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FORUM GEOBOTANICUM

An Electronic Journal of Geobotanical Research

Contents:

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Preface

Forum Geobotanicum is an electronic journal devoted to disseminate information concerning geographical distribution, ecology, morphology, taxonomy and conservation of vascular plants in the European Union with a main focus on middle Europe. It covers from molecular biology to environmental aspects. The focus is to publish original papers, reviews and announcements for the educated generalist as well as the specialist in this broad field. Forum Geobotanicum does not aim to supplant existing paper journals, but will be much more flexible in format, publication time and world-wide distribution than paper journals. Many important studies are being currently published in local journals and booklets and some of them are published privately. Hence, these studies will become aware to only a limited readership. Forum Geobotanicum will encourage authors of such papers to submit them as special issues of the journal. Moreover, the journal is planning to build up an E-mail-address section to support communication between geobotanists in Europe. The editors are optimistic that this electronic journal will develop to a widely used communication forum that will help to stimulate activities in the entire field of geobotany in middle Europe. To overcome problems of long term archivation and effective taxonomic publication of articles published electronically in Forum Geobotanicum, print versions of each volume of the journal and appropriate digital storage devices will be delivered freely to selected university libraries and state libraries in middle Europe.

Forum Geobotanicum ist eine elektronische Plattform, deren Zielsetzung darin besteht, neue Erkenntnisse der geobotanischen Forschung in der Europäischen Union mit Schwerpunkt Mitteleuropa umfassend zu verbreiten. Das Journal befasst sich mit allen Fragen von Verbreitung, Ökologie, Morphologie und Taxonomie von Gefäßpflanzen und soll das gesamte Spektrum der Geobotanik von molekularbiologischen Aspekten bis zu Umwelt- und Naturschutzfragen abdecken. Der Hauptfokus liegt auf der Publikation von Originaluntersuchungen und Übersichtsartikeln sowie Behandlung aktueller Fragen des Naturschutzes. Die Zielgruppen sind Personen mit Allgemeinkenntnissen in der Botanik und Floristik sowie Spezialisten auf den Gebieten der Geobotanik und Pflanzensystematik. Das Journal soll keine Zeitschrift in Druckform ersetzen, sondern eine Ergänzung zu den traditionellen Publikationsorganen bilden. Der Vorteil der Zeitschrift liegt in ihrer Flexibilität und raschen Publikationszeit nach Begutachtung der eingereichten Manuskripte und den Möglichkeiten, in größerem Umfang Fotografien und andere Abbildungen zu veröffentlichen. Der Vorteil einer elektronischen Zeitschrift besteht weiterhin darin, dass die Veröffentlichungen weltweit jedermann sofort zugänglich sind. Viele durchaus wichtige Untersuchungen aus dem Bereich der Geobotanik erscheinen in lokalen Publikationsorganen, wie Jahrbüchern und Heimatkalendern, oder auch im Eigenverlag. Da solche Veröffentlichungen bibliographisch kaum erfasst werden, können sie auch nicht in adäquater Weise wahrgenommen werden. Forum Geobotanicum soll ermöglichen, dass auch solche Publikationen in einer Literaturrubrik bekannt gemacht werden und ggf. nach Klärung von Copyright-Fragen als Supplemente der Zeitschrift ins Netz gestellt werden. Forum Geobotanicum nutzt die Vorteile des Internets, indem es abrufbare Hilfen, wie ein Verzeichnis von Adressen, Pflanzenlisten etc. zur Verfügung stellt. Insgesamt soll die Kommunikation zwischen Geobotanikern in Mitteleuropa erleichtert und eine Kommunikationsplattform etabliert werden, die die Aktivitäten auf dem gesamten Wissenschaftsgebiet stimuliert.
Das Journal ist uneigennützig und für Autoren und Benutzer kostenfrei. Für die Kostendeckung sind Sponsoren erwünscht, denen eine begrenzte Möglichkeit zur Darstellung eingeräumt werden kann. In der Anfangsphase wird das Journal von einem kleinen Herausgebergremiumbetrieben. Sollte sich Forum Geobotanicum erfolgreich weiter entwickeln, ist an eine Erweiterung des Herausgebergremiums auf Experten aus allen Nationen des mitteleuropäischen Raums gedacht. Um eine langfristige Verfügbarkeit der Publikationen zu gewährleisten, wird jeder Jahrgang von Forum Geobotanicum ausgedruckt, gebunden und mit digitalem Datenträger versehen an ausgewählte Universitätsbibliotheken, Landes- und Staatsbibliotheken Deutschlands und wichtiger Städte Mitteleuropas zur Archivierung und Ausleihe versandt.

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All manuscripts should be prepared with Microsoft Word and sent to the Editor by e-mail as "attachment" to the electronic address: **contact@forum-geobotanicum.net**. After a research manuscript has been accepted for publication, the author may be requested to rewrite the article in the journal's format (see PDF versions of articles Vol. 1, pp 1-8 or Vol. 2, pp 24-44). A galley proof is provided to author(s) before the article is available for all audiences.

Title Page
It should contain the following information:
a) The full title of the paper without abbreviations. The title should be as brief and informative as possible, specifying clearly the content of the article. If the title (legend) is german, an english subtitle must be added.
b) Full names of all authors indicating the corresponding authors and their full postal and electronic address.

Keywords
Authors must provide between three and six keywords, which must not be part of the title of the paper.

Abbreviations
All abbreviations must be explained when used first in the text.

Language
Preferentially written in either English or German.

Abstract (Zusammenfassung)
An english abstract between 200-400 words is required, abstracts submitted in German will on request be translated into English by the copy editor. The abstract should contain the principal ideas, methodology, results and important conclusions. Abbreviations should be avoided in the abstract. A reference might be included only if necessary, and mentioning the complete citation. Considering that the abstract will be published separately by international analysis information services, it should contain enough basic information so that the paper could be fully understood by those who do not have access to the full text.

Introduction (Einleitung)
It should be brief and limited to the definition of the problem, the aims and purposes of the research and its relation with other studies in the field.

Methods (Methoden)
It should include relevant details on the design, materials and techniques so that the study can be repeated.

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Results should be clearly presented. Tables and figures should only be included if required to fully understand the data.

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The aim of this section is the interpretation of the results and their relation to the existing knowledge. The information given in any part of the text may be cited but not repeated in the Discussion Section. Alternatively Results and Discussion can be presented in one section.

Acknowledgements (Danksagung)
The acknowledgments of the contributions of colleagues can be stated in this section. Acknowledgments for financial support must be cited on the corresponding section.

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References must be cited in the text mentioning the last name of the author and year between parenthesis. In case of two authors, both should be mentioned. When there are three or more authors, mention only the first author followed by et al. When two or more references are cited in the same parenthesis, the authors should be in chronological order. And if they have the same year, they should be in alphabetical order.
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At the end of the paper, in the References section the literature should be arranged in alphabetical order. If they have the same author name, they should be in chronological order. They must be presented according to the examples given in the first paper of volume 1.

Tables (Tabellen)
Tables must be numbered with Arabic numerals in the order in which they are cited in the text. They should have a brief descriptive title placed at the top. If the title (legend) is german, an english subtitle must be added. A short description is also accepted. Footnotes can be included below the table. Tables must be sent in Microsoft Word format and have no links to the main document or other archives.

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Photographs
Black and white and colour photographs on smooth and brilliant paper can be submitted.
Special care on the maximum definition of the photographs is required.

Drawings and Graphs
For digital line art, the following software can be used: Adobe Illustrator, Freehand, Corel Draw. Line art is also acceptable in TIFF format at a resolution of 1200 dpi.

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Greyscale images should be saved with at least 300 dpi; if text is included, use 600 dpi. Color images require 300 dpi. For best quality TIFF format is recommended. Illustrations in MS Word format will not be accepted.

Photographs, Drawings, Graphs and Tables
Provide files at 85 mm (single column) or 175 mm width (double column) and up to 210 mm in length allowing enough space for the legend.

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Trifolium micranthum Viv. an Nordseedeichen von Schleswig-Holstein – Charakterisierung der Pflanzen und ihrer Habitate, Status in Deutschland und Nachbargebieten

Trifolium micranthum Viv. at the North Sea dikes of Schleswig-Holstein – characterization of plants and their habitats, status in Germany and neighbouring countries

Published online: 08 March 2018

Abstract: A new distribution area with numerous growth sites of *Trifolium micranthum* has been discovered at the sea dikes of the North Sea coast of Schleswig-Holstein in Germany between the estuary of river Elbe and the island of Nordstrand with main occurrence on the peninsula Eiderstedt. Geographically this area links the Dutch population with the West Baltic population in Denmark and is the only semi natural growth site of this tiny clover in Germany. The other current growth sites in Germany are located on cemeteries in Nordrhein-Westfalen. *T. micranthum* prefers the steep inner slopes of sea dikes (30% gradient) with their higher diversity of vegetation and open ground sites created by grazing and tracks of sheep. Grazing creates significant reduction of the size of various parts of the clover (miniaturization). The paper also provides morphometric data on distinguishing features that are controversially treated in the literature, e.g. the length of pedicels with 0.6–1.1 mm (mean 0.8 mm), flower size (corolla with calyx) below 3 mm (mean 2.4 mm) and number of flowers per inflorescence of (1)2–6(8). A drawing of *T. micranthum* is provided that may help to discover new growth sites.

Kurzfassung In der vorliegenden Arbeit wird ein neues Teilareal von *T. micranthum* mit zahlreichen Vorkommen an den Nordseedeichen von Schleswig-Holstein zwischen der Elbeästuar und der Insel Nordstrand mit Schwerpunkt auf der Halbinsel Eiderstedt mitgeteilt, das geographisch zwischen dem Vorkommen in den Niederlanden und dem Ostsee-Areal in Dänemark vermittelt. Es handelt sich um die einzigen weitgehend naturnahen Wuchsorte der Art in Deutschland. Die anderen beiden aktuellen deutschen Vorkommen befinden sich auf Friedhöfen in Nordrhein-Westfalen. *T. micranthum* wächst bevorzugt an den steilen und artenreicheren Innenböschungen der Seedeiche, deren Vegetation durch intensive Schafbeweidung und Trittspuren kurz und lückig gehalten wird. Die Beweidung bewirkt eine signifikante Größenreduktion (Miniaturisierung) verschiedener Pflanzenteile. Widersprüchliche Angaben zu bestimmungskritischen Merkmalen werden durch morphometrische Untersuchungen überprüft. Unter anderem beträgt die Länge der Blütenstiele 0,6–1,1 mm (im Mittel 0,8 mm) und die Blüten mit Kelch sind deutlich unter 3 mm lang (im Mittel 2,4 mm). Die Zahl der Blüten der Infloreszenz beträgt (1)2–6(8). Eine graphische Darstellung soll bei Artbestimmung und Auffinden neuer Wuchsorte behilflich sein.

Keywords *Trifolium micranthum, Trifolium dubium,* Anatomy, Ecology, Distribution range

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Einleitung

Trifolium micranthum Viv. (Armblütiger Klee) ist eine diploide (2n=16) mediterran-atlantische Kleeart, die in der Vergangenheit (Gams 1925) zusammen mit der phänotypisch am nähesten stehenden Kleeart, *T. dubium* Sibth., auch im Subspeziesrang geführt wurde (*T. filiforme* subsp. *micranthum* (Viv.) Bonnier & Layens). *T. dubium* ist jedoch eine allotetraploide Art (2n=30), die durch Hybridisierung von *T. micranthum* und *T. campestre* Schreber (2n=14) entstanden ist (Ansari et al. 2008). *T. micranthum* ist im gesamten Mittelmeerraum und darüber hinaus ostwärts bis in die Kaukasusregion und nordöstlich bis Ungarn verbreitet. Sein atlantisches Areal reicht vom westlichen Nordafrika über die Iberische Halbinsel, Frankreich, Belgien und Holland nordwärts bis nach Großbritannien und Irland (Coombie 1968). Von (Süd)Norwegen gibt es nur einen historischen Fund ohne nähere Angaben von 1884 bei Kristiansand (Lid & Lid 2005, Jan Weseberg pers. Mitt.). Ein disjunktes nordöstliches Areal befindet sich im westlichen Ostseegebiet von Dänemark. Diesem können auch die ehemaligen Einzelvorkommen von der Flensburger Förde und im Hinterland der Howachter Bucht in Ostholstein (Raum Lütjenburg) zugeordnet werden (Raabe 1964, 1981), die aber seit 1980 nicht mehr bestätigt wurden. In Deutschland gilt die Art als vom Aussterben bedroht (Korneck et al. 1996, Rote-Liste-Kategorie 1).
In der vorliegenden Arbeit wird ein neues Teilareal von *T. micranthum* mit zahlreichen Vorkommen an den Nordseedeichen von Schleswig-Holstein mitgeteilt, das räumlich zwischen dem Vorkommen an der Nordseeküste von Holland und dem Ostsee-Areal in Dänemark vermittelt.

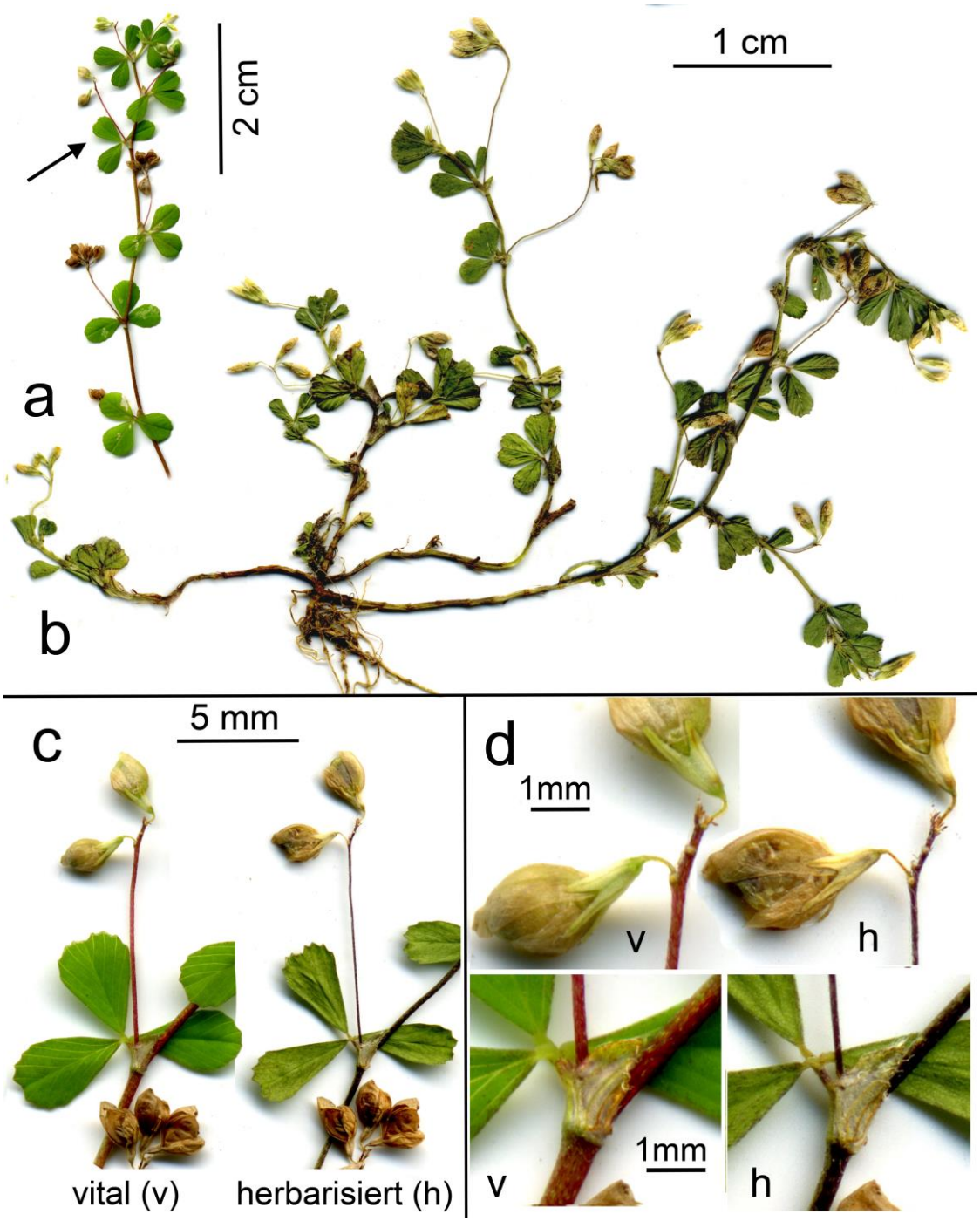

Abb. 1 (a, c, d) Scans von herbarisierten (h) und (noch) vitalen (v) Pflanzenteilen und (b) einer Gesamtpflanze von *T. micranthum* von einem beweideten Seedeich (Grothusenkoog). In (c, d) sind Abschnitte des in (a) gezeigten Astes abgebildet (Pfeil), der vor und nach Herbarisierung gescannt wurde. Die Herbarisierung führt zur Schrumpfung der Querduchmesser nicht aber der Längen von Blättchen, Infloreszenz- und Blütenstielen.

Fig. 1 Scans of herbarized (h) and still vital (v) parts of *T. micranthum* and (b) of a herbarium specimen of a whole plant, all collected at the sea dike of Grothusenkoog Schleswig-Holstein. In (c, d) part of the specimen shown in (a) (arrow) is displayed at higher magnification. Diameters of pedicels, peduncles and leaflets shrunk significantly but their length as well as the dimensions of fruits remained largely unchanged.

Diese Funde wurden zum Anlass genommen, eine Übersicht über das aktuelle Vorkommen der Art an seiner nordöstlichen europäischen Verbreitungsgrenze zu erstellen. Wegen in der deutschen Literatur nahezu durchgängig mit Fehlern behafteten Angaben zu Erkennungsmerkmalen der Art (siehe unten) werden auch Kennzeichen und Anatomie von *T. micranthum* behandelt und abgebildet (Abb. 1–6).

Material und Methoden

Im Juni 2015 und 2017 wurden die Seedeiche von Büsum bis Nordstrand durch Stichproben abgesucht. (Abb. 6). An jedem aufgesuchten Seedeichpunkt wurden rund 300 m

Deichlänge in der oberen und unteren Hälfte auf der Außen- und Innenböschung zu zweit abgesucht. Zwischen Büsum und dem Eidersperrwerk wurden 6 Deichstellen aufgesucht, auf der Halbinsel Eiderstedt zwischen dem Eidersperrwerk bis Simonsberg bei Husum insgesamt 16 Deichstellen, auf Nordstrand 5 Deichstellen und eine weitere Deichstelle nördlich der Arlau-Schleuse. Nicht begangen wurden die Deichabschnitte vom Simonsberger Koog bis Schobüll, der Nordstrander Damm und die Deichabschnitte im westlichen Nordstrand zwischen Süderhafen und Strucklahnungshörn. Ebenfalls wurden die Binnendeiche von Nordstrand zum Beltringharder Koog nicht begangen. Die durch 26 Stichproben abgesuchte Deichlänge betrug 77,5 km; im Durchschnitt wurden also die Seedeiche in Abständen von 3 km aufgesucht.

Von den meisten Stellen wurden Belegexemplare gesammelt und auch einige Pflanzen für weitere Untersuchungen eingetopft. Vermessungen erfolgten an vitalen und herbarisierten Pflanzen, die mit 1200–3200 dpi eingescannt und anschließend mit Adobe Photoshop-Cs Version 8.0.1 vermessen wurden. Um den Schrumpfungsgrad der Strukturen zu ermitteln, wurden frische Pflanzenteile nach Entnahme sofort eingescannt (2400 dpi) und dieselben Teile als Herbarpräparate erneut eingescannt und vermessen (Abb. 1). Die wesentlichen Details der graphischen Darstellung von *T. micranthum* in Abb. 5 basieren auf originalgetreuen Pausen eingescannter Pflanzenteile. Quantitative Daten werden überwiegend als arithmetisches Mittel ± Standardfehler angegeben, gefolgt (abgesetzt durch Klammern oder Semikolon) von Variationsbreite und Zahl (n) der untersuchten Objekte.

Befunde

Kennzeichen

Herbarisierungseffekte Die Vermessung von vitalen und herbarisierten Pflanzen ergab, dass die Längsachsen wie Stängel, Blütenkopfstiele, Blütenstiele, Kelche einschließlich Kelchzähnen und (geschlossenen) Kronen nicht oder vernachlässigbar schrumpfen (siehe Abb. 1c, d). Ebenfalls blieben die Dimensionen der reifen und noch unreifen Hülsen weitgehend unverändert. Die Durchmesser von Stängel, Blütenstandstielen (Pedunkel) und Blütenstielen schrumpften dagegen um 30–50 %. Das entspricht den Durchmessern dieser (vertrockneten) Strukturen zur Fruchtreife (Abb. 3f). Die Blättchen schrumpften (wohl abhängig vom lokalen Pressdruck) um etwa 10–40% in der Breite, aber nicht oder nur geringfügig in der Länge (Rhachis, Blattstiel).

Habitus *T. micranthum* besitzt eine bis zu 7 cm lange Pfahlwurzel mit teils kräftigen Seitenwurzeln. Der Stamm verzweigt sich nach wenigen mm in 3–6 Stängel, deren basalen Abschnitte sich seitlich ausbreiten und sich bei fehlender Beweidung nach wenigen cm bis 24 cm Höhe aufrichten und noch mehrere Nebenäste abgeben können. An den beweideten Deichen bleiben die Pflanzen flach ausgebreitet und können Durchmesser bis 18 cm erreichen.

Blüten Die Art ist durch ihre sehr kleinen Blüten (unter 3 mm) und Blütenstände mit wenigen Einzelblüten gekennzeichnet: 2,9±0,15 (1–7; n= 66) Blüten/Früchte pro Blütenstand/Fruchtstand an den beweideten Seedeichen und 4,16±0,19 (1–7; n=49) Blüten/Früchte an nicht beweideten Stellen (Zäune, Lagerplätze). Dieser Unterschied ist hoch signifikant ($p \ll 0{,}001$; doppelter *t*-Test). Wiinstedt (1908) gibt 3-6 Blüten pro Blütenstand aus Dänemark an. Die Blütenstände von Exemplaren der dänischen Insel Mejlø/Fünen (leg. Th. Schiøtz, 9.6.1890, Herbar KIEL) tragen 4,4±0,13 (2–7, n=60) Blüten ebenfalls hoch signifikant unterschiedlich von den Werten der Deiche, aber nicht unterschiedlich von den Werten der nicht beweideten nordfriesischen Deichabschnitte. Die Blüten sind besonders bei Sonne schwach geöffnet, öffnen sich vereinzelt noch einmal am Folgetag und bleiben dann dauerhaft geschlossen (Beobachtung an eingetopften Pflanzen). Die Einzelblüten (aus dem Kelch ragende Corolla um 1,7 mm) können aus dem aufrechten Stand des Beobachters bei genauem Hinsehen noch erkannt werden (Abb. 2, 5). Die beweideten und flach ausgebreiteten Pflanzen (Durchmesser 6–18 cm) erscheinen als grüne Kissen, die mit winzig kleinen (ca. 1,5 mm langen) gelben Spitzen übersät sind („wie gelbe Kommata wirkende Blütenköpfe“, Lunau 1959). *T. dubium* bildet dagegen bis 8 mm breite, zuerst umgekehrt breit kegelförmige und, bei Beginn des Verblühen (mit sich herabsenkenden unteren Blüten), kopfförmige Blütenstände mit 9,23±0,22 (5–20, n=35) Blüten pro Blütenstand.

Die Länge der Blüten beträgt zusammen mit dem Kelch 2,35±0,14 (2,1–2,6; n=44) mm. Die aus dem Kelchbecher herausragende geschlossene Krone (Corolla) ist 1,7±0,02 (1,5–1,9; n=29) mm lang und 0,83±0,02 (0,7–0,9; n=20) mm breit. Die Fahne ist endständig meistens ausgerandet und besitzt keine deutlichen Riefen. Die Flügel sind kürzer als die Fahne und überragen den unteren Fahnenrand bis 0,3 mm. Das Schiffchen wird von den Flügeln seitlich vollständig bedeckt. Während der Fruchtreife verfärben sich die Blütenblätter zunächst weißlich, dann hellbraun und verlängern sich noch um bis 0,3 mm. Die Länge des Kelchbecher-Oberrandes beträgt 0,71± 0,02 (0,5–0,8; n=20) mm und die der beiden oberen Kelchzähne 0,3 mm und der unteren drei Zähne 0,5–0,7 mm. Die Spitzen der Kelchzähne sind mit 1-3 bis 0,3 mm langen abstehenden weißen Haaren besetzt, die im Blüten- oder Fruchtstadium oft abfallen.

Bei *T. dubium* sind die Einzelblüten ebenfalls deutlich größer (3–4 mm) als die von *T. micranthum* mit breiteren und etwas bauchigen (löffelförmigen) Fahnen mit 4-6 angedeuteten Riefen. Die Fruchtstände sind breit kegelförmig gedrängt (Abb. 2, 3).

Hülsen/Früchte (Abb. 3, 4) Sie enthalten zu etwa gleichen Anteilen 1 oder 2 Samen. Reife einsamige Hülsen sind ohne den 0,2 mm langen endständig hochgekrümmten Schnabel 1,6–1,8 mm und bei zwei Samen 2,0–2,4 mm lang, im Durchschnitt aller Hülsen 1,9±0,02 (1,5–2,4; n=32) mm lang. Die Breite beträgt 1,21±0,02 (0,9-1,4; n=32) mm. Sie sind seitlich und manchmal auch endständig nicht vollständig von den vertrockneten und häutig versteiften Kronblättern bedeckt (Abb. 3, 4). Bei *T. dubium* ist die Bedeckung wegen der größeren Corolla mit breiterer und längerer Fahne meistens komplett (Abb. 2 d). Die breitovalen Samen sind übereinstimmend mit Zorić et al. (2010) knapp 1 mm groß (Durchschnitt 0,97 x 0,76 mm; n=9), linsenförmig abgeplattet und glänzend hell- bis dunkel kastanienbraun (Abb. 4). Bei *T. dubium* ist meistens (>80%) nur ein Samen pro Hülse enthalten (etwas größer). Die Hülse platzt am Oberrand unter oder neben der häutig versteiften Fahne auf. Die Fruchtstiele können sich gleichzeitig verdrehen und Kippbewegungen der Hülsen bewirken, so dass die Samen ohne sonstige äußere Einwirkungen in solchen Fällen herausfallen (Fotoserie in Abb. 4).

Blütenstiele (Pedizelli) Sie sind an den Deichen 0,77±0,26 (5–11; n=49) mm lang. Das Längenverhältnis zwischen Blütenstiel und Kelchbecher (0,71 mm) beträgt 1,10 (0,7–1,6). Exemplare von Mejlö / Fünen (siehe oben) besitzen

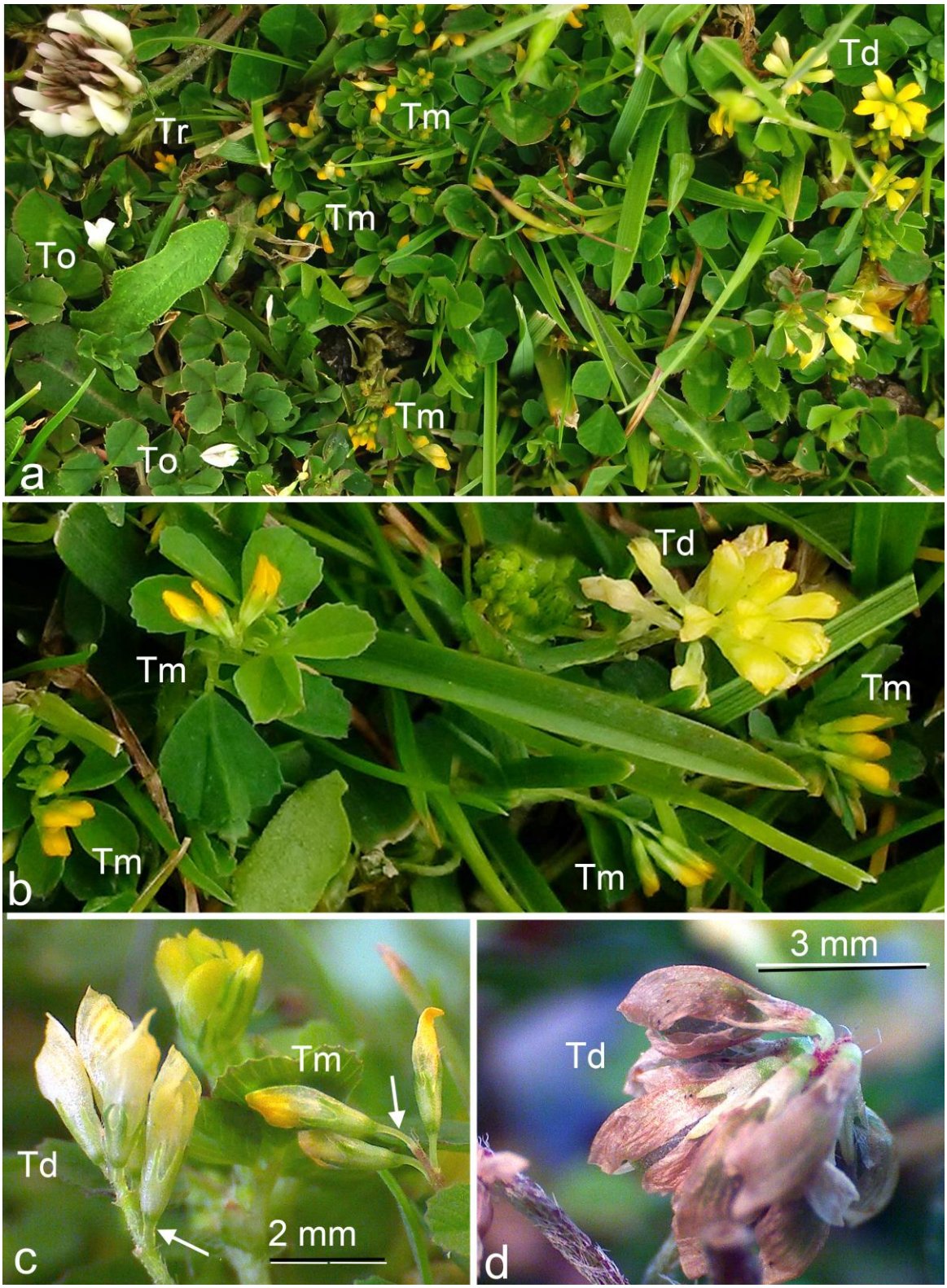

Abb. 2 Feldkennzeichen von *T. micranthum* (Tm.) an beweideten Seedeichen. (a, b) Mischbestände mit. *T. dubium* (Td), *T. ornithopodioides* (To) und *T. repens* (Tr). (c) Stärkere Vergrößerung von Blütenständen; Pfeile zeigen auf Blütenstiele. (d) Fruchtstand von *T. dubium* (Td); beachte die vollständige Bedeckung der Früchte durch die häutig versteifte Corolla.

Fig. 2 Field marks of T. micranthum (Tm) at grazed sea dikes. (a, b) Mixed stands with *T. dubium* (Td), *T. ornithopodioides* (To) and *T. repens* (Tr). (c) Close-up views of inflorescences; arrows point to pedicels. (d) Fruits of *T. dubium* (Td) completely hidden by the stiffened membranous corolla.

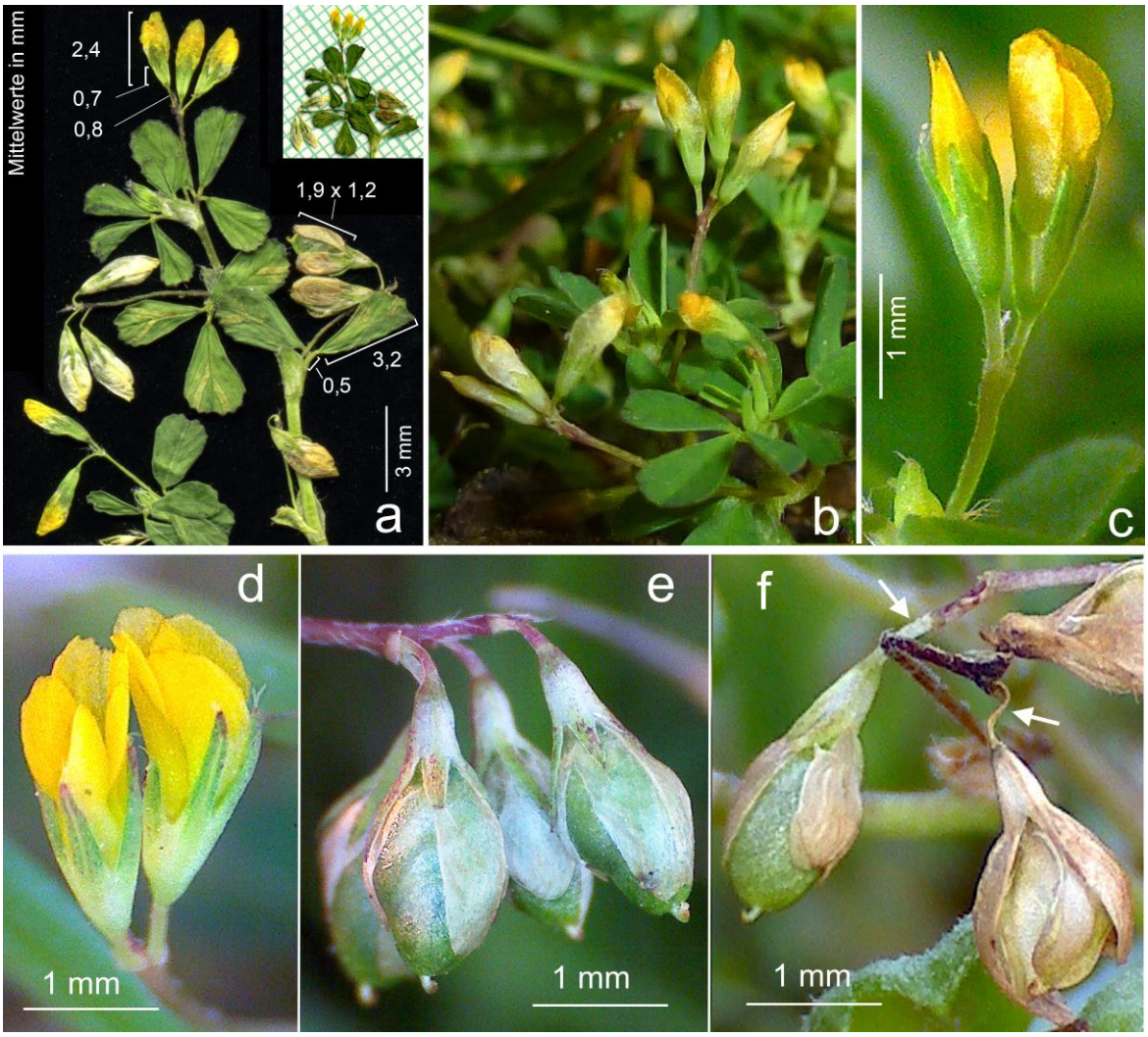

Abb. 3 Blüten- und Fruchtstände von *T. micranthum* bei stärkerer Vergößerung. In (a) sind Durchschnittswerte der für die Bestimmung relevanten Strukturen eingetragen. Pfeile in (f) zeigen auf Fruchtstiele, die bei der reifen Frucht geschrumpft sind.

Fig. 3 Close-up views of inflorescences and fruits of *T. micranthum*. Panel (a) includes average dimensions of structures relevant for determination. Arrows in (f) point to pedicels that are shrunken in mature fruits.

ebenfalls ein Längenverhältnis von um 1. Coombie (1968) gibt übereinstimmend das Verhältnis mit 1–1,5 an. Die Blütenstiele von *T. micranthum* sind in vivo 0,15–0,2 mm dick, zur Fruchtreife durch Austrocknung unter 0,1 mm (Abb. 3). Sie stehen zunächst aufrecht, und verlängern sich noch etwas (um 0,2 mm), fächern dann beim Verblühen in verschiedene Richtungen auf, oft waagerecht bis mäßig herabgekrümmt (Abb. 3).

Infloreszenzstiele (Pedunkel) Die Länge beträgt an den Deichen 5,61±0,36 (3,3–11; n=34) mm und ist signifikant kürzer ($p<0,01$,doppelter *t*-Test) als die von unbeweideten Pflanzen am Lagerplatz des Grothusenkooges 1917 (8,42±0,31; 3,7–10,3 mm; n=23), Mönkhagen/Ostholstein (9,31±0,2; 4,3–10,5 mm; n=11, KIEL) und von der unbewohnten dänischen Insel Mejlø (11,6±0,36; 4,7–14,5 mm; n=31, KIEL). Bei *T. dubium* stehen die 0,3–0,6 mm langen und 0,3–0,4 mm dicken Blütenstiele (Vitalmaße) zunächst straff aufrecht und biegen schon während des Verblühens einheitlich hakenförmig nach unten um (Abb. 2).

Die Blütenstiele sind bei *T. dubium* ca. 20–60% kürzer als der Kelchbecher (Längenverhältnis 0,4–0,8).

Blätter Die Blättchen sind annähernd gleich groß. Sie sind im oberen Drittel gezähnt mit 4–5 Zähnen (*T. dubium*: 5–7 Zähne) meistens mit gestutzter oft seicht ausgerandeter Spitze. Die vermessenen Mittelblättchen sind an den Deichen 3,2±0,92 (2–4,4; n=44) mm lang und signifikant ($p\ll0,01$) um ca. 20% kürzer als die Blättchen von Pflanzen benachbarter, unbeweideter Abschnitte (3,9±0,92; 2,3–4,8 mm; n=33) und der Belege von Mejlø (4,9±0,44; 2,3–6,5 mm; n=19). Für Spanien, Frankreich und England wird die Blättchenlänge mit 5-8 mm angegeben (Muñoz Rodriguez et al. 2015, Coulot & Rabaute 2013, Stace 2010). Zu Aspekten der Beweidungs-Miniaturisierung siehe unten (Habitat und Ökologie). Die Blätter an den Knoten mit Blütenständen von *T. micranthum* besitzen unabhängig vom Beweidungsgrad sehr kurze aus der Nebenblattscheide hervorgehende Stiele 0,52±0,05 (0,1–1,1; n=36) mm. Die Stiele der Blättchen sind ebenfalls sehr kurz (bis 0,3 mm) und annähernd gleich lang. An den Stängelabschnitten (Knoten) ohne Blütenstände und an Stängelverzweigungen (Abb. 6) sind die Blattstiele dagegen 2–5 mm lang. Bei *T. dubium* sind die Blattstiele an den Blüten tragenden Stängelabschnitten außerhalb der

Nebenblattscheide mit (1)2–3(5) mm immer deutlich länger als die Blattstiele von *T. micranthum* an den Infloreszenzabgängen. Das mittlere Blättchen ist bei *T. dubium* meistens länger gestielt (0,4–1,8 mm) als die Seitenblättchen (0,2–0,4 mm) (aber an den Deichen oft nicht).

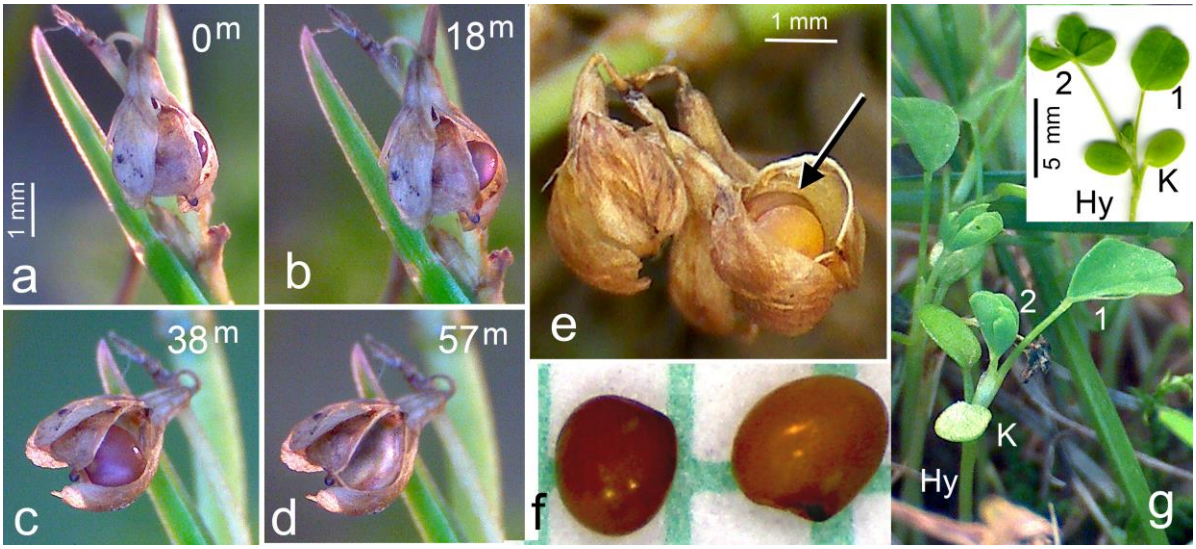

Abb. 4 (a–d) Auswahl von vier Fotografien aus einer Serie von in Minutenabständen (m) aufgenommenen Schnappschüssen mit Dokumentation von Hülsenöffnung und Samenfreisetzung; beachte die während des Öffnungsvorganges erfolgte Kippbewegung der Hülse mit spontaner Entleerung. (e) Geöffnete Hülse mit zwei Samen, (f) Samen auf mm-Papier und (g) Sämlinge in vivo (im Ausschnitt ein Vitalscan) mit Abschnitten des Hypokotyls (Hy), je zwei Keimblättern (K), einem Primärblatt (1) und dreizähligen Folgeblättern (2).

Fig. 4 (a–d) Selection of four images of a series of photographs taken at intervals of one minute (m) each to document the process of opening of the fruit capsule and seed release. Note tilting movement of the fruit during capsule opening with spontaneous seed release. (e) Opened capsule with two seed, (f) seeds on graph paper (mm scale), and (g) seedlings in vivo (inset shows scan of vital seedling) with cotelydones (K), parts of the hypocotyl (Hy), primary leaf (1) and following three-foliolate leaf generations (2).

Nebenblätter (Stipel) Die beiden Nebenblätter sind komplett stängelumfassend, schmal bis breit lanzettlich teils auch mit abgerundeter Spitze, und randlich mit einzelnen Haaren besetzt (Abb. 1d, 3a, 6). Sie sind ringsum mit dem Knoten und mittig mit dem Blattstiel verwachsen und liegen dem Stängel seitlich an oder sind flügelförmig abgespreizt (Abb. 3a unten, Abb. 6). Ihre Länge beträgt an den Infloreszenzen tragenden Knoten 2,1±0,07 (1,3–2,9; n=36) mm (gemessen von der Spitze bis zum Knoten am Abgang des Blattstängels). Bei *T. dubium* sind sie an den Deichen etwas länger 2,4 (1,8–3,8 mm) aber statistisch nicht signifikant. Auch ihre Form unterscheidet sie nicht deutlich von den Nebenblättern von *T. micranthum*. Die Nebenblätter sind mit dem Blattstiel untrennbar über eine Länge von 1,0±0,03 (0,7–1,6; n=36) mm verwachsen. Dieser ist dort abgeplattet ist mit einem mittelständigen und je einem seitlichen nach basal etwas divergierenden Leitungsbündel.

Jahreszyklus

T. micranthum keimt bereits Mitte September und besitzt Ende September neben den ovalen (bis 4 × 2 mm) und bis 4 mm gestielten Keimblättern bereits zwei weitere Laubblattgenerationen. Das erste Laubblatt (Primärblatt) ist ungeteilt (ca. 2,5 × 4 mm), das zweite bereits dreizählig mit bis zu 5 mm langem Stiel (Abb. 4). Die ersten Blüten wurden am 10. Mai gesehen (St. Peter-Brösum 2016) noch vor der Blüte von *T. dubium*. Die Hauptblühphase liegt zwischen Ende Mai und Ende Juni. Anfang Juli verschwinden die Blüten und Ende Juli beginnen die Pflanzen zu verwelken. Aber ein Fund in voller Blüte von K. Nikoleizig bei Mönkhagen (Ostholstein, KIEL!) ist auf den 15. 8 1965 datiert (Schreibfehler?).

Habitat, Ökologie

Die Pflanzen wachsen ganz überwiegend an der steileren Innenböschung der Seedeiche und dort bevorzugt im unteren Drittel und teils auch auf den ebenen Flächen am inneren Deichfuß (Innenberme) einschließlich Grabenböschungen (Abb. 5). Dabei ist es unerheblich, ob die Innenböschung nach Norden, Süden oder Osten gerichtet ist. Die steilere Innenböschung (Neigung 1:3) weist im Vergleich zur flacheren Außenböschung (1:6) (Zitscher 1966) in der Regel vermehrt gestörte Bodenstellen auf mit Trampelstufen der Schafe. *T. ornithopodiodes* bevorzugt dagegen die Südseite der Deiche und dort gerne den Mittelabschnitt der Böschung unabhängig davon, ob es sich um die Innen- oder Außenböschung handelt. Intensive Beweidung scheint für das Vorkommen beider Kleearten notwendig zu sein. Auf Deichabschnitten mit geringerer Beweidungsintensität und der Notwendigkeit zur Mahd fehlt *T. micranthum* weitgehend (und auch *T. ornithopodioides*). An allen Wuchsstellen kommt stets *T. dubium* als Zeigerart vor, oft in unmittelbarer Nachbarschaft. Das trifft auch für Bestände in Dänemark zu (Wiinstedt 1908). Auch andere Kleearten der Deiche (*T. repens*, *Medicago lupulina* und *T. ornithopodioides*) können in direkter Nachbarschaft zu *T. micranthum* wachsen und mit ihm Mischbestände bilden (Abb. 2). Diese Kleearten lassen aber keine besondere Be-

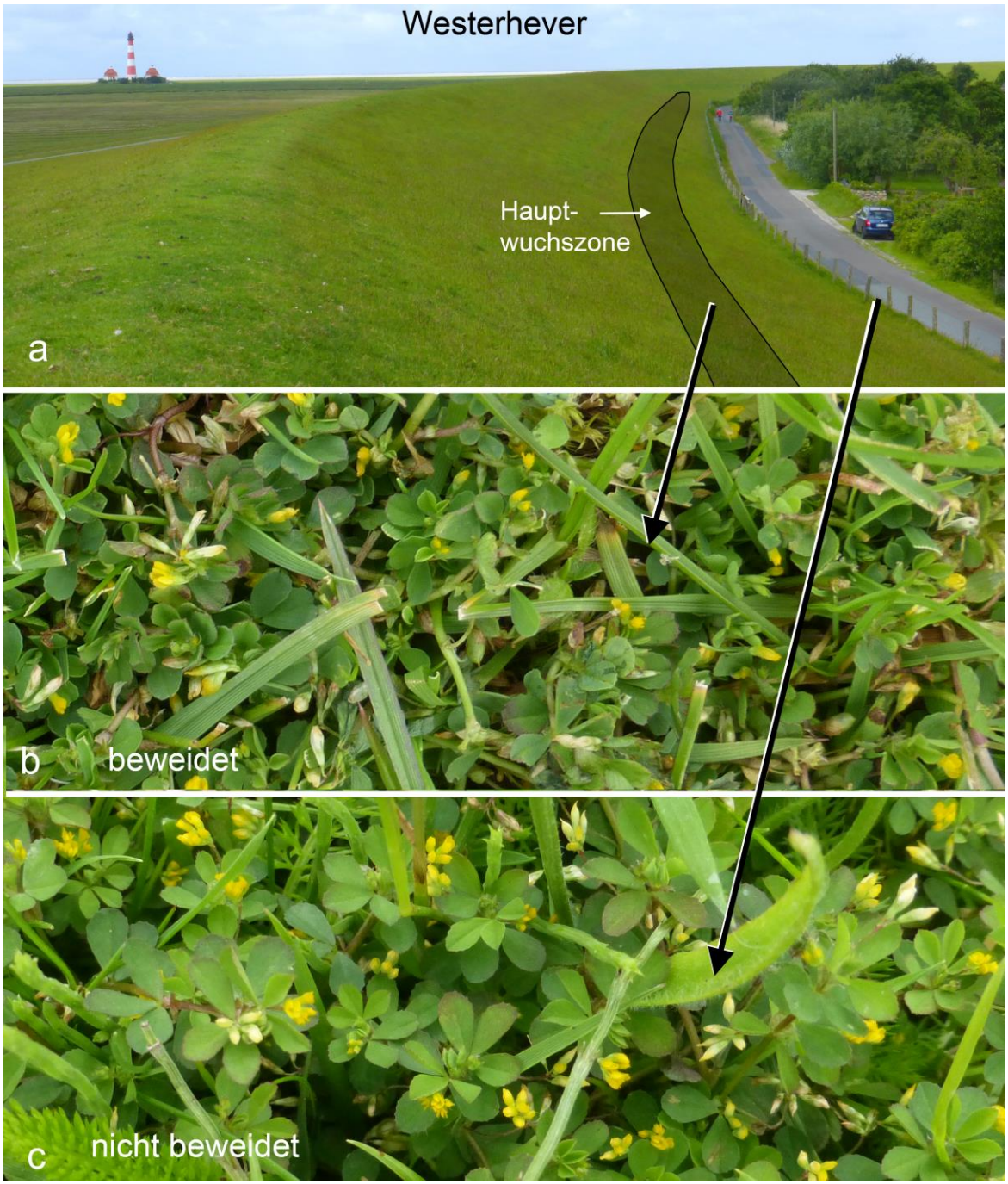

Abb. 5 (a) Typischer Wuchsort im unteren Drittel der Innenböschung der Seedeiche der Nordseeküste von Schleswig-Holstein – hier am Süderdeich von Westerhever – mit charakteristischer Wuchsform von (b) beweideten und (c) unbeweideten Pflanzen, die vereinzelt im Schutz von Zäunen wachsen.

Fig. 5 (a) Typical growth site of *T. micranthum* at the lower third of the inner slope of sea dikes at the North Sea coast of Schleswig-Holstein – here at the Süderdeich of Westerhever – with characteristic habitus of (b) grazed plants and (c) non grazed plants which occasionally grow protected underneath fences.

vorzugung des unteren Deichdrittels erkennen. Da *T. micranthum* eine annuelle Sippe ist, kann die Art in manchen Jahren vollständig fehlen. Das gilt auch für *T. ornithopodioides* (mehrfach so am Deich von St. Peter Brösum).
An den Deichen waren Blätter und Fruchtstiele der vermessenen Pflanzen um ca. 20–25% verkürzt und die Zahl der Blüten pro Blütenstand um ebenfalls ca. 25% reduziert (siehe oben). Diese Form der Miniaturisierung von Blättern, Pedunkel und Infloreszenzen können zusammen mit der flachen Ausbreitung der Äste als Anpassung an die Beweidung gesehen werden im Sinne einer Minderung der Verbisswahrscheinlichkeit. Die kürzeren Pedunkel können möglicherweise die Zeitspanne zwischen Beginn des Auswachsens der Infloreszenzen und der Fruchtreife verkürzen und die geringere Blütenzahl pro Köpfchen den Reifungsprozess der Früchte durch exklusivere Nährstoff-Versorgung beschleunigen.
Folgende Pflanzenarten (teils stark verbissen) wurden am 7. Juni 2015 auf einer 1 m^2 große Fläche um einen 200 cm^2 großen Bestand von *T. micranthum* in St. Peter-Brösum notiert:

Achillea millefolium, Anthoxanthum odoratum, Cerastium holosteoides, Bellis perennis, Cynosurus cristatus, Cirsium vulgare, Geranium molle, Hordeum secalinum, Scorzoneroides autumnalis, Leontodon saxatilis, Lolium perenne, Bromus hordeaceus, Medicago lupulina, Plantago coronopus, Plantago lanceolatus, Poa pratensis, Ranunculus bulbosus, Sherardia arvensis, Torilis nodosa, Trifolium dubium, Trifolium ornithopodioides, Trifolium repens, Veronica serpyllifolia.

An einer zweiten 1 m^2 großen Fläche bei Westerhever Norddeich (Höhe Heerstraße) im Juni 2016 wurde dasselbe Artenspektrum gefunden außer *Torilis nodosa*, *Cirsium vulgare* und *Hordeum secalinum*. Zusätzlich wuchs dort im 1m-Radius *Taraxacum sect. Ruderalia* und *Hypocheris radicata*.

Dieses Artenspektrum ist (außer *T. ornithopodioides*) typisch für die Nordseedeiche in Schleswig-Holstein (siehe Raabe 1981). Es handelt sich teilweise um wärmeliebende und konkurrenzschwache Arten, die lückenhafte Vegetation bevorzugen und auf gedüngten Wirtschaftsweiden und Äckern zurückgedrängt werden.

Verbreitung

Seedeiche der Westküste Schleswig-Holsteins

Es wurden insgesamt 28 Deichabschnitte mit je rund 300 m Länge abgesucht, also etwa 8 km Deichstrecke. Das entspricht einer zehnprozentigen Stichprobe. An 15 Stellen (ca. 50% der Stichproben) wurde *T. micranthum* nachgewiesen. Das bedeutet aber nicht, dass der Klee auf der Hälfte der 78 km langen Deichstrecke zu erwarten ist. In Abb. 7 ist zu erkennen, dass *T. micranthum* inhomogen verteilt ist. Auf dem 14 km langen Deichabschnitt zwischen Büsum und dem Eidersperrwerk und dem 13 km langen Deichabschnitt auf Nordstrand wurde jeweils nur je ein kleines Vorkommen gefunden. Zwei Drittel aller Nachweise befinden sich auf dem rund 40 km langen Seedeichabschnitt im West- und Nordteil der Halbinsel Eiderstedt zwischen Grothusenkoog und Adolphskoog. Am Binnendeich nördlich und südlich der Arlau Schleuse wurde *T. micranthum* nicht gefunden (schwach beweideter Deich mit reichlich Goldhafer). Ein weiterer Fund von *T. micranthum* außerhalb des Untersuchungsgebietes stammt aus 2016 von einem Lagerplatz am Seedeich westlich von Brunsbüttelkoog (J. Hebbel, pers. Mitt., Fotobelege!).

Die größten mehr oder minder zusammenhängenden Bestände (teils mit Lücken von mehreren 10 m) befinden sich (a) am Seedeich des Grothusenkooges auf einem Lagerplatz vor dem inneren Deichfuß (Innenberme) und an beiden Böschungen des Seedeiches (120 m Länge) und (b) am südlichen Seedeichabschnitt von Westerhever (nach Norden gerichtete Innenböschung) von Süderweg 10 bis 4, (Abb. 5). Ebenfalls scheint die Sippe an der Innenböschung (unteres Drittel) des 8 km langen Seedeiches des Jordflether Kooges vom Everschop-Siel ostwärts bis Ülvesbüll möglicherweise kontinuierlich verbreitet zu sein (alle drei dort besuchten Deichabschnitte mit teils größeren Beständen) und kommt auch an den westlich und östlich anschließenden Deichabschnitten des Ülvesbüller- und Norderheverkooges vor.

Wuchsorte Die Koordinaten und Zuordnung zu Quadranten der Topographischen Karten (TK) wurden auf den Karten der Käferfauna Deutschlands (https://www. kerbtier.de) ermittelt. Wenn nicht anders vermerkt, Funde von D. und H. Drenckhahn (DD/HD). ! = Herbarbeleg oder Foto von D. Drenckhahn gesehen.

TK 2120-211 Westlich Brunsbüttelkoog, Lagerplatz nahe des Deiches, dort teils auf Schotter wachsend (2016, J. Hebbel, Fotobeleg!). TK 1818-222 Hedwigenkoog, Zwei kleine Gruppen von 100-150 cm^2 (2017 DD/HD); in diesem Bereich liegt auch ein Fund von E.-W. Raabe am 28.6.1969 (HBG!). TK 1718-1232 Grothusenkoog, Lagerplatz am Ende der Zufahrtstraße zum Deich (Koogchaussee), Deich-Innen- und Außenböschung, auf dem Lagerplatz teils flächendeckend, mehrere tausend Pflanzen (2015-2017 DD/HD); 2017 am Deich durch Herbizideinsatz zur chemischen Distelbekämpfung verschwunden (2017 DD/HD). TK 1718-1141 St. Peter-Süderhöft, Eckhof, Winkel an der Innenböschung zwischen Seedeich und Altdeichrampe zusammen mit *T. ornithopodioides*, letzterer mit Hauptbestand auf der nahc Süden gerichteten Außenböschung (2015–2017 DD/HD). TK 1617-4214/-4223 Brösumer Siel, innerer Deichfuß am Altdeich 200 m westlich der Schleuse zusammen mit *T. ornithopodioides*, mehrere 300-500 cm^2 große Bestände (2007–2017, aber nicht 2010, 2014, 2016 DD/HD). TK 1618-1321 Süderhever Koog nördlich der Schleuse auf der Innenberme, reicher Bestand, in gering beweidetem Rasen teils aufrecht wachsend (2015–2017 DD/HD). TK 1617-2244 Westerhever-Leikenhusen, Deich-Innenböschung unteres Drittel, von Haus Süderweg 10 bis 4 über 450 m verstreute reiche Bestände (2017 DD/HD). TK 1617-2232 Westerhever-Stuffhusen, Deichkrone Außenkante neben Überfahrt des Wirtschaftsweges, solitärer 400 cm^2 großer Bestand (2017 DD/HD). TK 1518-3333/-3334 Westerhever-Norderdeich, Ende Heerstraße, lockerer Bestand bis 400 m westlich an Innenberme und Grabenböschung, teils auch an Innen- und Außenböschung des Deiches; auf der nach Süden gerichtetn Innenböschung einmal zusammen mit *T. ornithopodioides* (2016–2017 DD/HD). TK 1518-4334 Norderheverkoog-Mitte, Ende Schäferweg, mehrere kleine Gruppen am inneren Deichfuß am Ende der Rampe des Überfahrtweges (2017 DD/HD). TK 1518-4432 Norderheverkoog-Ost, Deich-Innenböschung 200 westlich der Deichzufahrt einzelne Pflanzen (2017 DD/HD). TK 1518-4442 Everschop-Siel, unmittelbar östlich des Schleusenhauses, Deich-Innenböschung oberes und mittleres Drittel, mehrfach kleinere Gruppen und Einzelpflanzen (2015 DD/HD). TK 1519-3344 Jordflehter Koog Parkbucht 50 m westlich der Staße nach Kaltenhörn, größerer Bestand (mehrere 100 Pflanzen) auf der Innenberme zwischen Fuß der Überfahrtrampe und Zaun; 2015 auch im oberen Drittel nahe der Deichkrone auf Höhe der Parkbucht (2015–2017 DD/HD). TK 1519-3423 Jordflehter Koog nahe der Straße nach Friedrichskoog, kleine Gruppe an der Deich-Innenböschung, unteres Drittel (2017 DD/HD). TK 1519-4133 Ülvesbüller Koog, 100 m nordöstlich der einzigen Deichzufahrt, am Fuß der Überfahrtrampe zwei kleine 200-500 cm^2 große Gruppen (2016–2017 DD/HD). TK 1519-14 Nordstrand Süderhafen, Zaun an der Überwegung zum Hafen, oberes Drittel der Deich-Außenböschung, mehrere aufrechte Pflanzen zusammen mit *Torilis nodosa* (2017 DD/HD).

Frühere Vorkommen in Schleswig-Holstein

Ostholstein TK 2328-3 Bereich Trittau ohne Ortsangabe („Juni 1965“, K. Nikoleizig, KIEL!, in Raabe et al.1987 Zuordnung zum Quadranten 3, der auf dem Herbarbeleg nicht angegeben ist). TK 2029-334 Mönkhagen, 1 km südwestlich der Schule „reichlich“; hier befindet sich eine

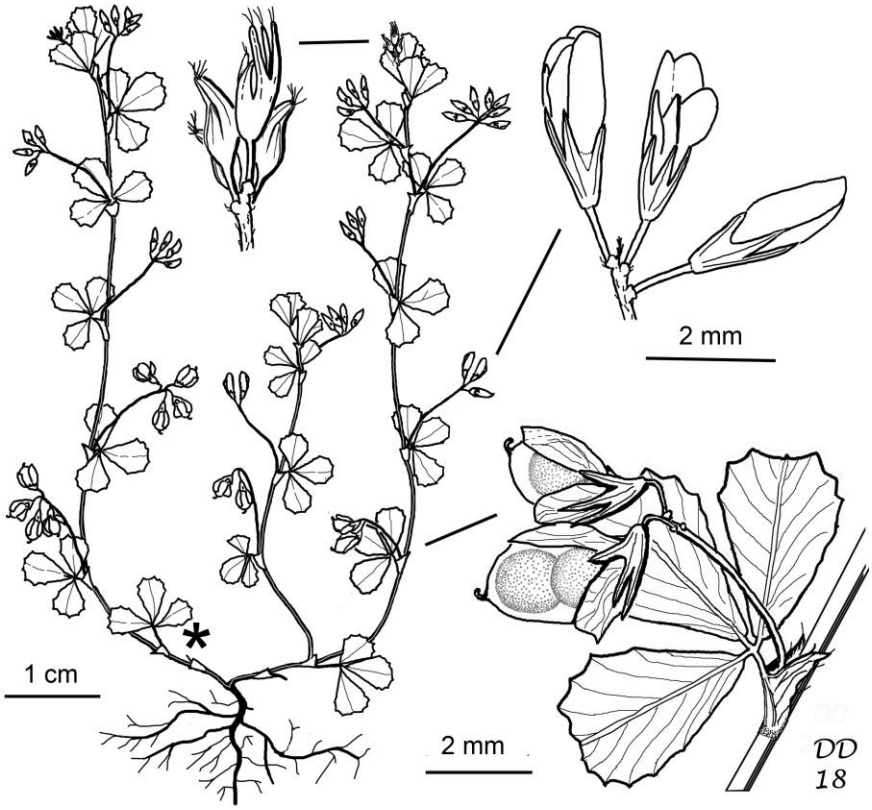

Abb. 6 Detailgetreue Zeichnung von *T. micranthum* mit Hervorhebung bestimmungsrelevanter Pflanzenteile. Die Laubblätter der basalen Sprossabschnitte (*) besitzen im Gegensatz zu den Laubblättern der blütentragenden Sprossabschnitte deutlich längere Stiele

Fig. 6 Drawing of *T. micranthum* with magnification of plant parts relevant for determination. Asterisk indicates leaves of basal stem parts with clearly visible petioles which are much longer than short petioles of the flowering stem parts.

Tabelle 1 Bestimmungsrelevante Strukturen von *T. micranthum* und *T.dubium.*
Table 1 Distinguishing features of *T. micranthum* and *T. dubium*

Struktur	***T. micranthum***	***T. dubium***
Blütenstand	(1)2–5(8) Blüten leicht gefächert	5–20 Blüten dicht gedrängt kegel–kopfförmig
Blüte + Kelch	2,4 (2–3) mm lang	3–3,6 mm lang
Blütenstiel-Länge	≥ Kelch ohne Zähne 0,8 (0,5–1,1) mm	< Kelch ohne Zähne 0,4–0,6 mm
Fruchtstand	lockere Gruppe Früchte aufrecht bis hängend	breit kegelförmig straff herabgebogene Fruchtstiele/Früchte
Frucht	von welker Corolla meistens inkomplett umhüllt	von welker Corolla meistens komplett umhüllt
Samen/Frucht	1–2	1 (selten 2)
Blattstiel an Infloreszenz-abgängen	0,5 (0,1–1,1) mm kürzer als Nebenblatt-Scheide	1,5–4 mm viel länger als Neben-blatt-Scheide
Mittelblätt-chen-Stiel	0,2–0,3 mm nicht länger als Seitenblättch.-Stiele	bis 1,5 mm meistens länger als Seitenblättch.-Stiele

Sandgrube (15.8.1961, K. Nikoleizig KIEL!). TK 2129-1 Zarpen, Kreis Storman (Raabe 1970), kein Herbarbeleg. TK 1930-113 östlich Ottendorf, Kreis Eutin, südlich Peper See, Rand der Landstraße, Erstnachweis für Schleswig-Holstein (1.6.1959, zwei Herbarbelege KIEL!, ein Beleg LUB!, Lunau 1959). TK 1729-1 Westlich Lütjenburg, Hangweiden (Raabe 1964), keine Herbarbelege. TK 1629-3 Raum Giekau-Gadendorf, u.a. Kiesgrubenweide westlich Nienthal, Hangweide östlich Emkendorf, Weide auf Höhe 96,8 nördlich Emkendorf (Raabe 1964), keine Herbarbelege von diesen Lokaltäten in KIEL, HBG, LUB. TK 1629-4 Lütjenburg/Kossau, Vegetationsaufnahme 21.5.1964 (F. Mang, KIEL!); in Raabe (1964) wird der Ort dieser Vegetationsaufnahme als „Ziegeleiwiesen nordöstlich von Lütjenburg“ beschrieben; ebendort (29.5.1964 E.-W. Raabe, HBG!; Foto des Beleges in Raabe, 1964). Ende Mai 1986 konnte die Art an diesen Wuchsorten um Lütjenburg bei einer eintägigen Nachsuche nicht mehr nachgewiesen werden (F. Dunkel, pers. Mitt.). TK1123-442 Langballigau, Flensburger Förde, „seeseitiger Strandwall“ (25. 5. 1967, leg. E.-W. Raabe, HBG!) und „sandiger alter Steinwall im Bereich der Mündung der Langballigau“ (26.5.1967, leg. H. E. Weber, Herbar H. E. Weber!). Eine Nachsuche Ende Mai 1986 durch F. Dunkel erbrachte keinen Nachweis mehr (F. Dunkel, pers. Mitt.). Dieser Wuchsort am Südufer der Flensburger Förde kann in Zusammenhang mit zwei Fundorten der Art von vor 1930 am nördlichen (dänischen) Fördeufer gesehen werden, die in der Verbreitungskarte von Jessen (1930) eingetragen sind. Ein Herbarbeleg etwa 25 km nördlich liegt vom Galgenberg bei Apenrade in Dänemark vor (Hinrichsen, ohne Datum, HBG!).

Westküste: Nur ein historischer Fund in TK 1818-22 Hedwigenkoog nördlich Büsum, Seedeich (28.6.1969, leg. E.-W. Raabe, HBG!). Raabe (1981) führt Näheres zu diesem Fund aus: "Den kleinsten Klee kennen wir zwar bisher lediglich an einer einzigen Stelle des Seedeiches nördlich Büsum, mehrfach dagegen an ähnlich günstigen Kleinklimalagen des Ostens, doch halten wir dafür, dass diese Art an unseren Nordseedeichen bisher übersehen sein könnte, zumal sie nur während der sehr kurzen Blütezeit im Mai einwandfrei diagnostiziert werden kann" (Anmerkung: Die Hauptblütezeit erstreckt sich aber bis Ende Juni).

Vorkommen im übrigen Deutschland
In Deutschland wurde die Art nach 1990 nur an einer Stelle im südöstlichen Niedersachen und an verschiedenen Stellen in Nordrhein-Westfalen nachgewiesen (Netzwerk Phytodiversität Deutschland 2013, Haeupler et al. 2003, Garve 2007, G. Loos, pers. Mitt.).
Niedersachsen Hier gilt die Art als unbeständiger Neophyt (Garve pers. Mitt.). TK 3616-4 Wimmer, Landkreis Osnabrück (1994, K. Lewejohann in Garve 2007).
Nordrhein-Westfalen TK 4129-3 Olfen-Kökelsum südwestlich Lüdinghausen, sandige Pferdeweide, Uferböschung am nördlichen Steverufer (1996–1997 G. Loos & D. Büscher pers. Mitt.). TK 5002-3 westlich Geilenkirchen, Sandgrubenbereich der Tevener Heide (1995, Bomble & Schmitz 2014, F.W. Bomble pers. Mitt.). TK 3917-14 Bielefeld, Neuer Friedhof, seit über 20 Jahren nachgewiesen, zuletzt „in großen Mengen in zahlreichen Zierrasen auf dem Neuen Friedhof" (29.05.2016, I. Sonneborn/A. Jagel, in Bochumer Bot. Ver. 2017). TK 5202-22 Aachen, Friedhof Hüls „in großen Beständen in Scherrasen und in Pflasterfugen" (11.06.2016, F.W. Bomble in Bochumer Bot. Ver. 2017). Das Vorkommen in der Sandgrube westlich von Geilenkirchen (nur 1995, Bomble pers. Mitt.) kann in einem räumlichen Bezug zum nahe gelegenen natürlichen Vorkommen auf Flussdünen an der Maas (Weeda et al. 1984) gesehen werden, und die Friedhofsvorkommen in Aachen und Bielefeld fügen sich gut in die Berichte aus dem benachbarten Belgien ein, wo sich der Klee neuerdings auf kurz geschorenen Rasen von Militärfriedhöfen ausbreitet (Vorkommen auf 80 der 137 Militärfriedhöfe, Van Landuy et al. 2004, siehe unten).

Vorkommen in Holland und Dänemark
Die aktuelle Verbreitung ist in Abb. 7 dargestellt. Näheres siehe unten im Absatz „Gefährdung in Deutschland und Nachbargebieten".

Diskussion

Kennzeichen Ein wichtiges Erkennungsmerkmal *T. micranthum* sind die 0,8 mm (0,5–1,1) mm langen Blütenstiele, die so lang oder etwas länger als der Kelchbecher ohne Zähne sind. Muñoz Rodriguez et al. (2015) geben in Übereinstimmung 0,5–1 mm für iberische Pflanzen und Coulot & Rabaute (2013) ´0,5–1,5 mm für Pflanzen Frankreichs an. Auch die Angaben in Coombie (1968) lassen auf dieselbe Länge schließen (1,5 Mal so lang wie der Oberrand des Kelchbechers, der 0,7 mm lang ist). Stace (2010) gibt eine Länge von ca. 1,5 mm an, was als Mittelwert deutlich zu lang ist. Die Angaben in Haeupler & Muer (2000), Rothmaler (2013 und frühere Auflagen) und Oberdorfer et al. (2001) von 2 mm langen Blütenstielen entsprechen definitiv nicht der Realität. In einer Bestimmungshilfe von Christensen et al. (2013) werden ebenfalls 2 mm lange Blütenstiele angegeben und und eine Skizze von Leaney (2012) entsprechend abgeändert. Die Zahl der Blüten pro Infloreszenz europäischer, iberischer, französischer, englischer, deutscher und dänischer Planzen (Muñoz Rodriguez et al. 2015, Coombie 1968, Coulot & Rabaute 2013, vorliegende Untersuchung) beträgt (1)2–6(8), auf den Britischen Inseln ausnahmsweise bis 10 (Stace 2010). In der zuvor zitierten deutschen Literatur werden abweichend davon 12–15 Blüten als Obergrenze angeben. Diese Ungereimtheiten im deutschen Schrifttum gehen sehr wahrscheinlich auf ungeprüfte Übernahmen der Angaben von Gams (1925) in Hegi zurück (2 mm lange Blütenstiele, 2–15 Blüten/Infloreszenz) und auch auf die Abbildung in Rothmaler (2013), in der nicht nur die Blütenstiele viel zu lang sondern auch die Kelchzähne inkorrekt gleich lang dargestellt sind. Die dichte Zähnung und fehlende Ausrandung/Stutzung der Blättchen in Rothmaler (2013) ist ebenfalls untypisch für *T. micranthum*. Die Abbildung 1388 von *T. micranthum* in Gams (1925) steht teilweise im Widerspruch zur Beschreibung und stellt eine Pflanze mit Teilmerkmalen von *T. dubium* dar. Die Abb. 6 dieser Arbeit basiert auf Scans, Fotos und Herbarexemplaren.

Unterscheidungsmerkmale zu *T. dubium* (Tab. 1): (a) der oft etwas lockere Blüten/Fruchtstand von *T. micranthum* besteht nur aus 2–6 (vereinzelt auch mal 8), im Durchschnitt 3–4 Blüten/Früchten – bei *T. dubium* dagegen stets kompakt kegel- oder kopfförmig mit meistens deutlich mehr als 5 (bis 20) Blüten/Früchten; (b) die dünnen, flexiblen Blütenstiele bei *T. micranthum,* von denen die meisten so lang oder länger als der Kelchbecher (ohne Zähne) sind – bei *T. dubium* dagegen kürzer als der Kelchbecher; (c) die fast sitzenden Blätter im Bereich der Infloreszenzabgänge von *T. micranthum* , die kürzer als die Nebenblattscheide sind – bei *T. dubium* dagegen stets viel länger (meistens >2mm) – und (d) das Stielchen des Mittelblättchens, das bei *T. micranthum* stets so lang ist wie die Seitenblättchenstiele – bei *T. dubium* dagegen oft deutlich länger.

Habitat, Ökologie *T. micranthum* ist eine konkurrenzschwache Art, deren Vorkommen an lückige Vegetation gebunden ist. Diese kommt natürlicherweise auf nährstoffarmen, oft sandigen Substraten vor, die aber wegen der intensiven Landnutzung inzwischen großflächig verschwunden sind. Wuchsorte an der dänischen Ostseeküste scheinen teilweise noch weitgehend natürlich zu sein. Dort wurde der Klee am Übergang zwischen Strandwall und höher gelegen, ausgesüßten Grünlandflächen gefunden (Wiinstedt 1908). Auch der Wuchsort am Strandwall bei Langballigau an der Flensburger Förde (siehe oben) befand sich in einem natürlichen Habitat. Strandwallvorkommen sind auch von der Insel Falster / Dänemark belegt (Herbarbelege in AAU!). In Holland könnte das Vorkommen auf Flussdünen an der Maas auch als natürlich angesehen werden (Weeda et al. 1987). Dagegen liegen die Vorkommen in den Dünengebieten an der Küste von Belgien (dort nur im Westen nahe der Grenze nach Frankreich vorkommend, D'hondt et al. 2012) und von Holland auf beweideten oder durch Pflegemaßnahmen anthropogen beeinflusster (kurz gehaltener) oder beweideter Vegetation, einmal in von Kaninchen verbissenem *Luzula campestris*-Bestand (D'hondt et al. 2012; Drees et al. 2009).
Die Seedeiche sind Ersatzwuchsorte, die trotz nährstoffreicher Bodengrundlage aus fruchtbarem Marschland (Klei) eine artenreiche Vegetation aufweisen, weil jegliche Düngung unterbleibt und insbesondere auf den steilen Innenböschungen (33% Gefälle) durch Trittspuren nackte

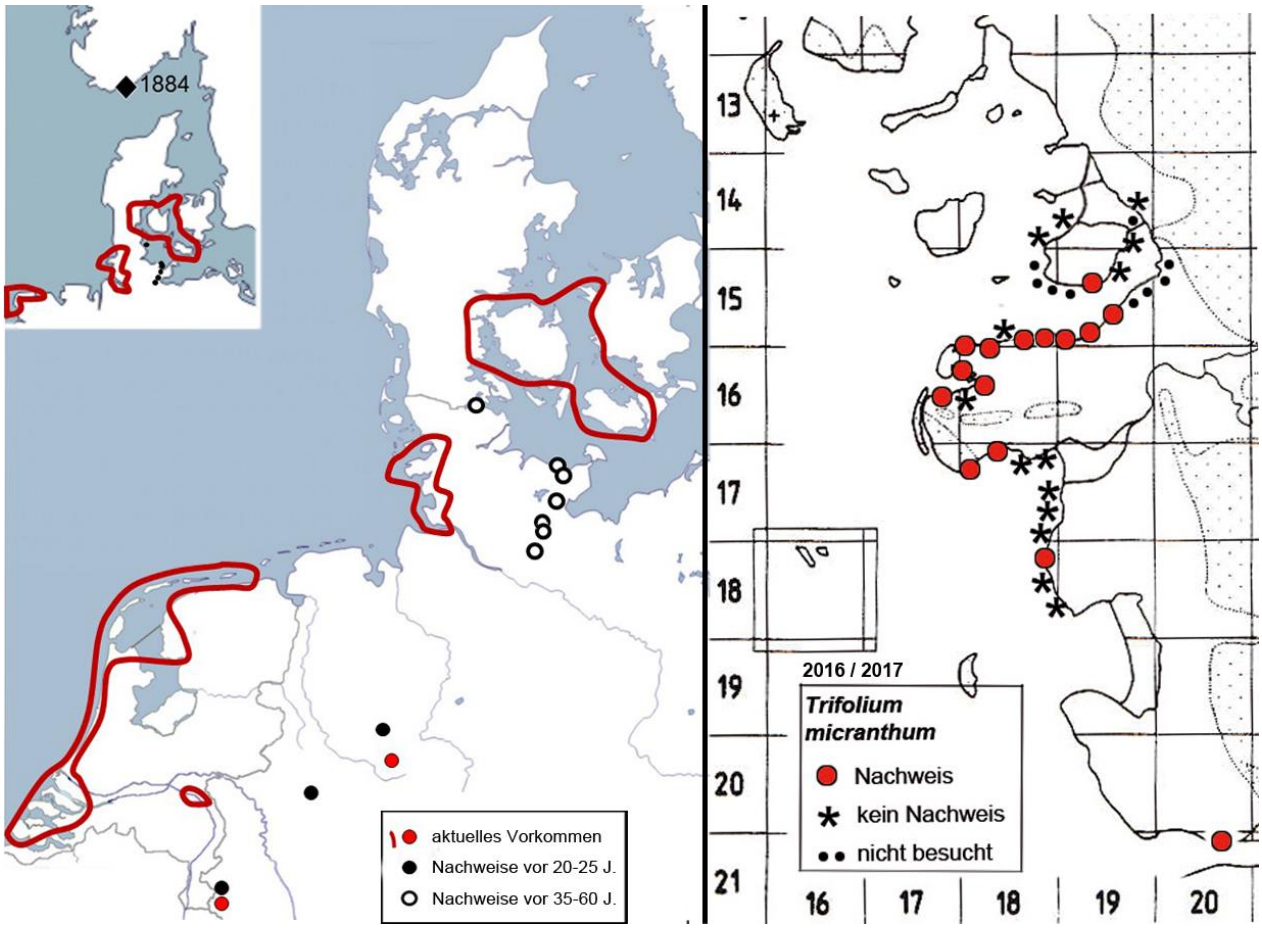

Abb. 7 Aktuelle Verbreitung (rot) und ehemalige Vorkommen (schwarz) von *T. micranthum* an seiner nordöstlichen Verbreitungsgrenze. Die systematisch untersuchten Seedeichabschnitte in Schleswig-Holstein sind durch Symbole gekennzeichnet. Die Deichabschnitte zwischen Brunsbüttelkoog (TK 2120-2) und dem Untersuchungsgebiet ab TK 1818 sind bisher nicht auf Vorkommen von *T. micranthum* geprüft worden.

Fig. 7 Current distribution (red) and former records (black) of *T. micranthum* at its northeastern range. Sea dikes systematically screened for occurrence of *T. micranthum* are marked by symbols, i.e. red dots (records), asterisks (no records); dotted stretches (not investigated). Sea dikes between the most southern record (Brunsbüttelkoog, TK 2120-2) and the study area (TK 1818 northwards) were not investigated.

Bodenstellen entstehen und die Vegetation durch Beweidung teils auf wenige cm niedrig und lückig gehalten wird. Ähnliches beschreibt Raabe (1964) von den ehemaligen Wuchsorten auf alten Viehweiden bei Lütjenburg in Ostholstein, wo die Sippe bevorzugt an steilen Hängen mit 30% Gefälle wuchs mit einer ähnlichen artenreichen Begleitvegetation wie an den Innenböschungen der Deiche an der Nordseeküste. Auch ist die Deichaußenseite stärker durch Salz beeinflusst (winterliche Sturmfluten, salzhaltige feuchte Luft) mit vermehrtem Vorkommen von halophilen Pflanzen wie *Trifiolium fragiferum, Juncus gerardii*, teils auch *Parapholis strigosus*. Ein Vorkommen von *T. micranthum* an Seedeichen ist auch von Holland bekannt insbesondere von den Deichen der nordöstlichen Zuiderzee (Weeda et al. 1987). Die (notwendige) Beweidung der Seedeiche ist sehr wahrscheinlich auch für die Verbreitung der Samen von *T. micranthum* über Hufe und Klauen (Epizoochorie), aber auch durch Nahrungsaufnahme und Dung (Endozoochorie) von Bedeutung (Couvreur et al. 2005, D'hondt & Hoffmann 2010). Die hartschaligen Kleesamen werden nicht verdaut (Russi et al. 1992). Endozoochorie von Kleesamen durch Schafe spielt in Neuseeland eine besondere Rolle bei der Ausbreitung von Weißklee (Suckling 1952).

Auf den (britischen) Militärfriedhöfen in Belgien darf nach den Bestimmungen der Commonwealth War Graves Commission die Grashöhe nie 3 cm überschreiten. Unter diesen Bedingungen scheint *T. micranthum* ideale Wuchsbedingungen zu finden. Außerdem wird die Art wahrscheinlich durch Mähgeräte auf Friedhöfen verbreitet und durch Transport der Geräte auch auf entferntere Friedhöfe verfrachtet (Anthropochorie). Die belgische Friedhofpopulation von *T. micranthum* unterscheidet sich aufgrund der AFLP-Analyse (amplified fragment length polymorphism) verschiedener Marker von der Küstendünenpopulation (D'hont et al. 2012). Das lässt auf Selektion bestimmter Mutanten oder Einschleppung aus anderen Populationen schließen. Ein genetischer Vergleich zwischen den Friedhofpopulationen von Belgien und Nordrhein-Westfalen wäre in diesem Zusammenhang interessant.

Gefährdung in Deutschland und Nachbargebieten

T. micranthum gilt in den Ländern an seiner nordöstlichen Verbreitungsgrenze als bedroht, in Holland als sehr bedroht (seit 1950 Abnahme über 50%, Gesamtbestand unter 2500 Exemplaren, Sparrius et al. 2014), in Deutschland als vom Aussterben bedroht (*Korneck* et al. 1996) und in Dänemark

als potenziell bedroht (Wind & Pihl 2004). Die starke Ausdünnung des Bestandes in Holland ist in den Verbreitungskarten von FLORON dokumentiert (NDFF 2017). In Dänemark sind die Verbreitungspunkte seit der Darstellung in Jessen (1930) ziemlich konstant geblieben (Hartvig 2015). In Deutschland könnte aufgrund der hier mitgeteilten Vorkommen die Rote-Liste-Kategorie 1 „vom Aussterben bedroht“ auf 2 „stark gefährdet“ herabgestuft werden. Die Seedeiche sind als Ersatzwuchsorte für inzwischen fast völlig verloren gegangene, artenreiche Magerweiden zu sehen. Ihre Eignung als Wuchsorte für *T. micranthum* hängt von der intensiven Schafbeweidung ab. Eine Aufgabe der Beweidung oder eine weniger intensive Beweidung könnten das Vorkommen von *T. micranthum* bedrohen. Als eine neue Gefährdungsform von *T. micranthum* und anderen seltenen Deichpflanzen kann der neuerliche Einsatz von Herbiziden an den Deichen zur Bekämpfung von Disteln gesehen werden (siehe oben) anstatt diese, wie bisher, mechanisch durch Mahd oder gezielt mit der Sense zu kontrollieren.

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Unser Dank gilt Herrn Dr. Götz H. Loos (Dortmund) und Herrn Dr. Eckard Garve (Sarstedt) für bereitwillige Auskünfte und Literaturhinweise zum Vorkommen von *T. micranthum* in Nordrhein-Westfalen und Niedersachsen. Danken möchte wir auch den Herren Dr. F. Wolfgang Bomble (Aachen) für nähre Auskünfte über den Raum Aachen, Dr. Ben Zonneveld für Hinweise zum Vorkommen in den Niederlanden, Jens Christian Schou (Hobro) für Literaturhinweise aus Dänemark und das Entziffern von Herbarscheden, Prof. Dr .Ole Seberg (Kopenhagen) und Dr. Jan Wesenberg (Oslo) für Auskünfte über den Status in Dänemark und Norwegen. Prof. Dr. Dr. H.E. Weber teilte dankenswerterweise einen Fund mit Fotografie von der Flensburger Förde mit. Dr. F. Dunkel gilt unser Dank für Literaturhinweise und Informationen über eine Suchexkursion 1986 nach Schleswig-Holstein. Frau Brigitte Bergmann (Aarhus, AAU), Frau Dr. Susanne Füting (Lübeck, LUB), Dr. Matthias Schultz (Hamburg, HBG) und Dr. Martin Nickol (Kiel, KIEL), haben in großzügiger Weise Fotografien/Scans von wichtigen Herbarbelegen angefertigt und zur Verfügung gestellt.

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Nomenklatorische Korrektur in der Gattung *Rubus*

Nomenclatural correction in the genus *Rubus*

Published online: 27 December 2018

Abstract Because of the older homonym *Rubus tilioides* Gand. 1884 the name *Rubus tiliifrons* W. Jansen & H. E. Weber is established as new name for *Rubus tilioides* W. Jansen & H. E. Weber 2010.

Zusammenfassung Wegen des älteren Homonyms *Rubus tilioides* Gand. 1884 wird für *Rubus tilioides* W. Jansen & H. E. Weber 2010 der neue Name *Rubus tiliifrons* W. Jansen & H. E. Weber veröffentlicht.

Keywords *Rubus* L. sectio *Corylifolii*, New name, Nomen novum

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Neuer Name für *Rubus tilioides* W. Jansen & H. E. Weber 2010

Aus Thüringen, Sachsen und Sachsen-Anhalt wurde 2010 eine *Corylifolii*- Sippe als *Rubus tilioides* W. Jansen & H. E. Weber beschrieben (Abb.1, 2). Herr Dr. Jean-Marie Royer (Chaumont, Frankreich) hat freundlicherweise darauf hingewiesen, dass M. Gandoger bereits 1884 denselben Namen verwendet hat. Er ist dort als „*R. tilioides* Gdgr. mss.“ und als neuer Name für „*R. tiliaefolius* Pierrat non Whe.“ aufgeführt. Man kann den Hinweis auf sein Manuskript so deuten, dass Gandoger den Namen nur als nomen provisorium betrachtete und ihn somit nicht gültig veröffentlichen wollte. Allerdings heißt es im Index auf Seite 268 „*R. tilioides* Gdgr.“, wobei nicht anzunehmen ist, dass Gandoger an dieser Stelle das Taxon anders beurteilte. Vielmehr dürfte es sich um eine Kurzform für den Index handeln. Im International Plant Names Index (IPNI, ipni.org) fehlt der Name *Rubus tilioides* Gand. Offenbar wurde er im Gegensatz zu den übrigen dort behandelten und bei IPNI aufgeführten Arten als nicht gültig veröffentlicht angesehen.

Man kann jedoch auch die Ansicht vertreten, dass Gandoger wie auch an anderen Stellen lediglich einen Hinweis auf die Quelle seines Namens geben und ihn durchaus definitiv veröffentlichen wollte. Dann wäre *Rubus tilioides* W. Jansen & H. E. Weber ein jüngeres Homonym und ein illegitimer Name. Daher wird hiermit ein neuer Name für dieses Taxon etabliert:

Rubus tiliifrons W. Jansen & H. E. Weber nom. nov. pro nom. *Rubus tilioides* W. Jansen & H. E. Weber 2010, Mitt Florist Kart Sachsen-Anhalt 15: 4, non *R. tilioides* Gandoger 1884, Mém Soc d'Emul Doubs ser 5, 8: 234.

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Abb. 1 Holotypus (Teil) von *Rubus tiliifrons* W. Jansen & H. E. Weber (aus Weber 2010)

Fig. 1 Holotype (part) of *Rubus tiliifrons* W. Jansen & H. E. Weber (taken from Weber 2010)

Abb. 2. *Rubus tiliifrons* W. Jansen & H. E. Weber am locus typicus (aus Weber 2010)

Fig. 2 *Rubus tiliifrons* W. Jansen & H. E. Weber at the type locality (taken from Weber 2010)

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Detlev Drenckhahn, Werner Jansen, Heinrich E. Weber

Rubus pseudoglotta Drenckhahn & W. Jansen, eine neue deutsch-dänische Brombeerart aus dem Formenkreis des *Rubus phylloglotta* (Frid.) Å. Gust.

Rubus pseudoglotta Drenckhahn & W. Jansen, a new bramble species with German-Danish distribution related to *R. phylloglotta* (Frid.) Å. Gust.

Published online: 28 December 2018

Abstract *Rubus pseudoglotta* Drenckhahn & W. Jansen is a tetraploid new member of the *Rubus* section *Corylifolii*, series *Subradula,* which was formerly included in the variability spectrum of *R. phylloglotta* (Frid.) Å. Gust.. This new species is distinguished by 4 (3–5)-nate leaves with obovate acuminate to cuspidate terminal leaflets with short-haired upper side and light greenish tangibly hairy under side. Stems grow arcuate, partly climbing, are obtusely angled, moderately hairy, green to reddish brown coloured, and armed with 10–20 straight, slender prickles, 2–4 (5) mm long, numerous pricklets, stalked glands and bristlets. Pedicels of inflorescence are armed with 2–8 (per cm) slender straight to slightly curved prickles (1–2 mm long) and studded with numerous stalked glands (up to 0.6 mm long) and some bristles. The species prefers road sides and hedgerows. The distribution area of *R. pseudoglotta*, known so far, extends from the area between Rendsburg and the surroundings of the city of Kiel in Schleswig-Holstein and reaches north to the Danish islands of Als and Fyn. A further outcome of this study is that there is no safe record of *R. phylloglotta* in Schleswig-Holstein/Deutschland and that it is questionable whether *R. phylloglotta* occurs outside the island Tåsinge in Denmark at all.

Zusammenfassung *Rubus pseudoglotta* Drenckhahn & W. Jansen ist eine tetraploide Brombeerart aus der Sektion *Corylifolii* (Serie *Subradula*), die bisher zum Variabilitäts-Spektrum von *R. phylloglotta* (Frid.) Å. Gust. gezählt wurde. Charakteristische Merkmale sind die 4 (3–5)-zähligen Blätter mit obovaten Endblättchen mit kurzer (ca. 1 cm) abgesetzter Spitze, kurzhaariger Blattoberseite und fühlbar behaarter grüner Blattunterseite. Die flach bogigen, teils klimmenden Schösslinge sind überwiegend stumpfkantig, grün bis rötlichbraun, schwach behaart und reichlich mit 2–4 (5) mm langen, geraden bis schwach gekrümmten Stacheln und kleineren Stacheln, Stachelhöckern, Stieldrüsen und Borsten besetzt. Die Blütenstiele sind mit 2–8 (pro cm) schlanken, geraden bis leicht gekrümmten Stacheln (1–2 mm lang) und zahlreichen Stieldrüsen (teils bis 0,6 mm lang) besetzt. Die Sippe wächst bevorzugt an Straßen- und Wegrändern und in Hecken. Die bekannt gewordenen Fundstellen erstrecken sich von Rendsburg bis in das Umfeld von Kiel, nordwärts bis zu den dänischen Inseln Alsen und Fünen. Unsere Untersuchungen zeigen weiterhin, dass *R. phylloglotta* bisher nicht in Schleswig-Holstein /Deutschland nachgewiesen wurde. Ob *R. phylloglotta* überhaupt außerhalb der Insel Tåsinge in Dänemark vorkommt, bedarf weiterer Nachforschungen.

Keywords False Tongue-Leaf Blackberry, *Rubus* Section *Corylifolii*, New Species, Species nova, Genome size, Distribution

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Einleitung

Im Rahmen von Untersuchungen über Status und Verbreitung des *Rubus phylloglotta* (Frid.) Å. Gust. wurden alle Herbarbelege der Sippe in Hamburg (HBG), Lund (LD) und Kopenhagen (C) und den Herbarien der Autoren dieser Arbeit untersucht. Dabei stellte sich eine erhebliche morphologische Heterogenität heraus, die auch Martensen (2011) bemerkte und als Variabilität der Art interpretierte. Der Lectotypus von *R. phylloglotta* (zwei Bögen C 2/2018/44 und 45, sel. Weber 1981) wurde im August 1913 westlich des Ortes Strammelse auf der dänischen Insel Tåsinge von N. Sörensen gesammelt. An der Typuslokalität hat C. E. Gustafsson 1937 Belege zur Bestimmung der Chromosomenzahl gesammelt (LD 2000268), die durch Å. Gustafsson erfolgte (Gustafsson 1939). Die Sippe erwies sich als tetraploid. *R. phylloglotta* wächst immer noch an der Typuslokalität und wurde dort im Juli 2018 eingehend vom Erstautor untersucht. Zahlreiche Belege einer Brombeersippe, die *R. phylloglotta* zugerechnet wurde (Martensen et al. 1983, Martensen 2018, Weber 1981, Jansen 2013), aber die in wesentlichen Merkmalen eine Sonderstellung einnimmt (Jansen 2013), stammen vom östlichen Kreis Rendsburg-Eckernförde in Schleswig-Holstein mit Schwerpunkt im Umfeld der Stadt Kiel. Dort hatte Otto Gelert die

Abb. 1 Fotografien mit herbarisiertem Abschnitt eines Schösslings von *R. phylloglotta* am locus classicus westlich des Ortes Strammelse auf der Insel Tåsinge in Dänemark (24.07.2018, Fotos D. Drenckhahn). Die abgebildeten Pflanzenteile stimmen mit den Typusbelegen im Herbar Kopenhagen überein.

Fig. 1 Compilation of photographs (24.07.2018 Photo D. Drenckhahn) and one herbarized piece of a primocane of *R. phylloglotta* from the type locality west of the village Strammelse on the island of Tåsinge in Denmark. The depicted *Rubus* parts are consistent with the type material of the Copenhagen herbarium.

Abb.2 Erstnachweis von *R. pseudoglotta* (als „*Rubus pyracanthus* Lg. f.“ benannt) durch O. Gelert im August 1886 westlich des Viehburger Gehölzes, Kiel (Ausschnitte aus dem Beleg C 1-2018-4 des Herbars Kopenhagen).

Fig. 2 First record of *R. pseudoglotta* (named “*Rubus pyracanthus* Lg. f.”) collected by O. Gelert in August 1886 west of Viehburg Forest, Kiel (part of a specimen of the Copenhagen herbarium C 1-2018-4).

Sippe bereits 1886 westlich des Viehburger Gehölzes in Kiel gesammelt (C 1-2018-4, Abb. 2). Diese von *R. phylloglotta* abweichende Brombeersippe wird im Folgenden als eine eigenständige Art, *R. pseudoglotta* Drenckhahn & W. Jansen, beschrieben und charakterisiert

Material und Methoden

Es wurden Materialien von 25 Wuchsorten ausgewertet, darunter 63 Schösslingsblätter mit 5–12 cm langen Schösslings-Segmenten und einem Schösslings-Durchmesser von 4–6 mm. Schösslinge und deren Blätter unter 4 mm Schösslings-Durchmesser wurden nicht berücksichtigt. Die

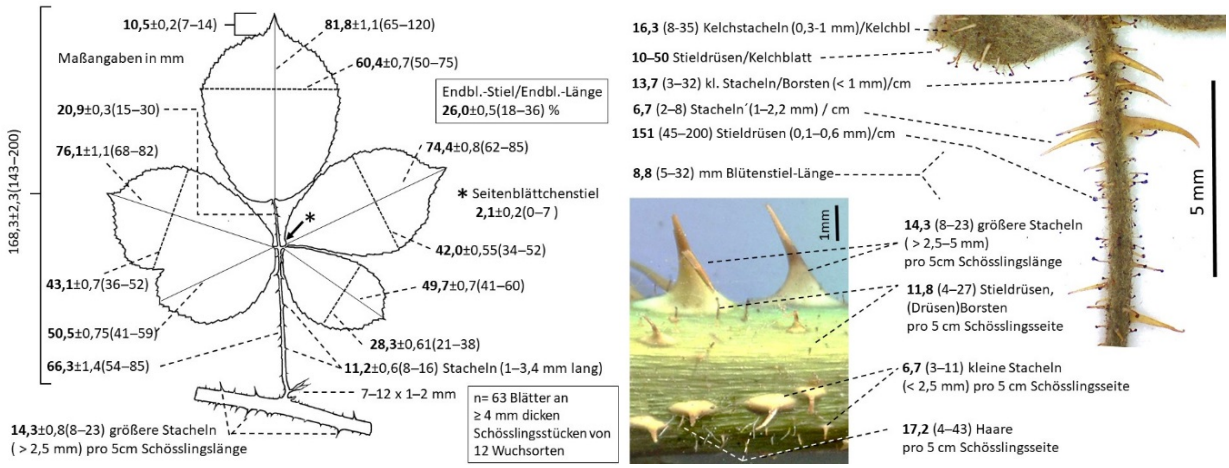

Abb. 3. *Rubus pseudoglotta*, quantitative Angaben (Mittelwerte, Variationsbreite und meistens auch ± Standardfehler) von Schösslings-Blättern (n=63), Schösslingen (n=32) und Blütenstielen (n=55 für die Längenangaben, n=16 für Angaben zu Stacheln und Indument).

Fig. 3. *Rubus phylloglotta,* measured values (arithmetic mean, variation and in most cases ± standard error) of primocane leaves (n=63), primocanes (n=32) und pedicels (n=55 with respect to length, n=16 concerning numbers of prickles, stalked glands etc.).

Zahl der Stacheln wurde an Schösslingen, Blattstielen, Blütenstandsachse und Blütenstielen allseitig ermittelt und (mit Ausnahme der Blattstiele) als Zahl pro Längeneinheit der betreffenden Struktur angegeben. Drüsen, Haare und Borsten wurden auf einer Schösslings-Seitenfläche (1/5 Umfangsfläche) erfasst und pro cm Länge berechnet (Zahl pro Flächeneinheit). Blüten: Zwölf Blüten/Frucht-Zweige von zehn verschiedenen Wuchsorten wurden untersucht, darunter n=55 Blütenstiele, 42 Kronblätter und zehn Blütendurchmesser wurden direkt am Strauch und auf Fotografien der Blüten (mit angelegtem Zentimetermaß) gemessen. Für die Vermessung von Strukturen >5 mm wurde ein Lineal mit 0,5 mm Skala verwendet. Strukturen <5 mm bis 0,05 mm wurden an eingescannten (1200 dpi) Pflanzenteilen mit dem Messwerkzeug-Programm von Adobe Photoshop CS (Version 8.0.1) vermessen. Haare der Blattoberseite wurden auf Lupen-Fotografien gezählt, die bei tangentialer Beleuchtung der Blätter aufgenommen wurden, um die Haare besser sichtbar zu machen. Es wurden 10 mm^2 große Probefelder ausgezählt, die Zählergebnisse gemittelt und auf 1 cm^2 Fläche hochgerechnet. Die quantitativen Angaben erfolgen überwiegend als arithmetisches Mittel ± Standardfehler und Variationsbreite (durch Semikolon oder Klammer abgesetzt), siehe Abb. 3. Die Bestimmung der Genomgröße (2C-Werte) erfolgte mittels Durchfluss-zytometrie von Zellen der mit einer Rasierklinge in kleinste Fragmente zerkleinerten Blattstiele (Drenckhahn et al. 2017).

Ergebnisse

Holotypus Altwittenbek, Altwittenbeker Str., 450 m östlich, Straßenböschung, 1626-141, 54°22.1285'N, 10°3.3989'E, 28. June 2018, ID 280618-1, D. Drenckhahn, HBG. **Isotypus** ID 280618-2, B.

Description (Fig. 2–6)
Stem low arching (30–120 cm) at first, then trailing up to 6.5 m, in hedges climbing up to 2 m high, subsequently hanging down, obtuse-angled with flat or slightly bulging sides, diameter of primocane mid portion 4.8(3–6.5) mm, green becoming reddish on sun-exposed sides, moderately hairy (17.2[4–43] hairs per 5cm side), studded with scattered stalked glands and bristles 11.8(4–27) per 5 cm side, prickles considerably changing in size from tubercules and 1–2.5 mm long prickles (6.7[3–11] per 5 cm side) to larger prickles (14.3[8–23] per 5cm cane), 3.8(2.5-5.1) mm in length, slender, patent or somewhat declining, straight to slightly curved, yellowish green to brown reddish with lighter tips, prickle base greenish to reddish, narrow oval.

Leaves 3–5-nate (3-nate 27%, 4-nate 40%, 5-nate 33%), 168 (135–200) mm long, upper side densely hairy (>200 to locally >500 hairs/cm^2), hairs very short 0.26 (0.1–0.6) mm; underside of leaflets moderately hairy on nerves and lamina (hairs 0.1–0.5 mm long) not felty. Terminal leaflet 81.8(65–96) mm long, 60.4(50–75) mm broad (greatest diameter in apical third), ratio of diameters 1.35(1.1–1.63), narrow to broad obovate, occasionally almost roundish, base narrowed emarginate to entire, apex acuminate to cuspidate (apex 7–14 mm), fairly evenly serrate (1-1.5 mm deep) with broad mucronate teeth, margin flat or slightly undulate; petiolule 20.9 (15–45) mm, i.e. 26.2(18–36)% length of leaflet. Lateral leaflets on average 10% shorter and 30% narrower than terminal leaflet: 60.4(50–75) mm × 42(34–52) mm, petiolules 2.1(0–7 mm). Basal leaflets 49.7(41–60) mm × 28.3(21–38) mm. Petiole with continuous upper sulcus, 66.3 (54–85) mm long, on an average 40 % of leaf length and 33% longer than length of basal leaflets; prickles 11.4±0.6 (8–16), 1–3.4 mm long, slender and straight to slightly curved, occasionally with few interspersed stalked glands, pricklets and acicles. Stipules mostly lanceolate, 11(9–14) mm × 1.1 (0.8–2.1) mm, surface and margin fringed with scattered stalked glands.
Inflorescence Flowering mainly second half of June, flowering branches (laterals) up to 95 cm long with 3–7 ternate leaves (up to 70 mm in length), the upper ones at base of or within terminal panicle ternate to simple. Inflorescence pyramidal consisting of a broad paniculate to loosely corymb terminal portion (4–9 cm broad × 7–12 cm long) with 12–28 flowers and 3–4 separate pedunculate flower clusters or small panicles borne in the 1–4 axils below, bearing (1)4–10 flowers each; axis flexuose, becoming reddish on sun-exposed side, moderately hairy with varying numbers of rather strong, slightly curved prickles (8–25 per 5 cm) of

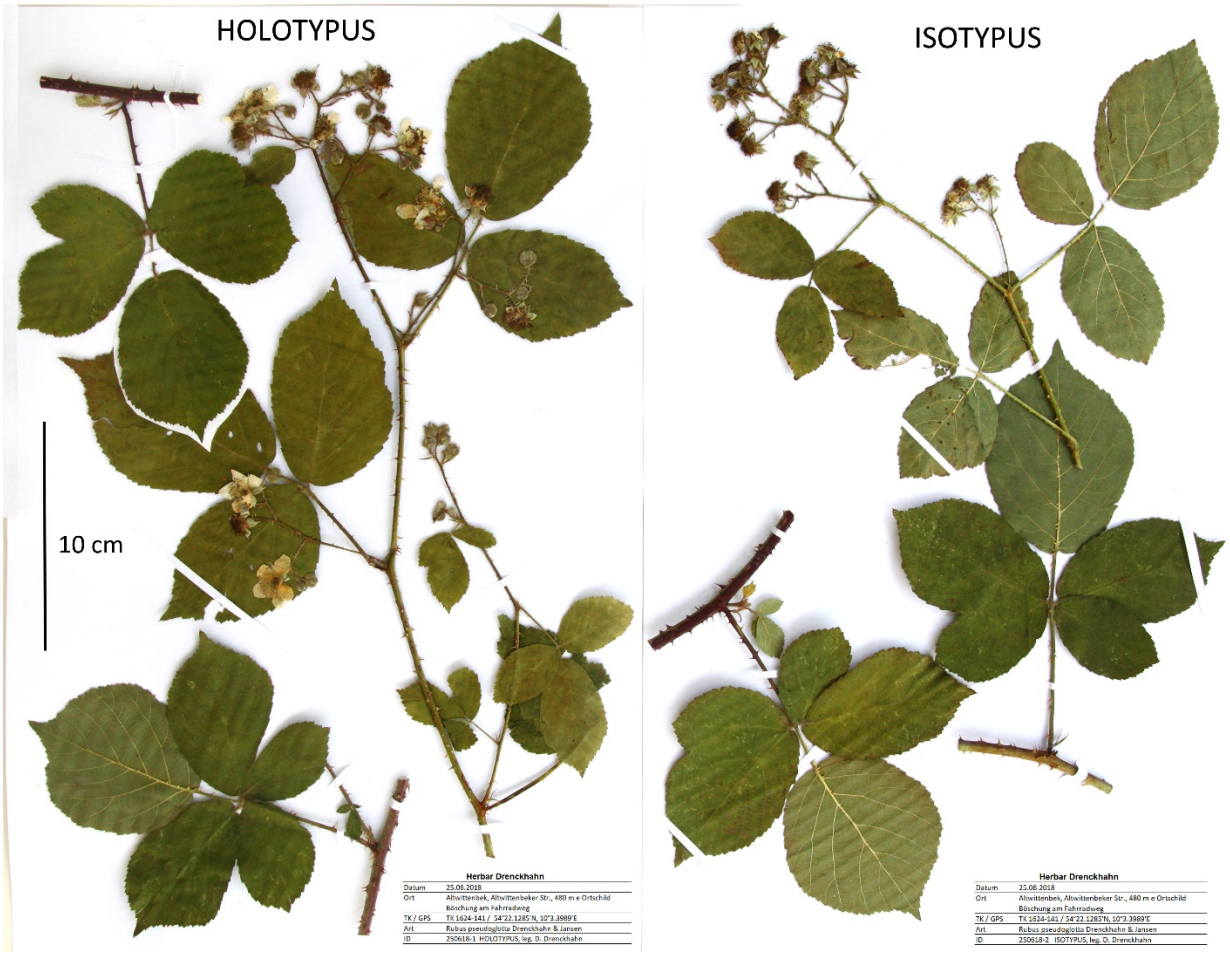

Abb. 4 Holotypus und Isotypus von *R. pseudoglotta*, der bislang *R. phylloglotta* zugerechnet wurde. Die Endblättchen wurden umgewendet, um beide Seiten eines Blattes sehen zu können.

Fig. 4 Holotype and Isotype of *R. pseudoglotta* which was previously attributed to *R. phylloglotta.* Terminal leaflets were turned over to see both sides of the same leaf.

different sizes (1.6–4.2 mm long) interspersed with pricklets and bristles and numerous stalked glands (10–40 per 5 cm); pedicels 8.8 (5–32) mm long with dense spreading to adpressed hairs, numerous stalked glands (0.1– 0.6 mm long, > 50 per cm), prickles slender, straight, patent 1–2.2 mm long, 6.7 (2–8) per cm.; flowers 2.5–3cm in diameter; sepals 4–6 mm, short pointed, loosely reflexed after petal fall, inner side white felty, outer side covered with dense short simple hairs and stellate hairs, several needle-shaped pricklets (8–35) and 10–50 stalked glands; petals white with wrinkled surface, narrow cuneate at base, 12–15 mm long and 7–8 mm broad, not touching neighbouring petals; stamens reflexed at petal fall, erect to clasping afterwards, 6–7 mm long exceeding styles, filaments white, anthers glabrous (white, turning brown); styles whitish green, carpels and receptacle glabrous, occasionally with single hairs.

Chromosomes, Genome size Nuclear DNA content (2C-values) of two plants (Flintbek) was 1.52 and 1.53 pg, respectively, which is typical of a tetraploid set (2*n*=28) of chromosomes (Drenckhahn & Zonneveld 2017). Genome size of *R. caesius*, a sexual and well established tetraploid species, is in the same range (1.50 pg, Würzburg).

Taxonomy The epithet *pseudoglotta* refers to the former inclusion of this species in the variability spectrum of *R. phylloglotta* (Frid.) Å. Gust. The proposed name is 'False Tongue-Leaf Blackberry' and, in German, 'Falsche Zungenblättrige Haselblattbrombeere'. *R. pseudoglotta* is distinguished from *R. phylloglotta* (Fig. 1) by (a) broader and apically more obtuse cuspidate terminal leaflets, (b) more or less sessile upper lateral leaflets, which are petiolate in *R. phyloglotta* (5–13 mm), (c) sparsely hairy canes in contrast to densely hairy canes in *R. phylloglotta* and (d) numerous pricklets at sepals (largely absent in *R. phylloglotta*).

Deutsche Kurzbeschreibung

Rubus pseudoglotta ist eine tetraploide (2*n*=28) Brombeerart aus der Sektion *Corylifolii*, Serie *Subradula,* wie auch *R. phylloglotta* (Gustafsson 1939). Charakteristische Merkmale sind die 4(3–5)-zähligen Blätter mit länglich bis gedrungen obovaten Endblättchen mit kurzer, ca. 1cm langer, abgesetzter Spitze, dicht kurzhaarig besetzter Blattoberseite (>200/cm^2) und fühlbar behaarter grüner Blattunterseite. Die Seitenblättchen sind meistens kaum oder nur wenige mm gestielt. Die flach bogigen, teils klimmenden Schösslinge sind überwiegend stumpfkantig, gewölbt bis flachseitig, grün bis rötlichbraun, schwach behaart (schnell verkahlend) und reichlich mit 2,5–4(5) mm langen, meistens geraden oder schwach gekrümmten Stacheln (8–23 pro 5 cm) und vielen kleineren oft drüsenköpfigen Stacheln, Stachelhöckern, Stieldrüsen und Borsten besetzt. Die Blütenstiele (durchschnittlich knapp 1 cm lang, vereinzelt um 3 cm, sind

mit 6(2–8, pro cm) schlanken, geraden bis leicht gekrümmten Stacheln (1–2 mm lang) besetzt und mit zahlreichen Stieldrüsen (teils bis 0,6 mm lang) und Drüsenborsten versehen. Die Sippe wächst bevorzugt an Straßen- und Wegrändern und Hecken (Knicks). Die bekannt gewordenen Fundstellen erstrecken sich von Rendsburg bis in das Umfeld von Kiel und nordwärts bis zu den dänischen Inseln Alsen und Fünen.

Verbreitung (Abb.6)

Dänemark 0826-43 (TK Gitter, Deutschland), SE Bøjden, Str, nach Egsmark, Fünen (Fyn), 24.07.1980 leg. H.-O. Martensen (Herb. Weber) – 0927-11, W Sineberg, Fünen (Fyn), Wäldchen, 23.07.1980 leg. H.-O. Martensen (HBG 1297/08), Abb. 7. – 1024-22, Stevning/Alsen (Als), 31.08.-1985 leg. H.-O. Martensen (HBG 1297/12 und C 2/2018/27).

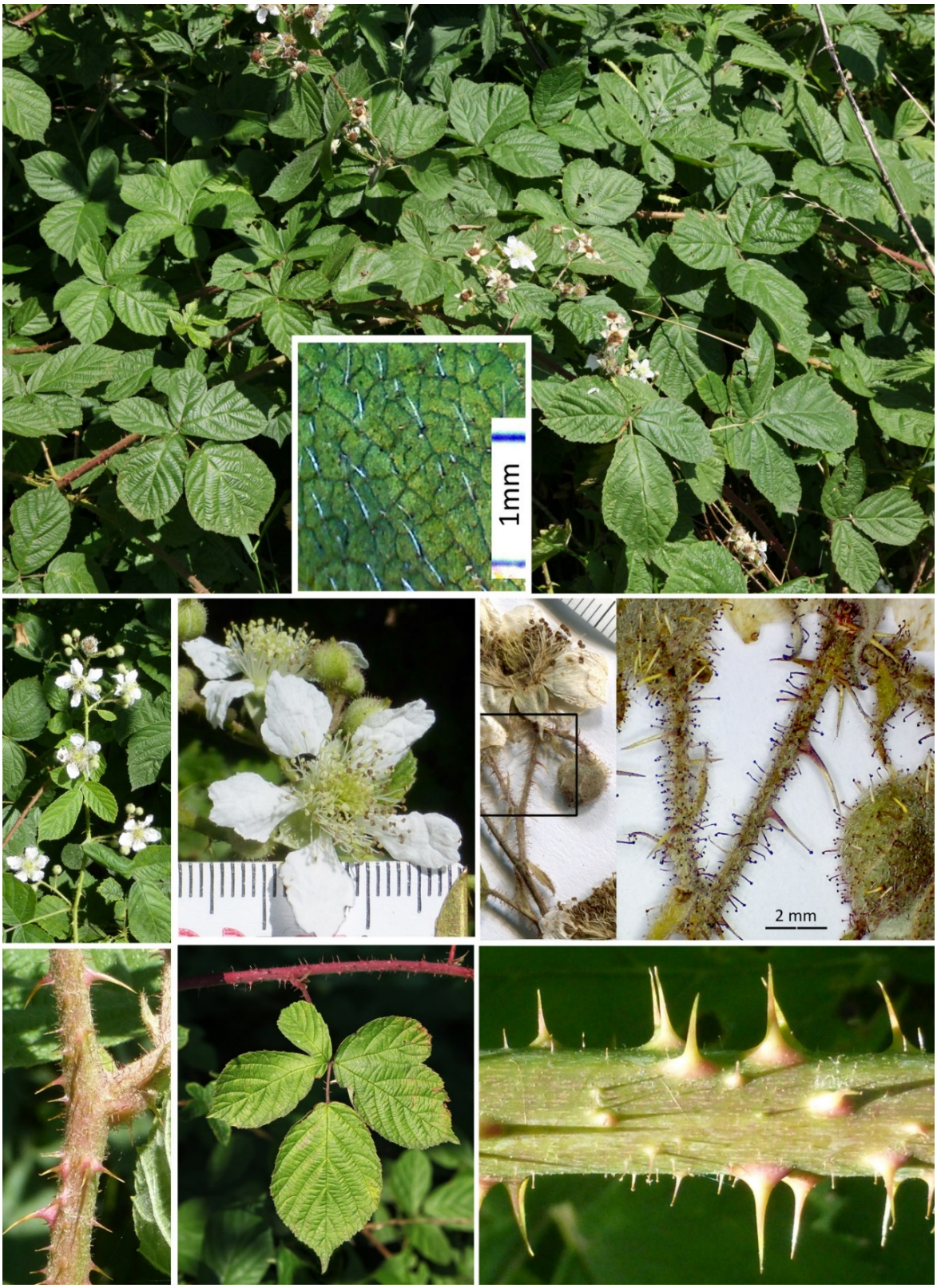

Abb. 5 Kennzeichen von *R. pseudoglotta* an der Typus-Lokalität 450 m östlich Altwittenbek. Fotos D. Drenckhahn
Fig. 5 Characteristics of *R. pseudoglotta* from the type locality 450 m east of Altwittenbek.

Deutschland/Schleswig-Holstein 1325-411, N Großgrödersby, Straßen-E-Seite (R 3559457/H 6057647), 14.07. 2011 (Herb. Jansen 110710.3), G.-U. Kresken/H.-O. Martensen. – 1325-411, N Großgrödersby, Straßen-W-Seite (R 3559441/H 6057641), 14.07.2011 G.-U. Kresken/H.-O. Martensen. –1624-423, S Ehlersdorf, Redder (R 3551768/H 6022798), 02.09.2005 (Herb. Jansen 05902.1), G.-U. Kresken/W. Jansen. – 1626-11, E Wulfshagen, Str. Teepott, (Herb. Jansen, leg. E. Walsemann 79817.2, det. Martensen)– 1626-112, NE Wulfshagen, 24.08.1980 H.-O. Martensen (Herbar Weber 24.8.80/4) – 1626-112, NE Blickstedt, 24.08.1980 H.-O. Martensen (HBG 1294/09). – 1626-112, NW Blickstedt, Straßen-SW-Seite (R 3567165/H 6029673), 11.07.2011 (Herb. Jansen 110711.4), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-112, NW Blickstedt, Straßen-NE-Seite (R 3567146/H 6029703), 11.07.2011 G.-U. Kresken/W. Jansen. –1626-112, NW Blickstedt, Straßen-S-Seite (R 3566696/H 6029953), 11.07.2011 G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-121, S Felmerholz, Straßen-E-Seite (R 3568689/ H 6029336), 11.07.2011 (Herb. Jansen 110711.3), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-121, SW Felmerholz, Straßen-N-Seite (R 3567856/ H 6029542), 11.07.2011 G.-U. Kresken/W. Jansen. – 1626-121, SW Felmerholz, Straßen-N-Seite (R 3567887 / H 6029540), 11.07.2011 G.-U. Kresken/W. Jansen. – 1626-121, SW Felmerholz, Straßen-S-Seite (R 3567947/H 6029505), 11.07.2011 G.-U. Kresken/W. Jansen. – 1626-123, SE Blickstedt, SE-Rand Grothmoor, Straßen-NW-Seite (R 3568790/ H 6027993) 11.07.2011 (Herb. Jansen 110711.2), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-141, SE-Rand von Altwittenbek (R 3568377/H 6026593), 30.08.2009 (Herb. Jansen 090830.2), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-141, SE Altwittenbek, am Kanal, Redder (R 3568901/H 6026280), 30.08.2009 (Herb. Jansen 090830.3), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-141, E Altwittenbek, Wegabzweigung von der K90 (R 3568957/H 6027067), 30.08.2009 G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-141, E Altwittenbek (R 3568808/H 6027046), 30.08.2009 G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-144, W Suchsdorf, bei der Schmiedekate (R 3569520/H 6025425), 01.09.1980 H.-O. Martensen (HBG 1294/04), 30.08.2009 (Herb. Jansen 090830.5), G.-U. Kresken/W. Jansen. – 1626-231, Projensdorfer Wald nordöstlich Suchsdorf, Waldrand (R 3570787/H 6026672), 30.08.2009 (Herb. Jansen 090830.6), G.-U. Kresken/W. Jansen. – 1626-321, Ottendorf, E-Rand, Straßen-SE-Seite (R 3568795/H 6023850), 01. 09.1980 H.-O. Martensen (HBG 1294/04, und Herb. Jansen 110708.7), 08.07.2011, G.-U. Kresken/W. Jansen. – 1626-321, N Ottendorf, Straßen-E-Seite (R 3568062/H 6024390), 11.07.2011 (Herb. Jansen 110711.1), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1626-322, N Kronshagen, Viehdamm, 01.09.1981 H.-O. Martensen (HBG 1294/07). – 1626-332, Melsdorf (R 3567279/H 6020797), 08.07.2011 (Herb. Jansen 110708.6), G.-U. Kresken//W. Jansen. – 1626-411, Kopperpahl N Kronshagen (R 3570605/H 6024695), 01.09.1980 H.-O. Martensen (HBG 1294/9), 08.07.2011 (Herb. Jansen 110708.8), G.-U. Kresken/W. Jansen. – 1726-121, N Mielkendorf, Ihlkate, Straßen-S-Seite (R 3568806/H 6018982), 08.07.2011 (Herb. Jansen 110708.4), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1726-312, N Rumohr, Juli 1981 A. Pedersen (HBG 1294/04). – 1726-141, E Rumohr, NW Streitberg, Redder (R 3568300/H 6015215), 13.07.2009 (Herb. Jansen 090609.2), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1726-222, Kronsburg, N Hopfenlandsberge (R 3575226/H 6018781), 08.07.2011 (Herb. Jansen 110708.3), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1726-224, Kiel, E Kronsburg, Gewerbegebiet, Knick (R 3575860/H 6017343) 08.07.2011 (Herb. Jansen 110708.2), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen). – 1726-232, S Meimersdorf (R 3572606/H 6015350), 07.07.2010 (Herb. Jansen 100707.7), G.-U. Kresken/W. Jansen. – 1726-241, ESE Meimersdorf, an der K 16, Knick (R 3573726/H 6016195), 07.07.2010 (Herb. Jansen 100707.5), G.-U. Kresken/W. Jansen. – 1726-311, Knick S Bornhorst bei Rumohr (SW Rumohr) (R 3565799/H 6013352), 13.07.2009 (Herb. Jansen 090713.3 und 100707.4), G.-U. Kresken/W. Jansen. – 1727-131, S Wellsee, NW Rönne (R 3576258/ H 6016398), 08.07.2011 (Herb. Jansen 110708.1), G.-U. Kresken/W. Jansen (Hinweis von H.-O. Martensen).

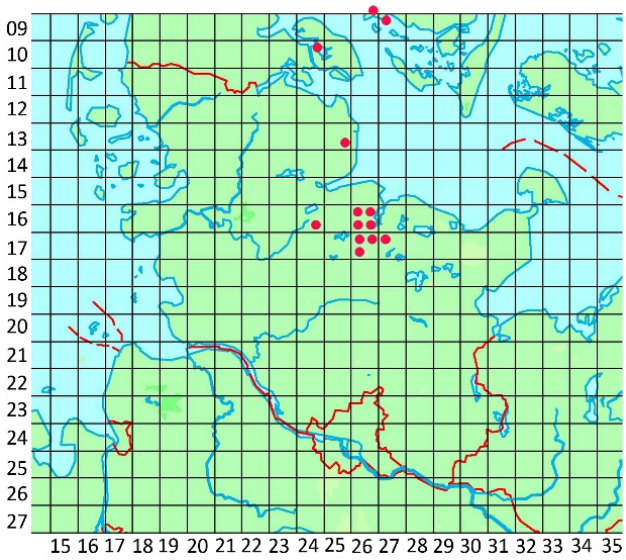

Abb. 6 Bekannte Verbreitung von *R. pseudoglotta,* dargestellt auf der Grundlage von Quadranten der topographischen Karten 1:25.000.

Fig. 6 Known distribution of *R. pseudoglotta* mapped on the basis of the topographical map grid 1:25.000 at quadrant resolution.

Diskussion

Rubus pseudoglotta wurde bisher in den recht weit gefassten *R. phylloglotta* einbezogen (Weber 1981 verweist u.a. auf den in Abb. 2 gezeigten Beleg von O. Gelert als zu *R. phylloglotta* gehörig) und auch Martensen (2011) zählte die in der vorliegenden Untersuchung als *R. pseudoglotta* abgegliederte Art noch zum Variabilitäts-Spektrum von *R. phylloglotta*. Das war rückblickend gesehen sinnvoll, weil dadurch eine erste Systematik in die Sektion *Corylifolii* gebracht und die Aufmerksamkeit und Sammeltätigkeit betreffend *R. phylloglotta* gefördert wurde, so dass jetzt auf einer verbesserten Kenntnisbasis Revisionen vorgenommen werden können.

Ein Vergleich von Abb.1 (*R. phylloglotta*) mit den Abb. 2–5, 7 (*R. pseudoglotta*) zeigt die besonders ins Auge fallenden Unterschiede in der Blattform: *R. phylloglotta* hat im Vergleich zu *R. pseudoglotta* schmalere und mehr allmählich zugespitzte Endblättchen mit einem Achsenverhältnis (Längsachse/Querachse) von 1,72±0,05 (1,4–2,0; n=18) versus 1,35±0,02 (1,1–1,6; n=63) *bei R. pseudoglotta* (hoch signifikanter Unterschied von p<< 0.01). Die oberen Seitenblättchen sind bei *R. phylloglotta* meistens >5 mm

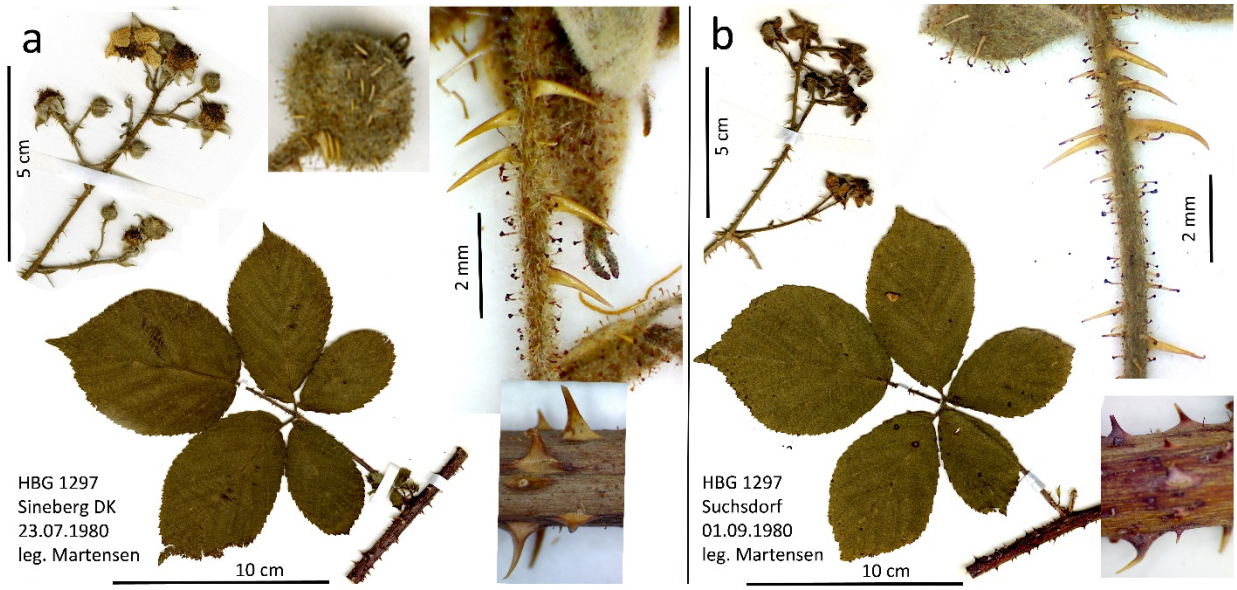

Abb. 7 Herbarbelege (Ausschnitte) von *R. pseudoglotta* von (a) der Insel Fünen (Fyn), Dänemark (Sineberg Wäldchen, leg. H.-O. Martensen HBG 1297/08), der alle Merkmale der Art vereinigt und (b) ein fast identisch aussehender Beleg vom selben Jahr westlich von Kiel/ Schleswig-Holstein (Suchsdorf, leg. H.-O. Martensen HBG 1297/04).

Fig. 7 Herbarium specimens (parts) of *R. pseudoglotta* from (a) island of Fyn, Denmark (Sineberg Grove, leg. H.-O. Martensen HBG 1297/08) which displays all characteristics of this species and (b) a specimen with nearly identical features from west of Kiel/Schleswig-Holstein (Suchsdorf, leg. H.-O. Martensen, HBG 1297/04).

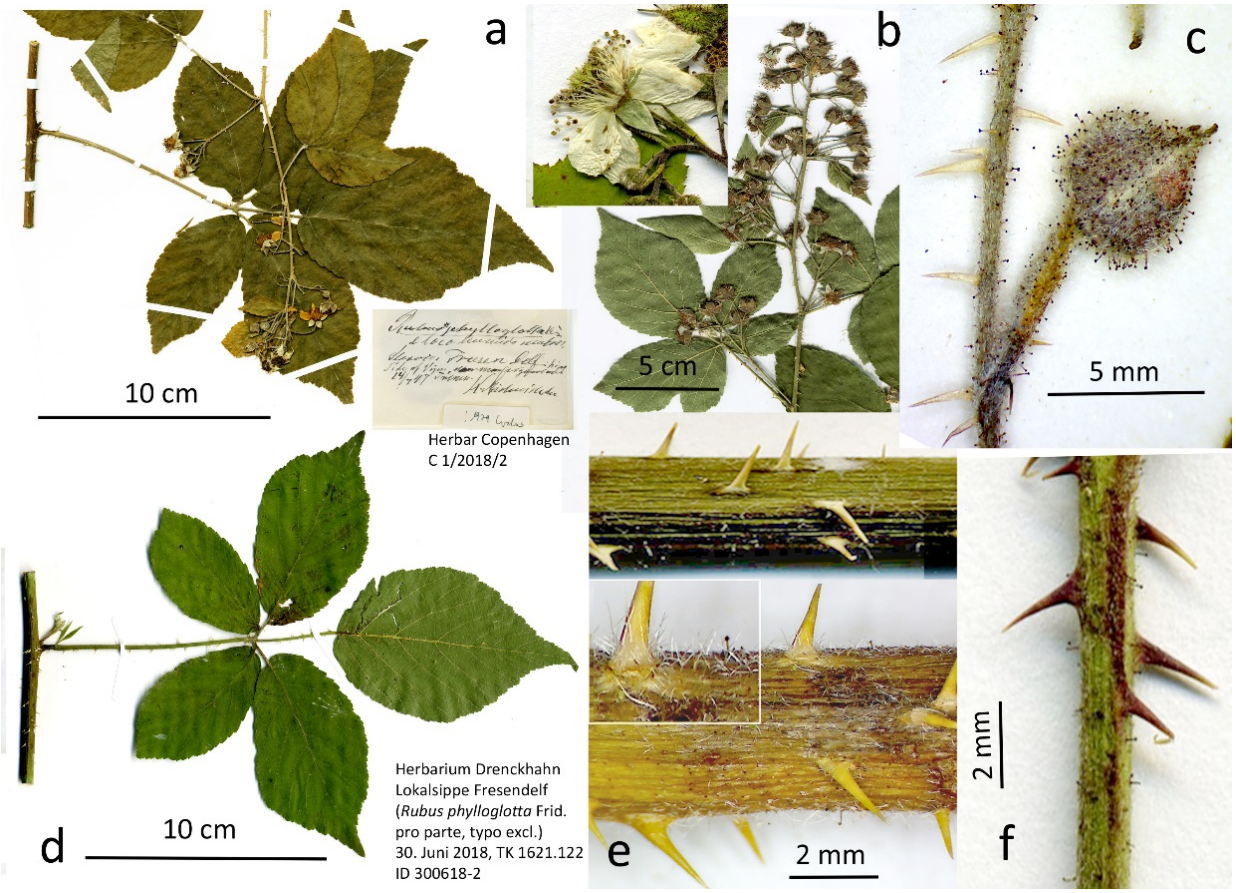

Abb. 8 Fresendelfer Lokalsippe, die bislang *R. phylloglotta* zugerechnet wurde. (a) Blatt und (e) (unten) Schössling eines Herbarbeleges (C 1/2018/2) von K. Friderichsen vom 14.7.1897, als *Rubus phylloglotta* benannt. (b-d, f) und (e) (oben) zeigen Teile einer Pflanze vom Fresendelf von Ende Juni 2018.

Fig. 8 Local bramble 'Fresendelf' which was previously attributed to *R. phylloglotta*. (a) leaf and (e) (lower panel) show parts from a herbarium specimen collected by K. Friderichsen on 14.7.1897 and named by him *Rubus phylloglotta*. (b-d, f) and (e) (upper panel) are parts of a specimen from Fresendelf collected end of June 2018.

Abb. 9 Lokalsippe „Schwabstedt-Ostenfeld“, die bislang *R. phylloglotta* zugerechnet wurde. Fotos D. Drenckhahn
Fig. 9 Local bramble variety ‘Schwabstedt-Ostenfeld’ which was previously attributed to *R. phylloglotta*.
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gestielt, bei *R. pseudoglotta* fast sitzend (<3mm). Die Endblättchenserratur ist bei *R. phylloglotta* meistens schwach periodisch, und die Art hat stark behaarte Schösslinge (>40 Haare/cm Seite, oft bis in das äußere Drittel der Stacheln reichend), während bei *R. pseudoglotta* die Schösslingsbehaarung schwach ist (bis 10 Haare/cm Seitenfläche) und später abschnittsweise völlig verschwindet. Nadelstacheln fehlen auf den Kelchblättern von *R. phylloglotta* (nur an der Basis gelegentlich einige) und sind bei *R. pseudoglotta* reichlich vorhanden.
In den Verbreitungskarten von Martensen et al. (1983), Martensen (2011) und Jansen (2013) sind auch Funde von *R. phylloglotta* auf der Geest zwischen Husum und Schwabstedt eingetragen. Nach derzeitigem Kenntnisstand handelt es sich dort um zwei unterschiedliche Lokalsippen, die sich deutlich von *R. phylloglotta* und auch *R. pseudoglotta* unterscheiden:

1. Lokalsippe „Fresendelf“ (Abb. 8). Diese Sippe wurde bereits am 14. Juli 1897 von Friderichsen bei Fresendelf (Schleswig-Holstein) aufgesammelt und von ihm als *R. phylloglotta* bezeichnet (C 1/2018/1, -2, -3, -7, -8, -9, -10), noch bevor 1913 N. Sörensen den Typus auf Tåsinge in Dänemark gesammelt hatte. Die Fresendelfer Sippe unterscheidet sich deutlich von *R. phylloglotta* und *R. pseudoglotta*, vor allem durch die Blattmorphologie, die flache (±1 mm) Serratur mit breitlichen mucronulierten Zähnen, einen lang ausgezogenen, oft gedrehten, schiefen Spitzenbereich, die kleinen (≤ 3mm), einheitlich geneigten, schlanken Hauptstacheln der Schösslinge. Von *R. pseudo glotta* und der Schwabstedt-Ostenfelder Lokalsippe unterscheidet sich die Fresendelfer Lokalsippe weiterhin durch eine dichte Schösslings-Behaarung.
2. Lokalsippe „Schwabstedt-Ostenfeld“ (Abb. 9): Diese ebenfalls lang zungenblättrige Sippe ist über eine Stecke von 5,5 km im Dreieck zwischen Fresendelf, Schwabstedt und Ostenfeld verbreitet. Sie steht *R. hystricopsis* (Frid.) Å. Gust. nahe mit einem dicht stacheligen borstigen Blütenstand und unterscheidet sich schon dadurch von *R. phylloglotta*. Sie erinnert durch die reich bestachelten Achsen mit vielen drüsenköpfigen Borsten und Stacheln an stachelreiche Ausprägungen von *R. pseudoglotta*, aber unterscheidet sich von diesem vor allem durch die lang ausgezogenen Endblättchen und deren enge Serratur. Der DNA-Gehalt (2C-Wert) von zwei Pflanzen von verschiedenen Wuchsorten bei Hollbüllhuus betrug 1,53 und 1,54 pg. Es handelt sich demzufolge auch um eine tetraploide Sippe (2*n*=28) wie *R. phylloglotta* und *R. pseudoglotta.*

Schlussfolgerung Aus den Untersuchungen dieser Studie kann gefolgert werden, dass *R. phylloglotta* nicht in Schleswig-Holstein (Deutschland) vorkommt. Ob die *R. phylloglotta* zugerechneten Funde auf der Insel Langeland (Martensen 2011), Süd-Fünen (u.a. C 2/2018/23, leg N. Sörensen) und nördlich Hadersleben/Haderslev (LD 2001676, leg. K. Friderichsen 1891 – als *R. friesii* bezeichnet – sowie C 2/2018/04, -29 und -34, leg. A. Pedersen 1983) noch in den Variationsbereich des Typus von *R. phylloglotta* von Tåsinge fallen, bedarf weiterer Untersuchungen an den Wuchsorten.
Eine von *R. phylloglotta* deutlich unterschiedene Brombeerart mit deutsch-dänischer Verbreitung und Schwerpunkt des Vorkommens im Umfeld der Stadt Kiel ist der hier eingehend charakterisierte *R. pseudoglotta*.

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Ben J.M. Zonneveld

The DNA weights per nucleus (genome size) of more than 2350 species of the Flora of The Netherlands, of which 1370 are new to science, including the pattern of their DNA peaks

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Abstract Besides external characteristics and reading a piece of DNA (barcode), the DNA weight per nucleus (genome size) via flow cytometry is a key value to detect species and hybrids and determine ploidy. In addition, the DNA weight appears to be related to various properties, such as the size of the cell and the nucleus, the duration of mitosis and meiosis and the generation time. Sometimes it is even possible to distinguish between groups or sections, which can lead to new classification of the genera. The variation in DNA weight is also useful to analyze biodiversity, genome evolution and relationships between related taxa. Moreover, it is important to know how large a genome is before one determines the base sequence of the DNA of a plant. Flow cytometry is also important for understanding fundamental processes in plants such as growth and development and recognizing chimeras. In the literature, DNA weight measurements are usually limited to one genus and often only locally (Siljak et al. 2010; Bai et al. 2012). In this study, however, it was decided to investigate all vascular plants from one country. This can also contribute to the protection of rare plants. This study is the first flora in the world whose weight of DNA per nucleus and peak patterns has been determined. More than 6400 plants, representing more than 2350 (sub)species (more than 90%) have been collected, thanks to the help of almost 100 volunteers of Floristisch Onderzoek Nederland (Floron). Multiple specimens of many species have therefore been measured, preferably from different populations, in some cases more than fifty. For 1370 species, these values were not previously published. Moreover, a good number of the remaining 45% are new for The Netherlands. In principle, each species has a fixed weight of DNA per nucleus. It has also been found that, especially between the genera, there are strong differences in the number of peaks that determine the DNA weight, from one to five peaks. This indicates that in a plant or organ there are sometimes nuclei with multiples of its standard DNA weight (multiple ploidy levels). It is impossible to show graphs of more than 2350 species. Therefore, we have chosen to show the peak pattern in a new way in a short formula. Within most genera there are clear differences in the DNA weights per nucleus between the species, in some other genera the DNA weight is hardly variable. Based on about twenty genera that were previously measured completely in most cases (‘t Hart et al. 2003: Veldkamp and Zonneveld 2011; Soes et al. 2012; Dirkse et al. 2014, 2015; Verloove et al. 2017; Zonneveld [et al.] 2000−2018), it can be noted that even if all species of a genus have the same number of chromosomes, there can still be a difference of up to three times in the weight of the DNA. Therefore, a twice larger DNA weight does not have to indicate four sets of chromosomes. Finally, this research has also found clues to examine further the current taxonomy of a number of species or genera.

Samenvatting Naast uiterlijke kenmerken en het lezen van een stukje DNA (barcodering), is het DNA-gewicht per kern (via flow cytometrie) een sleutelwaarde om soorten en hybriden te detecteren en ploïdie te bepalen. Daarnaast blijkt het DNA-gewicht met verschillende eigenschappen samen te hangen, zoals met de grootte van de cel en de kern, de duur van de mitose en meiose en met de generatie tijd. Soms is het zelfs mogelijk om tussen groepen of secties onderscheid te maken, wat tot nieuwe indeling van de geslachten kan leiden. De variatie in DNA-gewicht is ook nuttig om biodiversiteit, genoom evolutie en relaties tussen verwante taxa te analyseren. Bovendien is van belang te weten, hoe groot een genoom is, alvorens men van een plant de base-volgorde van het hele DNA kan bepalen. Flow cytometrie is ook belangrijk voor het begrijpen van fundamentele processen in planten zoals groei en ontwikkeling en het herkennen van chimaeren. In de literatuur wordt het meten van het DNA-gewicht meestal beperkt tot één geslacht en ook nog vaak alleen lokaal. In deze studie is echter besloten om alle vaatplanten van één land te onderzoeken. Dit kan dan ook een bijdrage leveren bij de bescherming van zeldzame planten. Deze studie is de eerste flora ter wereld waarvan het gewicht van het DNA per kern en de piekpatronen zijn bepaald. Hiervoor zijn ruim 6400 planten verzameld die ruim 2350 (onder)soorten (meer dan 90 %) vertegenwoordigen, vooral dankzij de hulp van bijna 100 vrijwilligers van Floristisch Onderzoek Nederland (Floron). Van veel soorten zijn dus meerdere exemplaren gemeten, bij voorkeur uit verschillende populaties, van sommigen wel meer dan vijftig. Voor 1370 soorten zijn dit niet eerder gepubliceerde waarden. Bovendien is van de overige 45 % ook

een flink aantal nieuw voor Nederland. In principe heeft elke soort een vast DNA- gewicht per kern. Er is ook gevonden dat vooral tussen geslachten, er sterke verschillen zijn in het aantal pieken die het DNA-gewicht aangeven, van een tot wel vijf pieken. Dit geeft aan dat in een plant of orgaan er soms kernen zijn met veelvouden van het standaard DNA-gewicht (meerdere ploïdie niveaus). Het is ondoenlijk om grafieken van alle 2350 soorten weer te geven. Daarom is er voor gekozen om het piekenpatroon op een nieuwe manier in een korte formule weer te geven. Binnen de meeste geslachten zijn er duidelijk verschillen in de DNA-gewichten per kern tussen de soorten, in enkele andere geslachten is het DNA-gewicht nauwelijks variabel. Gebaseerd op een twintigtal geslachten die eerder in de meeste gevallen compleet gemeten zijn, kan opgemerkt worden dat ook als alle soorten van een geslacht hetzelfde aantal chromosomen hebben, er toch een verschil tot meer dan driemaal in het gewicht van het DNA kan zijn. Een groter DNA-gewicht hoeft dus niet op meer dan 2 sets chromosomen te wijzen. Tenslotte heeft dit onde rzoek ook aanwijzingen gevonden om de huidige taxonomie van een aantal soorten of genera nader tegen het licht te houden.

Key words: Genome size, DNA weight, 2C-value, Dutch Flora, peak profiles

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Abbreviations Aa/aa: main standard, only mentioned in special cases; Aa15.9: *Agave americana* 'Aureomarginata' 15.9 pg; ad: adventive; A'dam: Amsterdam; Afrik. Pl.: Afrikaander plein; AGS: Alpine garden society UK; arb.: arboretum; BG: Botanical Garden; BZ: B. Zonneveld added; c.: circa, about; CCDB: Chromosome Counts Database; Chl22.8: *Chlorophytum comosum* 22.8 pg; cu: cultivated; E: East; ex: exote; FL: Floron list recognized after 2005; gr: groot/large; haem72: *Haemanthus albiflos* 72pg; hort.: hortorum/from the garden; HT: Heemtuin; k.: kade; kl: klein/small; l.: lane; L.dorp: Leiderdorp; N: North; NDV: Ned. Dendrologische Vereniging; n. c.: Locality not communicated; NHM: Natuurhistorisch museum; NRV: Ned. Rotsplanten Vereniging; NVV: Ned. Varen Vereniging; Nwijk: Noordwijk; pg: 1 picogram = 10^{-12} gram, ≈ 978 x 10^6 base pairs; pl.: plein; R'dam: Rotterdam; Sans2.7: *Sanseveria trifasciata* 2.7 pg; seed10x: 10 seeds used; s.l.: sensu lato/in broad sense; s.s.: sensu stricto/in narrow sense; str.: street; v.: veld; Var': variegated leaf; W: West; w.: weg/road; Z: South.

Introduction

The importance of flow cytometry for all kinds of applications has increased considerably in recent years. The weight of DNA per nucleus and also of separate chromosomes can now be determined. To make this clearer, some basic information may be helpful.

Plants and animals are made up of cells. Each cell contains a nucleus. Each nucleus contains long double strands of DNA made up of four bases, abbreviated with A, T, G and C. These strands are surrounded by proteins. DNA strands + proteins are divided into a number of pieces that are called chromosomes. Chromosomes can vary greatly in size and number in different organisms, so the number of chromosomes is not directly a measure of the weight of DNA in the nucleus. In diploid organisms, each chromosome is present in duplicate, so there are two sets of chromosomes. In most organisms only a limited part of this DNA codes for genes or characteristics. In humans with 7 picograms (pg) of DNA per nucleus, this is less than 2%, representing about 25.000 genes.

A number of alternative, not entirely overlapping terms are used for the weight of DNA per nucleus: weight of DNA per nucleus, quantity of DNA per nucleus, nuclear DNA weight, 2C-value, nuclear weight, genome size and genome weight. See 2x, 2n and 2C below for an explanation. It should be noted that nuclear weight is incorrect because the DNA represents less than 1 permille of the nuclear weight. Here we use the DNA weight or weight of the DNA or just DNA, whereby per nucleus and nuclear are often omitted. A code (e.g. **2C** 4C 8C) has been devised to indicate the number of peaks as seen in the flow cytometer, with the highest peak in bold. These peaks represent the different number of chromosome sets (ploidies) measured in a sample. Genomic weight is actually 1C, so one set of chromosomes, but is *pars pro toto* also often used for 2C-value. Kew DNA C-values (Bennet and Leitch 2012) is a collection of all published DNA weights of mainly economically important crops with 8700 measurements. It includes many duplicates and measurements with methods other than propidium iodide. The DNA weight can be used for all kinds of applications, especially because it can be determined quickly and relatively cheaply. Commercially, it is usually used to check whether a plant is (has become) polyploid or to determine the number of bases of the nuclear DNA before sequencing.

In this article we want to give an overview of the DNA weights of the Dutch flora, but also reflect on the following questions: Are we dealing with one or two species? Are there differences in DNA weight within or between genera? Does the weight of the DNA mean that the right species is measured? What is the possible other parent of this hybrid? How do the DNA weights relate between plants with different growth habits and environments? What is the relationship between chromosome numbers and DNA weight? What is the relationship between the amount of DNA per chromosome and the number of chromosomes or the weight of the DNA per nucleus? Is there a relationship between peak patterns and the weight of DNA? Can peak patterns be characteristic for families, genera or species?

Materials

When we talk about the flora, we mean the Dutch vascular plants. These include the seed plants and part of the spore plants (pines, ferns and horse tails). This study focuses on all 2119 names mentioned in the Heukels flora (no 23) of The Netherlands (Van der Meijden, 2005). This has been supplemented with a selection of the 680 species from the online species list of the Dutch Flora (Verspreidingsatlas.nl,

FLORON, as of 2019), which were observed after 2005. Also included are about 400 species, from the list made available by H. Duistermaat, which will be published in the Heukels no 24 and whose DNA weight had already been measured. In the end, 270 species of Heukels list (2019) and 250 of the FLORON list (2019) were not available for the study. This brings the total number of taxa measured to 2350 as of May 2019, from 2586 taxa listed in Table 1. Measurements are still lacking for extinct species, very rare species and hybrids, and recently published species, including many adventitious plants. If we look at the number of genera, the situation is as follows: of 624 genera, all species present in The Netherlands have been measured; of 115 genera not all present species have yet been measured and of 22 genera not a single species has yet been measured. The latter 22 are, probably not by chance, all monotypic for The Netherlands. In total there are 762 genera of which from 739 genera (97 %) at least one species has been measured. Many species, especially the common ones, were collected by the author. In addition, almost 100 volonteers of Floron (see supplement) helped to collect living material, especially from the rare species. In principle, an attempt was made to use as much 'field−collected' material as possible. If this was not possible, material from botanical gardens was also used, as indicated in the supplement. Some hard-to-obtain species were collected abroad. If later a wild Dutch plant did become available, it was exchanged or supplemented with the foreign species. There are also 75 species in the Heukels flora (2005), which are extinct in The Netherlands. So far, a third of these have been measured.

Checking the correct name of the plants has been done as follows: 1. Checking the morphology of the plant using the Heukels flora and for as far as possible, also by expert colleagues, like H. Duistermaat, the writer of the new Heukels flora. 2. In principle, the large local knowledge of the cooperating volonteers of FLORON was taken as the starting point 3. Comparing the DNA weight with the same and different species within the genus, both our own measurements and what can be found in the literature (Bennet and Leitch 2012). 4. Comparison with known chromosome numbers. 5. Comparison with peak patterns of previously measured plants 6. In case of doubt, plants are collected and measured again, preferably also from other locations.

More than 700 vouchers were made from species collected by G. Dirkse, S. Gongrijp and F. Adema, for example. Also H. Duistermaat has made vouchers of some measured plants. Unfortunately, vouchers could not be made for all of them. Often a single leaf or a few seeds were available, too few for a meaningful voucher. If entire plants had been asked for a voucher, florists would not have been able to collect all kinds of rare species, which of course should not been pulled out.

Occasionally only seeds were available. One or more of these were measured, depending on the size. The remaining seeds were sown to identify the species further and to measure the plant itself. The seeds of 250 species were measured (barely in Table 1), but this gives a separate problem. In principle, you get a diploid 2C peak of the young plant, the embryo, and a triploid 3C peak of the reserve food, the endosperm (Fig. 1b) (the endosperm in conifers is 1C, i.e. haploid). However, sometimes there is only one peak, because the embryo is dead or because no nuclei can be isolated from the endosperm and then it is not easy to decide whether nuclei were extracted from the embryo of the endosperm. If earlier measurements show that we only measure endosperm, the result for the endosperm is multiplied by 2/3. This is especially true for very fine seeds. For larger seeds, the embryo can often be separated from the endosperm. Incidentally, nuclei from six-year-old seeds of *Heracleum sosnowskyi* could still be isolated. This could mean that it might be worth testing this for rare species, which are present with seed in the herbarium. As long as there is germination, whole nuclei must still be present

Methods

The method to determine the DNA weights of the nuclei is most extensively described in Verloove et al. 2017, and is summarized below. A small piece of leaf, leafstalk, bark, root or seed is finely chopped together with a standard and buffer (changed from Bharathan et al. 1994) with a razor blade. One cm^2 alive, so not necessarily fresh=newly picked leaves etc. is sufficient. The DNA in the nuclei is made fluorescent with propidium iodide, after which the whole suspension is filtered over a 20 µm (1µm=10^{-6} m) filter. The more DNA there is per nucleus, the stronger the fluorescence of the DNA. An alternative staining is with DAPI. This is usually used by commercial companies to determine the ploidy. This fluorescence, unlike the propidium iodide used here, works only on the A and T bases instead of all four bases of the DNA. DAPI only indicates how many times the DNA of one species fluoresces more than another species, so a relative value, but not the absolute weight. This is caused by the fact that the total A-T content of the DNA between species can vary from 40 to 70 %. In *Arabidopsis thaliana* we find for example 58.6 % and in *Allium cepa*, the onion 70 % A-T.

After half an hour, the fluorescence of 1000−5000 nuclei in the suspension is measured in a few minutes using the flow cytometer. This is repeated after one hour. Almost all measurements are done with the flow cytometer of Becton-Dickinson-Accuri C6. For 131 species I have chosen from more than 6000 measurements made with the previous Partec flow cytometer (measurements made before 1−5−2012), due to lack of new material. Checks indicated that there is hardly any difference between the two devices.

As standard plant almost always *Agave americana* 'Aureomarginata' 2C=15.9 pg was used. Exceptions are for ferns, *Artemisia* etc., for which *Agave attenuata* 2C=7.9 pg was used. The reason is that the DNA weight of some genera more or less coincides with the most commonly used standard *A. americana*. *Clivia miniata* 2C=38.0 pg is used as standard for tulips and *Haemanthus albiflos* 2C=72.0 pg for *Fritillaria*, because these standards are closer to the unknown.

If several individuals of a species have been measured and the values were close together, the average is calculated for Table 1. The error margin of most measurements is +/− 2 %. Deviating DNA weights and possible polyploid plants (indicated by the symbol #) can be found in Table 2. The ploidy cannot be determined directly from the DNA weights and the tems derived or inferred ploidy must be used. The weight of the DNA per nucleus is expressed in picogram (pg). Although DNA is also present in the many mitochondria and chloroplasts, this is hardly a problem, because these organs have only short pieces of DNA of a few hundred bases. RNA also fluoresces with propidium iodide, but this does not pose a problem, because the buffer contains a RNA-degrading

enzyme. One can convert the DNA weight to the number of base pairs, where 1 picogram (10^{-12} gram) equals 978 Mbp=978 million base pairs (Doležel et al. 2003). Examples are A*rabidopsis* with 0.32 pg DNA per nucleus, humans with almost 7 pg and *Galanthus nivalis* with 72 pg. There is hardly any relationship of the DNA weight with the complexity of an organism. Even if within a genus all species have the same number of chromosomes, there can be a factor up to 3 (or more) difference in the DNA weight (see also Fig. 5). One may wonder whether it also happens that plants differ in the number of chromosomes (by splitting or fusing) but still have the same DNA weight. The frequency of this can perhaps be deduced from those cases where a number of close chromosome numbers for a species are mentioned, for example 2n =30, 32, 34, 36, 40 in *Erophila.*

General Remarks

Flow cytometry The DNA weight per nucleus, as it can be determined by flow cytometry, is a useful third way and sometimes a key value to distinguish between species. In a number of cases, especially when a larger number of plants per species were available, there sometimes appears to be variation within a species. This is considered when discussing the individual genera.

To understand the significance of DNA weight (genome size), you can compare it with the question which of the books in a pile are the same. With barcoding, for example, you can read line 10 on page 20. If two identical lines are found, we are dealing with the same book. With flow cytometry you weigh the books and if there are two books of 273 grams, it almost certainly also involves two identical books. The advantage of flow cytometry is that it is faster and cheaper. The disadvantage is that living material is needed, while barcoding can work with dried material. In addition, DNA weights don't indicate in principle any relationships. However, related species also often appear to have similar DNA weights. Flow cytometry can therefore lead to a genus being split into different genera, as happened with the succulent plants *Haworthia* and *Aloe* (Zonneveld 2002, 2015c). Barcode reads pieces of DNA from a few hundred bases and determines the order of the four letters (bases). It can that way distinguish between individuals and make a pedigree. However, how big must the difference be between the read pieces of DNA to name two plants as separate species: 3% difference, 10% difference etc.? In yeast, with hardly any usable morphological characteristics, one has solved it arbitrarily by calling a yeast as a separate species if between two (closely related) species the DNA sequence differs by more than 20%. That's also the difference between man and mouse! However, humans and chimpanzees differ less than 5% in their DNA sequences. Sometimes, within a genus, there are species with a strong discrepancy between the number of chromosomes counted and the DNA weights measured. This is sometimes, but not always, an indication that the aberrant species belongs in a different genus. Examples are *Alyssum* (now *Aurinia*) *saxatile* and *Orobanche purpurea* (now *Phelipanche*).

It is striking that none of the more than 2350 measured species has less DNA than *Arabidopsis* with 0.32 pg. *Arabidopsis thaliana* was once chosen as a research object because of its small genome, its rapid growth, 6 weeks from seed to seed, many seeds, small stature and the possibility to grow it in large numbers in a small space (Kornneef and Meinke 2010) and the efficient transformation methods using *Agrobaceterium tumefaciens* (Vergunst et al. 1998*)*. I had the impression of annual plants, which are usually fast growers, that they have little DNA. This seems to be confirmed in Table 4. However, when annual plants are compared with perennials, both for monocotyls and dicotyls you get a completely different picture. This is due to the large number of sedges *(Carex* spec.), perennials with little DNA. On the other hand, it is due to the very high values found for the species of the *Liliales* and *Asparagales*. The species with little DNA often have "as compensation" multiple peaks/ploidies (more than two sets of chromosomes) in nuclei of different organs such as in the leaf, the more active part of a plant.

To place the determination of the DNA weights of plants in a slightly broader context: Mosses, also plants, of which there are also about 160 species measured (not yet published) vary from 0.2 to 2.5 pg. It should be noted that the DNA contents of 80% of the mosses is below 1 pg, whereas for higher plants this applies to only 14% of the species. Also interesting is that *Riccia*, a liver worth, has with n=8, 0.77 pg and *R.* (subsp.?) *rhenana* with n=16, 1.21 pg. Although no plants, it is interesting for comparison (e.g. for the author, because the genetics of both species have been worked on for 15 years) to mention that according to the literature the fungus *Aspergillus nidulans* has 0.029 pg (n=8) and milk yeast, *Kluyveromyces lactis*, has 0.011pg DNA (n=6) per nucleus. So roughly 10 to 30 times less than *Arabidopsis thaliana*, the plant with the lowest amount of DNA per nucleus of the Dutch vascular plants (0.32 pg).

Hybrids Many species are known that have diploid and tetraploid or higher cytotypes or 'chromosome strains'. These occur in nature not only through direct chromosome doubling. Another way of forming tetraploids is the formation of unreduced or 2n gametes. In a diploid plant, the unreduced 2n=2x gamete does not have half of the diploid number of chromosomes (x) but the parent number 2x. Although this can occur in two species simultaneously, it seems less unlikely, unless they are self-pollinators. There are also exceptions when an entire population tends to form unreduced gametes. This can occur when exceptional environmental factors, such as sudden heat or cold, occur. If it occurs in a diploid plant, a triploid plant will develop after cross fertilization. This hybrid is usually sterile, unless it forms again a unreduced, now triploid (=3x), gamete. Fertilized with the haploid (x) gamete of one of the parents, this results in a more or less fertile autotetraploid (4x). If that doesn't happen, the triploid usually dies out. In some cases, however, the triploids can propagate vegetatively and can then be very successful (locally). This vegetative reproduction, often by stolons or by apomixis, is relatively common in triploids, because these are the only ones that can multiply despite the triploidy. Tetraploids originate mainly from crossing tetraploids with diploids that produce 2x gametes. Another possibility is vegetative reproduction via apomixis. Seed is still formed, from maternal tissue often after pollen stimulation (not fertilization). The offspring is identical to the mother plant. It is often wrongly thought that species cannot cross, because the number of chromosomes is different or because the ploidy is different. In crosses between diploids and tetraploids of the same species, but also between different species, the following situations can be encountered: 1. They do not cross 2. They do cross but the triploid is sterile (the

survivors multiply vegetatively or via apomixis). 3. The triploid gives some seedlings, such as *Hyacinthoides hispanica x non-scripta* (Zonneveld, not published). In triploid *Hosta*, the offspring usually have lost quite a few chromosomes, which causes them to return more or less to the diploid state (Zonneveld and Pollock 2012 a, b). 4. Sometimes two diploid parents that are not easy to cross, turn out to form a hybrid, but this one is often triploid. 5. The diploid and the tetraploid cross and in one step a tetraploid is formed, because the diploid plant makes 2x gametes. 6. If both diploid parents make unreduced gametes, a tetraploid hybrid can occur in one step (e.g. *Aesculusus x carnea*). Usually crosses between diploids and tetraploids do not appear to be such a problem, although the hybrid is often sterile. If two species do not cross, this may indicate that the parents are not so related and that the genomes cannot cooperate with each other, or with the chloroplasts or with the mitochondria. However, if there is a complete, for example geographical separation, no crossing barriers are built up or may be lost. Then the resulting species can often, even after a long time, cross normally, as shown by crosses between some Euro-Asian and American species. When a species splits into two populations, but the populations still grow close together, they tend to build up crossing barriers. Crossing barriers can occur at all levels. I found a nice example when making crosses with the cactus *Echinopsis*. 1. The pollen does not germinate on the stigma, i.e. there is no fertilisation and the whole flower falls off after a few days. 2. There is a normal cherry-sized fruit, but it contains no seeds. 3. The fruit does contain seeds but they do not germinate. 4. The seed does germinate but the seedlings all appear to be chlorotic (yellow-green) and almost always die. This is because the nuclear genome of one parent does not work well with the chloroplast genome of the other parent 5. The hybrid is formed, but appears sterile.

Hybrids often have characteristics of both parents. However, this is not always the case. If one parent has a high ploidy level and the other does not, there are hardly any characters visible in the hybrid from the plant with the low ploidy level as in hybrids with *Sedum suaveolens* which is 20-ploid. It is then prudent to take the low ploidy parent as the female parent. It also depends on whether a characteristic inherits dominant, recessive or intermediate. This is difficult to predict when crossing species. When crossing a species with naturally white flowers and a species with red flowers, the hybrid can be red, white or intermediate pink. The general opinion seems to be that two cytotypes must not only differ morphologically but also geographically, ecologically or reproductively in order to be named separately. But then there is the question: two separate subspecies or two species. Based on my own observations, among other things based on tens of years of thousands of crossbreeding experiments with all kinds of plants and fungi, I will give two examples. The ivy *Hedera helix* occurs as diploid, especially in the forests, and as tetraploid (*Hedera hibernica*), mainly planted and originating from the Atlantic coast. They are clearly different: *H. hibernica* has larger, less incised and less marbled leaves and tends less to climb and bear less fruit. They are often not considered as separate species. On the other hand, the value of hairiness or blue/grey leaf colour can be questioned. In the succulent *Echeveria* many crosses have been made. Here these characteristics appear to be based on one or two genes. It would not surprise me if this applies to several other species. Yet species are often distinguished on these characteristics. Also the environment can have a strong influence on these characters. An *Elymus (Elytrigia) atherica* with strong blue-grey leaves from the banks of the Grevelingen meer, gave after a few weeks in the garden a new, but plain green leaf.

For a geneticist it is striking that hybrids are sometimes referred to as (sub)species. Examples are:
(a) *Nymphaea* x *candida* (*N. alba* x *N. tetragona*) as *N. alba* subsp. *candida*
(b) *Aesculus* x *carnea* (*A. hippocastaneum* x *A. pavia*) as *A. carnea*.
(c) *Spartina* x *anglica* (*S. alternifolia* x *S. maritima*) doubled, as *S. anglica*.
On the other hand, for example *Oenothera x fallax* and *Crocus x stellaris* are presented as hybrid.

Chromosome number and DNA weight

The difference between 2n, 2x and 2C is as follows. 2n and 2x refer to the number of chromosomes per nucleus, i.e. the number of pieces in which the DNA is divided.
(a) (1)x is one set of chromosomes, 2x is two sets, 3x is three sets etc.
(b) 2n is the number of chromosomes in a somatic nucleus and can refer to different ploidies, it can contain two or more sets of chromosomes. So for a diploid: 2n=2x, for a triploid: 2n=3x, for a tetraploid: 2n=4x, etc. Nuclei of gametes, i.e. pollen grains and egg cells usually have half of the parental number of chromosomes, indicated by (1)n. Sometimes this number is not halved. These are called 2n gametes (unreduced gametes or gametes with the parental chromosome number). This is an important cause of the formation of polyploids.
(c) 2C refers to the weight of DNA per somatic nucleus, and this is independent of the number of chromosomes. Again, we can distinguish between 2Cn=2Cx=diploid and 2Cn=4Cx is a tetraploid etc. The distinction between 2Cn and 2Cx is not often used. We usually speak of 2C-value or DNA weight or genome size per somatic nucleus and 'per somatic nucleus' is usually omitted. The 2C in Table 1, for instance, says nothing about the ploidy, but indicates the DNA weight of the nuclei with the lowest ploidy level present. It is often the only peak or the peak with the lowest, basal ploidy when there are multiple peaks. In Fig. 1 and 2 eight common DNA patterns are given, as seen in the flow cytometer. 2C can be any ploidy here, including triploids and aneuploids (incomplete sets of chromosomes). If one 2C-value is measured for a species and there are for example three possible chromosome numbers, it cannot be decided which ploidy is applicable. Usually we see that with autotetraploids the weight of DNA per nucleus is slightly less than twice the diploid weight (genome downsizing; Simonin et al. 2018). That is because, if all chromosomes and thus genes are present four times, loss of some genes or even chromosome (parts) does not have to lead to problems. However, also the 'release' of transposons in the new cell environment and a subsequent DNA increase cannot be excluded. Nor can a change in the regulation (strength) of a gene be ruled out. A good example is *Narcissus poeticus* which has a very small corona (1.5 cm diameter) with a (partial) red color. After a strong selection process, this has eventually led to daffodils that have a large red corona. This is probably because the regulation of the gene for red is no longer limited to a small part of the corona.

Pitfalls

1. If there are two species of the same genus with an unknown number of chromosomes, one with a DNA weight of 10 pg, the other with 20 pg, there are two possible explanations: (a) The species with 20 pg is the tetraploid form, so it should have twice as many chromosomes. (b) The species with 20 pg has the same number of chromosomes but each with double the DNA content and is a different species. If the chromosome numbers are not known, it is not easy to decide between the two possibilities. Even if chromosome numbers are known, this does not always lead to an unequivocal conclusion. For *Ruppia cirrhosa* that is known to have 2n=20, 40 or 60 chromosomes, twice as much DNA has been measured as for *R. maritima* with 2n=20. From this it seems easy to deduce that the measured plant of *R. cirrhosa* has 2n=40 chromosomes. However, a factor 2 difference with the same numbers of chromosomes is common in many genera, so the above conclusion is not justified. Based on the DNA weight it is not possible to determine the ploidy level of a certain population of *R. cirrhosa*. In other words: determining the variation in ploidy levels can only be done when populations within the same species are compared.
2. One can only determine the exact ploidy level if earlier plants from the same species from a known ploidy level have been measured.
3. Even if within a genus all species have the same number of chromosomes, there can be a factor up to three difference in the weight of the DNA (e.g. *Helleborus*, Zonneveld 2001).
4. If only one peak is seen, after chopping together standard and unknown species, it may be that there were no nuclei isolated from the unknown species. It is also possible that both coincide exactly.
5. One should also be aware of species that apparently have twice as much DNA as the standard. It may be that the first peak coincides with the standard.
6. There is sometimes some background noise. If the first peak is very small, it could happen that it does not exceed the noise. You then measure the first peak you see, unaware of the fact that it is actually the second peak with twice as much DNA. A more definitive answer can be obtained by checking previous measurements, a different plant part or a different standard.
7. Finally, another standard was used when the peak of a species with a single peak was so close to the standard that it could not be determined which one was the peak of the standard and which of the unknown.

Reasons for measuring nuclear DNA weight (genome size) by Flow Cytometry

1. It can show derived polyploidy (triploids, tetraploids etc.).
2. It shows endopolyploidy (*Sedum, Brassica, Sanseveria*).
3. If the seed bearer is known, the DNA of pollen donor can be calculated for the hybrid.
4. If the parents have different DNA weights, the hybridity of the F1 is easily shown.
5. Hybridity test can be done already with F1 seed or seedling.
6. Identical DNA weights within a genus suggest that two plants could belong to the same species.
7. Bulb species can be tested without growing them up.
8. It can be used to follow cell lineages in all organs in ploidy chimeras.
9. Different DNA weights can indicate that two plants belong to different species
10. Close DNA weights of species of a genus often suggests a relationship.
11. DNA weights can proof/disprove taxonomic results based on morphology.
12. High or low DNA weights can indicate life histories (annuals/perennials etc.).
13. DNA weights in a genus can differ up to three times with the same chromosome number.
14. It can be used to recognize apomictic plants (diploid pollen/egg cells).
15. DNA content of each chromosome can be estimated from its karyotype.

Results

Technical considerations

Angiosperms basically consist of 3 meristem layers, called L1, L2, and L3, as present in the top meristem. These three layers can be found in all parts of the plant, except in the root which consists of one layer, the L3. This is different from the different tissues as often described for leaves. If the layers are genetically different, we speak of a chimera, but this is rare in wild plants. In the monocotyl *Hosta*, which I studied best in this respect, the L1 forms one cell layer (but several cell layers in the edge of the leaf), the L2 forms one cell layer (from which the gametes are formed) and the L3 is made up from 6−8 cell layers (from which the bulk of the leaf and the roots are formed). These three layers fit over each other like two gloves over one hand. They can usually be found in all organs with the flow cytometer if they differ in ploidy. All three layers are sometimes visible in chloroplast-chimera of *Hosta* and *Dracaena* (Zonneveld 2000, 2007, 2014a, 2018). Dicotyls have a slightly different structure: L1 forms only a thin outer layer, the cuticle, so the edge of the leaf is the L2 layer and below it, in the center, is the L3 layer. So with chloroplast-chimeras of dicotyls only two layers are different in color. A good example for monocotyls is the well-known *Sanseveria trifasciata* 'Aureomarginata'. This is a mutation where the border, the L1, has turned yellow, a so-called chloroplast chimera. Such a sharply separated L1 is best seen in monocotyls. However, in the same *Sanseveria* this yellow margin is tetraploid and the green centre diploid. We call this a ploidy chimera. This *Sanseveria* is therefore simultaneously a chloroplast chimera and a ploidy chimera. These two types of chimeras are mostly selected in culture, especially after tissue culture, and one rarely encounter them in nature. This is because, during seed formation, the chimera structure is lost, as the gametes are almost only formed from a single layer, the L2. Plants whose nuclear DNA weight is measured in the flow cytometer show one or more peaks of nuclear DNA (Fig.1, 2). This means that apart from a "diploid" nucleus, tetraploid, octoploid and even 16 and 32-ploid nuclei are often measured. Humans also show this phenomenon of cells with locally higher ploidies in very active organs, such as the liver, heart, muscle, placenta and tumor cells. In contrast, roots, derived exclusively from the L3, almost always show (but not in *Hieracium* and a few others), for a diploid, two peaks in the flow cytometer: a diploid and a tetraploid peak, Fig. 1b (tetraploid and oktoploid in a tetraploid plant). The tetraploid nuclei of the root usually account for 25−50% of the total and are only found in the cortex and not in the stele, both in the primary (germ) root and in the secondary roots (*Hosta*).

The values given here for the weight of DNA per nucleus only concern the lowest, basal, 2C-value. The polyploid or higher peaks, which can be found in Table 2, are useful to determine the location of the lowest 2C value compared to the standard. It would be interesting to investigate how the different ploidies are limited to specific tissues. If several chromosome sets are present, DNA doublings did occur, as preceded by normal cell division, but without actual cell division having taken place afterwards. This is called endopolyploidy. This peak pattern is indicated here with par example 2C 4C 8C 16C 32C (briefly represented as: 2C-32C) (Fig. 1, 2). So not with 2x etc. because the latter stands for the number of chromosomes. The peak with the lowest value is always indicated with 2C (actually 2Cn). Even if it is a polyploid (which is not always known), the smallest peak is 2C. If there are multiple peaks, the highest peak, with the type of nuclei that is most common in the tissue used, is often shown in Table 1 in bold. The weight of the DNA can give an indication about the number of chromosomes in some genera. However, because the chromosomes are not actually counted, one speaks of inferred or derived or assumed ploidy.

These peak patterns often appear to be genus- and even family specific. Almost half of the species have only a single peak like conifers, ferns, trees and many grasses, but also most shrubs. This means that all nuclei of a plant (at least in the measured plant part!) have the same DNA weight and there are no higher ploidies.

The following hypothesis could be made: Bushes look like dwarf forms of trees with their single peak, perhaps adap- ted to worse conditions such as cold, high altitude or shade. It may also be that these small shrubs are woody herbs, but have not acquired the ability to grow into large trees. The opposite, a herbaceous plant that has grown in size, but is poorly hardened, seems to be the case with *Sambucus,* Elder, which has a lot of DNA (25 pg). *Sambucus edulis* is even herbaceous. If we go further back in time it may be that deciduous trees were derived from herbaceous plants, not from conifers or ferns. Perhaps herbaceous plants had the advantage over conifers that they had a factor of 10 to 20 times less DNA than conifers (Zonneveld 2013). Herbaceous plants such as the *Ranunculaceae* that are basally splitted from the phylogenetic tree, have a relatively large amount of DNA. They have apparently not developed the ability to loose DNA.

However, the peak pattern also depends on the plant part used. Leaf stalks seem to have fewer peaks than leaves. Besides the plant part, its age can also have an influence. Leaves that have that with the increase of the ploidy the peaks become smaller, in other words, the higher the ploidies the smaller the number of the relevant nuclei. However, that is not always the case. Also two equally large peaks occur and even that the second peak is larger than the first one. Many species only have a small second peak (Fig. 1d). These are supposed to be temporary tetraploid nuclei of cells that go into division (indicated by brackets (4C). Also when there are three peaks there is variation. Usually it is found that the first peak is the largest (Fig. a). However, relatively often the second peak is the largest and sometimes the first and second peaks are the same size. More than three peaks can be found especially in succulents and other species with very little DNA. Species with little DNA are often plants that have a short generation time such as *Arabidopsis*. In these species with little DNA and

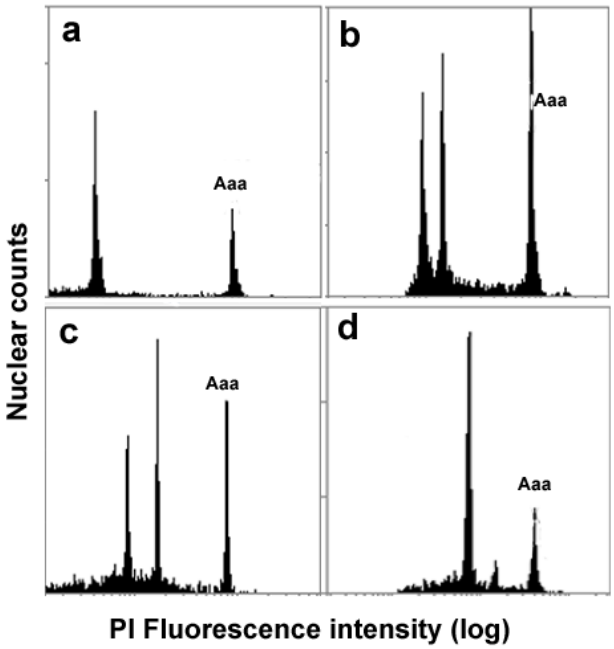

Fig.1 Examples of peak profiles (logarithmic) in the flow cytometer of nuclei stained with propidium iodide (PI). The *Agave americana* 'Aureomarginata' (Aaa) peak (2C=15.9 pg) is used as internal standard for determination of the DNA contents of the sample nuclei. (a) *Picris echioides* (2C); (b) *Linaria dalmatica* seed (2C, **3C**); (c) *Echeveria agavoide*s root (2C, **4C**); (d) *Plantago lanceolata* (**2C** 4C).

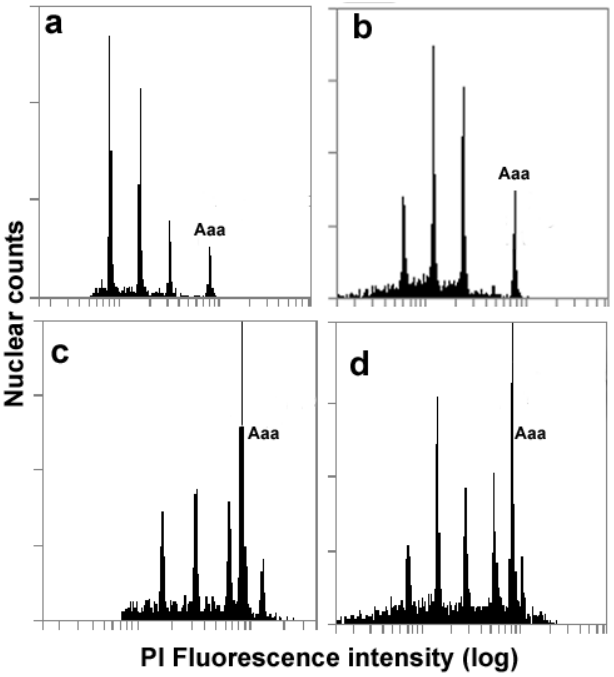

Fig. 2 Examples of peak profiles (logarithmic) in the flow cytometer (PI: Propidium iodide, Aaa peak: *Agave americana* 'Aureomarginata' nuclei). (a) *Lepidium latifolium* (**2C**, 4C, 8C); (b) *Viola odorata* (2C, **4C,** 8C); (c) *Sedum telephium* (yellow centre) (2C, **4C,** 8C, 16C); (d) *Graptopetalum filiferum* (2C−32C=2C, **4C**, 8C, 16C, 32C).

usually a short growth period, the occurrence of multiple peaks can compensate for the low weight of DNA per nucleus. If locally much of a certain product is needed, or if larger cells are needed, the weight of the DNA can be increased, for example, by doubling the weight of the DNA throughout the plant. However, if at the same time little DNA is required for other reasons, the plant can still get a lot of product by increasing ploidy locally, in certain organs, e.g. in the leaf. We find this, for example, in cacti and other succulents that make a lot of mucus (polysaccharides) to prevent dehydration. The plant then remains essentially diploid and also continues to form haploid gametes. It is even more subtle not to double the whole genome locally, but only the number of copies of the required gene. Polyploidy not only serves to make more of a particular product, but it is also correlated with larger cells and increased resistance to UV radiation

Nuclear DNA weight (genome size) of measured plants

More than 2350 species (as of May 2019) of more than 6400 measurements are listed in Table 1 (see the end of the paper). Standard deviations (not indicated) were for nearly all species about 2%. Table 1 also gives the possibility to compare all kinds of variables per species such as chromosome number, frequency of occurrence and peak pattern. The list contains all plant names that can be found in the Heukels flora (Van der Meijden 2005), including the not measured plants, the hybrids and the 75 extinct species. To save space, one is referred to the Heukels flora for the author names. Furthermore, italics indicate that a species is printed in small type in the Heukels flora.

As many as 1376 species were measured for the first time, i.e. that the measurement is new to science (based on Kew Plant DNA C-value index 2012). Almost 55% of the DNA weights are therefore new to science and of the remaining 45% many are new for The Netherlands. The Heukels list has been supplemented with 175 measured species described for The Netherlands after 2005, indicated in a separate column with Fl. (Floron, Verspreidingsatlas.nl, 2019) and 236 species of my choice, indicated with BZ. HD indicates plants that are added based on a list of newly to be added species to the new Dutch Flora of H. Duistermaat. If several DNA values are measured that cannot be attributed to ploidy, the arithmetic average is taken or, if there are any outliers, the median, i.e. the average of the most common numbers. Table 1 summarizes the results of the measurements. The ploidy or peak pattern that is mentioned for the species has never before been described in such detail and noted in this way. That is why a detailed explanation is given below. The frequency of occurrence per square kilometer (kfk) is largely taken from the Veldgids Nederlandse flora (Eggelte 2014), which ranges from extinct (0) to very common (9).

Heukels indicates that there are 138 plant families in The Netherlands that together contain a total of 719 genera. This has been supplemented to 762 genera. Of 97 % of all genera at least one species has been measured. Of about 624 genera all Dutch species were measured. There are also 340 genera monotypic, i.e. only one species of this genus is found in The Netherlands. There is also a list of chromosome numbers. These are largely taken from the English flora (Stace, 2010). Italics indicate whether the numbers refer to English species or whether they are species from the remaining of Europe. This is supplemented with data from the recently published site of the Chromosomal Count Data-base (Rice et al. 2015) with the chromosome numbers as counted worldwide. In the case that more than three chromosome numbers are known of a species, only the two extreme numbers are given (e.g. 24−96). There was also a column with the chromosome numbers of 600 Dutch species (370 if we subtract the multiple counts on a species) as counted in the years 1963 and later by Gadella and Kliphuis. However, this column has been omitted because it hardly added anything new. Finally, sometimes a chromosome number is mentioned, derived from the DNA weight. Counting chromosomes is not only time consuming, but mistakes are also easily made. It is a laborious job; one has to look for cells with dividing nuclei, with a high chance of counting errors. You are already happy if you can count 10 nuclei per day. It is therefore not very surprising that sometimes the number of chromosomes does not seem to correspond to the weight of the DNA and that chromosome numbers often differ. Moreover, the chromosome numbers are largely based on English species and these results can sometimes be different in The Netherlands. However, a comparison between the numbers of Gadella and Kliphuis and those of Stace shows that most DNA values match. If we exclude the differences in ploidy level, there are only 15 really different values. These are often based on a single pair of chromosomes, suggesting counting mistakes. In addition, there are 58 of the 373 counts in which Gadella and Kliphuis have one chromosome number and Stace several. Finally, there are 40 cases where Gadella and Kliphuis has found several chromosome numbers within a species, of which Stace only gives a single number. Chromosome numbers are also often useful, for example if the DNA weight does not seem to match the number of chromosomes. Then further attention should be paid to the measurements and to the species concerned. The combination of all these data per species on one line is also very useful. Comparing the measurements of Table 1 with the DNA values in the list of Kew (Bennett and Leitch 2012) is the obvious thing to do. However, it turned out that for only half of the measurements, DNA values can be found in the Kew list. This is because the values of the Kew list are taken from the literature and are largely limited to plants with a commercial interest. More importantly, several, often very different values are mentioned. This is caused by, among other things, the use of different devices with different light sources, different DNA dyes and different standards. The choice between these options proved to be too arbitrary to arrive at a meaningful comparison.

Polyploids are often found in nature at the edge of the area of the species (Zonneveld 2005, 2009, 2010). This means that they can be found relatively often with increasing height or more to the cold North. Table 2 shows an overview of the diploid plants that also appear to have polyploid cytotypes. The word "appear" is used because no chromosomes have actually been counted in this study. The species with possible multiple ploidies in different collections are indicated by a symbol (#) in Table 1. It is striking that of the 21 hexaploid plants (with 6 sets of chromosomes), 11 plants with about the same phenotype occur as triploid forms while of the 100 tetraploid plants only 18 with same phenotype also occur as triploid forms. It suggests that it occurs more often that a triploid plant becomes a hexaploid than that a triploid becomes a tetraploid plant. Tetraploids therefore often do not seem to originate via

Table 2 Species with possible polyploid cytotypes based on their DNA weight. > 6x: inferred ploidies larger than 6C.

Species	p /2C	pg/3C	pg/4C	pg/6C (>)	Species	pg /2C	pg /3C	pg/4C	pg/6C (>)
Achillea ptarmica	3.80		7.22		Luzula pilosa	0.54	0.72	1.05	
Actaea spicata	11.7		20.4		Malus domesticus 'Kanzi' / 'Jonagold'	1.60	2.41		
Adianthum raddianum	12.6	18.00			Malva verticilata / ssp. crispa	1.87		3.82	
Adianthum venustum	11.9	15.70			Malva moschata	1.58	2.57	2.96	
Ajuga reptans groen / 'Black Scallop'	2.41		4.47		Milium effusum	5.17		9.11	
Ailianthus altissima	1.38	2.2			Montia minor / fontana cf	0.69		1.13	
Allium sphaerocephalon	26.2	39.0			Muscari botryoides / alba	8.60		19.1	
Allium vineale	40.8	62.5			Myosotis scorp. ssp. nemorosa / ssp. scorp.	0.82			2.44
Alnus japonica	2.50		5.28		Myosotis dubia / discolor	0.62			1.84
Anemone coronaria	16.0		32.1		Nasturtium officinale / microphyllum	0.80		1.53	
Anthemis tinctoria	6.52	9.68			Neottia ovata	35.9	55.4		
Arabis glabra	0.70	1.22		2.07	Nepeta cataria	0.84	1.39		
Arabis hirsuta / hirsuta sagitata	0.56		1.29		Nymphaea marliacea	3.10	4.90	5.90	
Aristolochia clematitis	0.90	1.32			Odontites vernus / ssp.serotinus	1.12		2.08	
Artemisia absinthium	5.48		9.81		Oenanthe fistulosa 'Variegata"	1.35		2.45	
Artemisia argyi	8.95	12.8			Ononis spinosa / repens	1.56		2.75	
Artemisia campestris campestris / maritima	10.7	16.5			Orchis mascula	19.3	31.2		
Asparagus officinalis ssp. officinalis	2.88		6.15		Papaver argemone	3.08		5.92	
Atriplex patula	1.79?		3.61		Pinguicula vulgaris	1.45		2.98	
Beta vulgaris maritima	1.43	2.30	2.76		Poa pratensis	3.68		6.98	
Briza media	6.68		13.2	18.0	Polygonum arenastrum / aviculare	1.65	2.44		
Bromus hordeaceus ssp. thominei	9.8?		20.8		Potamogeton alpinus	0.97		1.85	
Bromus racemosus racemosus / commutati	12.6		22.5		Potamogeton lucens	1.28	1.80		
Bunium bulbocastanum	0.93	1.43		2.69	Potamogeton obtusifolius (oblongum)	0.96	1.45		
Buxus sempervirens	1.58	2.30			Potentilla anserina	1.09	1.61		
Calepina irregularis	0.43		0.92		Potentilla indica	3.51		6.52	
Callitriche stagnalis	2.62		5.5		Potentilla sterilis	0.54			> 6C
Campanula glomerata	3.65		7.5		Prunus avium	0.86		1.63	
Capsella bursa-pastoris	0.97	1.27			Ranunculus aquatilis diffusus	3.26		7.26	10.60
Cardamine hirsuta	0.50		0.98	1.67	Ranunculus hederaceus	4.04		7.67	
Cardamine pratensis	0.97	1.49			Raphanus sativus wit / zwart	1.26		2.41	
Catalpa bignonioides / ovata	1.04		2.09		Rosa glauca	1.16		2.07	
Catapodium rigidum	6.52		12.7		Rosa majalis	0.96			2.68
Cephalanthera damasonium	**37.1**		70.5		Rosa multiflora	1.21		2.19	
Cerastium fontanum ssp. fontanum	2.74		5.63		Rudbeckia hirta	4.54		10.0	
Cerastium fontanum ssp. holosteoides		5.62			Rudbeckia fulgida	8.41	12.9	16.9	
Cerastium tomentosum	1.31		2.70		Rudbeckia laciniata	10.60		23.1	
Ceratophyllum demersum	1.10		2.11		Sagina maritima / cf	0.68			2.03
Chenopodium quinoa	1.90	3.07			Salicornia europaea / ssp. brachystachya	1.25		2.57	
Chenopodium hybridum	1.22	1.79			Salicornia (europaea ssp.) stricta	1.26		2.58	
Clinopodium menthifolium	0.98		2.06		Salix aurita	0.80		1.70	
Crassula tillaea	0.63		1.1		Salix caprea	0.91	1.35		
Cuscuta europaea	2.54		5.14		Salix x mollissima	0.89	1.22		
Cyclamen coum	11.5	14.8	21.9		Salvia verbenaca / ssp. clandestina	0.78		2.72	3.23
Dactylorhiza fuchsii cf	11.7		21.6		Salvia verticillata	1.61		3.20	
Dactylorhiza incarnata	13.8	18.8	28.8		Salvinia natans	2.77	3.67		
Dactylorhiza incarnata ssp. coccinea	7.44				Sanguisorba officinalis	2.38	3.14		
Dact. majalis ssp. praetermissa	14.5	19.8	26.2		Scrophularia vernalis	0.82		1.74	
Equisetum scirpioides	42.0		74.3		Sedum album	0.56		1.11	1.65
Eragrostis minor	1.70			> 6C	Sedum telephium	2.28	3.60	4.59	
Euphorbia myrsinites	4.14	5.8			Sempervivum montanum	0.62		1.31	
Fritillaria imperialis	101		200		Senecio vulgaris	2.55	3.47		
Geranium molle	0.92		1.77		Silene baccifera	14.0		29.6	
Fallopia japonica	7.30	9.30			Sinapis arvensis	0.75	1.17		2.25
Forsythia x intermedia 'Arnold P' / 'Fergana	1.67		3.98		Sisyrinchium bermudianum	6.41	9.58		
Gagea pratensis 4x, 5x, 6x, 10x	32.7	39.9	47.5	75.8	Sonchus oleraceus	1.06			3.31
Gagea villosa	16.0		32.0		Spergularia salina	0.65		1.16	
Galanthus elwesii	55.3		105.8	157.0	Spiraea japonica	0.54	0.85		
Galanthus nivalis	72.3	105.3			Spirodela polyrhiza	0.39		0.92	> 6C
Galium mollugo	2.12	3.58	4.12		Stellaria pallida	0.57	0.78	0.99	
Galium palustre	3.75	4.96			Sutera cordata	1.51		2.97	
Gentiana pneumonanthe	5.41		9.72		Taraxacum officinale / laevigatum	2.87	3.95		
Hedera helix / hibernica	2.95		6.06		Thalictrum flavum	2.33		4.35	
Helianthus tuberosus	10.5		22.9		Thalictrum minus	2.33	3.93		
Hyacinthoides x massartiana	50.1	69.6			Trifolium campestre	0.74		1.57	
Hydrochaeris morsus-ranae	2.13		4.40	7.94	Trifolium suffocatum	0.45		0.87	
Hypericum maculatum ssp. obtusiusculum	0.91	1.56			Tripleurospermum inodora / maritima	5.92	9.92		> 6C
Jacobaea paludosa	8.57	13.20			Tulipa sylvestris	(61)	90.4	115.7	
Lagarosiphon major	3.52		7.28		Urtica dioica ssp. subinermis / ssp. dioca	1.34		2.51	
Lamium maculatum	2.77		5.99	> 6C	Veronica chamaedrys	1.47		2.98	
Lathraea clandestina	2.21		4.23		Veronica hederifolia / ssp. lucorum	3.02	4.25		
Lemna gibba	1.20	1.60			Veronica peregrina	1.14		2.26	
Lemna minor	0.89	1.44		2.91	Veronica triphyllos	0.97	1.42		
Lepidium virginicum	0.69		1.19		Vulpia bromoides	5.49			14.4
Lolium perenne	5.26		11.1	> 6C	Wahlenbergia hederacea	0.89		1.99	
Lonicera caprifolium	2.16	3.21		> 6C	Zanichella palustris / ssp. pedicellata	1.21	1.83		

triploids, but by doubling the DNA of the diploid plant. Other possibilities for the formation of tetraploids is from crossing tetraploid plants with diploid plants that make 2n gametes (unreduced gametes) and from crossing a diploid with an hexaploid plant. A distinction should also be made between crossing within the species and between two species (auto- versus allopolyploidization). The different values in Table 2 cannot simply be attributed to polyploidy. They may also have been caused by measurement errors, incorrect identifications or other causes. It is more interesting, if this is not the case and the polyploid types are also confirmed in the literature. When in doubt, several measurements have been made on the same species. Plants of a species can differ from each other in many ways. Also different chromosome numbers within a species occur. It cannot be excluded, that there also different DNA weights within a species. An important question when talking about species is: when is an (auto)-tetraploid called only an aberrant cytotype, a variety, subspecies or, as in *Agrimonia*, a separate species. Tetraploids are not always larger, thicker in leaf or with larger flowers or fruits compared to the diploid plant. However, they usually have larger stomata and pollen grains. Tetraploids can also be smaller and grow slower, like in *Hosta* and *Cyclamen*. Moreover, not all plants with large fruits are also polyploid, as is evident with most cultivated apples or giant pumpkins that seem to be diploid plants.

Nuclear DNA weights of families and orders are listed in Table 3. In total there are 138 families with 762 genera in The Netherlands (2005). Of these, 340 genera are monotypic for The Netherlands, i.e. there is only one species of this genus. This overview makes it possible to speculate about the relationship between DNA weight and phylogeny. For eight families of monocotyls (on average 12.43 pg) with the highest number of species, the average was calculated separately. *Typhaceae, Sparganiaceae, Cyperaceae* and *Juncaceae* range from 0.68 pg to 1.6 pg on average per family. Then there is a jump to the *Alismatales* with 7.5 pg and another jump to the *Poaceae* with 10 pg average. It then goes up via 29.8 pg for the *Asparagales* to 56.8 pg average for the *Liliales*. Also of the dicotyls, with an average of 4.51 pg, ten families were examined. Here the differences in DNA weights are more gradual with 1.51 pg for the *Brassicaceae* to 6.31 pg for the *Asteraceae*. Exceptions are the *Ranunculaceae* with 19.5 pg that are basally split of from the phylogenetic tree. Trees and shrubs are split into deciduous trees, shrubs and woody climbing plants. Deciduous trees (114x) have by far the least DNA with an average of 1.77 pg. Shrubs, including species such as *Erica, Thymus, Hypericum* etc., total 169, have an average of 2.82 pg, and Climbing Plants have 5.67 pg. The latter is mainly due to the high values for *Clematis*. The Gymnosperms stand out with 14 times as much DNA as the deciduous trees + shrubs. The conifers have a DNA weight that is even 20 times as large as that of deciduous trees s.s.. The *Ranunculaceae* have an average of 19.5 pg, the Gymnosperms 18.5 pg and the spore plants 26.2 pg. The *Cycadacea*e also belong in this list with about 40 pg (Zonneveld et al. 2012a, 2016). If we compare this with 9 other families of dicotyls with an average of about 3.6 pg, it seems to confirm that the *Ranunculaceae* are rightly found as a basic split in the phylogenetic tree of dicotyls.

The development of the higher (advanced) seed plants is then accompanied by a massive loss of DNA. (Alternative: The original ancestor may already have had little DNA and could therefore evolve into many species). The same movement can be seen in the monocotyls where the *Cyperales* have 90% less DNA per nucleus than the *Asparagales, Liliales* and *Poaceae*. We could then consider the last three orders as more basic. However, it seems better to see a link with the life cycle of plants with bulbs and tubers. In summer, autumn and winter the germling is formed by many cell divisions. This germling mainly grows out in spring by increasing the size of the already present cells. So here there is a separation between cell division in summer/winter and flowering/cell expansion in spring.

Table 3 Average (av.) nuclear DNA weights (pg) of orders/families analysed (anal.) with highest numbers of genera, arranged according to DNA weight. Deciduous trees, bushes, climbers were analysed separately.

Orders / Famiies analysed	pg (av.)	Genera anal.	Species (anal.) of all species
MONOCOTYLEDONS	12.43		373/554
(151 of 169 genera)			
Typhaceae	0.68	1	4/5
Sparganiaceae	1.15	1	4/4
Cyperaceae	1.18	16	94/110
Juncaceae	1.60	2	25/32
Alismatales	7.15	26	66/75
Poaceae	10.0	72	158/192
Orchidaceae	24.2	18	33/49
Asparagales (+Orch.)	29.3	37	82/99
Liliales	56.8	4	21/21
remaining			16
DICOTYLEDONS			
(290 of 530 genera)	4.5		1511/1711
Dicotyls (no Ranunculaceae)	3.6		1463/1655
Brassicaceae	1.51	45	98/109
Amaranthaceae	1.80	12	42/59
Rosaceae	2.06	24	127/151
Lamiaceae	2.16	24	74/82
Plantaginaceae	2.73	15	53/62
Caryophyllaceae	2.82	24	73/79
Apiacae	3.96	40	62/73
Fabaceae	4.62	30	88/94
Asteraceae	6.31	60	199/232
Ranunculaceae	19.47	16	48/56
remaining			240
GYMNOSPERMS: 17 of 25 g	26.2		88/92
Ferns	16.8	13	63/66
Equisetaceae	48.9	1	18/18
Lycopsida	12.7	3	7/8
Remaining			8
CONIFERS 12 genera	18.5	12	62/62
Trees, bushes, climbers			
Deciduous trees	1.77		114/118
Bushes	2.82		169/181
Climbers	5.67		19/19

Positive correlation between DNA weight and chromosome number was obserbed in the following genera:

Agrimonia, Acer, Anthoxanthum, Arenaria, Alisma Alopecurus, Atriplex, Avena, Bromus, Capsella, Catapodium, Cirsium, Convolvulus, Cornus, Crataegus, Doronicum, Drosera, Echium, Erodium, Galeopsis, Holcus, Hordeum, Hypericum, Inula, Kickxia, Lotus, Ludwigia, Lythrum, Nasturtium, Odontites, Ononis, Persicaria, Phleum, Polygala, Polygonum, Polypodium, Prunus, Rorippa, Rosa, Salicornia, Scleranthus, Setaria, Solidago

DNA contents of subgroups of monocotyls, dicotyls, ferns and gymnosperms

In Table 4 each of these 4 categories were subdivided into four subgroups: 1. annuals and biennials (Therophytes plus Hemicryptophytes pro parte), 2. perennials (Chamaephytes plus Hemicryptophytes pro parte plus Geophytes), 3. aquatic plants (Hydrophytes plus Helophytes) and 4. trees plus shrubs (Phanerophytes) plus woody climbing plants. It may seem strange to combine annuals and biennials into monocarpic plants, but it sometimes depends on the richness of the soil or the time of germination or the temperature whether a plant is annual or biennial *(Oenothera*, summer and winter wheat, etc.)

Table 4 Average nuclear DNA weights (pg) with respect to taxonomic division and growth habit. Polyploids are mostly excluded.

Orders		annual biennial	perennial	water-plants	trees bushes	not known	mean
	total (nr.)	623	1098	197	353	141	
Monocotyles	555	8.8	16.5	4.3	0.0	4.6	12.4
Dicotyles	1729	3.4	6.2	5.1	2.6	4.2	4.5
Conifers	33	0	0	0	35.9	0	35.9
Ferns	94	0	27.8	5.9	0	0	25.9

The first observation that strikes is that the gymnosperms can only be found in the subgroup trees and shrubs. Ferns can only be found in perennials and aquatic plants. The monocotyls have an average of 12.4 pg for all four subgroups and 4.5 pg for the dicotyls. The higher value for the monocotyls is mainly due to the high values of the *Liliales* and *Asparagales*. The low value for the dicotyls is mainly caused by the low values for the trees (no monocotyl trees in The Netherlands). For both monocotyls and dicotyls we find almost twice as much DNA in the perennials compared to annuals and biennials. For aquatic plants we find the same numbers in mono- and dicotyls. However, the monocotyl aquatic plants have 50% *less* DNA than the annuals and biennials, while the dicotyl aquatic plants have 50% *more* DNA per nucleus than the annuals and biennials.

Interspecific and intergeneric variation of Nuclear DNA contents

The nuclear DNA weights of the more than 2250 (sub)species of the Dutch flora, divided into DNA weight classes, increasing by 0.5 pg is shown in Fig. 3. All 230 values above 20 pg are summarized in the last column. Using larger classes e.g. per 5 pg (from 10 pg upwards) was no improvement, because then small classes suddenly seem large. Most species fall into the range of 1−3 pg. This means that some species may have the same amount of DNA, but still are not related. So the same amount of DNA is not proof that it is the same species. However, difference in DNA weight for different species within a genus, if they are not multiples, can indicate separate species.

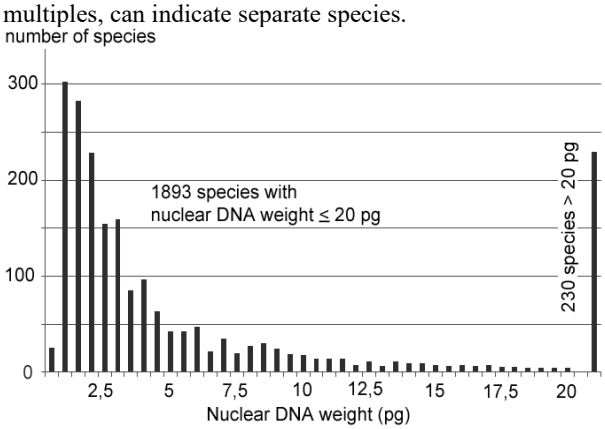

Fig. 3 Nuclear DNA weights of more than 2250 (sub)species of the Dutch flora, divided into DNA weight classes, increasing by 0.5 pg.

If we divide dicotyls and monocotyls into 8 classes with increasing DNA weights and increasing class sizes, especially in the three classes with 1−10 pg the dicotyls are best represented. This gives a different picture if we do not present the *numbers* (which are much higher for the dicotyls) but the *percentages* (Fig. 4). Especially in the highest and lowest classes the monocotyls are by far the largest group.

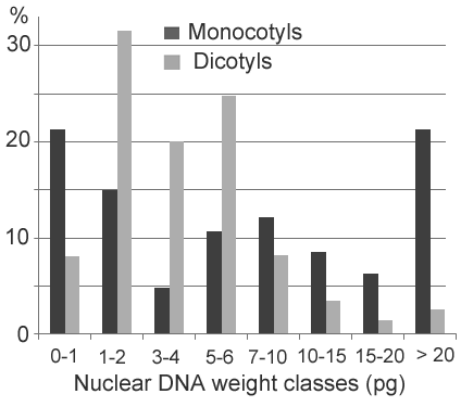

Fig. 4 Frequency distribution of monocots and dicots, ordered by increasing DNA weight.

Nuclear DNA weight in relation to number of chromosomes of different species

In Fig 5 Picograms are plotted against the chromosome numbers, in those cases where chromosome numbers (240 cases) of Gadella and Kliphuis (1963−1973) and Stace (2010) match and where no ploidies were found in both. In Fig. 5 the number of chromosomes from 2n=6 to 2n=100 was compared with the weight of nuclear DNA (between 0.3−62 pg). There are only 17 taxa with more than 62 pg out of the total of 2350 taxa, so there is a fair coverage. There is a considerable variation of nuclear DNA weight 5.76±0.516 (0.3−62) pg (mean ± standard error, variation) independent of chromosome number. But there is no negative or positive correlation between nuclear DNA content and chromosome number. The average DNA content remains the same irrespective of the number of chromosomes. This is the reason why the average content of DNA of chromomes

decreases with the number of chromosomes per nucleus. However, it should be emphasized in this context that at the intraspecific level there is a linear correlation between nuclear DNA weight and the number of chromosomes in virtually all species studied (Leitch and Bennet 2004 and own observations).

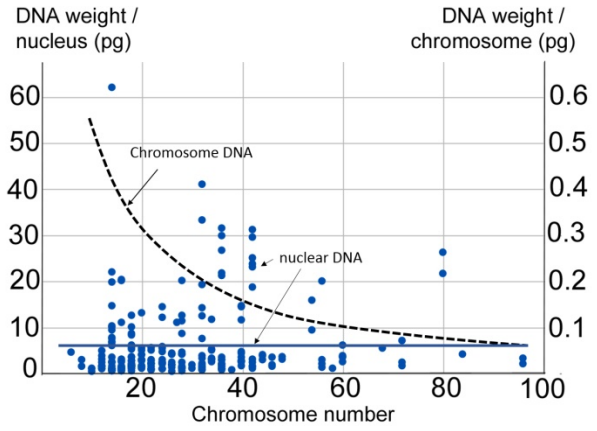

Fig. 5 Nuclear DNA contents (0.3–62 pg) plotted against chromosome number (2n=6–100). The DNA weight does not increase and does not correlate with chromosome numbers (blue regression line) but displays considerable interspecific variations (blue dots). As expected, the average DNA contents of chromosomes decreases with the increase of the number of chromosomes (dashed curve).

Discussion

Collecting and studying data often leads to new insights. Therefore, below is discussed per family, genus or species what was noticed about the measured DNA weights. Publishing only DNA weights is of little use without explanatory notes. Moreover, there is no hesitation in making suggestions for further research and formulating hypotheses.

Most trees and shrubs, but also ferns, have only one peak in the flow cytometer, i.e. only have nuclei with one DNA weight in the measured plant part. Overall, it is also striking that conifers, ferns (and *Cycadaceae*, Zonneveld 2012a, 2016) have roughly 10 to 30 times as much DNA as most deciduous trees and many herbaceous plants. It is also clear that most annual/biennial species and many deciduous trees have little DNA. This can indicate an ancestry of the trees from annual/biennial herbs. These low DNA weights (and probably higher growth rate as a seedling) of the deciduous trees could be an important reason why the conifers occur now mainly in northern regions (Simonis et al. 2018). Because of the cold, the growth rate may not play such a major role. Branching leaf nervation (but think of ferns and *Ginkgo*, P. Baas) (de Boer et al. 2012), successful symbiosis with insects and conquering the land from the water (Gomez et al. 2012) are cited as other reasons.

Abies The five species all have a single peak like almost all conifers. Four of the six species had 2n=24. Given the similar DNA weights of the other two species, they probably also had 2n=24 (later found in the literature in Chromosome Count Database=CCDB). This is called derived or inferred chromosome numbers.

Acer The species have two peaks where the first peak is the highest (indicated in bold). A peak between brackets (4C) means a rather small peak. In many cases, the second small peak is likely caused by still dividing cells, which temporarily have a double DNA weight. It is also found that *A. pseudoplatanus* has twice as much DNA as *A. platanoides*, in accordance with the double number of chromosomes of the first one. Also Maples with dark leaves do not differ in DNA weight from the normal green leaved forms. A dwarf form of the Norway maple does not differ from the mother plant in DNA weight either.

Achillea ptarmica There is only one chromosome number known: 2n=18 (in the literature the chromosomes of 70 plants are counted). It seems that there are two cytotypes of *A. ptarmica*.

Acorus calamus For the time being, it seems that only one DNA weight occurs in the Netherlands, although only two plants have been measured.

Actaea spicata Two values were measured, 11.7 and 20.4 pg, with the second, grown from seed obtained through the Alpine Garden Society (AGS), originated from an English garden.

Adonis The four taxa that have been measured, with roughly 30 pg, have a lot of DNA, i.e. 10–20 times more than many other annual plants. They belong to the basal split-off dicotyls (*Ranunculaceae*) which all have high amounts of DNA.

Aesculus x carnea The measurements show that this is a tetraploid plant, a so-called amphidiploid=allotetraploid resulting from a cross between the *A. hippocastan*eum and the not very hardy, red-flowering (sometimes yellow) chestnut *A. pavia* from the U.S. This means that the entire genome of both species has been combined, not half of each as is usually the case. *A. x carnea* is almost sterile, but still has 50% good pollen and is usually grafted. The few seeds that are formed, however, do germinate.

Ajuga *A. reptans* occurs in nature both with green leaves and, more rarely, with almost black leaves. *A. reptans* 'Black Scallop' is more stocky and has darker leaves. This one turned out to be tetraploid.

Alchemilla The DNA weight of the all 7 measured species is about 3.7 pg, with a range of only 3.56 to 3.89 for the 35 measurements on 12 species

Agrostis Two of the *Agrostis* species (*A. capillaris* from 6.49 to 7.81 pg and *A. gigantea* from 12.7 to 13 pg) have a rather wide range in the amount of DNA.This is may be an example showing that not in all cases a species has a single DNA weight.

Allium *A. vineale* and *A. sphaerocephalon* also seems to occur as a triploid. There is a relation between the number of chromosomes and the DNA weight for most of the species measured here. Exceptions are *A. paradoxum* and *A. ursinum* with a lot of DNA: 57.8 and 63.7 pg respectively and only 2n=16 and 14 chromosomes. This could indicate the existence of a second genus next to *Allium*.

Alnus Of the cultivated *A. x spaethii* (*A. japonicus x subcordata*) the chromosome number is not known, but from the DNA measurements it appears to be an allotetraploid.

Amaranthus *A. blitum* (small and large form) and *A. emarginata* have 50% more DNA than the other species in this genus. This could indicate that they are triploid hybrids. It is striking that there are not only diploid but up to 16-ploid peaks, where the second peak is often the highest. That the second peak is the highest, is apparently a family characteristic because it is also found in e.g. *Atriplex, Chenopodium* and *Salicornia,* which too belong to the *Amaranthaceae*.

Anagallis *A. tenella* (2n=22) has twice as much DNA as *A. arvensis* with 2n=40 (sometimes 20), but half the number of chromosomes. It seems that the Dutch form of *A. arvensis* has 2n=20.

Anchusa Five different colour forms of *Anchusa*, from yellow to blue from Thea Spruijt's garden, all had about 27 pg. *A. offic*inale has 13.8 pg. *A. ochroleuca* has 25.3 pg. So it looks like an unreduced gamete (2x) of *A. officinalis* has merged with a reduced gamete (also 2x!) of the tetraploid *A. ochroleuca*: 13.8 + 12.7= 26.5. Because allotetraploids (4x) are often fertile, this explains the hybrid swarms that are seen.

Anemone The five species all have about the same high amount of DNA. *A. blanda* also occurs as a triploid. Deviating is *A. apennina*, which has a similar weight of DNA, but would only have half the number of chromosomes (Rice et al. 2015). The light-blue flowered *A. nemorosa* 'Robinsoniana' is triploid. It could be a hybrid of the blue-flowered *A. apennina* with a unreduced gamete of *A. blanda*. Triploids are more often found in hybrids of not very related species, as the two similar sets of genomes in the hybrid give a more or less normal meiosis.

Anthriscus Although the chromosome numbers reported in the literature do not differ much, the DNA measurements seem to indicate that *A. cereifolium* and *A. sylvestris* appear as diploid, tetraploid and oktoploid forms. The chromosomes may have been partially split, but this can have no effect on the DNA weight.

Apium graveolens For *Apium,* chromosomes were counted 70 times and they are reported to have equal numbers of chromosomes. However, the cultivated celery differs greatly from the three other diploid *Apium* species as they appear to be hexaploid. This is true for all three cultivated forms, sold as bunches of small leaves or as "thick roots" or as large bleached leaves (pale celery).

Arabidopsis thaliana This species is often cultivated for research purposes and is 'fully' sequenced. This resulted in a DNA weight of 0.28 pg. However, measurements with the flow cytometer and comparisons with *Drosophila melanogaster* and the nematode *Cenorabditis elegans* clearly showed that it had to be 0.32 pg (=314 Mb) (Bennett et al. 2003). The difference is caused by large, repetitive pieces of DNA (e.g. ATC ATC ATC etc), of which it is difficult to determine the frequency of the repeats.

Arenaria *A. leptoclados* has half the DNA and half the number of chromosomes compared to *A. serpyllifolia.* One could perhaps also call them subspecies.

Artemisia It seems plausible that *A. campestris* subsp. *campestris* with 10.7 pg DNA (2n=18, 36) is a tetraploid and subsp. *maritima* with 16.4 pg (2n=54) hexaploid.

Asparagus Plants collected in the dune (both subsp.) have about 6 pg DNA per nucleus. For the cultivated forms we measured not only tetraploids with 6 pg but also diploids with 3 pg. The upright plants in the dune are probably feral plants. The low growing plants could be a simple mutation of the upright form as an adaptation (sea breeze?) to the growth in the dunes.

Arum The two Dutch species have different DNA weights. The other 25 species will be treated in a separate article.

Asplenium Perhaps they can be divided into two groups as follows: one group with two southern species with 2n=72 and 8.9 and 10.1 pg and the other 10 northern species with 12.8 to 19.1 pg with 2n=144. Also *A. scolopendrium* with 17.2 pg but only 72 chromosomes appeared to have 2n=144 in 5 of the 38 plants counted in the CCDB. Apparently the Dutch form has 2n=144. *A. trichomanes* subsp. *pachyrachis* with 19.1 pg deviates from subsp. *quadrivalens* with 18.2 pg.

Aster Of the 10 measured species (now *Symphiotrichum*) *A. tripolium* with by far the most DNA with 12.6 pg, has the smallest number of chromosomes with 2n=18. It is also no longer classified with *Symphiotrichum*, like the other asters are (Dirkse et al. 2014).

Atriplex In most species, not the first, which is more often the case, but the second peak is the highest, just like in other *Amaranthaceae*. There are 9 *Atriplex* species in the Netherlands, 7 of them have been measured. The species with 18 chromosomes have 1.5−2 pg and those with 36 chromosomes about 3.4 pg.

Avena *A. sativa* and *A. fatua* have the same amount of DNA with 26.5 pg and are both 2n=42. *Avena fatua* is also mentioned as a synonym of *A. sativa* and could therefore be a feral oat.

Beta vulgaris Plants measured appear to be triploid. Each year triploid sugar beets are made by crossing diploids with tetraploids. Triploids do not flower as fast as diploids, which increases the sugar yield. The cultivated beet therefore has one and a half times as much DNA as the wild beet as found on sea dikes and as in the beetroot and the chard. Nowadays, however, diploid F1 hybrids of sugar beet seem also to be cultivated.

Blysmus rufus This species has seven times as much DNA as *B. compressus* while the number of chromosomes is equal or slightly less. This could indicate a different genus.

Bolboschoenus The three species have little DNA per nucleus, i.e. circa 0.5 pg. There is hardly any difference in DNA weight between *B. maritimus* growing in brackish water and *B. laticarpus* in fresh water.

Brassica The numbers of chromosomes match the DNA weights. They also show three peaks with the first or the second largest. In this way it is easy to distinguish the tetraploid *B. napus* from the diploid oilseed rape, *B. rapa*, which usually adorns the verges. By the way, pakchoi and turnip greens are also forms of *B. rapa.*

Briza *B. media*, a perennial plant, appears to be not only diploid, but also tetraploid and hexaploid. *B. maxima*, an annual plant, appears to be diploid.

Bunium bulbocastanum For this species with 2n=20, 22 three values were measured: 0.93. 1.43 and 2.69 pg. It resembles three different cytotypes, diploid, triploid and hexaploid. We see this combination of DNA weights relatively often (Table 2).

Capsella The 28 plants supplied by florists as *C. rubella* have half the DNA weight compared to the 26 times measured *C. bursa-pastoris*. This suggests that the former is diploid and *C. bursa-pastoris* tetraploid. There is doubt about the taxonomic status of *C. rubella*.

Cardamine Only one out of the 19 plants is possibly polyploid in *C. pratensis*. For *C. pratensis* an average of 1.65 pg is found. The species growing in the swamp, *C. palustris*, is polyploid with 2.4 times as much DNA and 3.87 pg. However, the many different chromosome numbers for *C. pratensis* mentioned in the literature leave plenty of room for a different interpretation. It has been counted 1372 ! times according to CCDB.

Carex The species can unfortunately hardly be distinguished with flow cytometry. Species with more and deviating DNA weights are: *C. careophyllea* (1.37 pg); *C. davalliana* (1.25 pg); *C. dioica* (1.28 pg); *C. flacca* (2.48 pg); *C. panicea* (1.58 pg) and *C. trinervis* with 1.31 pg. There appears to be no relation to the number of chromosomes.

Caltha No difference in DNA value was found between *C. palustris* subsp. *palustris* and subsp. *araneosa*. The bird's nest roots seem to be caused by the regular emergence of the roots above the water by the tidal action as in the Biesbosch.

Catapodium For *C. rigidum*, three plants average 6.7 pg were measured and once 12.7 pg. This last measurement may be *C. maritimum*, for which I measured 12.2 three times, but it can also be a tetraploid *C. rigidum*.

Cerastium *C. fontanum* seems to have two different DNA values indicating diploidy and tetraploidy just as in *C. pumilum* and *semidecandrum*. This may correspond to the two subspecies. The cultivated *C. tomentosum* also has a more compact form with smaller leaves. This small *C. tomentosum* has half the weight of the DNA.

Chenopodium Those with 2n=18 seem to split into two groups: 6 species with about 0.90 pg (now split off as *Dysphania.* Mosyakin et al. 2008) and 2 species with 1.6 pg. In addition, there are 6 species with more DNA and more chromosomes, but there doesn't seem to be a correlation.

Corynephorus canescens Its DNA weights of 2.8, 3.0, 3.2 and 3.4 pg are rather variable. It could indicate that there are more species involved.

Cotoneaster Based on DNA weights two groups can be distinguished with circa 1.5 pg and 2n=34 and with 3 pg and 2n=68. Two species differ from this: *C. horizontalis* with 1.39 pg and 2n=68 and *C. integerrimus* with 2n=68 (34, 51) and 1.42 pg. The fact that there are no intermediate values seems to indicate that hybridisation between these two groups is rare if present.

Crassula The two Dutch species have the same amount of DNA. *C. tillaea* can hardly be kept alive in culture, while *C. helmsii*, especially found in ponds, even grows excellently under dry conditions.

Crepis At 18.0 pg, *C. biennis* has 2 to 4 times as much DNA as the other species but it also has many chromosomes. *C. capillaris* has with 2n=6 the lowest chromosome number of the Dutch flora, as far as I know.

Cuscuta *C. lupuliformis*, with one instead of two styles in the other species, stands out with 10 to 30 times as much DNA as the other cuscutas. *C. campestris* on the other hand has 4 times as many chromosomes as other cuscutas, but the least DNA of all *Cuscuta* species measured here. There seems to be no connection with the number of chromosomes. For *C. europaea* three values were found that can indicate diploid, triploid and tetraploid plants, while in the literature only one chromosome number is known. There may be other species involved, but a wrong identification cannot be ruled out. The endosperm of this species also turns out to be hexaploid instead of triploid and it made no difference in DNA weight whether it parasitized on *Humulus* or *Urtica*. The same is true for *C. epithymum*, parasitizing on *Galium* or *Rosa.*

Cyperus In *C. longus* with 2n=14 or about 120 chromosomes and *C. esculentus* (2n=18, 108, 206) but only 0.7 pg, the chromosome numbers mentioned in the literature raise questions.

Dactylorhiza For *D. incarnata*, 13.9, 18.9 and 29 pg were measured. Maybe these are diploid, triploid and tetraploid plants, but 85% of the 59 plants counted have 2n=2x=40 in the literature. *D. incarnata* subsp. *coccinea* has only half of the DNA weight: 7.63 pg. This may not be a subspecies but a different species. In *D. majalis* subsp. *praetermissa*, plants with solid green leaves or spotted leaves have the same DNA weight.

Deutzia Both species have 26 chromosomes but 13.4 and 3.0 pg DNA. However, at CCDB I also found 2n=130 for *D. scabra*, that fits better.

Diplotaxus The large *D. tenuifolia* has less DNA and less chromosomes than the smaller growing *D. muralis*.

Dryopteris The eight species of ferns listed in the Heukels flora are supplemented with 5 other species. In total, 220 plants were collected and measured (Hovenkamp et al. 2018). Two of the 13 species are diploid (*D. affinis* and *D. expansa*), three triploid and thus 8 tetraploid (from 32.6 to 37.9 pg). Although I have measured 59 times the here added triploids *D. x borreri* and D. *x cambrensis*, the DNA difference between these two triploids (which partly have other parents) is far from clear. Recently these two triploid hybrids are considered as species (Hovenkamp et al. 2018).

Eleocharis There are considerable differences in DNA content between the species, and not so much correlation with the number of chromosomes. Maybe not enough plants were counted.

Elymus The six species (was *Elytrigia***)**, are easy to distinguish with the flow cytometer: *E. arenosa* 20.7 pg, *E. repens* 23.1 pg, *E. juncea* 24.9 pg, especially found on the beach, *E. atherica* 28.9 pg, mainly in the dunes, *E. campestris* 30.1 pg and the hybrid of *E. atherica x juncea*, *E. x obtusiuscula* with 26.4 pg. (The view on the species used here is also based on unpublished research by G. Dirkse et al.) It is striking that of each species, 5 or more plants have been measured **including** *E. x obtusiuscula* (synonyms *E. maritima, E. x acuta*). However, *E. x obtusiuscula* is only indicated on the NDFF Verspreidingsatlas for a single location, the Grient. So it seems that it occurs much more often and is confused with the other species. A plant was found in Katwijk, exit 4, which had 37.2 pg. Possibly *E. juncea x (juncea x atherica*) and it then has 2n=49, according to the calculation. Or is it a hybrid with *Leymus arenarius*?

Epilobium This genus has little DNA, between 0.65 and 0.89 pg. So the values are close together. For *E. komarovianum* the doubtful value of 4.33 pg was first measured. Afterwards it turned out that this is another small leaved creeper: *Anagallis tenella*. The true *E. komarovianum* from the botanical garden of Amstelveen has 0.64 pg.

Equisetum There are about 20 species worldwide, most of them have been measured (to be published), except for a few South American ones. Of all species, as far as counted, it is mentioned that they have 216 chromosomes. Nevertheless, there seem to be clearly three, not overlapping, groups in terms of DNA weights: seven species with 24−31 pg, eight species with 42−60 pg and three species with 80 pg (all three are hybrids). So they seem to be diploids, tetraploids and hexaploids. However, a publication (Bennert et al. 2005) made it clear that the first two groups, despite a factor of two difference in DNA weight, are diploid. So the three hybrids are then probably triploid. The second group with 41−60 pg has then chromosomes about 2 times as large chromosomes as the first group. The remark about the same number of chromosomes seems debatable. The doubtful status of *E. debile* and (the synonym?) *E. japonicum* must be reassessed, as their DNA weights differ from all other *Equisetum* species measured.

Eragrostis ***E. minor*** is the species with the highest amount of DNA of the 4 measured species. *Eragrostis pilosa* must nowadays be called *E. multicaulis*. Several chromosome numbers of both *E. minor* and *E. multicaulis* are reported. However, in The Netherlands these have only been found for *E.*

minor. Nowadays *E. tef*, an important grain in Ethiopia, is also grown in The Netherlands.

Erica It shows only one DNA peak, just like many other woody shrubs and that even applies to a plant that you can hardly call a shrub.

Erigeron The species can be kept reasonably apart in terms of DNA weight. This does not apply to *E. daveauanus* who was already earlier considered synonymous with *E. sumatrensis* and has the same DNA weight. Remarkable for annual plants is the absence of higher ploidies in the leaf. There are (except *E. annuus*) instead higher DNA weights of 4−6 pg.

Erinus The white flowering, hairy form as well as the purple flowering, glabrous form of *E. alpinus*, growing in the Alps and naturalized on walls in the UK, have been measured. Although they have the same amount of DNA, they don't cross in the garden and I wonder if they are two species.

Erodium *E. cicutarium* has 2.75 pg DNA per nucleus. Because the subsp. *dunensis* has a lower DNA weight, 2.13 pg, this indicates a separate species. In the dunes I also found the hybrid *E. dunense x E. lebellii* (1.25 pg, = *E. x anaristatum*) with 1.58 pg. All of them have three peaks.

Erophila Three to four species are mentioned in the European floras. I measured the DNA weights of almost 100 plants, which according to me also represent 4 species that can (partly) be distinguished morphologically: the diploids *E. majuscula* (+ *E. praecox* 2x), the tetraploid *E. praecox*, the hexaploid *E. verna* s.s. (+ *E. glabrescens*) and the oktoploid *E. boerhavii* (+ *E. praecox* 8x), with respectively on average 0.64, 1.17, 1.64 and 2.24 pg. Although there is a small range in DNA weights, there are no intermediate values. The number of 4 species corresponds to the 4 species recognised by Winge (1940) (under invalid names). He counted hundreds of chromosomes of *Erophila* from The Netherlands, England and Denmark, crossed them and did grow them all under the same conditions. He also found that they are plants which fertilize themselves already in the closed bud (self-pollinators). In an old Heukels flora (1982), plants with elongated, oval and round siliques are already mentioned separately. 15 of the measured plants are also sequenced, but the different probes do not give an unambiguous answer (oral communication H. Duistermaat). Considering all the available data it seems reasonable to me to use 4 species as a basis. If we include the barcoding, *E. verna* seems to have about as much DNA as *E. glabrescens* and the oktoploid *E. praecox* as much DNA as *E. boerhavii.* In addition, diploid plants have been measured that coincide with *E. majuscula* in terms of DNA weight, but which differ morphologically due to the lack of stellate hairs, among other things. That might also be a diploid *E. praecox*. If we add this up, we arrive at 4 species with three cytotypes for *E. praecox*. At least 3 species can be found north of the Lighthouse in Noordwijk (Wantveld). All have three peaks. According to the latest insights, they are all placed now in Draba (Bomble 2006).

Euphorbia There are also all kinds of discrepancies between chromosome numbers and DNA weights. Especially *E. palustris* (2n=16, 20) and *E. paralias* with 2n=16 but respectively 8.10 and 1.59 pg stand out. Do they have to be transferred to another genus or should chromosomes of more plants be counted?

Fallopia (now *Reynoutria* p.p. Schuster et al. 2011). In England 2.7 pg was measured for *F. sachalinensis* (2n=44 (66, 132), *japonica* (2n=44, 88) and *japonica compacta* (2n=32, 40, 44). However, for these species I measured 8.8, 9.4(7.3) and 7.6 pg. And also 7.4 pg for *F. x bohemica*, which would be a hybrid of *F. japonica x sachalinensis* (7.3 x 8.8 = 8.1 pg). There is also 6.3 pg measured from plants from experimental crosses. The Dutch plants are hexaploid and octoploid as also measured in the Czech Republic (Suda et al. 2010). For *F. japonica* hexaploid, septaploid and oktoploids values are indicated. The origin could be explained as follows: 4x X 8x −> 6x X 8x−> 7x. A small problem: the tetraploid has not yet been found in The Netherlands. The three fallopias that are not classified under *Reynoutria* do indeed have much less DNA than these three *Reynoutria. F. convolvulus* has twice as much DNA as *F. dumetorum*, in accordance with its higher chromosome number.

Ficaria Findings on 2C-values have already been published in Gorteria (Zonneveld 2015a; Veldkamp 2015) in which eight (sub)species are distinguished worldwide. By far the most plants in The Netherlands are *F. verna*. In rare cases, it still produces seed. Escaped from gardens and probably also imported (via caravans?) from England, *F. ambigua* occurs in the Netherlands (in Heukels Flora as *F. verna* subsp. *grandiflorum*). Recently it has been demonstrated that tetraploid *F. verna* can be divided into two groups with 31 pg for the eastern form and 34 pg for the western form (Drenckhahn et al. 2017). Intermediate values are found in The Netherlands. The possible diploid ancestors of *F. verna* are *F. calthifolia* and *F. ambigua*.

Fritillaria For the Dutch species, *Fritillaria* has the highest amount of DNA per nucleus. *F. meleagris* has 107 pg and *F. imperialis* 101 pg, but there is also a cultivated form: *F. imperialis* 'Maxima' with 200 pg DNA.

Gagea This genus with 5 Dutch species has been extensively investigated (Zonneveld et al. 2015). *G. pratensis* occurs in 4 different ploidies: 4x, 5x, 6x and even 10x. Half of the almost 200 measured gageas, consist of the pentaploid *G. pratensis* and even 80% of the Dutch gageas are *G. pratensis*.

Galanthus Of the 20 or so species only a few occur "wild" in The Netherlands (Zonneveld et al. 2003). By far the most are *G. nivalis* with 72 pg, 10 times as much DNA per nucleus as humans. Recently, besides the *G. elwesii*, that is about the first to flower in spring with broad grey leaves, now *G. woronowi* is increasingly imported with broad, green leaves.

Galeopsis *G. tetrahit* is an allotetraploid (Müntzimg 1932, Bendiksby et al. 2011), *G. speciosa x pubescens*, and has **3.29** pg. One parent, *G. pubescens*, has 1.86 pg and for the other parent *G. speciosa* we find 2.21 pg. Then we get 2.21+ 1.86=**4.07** pg this does not correspond to the measured value. An alternative is that *G. tetrahit* is a hybrid of *G. speciosa x segetum.* The DNA weight of *G. segetum* (1.33 pg) fits much better: (2.21+1.33= **3.54** pg). Moreover, *G. segetum* (pale yellow) is much more common than *G. pubescens*. The recent publication by Bendikskby et al. (2011) designates *G. pubescens* and *G. sulphurea* (not measured, (the latter also with yellow flowers) as alternative parents.

Galium Of the common *G. mollugo* several ploidies are mentioned. 17 measurements (range 3.58−4.12 pg) have not yet shown this, although there do seem to be differences in the amount of DNA. It is striking that, of the 6 out of the 17 with the highest values, there are 5 plants from the dunes which do not occur in the other 12 taxa. This suggests that the dune form might be another (sub)species. It is doubted whether the pale yellow *G. x pomeranicum* is the hybrid *G. mollugo* (now *G. album*?) x *G. verum*, or just a pale *G. verum*. As far as DNA weight is concerned, this cannot be solved since both parents and the "hybrid" have the same amount of DNA. *Galium aparine* stands out with the second highest chromosome number but only 2.05

pg. Also *G. pumilum* with 2n=(44−66) 88 has no more DNA than other species with half the number of chromosomes. This may indicate 2n=44 for *G. pumilum*.

Geranium *G. sanguineum* has by far the highest amount of DNA: 8.28 pg combined with the largest number of chromosomes, namely 2n=84. *G. purpureum* has with 32 chromosomes only 1.09 pg. Both the purple and the white flowering form of *G. robertianum* were measured with the same result. All Geraniums give three peaks with the second (sometimes together with the third) the highest peak.

Ginkgo biloba *Ginkgo* is not a conifer but has just like conifers a haploid endosperm.

Glyceria It is not clear why *G. maxima* with 60 chromosomes has 13 times more DNA with 13.4 pg than *G. declinata* with 20 chromosomes, but only 1.01 pg. With their DNA weights, the species can be kept apart properly.

Hedera The plants wild in The Netherlands, occur in two ploidies: the diploid species, which we find mainly in the forest, and the tetraploid species with the double number of chromosomes and a double DNA weight. This *Hedera hibernica* is mainly planted as a hedge and on slopes and does not climb very often. That is why it flowers less often and the birds can spread far fewer seeds. The leaf is larger, is almost not marbled and has fewer pointed lobes. Hybrids have not yet been found, despite the fact that 40 collections have been measured. *H. hibernica* (Kirchner) Bean seems to be a separate species.

Helianthus *H. tuberosus* can be crossed with *H. rigidus*. *H. tuberosus* rarely or never flowers in The Netherlands, but after the warm summer and autumn of 2018 the first buds were seen in mid-October. The hybrid has as much DNA as *H. tuberosus* but flowers richly. It occurs in at least two forms: with and without tubers. Maybe both characteristics, tubers or flowers or both, have been selected separately? There is no difference in DNA weight between short-stemmed sunflowers (1 m) and long-stemmed forms (3 m).

Helicotrichon *H. pratense* has 2n=126 chromosomes, which is nine (!?) times as many as *H. pubescens*. Yet *H. pratense* has only 3.5 times more DNA. It may indicate a massive loss of DNA, after doubling.

Helleborus All 16 species have the same chromosome number 2n=32. However, the weight of the DNA per nucleus varies from 19 to 36 pg in the different species (Zonneveld 2001). This means that in the species with the highest amount of DNA, the chromosomes must be twice as large.

Heracleum The same DNA weight for *H. mantegazzianum* is found as for *H. sosnowskyi*. That does not automatically mean that it is the same species, but considering the other similar characteristics, it might be.

Hieracium It shows, with the limited number of measurements on Dutch plants, no clear relationship of the DNA weight with the chromosome numbers. Incidentally, the roots (used to measure the DNA weights for this genus) only show a single peak, unlike many other plants whose roots have two peaks, 2C and 4C.

Hordeum *H. marinum* is diploid with 2n=14 and the three other Dutch hordeums, *H. jubatum, murinum* and *secalinum* are tetraploid with 2n=28. They also have corresponding DNA weights. What is special is that barley, *H. vulgare*, which has been cultivated for centuries, is still simply a diploid with the corresponding DNA weight. This probably also applies to rye. On the other hand, wheat and oats have evolved in culture to hexaploid plants.

Hyacinthoides In The Netherlands the hybrids between *H. hispanica* and *H. non-scripta* dominate. Both parents are relatively rare in pure form. However, there is also a triploid form with broad leaves that is often cultivated and flowers later. The triploid also produces limited amounts of seed. Sowing 50 seeds yielded 34 seedlings. In terms of DNA weight, they fall between the diploid grandparents and the triploid hybrid (not shown here). They have lost a lot of DNA, as is often seen in offspring of triploids (Zonneveld and Pollock, 2012a).

Hydrocharis morsus-ranae This species occurs with two DNA weights: 4.4 and mostly with 8.6 pg, diploid and tetraploid plants, but only a single chromosome number is mentioned in the literature. Twice 2.1 pg was measured, but it is suspected that these were young *Nymphaea peltata* plants (should have been recognized by their serrated leaf edge).

Impatiens *I. parviflora* has the smallest flowers but the highest amount of DNA of the six *Impatiens* species measured here. Its hybrid with *I. balfouri* indicates unreduced gametes in *I. balfouri*. However, the hybrid is fertile and the seedlings are very uniform in the garden, also in terms of flower color and flower shape. Maybe seed is produced without fertilization. *I. glandulifera* is easy to control, because the seed loses its germinative capacity after a year. If all plants are removed before flowering, there will be nothing left for the following year as I experienced in 1974 and again in 2019.

Inula Among the four inulas*, I. britannica* seemed to be the only one to show a discrepancy between the DNA weight and the number of chromosomes. Perhaps it might have double the number of chromosome as is also frequently mentioned in the CCDB (Rice et al. 2015).

Jacobaea All seven species have 2n=40. Also they all show only one peak except the two subspecies of *J. vulgaris* which have three peaks. Maybe they don't belong in this genus. *J. paludosa* has roughly twice as much DNA, as much as J. *aquatica x vulgaris*, an allotetraploid. However, a factor of two difference within a genus is common, but it seems here a different situation.

Juncus Also in *Juncus* there is no direct correlation between chromosome numbers and DNA weight. Some really stand out, like *J. maritimus* with only 0.32 pg, *J. bufonius* with the highest number of chromosomes with 2n=108 but only 1.72 pg DNA and *J. capitatus* with only 2n=18 but still 0.72 pg. Sorted by DNA there seem to be two groups: 30 species with (0.32) 0.6−1.3 pg and 7 species with 1.8−3.9 pg (1.8−2.6 and 3.7−3.9 (3x), with no clear connection with the number of chromosomes. All species have only one peak.

Lamium With *L. maculatum*, DNA values of on average 2.78 pg (measured 5 times) are found, but also 5.8 and 11.7 pg. However, there is only one chromosome number 2n=18 (counted 43 times) and even the 2.78 pg is actually twice as much as you expect, compared to the other lamiums. Maybe the selection for larger white spots is responsible or other species are involved.

Lathraea *L. clandestina* occurs in two ploidies with 2.18 and 4.18 pg. The same holds for *L. squamaria.*

Lathyrus In the eleven *Lathyrus* species with, except one, 2n=14 chromosomes, the DNA weights vary from 8.85 to 20.4 pg. The only one with three times more chromosomes, *L. palustris* with 2n=42, has only 31.5 pg or 50 % more DNA. All *Lathyrus* have 2−4 peaks.

Lemna *and* ***Spirodela***, All 7−9 species of the Dutch Flora did grow within a radius of 2 km in Leiden ZW in 2015. The following year *L. minuta* appeared to have taken over almost the whole of The Netherlands. Maybe this was due to the following

frost-free winter. A number of "species" also appeared to have different amounts of DNA, which can sometimes be explained by differences in ploidy. It could also be different species, as has already been found for *Wolffia*.

Leontodon *L. saxatilis* has compared to the other 2 species with 4.04 and 4.83 pg, very little DNA with 1.41 pg, although it has a slightly lower number of chromosomes (2n=8 versus 2n=12 and 14).

Lepidium Six of the nine species have less than 1 pg DNA with 16 chromosomes. Only one of them*, L. densiflorum* has double the number of chromosomes. On the other hand, *L. draba* with 64, 80 chromosomes, does not exceed 1.97 pg.

Leucanthemum According to R. Haveman (2017), the common Dutch (tetraploid?) *Leucanthemum* should be called *L. ircutianum* instead of *L. vulgare* (the much rarer diploid plant). Alternatively, both cytotypes (also counted by Gadella and Kliphuis, 1963) could continue to be called *L. vulgare*.

Linum The two *Linum* species have the same amount of DNA but respectively 16 and 30 chromosomes. There could be a tetraploid *L. catharticum.*

Littorella uniflora For such a small plant, *L. uniflora* has a lot of DNA, 12.1 pg The same is even more true for *Luronium natans* with 43 pg.

Lonicera All five species have 2n=18 and three of the five have about 2 pg DNA. *L. periclimenum* has a lot of DNA, 6.3 pg, but it also listed with 36 and 54 chromosomes.

Luzula *L. campestris* with 2n=12 has almost as little DNA as *L. pilosa* with 2n=66. *L. multiflora* subsp. *multiflora* is hexaploid with 2.78 pg and subsp. *congesta* is octoploid with 3.28 pg. Are these separate species like for example *L. congesta* (Thuill) Lej?

Lycium Goji berries are now superfood. As a result, plants of *L. barbarum* with 5.84 pg are falsely offered a*s L. chinense* that measures 4.01 pg. *L. barbarum* is found in Katwijk also with round instead of elongated berries. The plants of Noordwijk, Huisterduinstraat with 4.99 pg then seemed to be hybrids. Both species are native to China. According to R. van Moorsel (2014) (NDFF, Verspreidingsatlas), the much rarer *L. chinense* never seeds in The Netherlands.

Lysimachia ***L.*** *clethroides*, the only species grown in The Netherlands with white flowers, has 2−3−4 times as much DNA as the other 5 lysimachias with yellow flowers.

Malus The wild *Malus* has about as much DNA and chromosomes as a number of cultivated apples (to be published with all other fruits, vegetables and herbs). It is often assumed that the cultivated plants have such large fruits or flowers because they are polyploid, i.e. that the DNA has at least been doubled. This seems not always to be the case, as is found with eating apples.

Malva *M. verticillata* is measured with 1.87 and 3.82 pg. The highest value is for the var. *crispa*. *M. verticillata* has a large number of chromosome types, namely circa 42, 76, 84, 112 and 126. So a var. *crispa* with twice as much DNA is not surprising. Also if this is compared with the other malvas that mainly have 2n=42 and from 1.5 to 3 pg.

Marsilia quadrifolia This plant has very little DNA for a fern, 2.55 pg. But the ferns *Pilularia* and *Azolla* are in the same order of magnitude, the other ferns measured are above 10 pg. These three ferns are all growing in/on the water.

Marubium vulgare This species grew in a Swiss botanical garden. A leaf of this species has been measured, due to the lack of a Dutch specimen.

Medicago *M. (sativa* subsp*.) falcata* with 2n=16(32) has exactly the same DNA weight as *M. sativa* subsp. *sativ*a with 2n=32. Just like the hybrid *M. x varia*. So it seems that *M. falcata* is just a subspecies of *sativa* and has 2n=32 in The Netherlands. This is confirmed in the new chromosome list (Rice et al. 2015). Both subspecies are likely hexaploid if they are compared with the other diploid medicagos.

Milium *M. effusum* with 2n=(14)28(42) has 5.17 pg and *M. vernale* with 2n=(8) 14 18(36) has 6.24 pg. It is not possible to determine which chromosome number applies here.

Montia For *M. minor* 0.69 pg was measured twice. For three other plants received as *M. minor* I found 1.14 pg. That is probably *M. fontana*, corresponding to a fourth plant received under that name (1.19 pg). Both have up to 16-ploid nuclei.

Myosotis All species have up to 16-ploid nuclei. *M. laxa* subsp. *laxa* and subsp. *caespitosa* have different DNA weights namely 3.12 and 2.49 pg. If we take 2x=22 and 0.8 pg as base numbers (based on all myosotis data), these appear to be octoploids and hexaploids. They might be separate species. This seems also to be the case for *M. scorpioides* subsp. *scorpioides* and subsp. *nemorosa.* These not only have different chromosome numbers namely 2n=22 and 66 but also the corresponding DNA weights namely 0.82 and 2.45 pg. So they seem to be diploids and hexaploids. Also the diploid *M. dubia* and the hexaploid *M. discolor* may be better considered as separate species.

Nepeta With *N. x faasseni (Nepetella x Nepeta racemosa*, there is something strange. With this taxus 0.68 pg is measured. For *N. racemosa* 1.68 pg was measured. The easiest way to calculate the unknown parent of a hybrid is to multiply the hybrid by 2 and then subtract the known parent: (2 x 0.68) minus 1.68= −0.32 pg for the other parent, a negative DNA weight! Was the wrong *N. racemosa* (from seed) measured or has another *N. racemosa* with half of the DNA been used? For *N. cataria* 0.84, 1.18, 1.39 and 1.55 pg were measured.

Nasturtium In a box of watercress from the supermarket it appears that both *N. officinale* and *N. microphylum c*an be found. That different species (not cultivars or varieties) are sold under one name also applies to spinach, rucola and spring onion. Two onion species are used interchangeably for spring onion, depending on the season.

Nymphea *N. x candida* is a hybrid between *N. alba* and *N. tetragona*. This hybrid in turn is backcrossed with *N. alba=N. x borealis*.

Oenothera All species have, in The Netherlands, just like *Oenanthe* all the same number of chromosomes, only one peak and about the same amount of DNA. The exception is *Gaura lindheimeri*, which is now also placed in *Oenothera*. However, it has only half of the DNA weight. ***Onopordum*** That the size of the plant is usually no indication for the weight of the DNA we see at *O. acanthium* with 2.76 pg.

Ophioglossum vulgatum This small fern has 44.6 pg and about 540 chromosomes. *O. azoricum* has with 65.3 pg and even 740 chromosomes, 50 % more DNA than *O. vulgatum*. It is considered a hybrid with *O. lusitanicum* (n=120, 240, 480) (Khandelwal 1990).

Ornithopus All three species have exactly the same amount of DNA, the same number of chromosomes and all three, three peaks.

Orchis and ***Ophrys*** The investigated species, all with high amounts of DNA (20−30 pg) have three peaks, i.e. have "diploid, tetraploid and octoploid" nuclei.

Orobanche Nearly all species have 2n=38 and more or less comparable amounts of DNA. The one exception is *O. purpurea* with 24 chromosomes. Contrary to expectations, it has roughly twice as much DNA as the other 8 species. It has now a different name*: Phelipanche purpurea* (Jacq.) Sojak.

Oxalis O. *dillenii* with (16) 24 chromosomes has only 10% of the weight of the DNA of *O. acetosella* with 2n=22.

Papaver *P. rhoeas* has with 5.2 pg and 2n=14 half the DNA weight of *P. dubia* with 2n=42 and 10.5 pg. However, also here Rice et al. 2015 offer a solution, which also indicate 14 and 28 as possible chromosome numbers for *P. dubia*. For *P. argemone* there are three different amounts of DNA: 3.1, 5.9 and 7.96 pg DNA, the first of which was measured from seed.

Paris quadrifolia This species, measured against *Haemanthus albiflos* with 72 pg, has a lot of DNA, namely 109 pg. 109 pg is not yet a record, *Viscum album* and *Fritillaria* 'Maxima' have almost twice as much DNA.

Pastinaca *P. sativa* subsp*. urens* seemed to me a separate species with its 3.01 pg compared to subsp. *sativa* with 3.49 pg. It turns out that this has already been implemented as *P. umbrosa* Stevens.

Persicaria *P. amphibia* with 2n=66, 88 and 96 has less DNA than expected, compared to the other persicarias.

Petrorhagia *P. saxifraga* has twice as many chromosomes as *P. prolifera* but only 25% more DNA.

Phalaris *P. canariensis* with 2n=12 has almost as much DNA as *P. arundinacea* which has 2n=28 (counted 5 times).

Phragmites australis This species also occurs in a more compact form on the edge of the mudflats along the sea. However, there was no difference in the DNA weight with the two meter high reed, which grows along the fresh water ditches.

Phyteuma The whitish *P. spicata* is much rarer in The Netherlands than the black-blue colored form. There is a slight but consistent difference in DNA weight: 2.40 pg for the white form and 2.48 pg for the blue form (6 plants of each measured and in all 12 cases the blue form had a slightly higher DNA weight). There are several morphological differences and together it seems opportune to consider them as separate species. The five light-blue to nearly white hybrids growing in my garden showed a much lower seed set, but they were the first to flower and had shorter flower spikes (Drought?).

Phytolacca Although they are often added together, I still tend to distinguish three species*: P. acinosa* with 6.21 pg (and probably 2n=72); *P. esculenta* (also with upright fruit bunches) with slightly less DNA 5.71 pg and also 2n=72 and *P. americana* (with hanging fruit bunches) with half of the number of chromosomes 2n=36 and half of the DNA 2.55 pg. Each species has been measured six times with the same result.

Plantago The *s*pecies have, except for *P. media* and *P. asiatica* (2n=24), about the same number, 2n=(10)−12 chromosomes. However, the weight of the DNA varies from 1.1 to 3.5 pg. That is just within what is found more often. *P. asiatica*, which has been in the garden as a variegated plant for years, comes back true from seed. It also seems to be an annual plant, but is often considered to be a form of *P. major*. However, the weight of the DNA is clearly different, 3.45 pg instead of 1.48 pg for *P. major*. In terms of DNA weight, it could be a hybrid between *P. major* and *P. media*, but the plant is less than half the size of its supposed parents. On the other hand, a purple-leaved form of *P. major* that has always leaves that are twice the size, has the same amount of DNA as *P. major.*

Platanthera *P. montana* has almost twice as much DNA per nucleus as *P. bifolia*, while they have the same number of chromosomes with 2n=42 (counted 40 times). The question is if they are separate species. Both have 3−4 peaks, just like many other orchids, even though they have a lot of DNA. This is perhaps related to the fact that from orchids always a single leaf was received to prevent destroying the plants. Leaves contain more often/always more peaks.

Polygala The three species can be easily separated in terms of DNA weight with 0.83, 1.05 and 1.88 pg.

Polygonum There are three DNA weights: 2.55 pg (*P. aviculare* subsp*. aviculare*, 2n=6x=60); 1.73 pg (*P. aviculare* subsp*. demersum,* (H. Duistermaat det.,) 2n=4x=40) and 1.95 pg *(P. oxispermum* subsp*. raii*). Total 60 samples were measured. So there seem to be 3 species. An alternative is that there are almost as many tetraploids (measured 24 times) as hexaploids (measured 30 times) in *P. aviculare* s.l. No hybrids have been found in 60 collections.

Polypodium The two Dutch species are notoriously difficult to separate in the field. Without a good microscope you could not solve that, as is true for more "field" characteristics. However, the DNA weights are very different: 29.2 pg (range 28.6−31.6) for *P. vulgare* and 44.9 pg (range 43.4−48.7 pg) for *P. interjectum*. Of the 61 plants measured, 13 were found to be hybrid *P. x mantoniae*. However, these fall into two groups of 6 and 7 plants: the first group has 37.5−39.5 pg, average 37.2 pg, according to the calculation the hybrid *P. x mantoniae* has (29.2+44.9)/2=37 pg. The second group, however, with 32.5−36.1 pg, 34.3 pg on average, deviates. These plants mainly came from Soest. So it seems that the lower values are backcrosses of *P. x mantoniae* with *P. vulgare*. Another possibility is that one of the parents in Soest has a lower value.

Populus Of the six poplars, five are close to 1 pg. An exception is the nowadays often cultivated, semi-pillar hybrid *P. x canescens* 'Koster' which has 1.5 pg. Apparently a triploid plant, with one of the parents making unreduced gametes or one of the parents was tetraploid.

Potamogeton The species can be divided into two groups: a group with almost 1 pg and a group with almost 2 pg. However, many more chromosome numbers are mentioned. Maybe they differ only in chromosome number not in the amount of DNA. Most plants have three peaks.

Potentilla The species have different DNA weights and chromosome numbers, with no clear connection between them.

Primula The three Dutch primroses are close together in DNA weight and have all three 4 peaks as also found for *Pseudofumaria.*

Prunus *P. laurocerasus* has roughly 7−10 times more DNA than the other 10 prunus, but that corresponds to its much larger number of chromosomes. The roundish purple or dark red plums that we find in the supermarket in winter are not the oval European *P. domestica* but another, Japanese, species, *P. salicina/triflora* with a different DNA weight.

Quercus The value for *Q. robur x petraea*, 2.20 pg, is higher than the parents with respectively 1.98 and 2.06 pg, but the difference is not really significant.

Ranunculus There is no clear distinction in DNA weight, peak pattern or chromosome numbers between the terrestrial and aquatic plants. R*. aquatilis* gives two values: 7.26, 8.89, and for subsp. *diffusus* 3.26 and 10.60 pg. This clearly deserves further investigation. Seven species with 2n=32 have DNA weights of 7.44−19.3 pg and three species with 2n=16 have 4.0, 5.94, and

6.33 pg. It is then striking that *R. bulbosus* also has with 2n=16, 11.0 pg and even 18.5 pg (2n=32, 64?). *R. polyanthemos* with only 0.91 pg is most likely misidentified. Also special is *R. parviflorus* for which both 6.6 and 12.1 pg were measured, both obtained from the same collector.

Rhamnus In *Rhamnus,* DNA contents and chromosome numbers are close together. *R. cathartica* with 0.94 pg (2n=24) and *R. frangula* with 0.71 pg and 2n=20.

Ribes *R. speciosum* is the only one that differs a little in DNA weight: 2.23 pg versus 1.84−2.04 of the other 7 *Ribes* species. It is the only one from California.

Ricinus communis This fast growing annual with a size of up to 2 m, has only a little DNA 0.8 pg. It has the appropriate name Miracle tree.

Rorippa *R. sylvestris* is a weed of meadows and moist pastures and is feared by farmers as it is poisonous to livestock.

Rosa There are 26 wild roses in The Netherlands. These are diploid, triploid, tetraploid, pentaploid and hexaploid plants (Bakker et al. 2011). There must have been a lot of hybridisation. In a few cases the DNA content does not match the ploidy. It can be a wrongly named species or wrong count.

Rubus There are more than 200 wild blackberries in The Netherlands (van de Beek et al. 2014). However, these are (often) apomictic clones. Of the four small subgenera five of the total seven species were measured and of the largest subgenus Rubus one of each series (36 series, 6 more to do) was attempted to measure, in total 41 species. Also here there are species that are inferred to be diploid, triploid, tetraploid, pentaploid and hexaploid.

Rudbeckia To the two species in the flora, a third species is added, *R. fulgida*, which also can be regularly encountered (in gardens). All three have different DNA weights. However, there also seem to be many hybrids.

Rumex *R. rugosus* is used as a vegetable and is said to be derived from *R. acetosa* and that fits on the basis of their DNA weights. *R. acetosa* is also similar to *R. thyrsiflorus* in terms of the small number of chromosomes and the relatively large weight of DNA. They thus seem to be related. Of the latter, both male and female specimens are measured. That the male plant has a chromosome more is not shown by the weight of the DNA. Is this a case of chromosome cleavage*? Rumex hydrolapathum* has by far the highest amount of DNA, 15.3 pg, corresponding to its larger number of chromosomes (2n=130, 200). However, three *Rumex* species with 2n=(40) 60 have only about 4 pg. Probably these are not very related. All *Rumex* species show three peaks.

Ruppia *R. cirrhosa* with 2n=20, 40 and 60 has twice as much DNA as *R. maritima* with 2n=20. The conclusion seems justified that *R. cirrhosa* has 2n=40. However, it may as well be 2n=20, because a factor of 2 difference with the same numbers of chromosomes is not uncommon. So even in this simple case with 2 species it is not possible to determine the ploidy of *R. cirrhosa* based on the DNA weight. Suppose that only 2n=40 was counted for *R. cirrhosa* then it would be wrong to conclude that it is a tetraploid.

Sagina Most species have less than 1 pg and show 3 to 4 DNA peaks. *Rumex* also shows three peaks with an average of 5 pg. So there doesn't seem to be such a strong correlation between DNA weight and the number of peaks. Better said: in nature there are exceptions to every rule.

Salicornia *Of S. europaea* the DNA weight of the large plants of a nursery in Zeeland was 1.22 pg, the same as what grew in the wild a few km away. Plants of Rottum, (*S. procumbens / stricta?*) have twice as much DNA with 2.53 pg. The question is, whether this is a single tetraploid species. Also striking is that what you buy at the fishmonger in winter and comes from Israel or Chile has another value: 1.95 pg. This could be a hybrid of e.g. *S. europaea x procumbens*, but also another non-Dutch species like the Mediterranean *S. perennans*.

Salvinia A plant received from Germany (Romerberg) is, in terms of DNA weight, exactly between the two other species. So probably a hybrid or another species.

Salix Most Salix, 16 species measured, have less than 1 pg. The species that have roughly twice as much DNA (8 species), also have twice as many chromosomes. *Salix x dasyclados* is then hexaploid with 2.24 pg which may have to do with its origin from a cross between three species. Almost all *Salix species* have two DNA peaks. This is unusual for trees, which usually have a single peak only.

Sambucus The four species are close together in DNA weight. The herbaceous elder does not deviate in this respect. They have for trees / bushes a lot of DNA with about 25 pg. Most shrubs have, just like trees, ten times less DNA. Is *Sambucus* perhaps an example of a moderately woody herbaceous genus?

Schoenoplectus S. *pungens* has almost twice as many chromosomes as the other four species, but the DNA content is similar. Are the chromosomes largely split in two parts?

Scilla A very big difference is found between the three scillas*, S. bifolia* has 9.6 pg and the other two scillas have 51.6 and 75 pg. They are now also placed in different genera.

Scleranthus *S. perennis*, the perennial species has half the DNA (and half the number of chromosomes) compared to the annual *Scleranthus*. You would expect the opposite.

Scrophularia For *Scrophularia vernalis* also diploid and tetraploid forms are found.

Sedum Remarkable with the sedums (and other succulents) is that they have three to five peaks. This may have something to do with the fact that they produce a lot of mucus (polysaccharides) to retain moisture.

Senecio Despite the fact that *S. nemorensis* and *S. sarracenicus* are also considered to be 2n=40 like the other senecios, they have 2−3 times more DNA. Such a difference is not uncommon.

Silene *S. baccifer,* the only Dutch silene with berries instead of dry fruits, has much more DNA than the other silenes. Maybe it would be better to put it back in *Cucubalus*. There also seems to be a tetraploid form. Despite relatively much DNA, 2−5 pg, all silenes show three peaks. The zinc-tolerant form of *S. vulgaris* was also measured, but no difference was found. *S. latifolia alba* and *S. dioica* have the same amount of DNA. However, the hybrid appears to have 1.5 times as much, so it is triploid and one of the parents has made unreduced (2n) gametes. This may indicate, just like in other cases where two diploid parents produce a triploid hybrid, that the parents are not very related. The hybrid can only be formed if unreduced gametes are formed by one of the parents, so that a partial diploid situation with 2 sets of one of the parents is present in the hybrid.

Silybum I once found a plant with beautiful, silver striped leaves in a neglected flowerbed in Noordwijk aan Zee. That turned out to be a thistle, *S. marianum*. Later I found out that the plant deviated with white flowers instead of purple ones.

Sisymbrium All six species are very close together and have with 0.65 pg very little DNA. As often, this is "compensated" by the higher ploidies in the leaf.

Solanum With the cultivated tomatoes *S. lycopersicum* all measured cultivars, from small roma types to beef tomatoes,

have the same amount of DNA in their leaves, regardless of the size or shape of the fruits. All six Dutch solanums have more DNA than tomatoes. Recently diploid potato varieties have been developed that can be grown from seed instead of tubers. Instead of buying young potatoes every year, you can now buy F1 hybrid seed. That saves a lot in freight costs. However, potatoes can only be harvested from seed after two years.

Solidago For all four species, different DNA weights were measured. This is for what it is worth, because there seems to be a lot of hybridizing.

Sonchus *S. arvensis* has as much DNA as the subsp. *maritima*. Both have roughly twice as much DNA, considering the ploidy, as the other species.

Spirodela polyrhiza This is the largest of the 7(9) Dutch duckweed species, but it has the lowest amount of DNA.

Stachys The species have both great variation in DNA weight per nucleus: 1.83−9.36 pg, and in chromosome number: 2n=10−102. This is not correlated, almost the opposite. *S. officinalis* with by far the highest amount of DNA, 9.36 pg, but only 2n=16 is also classified as *Betonica* L. There also seems to be a triploid form of *S. palustris*.

Stellaria The species fall between 0.95 and 2.67 pg in terms of DNA and 2n=22, 26, 44 in terms of chromosome number. The exception is *S. palustris* with 7.71 pg and 2n=circa 130. *S. pallida* varies from 0.57 via 0.78 to 0.99 pg. These are probably diploid, triploid and tetraploid plants.

Sutera cordata I noticed in the garden center, that the flowers were slightly larger than in previous years. Measurement showed that it was indeed a tetraploid cultivar.

Symphytum *S. orientale* with pure white flowers has only 0.98 pg DNA, although the chromosome number does not deviate from the other species. It was grown from seed and the flowers are indeed pure white.

Tagetes *T. patula* has almost twice as much DNA with half the number of chromosomes compared to the other *Tagetes* species.

Tanacetum *T. vulgare* has the same number of chromosomes but twice as much DNA as *T. parthenium*.

Taraxacum *Taraxacum* is a genus with a large number of often apomictic species. However, the dune form *T.* (subsp.) *laevigatum* has 4.0 pg DNA per nucleus (measured three times, tetraploid?) and the more common form (measured ten times, triploid) has 2.84 pg. It therefore seems logical to consider the dune form (with leaf incisions pointing downwards) as a separate species. Especially because all 28 dandelions from the *Taraxacum* section of the Czech Republic had also about 2.7 pg.

Thesium it could easily be shown that the collected *Thesium* species with 0.67 pg was indeed a species different from *T. humifusum* with 1.65 pg.

Thlaspi The species with the largest number of chromosomes also have a larger DNA weight.

Thymus They look like a (mini) deciduous trees in terms of DNA, with little DNA and only one peak.

Torilis. *T. arvensis*, with 2n=12 has 2.91 pg DNA, *T. nodosa* with 2n=24 has 1.83 pg.

Trapa natans This species has been purchased in a garden center.

Trifolium The species vary from 2n=10 to 18 with once 2n=32. The largest outlier is *T. medium* with 2n=80 and also a lot of DNA: 8.43 pg.

Triglochin *T. maritima*, , has twice as many chromosomes as *T. palustris* (in GB) but 3.5 times as much DNA (in The Netherlands). Moreover, two of the five species measured from this genus appear to be intermediate in terms of DNA weight. Are there hybrids between these two taxa or is it a separate species?

Tripleurospermum *T. maritimum,* mostly (always?) found along the coast of The Netherlands, has 9.80 pg. The material provided as *T. inodorum* has only 5.89 pg. One may wonder if they are separate species, or a diploid and a tetraploid form of the same species.

Triticum The now popular spelt, *T. aestivum* has as much DNA as regular wheat. It is a back-grown old-fashioned wheat variety with a rather low yield.

Tulipa sylvestris This is the only tulip that is probably native in The Netherlands. It is a tetraploid with 115.7 pg. The diploid form *T. australis* is more a species of southern Europe. Of both I had measured about ten plants. I was surprised to find a triploid with 90.4 pg on a small island on the south coast of Norway, where ballast sand was unloaded and loaded. But where did this triploid come from? The riddle seems solved when I got a plant from close by the old harbor town of Enkhuizen, which also turned out to be a triploid.

Typha The three species have barely more than half a picogram of DNA per nucleus.

Urtica *T. doica* subsp. *dioca* has twice as much DNA as subsp. *subinermis* (syn: subsp. *galicifolia* according to Stace (2010). The species new for The Netherlands, *U. membranacea*, does not differ much from the other *Urtica* species with its 1.75 pg.

Utricularia Just like *Typha* it has little DNA, about half a pg.

Vaccinium *V. oxycoccus* seems to occur in The Netherlands as a diploid plant with 2n=24, considering its DNA weight. The English numbers indicate 2n=48 and 72. However, Rice et al. 2015, also indicates 2n=24 in two of the 50 plants counted.

Valerianella With 0.42 pg it is one of the Dutch species with the least DNA. Comparable are *Juncus maritimus* with 0.32 pg, *Spirodela polyrhiza* with 0.37 pg, *Aruncus dioicus* with 0.39 pg and *Arabidopsis thaliana* with 0.32 pg.

Valeriana Female plants of *V. dioica* appeared to have almost 10 % more DNA than male plants. Each was measured two times. A third measurement unfortunately did not confirm this.

Valisneria spiralis This waterplant has a lot of DNA with 21.7 pg.

Verbascum This is one of the largest Dutch herbaceous plants together with *Heracleum* and *Onopordum.* Their low amounts of DNA do not match this.

Veronica With 25 species it is one of the larger Dutch genera of higher plants. There is a good correlation between the number of chromosomes and the weight of DNA per nucleus. *V. hederifolia* seems to consist of two species: subsp. *lucorum* (measured five times 2n=54) has 4.12 pg and the subsp. *hederifolia* 3.01 pg (measured nine times, 2n=36).

Vicia The species have 2n=12, 14 (28) chromosomes with about 4−8 pg. Here is the outsider *Vicia faba*, the broad bean, with 2n=12 but 26.5 pg DNA. This is seven times as much as with *V. sativa*, also with 2n=12. The increase in DNA may be due to massive insertions of transposons. These are virus-like particles that can jump into different places in the DNA and multiply in this way. But maybe *Vicia faba* belongs to another genus.

Vinca *V. major* with 2n=96 has twice as many chromosomes as *V. minor*. However, the weight of the DNA for *V. major*, 4.07 pg, is more than twice as large (1.53 pg) This is not the usual outcome for an autotetraploid and indicates that *V. major* is not a doubled *V. minor*.

Viola *V. curtisii* and *V. tricolor*, are the only pair within the genus in The Netherlands, that have the chromosome number 2n=26. However, *V. curtusii* has about 10% more DNA per nucleus. One may wonder if they belong to the same species.

Viscum album The mistletoe has a very high amount of DNA with 180 pg. Since it has only 20 chromosomes and humans have 46 chromosomes with almost 7 pg, it can be calculated that an average chromosome in *Viscum* is more than 60 times larger than a human chromosome.

Vulpia *V. myuri*s (2n=42) and *V. fasciculata* (2n=28) have almost the same amount of DNA with 12.9 and 12.7 pg respectively. Perhaps one of the two is not properly identified or there are more cytotypes.

Wolffia Probably it has to be split into five different species based on barcoding. This is confirmed by the different DNA weights. The originally native *W. arrhiza* has 4.78 pg, *W. globosa* 3.50 pg, *W. minigibba* cf 1.61 pg and *W. australiana* 0.95 pg. *W. columbiana* (often referred to as *W. arrhiza* in publications) now 2.55 pg.

Xanthium *X. strumarium* subsp. *strumarium* has 4.84 pg and subsp. *italicum* 5.37 pg. So they seem to be separate species.

Zanichellia Also the two subspecies of *Z. palustris*, where subsp. *palustris* has 1.23 pg and subsp. *pedicillata* 1.83 pg could point to different species. It also may be a triploid plant.

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Table 1 (next page)

Table 1 Summarizing table of all measured species with their nuclear DNA weights (2C-values), ploidies, chromosome numbers, number of measured specimens (n) per species, status, Dutch name, new names and family.
A All names from Heukels Flora 2005, plus new species found after that date (column I). *Italics*: small print in Heukels Flora. Asterisk (*) = (also) measured with *Agave attenuata* (7.9 pg). # = Other ploidies (#), see supplement (Table 5) and Table 2 for further information. **B** Average picogram (pg) DNA per nucleus = 2C-value, based on at least two different measurements and measured against *Agave americana* 'Aureomarginata'. **C** Somatic chromosome numbers (2n) from Stace (2010) and (Rice et al. 2015). c = circa, about. **D** Number of plants measured (n). **E** Peak profiles (see Fig. 1, 2). 2C is first (only) peak, **bold** = largest peak, (4C) very small peak 2C−32C = 2C, 4C, 8C, 16C, 32C. **F** Status. Frequency class (Eggelte 2014).0 = extinct to 9 = common, ad = adventive, cu = cultivated, ex = exote. **G** Dutch plant names, n.d. not decided on yet. **H** New species added since 2005: from **FL**oron list (B. Odé 2016), from **H. D**uistermaat list and from **B. Z**onneveld. **I** Families (138).

For further details, see Table 5 in Electronic Supplement
http://www.forum-geobotanicum.net/articles/vol_8-2018/zonneveld_flora-of-the-netherlands/zonneveld_flora-of-the-netherlands_supplement.pdf

A Species (mainly Heukels Flora)	B 2C	C Chrom. nr.	D n	E Peak	F Status	G Dutch name	H new	I family
Abies alba	35.5	*24*	2	2C	cu	Gewone zilverspar		Pinaceae
Abies concolor	37.3	*24*	1	2C	cu	Colorado zilverspar	FL	Pinaceae
Abies grandis	35.1	*24*	2	2C	cu	Reuzenzilverspar		Pinaceae
Abies nordmanniana	35.2	*24*	1	2C	cu	Kaukasische zilverspar		Pinaceae
Abies pinsappo	38.1	24	1	2C	cu	Spaanse zilverspar	FL	Pinaceae
Abies procera	34.4	*24*	1	2C	cu	Edelspar	FL	Pinaceae
Abies veitchii	34.9	24	1	2C	cu	Japanse zilverspar		Pinaceae
Abutilon theophrastii	2.31	42	1	2C, (4C)	6	Fluweelblad		Malvaceae
Acalypha australis	1.65	*(20) 40*	1	2C, (4C)	1	n. d.	FL	Euphorbiaceae
Acer campestre	1.40	26	1	2C, (4C)	8	Spaanse aak		Sapindaceae
Acer negundo	1.04	*26*	2	2C, (4C)	cu	Vederesdoorn		Sapindaceae
Acer platanoides	1.45	26	5	2C, (4C)	7	Noorse esdoorn		Sapindaceae
Acer pseudoplatanus	2.78	*52*	2	2C, (4C)	9	Gewone esdoorn		Sapindaceae
Acer sacharinum	2.23	*52*	1	2C, (4C)	cu	Witte esdoorn		Sapindaceae
Achillea filipendula 'Cloth of Gold'	6.43	*18, 36, 54*	1	2C	cu	Geel duizendblad	FL	Asteraceae
Achillea millefolium*	15.9	54	4	2C	9	Duizendblad		Asteraceae
Achillea ptarmica #	7.17	18	5	2C	8	Wilde bertram		Asteraceae
Acanthus mollis	2.37	56	1	**2C**, 4C	ad	Akant	FL	Acanthaceae
Aconitum vulparia	31.9	*16*	5	**2C**, 4C	1	Gele monnikskap		Ranunculaceae
Aconitum napellus	24.7	(16, 24) 32	2	**2C**, 4C, 8C, 16C	cu	Blauwe monnikskap		Ranunculaceae
Aconitum x stoerkianum	36.9		2	2C,	cu	Aconitum napellus x variegata		Ranunculaceae
Acorus calamus	1.29	18-45	2	**2C**, 4C	8	Kalmoes		Acoraceae
Acorus gramineus	0.84	18, 22, 24	3	**2C**, 4C	cu	Graskalmoes	BZ	Acoraceae
Actaea spicata #	20.4	*16*	2	2C	4	Christoffelkruid		Ranunculaceae
Actinidea deliciosa	4.74	174	5	2C	cu	Kiwi		Actinidiaceae
Adiantum capillus-veneris	11.6	60	1	**2C**, 4C, 8C	cu	Echt venushaar		Pteridaceae
Adiantum diaphanum cf	11.7	116, 232	1	2C	1	Smal venushaar		Pteridaceae
Adiantum raddianum	17.9	120	2	**2C**, 4C	cu	Fijn venushaar		Pteridaceae
Adianthum venustum	15.8	120	5	2C**, 4C**	cu	n. d.	BZ	Pteridaceae
*Adonis aestivalis**	31.0	32	2	2C	0	Zomeradonis		Ranunculaceae
*Adonis annua**	33.7	*32*	1		cu	Herfst adonis		Ranunculaceae
*Adonis flammea**	30.8	32	2	2C	cu	Kooltje-vuur		Ranunculaceae
*Adonis vernalis**	28.3	16	1		0	Voorjaars adonis		Ranunculaceae
Adoxa moschatelina	29.8	36	2	**2C**, 4C	6	Muskuskruid		Adoxaceae
Aegopodium podagraria	6.82	22, 42, 44	6	**2C**, 4C,	9	Zevenblad		Apiaceae
Aesculus hippocastanum	1.22	40	8	2C, (4C)	cu	Witte paardenkastanje		Sapindaceae
Aesculus parviflora	0.97	*40*	1	2C, (4C)	cu	Herfstpaardekastanje	FL	Sapindaceae
Aesculus pavia 'Yellow'	1.39	40	2	2C	cu	Rode paardenkastanje	BZ	Sapindaceae
Aesculus x carnea	2.55	*80*	5	2C, (4C)	cu	Aesc. pavia x hippocastaneum		Sapindaceae
Aethusa cynapium	2.93	20	2	2C	8	Hondspeterselie		Apiaceae
Agastache foeniculum	1.21	18	2	**2C**, 4C	cu	Dropnetel	FL	Lamiaceae
Agrimonia eupatoria	2.97	28	1	**2C, 4C**	7	Gewone agrimonie		Rosaceae
Agrimonia procera	5.91	56	1	**2C**, 3C, 4C	5	Welriekende agrimonie		Rosaceae
Agrostemma githago	4.20	48	1	**2C**, 4C	5	Bolderik		Caryophyllaceae
Agrostemma gracile		24			cu	Oosterse bolderik		Caryophyllaceae
Agrostis canina	**3.60**	*14*	2	**2C**, 4C	7	Moerasstruisgras		Poaceae
Agrostis capillaris	7.07	28	6	2C,	9	Gewoon struisgras		Poaceae
Agrostis castellana		*28, 42*			3	Tweetoppig struisgras	FL	Poaceae
Agrostis gigantea	13.2	42	4	2C	8	Hoog struisgras		Poaceae
Agrostis stolonifera	10.3	28	2	2C	9	Fioringras		Poaceae
Agrostis vinealis	6.86	28, c. 56	4	2C	6	Zandstruisgras		Poaceae
Agrostis x fouillardeana					ad	Agrostis capillaris x castelana		Poaceae
Ailanthus altissima	2.20	*64, 80*	3	2C	cu	Hemelboom		Simaroubaceae
Aira caryophyllea	12.7	*14, 28*	1	2C	8	Zilverhaver		Poaceae
Aira praecox	6.78	14	2	2C	8	Paashaver		Poaceae
Ajuga chamaepitys	2.29	28	1	2C, (4C)	0	Akkerzenegroen		Lamiaceae
Ajuga genevensis	2.56	32	2	2C, (4C)	ad	Harig zenegroen		Lamiaceae
Ajuga pyramidalis	2.35	32	3	2C, (4C)	1	Piramidezenegroen		Lamiaceae
Ajuga reptans ssp reptans #	2.35	32	6	2C, (4C)	8	Kruipend zenegroen		Lamiaceae
Ajuga reptans 'Atropurpurea'	2.18	32	1	2C, (4C)		Kruipend zenegroen	HD	Lamiaceae
Akebia quinata	1.45	16, 32	2	2C, (4C)	ad	Schijnaugurk/klimbes	FL	Lardizabalaceae
Alcea rosea	2.62	*26-56*	2	2C	cu	Stokroos		Malvaceae
Alchemilla acutiloba	3.75	*c. 100-109*	8	**2C**, 4C	2	Spitslobbige vrouwenmantel		Rosaceae
Alchemilla alpina cf	3.78	*c. 105*	6	2C, (4C)	1	Alpenvrouwenmantel	BZ	Rosaceae
Alchemilla epipsila	3.63	106	2	**2C**, 4C	cu	n. d.	BZ	Rosaceae
Alchemilla erythropoda	3.80	96-101	2	2C	cu	Dwergvrouwenmantel	BZ	Rosaceae
Alchemilla filicaulis		c. 103, c. 150			1	Fijnstengelige vrouwenmantel		Rosaceae
Alchemilla glabra	3.79	*c. 96-110*	1	**2C**, 4C	3	Kale vrouwenmantel		Rosaceae
Alchemilla micans		*c. 93-110*			2	Slanke vrouwenmantel		Rosaceae
Alchemilla mollis	3.71	*102-106*	6	2C	6	Fraaie vrouwenmantel		Rosaceae
Alchemilla monticola		*101-110*			1	Bergvrouwenmantel		Rosaceae
Alchemilla saxatilis cf	3.73	120-152	2	**2C**, 4C	ex	n.d.	BZ	Rosaceae
Alchemilla subcrenata		*104*			1	Geplooide vrouwenmantel		Rosaceae
Alchemilla vetteri		*154*			1	n.d.		Rosaceae
Alchemilla xanthochlora	3.70	*c. 107*	1	**2C**, 4C	1	Geelgroene vrouwenmantel		Rosaceae
Alisma gramineum	23.3	*14*	3	2C	5	Smalle waterweegbree		Alismataceae
Alisma lanceolatum	44.4	28	2	2C	6	Slanke waterweegbree		Alismataceae
Alisma plantago-aquatica	21.9	14	2	2C	9	Grote waterweegbree		Alismataceae
Alliaria petiolata	2.30	36, 42	2	**2C**, 4C, 8C	9	Look-zonder-look		Brassicaceae
Allium carinatum	47.1	*16, 24*	1	**2C**, 4C	2	Berglook		Alliaceae

A Species (mainly Heukels Flora)	B 2C	C Chrom. nr.	D n	E Peak	F Status	G Dutch name	H new	I family
Allium cepa	34.3	16, 24	4	**2C**, 4C	cu	Ui		Alliaceae
Allium neapolitanum	87.3	32, 36, 40	2		cu	n. d.		Alliaceae
Allium oleraceum	55.4	*32, 40*	1	**2C**, 4C	5	Moeslook		Alliaceae
Allium paradoxum	55.4	*16*	2	**2C, 4C**	3	Armbloemige look		Alliaceae
Allium pendulinum	42.0	*14, 18*	1	**2C**, 4C	1	Italiaanse knoflook	BZ	Alliaceae
Allium roseum	78.9	*16-40*	2	2C	cu	n. d.	HD	Alliaceae
Allium porrum	52.0	*32*	3	2C, 4C	cu	Prei		Alliaceae
Allium ramosum	65.3	(16) 32	1	2C		Chinese bieslook	HD	Alliaceae
Allium schoenoprasum*	15.7	16, 32	5	**2C**, 4C, 8C	6	Bieslook		Alliaceae
Allium scorodoprasum	47.2	16, 28	2	**2C**, 4C	4	Slangenlook		Alliaceae
Allium sphaerocephalon #	26.4	16 (32)	3		ad	Kogellook	FL	Alliaceae
Allium triquetrum	36.9	18, 27	3	**2C**, 4C	cu	*Driekantige look*		Alliaceae
Allium tuberosum	64.8	32	2		1	Chinese knoflook	FL	Alliaceae
Allium ursinum	62.0	14	3	**2C,** 4C	6	Daslook		Alliaceae
Allium vineale#	41.1	32	8	**2C,** 4C	9	Kraailook		Alliaceae
Allium zebdanense	29.0	*18, 45*	3	**2C,** 4C	1.0	Bochtig look		Alliaceae
Alnus cordata	1.13	28, 42	3	2C, (4C)	cu	Hartbladige els		Betulaceae
Alnus glutinosa	1.14	28	2	2C, (4C)	9	Zwarte els		Betulaceae
Alnus incana	1.24	*28*	1	2C, (4C)	7	Witte els		Betulaceae
Alnus x pubescens	1.22	*28*	1	2C, (4C)	cu	Alnus glutinosa x incana		Betulaceae
Alnus x spaethii	2.58	BZ: 56	2	2C, (4C)	cu	Alnus japonica x subcordata	BZ	Betulaceae
Alopecurus aequalis	7.06	14	2	2C	6	Rosse vossenstaart		Poaceae
Alopecurus bulbosus	13.9	14 (21, 28)	1	2C, (4C)	4	Knolvossenstaart		Poaceae
Alopecurus geniculatus	14.3	28	6	2C	9	Geknikte vossenstaart		Poaceae
Alopecurus myosuroides	7.52	14	3	**2C**, 4C	7	Duist		Poaceae
Alopecurus pratensis	12.6	28	1	2C	9	Grote vossenstaart		Poaceae
Alopecurus x hybridus						Grote x Geknikte vossenstaart		Poaceae
Althaea hirsuta		*36*			ad	Ruige heemst		Malvaceae
Althaea officinalis	3.90	42	4	2C	6	Heemst		Malvaceae
Alyssum alyssoides	1.44	*(16, 24) 32*	3	2C	4	Bleek schildzaad		Brassicaceae
Alyssum saxatile	1.46	16	3	**2C**, 4C, 8C, 16C	cu	Rotsschildzaad		Brassicaceae
Alyssum maritimum	0.83	*24*	2	**2C**, 4C, (8C)	cu	Zilverschildzaad	BZ	Brassicaceae
Amaranthus albus	1.09	*32, 34*	1	2C, 4C, 8C, 16C	5	Witte amarant		Amaranthaceae
Amaranthus blitoides	1.16	*32*	2	**2C**, 4C, 8C,	5	Nerfamarant		Amaranthaceae
Amaranthus blitum	1.59	*16, 34*	5	2C, 4C, 8C, 16C	6	Kleine majer		Amaranthaceae
Amaranthus caudatus	1.05	*32, 34, 64*	1	2C, **4C**, 8C,	ad	Kattenstaart amarant		Amaranthaceae
Amaranthus deflexus		*34*			ad	Liggende majer		Amaranthaceae
Amaranthus emarginata	1.46	34	1	2C, **4C**, 8C, 16C	ex	n. d.	BZ	Amaranthaceae
Amaranthus graecizans		*32, 34*			ad	Afrikaanse amarant		Amaranthaceae
Amaranthus hybridus ssp. bouchonii	1.18	*32*	2	2C, **4C**, 8C, 16C	6	Franse amarant		Amaranthaceae
Amaranthus hybridus ssp. hybridus	1.12	24, 32	4	2C, **4C**, 8C, 16C	6	Basterd amarant		Amaranthaceae
Amaranthus palmeri		*32, 34*			ad	Tweehuizige amarant		Amaranthaceae
Amaranthus retroflexus	1.18	*34*	2	2C, **4C**, 8C, 16C	7	Papegaaienkruid		Amaranthaceae
Amaranthus rudis		32			ad	Oeveramarant		Amaranthaceae
Amaranthus standleyanus		*34*			ad	Argentijnse amarant		Amaranthaceae
Ambrosia artemisiifolia	2.66	*36*	4	2C	ad	Alsem ambrosia		Asteraceae
Ambrosia psilostachya	5.95	*72, 108, 144*	3	2C	4	Zand ambrosia		Asteraceae
Ambrosia trifida	4.05	*24*	3	2C	ad	Driedelige ambrosia		Asteraceae
Amelanchier lamarckii	2.52	68	2	2C, 4C	8	Amerikaans krentenboompje		Rosaceae
Ammi majus zd	3.73	*22*	1	**2C,** 3C, 4C	ad	Groot akkerscherm		Apiaceae
Ammi visnaga	4.94	*20, 22*	1	2C, (4C)	ad	Fijn akkerscherm		Apiaceae
Ammophila arenaria	8.98	28	4	2C, 4C	7	Helm		Poaceae
Amsi(n)ckia micrantha	1.93	*32*	1	2C, (4C)	ad	Amsi(n)ckia		Boraginaceae
Anacamptis coriophora		36			0	Wantsenorchis		Orchidaceae
Anacamptis morio	21.8	36	1	2C, 4C	3	Harlekijn		Orchidaceae
Anacamptis pyramidalis	26.8	36	3	2C, **4C,** 8C	4	Hondskruid		Orchidaceae
Anagallis arvensis ssp. arvensis	2.45	(20) 40	5	**2C**, 4C, 8C	8	Rood (blauw) guichelheil		Primulaceae
Anagallis arvensis (as ssp. foemina)	2.43	40	3	2C, (4C)	2	Blauw guichelheil		Primulaceae
Anagallis monelli	2.86	20, 22	1	**2C**, 4C	1	Spaans guichelheil	BZ	Primulaceae
Anagallis tenella	4.42	22	5	**2C**, 4C	4	Teer guichelheil		Primulaceae
Anaphalis margarithacea 'Yedoensis	7.83	28	1	2C	cu	Pracht rozenkransje		Asteraceae
Anchusa arvensis*	31.2	*48*	5	2C, (4C)	8	Kromhals		Boraginaceae
Anchusa ochroleuca*	25.4	*24*	2	2C	2	Geelwitte ossentong		Boraginaceae
Anchusa officinalis*	13.8	*16*	4	2C, (4C)	6	Gewone ossentong		Boraginaceae
*Anchusa x baumgartnenii**	26.7	*BZ:28*	5	2C	ad	Anchusa ochroleuca x officinalis.		Boraginaceae
Andromeda polifolia	2.18	48	2	2C, (4C)	5	Lavendelhei		Ericaceae
Anemone apennina	28.7	*16*	2	2C	4	Blauwe anemoon		Ranunculaceae
Anemone blanda#	31.1	*16, 32*	5	2C	cu	Oosterse anemoon		Ranunculaceae
Anemone nemorosa	38.9	*30 (16-46)*	9	2C, (4C)	8	Bosanemoon		Ranunculaceae
Anemone ranunculoides	35.4	*32*	7	2C	4	Gele anemoon		Ranunculaceae
Anemone x hybrida	20.2	*16*	1	2C, (4C)	cu	Hoge anemoon	HD	Ranunculaceae
Anemone x lipsiensis	37.0		9	2C	cu	Bleekgele anemoon	BZ	Ranunculaceae
Anethum graveolens	2.81	*22*	1	**2C**, 4C	cu	Dille		Apiaceae
Angelica archangelica	6.41	*22*	4	2C	7	Grote engelwortel		Apiaceae
Angelica sylvestris	5.13	22	3	2C	9	Gewone engelwortel		Apiaceae
Anisantha diandra	24.4	*56*	1	**2C, 4C**	1	Hoge dravik		Apiaceae
Anisantha madritensis	9.91	*28*	1	2C	1	Spaanse dravik		Poaceae
Anisantha sterilis	6.21	14	2	**2C**, 4C	9	IJle dravik		Poaceae
Anisantha tectorum	5.76	*14*	3	**2C**, 4C	7	Zwenkdravik		Poaceae
Anoda cristata	5.65	60	1	**2C**, 4C	ad	Straalvrucht		Malvaceae
Antennaria dioica	7.33	28	1	2C	3	Rozenkransje		Asteraceae
Anthemis arvensis	8.55	18	1	2C	6	Valse kamille		Asteraceae

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Anthemis cotula	3.72	18	1	2C	5	Stinkende kamille		Asteraceae
Anthemis tinctoria* #	9.80	18	2	2C	5	Gele kamille		Asteraceae
Anthericum liliago*	13.6	30	4	**2C**, 4C, 8C	1	Grote graslelie		Asparagaceae
Anthoxanthum aristatum	7.39	*10*	2	2C	6	Slofhak		Poaceae
Anthoxanthum odoratum	13.1	20	2	2C	9	Gewoon reukgras		Poaceae
Anthriscus caucalis	1.17	14	1	**2C, 4C**	7	Fijne kervel		Apiaceae
Anthriscus cereifolium	2.45	18	2	**2C**, 4C	cu	Echte kervel		Apiaceae
Anthriscus sylvestris	4.16	16	5	2C,	9	Fluitenkruid		Apiaceae
Anthyllis vulneraria	0.90	12	4	2C, **4C**, 8C	6	Wondklaver		Fabaceae
Antirrhinum majus	1.27	*16*	2	**2C**, 4C	ad	Grote leeuwenbek		Fabaceae
Apera interrupta	8.73	14	1	2C	4	Stijve windhalm		Poaceae
Apera spica-venti	10.3	*14*	1	**2C**, 4C	8	Grote windhalm		Poaceae
Aphanes arvensis	2.75	48	9	2C	7	Grote leeuwenklauw		Rosaceae
Aphanes australis	0.85	16	4	**2C**, 4C	7	Kleine leeuwenklauw		Rosaceae
Apium graveolens	7.28	22, BZ: 66	9	2C	6	Selderij (+knolselderij)		Apiaceae
Apium inundatum	2.17	22	1	2C	5	Ondergedoken moerasscherm		Apiaceae
Apium nodiflorum	1.97	22	3	2C, (4C)	7	Groot moerasscherm		Apiaceae
Apium repens	1.34	22	1	2C, (4C)	3	Kruipend moerasscherm		Apiaceae
Aquilegia vulgaris	0.82	14	1	**2C, 4C**	6	Wilde akelei		Ranunculaceae
Arabidopsis arenosa	0.85	*16, 18, 32*	2	2C, **4C**, 8C, 16C	4	Rozetsteenkers		Brassicaceae
Arabidopsis thaliana	0.32	10	9	2C-**4C**-32C	9	Zandraket		Brassicaceae
Arabis (alpina ssp.) caucasica	0.95	*16*	3	**2C, 4C**, 8C	cu	Randjesbloem	FL	Brassicaceae
Arabis glabra#	1.22	12	3	2C, 4C, 8C,	4	Torenkruid		Brassicaceae
Arabis hirsuta ssp. hirsuta #	0.67	16, 32	2	**2C**, 4C, 8C, 16C	5	Ruige scheefkelk		Brassicaceae
Arabis hirsuta ssp. Sagittata #	0.56		3	**2C, 4C**, 8C, 16C	2	Pijlscheefkelk		Brassicaceae
Aralia elata	2.57	24	2	2C, (4C)	ad	Duivelswandelstok	BZ	Araliaceae
Arctium lappa	3.97	36	4	2C	8	Grote klit		Asteraceae
Arctium minus	4.70	36	1	2C, (4C)	9	Gewone klit		Asteraceae
Arctium nemorosum		*36*			3	Bosklit		Asteraceae
Arctium tomentosum	4.15	36	2	2C	5	Donzige klit		Asteraceae
Arctium x ambiguum		36			1	Arctium lappa x tomentosum		Asteraceae
Arctium x mixtum					1	Arctium minus x tomentosum		Asteraceae
Arctium x nothum					ad	Arctium lappa x minus		Asteraceae
Arctostaphylos uva-ursi	2.34	52	1	2C, **3C**	2	Berendruif		Ericaceae
Arenaria leptoclados	0.79	20	3	2C, 4C, (8C)	1	Tengere zandmuur		Caryophyllaceae
Arenaria serpyllifolia ssp. serpyllifolia	1.55	40	3	**2C, 4C**	8	Gewone zandmuur		Caryophyllaceae
Arenaria serpyllifolia ssp. lloidii		40			0	Gedrongen zandmuur		Caryophyllaceae
Aristolochia clematitis #	0.90	*14*	2	**2C**, 4C	4	Pijpbloem		Aristolochiaceae
Armeria maritima	8.89	18	3	2C	6	Engels gras		Plumbaginaceae
Armeria maritima var. hallii	9.10	18	1	2C	1	Engels gras (zinkplant)	BZ	Plumbaginaceae
Armoracia rusticana	1.44	**32**	6	**2C, 4C**, 8C	5	Mierikswortel		Brassicaceae
Arnica montana	3.21	38	2	2C	4	Valkruid		Asteraceae
Arnoseris minima		18			4	Korensla		Asteraceae
Aronia x prunifolia	2.84	*34*	3	2C	6	Appelbes 'Nero'		Rosaceae
Aronia arbutifolia 'Red Berry'	2.89	*34*	1	2C	cu	Gewone appelbes	FL	Rosaceae
Aronia melanocarpa 'Black Berry'	2.88	*34*	1	2C	cu	Zwarte appelbes	FL	Rosaceae
Arrhenatherum elatius* ssp. bulbosum	16.2	28	1	**2C**, 4C, 8C	5	Knolglanshaver (bont)		Poaceae
Arrhenatherum elatius* ssp. elatius	15.9	28	3	2C	9	Gewone glanshaver		Poaceae
Artemisia abrotanum*	12.5	*18*	3	2C	cu	Citroenkruid	BZ	Asteraceae
Artemisia absinthium* #	9.70	18	3	2C, **4C**	5	Absintalsem		Asteraceae
Artemisia annua*	3.86	18	1	2C	ad	Zomeralsem	FL	Asteraceae
Artemisia biennis*	6.81	*18*	4	2C	5	Rechte alsem		Asteraceae
Artemisia campestris* ssp.campestris #	10.7	*16, 18, 36*	1	2C	3	Wilde averuit		Asteraceae
Artemisia campestris* ssp. Maritima #	16.1	*54*	4	2C	3	Duinaveruit		Asteraceae
*Artemisia dracunculus**	25.9	*18-72*	2	2C	cu	Dragon		Asteraceae
Artemisia ludoviciana' Silver Queen' *	14.8	18, 36	3	2C	cu	Westerse bijvoet	FL	Asteraceae
Artemisia maritima*	16.2	54	5	2C	6	Zeealsem		Asteraceae
Artemisia princeps*	10.1	34, 36	9	2C	ad	Wijde alsem	FL	Asteraceae
Artemisia selengensis*	13.8	36	2	2C	ad	n. d.	FL	Asteraceae
*Artemisia verlotiorum**	13.7	48, 50, 52	19	2C	1	Herfstalsem		Asteraceae
Artemisia vulgaris*	6.51	16 (18)	8	2C	9	Bijvoet		Asteraceae
Artemisia x wurzellii*	10.1	34	2	2C	1	Artemisia vulgaris x verlotiorum	BZ	Asteraceae
Arum italicum	28.0	*84*	15	**2C**, 4C	5	Italiaanse aronskelk		Araceae
Arum maculatum	20.0	56	7	2C, **4C**, 8C	7	Gevlekte aronskelk		Araceae
Aruncus dioicus	0.44	*18*	3	2C, 4C, 8C	cu	Geitebaard		Rosaceae
Asarum europaeum	14.0	*26*	2	2C	1	Mansoor	HD	Aristolochiaceae
Asclepias syriaca	0.80	22	2	**2C**, 4C, 8C, 16C	1	Zijdeplant		Apocynaceae
Asclepias tuberosa	1.05	22	2	2C, 3C, 4C, 6C, 12C		Knolzijdeplant	FL	Apocynaceae
Asparagus officinalis ssp. officinalis	5.92	40	1	**2C**, 4C, 8C	cu	Wilde asperge (Duin)		Asparagaceae
Asparagus officinalis ssp. prostratus	6.01	40 (80)	8	**2C**, 4C, 8C	6	Liggende asperge (Duin)		Asparagaceae
Asparagus officinalis ssp.officinalis	6.06	20, 40	3	**2C**, 4C, 8C	cu	Gekweekte asperge	BZ	Asparagaceae
Asparagus officinalis ssp.officinalis	2.89	BZ: 20	6	**2C**, 4C, 8C	cu	BGU / BGL / Peru	BZ	Asparagaceae
Asperugo procumbens		48			1	Scherpkruid		Boraginaceae
Asperula arvensis		*22*			ad	Akkerbedstro		Rubiaceae
Asperula cynanchica	3.96	*40*	1	**2C**, 4C	0	Kalkbedstro		Rubiaceae
Asplenium adiantum-nigrum*	18.4	144	3	2C	3	Zwartsteel		Aspleniaceae
Asplenium ceterach*	13.7	144	3	2C	2	Schubvaren		Aspleniaceae
*Asplenium fontanum**	10.1	72	2	2C	0	Genaalde streepvaren		Aspleniaceae
*Asplenium foreziense**	17.8	144	3	2C	1	Forez-streepvaren		Aspleniaceae
Asplenium marinum* cf	18.0	144	3	2C	cu	n. d.	BZ	Aspleniaceae
Asplenium obovatum* ssp. lanceolatum	17.0	72 (144)	5	2C	1	Lancetbladige streepvaren	BZ	Aspleniaceae
Asplenium onopteris* cf	18.3	144	1	2C	1	n. d.	BZ	Aspleniaceae

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Asplenium ruta-muraria*	12.8	144	5	2C	7	Muurvaren		Aspleniaceae
Asplenium scolopendrium*	17.0	72 (144)	7	2C	6	Tongvaren		Aspleniaceae
*Asplenium septentrionale**	13.8	144	2	2C	1	Noordse streepvaren		Aspleniaceae
Asplenium trichomanes* ssp. quadrivalens	18.2	(72) 144	10	2C	5	Steenbreekvaren		Aspleniaceae
Asplenium trichomanes* ssp. pachyrachis	19.1	144	3	2C	1	Steenbreekvaren	BZ	Aspleniaceae
Asplenium viride	8.81	72	3	2C	1	Groensteel		Aspleniaceae
Aster cordifolius cf	3.52	16, 32	1	2C,	1	n. d.	BZ	Asteraceae
Aster laevis	5.37	48	1	2C, (4C)	cu	Gladde aster		Asteraceae
Aster novi-belgii	4.48	*48*	1	**2C**, 4C	cu	Nieuw-Nederlandse aster		Asteraceae
Aster tripolium	12.8	18	4	2C	8	Zulte		Asteraceae
Aster x versicolor					cu	Aster laevis x novi-belgii		Asteraceae
Astragalus cicer		*64*			ad	Bergerwt		Fabaceae
Astragalus glycyphyllos	1.60	*16*	1	**2C**, 4C, 8C	4	Hokjespeul		Fabaceae
Astrantium major	19.3	*(14) 28*	1	(2C), 3C	cu	Groot sterrenscherm	HD	Apiaceae
Athyrium filix-femina*	15.1	80	5	2C	8	Wijfjesvaren		Athyriaceae
Atriplex glabriuscula	1.82	18	3	**2C**, 4C, 8C	5	Kustmelde		Amaranthaceae
Atriplex hortensis	2.02	*18*	1	2C, **4C**, 8C	cu	Tuinmelde		Amaranthaceae
Atriplex laciniata	1.58	18	1	2C, **4C**, 8C	3	Gelobde melde		Amaranthaceae
Atriplex littoralis	1.63	18	3	2C, **4C**, 8C	6	Strandmelde		Amaranthaceae
Atriplex longipes		18			5	Gesteelde spiesmelde		Amaranthaceae
Atriplex patula	4.03	36	6	**2C**, 4C	9	Uitstaande melde		Amaranthaceae
Atriplex pedunculata		*18*			3	Gesteelde zoutmelde		Amaranthaceae
Atriplex portulacoides	2.76	36	4	**2C**, 4C	6	Gewone zoutmelde		Amaranthaceae
Atriplex prostrata	1.87	18	9	2C, **4C**, 8C	9	Spiesmelde		Amaranthaceae
Atriplex x gustafssoniana					0	Atriples longipes x prostrata		Amaranthaceae
Atropa bella-donna	3.92	72	3	**2C**, 4C	4	Wolfskers		Solanaceae
Aubretia deltoidea	0.76	*16*	1	2C, 4C, 8C, 16C	cu	Aubretia		Brassicaceae
Aucuba japonica 'Variegated'	**24.5**	16, 32	3		cu	Broodboom, Aucuba		**Garryaceae**
Avena fatua	26.4	42	1	2C, (4C)	6	Oot		Poaceae
Avena sativa	26.5	*42*	1	**2C**, 4C	cu	Haver		Poaceae
Avena sterilis		*42*			ad	Wilde haver		Poaceae
*Avena strigosa**	16.5	*14, 28*	1	**2C**, 3C, 6C	ad	Evene		Poaceae
Axyris amarantoides		18			ad	Hoornmelde		Amaranthaceae
Azolla cristata					1	Kleine kroosvaren		Salviniaceae
Azolla filiculoides*	1.58	*44, 66*	5	2C	8	Grote kroosvaren		Salviniaceae
Azolla caroliniana* cf	1.14		1	2C	cu	n. d.	BZ	Salviniaceae
Baccharis halimifolia	4.52	*18*	1	2C	cu	Struikaster		Asteraceae
Baldellia ranunc.ssp. ranunculoides	25.8	16	2	2C	5	Stijve moerasweegbree		Alismataceae
Baldellia ranunc.ssp. repens	25.7	16	1	2C	3	Kruipende moerasweegbree		Alismataceae
Ballota nigra ssp. nigra		20			ad	Echte ballote		Lamiaceae
Ballota nigra ssp. meridionalis	2.67	20	2	2C, (4C)	6	Stinkende ballote		Lamiaceae
Barbarea intermedia	0.47	*16*	2	2C, **4C**, 8C, 16C	6	Bitter barbarakruid		Brassicaceae
Barbarea stricta	0.56	*14, 16, 18*	1	2C, **4C**, 8C, 16C	7	Stijf barbarakruid		Brassicaceae
Barbarea verna	0.57	*16*	2	2C, **4C**, 8C, 16C	ad	Vroeg barbarakruid		Brassicaceae
Barbarea vulgaris	0.57	16	3	2C, **4C**, 8C	8	Gewoon barbarakruid		Brassicaceae
Bassia hirsuta		18			0	Ruig zoutkruid		Amaranthaceae
Bassia scoparia	2.07	*18*	1	2C, 4C, (8C)	ad	Studentenkruid / Zomercypres		Amaranthaceae
Bellevalia romana	21.2		2		ad	n. d.	FL	Asparagaceae
Bellis perennis	3.56	18	4	2C	9	Madeliefje		Asteraceae
Berberis aggregata	2.94	*28*	1	2C	cu	Roze berberis		Berberidaceae
Berberis aquifolium	2.46	*28*	1	2C	cu	Mahonie		Berberidaceae
Berberis julianae	3.20	*28*	1	**2C**, 4C	cu	Chinese Zuurbes		Berberidaceae
Berberis thunbergii	3.50	*28*	1	2C	1	Japanse berberis		Berberidaceae
Berberis vulgaris	3.48	*28*	4	**2C**, 4C	6	Zuurbes		Berberidaceae
Berteroa incana	1.36	*16*	2	**2C, 4C**	7	Grijskruid		Brassicaceae
Berula erecta	1.13	*18, 20*	3	2C	8	Kleine watereppe		Apiaceae
Beta vulgaris ssp. *vulgaris*	2.28	18, 27, 36	4	2C, **4C**, 8C, 16C	cu	Suikerbiet		Amaranthaceae
Beta vulgaris ssp. maritima #	1.49	18	3	**2C**, 4C, 8C, 16C	4	Strandbiet / Kroot		Amaranthaceae
Betula pendula	0.98	28	1	2C	9	Ruwe berk		Betulaceae
Betula (x?) pubescens	2.89	56	1	2C	7	Zachte berk		Betulaceae
Betula nigra	0.95	28	1	2C	cu	Zwarte berk	BZ	Betulaceae
Betula utilis 'Doorenbosch'	2.06	28, 56	3	2C	cu	Ziverberk	BZ	Betulaceae
Bidens cernua	4.70	24	4	2C,	8	Knikkend tandzaad		Asteraceae
Bidens connata	6.41	48, 72	1	2C	7	Smal tandzaad		Asteraceae
Bidens frondosa	3.45	48	3	2C	8	Zwart tandzaad		Asteraceae
Bidens pilosa	6.27	(24-48) 72	6	2C	ad	n. d.	BZ	Asteraceae
Bidens radiata	4.41	(36) 48	5	2C	3	Riviertandzaad		Asteraceae
Bidens subalternans	6.21	48	1	2C	ad	n. d.	BZ	Asteraceae
Bidens tripartita	6.60	48	1	2C	9	Veerdelig tandzaad		Asteraceae
Bifora radians		20			ad	Holzaad		Apiaceae
Blackstonia perfoliata ssp. serotina	2.67	40	1	2C, (4C)	2	Herfstbitterling		Gentianaceae
Blackstonia perfoliata ssp. perfoliata	2.77	40	2	2C	3	Zomerbitterling	BZ	Gentianaceae
Blechnum spicant	15.4	68	1	2C	7	Dubbelloof		Blechnaceae
Blysmus compressus	0.67	*44, 78*	2	2C	4	Platte bies		Cyperaceae
Blysmus rufus	4.24	40	2	2C, (4C)	4	Rode bies		Cyperaceae
Bolboschoenus maritimus	0.52	*40-110*	4	2C	8	Heen (zoute3 water); zeebies		Cyperaceae
Bolboschoenus laticarpus	0.54		2	2C	ad	Oeverbies, Heen (zoete water)	FL	Cyperaceae
Bolboschoenus planiculmis	0.58	50-108	2	2C	1	Oostelijke bies	BZ	Cyperaceae
Borago officinalis	3.54	*16*	3	**2C, 4C**, (8C)	cu	Bernagie		Boraginaceae
Botrychium lunaria*	29.1	90	1	2C	5	Gelobde maanvaren		Ophioglossaceae
Botrychium matricariifolium		180			0	Vertakte maanvaren		Ophioglossaceae
Brachypodium pinnatum		16, 28, 36			5	Gevinde kortsteel		Poaceae

A Species (mainly Heukels Flora)	B 2C	C Chrom. nr.	D n	E Peak	F Status	G Dutch name	H new	I family
Brachypodium sylvaticum	0.89	18, 28, 44	2	2C	6	Boskortsteel		Poaceae
Brassica juncea	2.30	*36*	2	2C	4	Sarepta mosterd	BZ	Brassicaceae
Brassica napus	2.44	38	3	2C, 4C, 8C	cu	Koolraap (Koolzaad)		Brassicaceae
Brassica nigra	1.31	16	2	2C, 4C, 8C	7	Zwarte mosterd		Brassicaceae
Brassica oleracea ssp. oleracea	1.35	18	17	2C, 4C, 8C	cu	Wilde kool		Brassicaceae
Brassica rapa	1.11	20	11	2C, 4C, 8C, 16C	cu	Raapzaad, pakchoi, raapsteeltjes		Brassicaceae
Briza media #	6.68	14	7	2C, 4C	6	Bevertjes		Poaceae
Briza maxima	9.00	14	2	2C, 4C, 8C	cu	Groot trilgras	FL	Poaceae
Bromopsis erecta	21.4	*28-112*	3	2C	**4**	Bergdravik		**Poaceae**
Bromopsis inermis ssp. pumpelliana		*42, 56*			**ad**	Amerikaanse kweekdravik		**Poaceae**
Bromopsis ramosa ssp. *benekenii*		28			**1**	Bosdravik		**Poaceae**
Bromopsis ramosa ssp. ramosa	26.1	42	2	2C	**2**	Ruwe dravik		**Poaceae**
Bromus arvensis	11.5	14	1	2C	ad	Akkerdravik		Poaceae
Bromus bromoideus	22.3	28	1	2C	0	Ardense dravik		Poaceae
Bromus corymbosus cf	22.9		3	2C		n. d.		Poaceae
Bromus hordeaceus ssp. *thominei* #	20.8	28	4	2C	9	n. d.		Poaceae
Bromus hordeaceus ssp. *hordeaceus*	20.1	28	3	2C	9	Zachte dravik	BZ	Poaceae
Bromus inermis ssp. inermis	11.9	*28-70*	1	2C	6	Kweekdravik	BZ	Poaceae
Bromus lepidus		28			ad	Sierlijke dravik		Poaceae
Bromus racemosus ssp. *commutatus* #	22.4	*14, 28*	3	**2C**, 4C	5	Grote Trosdravik		Poaceae
Bromus racemosus ssp. *racemosus*	12.0	14, 28	1	2C	ad	Trosdravik		Poaceae
Bromus secalinus	22.2	*28*	1	2C	1	Dreps		Poaceae
Brunnera macrophylla	4.10	*12*	2	**2C**, 4C, 8C	cu	Kaukasisch vergeetmijnietje		Boraginaceae
Bryonia dioica	3.92	20	3	2C, **4C**, 8C	8	Heggenrank		Cucurbitaceae
Buddleja davidii	2.90	*76*	4	2C	7	Vlinderstruik		Scrophulariaceae
Bunias orientalis	5.31	*14*	1	2C, **4C**, 8C, 16C	4	Grote hardvrucht		Brassicaceae
Bunium bulbocastanum #	0.93	*20*	5	2C, **4C**	4	Aardkastanje		Apiaceae
Bupleurum falcatum	0.80	16-32	2	2C, (4C)	1	Sikkelgoudscherm		Apiaceae
Bupleurum rotundifolium	1.56	*16*	1	2C, (4C)	ad	Doorwas		Apiaceae
Bupleurum subovatum		*16*			ad	Smalle doorwas		Apiaceae
Bupleurum tenuissimum	0.82	*16*	1	2C	3	Fijn goudscherm		Apiaceae
Butomus umbellatus	12.5	26, 39	3	2C	8	Zwanenbloem		Butomaceae
Buxus sempervirens #	1.57	28;, BZ: 42	3	2C, (4C)	cu	Buxus		Buxaceae
Cabomba caroliniana	7.30	24, 96, 104	1	**2C**, 4C	1	Waterwaaier	FL	Cabombaceae
Cakile maritima	1.53	18	2	2C, **4C**, 8C	5	Zeeraket		Brassicaceae
Calamagrostis canescens cf	7.73	28	1	**2C,** 4C	8	Hennegras		Poaceae
Calamagrostis epigejos	7.65	*28, 56*	2	2C	8	Duinriet		Poaceae
Calamagrostis pseudophragmites		28			0	Rivierstruisriet		Poaceae
Calamagrostis stricta		28			3	Stijf struisriet		Poaceae
Calamagrostis x gracilescens					1	Calamagrostis canescens x stricta		Poaceae
Calammophila X baltica	8.03	*28, 42*	2	2C	6	Noordse helm		Poaceae
Calaminthe nepeta	1.46	*24, 48, 72*	1	2C	cu	Bergsteentijm	BZ	Lamiaceae
Calendula arvensis	5.35	*36, 44*	1	2C, (4C)	ad	Akkergoudsbloem		Asteraceae
Calendula officinalis	2.91	*28, 32*	1	2C	cu	Goudsbloem		Asteraceae
Calepina irregularis #	0.92	14, 28	2	**2C**, 4C, 8C	1	Kalkraket		Brassicaceae
Calla palustris	2.16	*36, 72*	2	**2C**, 4C	6	Slangenwortel		Araceae
Calistephus chinensis	5.69	*18 (36)*	1	2C	cu	Chinese aster	FL	Asteraceae
Callitriche hamulata	8.14	28, 38	1	2C	5	Haaksterrenkroos		Plantaginaceae
Callitriche brutia ssp. hamulata	7.90	28, 38	2	2C	8	Sterrekroos		Plantaginaceae
Callitriche brutia	3.67	38	1	2C	8	Gesteeld sterrekroos	BZ	Plantaginaceae
Callitriche cophocarpa		10, 12			1	Gekield sterrenkroos		Plantaginaceae
Callitriche hermaphroditica		6			2	Rond sterrenkroos		Plantaginaceae
Callitriche obtusangula	3.57	10	2	2C	5	Stomphoekig sterrenkroos		Plantaginaceae
Callitriche palustris	2.71	*20*	1	2C	1	Klein sterrenkroos		Plantaginaceae
Callitriche platycarpa	5.45	20	5	2C	8	Gewoon sterrenkroos		Plantaginaceae
Callitriche stagnalis # cf	2.63	10	4	2C	5	Gevleugeld sterrenkroos		Plantaginaceae
Callitriche truncata		6			1	Doorschijnend sterrenkroos		Plantaginaceae
Calluna vulgaris ssp. vulgaris	1.26	16	1	2C	8	Struikhei		Ericaceae
Calluna vulgaris ssp. *hirsuta*					1	Struikhei		Ericaceae
Caltha palustris* ssp. araneosa	33.3	24	2	2C, (4C)	3	Spindotterbloem		Ranunculaceae
Caltha palustris ssp. palustris	33.1	24	7	**2C**, 4C	8	Gewone dotterbloem		Ranunculaceae
Camelina sativa ssp. alyssum		40			0	Vlashuttentut		Brassicaceae
Camelina sativa ssp. sativa	1.77	40	1	**2C**, 4C	ad	Zaadhuttentut		Brassicaceae
Campanula carpatica	3.20	34	1	**2C**, 4C, 8C	1	Karpatenklokje		Brassicaceae
Campanula garganica	2.52	34	6	**2C**, 4C	1	n. d.	BZ	Campanulaceae
Campanula glomerata #	3.65	30	2	2C	1	Kluwenklokje / bloembos		Campanulaceae
Campanula latifolia	3.12	*34*	2	2C	4	Breed klokje		Campanulaceae
Campanula medium	3.54	*34*	1	2C	1	Marietteklokje		Campanulaceae
Campanula patula	6.64	20, 40	1	2C	1	Weideklokje		Campanulaceae
Campanula persicifolia	6.84	16 (32)	4	2C	5	Prachtklokje		Campanulaceae
Campanula portenschlagiana	2.87	34	5	**2C**, 4C	1	Dalmatie klokje (langere buis)		Campanulaceae
Campanula poscharskyana	2.84	34	3	2C, 4C, 8C	5	Kruipklokje (langere slippen)		Campanulaceae
Campanula pyramidalis	3.42	34	2	**2C**, 4C	ad	Piramideklokje	FL	Campanulaceae
Campanula rapunculoides	8.21	*68, 102*	1	2C	6	Akkerklokje		Campanulaceae
Campanula rapunculus	3.17	20	2	**2C**, 4C	6	Rapunzelklokje		Campanulaceae
Campanula rhomboidalis		*34*			1	Bergklokje		Campanulaceae
Campanula rotundifolia	4.47	68, 102	1	2C	8	Grasklokje		Campanulaceae
Campanula trachelium	5.11	34	2	**2C**, 4C	3	Ruig klokje		Campanulaceae
Cannabis sativa	1.22	*20*	2	**2C**, 4C, 8C	cu	Hennep		Cannabaceae
Capsella bursa-pastoris #	0.84	16, 32	26	**2C**, 4C, (8C)	9	Herderstasje		Brassicaceae
Capsella rubella	0.47	16	28	2C, **4C**, 8C	2	Rood herderstasje	FL	Brassicaceae
Cardamine amara	0.49	16	2	2C, **4C,** 8C, 16C	6	Bittere veldkers		Brassicaceae

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Cardamine bulbifera	4.33	32-128	1	2C	ad	Bolletjeskers		Brassicaceae
Cardamine corymbosa	1.49	*48*	1	**2C**, 4C	ex	Eenbloemige veldkers		Brassicaceae
Cardamine flexuosa	1.15	32	13	2C, 4C, 8C, 16C	8	Bosveldkers		Brassicaceae
Cardamine occulta	1.71	64	19	2C, 4C, 8C	4	Aziatische veldkers	FL	Brassicaceae
Cardamine hirsuta #	0.50	16	13	2C**, 4C,** 8C	9	Kleine veldkers		Brassicaceae
Cardamine impatiens	0.43	*16*	5	**2C, 4C**, 8C, 16C	5	Springzaadveldkers		Brassicaceae
Cardamine palustris	3.75	64, 80		**2C**, 4C		n. d.	BZ	Brassicaceae
Cardamine pratensis #	1.65	**30**-72	20	**2C, 4C**, 8C	9	Pinksterbloem		Brassicaceae
Carduus acanthoides	1.81	*22*	3	2C, (4C)	4	Langstekelige distel		Asteraceae
Carduus crispus	2.55	16	1		9	Kruldistel		Asteraceae
Carduus nutans	1.81	16	2	2C	7	Knikkende distel		Asteraceae
Carduus tenuiflorus	7.03	54	1	2C	2	Tengere distel		Asteraceae
Carduus x stangii					2	Carduus crispus x nutans		Asteraceae
Carex acuta	1.02	82, 83, 84	1	2C	8	Scherpe zegge		Cyperaceae
Carex acutiformis	0.92	38	1	2C	8	Moeraszegge		Cyperaceae
Carex appropinquata		*64*			2	Paardenhaarzegge		Cyperaceae
Carex aquatilis	0.88	76, 77	1	2C	4	Noordse zegge		Cyperaceae
Carex arenaria	0.86	*28-64*	2	2C	7	Zandzegge		Cyperaceae
Carex brizoides	0.73	58	2	2C	3	Trilgraszegge		Cyperaceae
Carex buxbaumii	1.66	*74, 106*	1	2C	3	Knotszegge		Cyperaceae
Carex caryophyllea	1.37	68	1	2C	5	Voorjaarszegge		Cyperaceae
Carex cespitosa		*78*			1	Polzegge		Cyperaceae
Carex colchica	0.68	*58*	1	2C	2	Rivierduinzegge	BZ	Cyperaceae
Carex crawfordii	0.69	68	1	2C, (4C)	1	IJle hazenzegge		Cyperaceae
Carex curta (syn canescens)	0.81	*56, 62*	1	2C	8	Zompzegge		Cyperaceae
Carex curvata	0.75	*c86*	1	2C	1	Gekromde zegge	BZ	Cyperaceae
Carex davalliana	1.25	*46*	1	2C	1	Veenzegge	FL	Cyperaceae
Carex diandra	0.96	*60*	1	2C	5	Ronde zegge		Cyperaceae
Carex digitata	0.79	48, 50	1	2C	2	Vingerzegge		Cyperaceae
Carex dioica	1.28	52	1	2C, (4C)	1	Tweehuizige zegge		Cyperaceae
Carex distans	0.84	74	2	2C	6	Zilte zegge		Cyperaceae
Carex disticha	0.74	62	1	2C	8	Tweerijige zegge		Cyperaceae
Carex divisa	0.84	*60*	1	2C	1	Kustzegge		Cyperaceae
Carex divulsa	0.82	58	1	2C	2	Groene bermzegge		Cyperaceae
Carex echinata	0.85	*58*	1	2C	6	Sterzegge		Cyperaceae
Carex elata	1.02	74, 75, 76	1	2C	7	Stijve zegge		Cyperaceae
Carex elongata	0.84	*56*	1	2C	7	Elzenzegge		Cyperaceae
Carex ericetorum	1.37	30	1	2C	2	Heidezegge		Cyperaceae
Carex extensa	0.71	60	3	2C	5	Kwelderzegge		Cyperaceae
Carex flacca	2.44	76	3	2C	7	Zeegroene zegge		Cyperaceae
Carex flava		60	1		2	Gele zegge		Cyperaceae
Carex grayi	1.11	52	1	2C	ad	Morgensterzegge	FL	Cyperaceae
Carex hartmanii		*68*	1		1	Kleine knotszegge		Cyperaceae
Carex hirta	0.65	112	3	2C	9	Ruige zegge		Cyperaceae
Carex hostiana	0.78	56	1	2C	5	Blonde zegge		Cyperaceae
Carex laevigata		71, 72	1		1	Gladde zegge		Cyperaceae
Carex lasiocarpa	0.89	*56*	1	2C	6	Draadzegge		Cyperaceae
Carex lepidocarpa cf	0.65	68	1	2C	1	Schubzegge		Cyperaceae
Carex ligerica	0.74	*58*	3	2C	3	Rivierduinzegge	BZ	Cyperaceae
Carex limosa		*56, 62, 64*	0		0	Slijkzegge		Cyperaceae
Carex muricata cf	0.88	*56, 58*	2	2C	2	Dichte bermzegge		Cyperaceae
Carex muskingumensis	0.75	*80*	1	2C	ad	Palmzegge		Cyperaceae
Carex nigra	0.99	83, 84, 85	3	2C	8	Zwarte zegge		Cyperaceae
Carex oederi ssp. oederi	0.87	*70*	4	2C	5	Dwergzegge		Cyperaceae
Carex oederi ssp. oedocarpa	0.84		3	**2C**, 4C	7	Geelgroene zegge		Cyperaceae
Carex otrubae	0.90	58	2	2C	8	Valse voszegge		Cyperaceae
Carex ovalis	0.60	64	1	2C, (4C)	8	Hazenzegge		Cyperaceae
Carex pallescens	0.92	64	1	2C	6	Bleke zegge		Cyperaceae
Carex panicea	1.58	32	1	2C	7	Blauwe zegge		Cyperaceae
Carex paniculata ssp. *lusitanica*	0.82	*60, 62, 64*	4	**2C**, 4C, 8C	8	Pluimzegge		Cyperaceae
Carex pendula	0.89	*58, 60*	1	2C	3	Hangende zegge		Cyperaceae
Carex pilosa	1.17	*42, 44*	1	2C	ad	Gewimperde zegge	FL	Cyperaceae
Carex pilulifera	1.26	18	1	2C	8	Pilzegge		Cyperaceae
Carex praecox	0.74	58	1	2C	1	Vroege zegge		Cyperaceae
Carex pseudobrizoides cf	0.73	58	2	2C	2	Valse zandzegge cf	BZ	Cyperaceae
Carex pseudocyperus cf	0.85	*66*	4	2C	8	Hoge cyperzegge		Cyperaceae
Carex pulicaris	0.75	*58, 60*	2	2C	4	Vlozegge		Cyperaceae
Carex punctata	0.77	68	1	2C	2	Stippelzegge		Cyperaceae
Carex reichenbachii	0.72	*58*	1	2C	2	Valse zandzegge		Cyperaceae
Carex remota	0.93	60, 62	5	2C	8	IJle zegge		Cyperaceae
Carex riparia	0.91	*72*	1	**2C**, 4C, 8C	8	Oeverzegge		Cyperaceae
Carex rostrata	0.91	*72-82*	2	2C	8	Snavelzegge		Cyperaceae
Carex scoparia	0.70	*56-70*	1	2C	1	n. d.	FL	Cyperaceae
Carex spicata	0.80	*58*	1	2C	7	Gewone bermzegge		Cyperaceae
Carex strigosa	0.74	66	2	2C	1	Slanke zegge		Cyperaceae
Carex sylvatica	0.79	58	1	2C	4	Boszegge		Cyperaceae
Carex tomentosa	0.95	48	1	2C	1	Viltzegge		Cyperaceae
Carex trinervis	1.31	*84, 85*	2	2C	6	Drienervige zegge		Cyperaceae
Carex vesicaria	0.98	*74, 82*	1	2C	6	Blaaszegge		Cyperaceae
Carex vulpina	0.77	*65, 68*	1	2C	4	Voszegge		Cyperaceae
Carex vulpinoidea		*52, 54*			2	Ribbelzegge		Cyperaceae
Carex x boenninghausiana					1	Carex paniculata x remota		Cyperaceae

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Carex x elytroides					7	Carex acuta x nigra		Cyperaceae
Carex x fulva	0.76		1	2C	2	Carex hostiana x oederi		Cyperaceae
Carex x kneuckeriana	0.89		1	2C	1	Carex otrubae x remota		Cyperaceae
Carex x timmiana					2	Carex nigra x trinervis		Cyperaceae
Carlina vulgaris	8.69	20	2	2C	6	Driedistel		Asteraceae
Carpinus betulus	3.57	16, 32, 64	4	2C	8	Haagbeuk		Betulaceae
Carthamus tinctorius	2.67	*24*	1	2C	ad	Saffloer		Asteraceae
Carum carvi	4.31	20	5	2C	6	Karwij		Apiaceae
Carum verticillatum	1.55	*20, 22*	1	2C	1	Kranskarwij		Apiaceae
Castanea sativa	1.68	*22, 24*	3	2C, (4C)	8	Tamme kastanje		Fagaceae
Catabrosa aquatica	6.29	20	1	2C,	7	Watergras		Poaceae
Catalpa bignonioides	2.12	40	2	2C, (4C)	cu	Trompetboom		Bignoniaceae
Catapodium marinum	12.2	14, 28	4	2C, (4C)	3	Laksteeltje		Poaceae
Catapodium rigidum #	6.52	14	4	2C, (4C)	3	Stijf hardgras		Poaceae
Caucalis platycarpos		20			ad	Caucalis		Apiaceae
Celtis australis	1.73	20, 40	2	2C	ad	Europese netelboom	BZ	Cannabaceae
Centaurea calcitrapa	2.13	*20*	2	2C	2	Kalketrip		Asteraceae
Centaurea cyanus	1.66	*24*	1	2C, **4C**	7	Korenbloem		Asteraceae
Centaurea jacea	4.01	44	1	2C	9	Knoopkruid		Asteraceae
Centaurea montana	5.82	*24, 40, 44*	2	2C	ad	Bergcentaurie		Asteraceae
Centaurea scabiosa	3.47	20	2	2C, (4C)	5	Grote centaurie		Asteraceae
Centaurea solstitialis		*16*			ad	Zomercentaurie		Asteraceae
Centaurea stoebe	1.72	18	1	2C	1	Rijncentaurie		Asteraceae
Centaurium erythraea	2.14	40	3	2C, (4C)	7	Echt duizendguldenkruid		Gentianaceae
Centaurium littorale	2.35	40	2	2C, (4C)	5	Strandduizendguldenkruid		Gentianaceae
Centaurium pulchellum	2.55	c. 34, 36	5	2C	7	Fraai duizendguldenkruid		Gentianaceae
Centaurium x intermedium		*40, 50, 60*			1	Centaurium erythreum x littorale		Gentianaceae
Centranthus ruber	1.18	*32*	2	2C	cu	Spoorbloem		Caprifoliaceae
Centunculus minimus #	1.84	*22*	4	2C	4	Dwergbloem		Primulaceae
Cephalanthera damasonium #	37.1	*32, 36, 54*	1		2	Bleek bosvogeltje		Orchidaceae
Cephalanthera longifolia	35.6	*32, 34*	1	2C, 4C	0	Wit bosvogeltje		Orchidaceae
Cephalanthera rubra		*36, 44, 48*			0	Rood bosvogeltje		Orchidaceae
Cerastium arvense	2.62	72	4	2C, 4C	8	Akkerhoornbloem		Caryophyllaceae
Cerastium brachypetalum		90			2	Kalkhoornbloem		Caryophyllaceae
Cerastium diffusum cf	2.44	72	3	2C, **4C**, 8C	6	Scheve hoornbloem		Caryophyllaceae
Ceras.fontanum ssp. holosteoides	5.62	71, 108, 144	1	**2C**, 4C, (8C)	3	Glanzige hoornbloem		Caryophyllaceae
Cerastium fontanum ssp. vulgare #	5.60	72, 108, 144	5	**2C**, 4C,	9	Gewone hoornbloem		Caryophyllaceae
Cerastium glomeratum	1.66	72	5	**2C**, 4C, (8C)	8	Kluwenhoornbloem		Caryophyllaceae
Cerastium glutinosum cf	1.25	70	1	2C, **4C**, 8C	1	Bleke hoornbloem		Caryophyllaceae
Cerastium pumilum	3.52	72, 90	1	2C, 4C	3	Steenhoornbloem		Caryophyllaceae
Cerastium semidecandrum	1.32	(18) 36	4	2C, 4C, 8C	8	Zandhoornbloem		Caryophyllaceae
Cerastium tomentosum #	2.68	72	4	**2C, 4C**, 8C	cu	Viltige hoornbloem		Caryophyllaceae
Ceratocapnos claviculata	0.66	*32*	2	2C-**4C**-32C	8	Rankende helmbloem		Papaveraceae
Ceratochloa carinata	12.4	*56*	4	2C, (4C)	6	Gekielde dravik		Poaceae
Ceratochloa cathartica		*28, 42, 56*			ad	Paardengras		Poaceae
Ceratophyllum demersum #	1.10	*24-72*	2	2C, **4C**	9	Grof hoornblad		Ceratophylaceae
Ceratophyllum submersum	0.43	*24, 40, 72*	1	2C, (4C)	5	Fijn hoornblad		Ceratophylaceae
Chaenomeles japonica	1.43	*34*	1	2C, (4C)	cu	Japanse sierkwee	HD	Rosaceae
Chaenorhinum minus	0.90	14	2	2C	7	Kleine leeuwenbek		Plantaginaceae
Chaenorhinum origanifolium	1.20	*14*	1	2C	1	Marjoleinbekje		Plantaginaceae
Chaerophyllum aureum	1.65	*22*	1	2C	1	Gouden ribzaad		Apiaceae
Chaerophyllum bulbosum	1.72	22	3	2C, (4C)	5	Knolribzaad		Apiaceae
Chaerophyllum temulum	4.81	*14, 22*	3	2C	8	Dolle kervel		Apiaceae
Chamaecyparis x lawsoniana	21.6	*22*	1		cu	Lawson's cypres		Cupressaceae
Chamerion angustifolium	1.47	36	1	2C	9	Wilgenroosje		Onagraceae
Chelidonium majus	2.31	12	1	2C, **4C**, 8C	9	Stinkende gouwe		Papaveraceae
Chenopodium album	3.54	(36) 54	11	2C, (4C)	9	Melganzenvoet		Amaranthaceae
Chenopodium ambrosioides	1.09	(16) 32 (64)	4	2C, **4C**, 8C, 16C		Welriekende ganzevoet		Amaranthaceae
Chenopodium berlandieri		36			ad	Texaanse ganzenvoet		Amaranthaceae
Chenopodium bonus-henricus	2.44	36	1	**2C**, 4C, 8C	2	Brave hendrik		Amaranthaceae
Chenopodium botrys	0.95	18	1	2C, **4C**, 8C, 16C	4	Druifkruid		Amaranthaceae
Chenopodium chenopodioides		*18*	1		2	Beursjesganzenvoet		Amaranthaceae
Chenopodium ficifolium	1.66	18	1	**2C**, 4C, 8C	8	Stippelganzenvoet		Amaranthaceae
Chenopodium foliosum	0.90	18	1	2C, **4C**, C8, 16C	5	Rode aardbeispinazie		Amaranthaceae
Chenopodium giganteum	3.55	54	3	**2C**, 4C	ad	Boomspinazie	BZ	Amaranthaceae
Chenopodium glaucum	0.78	18	3	2C, **4C**, 8C, 16C	8	Zeegroene ganzenvoet		Amaranthaceae
Chenopodium hircinum cf	3.87	36	3	2C, (4C)	2	n. d., smells like rotten fish	BZ	Amaranthaceae
Chenopodium hybridum	1.79	18	1	2C, (4C)	5	Esdoornganzenvoet		Amaranthaceae
Chenopodium murale	1.08	18	1	2C, **4C**, 8C	5	Muurganzenvoet		Amaranthaceae
Chenopodium polyspermum	1.65	18	2	2C, **4C**, 8C	8	Korrelganzenvoet		Amaranthaceae
Chenopodium pumilio	0.81	18	2	2C, **4C**, 8C		Liggende ganzevoet		Amaranthaceae
Chenopodium quinoa #	3.06	18-54	6	2C, **4C**, 8C, 16C	cu	Quinoa		Amaranthaceae
Chenopodium rubrum	1.85	36	6	**2C**, 4C, 8C	8	Rode ganzenvoet		Amaranthaceae
Chenopodium schraderianum	0.81	18	1	**2C**, 4C, 8C	ad	Gekield duifkruid		Amaranthaceae
Chenopodium vulvaria	0.91	18 (36, 72)	1	2C, **4C**, 8C, 16C		Stinkende ganzevoet		Amaranthaceae
Chionodoxa luciliae	8.55	18, 20	2	2C	cu	Middelste sneeuwroem		Asparagaceae
Chionodoxa sardensis	8.30	18	3		cu	Kleine sneeuwroem		Asparagaceae
Chionodoxa siehei	8.70	*18*	6	2C	5	Sneeuwroem		Asparagaceae
Chondrilla juncea	3.25	15!	1	2C	2	Knikbloem		Asteraceae
Chrysosplenium alternifolium	1.78	48	1	2C, 4C, **8C**	4	Verspreidbladig goudveil		Saxifragaceae
Chrysosplenium oppositifolium	1.08	42	1	2C, (4C)	4	Paarbladig goudveil		Saxifragaceae
Cicendia filiformis	1.17	*26*	2	**2C**, 4C	4	Draadgentiaan		Gentianaceae

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Cicer arietinum	1.79	*14, 16*	1	2C, **4C,** 8C	ad	Kikkererwt		Fabaceae
Cichorium endivia	2.02	18	5	2C	cu	Andijvie		Asteraceae
Cichorium intybus	2.87	18	3	2C	7	Wilde cichorei		Asteraceae
Cicuta virosa	2.18	22	1	2C	7	Waterscheerling		Apiaceae
Circaea alpina		22			1	Alpenheksenkruid		Onagraceae
Circaea lutetiana	1.14	22	4	2C	7	Groot heksenkruid		Onagraceae
Circaea x intermedia	1.14	22	3	2C, (4C)	2	Klein heksenkruid		Onagraceae
Cirsium acaule	2.64	34	2	2C	3	Aarddistel		Asteraceae
Cirsium arvense	2.94	34	1	2C	9	Akkerdistel		Asteraceae
Cirsium dissectum	2.49	34	1	2C	6	Spaanse ruiter		Asteraceae
Cirsium eriophorum	3.62	34	1	2C	3	Wollige distel		Asteraceae
Cirsium oleraceum	2.44	*34*	1	2C	4	Moesdistel		Asteraceae
Cirsium palustre	2.53	34	3	**2C**, 4C, 8C	9	Kale jonker		Asteraceae
Cirsium vulgare	5.43	68	2	2C	9	Speerdistel		Asteraceae
Cirsium x forsteri	2.41		1	2C	2	Cirsium dissectum x palustre		Asteraceae
Cirsium x rigens	2.56		1	2C	cu	Cirsium acaule x oleraceum		Asteraceae
Citrullus lanatus	0.95	*22*	8	**2C**, 4C, 8C	cu	Watermeloen		Cucurbitaceae
Cladium mariscus	0.54	*36, c. 60*	1	2C	5	Galigaan		Cyperaceae
Claytonia perfoliata	4.13	36	2	2C, **4C**, 8C	8	Winterpostelein		Portulacaceae
Claytonia sibirica	6.97	24, 36, 48	1	**2C**, 4C, 8C	7	Roze Winterpostelein		Portulacaceae
Clematis montana	19.1	16	1	2C, (4C)	cu	Bergbosrank	FL	Ranunculaceae
Clematis vitalba	20.2	16	2	2C	7	Bosrank		Ranunculaceae
Clematis viticella	20.6	*16*	4	2C, (4C)	2	Italiaanse clematis		Ranunculaceae
Clethra alnifolia	3.00	32	1	2C	cu	Clethra		Clethraceae
Clinopodium ascendens cf	0.93	48	1	2C, **4C**	1	Opstijgende steentijm	BZ	Lamiaceae
Clinopodium acinos	1.43	18	1	2C, (4C)	5	Kleine steentijm		Lamiaceae
Clinopodium calamintha	2.00	48, 72	1	2C	ex	Kleine bergsteentijm		Lamiaceae
Clinopodium grandiflorum cf	1.82	22	1	2C	cu	Grote steentijm		Lamiaceae
Clinopodium menthifolium #	1.77	24	4	2C	2	Bergsteentijm		Lamiaceae
Clinopodium vulgare	1.02	20	3	**2C**, 4C	3	Borstelkrans		Lamiaceae
Cochlearia danica	1.54	42	2	**2C**, 4C, 8C, 16C	8	Deens lepelblad		Brassicaceae
Cochlearia officinalis ssp. anglica		36-60			4	Engels lepelblad		Brassicaceae
Cochlearia officinalis ssp. officinalis	1.65	24	4	2C, 4C, 8C, 16C	4	Echt lepelblad		Brassicaceae
Coincya monensis	3.81	24, 48	1	2C, 4C, 8C	3	Muurbloemmosterd		Brassicaceae
Coix lacryma-jobi leaf	4.45	20	3	2C, 4C	ad	Jobs tranen		Poaceae
Colchicum autumnale	5.80	24-42	2	2C, (4C)	4	Herfsttijloos		Colchicaceae
Colchicum byzantinum	6.90	40	1	2C	cu	Droogbloeier		Colchicaceae
Collinsia heterophylla	4.17	14	1	2C, (4C)	cu	n. d.		Plantaginaceae
Colutea arborescens cf	1.42	*16*	3	2C, **4C**, 8C	cu	Europese blazenstruik		Fabaceae
Colutea orientalis		*16*			cu	Oosterse blazenstruik	FL	Fabaceae
Colutea x media	1.44	*16*	1	2C**, 4C**, 8C	cu	Colutea orientalis.x arborescens		Fabaceae
Comarum palustre	1.30	35, 40, 64	1	**2C**, 4C, (8C)	7	Wateraardbei		Rosaceae
Conium maculatum	2.84	22	2	2C	6	Gevlekte scheerling		Apiaceae
Conopodium majus	1.67	22	1	2C	1	Franse aardkastanje		Apiaceae
Conringia orientalis	1.30	*14*	1		ad	Witte steenraket		Brassicaceae
Consolida ajacis #*	14.8	*16*	2	2C	cu	Valse ridderspoor		Ranunculaceae
Consolida hispanica						Oosterse ridderspoor		Ranunculaceae
Consolida regalis	7.59	16	2	2C	3	Wilde ridderspoor		Ranunculaceae
Convallaria majalis	37.5	32, 36, 38	11	2C	8	Lelietje-van-dalen		Asparagaceae
Convolvulus arvensis	3.17	48	2	**2C,** 4C	9	Akkerwinde		Convolvulaceae
Convolvulus lineatus		30 (60)			ad	Calandsklokje		Convolvulaceae
Convolvulus sepium	1.44	22	4	**2C,** 4C	9	Haagwinde		Convolvulaceae
Convolvulus silvatica	1.49	22	4	**2C,** 4C	ad	Gestreepte winde		Convolvulaceae
Convolvulus soldanella	1.53	22	2	**2C,** 4C	5	Zeewinde		Convolvulaceae
Convolvulus tricolor	1.02	20	1	2C, **4C**, 8C	cu	Dagschone	FL	Convolvulaceae
Conyza: zie Erigeron		*18, 36, 54*	--	2C, (4C)	1	Fijnstraal		Asteraceae
Corallorrhiza trifida		*40, 42, 84*			0	Koraalwortel		Orchidaceae
Coriandrum sativum	4.69	*22*	4	2C, (4C)	cu	Koriander		Apiaceae
Corispermum intermedium	1.07	*18*	3	**2C**, 4C, 8C, 16C	6	Smal vlieszaad		Amaranthaceae
Corispermum marschallii		18			0	Breed vlieszaad		Amaranthaceae
Cornus mas	6.76	*18, 54*	2	2C	cu	Gele kornoelje		Cornaceae
Cornus sanguinea ssp. sanguinea	2.45	22	3	2C, (4C)	7	Rode kornoelje	HD	Cornaceae
Cornus sanguinea ssp. australis	2.47	22	1	2C	cu	n. d.	HD	Cornaceae
Cornus sericea	2.02	*22*	1	2C	cu	Canadese kornoelje		Cornaceae
Cornus suecica	1.97	*22*	1	2C, **3C**	1	Zweedse kornoelje		Cornaceae
Coronopus didymus	0.81	32	3	2C**, 4C**, 8C, 16C	6	Kleine varkenskers		Brassicaceae
Coronopus squamatus	1.03	*32*	3	2C, 4C, 8C, 16C	7	Grove varkenskers	BZ	Brassicaceae
Corrigiola litoralis	0.82	16, 18	2	**2C**, 4C, 8C	4	Riempjes		Caryophyllaceae
Cortaderia selloana	8.36	(16) 32	3	2C	cu	Pampasgras	HD	Poaceae
Corydalis cava #	2.16	*16, 32*	2	**2C**, 4C, 8C	4	Holwortel		Papaveraceae
Corydalis cheiranthifolia	1.13	12, 16	1	2C, **4C**, 8C	cu	Varenhelmbloem	FL	Papaveraceae
Corydalis solida	1.50	*16, 24, 32*	2	**2C, 4C, 8C**, 16C	6	Vingerhelmbloem		Papaveraceae
Corylus avellana	0.83	22, 28	5	2C	9	Hazelaar		Betulaceae
Corylus maxima	0.85	22, 28	1	2C	cu	Lambertsnoot	FL	Betulaceae
Corylus colurna	0.92	28	4	2C	cu	Turkse hazelaar	BZ	Betulaceae
Corynephorus canescens	3.07	14	9	2C, (4C)	8	Buntgras		Poaceae
Cosmos bipinnatus	2.54	*24*	3	2C	cu	Cosmea		Asteraceae
Cotoneaster ambiguus / lucidus	2.90	68	4	2C	cu	n. d.	FL	Rosaceae
Cotoneaster bullatus	2.83	68	2	2C	2	Grote boogcotoneaster	FL	Rosaceae
Cotoneaster dammeri	1.55	34	2	2C	cu	n. d.	FL	Rosaceae
Cotoneaster dielsianus	2.93	68	1	2C	2	Diel's cotoneaster	FL	Rosaceae
Cotoneaster divaricatus	2.99		1	2C	cu	n. d.	FL	Rosaceae

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Cotoneaster franchetii	2.85	68	1	2C	cu	n. d.	FL	Rosaceae
Cotoneaster hjelmqvistii	2.83		1	2C	cu	Dwergmispel	FL	Rosaceae
Cotoneaster horizontalis	1.39	68	1	2C, (4C)	cu	Vlakke dwergmispel		Rosaceae
Cotoneaster integerrimus	1.42	34-102	1	2C	1	Wilde dwergmispel		Rosaceae
Cotoneaster rehderi	2.97		1	2C	cu	Rimpelige cotoneaster		Rosaceae
Cotoneaster salicifolius	1.42	34	2	2C	cu	Wilgbladige cotoneaster		Rosaceae
Cotoneaster sternianus cf	2.87		1	2C	cu	Witte boogcotoneaster		Rosaceae
Cotoneaster zabellii	1.60		1	2C	cu	n. d.	FL	Rosaceae
Cotoneaster x suecicus	1.41	34	2	2C	cu	n. d.	FL	Rosaceae
Cotoneaster x watereri	1.44		1	2C	cu	n. d.	FL	Rosaceae
Cotula coronopifolia	3.83	*20, 40*	2	2C	4	Goudknopje		Asteraceae
Cotula australis		*(18) 36*			ad	Kamilleknopje	FL	Asteraceae
Crambe abyssinica cf	6.22	60	1		ad	Afrikaanse bolletjeskool		Brassicaceae
Crambe maritima	4.77	60	6	2C, **4C,** 8C	4	Zeekool		Brassicaceae
Crassula helmsii	0.63	36	2	2C, **4C,** 8C	1	Watercrassula		Crassulaceae
Crassula tillaea #	0.63	16, 32, 64	5	2C, **4C**, 8C	3	Mosbloempje		Crassulaceae
Crataegus crus-galli	3.20	*51, 68*	3	2C	cu			Rosaceae
Crataegus laevigata	1.47	34	8	2C	7	Tweestijlige meidoorn		Rosaceae
Crataegus monogyna	1.52	34	5	2C	9	Eenstijlige meidoorn		Rosaceae
Crataegus rhipidophyla / rosiformis	2.88	*68*	1	2C	cu	Koraalmeidoorn	BZ	Rosaceae
Crataegus x macrocarpa	2.41	*51*	8	2C	1	Crataegus laevigata x rhipidophyla	BZ	Rosaceae
Crataegus x media	1.58	*34*	3	2C	cu	Crataegus laevigata x monogyna		Rosaceae
Crataegus x subphaerica	3.12	*BZ: 85*	6	2C	1	Crataegus monogyna x rhipidophyla	FL	Rosaceae
Crepis biennis*	17.9	40	1	2C	7	Groot streepzaad		Asteraceae
Crepis capillaris	4.47	6	2	2C, (4C)	9	Klein streepzaad		Asteraceae
Crepis foetida	4.57	8, 10	1	2C	2	Stinkend streepzaad		Asteraceae
Crepis paludosa	9.04	12	2	2C	5	Moerasstreepzaad		Asteraceae
Crepis setosa	3.80	8	1	2C	ad	Borstelstreepzaad		Asteraceae
Crepis tectorum		*8*	1		6	Smal streepzaad		Asteraceae
Crepis vesicaria ssp. taraxacifolia	5.64	8	1	2C	5	Paardenbloemstreepzaad		Asteraceae
Crithmum maritimum	4.72	20	2	2C, **4C,** 8C	3	Zeevenkel		Apiaceae
Crocus angustifolius	7.32	12	2	2C	cu	n. d.	HD	Iridaceae
Crocus chrysanthus	8.10	20	2		cu	Vroege crocus		Iridaceae
Crocus flavus	9.80	8	1		cu	*Geel-oranje crocus*	BZ	Iridaceae
Crocus sativus	10.2	*24*	3		cu	Safraancrocus	BZ	Iridaceae
Crocus tommasinianus	7.80	*16*	2	2C	4	Boerenkrokus		Iridaceae
Crocus vernus	20.3	*8, 16, (32)*	4	2C	5	Bonte krokus		Iridaceae
Crocus x stellaris	13.1	10, 14	2	2C	cu	*Crocus angustifolius x flavus*		Iridaceae
Cruciata laevipes	0.71	22	2	2C, **4C**, 8C, 16C	5	Kruisbladwalstro		Rubiaceae
Cryptomeria japonica	20.60	22	1		cu	Sikkelcipres		Crupessaceae
Cucumis melo	1.04	*24*	9	2C, 4C, 8C, 16C	cu	Meloen		Cucurbitaceae
Cucumis sativus	0.86	24	7	2C, 4C, 8C, 16C	cu	Komkommer		Cucurbitaceae
Cucurbita pepo	1.03	44	9	2C, 4C, 8C, 16C	cu	Sierpompoen, Courgette		Cucurbitaceae
Cucurbita maxima	1.07	40	5	2C, **4C**, 8C, 16C	cu	Reuzenkalabas	FL	Cucurbitaceae
Cuminum cyminum	4.64	*14*	1	2C	cu	Komijn		Apiaceae
Cuscuta campestris #	1.22	56	4	2C, **4C,** 8C	3	Veldwarkruid		Convolvulaceae
Cuscuta epilinum		*42*			0	Vlaswarkruid		Convolvulaceae
Cuscuta epithymum	1.42	14	3	2C, **4C**, 8C	6	Klein warkruid on Galium		Convolvulaceae
Cuscuta epithymum	1.32	14	3	2C, **4C**, 8C	6	Klein warkruid on Rosa spinossima		Convolvulaceae
Cuscuta europaea #	5.15	*14*	10	2C, **4C**, 8C	6	Groot warkruid		Convolvulaceae
Cuscuta gronovii	9.83	60	1	**2C**, 4C	2	Oeverwarkruid		Convolvulaceae
Cuscuta lupuliformis	49.0	*28*	3	**2C**, 4C	5	Hopwarkruid		Convolvulaceae
Cymbalaria muralis	0.98	*14*	2	2C	7	Muurleeuwenbek		Plantaginaceae
Cymbalaria muralis ssp. visianii	1.07		1	2C,	1	n. d.		
Cynodon dactylon	2.29	36	2	2C, 4C	6	Handjesgras		Poaceae
Cynoglossum officinale	1.97	*24*	1	2C, **4C**, 8C	6	Veldhondstong		Boraginaceae
Cynoglossum amabile	1.51	*24*	1	**2C**, 4C, 8C, 16C	1	n. d.	BZ	Boraginaceae
Cynosurus cristatus	5.94	14	2	2C, 4C	8	Kamgras		Poaceae
Cynosurus echinatus		*14*			ad	Stekelkamgras		Poaceae
Cyperus eragrostis	1.45	*42*	4	2C	1	Bleek cypergras		Cyperaceae
Cyperus esculentus	0.66	108 (206)	1	2C	3	Knolcyperus		Cyperaceae
Cyperus flavescens		50, 70			0	Geel cypergras		Cyperaceae
Cyperus glomeratus	1.28		2	2C	0	n. d.	BZ	Cyperaceae
Cyperus fuscus	0.49	36	2	2C	5	Bruin cypergras		Cyperaceae
Cyperus gregorianus	0.85		1	2C		n. d.	BZ	Cyperaceae
Cyperus longus	*0.70*	14, c. 120	1	2C	1	Rood cypergras		Cyperaceae
Cyperus zumula	0.61		1	2C	cu	Kattegras	BZ	Cyperaceae
Cyrtomium falcatum*	22.9	*82, 123*	2	2C	cu	IJzervaren		Dryopteraceae
Cyrtomium fortunei*	21.0	82, 123	2	2C	ad	Smalle ijzervaren	FL	Dryopteraceae
Cystopteris fragilis*	15.6	168, 252	4	2C	3	Blaasvaren		Athyriaceae
Cytisus scoparius	2.21	24, 46, 48	1	2C	9	Brem		Fabaceae
Dactylis glomerata	8.59	28	2	2C	9	Kropaar		Poaceae
Dactylorhiza elata ssp. *sesquipedalis*		80	0	2C,	0	Grote rietorchis		Orchidaceae
Dactylorhiza incarnata var. *incarnata* #	29.0	0 (BZ: 60, 8(	5	2C	6	Vleeskleurige orchis		Orchidaceae
Dactylorhiza incarnata var. *lobelii*						Vleeskleurige duinorchis		Orchidaceae
Dactylorhiza incarnata var. coccinia	7.44	BZ: 20	2	2C,	1	Steenrode orchis	FL	Orchidaceae
Dactylorhiza maculata ssp. fuchsii #	11.6	40	5	**2C, 4C**	5	Bosorchis		Orchidaceae
Dactylorhiza maculata ssp. maculata	18.6	80	1	**2C**, 4C	6	Gevlekte orchis		Orchidaceae
Dactylorhiza majalis ssp. majalis cf	21.6	80	1	2C, 4C	5	Brede orchis		Orchidaceae
Dactylorhiza majalis ssp praeterm. #	26.3	80	7	2C, (4C)	6	Rietorchis		Orchidaceae
Dactylorhiza majalis ssp. sphagnicola					2	Veenorchis		Orchidaceae
Dactylorhiza traunsteineri		80				Smalle orchis		Orchidaceae

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Dactylorhiza viridis*	14.9	40	2	2C, 4C, 8C	2	Groene nachtorchis		Orchidaceae
Danthonia decumbens	4.19	36	1		8	Tandjesgras		Poaceae
Daphne laureola	6.08	18	2	**2C, 4C**	1	Zwart peperboompje		Thymelaeaceae
Daphne mezereum	6.20	18	3	2C, 4C, 8C	3	Rood peperboompje		Thymelaeaceae
Datura stramonium	4.24	*24*	6	**2C, 4C**	6	Doornappel		Solanaceae
Daucus carota	1.19	*18*	5		8	Wilde peen		Apiaceae
Daucus carota 'Sativus'	1.18	18	8	2C, (4C)	8	Winterpeen		Apiaceae
Deschampsia cespitosa	8.60	26, 39, 52	1	2C, 4C	8	Ruwe smele		Poaceae
Deschampsia flexuosa	12.2	14, 28	2	2C	9	Bochtige smele		Poaceae
Deschampsia setacea	4.94	14	1	2C	3	Moerassmele		Poaceae
Descurainia sophia	0.61	*28, 56*	1	2C, 4C, 8C, 16C	7	Sofiekruid		Brassicaceae
Deutzia gracilis	3.08	26	5	2C	cu	Witte deutzia		Hydrangeaceae
Deutzia scabra	13.4	26, 130	5	2C	cu	Roze deutzia		Hydrangeaceae
Dianthus armeria	1.00	30	1	**2C**, 4C, 8C	4	Ruige anjer		Caryophyllaceae
Dianthus barbatus	1.54	*30*	2	**2C**, 4C, 8C	cu	Duizenschoon		Caryophyllaceae
Dianthus carthusianorum	1.19	*30*	3	**2C**, 4C, 8C	1	Karthuizer anjer		Caryophyllaceae
Dianthus deltoides	0.93	30	1	**2C,** 3C, 4C, 6C	4	Steenanjer		Caryophyllaceae
Dianthus giganteus	1.19	*30*	3	2C, 4C, 8C	2	Hoofdjes anjer	BZ	Caryophyllaceae
Dianthus superbus	1.53	30, 60	1	**2C**, 4C, 8C	0	Prachtanjer		Caryophyllaceae
Dicentra spectabilis	1.37	16, 28, 32	1	2C, **4C**, 8C	cu	Mariahartje	FL	Papaveraceae
Dicentra eximia	1.11	16	1	2C, **4C,** 8C	cu		FL	Papaveraceae
Digitalis lanata	2.69	56 (112)	2		ad	Wollig vingerhoedskruid	FL	Plantaginaceae
Digitalis lutea	5.03	*16-112*	2	**2C**, 4C, 8C	ad	Geel vingerhoedskruid		Plantaginaceae
Digitalis purpurea	2.02	56	2	2C	8	Vingerhoedskruid		Plantaginaceae
Digitaria ischaemum	2.05	*36, 45*	2	2C	8	Glad vingergras		Poaceae
Digitaria sanguinalis	2.46	*18, 28, 36-48*	6	**2C,** 4C	7	Harig vingergras		Poaceae
Diplotaxis muralis	2.56	*42*	3	2C, **4C**, 8C, 16C	6	Kleine zandkool		Brassicaceae
Diplotaxis tenuifolia	1.67	*22*	2	2C, **4C**, 8C	7	Grote zandkool		Brassicaceae
Dipsacus fullonum	6.65	*(16) 18*	3	2C	8	Grote kaardebol		Caprifoliaceae
Dipsacus laciniatus	7.05	*(16) 18*	5	2C	1	Slipbladkaardebol		Caprifoliaceae
Dipsacus pilosus	10.4	*18*	1	**2C,** 4C, 8C, 16C	5	Kleine kaardebol		Caprifoliaceae
Dipsacus strigosus	8.69	*18*	1	2C	ad	Slanke kaardebol	FL	Caprifoliaceae
Dittrichia graveolens	1.99	*18*	1	2C	1	Kamfer alant		Asteraceae
Dittrichia viscosa		*18*			ad	Kleverige alant		Asteraceae
Doronicum orientale	5.92	60	1	2C	cu	Oosterse zonnebloem	FL	Asteraceae
Doronicum pardalianches	6.76	*60*	1	2C	2	Hartbladzonnebloem		Asteraceae
Doronicum plantagineum	10.0	*120*	2	2C	4	Weegbreezonnebloem		Asteraceae
Draba muralis	0.95	*32*	1	**2C**, 4C, 8C	4	Wit hongerbloempje		Brassicaceae
Drosera anglica	6.15	40	1	2C	1	Lange zonnedauw		Droseraceae
Drosera intermedia	2.96	20	1	2C	7	Kleine zonnedauw		Droseraceae
Drosera rotundifolia	2.75	20	2	2C	7	Ronde zonnedauw		Droseraceae
Drosera x obovata					0	Drosera anglica x rotundifolia		Droseraceae
Dryopteris affinis*	16.6	82	50	2C	3	Geschubde mannetjesvaren		Dryopteraceae
Dryopteris x borreri* cf	25.3	123	36	2C	2	Matte geschubde mannetjesvaren	BZ	Dryopteraceae
Dryopteris x cambrensis* cf	24.6	123	23	2C	1	n. d.	BZ	Dryopteraceae
Dryopteris carthusiana*	34.6	164	26	2C	7	Smalle stekelvaren		Dryopteraceae
Dryopteris cristata*	34.8	164	6	2C	6	Kamvaren		Dryopteraceae
Dryopteris cycadina*	27.7	82	6	2C	1	n. d.	FL	Dryopteraceae
Dryopteris dilatata*	37.9	164	26	2C	7	Brede stekelvaren		Dryopteraceae
*Dryopteris expansa**	20.9	82	1	2C	1	Tere stekelvaren		Dryopteraceae
Dryopteris filix-mas*	32.6	164	26	2C	8	Mannetjesvaren		Dryopteraceae
Dryopteris x critica*	40.1	BZ: 205	6	2C	ad	n. d.		Dryopteraceae
*Dryopteris x deweveri**	36.6	164	2	2C	2	Dryopteris carthusiana x dilatata		Dryopteraceae
*Dryopteris x complexa**	33.6	164	2	2C	1	Dryopteris affinis x filix-mas		Dryopteraceae
*Dryopteris x uliginosa**	34.7	164	3	2C	1	Dryopteris carthusiana x cristata		Dryopteraceae
Echinacea purpurea*	15.4	22	2	2C	1	Rode zonnehoed	BZ	Boraginaceae
Echinochloa crus-galli	3.26	36-72	5	**2C,** 4C	8	Europese hanenpoot		Poaceae
Echinochloa muricata	1.95	48	2	**2C**, 4C	1	Stekelige hanenpoot		Poaceae
Echinochloa frumentacea	3.59	(36, 48) 54	1	2C, 4C	1	n. d.	FL	Poaceae
Echinops exaltatus	8.95	*30*	1	2C	cu	Stekelige kogeldistel		Asteraceae
Echinops sphaerocephalus	8.34	*30, 32*	1	2C	cu	Beklierde kogeldistel		Asteraceae
Echium plantagineum	0.76	16	2	2C, **4C**, 8C, 16C	1	Weegbreeslangenkruid	BZ	Boraginaceae
Echium vulgare	1.74	32	4	**2C**, 4C, 8C, 16C	7	Slangenkruid		Boraginaceae
Egeria densa	11.5	*48*	1	**2C, 4C**	cu	Egeria		Hydrocharitaceae
Eichornia crassipes	2.90	32	2	2C	cu	Waterhyacinth	FL	Pontederiaceae
Elaeagnus angustifolia	1.17	28	1	2C, (4C)	cu	Smalle olijfwilg		Eleagnaceae
Elaeagnus commutata	1.49	*28*	1	2C, (4C)	cu	Zilverolijfwilg		Eleagnaceae
Elaeagnus multiflora	1.55		1	2C, (4C)	cu	Langstelige olijfwilg		Eleagnaceae
Elatine hexandra	1.42	*72*	1	2C, (4C)	4	Gesteeld glaskroos		Elatinaceae
Elatine hydropiper	0.59	*40*	1	2C	2	Klein glaskroos		Elatinaceae
Elatine triandra		40			ad	Drietallig glaskroos		Elatinaceae
Eleocharis acicularis	2.63	*20, 56*	2	2C	7	Naaldwaterbies		Cyperaceae
Eleocharis multicaulis	3.60	20	1	2C	6	Veelstengelige waterbies		Cyperaceae
Eleocharis ovata		10			1	Eivormige waterbies		Cyperaceae
Eleocharis palustris	10.8	16, 37, 38	3	2C	8	Gewone waterbies		Cyperaceae
Eleocharis quinqueflora	1.14	20, 50, c.136	2	2C	5	Armbloemige waterbies		Cyperaceae
Eleocharis uniglumis	9.50	40-90	1	2C	6	Slanke waterbies		Cyperaceae
Eleogiton fluitans	0.57	60	1	2C	6	Vlottende bies		Cyperaceae
Eleusine indica ssp. *indica*	1.43	*18, 36*	1	2C	ad	Plat handjesgras		Poaceae
Elodea canadensis	2.77	*24, 48*	1	2C	7	Brede waterpest		Hydrocharitaceae
Elodea nutallii	8.35	*48*	2	2C,	9	Smalle waterpest		Hydrocharitaceae
Elymus caninus*	16.9	28	4	2C, (4C)	5	Hondstarwegras		Poaceae

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Elymus arenosus cf	20.7		5	2C	--	Mainzerkweek	BZ	Poaceae
Elymus athericus	28.9	42	10	2C	6	Zeekweek		Poaceae
Elymus campestris	30.1		27	2C	--	Veldkweek	BZ	Poaceae
Elymus junceus ssp. boreoatlanticus	24.9	28	8	2C	5	Biestarwegras		Poaceae
Elymus junceus x (x acutus) cf	37.2	BZ: 49	1	2C	--	Biestarwegras hybrid	BZ	Poaceae
Elymus repens	23.1	42	8	2C, (4C)	9	Kweek		Poaceae
Elymus x obtusiusculus	26.4	35	8	2C, (4C)	6	Basterdkweek, E. atherica x juncea		Poaceae
Empetrum nigrum	1.25	*26, 52*	4	2C	7	Kraaihei		Ericaceae
Ephedra gerardiana	33.4	*14, 18*	1	2C	cu	Chinese Ephedra	FL	Ephedraceae
Epilobium ciliatum	0.67	36	7	2C, (4C)	7	Beklierde basterdwederik		Onagraceae
Epilobium hirsutum	0.87	36	3	2C	9	Harig wilgenroosje		Onagraceae
Epilobium komarovianum	0.64	36	1	2C	cu	Kruipende basterdwederik		Onagraceae
Epilobium lanceolatum	0.83	36	2	2C	1	Lancetbladige basterdwederik		Onagraceae
Epilobium montanum	0.77	36	6	2C	8	Bergbasterdwederik		Onagraceae
Epilobium obscurum	0.65	36	1	2C	6	Donkergroene basterdwederik		Onagraceae
Epilobium palustre	0.65	36	2	2C, (4C)	7	Moerasbasterdwederik		Onagraceae
Epilobium parviflorum	0.80	36	4	2C	9	Viltige basterdwederik		Onagraceae
Epilobium roseum	0.65	36	2	2C	6	Bleke basterdwederik		Onagraceae
Epilobium tetragonum	0.68	36	3	**2C,** 4C	8	Kantige basterdwederik		Onagraceae
Epimedium alpinum	8.41	12	1	2C	cu	Epimedium		Berberidaceae
Epipactis atrorubens	27.2	*(38) 40 (60)*	2	2C	2	Bruinrode wespenorchis		Orchidaceae
Epipactis helleborine ssp. helleborine	26.9	(36) 40 (44)	3	2C, (4C)	8	Brede wespenorchis		Orchidaceae
Epipactis helleborine ssp. neerlandica	26.9		3	2C	5	Duinwespenorchis		Orchidaceae
Epipactis muelleri		38			1	Geelgroene wespenorchis		Orchidaceae
Epipactis palustris	28.5	*40-48*	2	2C, (4C)	6	Moeraswespenorchis		Orchidaceae
Equisetum arvense	28.6	216	6	2C, 4C	9	Heermoes		Equisetaceae
Equisetum fluviatile	29.3	216	4	2C, (4C)	8	Holpijp		Equisetaceae
Equisetum hyemale	53.2	216	7	2C, 4C	4	Schaafstro		Equisetaceae
Equisetum palustre	30.4	216	9	2C, 4C	8	Lidrus		Equisetaceae
Equisetum pratense	24.0	216	1	2C, 4C	0	Veldpaardenstaart	BZ	Equisetaceae
Equisetum ramosissimum	57.3	*216*	4	2C	2	Vertakte paardenstaart	BZ	Equisetaceae
Equisetum ramossisimum x var. debile	49.8	*216*	2	2C, 4C		n. d.	BZ	Equisetaceae
Equisetum (hyemale/ramos var) jap.cf	49.7		4	2C, (4C)		n. d.	BZ	Equisetaceae
Equisetum scirpioides #	42.0	216	4	2C	ad	Dwergholpijp	FL	Equisetaceae
Equisetum sylvaticum	25.6	216	6	**2C**, 4C	4	Bospaardenstaart		Equisetaceae
Equisetum telmateia	27.4	216	6	**2C**, 4C	4	Reuzenpaardenstaart		Equisetaceae
Equisetum variegatum	59.8	216	2	**2C**, 4C	3	Bonte paardenstaart		Equisetaceae
Equisetum x alsaticum	85.8		1	2C		n. d.	BZ	Equisetaceae
Equisetum x ascendens	82.2		3	**2C**, 4C	1	n. d.	FL	Equisetaceae
Equisetum x geisertii	85.9		1	**2C**, 4C		n. d.	BZ	Equisetaceae
Equisetum x litorale	30.6	216	1	**2C**, 4C	8	Equisetum arvense x fluviatile		Equisetaceae
Equisetum x moorei	57.3	216	4	2C	2	Equisetum hyemale x ramosissimum.	BZ	Equisetaceae
Equisetum x trachyodon	59.4	216	1	2C	1	Equisetum variegatum x hyemale		Equisetaceae
Eragrostis minor #	1.64	*20-80*	8	2C, (4C)	6	Klein liefdegras		Poaceae
Eragrostis multicaulis	1.43	*20-72*	15	2C	8	Stijf Straatliefdegras		Poaceae
Eragrostis sp.	1.13		1	2C, 4C		n. d.	BZ	Poaceae
Eragrostis tef	1.72	*40*	6	**2C**, 4C	cu	Teff	BZ	Poaceae
Eragrostis virescens	2.49	*60*	1	2C, (4C)	1	n. d.	BZ	Poaceae
Eranthis hyemalis	23.7	*16, 48*	6	2C	5	Winterakoniet		Ranunculaceae
Erica cinerea	0.79	24	1	2C	2	Rode dophei		Ericaceae
Erica x darleyensis	1.23		1	2C	cu	Erica carnea x eugena	FL	Ericaceae
Erica scoparia	0.89	24	3	2C	2	Bezemdophei		Ericaceae
Erica tetralix	1.01	24	2	2C	8	Gewone dophei		Ericaceae
Erigeron acris	2.81	18	3	2C	6	Scherpe fijnstraal		Asteraceae
Erigeron acris ssp. serotinus	2.85		1	2C	ad	n. d.	BZ	Asteraceae
Erigeron annuus	4.55	18+9B	10	2C, (4C)	6	Zomerfijnstraal		Asteraceae
Erigeron bonariensis	4.46	*18, 36, 54*	11	2C	1	Gevlamde fijstraal		Asteraceae
Erigeron canadensis	0.97	18	13	2C, (4C)	9	Canadese fijnstraal		Asteraceae
Erigeron karvinskianus	3.88	*18-54*	8	2C	cu	Muurfijnstraal		Asteraceae
Erigeron sumatrensis	4.74	*54*	24	2C	1	Hoge fijnstraal		Asteraceae
Erigeron sumatrensis (+ daveauanus)	4.81		14	2C		Canadese fijnstraal	BZ	Asteraceae
Erigeron floribundus	5.14	54	20	2C		Ruige fijnstraal	BZ	Asteraceae
Erigeron x huelsenii						Erigeron acer x canadenis	BZ	Asteraceae
Erigeron x flahaultianus						Erigeron bonariensis x canadensis	BZ	Asteraceae
Erigeron acer x floribunda	3.98	BZ: 36	1	2C		Erigeron acer x floribundus	BZ	Asteraceae
Erinus alpinus	1.02	*14*	2	2C	cu	'Alpenleverbalsem'	BZ	Scrophulariaceae
Eriophorum angustifolium	1.02	58	3	2C	7	Veenpluis		Cyperaceae
Eriophorum gracile		*60, 76*	1		2	Slank wollegras		Cyperaceae
Eriophorum latifolium		*54, 58, 72*	1		1	Breed wollegras		Cyperaceae
Eriophorum vaginatum	0.84	58	3	2C	6	Eenarig wollegras		Cyperaceae
Erodium cicutarium	2.71	40	5	**2C**, 4C, 8C	9	Gewone reigersbek		Geraniaceae
Erodium (cicut. ssp) dunense	2.11	40	18	**2C**, 4C, 8C	5	Duinreigersbek		Geraniaceae
Erodium lebelii	1.25	20	2	**2C**, 4C, 8C	6	Kleverige reigersbek		Geraniaceae
Erodium x anaristatum	1.58	30	2	**2C**, 4C, 8C	3	Erodium lebellii x dunensis	FL	Geraniaceae
Erodium moschatum	1.86	20	2	**2C**, 4C, 8C	1	Muskusreigersbek	FL	Geraniaceae
Erophila majuscula (+praecox diploid?)	0.64	14	5	**2C**, 4C, 8C, 16C	--	Vroegeling	BZ	Brassicaceae
Erophila praecox tetraploid 4x	1.15	32	8	**2C, 4C**, 8C	--	Vroegeling	BZ	Brassicaceae
Erophila verna (+ glabrescens)	1.64	30-44 (46)	58	**2C, 4C**, 8C	8	Vroegeling		Brassicaceae
Erophila boerhavii (+praecox octoploid)	2.23	30 (48-56)	27	2C, **4C**		Vroegeling	HD	Brassicaceae
Eruca vesicaria (ssp. glabrescens)	1.41	*22*	1	2C, 4C, 8C, 16C	ad	Zwaardherik		Brassicaceae
Eruca sativa	2.35	22	1	2C, 4C, 8C		Rucola	BZ	Brassicaceae
Erucastrum gallicum	2.31	*30*	1	2C, 4C	6	Schijnraket		Brassicaceae

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Eryngium campestre	3.62	*14, 28*	1	2C	7	Kruisdistel		Apiaceae
Eryngium maritimum	2.59	16	2	2C,	5	Blauwe zeedistel		Apiaceae
Eryngium planum	2.71	16	1	2C, (4C)	ev	Vlakke kruisdistel	BZ	Apiaceae
Erysimum aureum	1.02		2	**2C**, 4C	ad	Kleinbloemige muurbloem	BZ	Brassicaceae
Erysimum cheiranthoides	0.44	16	8	2C, **4C**, 8C, 16C	8	Gewone steenraket		Brassicaceae
Erysimum cheiri	0.87	14	2	2C, **4C**, 8C	4	Muurbloem		Brassicaceae
Erysimum repandum		16			ad	Uitgespreide steenraket		Brassicaceae
Erysimum virgatum (hieracifolium?)	1.71	48	1	2C, (4C)	3	Stijve steenraket		Brassicaceae
Erysimum x marshallii	2.76	*42*	1	2C	cu	Oranje muurbloem		Brassicaceae
Eschscholtzia californica	0.92	*12*	3	**2C, 4C, 8C, 16C**	cu	Slaapmuts		Papaveraceae
Euonymus europaeus	1.99	32	4	2C	8	Wilde kardinaalsmuts		Celastraceae
Euonymus japonicus	0.67	32	4	2C	cu	Japanse kardinaalsmuts	BZ	Celastraceae
Euonymus latifolius	2.06	64	1	2C	cu	Brede kardinaalsmuts	FL	Celastraceae
Eupatorium cannabinum	5.12	20	3	2C, (4C)	9	Koninginnenkruid		Asteraceae
Eupatorium purpureum	4.75	20	2	2C	cu	Purper leverkruid	FL	Asteraceae
Euphorbia amygdaloides 'Rubra'	6.73	20	1	2C,	2	Amandelwolfsmelk		Euphorbiaceae
Euphorbia characias	6.48	20	1	2C	1	Vroege wolfsmelk	HD	Euphorbiaceae
Euphorbia cyparissias	2.15	20, 40	1	2C, (4C)	6	Cipreswolfsmelk		Euphorbiaceae
Euphorbia dulcis	4.71	12, 18, 24	1	2C, (4C)	ad	Zoete wolfsmelk	FL	Euphorbiaceae
Euphorbia epithymoides	1.56	14	1	2C, 3C	ad	Kleurige wolfsmelk		Euphorbiaceae
Euphorbia esula	3.78	60	3	2C, (4C)	8	Heksenmelk		Euphorbiaceae
Euphorbia exigua	1.51	24	3	2C, (4C)	5	Kleine wolfsmelk		Euphorbiaceae
Euphorbia helioscopia	2.11	42	2	2C, (4C)	8	Kroontjeskruid		Euphorbiaceae
Euphorbia lathyrus	2.51	20	1	2C, (4C)	6	Kruisbladige wolfsmelk		Euphorbiaceae
Euphorbia lucida	4.44	28, 40	1	2C, (4C)	ad	Glanzende wolfsmelk	BZ	Euphorbiaceae
Euphorbia maculata	1.17	*28*	3	2C, (4C)	1	Straatwolfsmelk		Euphorbiaceae
Euphorbia myrsinites	4.05	*20*	4	2C, (4C)	cu	Blauwgroene wolfsmelk	BZ	Euphorbiaceae
Euphorbia palustris	8.31	16, 20	6	2C,	5	Moeraswolfsmelk		Euphorbiaceae
Euphorbia paralias	1.59	16	1	2C, (4C)	3	Zeewolfsmelk		Euphorbiaceae
Euphorbia peplus	0.72	16	2	2C, (4C)	8	Tuinwolfsmelk		Euphorbiaceae
Euphorbia platyphyllos	1.58	30	1	2C, (4C)	1	Brede wolfsmelk		Euphorbiaceae
Euphorbia prostrata	0.66	18	1	2C, (4C)	2	Geribde wolfsmelk	FL	Euphorbiaceae
Euphorbia seguieriana	1.78	40	1	2C, (4C)	3	Zandwolfsmelk		Euphorbiaceae
Euphorbia serpens	1.06	22, 24	1	2C, (4C)	ad	Gladde wolfsmelk		Euphorbiaceae
Euphorbia stricta		*20, 28*	1		2	Stijve wolfsmelk		Euphorbiaceae
Euphrasia micrantha	2.38	*44*	1	**2C**, 4C	1	Slanke Ogentroost		Orobanchaceae
Euphrasia nemorosa		*44*	1		1	Bosogentroost		Orobanchaceae
Euphrasia officinalis		22	1		1	Beklierde ogentroost		Orobanchaceae
Euphrasia stricta	2.25	*20, 28*	2	**2C**, 4C, 8C	7	Stijve ogentroost		Orobanchaceae
Euphrasia tetraquetra	2.37	*44*	3	**2C,** 4C, 8C	ad	Vierrijige ogentroost		Orobanchaceae
Euribia divaricata	3.68	18	1	2C	1	n. d.	BZ	Asteraceae
Euribia macrophylla		72			cu	Grote aster	HD	Asteraceae
Euribia schreberi cf	3.78	54	3	2C	1	Middelste netelaster	BZ	Asteraceae
Fagopyrum esculentum	2.85	*16 (32)*	4	**2C**, 4C	cu	Boekweit		Polygonaceae
Fagopyrum tataricum	1.14	16	1	2C, **4C,** 8C	0	Franse boekweit		Polygonaceae
Fagus grandifolia	1.15		1		cu	Amerikaanse beuk	FL	Fagaceae
Fagus orientalis	1.13	24	2		cu	Oosterse beuk	FL	Fagaceae
Fagus sylvatica	1.14	24	1	2C	8	Beuk		Fagaceae
Falcaria vulgaris	2.90	*22*	1	2C	1	Sikkelkruid		Apiaceae
Fallopia baldschuanica	3.27	20	6	2C, **4C**, 8C	cu	Chinese bruidsluier		Polygonaceae
Fallopia convolvulus	3.02	40	2	**2C, 4C**	9	Zwaluwtong		Polygonaceae
Fallopia dumetorum	1.54	20	7	**2C, 4C**, 8C	8	Heggenduizendknoop		Polygonaceae
Fallopia japonica	9.30	(66) 88	12	2C, 4C	8	Japanse duizendknoop		Polygonaceae
Fallopia japonica compacta x ssp. Japonica	7.40	66	4			Japanse duizendknoop	BZ	Polygonaceae
Fallopia sachalinensis	8.70	(44) 66, 88	4		7	Sachalinse duizendknoop		Polygonaceae
Fallopia x bohemica	7.40	(44) 66 (88)	8		3	Fallopia japonica x sachalinensis		Polygonaceae
Fallopia x conollyana	6.48	BZ: 54	1		1	Fallopia baldschuanica x japonica		Polygonaceae
Fatsia japonica	2.99	24, 48	2	2C,	cu	Vingerplant	BZ	Araliaceae
Festuca arenaria*	18.1	56	2	2C, (4C)	6	Duinzwenkgras		Poaceae
Festuca arundinacea*	17.3	42	2	2C	8	Rietzwenkgras		Poaceae
Festuca brevipila* cf	13.5	42	1	**2C**, 4C	6	Hard zwenkgras		Poaceae
Festuca filiformis*	4.30	14	1	**2C**, 4C	8	Fijn schapengras		Poaceae
Festuca gigantea*	20.0	42	4	**2C**, (4C)	7	Reuzenzwenkgras		Poaceae
Festuca heterophylla*	21.9	*28, 42*	2	2C	ad	Draadzwenkgras		Poaceae
Festuca lemanii*	14.2	42	1	2C	3	Groot zwenkgras		Poaceae
Festuca ovina* cf	14.1	28	1	**2C,** 4C	2	Schapengras		Poaceae
Festuca ovina* ssp. guestphalica		28			1	Zinkschapengras		Poaceae
Festuca ovina* ssp. hirtula (as rubra)	9.70	28	2		ad	Ruig schapengras		Poaceae
*Festuca pallens**		14, 21, 28			0	Kalkzwenkgras		Poaceae
Festuca pratensis*	6.04	14	2	**2C**, 4C, 8C	8	Beemdlangbloem		Poaceae
Festuca rubra*	5.75	42	1	**2C**, 4C	9	Rood zwenkgras		Poaceae
Festulolium X braunii cf	6.34	*14*	3		ad	Fest. pratensis x Lol. multiflorum		Poaceae
Festulolium X loliaceum		14, 21			2	Fest.prat x Lol.per.Trosraaigras		Poaceae
Festulpia X		42			0	Festuca rubra x Vulpia myurosur.		Poaceae
Festulpia X					0	Festuca rubra x Vulpia bromoides		Poaceae
Ficaria verna	33.3	32	50	**2C, 4C**	9	Gewoon speenkruid		Ranunculaceae
Ficaria ambigua (as ssp. grandiflora)	20.6	16	15	2C	1	Vreemd speenkruid		Ranunculaceae
Ficus carica	0.79	26	3	2C, (4C)	cu	Vijg		Moraceae
Filago arvensis		28	1		1	Akkerviltkruid		Asteraceae
Filago lutescens	1.64	*28*	1	**2C, 4C**	1	Geel viltkruid		Asteraceae
Filago minima	1.40	*28*	1	2C	6	Dwergviltkruid		Asteraceae
Filago pyramidata		*28*			0	Spatelviltkruid		Asteraceae

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Filago vulgaris	1.85	28	1	**2C**, 4C, 8C	2	Duits viltkruid		Asteraceae
Filipendula ulmaria	0.79	14, 16	1	**2C, 4C,** 8C, 16C	9	Moerasspirea		Rosaceae
Filipendula vulgaris	0.85	14	6	2C, 4C	1	Knolspirea		Rosaceae
Foeniculum vulgare	3.53	*22*	6	2C, **4C**, 8C	cu	Venkel		Apiaceae
Forsythia suspensa		24, 28			ad	Hangende forsythia		Oleaceae
Forsythia viridissima	2.01	28	1	2C	cu	Rechte forsythia		Oleaceae
Forsythia x intermedia #	1.82	*58*	9	**2C**, 4C	cu	Forsythia suspensa x viridissima		Oleaceae
Fragaria moschata	1.59	*42*	2	**2C**, 4C	1	Grote bosaardbei		Rosaceae
Fragaria vesca	0.59	14	7	**2C**, 4C, 8C	7	Bosaardbei		Rosaceae
Fragaria x ananassa	1.96	*56*	4	**2C**, 4C	cu	Aardbei F. virginiana x chiloensis		Rosaceae
Fraxinus angustifolia	1.76	*46*	1	**2C**	cu	Smalbladige es	FL	Oleaceae
Fraxinus excelsior	1.84	46	2	2C	9	Es		Oleaceae
Fraxinus ornus	2.01	46	1	2C	cu	Pluimes	FL	Oleaceae
Fritillaria imperialis #	101	24, 48	2	2C	cu	Keizerskroon		Liliaceae
Fritillaria meleagris	107	*24*	4	2C, (4C)	5	Wilde kievitsbloem		Liliaceae
Fumaria capreolata	1.39	56, 64	1	**2C**, 4C, 8C	4	Rankende duivenkervel		Papaveraceae
Fumaria muralis	1.20	48	1	**2C**, 4C, 8C	5	Middelste duivenkervel		Papaveraceae
Fumaria officinalis	1.76	32, 48	1	**2C, 4C**, 8C	7	Gewone duivenkervel		Papaveraceae
Gagea lutea	42.7	6x =72	22	**2C,** 4C	4	Bosgeelster		Liliaceae
Gagea lutea var glauca	42.3	6x =72	15	**2C,** 4C	4	Grauwe bosgeelster	BZ	Liliaceae
Gagea minima	14.9	2x =24	2	**2C,** 4C	1	Spitse geelster		Liliaceae
Gagea pratensis	32.7	4x =48,	30	**2C,** 4C	5	Weidegeelster	BZ	Liliaceae
Gagea pratensis	39.9	5x =60,	99	**2C,** 4C	5	Weidegeelster		Liliaceae
Gagea pratensis	45.6	6x =72	22	**2C,** 4C	5	Weidegeelster	BZ	Liliaceae
Gagea pratensis	75.8	10x =120	2	**2C,** 4C	5	Weidegeelster	BZ	Liliaceae
Gagea spathacea	46.7	9x =108	18	**2C,** 4C	4	Schedegeelster		Liliaceae
Gagea villosa*	16.9	24 (36-72)	15	**2C,** 4C	3	Akkergeelster		Liliaceae
Gagea villosa* #	32.3	48	5	**2C,** 4C	1	Akkergeelster	BZ	Liliaceae
Gaillardia x grandiflora	24.7	72	1	2C	ad	Kokarde bloem	FL	Asteraceae
Galanthus caucasicus	59.1	24	12	2C	cu	*Kaukasisch sneeuwklokje*		Amaryllidaceae
Galanthus elwesii #	55.3	*24, 48, 72*	13	2C	cu	*Groot sneeuwklokje*		Amaryllidaceae
Galanthus ikariae	68.7	24	6	2C	cu	*Glanzend sneeuwklokje*		Amaryllidaceae
Galanthus nivalis #	72.2	*24-48*	25	2C	7	Gewoon sneeuwklokje		Amaryllidaceae
Galanthus plicatus	55.6	*24*	8	2C	cu		HD	Amaryllidaceae
Galanthus woronowii	56.4	*24*	14	2C	cu		HD	Amaryllidaceae
Galega officinalis	3.96	*16*	2	2C	cu	Galega		Fabaceae
Galeopsis angustifolia	1.22	*16*	1	2C	3	Smalle raai		Lamiaceae
Galeopsis bifida	3.22	32	6	2C, (4C)	7	Gespleten hennepnetel		Lamiaceae
Galeopsis ladanum		16			1	Brede raai		Lamiaceae
Galeopsis pubescens	1.86	16	2	2C, (4C)	2	Zachte hennepnetel		Lamiaceae
Galeopsis segetum	1.33	*16*	1	2C, (4C)	6	Bleekgele hennepnetel		Lamiaceae
Galeopsis speciosa	2.18	16	2	2C, (4C)	7	Dauwnetel		Lamiaceae
Galeopsis tetrahit	3.29	32	7	2C, (4C)	9	Gewone hennepnetel		Lamiaceae
Galinsoga parviflora	1.62	16	2	2C	9	Kaal knopkruid		Asteraceae
Galinsoga quadriradiata	4.14	32	4	2C	9	Harig knopkruid		Asteraceae
Galium aparine	2.05	22-88	2	2C, 4C, 8C	9	Kleefkruid		Rubiaceae
Galium boreale	3.46	44	2	**2C, 4C**	1	Noords walstro		Rubiaceae
Galium elongatum	4.53	96	1	**2C**, 4C		n. d.		Rubiaceae
Galium glaucum		22, 44			0	Zeegroen walstro		Rubiaceae
Galium mollugo #	3.95	*22, 44*	15	**2C**, 4C	8	Glad walstro		Rubiaceae
Galium odoratum	1.77	(22) 44	6	**2C,** 4C, 8C	6	Lievevrouwebedstro		Rubiaceae
Galium palustre #	5.01	*24-144*	6	**2C**, 4C	9	Moeraswalstro		Rubiaceae
Galium parisiense		*22, 44, 66*	1		ad	Frans walstro		Rubiaceae
Galium pumilum	3.45	(44, 66) 88	6	2C, 4C	3	Kalkwalstro		Rubiaceae
Galium saxatile	3.00	44	1	**2C, 4C**	8	Liggend walstro		Rubiaceae
Galium spurium		*20, 44*			ad	Akkerwalstro		Rubiaceae
Galium sylvaticum	2.07	22	4	2C, **4C**, 8C	0	Boswalstro		Rubiaceae
Galium tricornutum		*44*			0	Driehoornig walstro		Rubiaceae
Galium uliginosum	1.32	*22, 44*	1	**2C, 4C**	7	Ruw walstro		Rubiaceae
Galium verum	3.93	44	9	**2C,** 4C	8	Geel walstro		Rubiaceae
Galium x pomeranicum	3.71	*44*	2	**2C**, 4C	3	Bleekgeel walstro		Rubiaceae
Gaudinia fragilis	3.44	*14*	1	**2C**, 4C, 8C	ad	Gaudinia	FL	Poaceae
Gaultheria mucronata	3.18	*66*	3	2C	ad	'Parelbes'	FL	Ericaceae
Gaultheria procumbens	2.39	*38*	2	2C	cu	Bergthee	FL	Ericaceae
Genista anglica	1.54	12, 48	3	**2C**, 4C, 8C	7	Stekelbrem		Fabaceae
Genista germanica	1.81	44-48	3	2C,	1	Duitse brem		Fabaceae
Genista pilosa	2.09	*24 (45)*	4	2C,	6	Kruipbrem		Fabaceae
Genista tinctoria	1.80	48 (96)	5	2C, (4C)	5	Verfbrem		Fabaceae
Gentiana cruciata	8.03	52	4	2C	4	Kruisbladgentiaan		Gentianaceae
Gentiana pneumonanthe #	9.62	*26*	5	2C	6	Klokjesgentiaan		Gentianaceae
Gentianella amarella*	15.7	*36*	1	2C	4	Slanke gentiaan		Gentianaceae
Gentianella campestris	5.13	*36*	1	2C	2	Veldgentiaan		Gentianaceae
Gentianella germanica		*36*			2	Duitse gentiaan		Gentianaceae
Gentianopsis ciliata		*44*			1	Franjegentiaan		Gentianaceae
Geranium columbinum	1.57	18	1	2C, **4C**, 8C	4	Fijne ooievaarsbek		Geraniaceae
Geranium dissectum	1.40	22	2	**2C**, 4C, 8C	9	Slipbladige ooievaarsbek		Geraniaceae
Geranium endressii	3.13	*26, 28*	2	**2C**, 4C, (8C)	cu	Roze ooievaarsbek		Geraniaceae
Geranium lucidum	1.73	20, 40	2	**2C**, 4C, 8C, 16C	4	Glanzige ooievaarsbek		Geraniaceae
Geranium macrorrhizum	3.37	*46, 92*	2	2C, 4C, 8C	cu	Rotsooievaarsbek		Geraniaceae
Geranium molle #	1.77	26	3	2C, **4C**, 8C	9	Zachte ooievaarsbek		Geraniaceae
Geranium nodosum	3.53	28	1	2C, 4C, (8C)	ad	Knopige ooievaarsbek	FL	Geraniaceae
Geranium phaeum	3.37	*28*	1	2C, **4C**, 8C, 16C	5	Donkere ooievaarsbek		Geraniaceae

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Geranium pratense	4.83	28	2	**2C**, 4C, 8C	6	Beemdooievaarsbek		Geraniaceae
Geranium purpureum	1.09	32 (64)	9	2C, **4C**, 8C	4	Klein robertskruid		Geraniaceae
Geranium pusillum	1.78	*26*	4	**2C**, 4C, 8C	9	Kleine ooievaarsbek		Geraniaceae
Geranium pyrenaicum	2.79	28	2	2C, 4C, 8C	6	Bermooievaarsbek		Geraniaceae
Geranium robertianum	2.53	32	10	**2C**, 4C, 8C	8	Robertskruid		Geraniaceae
Geranium rotundifolium	1.14	*26*	3	**2C, 4C**, 8C	2	Ronde ooievaarsbek		Geraniaceae
Geranium sanguineum	8.36	84	3	2C	cu	Bloedooievaarsbek		Geraniaceae
Geranium sylvaticum	4.92	28	2	**2C**, 4C	cu	Bosooievaarsbek		Geraniaceae
Geum macrophyllum	2.31	42	1	**2C**, 4C, 8C	1	Groot nagelkruid		Rosaceae
Geum rivale	2.45	42	3	**2C, 4C**	4	Knikkend nagelkruid		Rosaceae
Geum urbanum	3.13	42	2	**2C,** 4C	8	Geel nagelkruid		Rosaceae
Geum x intermedium					1	Geum rivale x urbanum		Rosaceae
Ginkgo biloba	22.3	*24*	5	2C	cu	Ginkgo	FL	Ginkgoaceae
Gilia achilleifolia	6.77	*18*	1	2C	ad	n. d.	BZ	Polemoniaceae
Gilia capitata	6.23	*18*	2	2C	cu	n. d.	BZ	Polemoniaceae
Gladiolus communis	7.42	*60, 90, 120*	1	2C	ad	Wilde gladiool	BZ	Iridaceae
Glaucium flavum	2.02	12	2	2C, **4C**, 8C	4	Gele hoornpapaver		Papaveraceae
Glaux maritima	3.05	30	2	**2C,** 4C, 8C	7	Melkkruid		Primulaceae
Glebionis coronaria cf*	15.5	*18*	1	2C, (4C)	cu	Gekroonde ganzenbloem		Asteraceae
Glebionis segetum*	14.7	18	4	2C, (4C)	8	Gele ganzenbloem		Asteraceae
Glechoma hederacea	1.97	36	4	2C	9	Hondsdraf		Lamiaceae
Glyceria declinata	1.01	20	2	**2C,** 4C	5	Getand vlotgras		Poaceae
Glyceria fluitans	2.66	40	3	**2C,** 4C	9	Mannagras		Poaceae
Glyceria maxima*	13.3	(56) 60	4	**2C,** 4C	9	Liesgras		Poaceae
Glyceria notata	2.62	40	6	**2C**, 4C, 8C	5	Stomp vlotgras		Poaceae
Glyceria striata	2.08	20	1	2C, (4C)	ex	Gestreept vlotgras	BZ	Poaceae
Glyceria x pedicellata		40			2	Glyceria fluitans x notata		Poaceae
Glycine max	2.51	*40*	1	**2C**, 4C	cu	Soja		Fabaceae
Gnaphalium luteo-album	2.40	14	5	**2C**, 4C	7	Bleekgele droogbloem		Asteraceae
Gnaphalium sylvaticum	4.48	56	2	2C,	7	Bosdroogbloem		Asteraceae
Gnaphalium uliginosum	0.95	14	1	**2C**, 4C	8	Moerasdroogbloem		Asteraceae
Goodyera repens	11.4	30	3	**2C, 4C**, 8C	4	Dennenorchis		Orchidaceae
Gratiola officinalis	3.11	32	1	2C, (4C)	1	Genadekruid		Plantaginaceae
Groenlandia densa	0.51	*30*	1	2C, 4C, 8C	6	Paarbladig fonteinkruid		Potamogetonaceae
Guizotia abyssinica	6.59	*30*	2	2C	ad	Gingelikruid, negerzaad		Asteraceae
Gymnadenia conopsea	14.3	40	3	2C, 4C, 8C	3	Grote muggenorchis		Orchidaceae
Gymnadenia conopsea ssp. densiflora		40			1	n. d.		Orchidaceae
Gymnocarpium dryopteris*	15.9	160	2	2C	4	Gebogen driehoeksvaren		Athyriaceae
Gymnocarpium robertianum *	14.1	160-168	2	2C	2	Rechte driehoeksvaren		Athyriaceae
Gypsophila muralis	1.88	34	1	**2C, 4C**	3	Gipskruid		Caryophyllaceae
Gypsophila paniculata	3.01	*34*	2	**2C, 4C,** 8C	cu	Pluimgipskruid		Caryophyllaceae
Hammarbya paludosa		*28*			1	Veenmosorchis		Orchidaceae
Hedera helix	3.02	48	28	2C, (4C)	9	Klimop		Araliaceae
Hedera hibernica	6.22	96	14	2C, (4C)	cu	Atlantische klimop	BZ	Araliaceae
Helianthemum nummularium	5.66	20	1	2C	2	Geel zonneroosje		Cistaceae
Helianthus annuus	6.85	*34*	4	2C	ad	Zonnebloem		Asteraceae
Helianthus tuberosus	23.4	*102*	5	2C	cu	Aardpeer		Asteraceae
Helianthus x laetiflorus	23.2	*102*	5	2C	6	Stijve zonnebloem (rigidus x tuber.)		Asteraceae
Helianthus rigidus		*102*			ad	Stijve aardpeer	FL	Asteraceae
Helichrysum arenarium	2.07	28	1	2C, (4C)	1	Strobloem		Asteraceae
Helictotrichon pratense	35.8	126	1	**2C, 4C**, 8C	3	Beemdhaver		Poaceae
Helictotrichon pubescens	10.1	14	2	2C, 4C, 8C	6	Zachte haver		Poaceae
Heliotropium europaeum	2.44	(24) 36, 48	1	2C	ad	Europese heliotroop		Boraginaceae
Helleborus argutifolius	18.9	*32*	1		cu	Corsicaans nieskruid	HD	Ranunculaceae
Helleborus foetidus	23.3	*32*	2	2C	1	Stinkend nieskruid		Ranunculaceae
Helleborus lividus ssp. corsicus	19.0	*32*	1	2C	cu	Nieskruid	FL	Ranunculaceae
Helleborus orientalis	30.0	*32*	6			Oosters nieskruid	HD	Ranunculaceae
Helleborus viridis	30.6	*32*	2	2C	3	Wrangwortel		Ranunculaceae
Heracleum mantegazzianum	3.65	22	2	**2C,** 4C	8	Reuzenberenklauw		Apiaceae
Heracleum sosnowskyi	3.58	22	4	3C	2	n. d.	FL	Apiaceae
Heracleum sphondylium	4.51	22	4	2C	9	Gewone berenklauw		Apiaceae
Herminium monorchis	22.5	*38, 40*	5	**2C, 4C**	3	Honingorchis		Orchidaceae
Herniaria glabra	1.35	18	2	2C, 4C, 8C, 16C	5	Kaal breukkruid		Caryophyllaceae
Herniaria hirsuta	2.62	36	5	**2C**, 4C	ad	Behaard breukkruid		Caryophyllaceae
Hesperis matronalis	8.01	14-32	2	2C	cu	Damastbloem		Brassicaceae
Heuchera sanguinea	1.19	14	1	2C	cu	Purperklokje		Saxifragraceae
Hibiscus trionum	3.73	*28, 56*	2	2C	ad	Drie-urenbloem		Malvaceae
Hibiscus syriacus	4.76	*80*	1	2C	cu	Althaeastruik	HD	Malvaceae
Hieracium amplexicaule	14.3	*27, 36*	5	**2C**, 4C	2	Stengelomvattend havikskruid		Asteraceae
Hieracium aurantiacum	7.76	*36, 45*	2	2C	7	Oranje havikskruid		Asteraceae
Hieracium caespitosum	8.71	*36*	1	2C	5	Weidehavikskruid		Asteraceae
Hieracium glaucinum ssp. similatum	10.3	*27*	1	2C	ad	Vroeg Havikskruid	BZ	Asteraceae
Hieracium lactucella	4.09	*18*	6	2C	2	Spits havikskruid		Asteraceae
Hieracium laevigatum	11.0	*27*	1	2C	9	Stijf havikskruid		Asteraceae
Hieracium maculatum	10.4	*27*	1	2C	1	Bochtig havikskruid		Asteraceae
Hieracium murorum	10.6	*27*	2	2C, 4C	5	Muurhavikskruid		Asteraceae
Hieracium peleterianum ssp. pelet.	3.63	18	6	2C	1	Valse muizenoor		Asteraceae
Hieracium pilosella	7.10	*18-63*	10	2C	8	Muizenoor		Asteraceae
Hieracium piloselloides	9.63	45	2	2C	5	Grijs havikskruid		Asteraceae
Hieracium sabaudum ssp. rigens	12.0		1			Steenhavikskruid	BZ	Asteraceae
Hieracium sabaudum*	15.4	*(18) 27*	2	2C	7	Boshavikskruid		Asteraceae
Hieracium umbellatum	8.55	*18*	3	2C	8	Schermhavikskruid		Asteraceae

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Hieracium velutinum	10.7	27 (36)	3	2C	1	Valse muizenoor grijswit		Asteraceae
Hieracium vulgatum	11.3	27	1	2C	7	Dicht havikskruid		Asteraceae
Hieracium x brachiatum	13.2	27-72	1	2C	1	Hieracium pilosella x praealtum		Asteraceae
Hieracium x flagellare	7.73	45	2	2C	2	Hieracium cespitosum x pilosella		Asteraceae
Hieracium x schultesii	5.60	27, 36, 45		2C	1	Hieracium lactucella x pilosella		Asteraceae
Hieracium x stoleniferum	7.48	36	3	2C	1	Hieracium auriantiacum x pilosella		Asteraceae
Hierochloe odorata	8.38	28	2	2C, 4C, **8C**	6	Veenreukgras		Poaceae
Himantoglossum hircinum	25.6	*24, 36*	2	2C,	2	Bokkenorchis		Orchidaceae
Hippocrepis comosa	3.99	14, 28	1	2C, (4C)	0	Paardenhoefklaver		Fabaceae
Hippophae rhamnoides	2.41	24	1	2C	7	Duindoorn		Eleagnaceae
Hippuris vulgaris	1.38	32	2	2C, (4C)	7	Lidsteng		Plantaginaceae
Hirschfeldia incana	0.99	14	3	**2C,** 4C, 8C, 16C	3	Grijze mosterd	BZ	Brassicaceae
Holcus lanatus	3.41	14	1	2C, 4C	9	Gestreepte witbol		Poaceae
Holcus mollis	6.00	28-49	1	2C, 4C	9	Gladde witbol		Poaceae
Holosteum umbellatum	1.86	*20*	1	2C, **4C**, 8C	4	Heelbeen		Caryophyllaceae
Honckenya peploides	7.90	(48, 64) 68	2	2C	6	Zeepostelein		Caryophyllaceae
Hordelymus europaeus	20.2	*28*	1		1	Bosgerst		Poaceae
Hordeum distichon		*14*			ad	Chevaliergerst		Poaceae
Hordeum jubatum*	17.3	*28*	2	2C	4	Kwispelgerst		Poaceae
Hordeum marinum	9.01	14	1	2C	4	Zeegerst		Poaceae
Hordeum murinum	19.6	*28*	3	**2C,** 4C	9	Kruipertje		Poaceae
Hordeum secalinum	20.1	28	1	**2C,** 4C	7	Veldgerst		Poaceae
Hordeum vulgare	10.0	*14*	10	**2C,** 4C	cu	Gerst		Poaceae
Hornungia procumbens	0.96	*12*	2	**2C**, 4C, 8C	ad	n. d.	BZ	Brassicaceae
Hottonia palustris	1.84	*20*	1	**2C**, 4C, 8C	8	Waterviolier		Primulaceae
Houttuynia cordata	1.78	*24-126*	1	2C, 4C	cu	Moerasanemoon		Saururaceae
Humulus lupulus	5.68	20	7	**2C**, 4C	9	Hop		Cannabaceae
Huperzia selago*	18.1	264	3	2C	2	Dennenwolfsklauw		Lycopodiaceae
Hyacinthoides hispanica	48.4	*16, 24*	5	2C	cu	Spaanse hyacint		Asparagaceae
Hyacinthoides non-scripta	46.0	16, 24	3	2C	7	Wilde hyacint		Asparagaceae
Hyacinthoides x massartiana #	50.1	*16, 24*	1	2C	cu	Hyacinthoides hispanica x nonscripta		Asparagaceae
Hyacinthus orientalis	56.8	*16, 24*	6	2C	cu	*Hyacint*		Asparagaceae
Hydrocharis morsus-ranae #	8.14	(14) 28	13	**2C**, 4C	8	Kikkerbeet		Hydrocharitaceae
Hydrocotyle ranunculoides	1.62	48	2	2C, (4C)	4	Grote waternavel		Araliaceae
Hydrocotyle vulgaris	2.11	96	5	2C	8	Gewone waternavel		Araliaceae
Hyoscyamus niger	2.76	34	1	**2C,** 4C, 8C	5	Bilzekruid		Solanaceae
Hypericum androsaemum	2.17	40	1	2C	cu	Mansbloed		Hypericaceae
Hypericum calycinum	2.70	20 (40)	2		cu	Grootbloemig hertshooi		Hypericaceae
Hypericum canadense		16			ex	Canadese hertshooi		Hypericaceae
Hypericum elodes	1.28	16, 32	2	2C	6	Moershertshooi		Hypericaceae
Hypericum hirsutum	0.71	18	3	2C	4	Ruig hertshooi		Hypericaceae
Hypericum humifusum	0.77	16	2	2C	7	Liggend hertshooi		Hypericaceae
Hypericum maculatum ssp. maculatum		16			2	Gevlekt hertshooi		Hypericaceae
Hypericum maculatum ssp. obtusiusculum	1.56	32	9	2C	7	Kantig hertshooi		Hypericaceae
Hypericum majus	0.51	16	1	2C, (4C)	cu	n. d.	FL	Hypericaceae
Hypericum montanum	0.80	*16*	3	2C, (4C)	2	Berghertshooi		Hypericaceae
Hypericum perforatum	1.59	32	1	2C, (4C)	9	Sint-Janskruid		Hypericaceae
Hypericum pulchrum	0.89	18	2	2C	4	Fraai hertshooi		Hypericaceae
Hypericum tetrapterum	0.87	16	2	2C	8	Gevleugeld hertshooi		Hypericaceae
Hypericum x desetangsii	1.63	*32, 48*	6	2C	3	Hypericum maculatum x perforatum		Hypericaceae
Hypericum x inodorum	0.95	*40*	1	2C	cu	n. d.	BZ	Hypericaceae
Hypochaeris glabra	3.48	10	2	2C	5	Glad biggenkruid		Asteraceae
Hypochaeris maculata		10			0	Gevlekt biggenkruid		Asteraceae
Hypochaeris radicata	2.93	8	2	2C,	9	Gewoon biggenkruid		Asteraceae
Hyssopus officinalis	0.95	*12*	2	2C, (4C)	cu	*Hyssop*		Lamiaceae
Iberis amara	1.80	14	3	2C, **4C**, 8C,	cu	Bittere scheefbloem		Brassicaceae
Iberis umbellata	1.36	*14-34*	1	**2C**, 4C, 8C	cu	Scheefkelk		Brassicaceae
Ilex aquifolium	1.87	40	1	2C	8	Hulst		Aequifoliaceae
Ilex crenata	2.00	34	3	2C	cu	Japanse hulst	FL	Aequifoliaceae
Iles x antaclerensis	2.01		1		cu	n. d.	BZ	Aequifoliaceae
Ilex x meserveae	c. 1.89		3		1	Ilex rugosa x aequifolium	BZ	Aequifoliaceae
Illecebrum verticillatum	0.92	10	1	**2C,** 4C, 8C, 16C	6	Grondster		Caryophyllaceae
Impatiens balfouri	2.91	14	4	**2C**, 4C, 8C	cu	Tweekleurig springzaad		Balsaminaceae
Impatiens capensis	1.71	14	1	2C, **4C**, 8C	3	Oranje springzaad		Balsaminaceae
Impatiens tricornis	3.60		1	2C	1	Ruig springzaad	FL	Balsaminaceae
Impatiens glandulifera	1.96	18	4	**2C**, 4C, 8C	8	Reuzenbalsemien		Balsaminaceae
Impatiens noli-tangere	1.44	*20, 40*	2	**2C**, 4C, 8C, 16C	6	Groot springzaad		Balsaminaceae
Impatiens parviflora	4.31	24, 26	8	**2C**, 4C,	6	Klein springzaad		Balsaminaceae
Impatiens parviflora x balfouri cf	4.80	BZ: 26	2	**2C**, 4C	cu	n. d.	BZ	Balsaminaceae
Imperata cylindrica	1.57	20 (40, 60)	1		cu	Japans bloedgras		Poaceae
Inula britannica	6.97	(16, 24) 32	2	2C	6	Engelse alant		Asteraceae
Inula conyza	7.56	32	2	2C	6	Donderkruid		Asteraceae
Inula helenium	4.67	20	3	2C	ad	Griekse alant		Asteraceae
Inula racemosa	4.59	20	3	2C	2	Trosalant	FL	Asteraceae
Inula salicina	3.59	16	2	2C	0	Wilgalant		Asteraceae
Ipheion uniflorum	19.1	12, 24	6	**2C**, 4C	cu	Voorjaarsster	FL	Amaryllidaceae
Ipomoea purpurea	1.57	30	4	**2C**, 4C	cu	Dagbloem	BZ	Convolvulaceae
*Iris foetidissima**	15.4	40	6		1	Stinkende lis		Iridaceae
Iris germanica	26.9		3	2C, 4C	cu	Blauwe lis	HD	Iridaceae
Iris japonica	16.9	32-60	1	**2C**, 4C	cu	Japanse iris	HD	Iridaceae
Iris pseudacorus	11.7	34	4	2C,	9	Gele lis		Iridaceae
Iris reticulata	14.1	20	1	2C, 4C	cu	n. d.	HD	Iridaceae

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Isatis tinctoria	1.23	*28*	4	2C, **4C**, 8C	5	Wede		Brassicaceae
Isoetes echinospora*	7.54	22	1	2C	2	Kleine biesvaren		Isoetaceae
Isoetes lacustris*	25.6	110	4	2C	1	Grote biesvaren		Isoetaceae
Isolepis setacea	0.95	22	2	2C	7	Borstelbies		Cyperaceae
Iva xanthifolia	6.25	*28, 36*	1	**2C**, 3C	ad	Iva		Asteraceae
Jacobaea aquatica var. *erratica*	4.47	40	1	2C	1	Waterkruiskruid		Asteraceae
Jacobaea aquatica var. *aquatica*	4.21	40	5	2C, (4C)	5	Waterkruiskruid		Asteraceae
Jacobaea aquatica x vulgaris	8.52	BZ: 80	5	2C, (4C)	cu	n. d.	BZ	Asteraceae
Jacobaea erucifolia	6.74	40	1	2C	8	Viltig kruiskruid		Asteraceae
Jacobaea maritima	4.99	*40*	1	2C	cu	Zilverkruiskruid		Asteraceae
Jacobaea paludosa	8.48	*40*	3	2C	7	Moeraskruiskruid		Asteraceae
Jacobaea vulgaris ssp. dunensis	4.40	40	1	**2C**, 4C, 8C	5	Duinkruiskruid		Asteraceae
Jacobaea vulgaris ssp. vulgaris	4.45	40	16	**2C,** 4C, 8C	9	Jakobskruiskruid		Asteraceae
Jasione montana	3.01	12	3	**2C**, 4C	8	Zandblauwtje		Campanulaceae
Jasminum nudiflorum	2.09	*26, 52*	3	2C	cu	Winterjasmijn		Oleaceae
Juglans regia	1.33	*32*	3	2C	cu	Okkernoot, Walnoot		Juglandaceae
Juglans nigra	1.27	*32*	3	2C	cu	Zwarte Walnoot	HD	Juglandaceae
Juncus acutiflorus	2.56	40	2	2C	8	Veldrus		Juncaceae
Juncus alpinoarticulatus	1.99	40	3	2C	6	Alpenrus		Juncaceae
Juncus amabilis	0.61		2	2C	ad	n. d.	BZ	Juncaceae
Juncus ambiguus	0.66	34	1	2C	5	Zilte greppelrus		Juncaceae
Juncus aridicola	0.57		2	2C	ad	n. d.	BZ	Juncaceae
Juncus articulatus	3.69	80	6	2C	9	Zomprus		Juncaceae
Juncus australis	0.55		6	2C	ad	n. d.	BZ	Juncaceae
Juncus balticus	1.14	84	1	2C	5	Noordse rus		Juncaceae
Juncus bufonius	1.72	(30) 98 (102	3	2C	9	Greppelrus		Juncaceae
Juncus bulbosus	1.77	40	1	2C	8	Knolrus		Juncaceae
Juncus canadensis		80			2	Canadese rus		Juncaceae
Juncus capitatus	0.72	*18*	1	2C	1	Koprus		Juncaceae
Juncus compressus	0.58	*40, 44*	1	2C	7	Platte rus		Juncaceae
Juncus conglomeratus	0.61	42	2	2C	9	Biezenknoppen		Juncaceae
Juncus continuus	0.60		4	2C	ad	n. d.	BZ	Juncaceae
Juncus distegus	0.63		1	2C	ad	n. d.	BZ	Juncaceae
Juncus dudleyi	3.78	c84, 42	1	2C	1	Samengetrokken rus	FL	Juncaceae
Juncus edgariae	0.60	40	4	2C	ad	n. d.	BZ	Juncaceae
Juncus effusus	0.69	40, 42	1	**2C**, 4C	9	Pitrus		Juncaceae
Juncus ensifolius		40			3	Zwaardrus		Juncaceae
Juncus filicaulis	0.56		2	2C	ad	n. d.	BZ	Juncaceae
Juncus filiformis		*40, 80*			5	Draadrus		Juncaceae
Juncus flavidus	0.55		1	2C	ad	n. d.	BZ	Juncaceae
Juncus foliosus		26			1	Gestreepte greppelrus		Juncaceae
Juncus gerardii	3.91	84	2	2C	7	Zilte rus		Juncaceae
Juncus gregiflorus	0.63		1	2C	ad	n. d.	BZ	Juncaceae
Juncus imbricatus	1.01		3	2C	ad	n. d.	BZ	Juncaceae
Juncus inflexus	0.76	40, 42	1	2C	8	Zeegroene rus		Juncaceae
Juncus maritimus	0.33	40, 48	2	2C	6	Zeerus		Juncaceae
Juncus ochrocoleus	0.55		5	2C	ad	n. d.	BZ	Juncaceae
Juncus pallidus	0.60		4	2C	ad	n. d.	BZ	Juncaceae
Juncus procerus	0.60		3	2C	ad	n. d.	BZ	Juncaceae
Juncus pygmaeus	1.05	*40*	1	2C	4	Dwergrus		Juncaceae
Juncus radula	0.62		1	2C	ad	n. d.	BZ	Juncaceae
Juncus sp	0.61		5	2C	ad	n. d.	BZ	Juncaceae
Juncus squarrosus	0.82	40	1	2C	8	Trekrus		Juncaceae
Juncus subnodulosus	1.29	40	2	2C	7	Paddenrus		Juncaceae
Juncus subsecundus	0.55		1	2C	ad	n. d.	BZ	Juncaceae
Juncus tenageia					4	Wijdbloeiende rus		Juncaceae
Juncus tenuis	1.01	*32-84*	5	2C	8	Tengere rus		Juncaceae
Juncus usitatus	0.54		3	2C	ad	n. d.	BZ	Juncaceae
Juncus vaginatus	0.59		1	2C	ad	n. d.	BZ	Juncaceae
Juncus x diffusus	0.65		3	2C	ad	Juncus effusus x inflexus	BZ	Juncaceae
Juncus x kern-reichgeltii					2	Juncus conglomeratus x effusus		Juncaceae
Juniperus communis	22.9	22	4	2C	6	Jeneverbes		Cupressaceae
Kerria japonica 'Pleniflora'	0.93	18		2C	cu	Kerria	FL	Rosaceae
Kickxia elatine	3.09	36	2	2C	5	Spiesleeuwenbek		Plantaginaceae
Kickxia spuria	1.85	18	2	2C, (4C)	5	Eironde leeuwenbek		Plantaginaceae
Knautia arvensis*	14.1	*16, 20, 40*	1	**2C**, 4C	6	Beemdkroon		Caprifoliaceae
*Knautia dipsacifolia**	14.1	40, 60	2	2C, 4C	1	Bergknautia		Caprifoliaceae
Koeleria albescens cf	5.01	28	3	2C, 4C	6	Duinfakkelgras	BZ	Poaceae
Koeleria macrantha	5.42	14, 28	1	2C, **4C**	2	Blauw fakkelgras	FL	Poaceae
Koeleria pyramidata	8.72	14-84	3	2C,	1	Smal fakkelgras		Poaceae
Koelreuteria paniculata	0.80	*22, 30*	2	2C, (4C)	cu	Gele zeepboom		Sapindaceae
Laburnum alpinum	2.54	*48*	3	**2C,** 4C	cu	Alpen gouden regen	BZ	Fabaceae
Laburnum anagyroides	2.57	*48*	2	**2C,** 4C	cu	Gouden regen		Fabaceae
Laburnum x watereri 'Vossii'	2.71		1	**2C,** 4C	cu	Laburnum alpinum x anagyroides		Fabaceae
Laburnocytisus 'Adamii'	2.54	48	3	**2C,** 4C	cu	X (Laburnum + Cytisus)	BZ	Fabaceae
Lactuca saligna		*18*		2C	0	Wilgsla		Asteraceae
Lactuca sativa	5.99	*18*	3	2C	cu	Sla		Asteraceae
Lactuca serriola	6.08	18	1	2C	8	Kompassla		Asteraceae
Lactuca tatarica	8.60	*16, 18*	1	2C	1	Strandsla		Asteraceae
Lactuca virosa	7.84	18	4	2C	3	Gifsla		Asteraceae
Lagarosiphon major #	3.52	22	2	2C, **4C**, 8C	ex	Verspreidbladige waterpest	FL	Hydrocharitaceae
Lagurus ovatus	6.68	*14*	2	2C	4	Hazenstaart		Poaceae

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Lamarckia aurea		*14*			1	Pluimstaartje		Poaceae
Lamiastrum galeob. ssp. argentatum	5.82	36	2	2C	5	Bonte gele dovenetel		Lamiaceae
Lamiastrum galeobdolon ssp. galeob.	5.86	18, 36	3	**2C**, 4C, 8C	4	Gele dovenetel		Lamiaceae
Lamium album	1.81	18	2	**2C**, 4C, 8C	9	Witte dovenetel		Lamiaceae
Lamium amplexicaule	1.26	18	1	2C, 4C	8	Hoenderbeet		Lamiaceae
Lamium confertum	2.72	36	1	2C, (4C)	1	Brede dovenetel		Lamiaceae
Lamium hybridum	2.60	36	1	**2C, 4C**	6	Ingesneden dovenetel		Lamiaceae
Lamium maculatum #	2.78	*18*	5	**2C**, 4C	7	Gevlekte dovenetel		Lamiaceae
Lamium purpureum	1.49	18	2	2C	9	Paarse dovenetel		Lamiaceae
Landoltia punctata	0.97	46	2	2C	1	Smal kroos	FL	Araceae
Lappula squarrosa	1.59	*48 (54)*	2	2C, 4C, 8C	ad	Stekelzaad		Boraginaceae
Lapsana communis	2.63	14	1	2C	9	Akkerkool		Asteraceae
Larix decidua	26.0	*24*	1		cu	Europese lork		Pinaceae
Larix kaempferi	26.4	*24*	1		cu	Japanse lork		Pinaceae
Larix x marschlinsii	27.9	*24*	1	2C	cu	Larix decidua x kaempferi		Pinaceae
Lathraea clandestina #	2.20	42	8	2C, **4C**, 8C	cu	Paarse schubwortel		Orobanchaceae
Lathraea squamaria #	2.95	36	4	2C, 4C, 8C, 16C	1	Bleke schubwortel		Orobanchaceae
Lathyrus aphaca	9.37	14	1	2C,	1	Naakte lathyrus		Fabaceae
Lathyrus hirsutus	12.0	14	1	**2C, 4C**	3	Ruige lathyrus		Fabaceae
Lathyrus japonicus	12.3	14	2	**2C**, 4C	3	Zeelathyrus		Fabaceae
Lathyrus latifolius	22.6	14	1	**2C**, 4C, 8C	cu	Brede lathyrus		Fabaceae
Lathyrus linifolius	11.4	14	2	2C	3	Knollathyrus		Fabaceae
Lathyrus niger	13.8	*14*	1	**2C**, 4C, 8C	0	Zwarte lathyrus		Fabaceae
Lathyrus nissolia	8.94	14	2	**2C**, 4C, 8C	4	Graslathyrus		Fabaceae
Lathyrus palustris	31.5	42	1	**2C**, 4C	6	Moeraslathyrus		Fabaceae
Lathyrus pratensis	11.6	14, 28	4	**2C**, 4C	9	Veldlathyrus		Fabaceae
Lathyrus sylvestris	20.4	*14*	1	**2C, 4C**	5	Boslathyrus		Fabaceae
Lathyrus tuberosus*	14.4	14	3	2C, (4C)	7	Aardaker		Fabaceae
Lavatera thuringiacia	7.22	44	1	2C	cu	n. d.	FL	Malvaceae
Lavendula angustifolia	2.44	36-54	3	2C, (4C)	cu	Echte lavendel	HD	Lamiaceae
Leersia oryzoides	1.83	*48, 60*	2	2C, (4C)	5	Rijstgras		Poaceae
Legousia hybrida		20			3	Klein spiegelklokje		Campanulaceae
Legousia speculum-veneris	2.10	*20*	3	**2C**, 4C	4	Groot spiegelklokje		Campanulaceae
Lemna aequinoctialis	1.01	*20-80*	1	2C	1	n. d.	FL	Araceae
Lemna gibba #	1.24	40-80	14	**2C, 4C**	8	Bultkroos		Araceae
Lemna minor #	0.86	(20) 40	19	2C	9	Klein kroos		Araceae
Lemna minuta	0.79	40	17	2C	6	Dwergkroos		Araceae
Lemna trisulca	1.17	40, 44	3	2C, (4C)	8	Puntkroos		Araceae
Lemna turionifera	1.13	*40, 42 (80)*	11	2C	1	Knopkroos		Araceae
Lens culinaris	9.26	*14*	1	2C	cu	Linze		Fabaceae
Leontodon autumnalis	4.24	12	4	2C	9	Vertakte leeuwentand		Asteraceae
Leontodon hispidus	4.83	14	1	2C, (4C)	6	Ruige leeuwentand		Asteraceae
Leontodon saxatilis	1.41	8	2	2C, (4C)	8	Kleine leeuwentand		Asteraceae
Leonurus cardiaca	1.57	18	3	2C, (4C)	5	Hartgespan		Lamiaceae
Lepidium campestre	0.78	16	2	2C,	6	Veldkruidkers		Brassicaceae
Lepidium densiflorum	0.75	32	1	**2C**, 4C, 8C	ad	Dichtbloemige kruidkers		Brassicaceae
Lepidium draba	1.97	*64, 80*	3	**2C**, 4C, 8C	7	Pijlkruidkers		Brassicaceae
Lepidium graminifolium	2.54	*16, 48*	1	**2C, 4C**	3	Graskers		Brassicaceae
Lepidium heterophyllum	0.40	16	1	2C, **4C**, 8C	4	Rozetkruidkers		Brassicaceae
Lepidium latifolium	1.18	24	3	2C, **4C**, 8C	4	Peperkers		Brassicaceae
Lepidium neglectum		*32*			5	Vergeten kruidkers		Brassicaceae
Lepidium perfoliatum		*16*			ad	Doorgroeide kruidkers		Brassicaceae
Lepidium ruderale	0.73	*16, 32*	1	2C, **4C,** 8C	5	Steenkruidkers		Brassicaceae
Lepidium sativum	1.25	*16, 24*	1	2C, **4C**, 8C, 16C	cu	Tuinkers		Brassicaceae
Lepidium virginicum #	0.68	*(16) 32*	3	2C, 4C	5	Amerikaanse kruidkers		Brassicaceae
Leucanthemum paludosum	7.54	18	1	2C	1	Kleine margriet		Asteraceae
Leucanthemum vulgare	21.0	18, 36, 54	7	2C	9	Gewone margriet		Asteraceae
Leucojum aestivum	72.3	22	10	2C	4	Zomerklokje		Amaryllidaceae
Leucojum vernum	80.8	20, 22, 24	15	2C	4	Lenteklokje		Amaryllidaceae
Levisticum officinale	10.2	*22*	2	2C	cu	Lavas		Apiaceae
Leycesteria formosa	1.75	*18*	1	2C, (4C)	cu	Fazentenbes		Caprifoliaceae
Leymus arenarius	40.3	56	2	2C	6	Zandhaver		Poaceae
Ligustrum ovalifolium	2.93	*46*	1	2C	cu	Haagliguster		Oleaceae
Ligustrum vulgare	3.41	46	1	2C	7	Wilde liguster		Oleaceae
Lilium bulbiferum ssp.bulbiferum	95.0	24	1		cu	Oranje lelie		Liliaceae
Lilium bulbiferum ssp. croceum	95.1	24	12	2C	2	Roggelelie		Liliaceae
Lilium martagon	93.8	24	2		cu	Turkse lelie		Liliaceae
Limnanthes alba		10			cu	Donzige moerasbloem		Limnanthaceae
Limnanthes douglasii	4.28	10	1	2C, **4C**	cu	Geelwitte moerasbloem		Limnanthaceae
Limonium binervosum	7.07	27, 35,	2	2C	ad	Kliflamsoor	FL	Plumbaginaceae
Limonium humile	6.05	(36, 48) 54	1	2C	1	IJle lamsoor		Plumbaginaceae
Limonium vulgare	5.37	18, 36, 45	8	2C	6	Lamsoor		Plumbaginaceae
Limosella aquatica	1.54	40	2	2C	6	Slijkgroen		Plantaginaceae
Linaria arvensis		12			0	Blauwe leeuwenbek		Plantaginaceae
Linaria dalmatica	1.78	12	2	2C, **3C**	ad	Dalmatië bekje	FL	Plantaginaceae
Linaria purpurea	1.90	*12*	1	2C	1	Walstroleeuwenbek		Plantaginaceae
Linaria repens	1.77	*12*	1	2C	5	Gestreepte leeuwenbek		Plantaginaceae
Linaria supina	1.61	*12*	1	2C	ad	Liggende leeuwenbek		Plantaginaceae
Linaria vulgaris	1.57	12	1	2C	9	Vlasbekje		Plantaginaceae
Lindernia dubia	0.80	18	1	2C	1	Schijngenadekruid	FL	Scrophulariaceae
Linnaea borealis	1.83	32	1	2C	3	Linnaeusklokje		Caprifoliaceae
Linum catharticum	1.46	16	3	2C	6	Geelhartje		Linaceae

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Linum usitatissimum	1.39	*30*	2	2C	cu	Vlas		Linaceae
Liparis loeselii	12.9	26, 32	1	2C	5	Groenknolorchis		Orchidaceae
Lithospermum arvense	3.07	40	1	**2C**, 4C, (8C)	4	Ruw parelzaad		Boraginaceae
Lithospermum officinale	1.26	28	1	**2C,** 4C, (8C)	5	Glad parelzaad		Boraginaceae
Littorella uniflora	12.3	24	2	**2C**, 4C, (8C)	5	Oeverkruid		Plantaginaceae
Lobelia dortmanna	2.06	14	1	2C	3	Waterlobelia		Campanulaceae
Lobelia erinus	3.03	14, 28, 42	1	2C	cu	n. d.	HD	Campanulaceae
Lobelia inflata		14			1	Blaaslobelia		Campanulaceae
Lobelia pedunculata	3.70	*28*	2	**2C**, 4C	cu	Gazonlobelia	FL	Campanulaceae
Lolium multiflorum cf	10.5	*14*	2	**2C**, 4C	8	Italiaans raaigras		Poaceae
Lolium perenne #	5.26	14	2	**2C**, 4C, 8C	9	Engels raaigras		Poaceae
Lolium remotum		*14*			0	Vlasdolik		Poaceae
Lolium temulentum	8.27	*14*	1	2C	0	Dolik		Poaceae
Lolium x hybridum					2	Lolium perenne x multiflorum		Poaceae
Lonicera caprifolium #	2.16	*18*	3	2C, (4C)	ad	Tuinkamperfoelie		Caprifoliaceae
Lonicera japonica	1.93	*18*	1	2C	cu	n. d.	BZ	Caprifoliaceae
Lonicera nitida	1.99	*18*	2	2C,	cu	Buxuskamperfoelie	BZ	Caprifoliaceae
Lonicera periclymenum	6.91	*18, 36, 54*	4	2C,	9	Wilde kamperfoelie		Caprifoliaceae
Lonicera tatarica	1.79	*18*	2	2C, (4C)	cu	Tartaarse kamperfoelie		Caprifoliaceae
Lonicera xylosteum	1.81	*18*	1	**2C,** 4C	2	Rode kamperfoelie		Caprifoliaceae
Lotus corniculatus	2.48	24	3	**2C,** 4C	9	Gewone rolklaver		Fabaceae
Lotus (corniculatus?) 'Sativus'	2.33		2	**2C,** 4C	cu	Rechte rolklaver		Fabaceae
Lotus glaber	1.20	12	3	**2C**, 4C, (8C)	7	Smalle rolklaver		Fabaceae
Lotus pedunculatus	1.14	12	3	2C, 4C	9	Moerasrolklaver		Fabaceae
Ludwigia grandiflora	3.14	80	1	2C	ex	Waterteunisbloem		Onagraceae
Ludwigia palustris	0.84	16	2	2C, (4C)	7	Waterlepeltje		Onagraceae
Ludwigia peploides	0.59	16	1	2C	ex	Kleine waterteunisbloem		Onagraceae
Lunaria annua	0.95	*30*	2	2C, **4C**, 8C, 16C	cu	Tuinjudaspenning		Brassicaceae
Lunaria rediviva	0.77	28, 30	2	2C, **4C**, 8C, 16C	1	Wilde judaspenning		Brassicaceae
Lupinus angustifolius	2.00	*40, 48*	1	2C, 4C, 8C	ad	Blauwe lupine		Fabaceae
Lupinus luteus	2.94	*48-56*	1	2C, **4C,** 8C, 16C	cu	Gele lupine		Fabaceae
Lupinus polyphyllus	1.62	*48*	1	2C, **4C**	7	Vaste lupine		Fabaceae
Lupinus x regalis	1.62		1	2C	cu	Lupine arborescens.x polyphyllus	BZ	Fabaceae
Luronium natans	44.0	*42*	3	**2C**, 4C	6	Drijvende waterweegbree		Alismataceae
Luzula nivea	1.84	*12*	4			n. d.		
Luzula campestris	0.76	12 (18-36)	1	2C	9	Gewone veldbies		Juncaceae
Luzula luzuloides	1.80	12	1	**2C, 4C**	4	Witte veldbies		Juncaceae
Luzula multiflora ssp. *congesta*	3.28	48	1	2C	3	Dichtbloemige veldbies		Juncaceae
Luzula multiflora ssp. *multiflora*	2.78	36	1	2C	6	Veelbloemige veldbies		Juncaceae
Luzula pilosa #	0.54	(62) 66	3	**2C,** 4C, 8C	6	Ruige veldbies		Juncaceae
Luzula sylvatica	1.42	12	1	2C	4	Grote veldbies		Juncaceae
Lycium barbarum	5.84	24	4	2C, (4C)	5	Boksdoorn		Solanaceae
Lycium chinense	4.01	24 (36, 48)	3	2C, **4C**, 8C	cu	Chinese boksdoorn, Gojibes	FL	Solanaceae
Lycium chinense x barbarum cf	4.99	BZ: 24	4	2C, **4C**	cu	n. d.	BZ	Solanaceae
Lycopodium annotinum	9.43	68	1	2C	3	Stekende wolfsklauw		Lycopodiaceae
Lycopodium clavatum	5.51	68	3	2C	4	Grote wolfsklauw		Lycopodiaceae
Lycopodium complanatum		46			0	Vlakke wolfsklauw	BZ	Lycopodiaceae
Lycopodium tristachyum	5.53	46	1	2C, (4C)	3	Kleine wolfsklauw		Lycopodiaceae
Lycopodiella inundata*	17.9	156	2	2C	6	Moeraswolfsklauw		Lycopodiaceae
Lycopus europaeus	1.02	22	2	2C	9	Wolfspoot		Lamiaceae
Lysichiton americanus	6.36	*28*	2	2C	1	Gele moeraslantaarn		Araceae
Lysichiton camschatcensis	5.20	*28*	1		cu	Witte moeraslantaarn	BZ	Araceae
Lysimachia clethroides	12.9	24	3	2C	cu	Witte troswederik	FL	Primulaceae
Lysimachia nemorum	3.41	16, 18	1	**2C**, 4C	5	Boswederik		Primulaceae
Lysimachia nummularia	4.77	*(30-36) 43*	2	**2C, 4C**	9	Penningkruid		Primulaceae
Lysimachia punctata	4.53	30	7	2C	cu	Puntwederik		Primulaceae
Lysimachia thyrsiflora	2.92	42	2	**2C,** 4C	8	Moeraswederik		Primulaceae
Lysimachia vulgaris	8.59	*(42) 84*	3	2C	9	Grote wederik		Primulaceae
Lythrum hyssopifolia	1.44	*20*	1	2C	3	Kleine kattenstaart		Lythraceae
Lythrum junceum		*10*			1	Kruipkattestaart		Lythraceae
Lythrum portula	0.58	10	2	2C	7	Waterpostelein		Lythraceae
Lythrum salicaria	3.30	60	5	2C	9	Grote kattenstaart		Lythraceae
Macleaya cordata	1.29	20	1	**2C**, 4C, 8C	ad	Pluimpapaver	FL	Papaveracaeae
Maianthemum bifolium	30.3	6, c. 38, c. 4	4	2C	8	Dalkruid		Asparagaceae
Malcolmia maritima	0.55	*14, 16*	2	2C, **4C**, 8C	cu	Zeeviolier		Brassicaceae
Malus domestica #	1.61	*34*	31	2C	7	Eetappel		Rosaceae
Malus sylvestris	1.76	*34*	5	2C	7	Wilde appel		Rosaceae
Malva alcea	10.6	*84*	5	2C	5	Vijfdelig kaasjeskruid		Malvaceae
Malva moschata #	2.93	42	7	2C, (4C)	7	Muskuskaasjeskruid		Malvaceae
Malva neglecta	1.53	42	2	2C, (4C)	8	Klein kaasjeskruid		Malvaceae
Malva parviflora cf	3.51	*42*	2	2C	ad	Kleinbloemig kaasjeskruid		Malvaceae
Malva pusilla	1.46	*42*	5	2C	ad	Rond kaasjeskruid		Malvaceae
Malva sylvestris	1.56	42	3	2C	8	Groot kaasjeskruid		Malvaceae
Malva verticillata ssp. crispa #	3.82	*c. 76-126*	1	2C	cu	Dessertblade	BZ	Malvaceae
Malva verticillata ssp. verticillata #	1.87	*42-126*	1	2C	cu	Dessertbladen		Malvaceae
Malva x clementii cf	7.02		1	2C,	1	n. d.	BZ	Malvaceae
Marrubium vulgare	2.72	34	1	2C, (4C)	2	Malrove		Lamiaceae
*Marsilea quadrifolia**	2.55	40	2	2C	1	Klaverbladvaren		Marsileaceae
Matricaria chamomilla	5.67	18	1	2C	9	Echte kamille		Asteraceae
Matricaria discoidea	4.75	18	2	2C	9	Schijfkamille		Asteraceae
Matteuccia struthiopteris*	26.8	*78, 80*	3	**2C**, 4C	cu	Struisvaren		Onocleaceae
Mazus reptans	2.21		1	2C	cu	n. d.	HD	Phrymaceae

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Meconopsis cambrica	6.80	22	1	**2C, 4C, 8C**	cu	Schijnpapaver		Papaveraceae
Medicago arabica	1.22	16	2	**2C, 4C**, 8C, 16C	7	Gevlekte rupsklaver		Fabaceae
Medicago lupulina	1.40	16	2	**2C**, 4C	9	Hopklaver		Fabaceae
Medicago minima	1.20	*16, 32*	1	**2C**, 4C	4	Kleine rupsklaver		Fabaceae
Medicago polymorpha	1.06	*14, 16*	6	**2C**, 4C, 8C	3	Ruige rupsklaver		Fabaceae
Medicago sativa ssp. sativa	3.58	16, 32	4	**2C**, 4C	cu	Luzerne (alfalfa)		Fabaceae
Medicago sativa ssp. falcata	3.56	*16, 32*	3	2C, (4C)	6	Sikkelklaver		Fabaceae
Medicago x varia	3.72	32	1	**2C**, 4C, 8C	5	Medicago falcata x sativa		Fabaceae
Melampyrum arvense	14.9	*18*	2	**2C**, 4C, 8C	1	Wilde weit		Orobanchaceae
Melampyrum pratense*	15.5	*18*	2	**2C,** 4C	7	Hengel		Orobanchaceae
Melica nutans	5.70	18	1	**2C**, 4C	ad	Knikkend parelgras		Poaceae
Melica uniflora	5.10	18	2	**2C**, 4C, 8C	5	Eenbloemig parelgras		Poaceae
Melilotus albus	2.59	*16*	1	**2C**, 4C, 8C	8	Witte honingklaver		Poaceae
Melilotus altissimus	2.83	*16*	1	**2C**, 4C, 8C	7	Goudgele honingklaver		Fabaceae
Melilotus indicus	2.05	*16*	1	**2C**, 4C	3	Kleine honingklaver		Fabaceae
Melilotus officinalis	2.70	*16*	1		8	Citroengele honingklaver		Fabaceae
Melissa officinalis	1.94	*32, 34, 64*	1	2C	cu	Citroenmelisse		Lamiaceae
Melittis melissophyllum	1.07	30	1	2C	ad	Bijenblad	FL	Lamiaceae
Mentha aquatica	3.28	96	9	2C, 4C, 8C	9	Watermunt		Lamiaceae
Mentha arvensis	2.62	72	1	2C	8	Akkermunt		Lamiaceae
Mentha longifolia	0.95	24, 48	2	2C	6	Hertsmunt		Lamiaceae
Mentha pulegium	0.89	20	1	2C	3	Polei		Lamiaceae
Mentha spicata	1.50	36	3	2C	cu	Aarmunt		Lamiaceae
Mentha suaveolens	1.07	24	3	2C, (4C)	3	Witte munt		Lamiaceae
Mentha x gracilis cf	2.61	54-120	2	2C, (4C)	1	Mentha arvensis x spicata		Lamiaceae
Mentha x piperita cf	1.78	66-120	2	2C	cu	Mentha aquatica x spicata		Lamiaceae
Mentha x rotundifolia	0.88	24	1	2C, 4C, **8C**, 16C	6	Wollige munt		Lamiaceae
Mentha x verticillata	4.41	42-132	1	2C	6	Mentha arvensis x aquatica		Lamiaceae
Menyanthes trifoliata	4.03	54	1	2C	7	Waterdrieblad		Menyanthaceae
Mercurialis annua	1.29	*16 (32, 48)*	2	2C, **4C,** 8C, 16C	7	Tuinbingelkruid		Euphorbiaceae
Mercurialis perennis	7.21	64	4	**2C,** 4C	4	Bosbingelkruid		Euphorbiaceae
Mespilus germanica	1.79	*34*	6	**2C**, 4C	6	Mispel		Rosaceae
Metasequoia glyptostroboides	19.3	*22*	2		cu	Watercipres		Cupressaceae
Mibora minima	9.92	14 (28)	2	**2C, 4C**	2	Dwerggras		Poaceae
Micropyrum tenellum		14			1	Grindstijfgras		Poaceae
Milium effusum #	5.17	(14) 28 (42)	5	**2C**, 4C	6	Bosgierstgras		Poaceae
Milium vernale	6.24	14, 18 (36)	2	**2C**, 4C	4	Ruw gierstgras		Poaceae
Mimulus guttatus	0.86	28	2	2C, (4C)	5	Gele maskerbloem		Phrymaceae
Mimulus moschatus		32			cu	Muskusplantje		Phrymaceae
Mimulus luteus 'Bonfire red'	1.41	*60, 62, 64*	2	2C	cu	Gevlekte maskerbloem	BZ	Phrymaceae
Minuartia hybrida		46			2	Tengere veldmuur		Caryophyllaceae
Minuartia stellata	2.00	32	2	2C, (4C)	cu	Griekse veldmuur	BZ	Caryophyllaceae
Miscanthus sinensis	5.58	36-42	3	**2C**, 4C	cu	Klein prachtriet	FL	Poaceae
Miscanthus x giganteus	7.42	57	1	2C		Groot prachtriet	BZ	Poaceae
Misopates orontium	0.88	*14, 16*	1	2C, (4C)	5	Akkerleeuwenbek		Plantaginaceae
Moehringia trinervia	2.94	24	3	**2C**, 4C, 8C	8	Drienerfmuur		Caryophyllaceae
Moenchia erecta		36			0	Kruismuur		Caryophyllaceae
Molinia caerulea	3.51	36, 90	1	2C, 4C	9	Pijpenstrootje		Poaceae
Moneses uniflora		*26*			2	Eenbloemig wintergroen		Ericaceae
Monotropa hypopitys	6.78	16, 48	1	2C	3	Stofzaad		Ericaceae
Montia fontana #	1.14	20 (40)	4	2C, **4C**, 8C, 16C	4	Groot bronkruid		Portulacaceae
Montia minor	0.69	20	3	2C, **4C**, 8C, 16C	5	Klein bronkruid		Portulacaceae
Morella caroliniensis					1	Wasgagel		Myricaceae
Morus nigra	0.76	308	2	2C, (4C)	cu	Zwarte moerbij		Moraceae
Muscari armeniacum	8.92	*18, 36*	2	2C	cu	*Langbladige druifhyacint*		Asparagaceae
Muscari botryoides #	8.47	*18, 36*	3	2C	6	Blauwe druifjes (white flowers.)		Asparagaceae
Muscari comosum	8.40	*18, 28*	2	2C	4	Kuifhyacint		Asparagaceae
Muscari latifolium	9.70	18	2	2C	cu	Brede druifhyacint	FL	Asparagaceae
Myagrum perfoliatum	1.26	14	1	**2C**, 4C, 8C	1	Myagrum	FL	Brassicaceae
Mycelis muralis	3.77	18	2	2C	6	Muursla		Asteraceae
Myosotis arvensis	1.96	*36, 48, 52*	10	2C, **4C,** (8C)	9	Akker vergeet-mij-nietje		Boraginaceae
Myosotis discolor	1.84	*72*	27	**2C**, 4C	7	Veelkleurig vergeet-mij-nietje		Boraginaceae
Myosotis (discolor ssp) dubia	0.62	*24*	14	**2C, 4C,** 8CC16C	6	Veelkleurig vergeet-mij-nietje		Boraginaceae
Myosotis laxa ssp. cespitosa cf	2.49	(22, 44) 88	5	**2C**, 4C	3	Zomp vergeet-mij-nietje		Boraginaceae
Myosotis laxa ssp. laxa	3.33	88	3	**2C,** 4C	5	Zomp vergeet-mij-nietje	BZ	Boraginaceae
Myosotis ramosissima	1.15	*48*	13	**2C, 4C**, 8C	7	Ruw vergeet-mij-nietje		Boraginaceae
Myosotis scorpioides ssp. nemorosa #	0.84	22	7	**2C, 4C**, 8C, 16C	5	Weide vergeet-mij-nietje		Boraginaceae
Myosotis scorpioides ssp.scorpioides #	2.44	64, 66	20	**2C**, 4C	8	Moerasvergeet-mij-nietje		Boraginaceae
Myosotis sylvatica	0.67	18	5	**2C**, 4C, 8C, 16C	6	Bos vergeet-mij-nietje		Boraginaceae
Myosoton aquaticum	4.16	28	1	2C, **4C**	8	Watermuur		Caryophyllaceae
Myosurus minimus	2.45	*16*	4	**2C**, 4C, 8C	6	Muizenstaart		Ranunculaceae
Myrica gale	1.70	48	1	2C	7	Wilde gagel		Myricaceae
Myriophyllum alterniflorum	0.47	14	1	2C	5	Teer vederkruid		Haloragaceae
Myriophyllum aquaticum	1.51	48	4	2C, (4C)	1	Parelvederkruid		Haloragaceae
Myriophyllum heterophyllum	0.62		1	2C, 4C, 8C	1	Ongelijkbladig vederkruid		Haloragaceae
Myriophyllum robustum cf	1.84		5	2C	ex	n. d.	FL	Haloragaceae
Myriophyllum spicatum	2.77	42	4	**2C**	8	Aarvederkruid		Haloragaceae
Myriophyllum verticillatum	1.10	28	1	2C	6	Kransvederkruid		Haloragaceae
Myrrhis odorata	1.73	22	2	**2C, 4C**	5	Roomse kervel		Apiaceae
Najas marina	0.41	*12*	1	2C-32C	4	Groot nimfkruid		Hydrocharitaceae
Najas minor		12-56			2	Klein nimfkruid		Hydrocharitaceae
Narcissus poeticus	26.0	14, 21, 28	5	2C	cu	Witte narcis		Amaryllidaceae

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Narcissus pseudonarcissus	23.8	*14*	5	2C	4	Wilde narcis		Amaryllidaceae
Nardus stricta	4.16	*26*	1	**2C**, 4C	7	Borstelgras		Poaceae
Narthecium ossifragum	0.93	26	1	2C, (4C)	5	Beenbreek		Nartheciaceae
Nasturtium microphyllum #	1.60	64	7	**2C, 4C,** 8C, 16C	7	Slanke waterkers		Brassicaceae
Nasturtium officinale #	0.82	32	3	2C, **4C,** 8C	4	Witte waterkers		Brassicaceae
Nemesia melissaefolia	1.45	18	1	2C	1	Kransnemesia		Scrophulariaceae
Neotinea ustulata		*42*			0	Aangebrande orchis		Orchidaceae
Neottia cordata*	50.2	*36-44*	2	**2C**, 4C	4	Kleine keverorchis		Orchidaceae
Neottia nidus-avis*	31.5	*36*	2	**2C**, 4C, 8C	2	Vogelnestje		Orchidaceae
Neottia ovata* #	36.3	34-36	5	2C, **4C**, 8C	6	Grote keverorchis		Orchidaceae
Nepeta cataria #	1.18	(18) 34, 36	4	2C, (4C)	4	Wild kattenkruid		Lamiaceae
Nepeta racemosa cf	1.75	18 (36)	2	2C	cu	Blauw kattenkruid		Lamiaceae
Nepeta x faassenii	0.68	*26*	2	2C, (4C)	cu	Grijs kattenkruid		Lamiaceae
Neslia paniculata		14			ad	Vinkenzaad		Brassicaceae
Nicandra physalodes	2.48	20	3	2C, **4C,** 8C	ad	Zegekruid		Solanaceae
Nicotiana sylvestris	5.55	*24*	1	**2C,** 4C, 8C	ad	Witte trompettabak	BZ	Solanaceae
Nicotiana tabacum	8.71	*48*	3	**2C, 4C**	cu	Tabak		Solanaceae
Nigella arvensis		12			0	Wilde nigella		Ranunculaceae
Nigella damascena	24.0	*12*	1	2C	cu	Juffertje-in-het-groen		Ranunculaceae
Nonea lutea	1.47	14	3	2C, **4C**, 8C	1	Geel monnikskruid		Boraginaceae
Nuphar advena		*34*			cu	n. d.		Nymphaeceae
Nuphar lutea	5.27	34	2	2C	8	Gele plomp		Nymphaeceae
Nymphaea alba	4.46	84	4	2C	8	Witte waterlelie		Nymphaeceae
Nymphaea marliacea #	5.90		5	2C, (4C)	cu	gele,roze,witte bloem		Nymphaeceae
Nymphaea tetragona var. minima	3.59	28, 56, 112	2			n. d.	BZ	Nymphaeceae
Nymphaea x candida	5.99	BZ: 112	3	2C, (4C)	1	Noordelijke waterlelie		Nymphaeceae
Nymphaea x borealis	5.37	BZ: 98	1	2C, (4C)		Nymphaea alba x (x candida)	BZ	Nymphaeceae
Nymphoides peltata	1.81	54	3	2C	8	Watergentiaan		Menyanthaceae
Ocimum basilicum	5.10	48, 52, 76	2	2C	cu	Basilicum		Lamiaceae
Odontites vernus ssp. serotinus	1.18	*18, 20*	2	**2C**, 4C, 8C	7	Rode ogentroost		Orobanchaceae
Odontites vernus ssp. vernus #	2.45	(20) 40	3	**2C**, 4C, 8C	1	Akkerogentroost		Orobanchaceae
Odontites vernus ssp. *litoralis*						Vroege ogentroost		Orobanchaceae
Oenanthe aquatica	2.03	22	2	2C, (4C)	8	Watertorkruid		Apiaceae
Oenanthe crocata	1.52	22	1	**2C**, 4C, 8C	2	Dodemansvingers		Apiaceae
Oenanthe fistulosa Variegated #	1.35	22	2	2C, (4C)	8	Pijp torkruid		Apiaceae
Oenanthe lachenalii	1.46	22	4	2C, (4C)	6	Zilt torkruid		Apiaceae
Oenanthe peucedanifolia		22			0	Varkenskervel-torkruid		Apiaceae
Oenanthe pimpinelloides	1.38	22	1	2C, (4C)	1	Beverneltorkruid		Apiaceae
Oenanthe silaifolia		22			1	Weidekervel-torkruid		Apiaceae
Oenothera biennis	2.31	14	3	2C	6	Middelste teunisbloem		Onagraceae
Oenothera deflexa	2.26		3	2C	5	Zandteunisbloem		Onagraceae
Oenothera glazioviana	2.31	*14*	2	2C	5	Grote teunisbloem		Onagraceae
Oenothera glazioviana ssp. rubricalix	2.39	14	3	2C	1	d rode calix		Onagraceae
Oenothera oakesiana	2.40	14	1	2C	2	Duinteunisbloem	FL	Onagraceae
Oenothera oehlkersii	2.21	14	1	2C	ad	Bleke teunisbloem	FL	Onagraceae
Oenothera parviflora	2.29	14	1	2C	ad	Kleine teunisbloem	FL	Onagraceae
Oenothera royfraseri	2.19	14	2	2C	1	n. d.	FL	Onagraceae
Oenothera rubricaulis	2.37	14	1	2C	1	n. d.	FL	Onagraceae
Oenothera oakesiana cf	2.20	14	1	2C		n. d.	FL	Onagraceae
Oenothera victorinii	2.33		1	2C,	ad	n. d.	FL	Onagraceae
Oenothera villosa	2.47	14	1	2C	ad	n. d.	FL	Onagraceae
Oenothera lindheimeri	1.32	14	1	2C	cu	Prachtkaars	BZ	Onagraceae
Oenothera x fallax	2.32	*14*	2	2C	6	Oenothera biennis x glazioviana		Onagraceae
Omphalodes verna	2.42	*42, 48*	1	**2C**, 4C, 8C	cu	Vroeg vergeet-mij-nietje		Boraginaceae
Onobrychis viciifolia	2.54	*28*	1	**2C,** 4C, 8C	3	Esparcette		Fabaceae
*Onoclea sensibilis**	32.5	*74*	1	2C	cu	Bolletjes varen		Onocleaceae
Ononis repens ssp. repens #	2.68	60	4	**2C**, 4C	5	Kruipend stalkruid		Fabaceae
Ononis repens ssp. spinosa #	1.49	30	2	**2C**, 4C, 8C	7	Kattendoorn		Fabaceae
Onopordum acanthium	2.69	*34*	2	2C, (4C)	6	Wegdistel		Asteraceae
Ophioglossum azoricum	65.3	*720*	1	2C	1	Azorenaddertong		Ophioglossaceae
Ophioglossum vulgatum	44.7	c. 540	4	2C	6	Addertong		Ophioglossaceae
Ophrys apifera	21.3	*36*	3	**2C**, 4C, 8C	5	Bijenorchis		Orchidaceae
Ophrys holoserica	20.6	*36*	1	2C, **4C**, 8C		Hommelorchis	BZ	Orchidaceae
Ophrys insectifera	22.2	*36*	2	2C, **4C**, 8C	3	Vliegenorchis		Orchidaceae
Orchis anthropophora	29.6	*42*	1	2C, (4C)	2	Poppenorchis		Orchidaceae
Orchis mascula #	20.8	*42*	6	2C, (4C)	3	Mannetjesorchis		Orchidaceae
Orchis militaris	23.9	42	3	2C, **4C,** 8C	3	Soldaatje		Orchidaceae
Orchis purpurea	18.7	*42*	1	2C, 4C, **8C**	3	Purperorchis		Orchidaceae
Orchis simia		*42*			2	Aapjesorchis		Orchidaceae
Orchis x hybrida					1	Orchis militaris x purpurea		Orchidaceae
Oreopteris limbosperma*	13.5	68	1	2C	4	Stippelvaren		Thelypteridaceae
Origanum majorana	1.94	30	2	2C	cu	Echte marjolein		Lamiaceae
Origanum vulgare	1.77	30	1	2C, (4C)	6	Wilde marjolein		Lamiaceae
Orlaya grandiflora	1.68	20	1	2C, F2336	ad	Straalscherm		Apiaceae
Ornithogalum pyramidale	17.3	24, 54	1		ad	Piramidevogelmelk		Asparagaceae
Ornithogalum nutans	43.9	14-42	1		5	Knikkende vogelmelk		Asparagaceae
Ornithogalum pyrenaicum	30.2	16, 32	4	**2C,** 4C, (8C)	cu	Bosvogelmelk	FL	Asparagaceae
Ornith. umbellatum ssp. *campestre*	43.6	27, 28	1		ad	n. d.		Asparagaceae
Ornith. umbellatum ssp. umbellatum	48.1	54 (16-104)	5	2C,	8	Gewone vogelmelk		Asparagaceae
Ornithopus compressus	1.23	*14*	2	**2C**, 4C, (8C)	3	Geel vogelpootje		Fabaceae
Ornithopus perpusillus	1.23	14	2	**2C**, 4C, (8C)	8	Klein vogelpootje		Fabaceae
Ornithopus sativus	1.19	*14*	1	**2C**, 4C, (8C)	cu	Serradelle		Fabaceae

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Ornithopus x martinii cf	1.26		1	**2C**, 4C, (8C)	1	Ornithopus compressus x perpus.	BZ	Fabaceae
Orobanche amethystea	5.40	*38*	1	2C	1	Violette bremraap	BZ	Orobanchaceae
Orobanche caryophyllacea	7.66	38	5	2C	5	Walstrobremraap		Orobanchaceae
Orobanche elatior		38			1	Centauriebremraap		Orobanchaceae
Orobanche hederae	5.70	38	3	2C	1	Klimopbremraap		Orobanchaceae
Orobanche lutea	5.59	38	1	2C	2	Rode bremraap		Orobanchaceae
Orobanche lucorum	8.12	38	1	2C	cu	Zuurbesbremraap	BZ	Orobanchaceae
Orobanche minor	6.06	38	2	**2C**, 4C	5	Klavervreter		Orobanchaceae
Orobanche picridis	5.66	38	2	2C, (4C)	4	Bitterkruidbremraap		Orobanchaceae
Orobanche purpurea*	14.1	24	3	2C, (4C)	4	Blauwe bremraap		Orobanchaceae
Orobanche ramosa		24			0	Hennepvreter (on tomato)		Orobanchaceae
Orobanche rapum-genistae		38			4	Grote bremraap		Orobanchaceae
Orobanche reticulata	6.19	38	3	2C, (4C)	4	Distelbremraap		Orobanchaceae
Orthilia secunda		*38*			0	Eenzijdig wintergroen		Ericaceae
Oryzopus miliacium	0.86	24	1	2C, (4C)	ad	Smilogras	FL	Poaceae
Osmanthus heterophyllus	1.68	46	1	2C	cu	Schijnhulst	FL	Oleaceae
Osmunda regalis*	28.2	44	3	2C	7	Koningsvaren		Osmundaceae
Ostrya carpinifolia	0.81	16	1	2C	ad	Hopbeuk	BZ	Fagaceae
Oxalis acetosella	5.58	22	5	2C, (4C)	7	Witte klaverzuring		Oxalidaceae
Oxalis corniculata	2.41	24	6	2C	6	Gehoornde klaverzuring		Oxalidaceae
Oxalis debilis	2.11	14, 28	1	2C, **4C**	1	Stippelklaverzuring	FL	Oxalidaceae
Oxalis dillenii	0.57	*(16) 24*	1	2C, **4C,** 8C	1	Knobbel klaverzuring		Oxalidaceae
Oxalis stricta	2.17	(18) 24	1	2C	8	Stijve klaverzuring		Oxalidaceae
Pachysandra terminalis	3.75	*48*	1	2C	cu	Dikkemanskruid		Buxaceae
Panicum barbipulvinatum	0.89		2	2C, **4C,** 8C	ad	Fijne draadgierst	FL	Poaceae
Panicum capillare	0.96	*18*	2	**2C**, 4C	ad	Draadgierst		Poaceae
Panicum dichotomiflorum	3.01	*36, 54*	1	**2C**, 4C	ad	Kale gierst		Poaceae
Panicum miliaceum	2.11	*36*	3	**2C**, 4C	ad	Pluimgierst, Millet		Poaceae
Panicum schinzii	0.99	*18*	1	**2C**, 4C, 8C, 16C	ad	Zuid-Afrikaanse gierst		Poaceae
Papaver argemone #	7.96	(12, 28) 42	3	**2C**, 4C	6	Ruige klaproos		Papaveraceae
Papaver atlanticum	2.36	*14*	2	**2C**, 4C, 8C	cu	Donzige klaproos		Papaveraceae
Papaver dubium	10.6	(14, 28) 42	7	**2C**, 4C	9	Bleke klaproos		Papaveraceae
*Papaver orientale**	15.2	28, 42	2	2C, (4C)	cu	Reuzenklaproos		Papaveraceae
Papaver rhoeas	5.20	14	7	2C, **4C**, 8C	8	Grote klaproos		Papaveraceae
Papaver somniferum	6.82	*22*	2	2C, **4C**, 8C	cu	Slaapbol		Papaveraceae
Papaver x exspectatum					1	Papaver rhoeas x dubium		Papaveraceae
Paradisia liliastrum	7.80	30	5			Paradijslelie	BZ	Asparagaceae
Parapholis strigosa	13.0	28	2	**2C**, 4C, 8C	5	Dunstaart		Poaceae
Parentucellia viscosa	2.85	48	2	2C, **4C**, 8C	5	Kleverige ogentroost		Orobanchaceae
Parietaria judaica	1.69	26	2	2C	5	Klein glaskruid		Urticaceae
Parietaria lusitanica	0.80	*16 (20)*	1	2C, **4C**		n. d.	BZ	Urticaceae
Parietaria officinalis	1.01	*14*	3	**2C,** 4C, 8C	5	Groot glaskruid		Urticaceae
Paris quadrifolia haem.	109	60	4	2C	5	Eenbes		Melanthlaceae
Parnassia palustris	2.69	18, 36	2	2C	6	Parnassia		Parnaciaceae
Parthenocissus inserta	1.79	*40*	1	2C	6	Valse wingerd		Vitaceae
Parthenocissus quinquefolia	2.39	*40*	2	2C	1	Vijfbladige wingerd		Vitaceae
Parthenocissus tricuspidata	1.30	*40*	2	2C	3	Oosterse wingerd		Vitaceae
Passiflora coerulea	2.99	18	3	**2C**, 4C	cu	Blauwe passiebloem	FL	Passifloraceae
Pastinaca sativa ssp. sativa	3.49	*22*	3	2C	9	Pastinaak		Apiaceae
Pastinaca umbrosa (as ssp. urens)	3.01	*22*	3	2C	1	Brandpastinaak		Apiaceae
Paulownia tomentosa	1.24	*40*	1	2C	cu	Anna Paulownaboom		Paulowniaceae
Pedicularis palustris	4.70	16	2	**2C**, 4C, 8C	5	Moeraskartelblad		Orobanchaceae
Pedicularis sylvatica	5.19	16	1	2C	5	Heidekartelblad		Orobanchaceae
Pennisetum alopecuroides	1.99	22, 36	1	**2C, 4C**	cu	Lampenpoetsergras	BZ	Poaceae
Pennisetum glaucum	**4.47**	14 (BZ: 36)	1	2C, 4C	cu	n. d.	BZ	Poaceae
Pennisetum advena 'Rubrum'	**1.64**	(18) 27 (54)	1	2C, 4C	cu	n. d.	BZ	Poaceae
Pentaglottis sempervirens	2.17	22	3	**2C**, 4C, 8C	5	Overblijvende ossentong		Boraginaceae
Persicaria amphibia	4.28	66, 88, 96	8	2C, (4C)	9	Veenwortel		Polygonaceae
Persicaria amplexicaulis	4.09	40	1	2C	cu	Doorgroeide duizendknoop	BZ	Polygonaceae
Persicaria bistorta	6.12	48	1	2C	6	Adderwortel		Polygonaceae
Persicaria capitata	2.05	*22, 40*	3	2C, (4C)	cu	Kogelduizendknoop		Polygonaceae
Persicaria hydropiper	1.82	*20, 22*	3	2C, (4C)	8	Waterpeper		Polygonaceae
Persicaria lapathifolia	1.71	22	2	2C, (4C)	9	Beklierde duizendknoop		Polygonaceae
Persicaria lapath. ssp. brittingeri	1.77	22	1	2C, (4C)		Oeverduizendknoop	BZ	Polygonaceae
Persicaria maculosa	3.48	44	4	**2C**, 4C	9	Perzikkruid		Polygonaceae
Persicaria minor	3.21	*40*	2	2C	6	Kleine duizendknoop		Polygonaceae
Persicaria mitis	3.59	*40*	2	**2C**, 4C	8	Zachte duizendknoop		Polygonaceae
Persicaria pensylvanica		*22*			1	Amerikaans perzikkruid		Polygonaceae
Persicaria wallichii	2.50	*22*	1	**2C**, 4C	4	Afghaanse duizendknoop		Polygonaceae
Petasites albus	6.00	*60*	3	2C	cu	Wit hoefblad		Asteraceae
Petasites hybridus	6.18	60	2	2C	8	Groot hoefblad		Asteraceae
Petasites japonicus	10.9	*60*	1	2C	cu	Japans hoefblad		Asteraceae
Petasites pyrenaicus		*52, 60*			cu	Winterheliotroop	FL	Asteraceae
Petrorhagia nanteuillii	3.06	60	2	**2C**, 4C	ad	n. d.	BZ	Caryophyllaceae
Petrorhagia prolifera	1.34	30	3	2C, 4C, (8C)	3	Slanke mantelanjer		Caryophyllaceae
Petrorhagia saxifraga	1.76	*60*	1	**2C**, 4C	cu	Kleine mantelanjer		Caryophyllaceae
Petroselinum crispum	4.39	22	1	2C	cu	Peterselie		Apiaceae
Petroselinum segetum	2.95	*16*	1	**2C**, 4C	2	Wilde peterselie		Apiaceae
Petunia x punctata	2.98		1	**2C**, 4C, (8C)	cu	Petunia	BZ	Solanaceae
Peucedanum carvifolia	5.93	22	1	2C	4	Karwijvarkenskervel		Apiaceae
Peucedanum officinale	8.44	*66*	2	2C	1	Varkensvenkel		Apiaceae
Peucedanum palustre	9.29	22	1	2C	8	Melkeppe		Apiaceae

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Phacelia tanacetifolia	1.48	*22*	2	**2C**, 4C, 8C	cu	Phacelia		Boraginaceae
Phalaris arundinacea	10.2	28	6	**2C,** 4C	9	Rietgras		Poaceae
Phalaris canariensis	9.61	12	1	**2C**, 4C, 8C	cu	Kanariezaad		Poaceae
Phaseolus coccineus	1.72	*22*	1	**2C, 4C**, 8C	cu	Pronkboon		Fabaceae
Phaseolus vulgaris	1.37	*22*	9	2C, 4C, 8C, 16C	cu	Bruine boon etc		Fabaceae
Phegopteris connectilis*	14.2	90	1	2C	4	Smalle beukvaren		Thelypteridaceae
Philadelphus coronarius	2.57	*26*	2	2C	cu	Boerenjasmijn		Hydrangeaceae
Phleum arenarium	3.13	14	1	**2C,** 4C	7	Zanddoddegras		Poaceae
Phleum pratense ssp. pratense	8.47	42	3	2C	9	Timoteegras		Poaceae
Phleum pratense ssp. serotinum	8.78	*42*	1	2C	8	Klein timoteegras		Poaceae
Phlomis russelliana	10.0		2	2C	cu	Brandkruid		Fabaceae
Phoenix dactilifera	1.73	36	1	3C	cu	Dadel	FL	Arecaceae
Phragmites australis	2.26	*36-96*	3	**2C**, 4C, 8C	9	Riet		Poaceae
Phuopsis stylosa	2.17	20, 22	2	2C, **4C**, 8C	cu	Kruisjesbloem	FL	Rubiaceae
Physalis alkekengi	5.05	*24*	2	2C, **4C**, 8C	5	Lampionplant		Solanaceae
Physalis ixiocarpa	5.05	*24*	2	2C, 4C, 8C, 16C	ad	Tomatillo	FL	Solanaceae
Physalis peruviana	12.4	*24, 48*	3	2C, **4C,** 8C	cu	Goudbes		Solanaceae
Physocarpus opulifolius	0.53	*18*	1	2C	cu	Blaasjesvrucht		Rosaceae
Phyteuma spicatum ssp. nigrum	2.47	*22*	6	**2C,** 4C, 8C	4	Zwartblauwe rapunzel		Campanulaceae
Phyteuma spicatum ssp. spicatum	2.45	22	6	**2C**, 4C, 8C	2	Witte rapunzel		Campanulaceae
Phytolacca acinosa	6.24	*18, 36, 72*	6	**2C**, 4C, (8C)	5	Karmozijnbes s.l.		Phytolaccaceae
Phytolacca americana	2.56	36	6	**2C**, 4C	4	Westerse karmozijnbes		Phytolaccaceae
Phytolacca esculenta	5.68	36, 72	6	**2C**, 4C	6	Oosterse karmozijnbes		Phytolaccaceae
Picea abies	40.7	*24*	2	2C	cu	Fijnspar		Pinaceae
Picea omorika	37.9	*24*	1	2C	cu	Servische spar		Pinaceae
Picea orientalis	36.7	24	2	2C	cu	Kaukasische spar		Pinaceae
Picea pungens	42.1	*24*	1	2C	cu	Blauwe spar		Pinaceae
Picea sitchensis	38.1	*24*	2	2C, (4C)	cu	Sitkaspar		Pinaceae
Picris echioides	1.57	10	3	2C	6	Dubbelkelk		Asteraceae
Picris hieracioides	2.91	10	4	2C	7	Echt bitterkruid		Asteraceae
Pilularia globulifera*	1.91	26	3	2C	5	Pilvaren		Marsileaceae
Pimpinella anisum	3.18	18, 20	2	2C, **3C,** 4C, 6C,	cu	Anijs		Apiaceae
Pimpinella major	5.57	*20*	7	**2C**, 4C	7	Grote bevernel		Apiaceae
Pimpinella saxifraga	7.70	40	5	2C	7	Kleine bevernel		Apiaceae
Pinguicula vulgaris #	1.47	64	3	2C	3	Vetblad		Lentibulariaceae
Pinus banksiana	45.5	24	1	2C	cu	Struikden		Pinaceae
Pinus mugo	45.2	*24*	8	2C	cu	Bergden		Pinaceae
Pinus nigra var. maritima 'Laricio'	51.6	*24*	1	2C	cu	Corsicaanse den		Pinaceae
Pinus nigra var. nigra	51.3	*24*	13	2C	cu	Oostenrijkse den		Pinaceae
Pinus pinaster	57.8	*24*	2	2C	cu	Zeeden		Pinaceae
Pinus strobus	59.1	*24*	2	2C	cu	Weymouthden		Pinaceae
Pinus sylvestris	48.4	24	1	2C	8	Grove den		Pinaceae
Pistia stratiotes	0.88	28	1	2C,	ad	Watersla		Araceae
Pisum sativum	8.72	*14*	6	**2C**, 4C, 8C	cu	Erwt, capucijner, peultjes		Fabaceae
Plantago asiatica	3.43	(12) 24 (36)	3	2C, (4C)	cu	"Aziatische" weegbree	BZ	Plantaginaceae
Plantago arenaria	3.52	*12*	1	2C, (4C)	4	Zandweegbree		Plantaginaceae
Plantago coronopus	1.15	10	2	**2C**, 4C, 8C	7	Hertshoornweegbree		Plantaginaceae
Plantago lanceolata	2.76	12 (24)	4	2C, (4C)	9	Smalle weegbree		Plantaginaceae
Plantago major ssp. intermedia	1.47	12	3	2C	6	Getande weegbree		Plantaginaceae
Plantago major ssp. major	1.48	12	2	2C	9	Grote weegbree		Plantaginaceae
Plantago maritima	2.68	12 (24)	2	2C	6	Zeeweegbree		Plantaginaceae
Plantago media	5.51	(12) 24	3	2C	6	Ruige weegbree		Plantaginaceae
Platanthera bifolia	25.0	42	4	2C, **4C**, 8C,	5	Welriekende nachtorchis		Orchidaceae
Platanthera montana	45.2		1	2C, 4C, 8C, 16C	3	Bergnachtorchis		Orchidaceae
Platanus orientali	4.26	42	3	2C	cu	Oosterse plataan		Platanaceae
Platanus occidentalis	4.18	42	1	2C	cu	Westerse plataan	BZ	Platanaceae
Platanus x hispanica	4.27	*42*	2	2C	cu	Platanus occidentalis x orientalis		Platanaceae
Poa angustifolia	8.27	*42-72*	1	2C	6	Smal beemdgras		Poaceae
Poa annua (infirma x supina)	4.21	28	10	**2C**, 4C	9	Straatgras		Poaceae
Poa bulbosa	7.40	28, 45	1	2C	5	Knolbeemdgras		Poaceae
Poa chaixii		*14*			2	Bergbeemdgras		Poaceae
Poa compressa	5.61	42	2	2C	7	Plat beemdgras		Poaceae
Poa humilis	10.9	54-109	3	2C, (4C)	9	Berijpt beemgras	BZ	Poaceae
Poa infirma	2.84	14	9	**2C,** 4C, (8C)	ad	Vroeg beemdgras	BZ	Poaceae
Poa nemoralis	6.71	42, 56	1	2C	8	Schaduwgras		Poaceae
Poa palustris	3.07	*14, 28, 42*	1	2C	8	Moerasbeemdgras		Poaceae
Poa pratensis #	6.98	*42-98*	3	**2C**, 4C	9	Veldbeemdgras		Poaceae
Poa trivialis	3.48	14, 28	3	**2C**, 4C	9	Ruw beemdgras		Poaceae
Polemonium coeruleum	13.4	18	1	2C, (4C)	cu	Jakobsladder		Polemoniaceae
Polycarpon tetraphyllum	1.44	54	6	**2C**, 4C	3	Kransmuur		Caryophyllaceae
Polycnemum arvense		18-54			1	Akkerknarkruid		Amaranthaceae
Polycnemum majus		54			0	Knarkruid		Amaranthaceae
Polygala comosa	1.05	34	4	2C, 4C, 8C	3	Kuifvleugeltjesbloem		Polygalaceae
Polygala serpyllifolia	0.83	34	1	**2C, 4C**, 8C	5	Liggende vleugeltjesbloem		Polygalaceae
Polygala vulgaris	1.88	68	2	**2C**, 4C	6	Gewone vleugeltjesbloem		Polygalaceae
Polygonatum multiflorum	20.5	18, 30	9	2C	8	Gewone salomonszegel		Asparagaceae
Polygonatum odoratum	23.2	26-30	8	2C	6	Welriekende salomonszegel		Asparagaceae
Polygonatum verticillatum	17.7	30, 84	2	2C, (4C)	1	Kranssalomonszegel		Asparagaceae
Polygonatum x hybridum		*19, 28*			cu	*Polyg. multiflorum x odoratum*		Asparagaceae
Polygonum aviculare ssp. demersum	1.73	40	24	**2C**, 4C	ad	n. d.	BZ	Polygonaceae
Polygonum aviculare ssp. aviculare	2.55	60	30	**2C**, 4C	9	Gewoon varkensgras		Polygonaceae
Polygonum maritimum		20			0	Strandvarkensgras		Polygonaceae

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Polygonum oxyspermum ssp. raii	1.95	40	9	**2C**, 4C	1	Zandvarkensgras		Polygonaceae
Polypodium cambricum*	16.1	74	4	2C		Zuidelijke eikvaren	BZ	Polypodaceae
Polypodium interjectum*	44.5	222	39	2C	5	Brede eikvaren		Polypodaceae
Polypodium vulgare*	29.0	148	33	2C	7	Gewone eikvaren		Polypodaceae
*Polypodium x mantoniae**	37.9	185	16	2C	6	Polypodium interjectum x vulgare		Polypodaceae
Polypodium vulgare x (xmantoniae)* cf	33.9	BZ: 165	7	2C	7	Polyp.vulgare x (interj. x vulg.)	BZ	Polypodaceae
Polypogon fugax	10.7	42	2	2C	1	n. d.	BZ	Poaceae
Polypogon monspeliensis	7.95	28	1	**2C**, 4C	ad	Baardgras		Poaceae
Polypogon viridis	7.08	*28*	7	**2C**, 4C	3	Kransgras		Poaceae
Polystichum aculeatum*	28.2	164	8	2C	4	Stijve naaldvaren		Dryopteraceae
Polystichum lonchitis*	13.5	82	1	2C	2	Lansvaren		Dryopteraceae
Polystichum luctuosum*	15.9	123	2	2C	1	n. d.	FL	Dryopteraceae
Polystichum polyblepharum*	35.7	164	3	2C,	1	Glansschildvaren	BZ	Dryopteraceae
Polystichum setiferum*	15.4	82 (164)	25	2C	2	Zachte naaldvaren		Dryopteraceae
Polystichum x bicknellii*	21.8	123	7	2C	ad	Polystichum aculeatum x setiferum	FL	Dryopteraceae
Pontederia cordata	1.34	*16*	2	2C	cu	Moerashyacint		Pontederiaceae
Populus alba	0.96	*38, 57*	1	2C	8	Witte abeel		Salicaceae
Populus balsamifera	1.06	*38, 76*	1	2C, (4C)	cu	Ontariopopulier		Salicaceae
Populus nigra 'Italica'	1.00	38	1	2C	cu	Italiaanse populier		Salicaceae
Populus nigra	1.01	38	2	2C	6	Zwarte populier		Salicaceae
Populus tremula	0.96	38	8	2C, (4C)	8	Ratelpopulier		Salicaceae
Populus trichocarpa	1.00	*38*	1	2C, (4C)	cu	Zwarte balsempopulier		Salicaceae
Populus x canescens	1.49	*38, 57*	4	2C	6	Grauwe abeel Pop. alba x tremula		Salicaceae
Populus x canadensis 'Serotina'	1.02	38	1	2C		Populus deltoides x nigra		Salicaceae
Portulaca oleracea	2.72	18, 54	4	**2C,** 4C, 8C, 16C	6	Postelein		Portulacaceae
Potamogeton acutifolius	1.02	*26*	2	**2C**, 4C, 8C	6	Spits fonteinkruid		Potamogetonaceae
Potamogeton alpinus #	0.97	*26, 52*	3	**2C**, 4C, 8C	5	Rossig fonteinkruid		Potamogetonaceae
Potamogeton berchtoldii	1.08	*26*	1	2C, **4C,** 8C	3	Klein fonteinkruid		Potamogetonaceae
Potamogeton coloratus		*26*			2	Weegbreefonteinkruid		Potamogetonaceae
Potamogeton compressus		*26*			6	Plat fonteinkruid		Potamogetonaceae
Potamogeton crispus	1.68	*26-78*	3	**2C**, 4C, (8C)	8	Gekroesd fonteinkruid		Potamogetonaceae
Potamogeton filiformis		*66, 78*			1	Draadfonteinkruid		Potamogetonaceae
Potamogeton gramineus	1.78	*52*	5	**2C,** 4C	5	Ongelijkbladig fonteinkruid		Potamogetonaceae
Potamogeton lucens #	1.79	*52*	5	**2C,** 4C	7	Glanzig fonteinkruid		Potamogetonaceae
Potamogeton friesii	0.99	*26*	2	**2C**, 4C, (8C)	6	Puntig fonteinkruid		Potamogetonaceae
Potamogeton natans	1.85	*42, 52*	2	**2C**, 4C, (8C)	8	Drijvend fonteinkruid		Potamogetonaceae
Potamogeton nodosus	1.54	*52*	1	**2C**, 4C, (8C)	4	Rivierfonteinkruid		Potamogetonaceae
Potamogeton obtusifolius #	0.96	*26*	2	**2C**, 4C, (8C)	6	Stomp fonteinkruid		Potamogetonaceae
Potamogeton pectinatus	1.94	*42, 78*	2	**2C**, 4C	8	Schedefonteinkruid		Potamogetonaceae
Potamogeton perfoliatus	1.76	*26-78*	1	**2C**, 4C, (8C)	7	Doorgroeid fonteinkruid		Potamogetonaceae
Potamogeton polygonifolius	1.00	*28*	3	**2C**, 4C, (8C)	5	Duizendknoopfonteinkruid		Potamogetonaceae
Potamogeton praelongus		*52*			3	Langstengelig fonteinkruid		Potamogetonaceae
Potamogeton sp.	0.93		1	**2C**, 4C, (8C)		n. d.	BZ	Potamogetonaceae
Potamogeton pusillus	0.64	*26, 28*	1	**2C**, 4C, (8C)	6	Tenger fonteinkruid		Potamogetonaceae
Potamogeton trichoides	1.00	*26*	1	**2C**, 4C, (8C)	8	Haarfonteinkruid		Potamogetonaceae
Potamogeton x angustifolius / gramineus	1.75		1	**2C**, 4C	1	Potamogetum gramineus x lucens		Potamogetonaceae
Potamogeton x decipiens	1.86		1	**2C**, 4C, (8C)	1	Potam.lucens/crispus x prael/perfoliata		Potamogetonaceae
Potamogeton x fluitans		*52*			1	Potamogetum lucens x natans		Potamogetonaceae
Potamogeton x lintonii cf	2.09		2	**2C**, 4C, (8C)	1	Potam. mucronatus x crispus		Potamogetonaceae
Potamogeton x nitens	1.80	*52*	1	**2C**, 4C, (8C)		Potam.pectinatus x crispus	BZ	Potamogetonaceae
Potamogeton x sparganifolius cf	1.94		2	**2C, 4C**	1	Potam. gramineus x natans		Potamogetonaceae
Potentilla alba	1.59	*28*	1	2C	ad	n. d.	FL	Rosaceae
Potentilla anglica	2.10	56	1	**2C**, 4C	8	Kruipganzerik		Rosaceae
Potentilla anserina #	1.08	28 (35) 42	10	**2C, 4C**	9	Zilverschoon		Rosaceae
Potentilla argentea #	0.45	14	2	**2C,** 4C	7	Viltganzerik		Rosaceae
Potentilla erecta	1.49	28	4	2C, (4C)	8	Tormentil		Rosaceae
Potentilla (now Dasiphora) fruticosa	0.92	28	1	2C	cu	Struikganzerik	FL	Rosaceae
Potentilla indica #	3.52	*42, 84*	8	**2C**, 4C	cu	Schijnaardbei		Rosaceae
Potentilla intermedia	2.15	*28, 42, 56*	1	**2C**, 4C	6	Middelste ganzerik		Rosaceae
Potentilla micrantha cf	0.83	*12, 14*	1	**2C, 4C**	ad	n. d.		Rosaceae
Potentilla norvegica	1.68	*42, 56, 70*	1	**2C**, 4C	6	Noorse ganzerik		Rosaceae
Potentilla recta	1.11	*28, 42*	3	2C, (4C)	6	Rechte ganzerik		Rosaceae
Potentilla reptans	1.38	28	1	**2C**, 4C	9	Vijfvingerkruid		Rosaceae
Potentilla sterilis #	0.54	(14) 28 (42)	1	**2C**, 4C, 8C	5	Aardbeiganzerik		Rosaceae
Potentilla supina	0.82	28, 42	3	**2C**, 4C, 8C	6	Liggende ganzerik		Rosaceae
Potentilla tabernaemontani	1.77	42-70	2	**2C**, 4C	5	Voorjaarsganzerik		Rosaceae
Potentilla x suberecta		42			1	Potentilla anglica x erecta		Rosaceae
Pratia zie Lobelia						n. d.		
Primula elatior	1.13	22	5	2C, **4C**, 8C, 16C	6	Slanke sleutelbloem		Primulaceae
Primula veris	0.98	22	4	2C, **4C**, 8C, 16C	5	Gulden sleutelbloem		Primulaceae
Primula vulgaris	1.01	22	2	2C, **4C**, 8C, 16C	4	Stengelloze sleutelbloem		Primulaceae
Prunella vulgaris	1.12	28	1	2C	9	Gewone brunel		Lamiaceae
Prunella grandiflora	1.56	28	2	2C	ad	Grote brunel	FL	Lamiaceae
Prunus avium #	0.84	16	7	**2C**, 4C, 8C	cu	Zoete kers		Rosaceae
Prunus cerasifera	0.63	*16*	2	**2C**, 4C	5	Kerspruim (black leaf)		Rosaceae
Prunus cerasus	1.72	*32*	1	2C	ad	Zure kers (Morel)		Rosaceae
Prunus domestica	2.11	48	7	**2C, 4C**	cu	Pruim		Rosaceae
Prunus incisa 'Kojou-no-may'	0.61	16	2	2C, (4C)	cu	Fujikers	FL	Rosaceae
Prunus laurocerasus	7.90	144, c. 175	5	2C,	cu	Laurierkers		Rosaceae
Prunus mahaleb	0.68	*16*	3	2C, (4C)	cu	Weichselboom		Rosaceae
Prunus padus	1.21	32	1	**2C**, 4C	9	Gewone vogelkers		Rosaceae
Prunus serotina	1.05	*32*	3	2C, (4C)	9	Amerikaanse vogelkers		Rosaceae

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Prunus spinosa	1.42	32	5	**2C**, 4C	8	Sleedoorn		Rosaceae
Prunus virginiana	1.14	16	2	2C	ad	Kleine vogelkers	FL	Rosaceae
Prunus x fruticans		16			1	Prunus domesticus x spinosa		Rosaceae
Pseudofumaria alba	0.77	*28, 32*	2	**2C**, 4C, 8C, 16C	2	Geelwitte helmbloem		Papaveraceae
Pseudofumaria lutea	1.37	*28, 56*	1	**2C**, 4C, 8C, 16C	5	Gele helmbloem		Papaveraceae
Pseudorchis albida		*40, 42*			0	Witte muggenorchis		Orchidaceae
Pseudosasa japonica	6.56	*48*	2	**2C**, 4C	cu	Japanse bamboe		Poaceae
Pseudotsuga menziesii	35.2	*26*	1	2C	cu	Douglas spar		Pinaceae
Pteridium aquilinum*	16.6	104, 156	1	2C, 4C	8	Adelaarsvaren		Dennstaedtaceae
Pteris cretica cf*	19.3	*58-174*	2	**2C**, 4C	cu	Lintvaren		Pteridaceae
Pterocarya fraxinifolia	1.39	32	2	2C	cu	Kaukasische Vleugelnoot	FL	Juglandaceae
Puccinellia distans ssp. borealis		28			3	Bleek kweldergras		Poaceae
Puccinellia distans ssp. distans	8.70	42	1	2C	7	Stomp kweldergras		Poaceae
Puccinellia fasciculata		28			4	Blauw kweldergras		Poaceae
Puccinellia maritima	10.7	56	1	2C	6	Gewoon kweldergras		Poaceae
Puccinellia rupestris		42			0	Dichtbloemig kweldergras		Poaceae
Pulicaria dysenterica	2.08	18	2	2C	8	Heelblaadjes		Asteraceae
Pulicaria vulgaris	1.84	18	1	2C	6	Klein vlooienkruid		Asteraceae
Pulmonaria longifolia 'Cebenense'	3.99	*14*	2	2C, (4C)	1	Langbladig longkruid	BZ	Boraginaceae
Pulmonaria montana	4.27	*22*	2	2C, 4C	1	Smal longkruid		Boraginaceae
Pulmonaria obscura		14			ad	Ongevlekt longkruid		Boraginaceae
Pulmonaria officinalis	3.15	16	4	2C, **4C**, 8C	6	Gevlekt longkruid		Boraginaceae
Pulmonaria rubra	2.45	14	1	2C, **4C**, 8C	1	Rood longkruid	FL	Boraginaceae
Pulsatilla vulgaris	26.2	32	3	2C	0	Wildemanskruid		Ranunculaceae
Puschkinia scilloides	14.0	10	1		cu	Buishyacinth	HD	Asparagaceae
Pyracantha coccinea 'Orange Glow'	1.38	34	1	2C	cu	Vuurdoorn	HD	Rosaceae
Pyrola minor	8.43	*46*	1	2C	5	Klein wintergroen		Ericaceae
Pyrola rotundifolia	7.12	*46*	1	**2C, 3C**	6	Rond wintergroen		Ericaceae
Pyrus communis	1.24	*34*	17	2C	5	Peer		Rosaceae
Pyrus pyraster	1.23	*34*	1	2C	cu	Wilde peer	FL	Rosaceae
Quercus cerris	1.90	*24*	3	2C	cu	Moseik		Fagaceae
Quercus palustris	1.69	24	3	2C	cu	Moeraseik		Fagaceae
Quercus petraea	2.05	24	2	2C	6	Wintereik		Fagaceae
Quercus pubescens	1.95	24	2	2C	cu	Donzige eik		Fagaceae
Quercus robur	2.01	24	2	2C	9	Zomereik		Fagaceae
Quercus rubra	1.74	*24*	3	2C	8	Amerikaanse eik		Fagaceae
Quercus x hispanica	1.73	*24*	1	2C		Quercus cerris x suber		Fagaceae
Quercus x rosacea cf	2.20	24	1	2C	cu	Quercus petraea x robur		Fagaceae
Radiola linoides	1.06	18	2	2C, 4C, 8C	5	Dwergvlas		Linaceae
Ranunculus acris	9.20	14	4	**2C**, 4C	9	Scherpe boterbloem		Ranunculaceae
Ranunculus aquatilis ssp. *aquatilis*	7.19	(32) 48	3	2C,	6	Fijne waterranonkel		Ranunculaceae
Ranunculus aquatilis ssp.diffusus #	10.6	32	2	2C, 4C, 8C	2	Kleine waterranonkel	BZ	Ranunculaceae
Ranunculus arvensis	13.3	*32*	1	2C, 4C	2	Akkerboterbloem		Ranunculaceae
Ranunculus auricomus	14.6	32	6	**2C**, 4C	5	Gulden boterbloem		Ranunculaceae
Ranunculus baudotii*	14.8	(16) 32	2	2C,	5	Zilte waterranonkel		Ranunculaceae
Ranunculus bulbosus #	11.0	16	4	2C, 4C	7	Knolboterbloem		Ranunculaceae
Ranunculus circinatus	5.94	16	1	2C, **4C,** 8C	7	Stijve waterranonkel		Ranunculaceae
Ranunculus flammula	12.5	32	7	2C, (4C)	9	Egelboterbloem		Ranunculaceae
Ranunculus fluitans		16, 32			3	Vlottende waterranonkel		Ranunculaceae
Ranunculus hederaceus #	4.04	16	5	2C, **4C**	5	Klimopwaterranonkel		Ranunculaceae
Ranunculus lingua	49.8	128	3	2C,	7	Grote boterbloem		Ranunculaceae
Ranunculus muricatus A	26.1	48, 64	2	2C	1	Ruige boterbloem cf	BZ	Ranunculaceae
Ranunculus muricatus B	20.6	48, 64	4	2C	1	Ruige boterbloem cf	BZ	Ranunculaceae
Ranunculus ololeucos		16, 32			4	Witte waterranonkel		Ranunculaceae
Ranunculus omiophyllus		16, 32			0	Drijvende waterranonkel		Ranunculaceae
Ranunculus parviflorus	6.60	14, 28	2	2C, **4C,** 8C	ad	Kleine boterbloem	FL	Ranunculaceae
Ranunculus peltatus ssp. *peltatus*	7.64	16, 32, 48	1	2C	6	Grote waterranonkel		Ranunculaceae
Ranunculus peltatus ssp.*heterophyllus*					1	Penseelbladige waterranonkel		Ranunculaceae
Ranunculus polyanthemos ssp. nemorosus	18.4	16	1		0	Bosboterbloem		Ranunculaceae
Ranunculus polyanthemos ssp. polyanthemoides		16			1	Kalkboterbloem		Ranunculaceae
Ranunculus repens*	19.4	32	3	**2C**, 4C	9	Kruipende boterbloem		Ranunculaceae
Ranunculus sardous	6.33	*16*	2	**2C**, 4C	6	Behaarde boterbloem		Ranunculaceae
Ranunculus sceleratus	7.22	32	2	2C,	9	Blaartrekkende boterbloem		Ranunculaceae
Ranunculus tripartitus		48			0	Driedelige waterranonkel		Ranunculaceae
Raphanus raphanistrum	1.15	18	4	2C, **4C,** 8C	8	Knopherik		Brassicaceae
Raphanus sativus #	1.22	*18*	6	2C, 4C, **8C,** 16C	cu	Radijs /ramenas		Brassicaceae
Rapistrum rugosum	1.25	*16*	1	2C, (4C)	6	Bolletjesraket		Brassicaceae
Reseda lutea	2.06	48	2	**2C**, 4C, 8C	7	Wilde reseda		Resedaceae
Reseda luteola	1.33	26	2	**2C,** 3C	7	Wouw		Resedaceae
Reseda odorata	0.96	12		**2C**, 4C, 8C	1	n. d.	FL	Resedaceae
Rhamnus cathartica	0.98	24	3	2C, (4C)	7	Wegedoorn		Rhamnaceae
Rhamnus frangula	0.71	20	1	2C, (4C)	8	Sporkehout		Rhamnaceae
Rheum x rhabarbarum	9.55	*44*	1	**2C**, 4C,	cu	Tuinrabarber		Polygonaceae
Rhinanthus alectorolophus	2.57	22	1	2C, **4C**, 8C	4	Harige ratelaar		Orobanchaceae
Rhinanthus angustifolius	2.70	22	2	2C, **4C**, 8C	7	Grote ratelaar		Orobanchaceae
Rhinanthus minor	2.85	22	2	2C, **4C**, 8C	6	Kleine ratelaar		Orobanchaceae
Rhinanthus x fallax					1	Rhinanthus angustifolius x minor		Orobanchaceae
Rhododendron ponticum	1.61	*26*	1	2C	7	Pontische rhododendron		Ericaceae
Rhus radicans	0.91	30	1	2C	cu	Gifsumak, poison ivy		Anacardiaceae
Rhus typhina	0.86	*30*	4	2C	7	Azijnboom, fluweelboom		Anacardiaceae
Rhynchospora alba	0.45	26	1	2C	6	Witte snavelbies		Cyperaceae
Rhynchospora fusca	0.51	26	1	2C	6	Bruine snavelbies		Cyperaceae

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Ribes alpinum	2.00	*16*	2	2C	5	Alpenbes		Grossulariaceae
Ribes nigrum	2.04	16	1	2C	8	Zwarte bes		Grossulariaceae
Ribes odoratum	1.96	*16*	1	2C	cu	Gele ribes		Grossulariaceae
Ribes rubrum 'Domesticum'	2.03	16	8	2C	8	Aalbes		Grossulariaceae
Ribes sanguineum	1.84	*16*	1	2C	cu	Rode ribes		Grossulariaceae
Ribes speciosum	2.23		1			n. d.	BZ	Grossulariaceae
Ribes spicatum	1.94	*16*	1	2C	1	Noordse aalbes		Grossulariaceae
Ribes uva-crispa	1.87	16	4	2C	8	Kruisbes		Grossulariaceae
Ricinus communis	0.85	*20*	3	**2C**, 4C	cu	Wonderboom		Euphorbiaceae
Rohdea japonica haem.	95.1	38, c. 76	1	2C		Japanse lelie	BZ	Asparagaceae
Robinia pseudoacacia	1.58	*20*	1	**2C**, 4C	8	Robinia		Fabaceae
Rorippa amphibia	1.14	16, 32	3	**2C**, 4C	9	Gele kers		Brassicaceae
Rorippa austriaca	0.44	16	1	2C, **4C**, 8C	6	Oostenrijkse kers		Brassicaceae
Rorippa palustris	1.18	32	1	**2C**, 4C, 8C	9	Moeraskers		Brassicaceae
Rorippa sylvestris	1.45	32, 48	2	**2C**, 4C, 8C	8	Akkerkers, kiek		Brassicaceae
Rorippa islandica cf	1.07	16, 32	1	2C, **4C,** 8C		n. d.	BZ	Brassicaceae
Rorippa x anceps		32, 40			2	Rorripa amphibia x sylvestris		Brassicaceae
Rorippa x armoracioides		32			2	Rorripa austriaca x sylvestris		Brassicaceae
Rosa agrestis	3.58	35, 42	1	2C, (4C)	1	Kraagroos		Rosaceae
Rosa arvensis	1.14	14	1	2C, (4C)	4	Bosroos		Rosaceae
Rosa balsamica	3.47	35	2	2C, (4C)	2	Beklierde heggenroos		Rosaceae
Rosa canina	2.89	35	4	2C, (4C)	9	Hondsroos		Rosaceae
Rosa corymbifera	3.00	35	4	2C, (4C)	2	Heggenroos		Rosaceae
Rosa dumalis	2.79	*35*	1	2C, (4C)	2	Kale struweelroos		Rosaceae
Rosa elliptica	2.81	*35, 42*	2	2C,	1	Wigbladige roos	BZ	Rosaceae
Rosa gallica officinalis	2.31	*28*	1	2C, (4C)	cu	Franse roos		Rosaceae
Rosa glauca #	2.06	28	4	2C, (4C)	cu	Bergroos		Rosaceae
Rosa henkeri-schulzei	2.74	35 (c. 42)	1	2C, (4C)	2	Schijnegelantier		Rosaceae
Rosa 'Hollandica' (x rugosa)	0.99		1	2C, (4C)	cu	Hollandse rimpelroos		Rosaceae
Rosa inodora	2.84	42	4	2C, (4C)	cu	Schijnkraagroos		Rosaceae
Rosa majalis #	0.96	14, 21	2	2C, (4C)	3	Kaneelroos		Rosaceae
Rosa micrantha	2.82	35, 42	1	2C, (4C)	2	Kleinbloemige roos		Rosaceae
Rosa multiflora #	1.16	*14*	2	2C, (4C)	cu	Veelbloemige roos		Rosaceae
Rosa nitida		*14*		2C, (4C)	cu	Glanzende roos	FL	Rosaceae
Rosa pseudoscabriuscula	2.93	35	2	2C, (4C)	2	Schijnviltroos (syn of villosa)		Rosaceae
Rosa rubiginosa	2.80	35	3	2C, (4C)	6	Egelantier		Rosaceae
Rosa rugosa	1.08	*14, 28*	4	2C, 4C, **8C**	8	Rimpelroos		Rosaceae
Rosa sherardii	2.72	28, 35, 42	1	2C, (4C)	1	Berijpte viltrs (syn of villosa)		Rosaceae
Rosa spinosissima	1.99	28	2	2C, (4C)	6	Duinroos		Rosaceae
Rosa spinosissima ssp. altaica	1.97	28	1	2C, (4C)		Duinroos		Rosaceae
Rosa tomentosa	2.81	35	1	2C, (4C)	4	Viltroos (syn of villosa)		Rosaceae
Rosa villosa	2.17	28, 56	2	2C, (4C)	4	Bottelroos		Rosaceae
Rosa virginiana	1.99	*28*	1	2C,	ad	Virginische roos		Rosaceae
Rosa caesia	2.68	35	1	2C, (4C)		Behaarde struweelroos	BZ	Rosaceae
Rosa subcanina	2.81	35	1	2C, (4C)		Schijnhondsroos	BZ	Rosaceae
Rosa subcollina	2.81	35, 42	2	2C, (4C)		Schijnheggenroos	BZ	Rosaceae
Rosmarinus officinalis	2.64	*24*	4	2C, (4C)	cu	Rozemarijn		Lamiaceae
Rostraria cristata	7.49	*26*	1	2C	1	Klein fakkelgras		Poaceae
Rubia tinctorum	3.36	*22, 44*	1	**2C**, 4C, 8C	1	Meekrap		Rubiaceae
Rubus caesius	1.47	28, 35	4	2C, (4C)	9	Dauwbraam		Rosaceae
Rubus camtostachys	1.46	28	1	2C, 4C		Bleke randbraam	HD	Rosaceae
Rubus canduliger	1.16	28	1	2C, 4C		Lichtende viltbraam	HD	Rosaceae
Rubus dejonghii	1.49	28	1	2C, 4C		Bleke contrastbraam	HD	Rosaceae
Rubus drenthicus	1.80	28	1	2C, 4C		Bruine bermbraam	HD	Rosaceae
Rubus geniculatus	1.47	28	1	2C, 4C		Knieviktbraam	HD	Rosaceae
Rubus glandithyrsos	1.44	28	1	2C, 4C		Rode contrastbraam	HD	Rosaceae
Rubus idaeus	0.69	14-42	3	2C, (4C)	8	Framboos		Rosaceae
Rubus luticola	2.31	42	1	2C, 4C		Groene speerbraam	HD	Rosaceae
Rubus macrophyllus	1.51	28	1	2C		Bolle haarbraam	HD	Rosaceae
Rubus mucronulatus	1.55	28	1	2C		Fijne tandbraam	HD	Rosaceae
Rubus nelliae	1.53	28	1	**2C**, 4C		Hartviltbraam	HD	Rosaceae
Rubus nemoralis	1.46	28	1	2C, (4C)	cu	Zandhaagbraam		Rosaceae
Rubus nessensis	1.38	28	4	**2C,** 4C		Vroege roggebraam	HD	Rosaceae
Rubus odoratus	0.74	*14*	1	2C, (4C)	cu	Roodbloeiende framboos		Rosaceae
Rubus phoenicolasius	0.72	*14*	1	2C, (4C)	cu	Japanse wijnbes		Rosaceae
Rubus plicatus	1.47	28	1	2C, 4C		Geplooide stokbraam	HD	Rosaceae
Rubus raduloides	1.50	28	1	**2C**, 4C		Arsenaalbraam	HD	Rosaceae
Rubus rosaceus	1.41	28	1	**2C**, 4C		Rode borstelbraam	HD	Rosaceae
Rubus rudis	1.52	28	1	2C, 4C		Ruwe raspbraam	HD	Rosaceae
Rubus saxatilis	1.49	28	2	2C, (4C)	1	Steenbraam		Rosaceae
Rubus scissus	1.45	28	1	**2C**, 4C		Naaldroggebraam	HD	Rosaceae
Rubus silvaticus	1.40	28	1	2C		Donkere pluimbraam	HD	Rosaceae
Rubus spectabilis	0.57	*14*	2	**2C, 4C**, 8C	5	Prachtframboos		Rosaceae
Rubus sprengelii	1.49	28	1	2C		Rode grondbraam	HD	Rosaceae
Rubus ulmifolius	0.77	14	1	2C, 4C		Koebraam	HD	Rosaceae
Rubus vestitus	1.66	28	1	2C		Fraaie kambraam	HD	Rosaceae
Rubus x idaeoides					1	Basterd framboos	FL	Rosaceae
Rudbeckia fulgida* cf #	8.41	*30, 38, 76*	6	2C	cu	Rudbeckia	BZ	Asteraceae
Rudbeckia hirta cf #*	4.64	*38*	3	2C	cu	Ruige rudbeckia		Asteraceae
Rudbeckia laciniata* #	10.6	*36-102*	3	2C	4	Slipbladige rudbeckia		Asteraceae
Rudbeckia rugosa cf	2.33		2	2C	cu	n. d.	BZ	Asteraceae
Rumex acetosa ambiguus	6.91	BZ: 14/15	2	2C, **4C,** 8C	cu	Tuinzuring	BZ	Polygonaceae

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Rumex acetosa	6.85	14/15	1	2C, **4C**, 8C	9	Veldzuring		Polygonaceae
Rumex acetosella	5.03	28, 42	2	**2C**, 4C	9	Schapenzuring		Polygonaceae
Rumex aquaticus		*140 (200)*			0	Paardenzuring		Polygonaceae
Rumex conglomeratus	1.54	*18, 20, 40*	3	2C, **4C,** 8C	8	Kluwenzuring		Polygonaceae
Rumex crispus	4.44	(40) 60	1	**2C**, 4C	9	Krulzuring		Polygonaceae
Rumex hydrolapathum*	15.2	130, 200	6	2C, 4C	9	Waterzuring		Polygonaceae
Rumex longifolius	8.46	60	1	2C	1	Noordse zuring		Polygonaceae
Rumex maritimus	2.25	40	3	**2C**, 4C, 8C	7	Goudzuring		Polygonaceae
Rumex obtusifolius	2.64	40	2	2C, 4C, 8C, 16C	9	Ridderzuring		Polygonaceae
Rumex palustris	3.81	(40) 60	2	**2C**, **4C**	7	Moeraszuring		Polygonaceae
Rumex patientia	4.76	(40) 60	2	2C, **4C**	cu	Spinaziezuring		Polygonaceae
Rumex salicifolius	1.38	*20*	3	2C, **4C**, 8C	ad	Wilgzuring		Polygonaceae
Rumex sanguineus	1.50	20	2	2C, **4C**, 8C	7	Bloedzuring		Polygonaceae
Rumex scutatus	2.24	*20*	1	2C, **4C**, 8C	3	Spaanse zuring		Polygonaceae
Rumex stenophyllus	3.85	(20, 22) 60	4	2C, 4C	ad	n. d.		Polygonaceae
Rumex thyrsiflorus female	7.18	14	4	2C, **4C**, 8C	6	Geoorde zuring		Polygonaceae
Rumex thyrsiflorus male	7.15	15	4	2C, **4C**, 8C	6	Geoorde zuring		Polygonaceae
Rumex x pratensis	3.72		1	2C, **4C**, 8C	5	Rumex crispus x obtusifolius		Polygonaceae
Ruppia cirrhosa	5.63	*20, 40, 60*	1	2C, **4C**, 8C	3	Spiraalruppia		Ruppiaceae
Ruppia maritima	2.82	20	2	2C, **4C**, **8C**	3	Snavelruppia		Ruppiaceae
Ruscus aculeatus	22.2	40	1	2C	cu	Stekelige muizendoorn	FL	Asparagaceae
Ruta graveolens	1.16	72-80	2	2C,	cu	Wijnruit		Rutaceae
Sagina apetala	0.95	12	6	**2C**, 4C, 8C	5	Donkere vetmuur		Caryophyllaceae
Sagina maritima #	0.77	28	1	**2C**, 4C, 8C	5	Zeevetmuur		Caryophyllaceae
Sagina micropetala	0.97	12	4	**2C**, 4C	4	Uitstaande vetmuur		Caryophyllaceae
Sagina nodosa	1.13	56	3	**2C, 4C**	6	Sierlijke vetmuur		Caryophyllaceae
Sagina procumbens	0.79	22	6	**2C**, 4C, (8C)	9	Liggende vetmuur		Caryophyllaceae
Sagina subulata	0.93	22	1	2C, 4C, 8C, 16C	cu	Priemvetmuur		Caryophyllaceae
Sagittaria latifolia	32.4	*22*	1		cu	Breed pijlkruid		Alismataceae
Sagittaria sagittifolia	42.0	*16, 20, 22*	11	2C, (4C)	8	Pijlkruid		Alismataceae
Salicornia europaea ssp. europaea #	1.27	18	14	2C, **4C,** 8C	6	Kortarige zeekraal		Amaranthaceae
Salicornia europaea ssp. brachystachya	2.57	36	2	2C, 4C		n. d.		Amaranthaceae
Salicornia pusilla (europaea?)	1.26	18	6	2C, **4C,** 8C, 16C	0	Eenbloemige zeekraal		Amaranthaceae
Salicornia procumbens	2.51	36	14	2C, **4C**, (8C)	6	Langarige zeekraal		Amaranthaceae
Salicornia perennans	1.95	18	4	2C, **4C**, 8C	cu	import Israel/Chili	BZ	Amaranthaceae
Salix alba	1.74	76	2	2C	9	Schietwilg		Salicaceae
Salix aurita #	1.70	*38, 76*	2	2C, (4C)	9	Geoorde wilg		Salicaceae
Salix babylonica 'Tortuosa"	1.71	*76*	2		cu	Krulwilg		Salicaceae
Salix caprea #	0.91	*38, 76*	6	2C, (4C)	9	Boswilg		Salicaceae
Salix cinerea ssp. *cinerea*	0.92	76	1	**2C**, 4C	9	Grauwe wilg		Salicaceae
Salix cinerea ssp. *oleifolia*		*76*			3	Rossige wilg		Salicaceae
Salix daphnoides	0.89	38	1	**2C**	cu	Berijpte wilg		Salicaceae
Salix elaeagnos	0.76	38	1	2C		n. d.		Salicaceae
Salix eriocephala	0.91	38	2	2C, 4C	2	n. d.		Salicaceae
Salix myrsinifolia	2.45	114	4	2C		n. d.		Salicaceae
Salix pentandra	1.83	76	1	**2C**	6	Laurierwilg		Salicaceae
Salix purpurea	0.95	38	**2**	2C, (4C)	7	Bittere wilg		Salicaceae
Salix repens	0.87	38	2	2C, (4C)	8	Kruipwilg		Salicaceae
Salix repens var. a*rgentea*	0.89	38	1	2C, (4C)	6	Kruipwilg (dunes)		Salicaceae
Salix udensis 'Sekka'	0.94	*38*	2	2C	cu	Bandwilg		Salicaceae
Salix triandra	0.84	38, 44, 88	1	2C, (4C)	8	Amandelwilg		Salicaceae
Salix viminalis	0.83	38	1	2C, (4C)	8	Katwilg		Salicaceae
Salix x charrieri cf	1.76		1	2C, (4C)	1	Salix aurita x cinerea oleifolia	FL	Salicaceae
Salix x dasyclados	2.24	76 (114)	1	2C	6	Duitse dot (capr. x ciner. x vimin		Salicaceae
Salix x eriocephala	0.81	38	2	2C, (4C)	--	Amerikaantje	FL	Salicaceae
Salix x doniana	0.91		1	**2C**, 4C	1	Salix purpurea xrepens	BZ	Salicaceae
Salix x fragilis	1.66	76	2	**2C**, 4C	8	Kraakwilg		Salicaceae
Salix x friesiana	0.87		1	**2C**, 4C	1	Salix repens x viminalis	FL	Salicaceae
Salix x holoserica	0.83	57	1	2C, (4C)	1	Salix cinerea x viminalis	FL	Salicaceae
Salix x molissima #	0.89	38	2	**2C,** 4C	2	Salix triandra x viminalis		Salicaceae
Salix x multinervis	0.87		2	**2C**, 4C	7	Salix aurita x cinerea		Salicaceae
Salix x reichardtii					2	Salix caprea x cinerea		Salicaceae
Salix x rubens	1.68	76	2	2C, (4C)	6	Salix alba x fragilis		Salicaceae
Salix x rubra	0.87	38	1	2C	2	Salix purpurea x viminalis		Salicaceae
Salix x sepulcralis 'Chrysocoma'	1.60	76	1		cu	Treurwilg	hd	Salicaceae
Salix x smithiana	0.88	38, 41	2	**2C**, 4C	3	Salix caprea x viminalis		Salicaceae
Salsola kali	3.31	36	4	**2C,** 4C, 8C	6	Stekend loogkruid		Amaranthaceae
Salsola soda	2.90	18 (36)	1	**2C,** 4C, 8C	cu	Japanse zeekraal	BZ	Amaranthaceae
Salsola tragus	3.02	36	4	**2C**, 4C, 8C	3	Zacht loogkruid		Amaranthaceae
Salvia hispanica	0.96	12	2	2C, 4C, (8C)	cu	Chia		Amaranthaceae
Salvia nemorosa	1.13	14	1	**2C**, 4C, 8C	cu	Bossalie		Lamiaceae
Salvia officinalis	1.18	*14*	1	**2C**, 4C	cu	Echte salie		Lamiaceae
Salvia pratensis	1.57	*16, 18*	1	**2C**, 4C,	5	Veldsalie		Lamiaceae
Salvia verbenaca #	3.23	14-64	3	**2C**, 4C, 8C	1	Kleinbloemige salie		Lamiaceae
Salvia verticillata #	2.83	16 (32)	5	**2C**, 4C,	3	Kranssalie		Lamiaceae
*Salvinia auriculata**	4.53	45	2	2C	cu	Grote vlotvaren		Salviniaceae
*Salvinia natans**	2.77	18, 36	1	2C	cu	Kleine vlotvaren		Salviniaceae
Salvinia natans x auriculata* cf	3.67	BZ: 31	1	2C		n. d.		Salviniaceae
Sambucus canadensis	24.7	*36*	2	2C	cu	Canadese vlier		Adoxaceae
Sambucus ebulus	24.7	36	2	2C	4	Kruidvlier		Adoxaceae
Sambucus nigra (incl. 'Laciniata')	26.5	36	6	2C, (4C)	9	Gewone vlier		Adoxaceae
Sambucus racemosa	24.9	*36*	3	2C	8	Trosvlier		Adoxaceae

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Samolus valerandi	1.29	26	3	2C, (4C)	7	Waterpunge		Primulaceae
Sanguisorba minor ssp. *balearica*		*28*			ex	Moespimpernel		Rosaceae
Sanguisorba minor ssp. minor	1.20	28	3	2C, 4C	5	Kleine pimpernel		Rosaceae
Sanguisorba officinalis #	2.38	28, 56	5	**2C**, 4C	7	Grote pimpernel		Rosaceae
Sanicula europaea	2.65	16	4	2C	4	Heelkruid		Apiaceae
Sanvitalia procumbens	2.91	16	1	2C	cu	Huzarenknoop	FL	Asteraceae
Saponaria ocymoides	4.28	*28*	2	**2C**, 3C	cu	Muurzeepkruid		Caryophyllaceae
Saponaria officinalis	4.58	28	2	2C, (4C)	7	Zeepkruid		Caryophyllaceae
Satureja hortensis	3.47	48	1	2C, (4C)	cu	Bonekruid		Lamiaceae
Sauromatum venosum	11.7	26 (52, 104)	1	2C, **4C**, 8C	cu	n. d.	FL	Araceae
Saxifraga granulata	4.97	32, 48	2	2C, (4C)	5	Knolsteenbreek		Saxifragaceae
Saxifraga hirculus		16, 28, 32			0	Bokjessteenbreek		Saxifragaceae
Saxifraga tridactylites	1.34	*22*	7	2C	6	Kandelaartje		Saxifragaceae
Scabiosa columbaria	2.51	16	2	**2C**, 4C, 8C	4	Duifkruid		Caprifoliaceae
Scandix pecten-veneris	1.41	*16*	1	2C	2	Naaldenkervel		Apiaceae
Scheuchzeria palustris		22			1	Veenbloembies		Scheuchzeriaceae
Schoenoplectus lacustris	1.23	*42*	2	2C	8	Mattenbies		Cyperaceae
Schoenoplectus mucronatus		44			1	Ribbelbies		Cyperaceae
Schoenoplectus pungens	1.07	*74, 78*	1	2C	2	Stekende bies		Cyperaceae
Schoenoplectus tabernaemontani	1.24	42	2	2C	7	Ruwe bies		Cyperaceae
Schoenoplectus triqueter	1.17	*40, 42*	1	2C	4	Driekantige bies		Cyperaceae
Schoenoplectus x carinatus					1	Schoenoplectus lacustris x triqueter		Cyperaceae
Schoenoplectus x kueckenthalianus	1.28		1	2C	1	Schoenoplectus tabern. x triqueter		Cyperaceae
Schoenus nigricans	1.80	44	1	**2C**, 4C	5	Knopbies		Cyperaceae
Scilla bifolia	9.60	*'6, 18, 36, 5*	1	2C	5	Vroege sterhyacint		Asparagaceae
Scilla mischtschenkoana	51.6	*12*	2	2C	cu	Streephyacint	FL	Asparagaceae
Scilla siberica	75.4	*12, 18*	2	2C	5	Oosterse sterhyacint		Asparagaceae
Scirpoides holoschoenus	0.55	164, 168	2	2C	1	Kogelbies		Cyperaceae
Scirpus sylvaticus	0.75	62	2	2C	8	Bosbies		Cyperaceae
Scleranthus annuus ssp. annuus	4.07	44	3	2C, (4C)	8	Eenjarige hardbloem s.s.		Caryophyllaceae
Scleranthus annuus ssp. polycarpos	3.97	44	1	**2C**, 4C	2	Kleine hardbloem		Caryophyllaceae
Scleranthus perennis	2.02	22	1	**2C**, 4C, 8C	4	Overblijvende hardbloem		Caryophyllaceae
Scorzonera hispanica	4.96	14 (28)	1	2C	ad	Grote schorseneer		Asteraceae
Scorzonera humilis cf	11.8	14	3	2C	3	Kleine schorseneer		Asteraceae
Scrophularia auriculata	3.27	78, 80	4	2C, (4C)	5	Geoord helmkruid		Scrophulariaceae
Scrophularia canina	1.30	26	1	2C, (4C)	0	Hondshelmkruid		Scrophulariaceae
Scrophularia nodosa	1.54	36	1	2C	8	Knopig helmkruid		Scrophulariaceae
Scrophularia umbrosa	2.84	*26, 52*	1	2C,	5	Gevleugeld helmkruid		Scrophulariaceae
Scrophularia vernalis #	1.74	*28, 40*	2	**2C**, 4C	5	Voorjaarshelmkruid		Scrophulariaceae
Scutellaria altissima	0.83	34	2	**2C,** 3C	ad	Groot glidkruid	FL	Lamiaceae
Scutellaria columnae	0.68	34	1	2C,	3	Trosglidkruid		Lamiaceae
Scutellaria galericulata	0.78	30, 32	3	2C	9	Blauw glidkruid		Lamiaceae
Scutellaria minor		c32			4	Klein glidkruid		Lamiaceae
Scutellaria x hybrida					1	Scutellaria galericulata x minor		Lamiaceae
Secale cereale 'Petkuss Spring'*	15.5	*14*	1	2C	cu	Rogge		Poaceae
Securigera varia	3.33	*24*	2	2C, 4C	5	Bont kroonkruid		Fabaceae
Sedum acre	2.91	80	10	**2C, 4C**, 8C,	8	Muurpeper		Crassulaceae
Sedum album #	1.11	*32-136*	12	2C, **4C**, 8C,	7	Wit vetkruid		Crassulaceae
Sedum cepaea	0.91	20, 22	1	**2C, 4C, 8C, 16C**	cu	Omgebogen vetkruid		Crassulaceae
Sedum dasyphyllum 'Mesatlanticum'	0.57	*28, 42, 56*	1	2C, 4C, 8C, 16C	ad	Dik vetkruid		Crassulaceae
Sedum forsterianum	4.96	24-84	2	2C**, 4C**	0	Sierlijk vetkruid		Crassulaceae
Sedum hispanicum	0.93	*14-42*	4	2C, **4C,** 8C, 16C	cu	Spaans vetkruid	FL	Crassulaceae
Sedum hybridum cf #	2.96	*64*	1	2C, **4C,** 8C		Kruipend vetkruid	HD	Crassulaceae
Sedum kamschaticum		*32, 48, 64*				Kamtsjatka-vetkruid	HD	Crassulaceae
Sedum rupestre	4.04	*34-112*	3	2C, **4C**, 8C,	5	Tripmadam		Crassulaceae
Sedum sarmentosum	1.30	58	1	**2C, 4C,** 8C, 16C	cu	Driebladvetkruid		Crassulaceae
Sedum sediforme	4.39	*32, 64, 96*	1	2C, 4C, 8C, 16C	cu	n. d.	BZ	Crassulaceae
Sedum sexangulare	1.90	*72, 74, 108*	1	**2C**, 4C, 8C	6	Zacht vetkruid		Crassulaceae
Sedum spectabile	3.60	*50, 51*	5	2C, 4C, 8C	cu	Roze hemelsleutel		Crassulaceae
Sedum spurium	4.38	*28*	3	**2C**, 4C, 8C	cu	Roze vetkruid		Crassulaceae
Sedum stoloniferum	1.76	*14, 28*	2	2C, **4C**, 8C	cu	n. d.	BZ	Crassulaceae
Sedum telephium #	2.28	24, 26	8	2C, **4C**, 8C	8	Hemelsleutel		Crassulaceae
Sedum 'Herbstfreude'	3.49		1	**2C, 4C, 8C, 16C**	cu	Sedum spectabile x telephium		Crassulaceae
Selaginella kraussiana	0.40	20	1	2C, (4C)	ad	Gazonmosvarentje	FL	Selaginellaceae
Selinum carvifolia		*22*			2	Karwijselie		Apiaceae
Sempervivum arachnoideum	0.65	32, 48, 64	1	2C, **4C**, 8C	cu	Spinnewebhuislook	BZ	Crassulaceae
Sempervivum montanum #	0.62	42, 84	3	2C, **4C**, 8C		Berghuislook		Crassulaceae
Sempervivum montanum ssp.burnatii	1.01	BZ: 57	3	2C, **4C**, 8C		Grote berghuislook	BZ	Crassulaceae
Sempervivum tectorum	1.52	72	5	2C, **4C**, 8C	cu	Huislook		Crassulaceae
Sempervivum x barbulatum		BZ: 37				Semp. arachnoideum. x montanum	BZ	Crassulaceae
Senecio inaequidens	3.05	*40*	5	2C, (4C)	8	Bezemkruiskruid		Asteraceae
Senecio nemorensis	10.7	40	4	2C	5	Schaduwkruiskruid		Asteraceae
Senecio sarracenicus	13.0	40	1	2C	5	Rivierkruiskruid		Asteraceae
Senecio squalidus	1.00	20	1	2C, 4C, (8C)	ad	Glanzend kruiskruid		Asteraceae
Senecio sylvaticus	4.35	40	1	2C	5	Boskruiskruid		Asteraceae
Senecio vernalis		*20, 40*			5	Oostelijk kruiskruid		Asteraceae
Senecio viscosus	4.75	40	1	2C	8	Kleverig kruiskruid		Asteraceae
Senecio vulgaris	3.47	40	5	2C	9	Klein kruiskruid		Asteraceae
Senecio vulgaris var. *hibernicus*		40			ad	n. d.		Asteraceae
Senecio x helwingii					0	Senecio vernalis x vulgaris		Asteraceae
Serratula tinctoria	3.33	22	1	2C	0	Zaagblad		Asteraceae
Seseli montanum	2.73	22	1	2C	0	Bergseselie		Apiaceae

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Seseli libanotis	5.60	18, 22	1	2C	ad	Hertswortel	FL	Apiaceae
Sesleria albicans	9.55	28	1	2C	0	Blauwgras		Poaceae
Setaria faberi	2.59	*36*	1	2C, 4C, 8C	7	Chinese naaldaar		Poaceae
Setaria italica	1.17	*18*	4	**2C**, 4C, 8C	ad	Trosgierst		Poaceae
Setaria pumila	2.57	*36, 72*	2	**2C**, 4C	6	Geelrode naaldaar		Poaceae
Setaria verticilliformis	1.86	*36*	1	**2C, 4C**	ad	Gladde kransnaaldaar	FL	Poaceae
Setaria verticillata	1.92	*18, 36, 54*	2	**2C, 4C**	7	Kransnaaldaar		Poaceae
Setaria viridis	1.05	*18, 36*	2	2C, (4C)	8	Groene naaldaar		Poaceae
Sherardia arvensis	1.16	22	2	2C, **4C**, 8C, 16C	6	Blauw walstro		Rubiaceae
Sigesbeckia orientalis	5.51	30	1	2C	ad	n. d.	BZ	Asteraceae
Silaum silaus	6.68	22	1	2C	4	Weidekervel		Apiaceae
Silene armeria	2.91	*24*	5	**2C, 4C,** 8C	ad	Pekbloem		Caryophyllaceae
Silene baccifera* #	14.3	24	5	2C, (4C)	3	Besanjelier		Caryophyllaceae
Silene coeli-rosa	1.89	*24*	1	2C, 4C, **8C**	cu	Hemelroosje		Caryophyllaceae
Silene conica	1.93	20, 24	2	2C, **4C**	5	Kegelsilene		Caryophyllaceae
Silene coronaria	6.36	*24*	1	2C, 4C, 8C	cu	Prikneus		Caryophyllaceae
Silene dichotoma	2.96	24, 48	2	2C, **4C**	ad	Gaffelsilene		Caryophyllaceae
Silene dioica	5.54	24 (48)	5	2C, **4C**, 8C	9	Dagkoekoeksbloem		Caryophyllaceae
Silene flos-cuculi	5.38	24	1	**2C**, 4C, 8C	8	Echte koekoeksbloem		Caryophyllaceae
Silene gallica	2.15	24	4	**2C**, 4C, 8C	1	Franse silene		Caryophyllaceae
Silene latifolia ssp. alba	5.55	24	7	2C, 4C, 8C, 16C	8	Avondkoekoeksbloem		Caryophyllaceae
Silene noctiflora	4.75	24	2	**2C**, 4C, 8C	2	Nachtkoekoeksbloem		Caryophyllaceae
Silene nutans	5.31	24	5	**2C**, 4C, 8C	4	Nachtsilene		Caryophyllaceae
Silene otites	5.23	24	1	**2C**, 4C, 8C	4	Oorsilene		Caryophyllaceae
Silene viscaria	4.54	24	1	**2C,** 3C	cu	Rode pekanjer		Caryophyllaceae
Silene vulgaris	2.28	24	1	2C, **4C**, 8C	6	Blaassilene		Caryophyllaceae
Silene vulgaris on zink	2.35	24	1	2C, **4C**, 8C	1	Blaassilene		Caryophyllaceae
Silene x hampeana	8.02	BZ: 36	1	**2C**, 4C	2	Silene dioica x latifolia		Caryophyllaceae
Silphium asteriscus*var. latifolius	16.5	14	1	2C		n. d.	BZ	Asteraceae
Silybum marianum	1.71	*34*	2	2C	ad	Mariadistel		Asteraceae
Sinapis alba	1.12	*24*	6	**2C, 4C**, 8C	cu	Witte mosterd		Brassicaceae
Sinapis arvensis	2.21	18	1	2C, **4C**, 8C	8	Herik		Brassicaceae
Sisymbrium altissimum	0.55	*14*	1	2C, **4C**, 8C	8	Hongaarse raket		Brassicaceae
Sisymbrium austriacum ssp. chrysanthum	0.65	14	1	2C, 4C, 8C	5	Maasraket		Brassicaceae
Sisymbrium irio	0.68	*14-56*	2	2C, **4C**, 8C, 16C	ad	Brede raket		Brassicaceae
Sisymbrium loeselii	0.53	*14*	1	2C, 4C, 8C, 16C	ad	Spiesraket		Brassicaceae
Sisymbrium officinale	0.65	*14*	2	2C**, 4C,** 8C	9	Gewone raket		Brassicaceae
Sisymbrium orientale	0.61	*14*	2	2C, 4C, 8C, 16C	5	Oosterse raket		Brassicaceae
Sisymbrium strictissimum	1.59	*14, 28*	2	2C, 4C, 8C, 16C	ad	n. d.	BZ	Brassicaceae
Sisymbrium supinum		*42*			0	Liggende raket		Brassicaceae
Sisymbrium volgense	0.65	*14*	1	2C, **4C**, 8C, 16C	4	Spiesraket	FL	Brassicaceae
Sisyrinchium bermudiana	2.21	64, 88, 96	4	**2C, 4C**	cu	Ruslelie		Iridaceae
Sisyrinchium californicum	9.80	32	4	**2C**, 4C, 8C	cu	Gele bieslelie	FL	Iridaceae
Sium latifolium	5.38	*20*	1	2C	8	Grote watereppe		Apiaceae
Skimmia japonica	5.18	*30 (60)*	4	2C	cu	n. d.	HD	Rutaceae
Smyrnium olusatrum	7.51	22	1	2C	1	Zwartmoeskervel		Apiaceae
Smyrnium perfoliatum	5.45	*22*	2	2C	1	Doorwaskervel		Apiaceae
Solanum americanum	2.56	*24*	2	**2C, 4C**, 8C	1	n. d.	BZ	Solanaceae
Solanum dulcamara	2.32	24	2	2C, **4C**, 8C	9	Bitterzoet		Solanaceae
Solanum lycopersicum	1.99	*24*	9	**2C, 4C**, 8C	cu	Tomaat+Roma		Solanaceae
Solanum nigrum ssp. nigrum	7.08	24-72	4	**2C**, 4C, 8C	9	Zwarte nachtschade		Solanaceae
Solanum nigrum ssp. schultesii	6.99	72	2	2C	4	Beklierde nachtschade		Solanaceae
Solanum physalifolium	3.66	16	2	**2C**, 4C	4	Glansbesnachtschade		Solanaceae
Solanum pseudocapsicum	2.71	24	2	2C, 4C	cu	Oranjeboompje		Solanaceae
Solanum sarrachoides	3.25	24	2	**2C, 4C**, 8C	1	Kleverige nachtschade		Solanaceae
Solanum triflorum	3.41	*24*	3	2C, **4C**, 8C	5	Driebloemige nachtschade		Solanaceae
Solanum tuberosum	3.82	48	6	2C, **4C**, 8C	cu	Aardappel		Solanaceae
Solanum villosum	4.83	48	1	**2C**, 4C	1	Donsnachtschade	BZ	Solanaceae
Soleirolia soleirolii	1.15	*20*	1	2C, (4C)	cu	Slaapkamergeluk		Urticaceae
Solidago canadensis ssp. altissima	5.61	*54*	1	2C	--	n. d.	BZ	Asteraceae
Solidago canadensis	2.14	18, 36, 54	4	2C, (4C)	7	Canadese guldenroede		Asteraceae
Solidago gigantea	3.81	18, 36, 54	6	2C	8	Late guldenroede		Asteraceae
Solidago virgaurea	1.92	18	3	2C	6	Echte guldenroede		Asteraceae
Soliva sessilis	3.81	110	2	2C	ad	Naaldzaadbloem	BZ	Asteraceae
Sonchus arvensis	9.29	54	3	2C	9	Akkermelkdistel		Asteraceae
Sonchus arvensis var. maritimus	9.23	54	3	2C	7	Akkermelkdistel (duin)		Asteraceae
Sonchus asper	1.58	18	2	2C, (4C)	9	Gekroesde melkdistel		Asteraceae
Sonchus oleraceus #	3.29	32	2	2C	9	Gewone melkdistel		Asteraceae
Sonchus palustris	3.79	18 (54)	2	2C	7	Moerasmelkdistel		Asteraceae
Sorbaria sorbifolia	1.05	*36*	1	2C, (4C)	cu	Lijsterbesspiraea		Rosaceae
Sorbaria tomentosa ssp angustifolia cf	1.11		1	2C, (4C)	cu	Harige sorbaria		Rosaceae
Sorbus aria	2.24	34	1	2C, (4C)	cu	Meelbes		Rosaceae
Sorbus aucuparia	1.54	34	1	2C	9	Wilde lijsterbes		Rosaceae
Sorbus domestica	1.65	34	1	2C	ad	Tamme lijsterbes	FL	Rosaceae
Sorbus torminalis	1.74	34	1	2C	cu	Elsbes	FL	Rosaceae
Sorbus intermedia	2.91	68	2	2C,	cu	Zweedse meelbes		Rosaceae
Sorbus x thuringiacia cf	1.41	*34*	1	2C, (4C)	cu	Gedeelde meelbes		Rosaceae
Sorghum bicolor	1.80	*20*	7	**2C, 4C**, 8C	ad	Sorgo, Kafferkoorn		Poaceae
Sorghum halepense	3.72	*20, 40*	1	**2C, 4C**	4	Wilde sorgo		Poaceae
Sparganium angustifolium	1.35	*30*	5	2C	3	Drijvende egelskop		Sparganiaceae
Sparganium emersum	1.16	*30*	1	2C	8	Kleine egelskop		Sparganiaceae
Sparganium erectum	1.07	*30*	3	2C	9	Grote egelskop		Sparganiaceae

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Sparganium natans	1.04	*30*	1	2C	4	Kleinste egelskop		Sparganiaceae
Spartina x anglica	7.95	*120-124*	7	2C	6	Engels slijkgras		Poaceae
Spartina maritima		6=60			1	Klein slijkgras		Poaceae
Spartina x townsendii	4.02	62 (49-66)	2	**2C, 4C**	6	Spartina alterniflora.x maritima		Poaceae
Spartium junceum	2.63	48, 52, 54	1	2C	cu	Spaanse brem	FL	Fabaceae
Spergula arvensis	0.91	18	1	2C, **4C**, 8C, 16C	9	Gewone spurrie		Caryophyllaceae
Spergula morisonii	0.40	18	1	2C, (4C)	7	Heidespurrie		Caryophyllaceae
Spergularia media	0.58	18	4	2C, **4C**, 8C	6	Gerande schijnspurrie		Caryophyllaceae
Spergularia rubra	1.17	36	3	**2C**, 4C, 8C	8	Rode schijnspurrie		Caryophyllaceae
Spergularia salina	0.62	36	2	**2C**, 4C, 8C	8	Zilte schijnspurrie		Caryophyllaceae
Spergularia segetalis		18			0	Korenschijnspurrie		Caryophyllaceae
Spinacea oleracea	2.08	*12*	2	2C, **4C**, 8C, 16C	cu	Spinazie wild		Amaranthaceae
Spiraea chamaedryfolia		*18, 32, 36*			cu	Struikspiraea		Rosaceae
Spiraea douglasii	1.09	*36*	2	2C	cu	Douglasspirea		Rosaceae
Spiraea japonica	0.85	*14, 18, 34*	1	2C, (4C)	cu	Japanse spiraea	FL	Rosaceae
Spiraea salicifolia	1.18	*36*	2	2C	cu	Theeboompje	FL	Rosaceae
Spiraea tomentosa cf	1.49	*36*	1	2C	cu	Viltige spirea		Rosaceae
Spiraea x billardii cf	1.18		2	2C	ex	Spiraea salicifolia x douglasii		Rosaceae
Spiranthes aestivalis		*30*			0	Zomerschroeforchis		Orchidaceae
Spiranthes spiralis*	16.2	30	1	2C, **4C**, 8C	1	Herfstschroeforchis		Orchidaceae
Spirodela polyrhiza	0.37	40	12	2C	9	Veelwortelig kroos		Araceae
Sporobolus indicus ssp. indicus	3.44	36	1	**2C**, 4C	ad	Rattenstaartgras	FL	Poaceae
Stachys alpina		30			1	Alpenandoorn		Lamiaceae
Stachys annua		*34*			ad	Zomerandoorn		Lamiaceae
Stachys arvensis	0.92	10	3	2C	6	Akkerandoorn		Lamiaceae
Stachys byzantina	1.78	30	1	**2C**, 4C	ad	Wollige andoorn	FL	Lamiaceae
Stachys officinalis cf	9.36	16	1	2C	3	Betonie		Lamiaceae
Stachys palustris	3.82	64 (96, 102)	7	2C, (4C)	9	Moerasandoorn		Lamiaceae
Stachys recta zlg	1.83	*(32) 34 (48)*	2	**2C**, 4C	1	Bergandoorn		Lamiaceae
Stachys sylvatica	2.55	64	1	**2C**, 4C	8	Bosandoorn		Lamiaceae
Stachys x ambigua		83		2C	6	Stachys palustris x sylvatica		Lamiaceae
Staphylea pinnata	3.63	*24, 26*	2	**2C, 4C**	cu	Pimpernoot		Staphyleaceae
Stellaria graminea	1.94	26	3	**2C**, 4C, (8C)	8	Grasmuur		Caryophyllaceae
Stellaria holostea	2.44	26	2	**2C,** 4C, 8C, 16C	8	Grote muur		Caryophyllaceae
Stellaria media	2.06	44	6	**2C, 4C,** 8C	9	Vogelmuur		Caryophyllaceae
Stellaria neglecta	2.67	22	3	**2C**, 4C, 8C	3	Heggenvogelmuur		Caryophyllaceae
Stellaria nemorum ssp. nemorum	1.91	26	2	2C, (4C)	4	Bosmuur		Caryophyllaceae
Stellaria nemorum ssp. *montana*					1	n. d.	BZ	Caryophyllaceae
Stellaria pallida #	0.95	22 (40)	6	**2C**, 4C, 8C, 16C	5	Duinvogelmuur		Caryophyllaceae
Stellaria palustris	7.71	c130	2	**2C,** 4C, 8C	7	Zeegroene muur		Caryophyllaceae
Stellaria uliginosa	1.52	24	1	**2C**, 4C	8	Moerasmuur		Caryophyllaceae
Stratiotes aloides	10.5	*24*	15	**2C**, 4C, 8C	7	Krabbenscheer		Hydrocharitaceae
Suaeda maritima	1.95	36	4	**2C**, 4C, 8C	6	Schorrenkruid		Amaranthaceae
Subularia aquatica		*28, 36*			0	Priemkruid		Brassicaceae
Succisa pratensis	3.96	20	1	2C	7	Blauwe knoop		Caprifoliaceae
Sutera cordata #	1.50		6	2C, (4C)	cu	Tapijtbloem		Scrophulariaceae
Symphoricarpos albus	5.87	*36, 54, 72*	2	2C	7	Sneeuwbes		Caprifoliaceae
Symphoricarpos x chenaultii	1.46	*18*	2	2C	cu	Rose sneeuwbes	BZ	Caprifoliaceae
Symphyotricum lateriflorum cf	5.81	c. 143	20	2C	ad	n. d.	HD	Asteraceae
Symphyotrichum ontarionis	2.90	*32*	11	2C	ad	Ontario-aster	HD	Asteraceae
Symphyotrichum lanceolatus	4.03	32-64	2	2C	4	Smalle aster	BZ	Asteraceae
Symphyotrichum squamatus	3.07	*20*	2	2C, 4C, 8C	ad	n. d.	BZ	Asteraceae
Symphytum asperum	4.21	32	1	**2C, 4C**	1	Ruwe smeerwortel		Boraginaceae
Symphytum caucasicum 'Azureum'	1.81	24, 36, 48	2	**2C, 4C**, 8C	cu	Kaukasische smeerwortel	BZ	Boraginaceae
Symphytum ibericum	7.79	60	2	**2C**	ad	Kruipende smeerwortel	FL	Boraginaceae
Symphytum officinale	4.54	24, 48	4	**2C**, 4C, 8C	9	Gewone smeerwortel		Boraginaceae
Symphytum orientale	0.98	32	2	**2C**, 4C, 8C	cu	Witte smeerwortel	BZ	Boraginaceae
Symphytum x uplandicum	4.13	36, 40, 44	1	**2C**, 4C, 8C, 16C	ad	Symphytum officinale x asperum		Boraginaceae
Symphytum x hidkotense	5.67	52	1	**2C**, 4C, 8C	cu	Sym. grandiflorum x (x uplandicum)	BZ	Boraginaceae
Syringa vulgaris	2.45	*44, 46, 48*	2	2C, (4C)	cu	Sering		Oleaceae
Tagetes minuta	2.08	48	3	2C, (4C)	ad	Geelgroen afrikaantje		Asteraceae
Tagetes patula	3.79	(20-24) 48	3	2C	cu	Tuinafrikaantje	BZ	Asteraceae
Tagetes erecta	2.00		1	2C	cu	large flower		Asteraceae
Tagetes tenuifolia	1.96	24	1	2C	cu	small flower		Asteraceae
Tamarix gallica	3.17	*24*	1	2C	cu	Franse tamarisk		Tamaricaceae
Tanacetum parthenium	4.98	18 (36)	2	2C	8	Moederkruid		Asteraceae
Tanacetum vulgare	10.1	18	2	2C	9	Boerenwormkruid		Asteraceae
Tanacetum x coccineum	11.0		3	2C,	cu	n. d.	BZ	Asteraceae
Taraxacum officinale Aggregate #	2.84	24-48	10	2C, (4C)	9	Paardenbloem		Asteraceae
Taraxacum laevigatum Aggregate #	4.00	24	3	2C	3	Duinpaardenbloem	BZ	Asteraceae
Taxus baccata	23.3	24	4	2C	7	Taxus		Pinaceae
Teesdalia nudicaulis	1.15	*36*	2	2C, **4C**, 8C, 16C	8	Klein tasjeskruid		Brassicaceae
Tellima grandiflora	1.30	*14*	1	2C	cu	Franjekelk		Saxifragaceae
Tephroseris palustris	9.90	*48*	2	2C	7	Moerasandijvie		Asteraceae
Tetragonolobus maritimus	1.58	*14*	2	2C, (4C)	2	Hauwklaver		Fabaceae
Teucrium botrys	0.55	32	2	2C, (4C)	1	Trosgamander		Lamiaceae
Teucrium chamaedrys	3.60	*32-96*	1	**2C**, 4C	1	Echte gamander		Lamiaceae
Teucrium montanum	1.09	13-60	1	**2C**, 4C	1	Berggamander		Lamiaceae
Teucrium scordium	1.46	32	1	2C	1	Moerasgamander		Lamiaceae
Teucrium scorodonia	2.21	32	2	2C, (4C)	7	Valse salie		Lamiaceae
Thalictrum aquilegiifolium	1.54	14 (28)	3	2C	cu	Akeleiruit		Ranunculaceae
Thalictrum flavum #	4.17	84	3	2C	8	Poelruit		Ranunculaceae

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Thalictrum minus #	2.38	42	4	**2C,** 4C, 8C	5	Kleine ruit		Ranunculaceae
Thelypteris palustris*	16.0	70	1	2C	6	Moerasvaren		Thelypteridaceae
Thesium humifusum	1.71	c26	2	2C	1	Liggend bergvlas		Santalaceae
Thesium pyrenaicum	0.52	14	1	2C	0	Weidebergvlas		Santalaceae
Thesium sp	0.67		1	2C		n. d.	BZ	Santalaceae
Thlaspi arvense	1.12	14	2	2C	8	Witte krodde		Brassicaceae
Thlaspi caerulescens	0.61	14	2	**2C, 4C**, 8C	1	Zinkboerenkers		Brassicaceae
Thlaspi perfoliatum	1.30	*14) 42 (c. 70*	3	**2C**, 4C	4	Doorgroeide boerenkers		Brassicaceae
Thuja orientalis	20.4	19-44	3	2C	cu	Oosterse levensboom		Cupressaceae
Thuja occidentalis	23.2	22	1	2C	cu	Westerse levensboom	BZ	Cupressaceae
Thuja plicata	22.6	*22*	1	2C	cu	Reuzenlevensboom		Cupressaceae
Thymus praecox	2.38	24, 56	2	2C	1	Kruiptijm		Lamiaceae
Thymus pulegioides	1.52	28	1	2C	6	Grote tijm		Lamiaceae
Thymus serpyllum	1.51	24	2	2C	5	Kleine tijm		Lamiaceae
Thymus vulgaris	1.67	*30*	1	2C	cu	Echte tijm		Lamiaceae
Thymus x citrodorus	2.52		1	2C, (4C)	cu	Citroentijm, T. vulgaris x pulegoides	BZ	Lamiaceae
Tilia cordata	2.14	82, 86	2	2C, (4C)	4	Winterlinde		Malvaceae
Tilia platyphyllos ssp. platyphyllos	2.09	82	2	2C, (4C)	5	Zomerlinde		Malvaceae
Tilia platyphyllos ssp. cordifolia	2.03	82	1	2C		Zomerlinde	BZ	Malvaceae
Tilia tomentosa	2.16	82	2	2C	cu	Zilverlinde	BZ	Malvaceae
Tilia x vulgaris	2.04	*82*	1	2C	cu	Holl. linde,Tilia cord. X platyphyllos		Malvaceae
Torilis arvensis	2.91	12	3	2C	2	Akkerdoornzaad		Apiaceae
Torilis japonica	1.37	(12) 16	4	2C	7	Heggendoornzaad		Apiaceae
Torilis nodosa	1.83	24	1	2C	6	Knopig doornzaad		Apiaceae
Trachelium coeruleum	2.05	*34*	1	2C, 3C	1	Halsbloem		Campanulaceae
Trachycarpus fortunei	8.04	*36*	1	2C	1	Henneppalm	BZ	Arecaceae
Tradescantia virginiana	81.2	*12, 24*	2	2C	cu	Eendagsbloem		Commelinaceae
Tradescantia fluminensis variegatum*	16.2	60	2	**2C**, 4C	cu	Vaderplant	FL	Commelinaceae
Tragopogon dubius	4.68	12, 24, 36	1	2C	4	Bleke morgenster		Asteraceae
Tragopogon porrifolius	5.92	12	3	2C	5	Paarse morgenster		Asteraceae
Tragopogon pratensis ssp. orientalis	5.20	12	8	2C, (4C)	4	Oosterse morgenster		Asteraceae
Tragopogon pratensis ssp. pratensis	4.91	12	1	2C	8	Gele morgenster		Asteraceae
Tragopogon x mirabilis		*12*			1	Tragopogon porrifolius x pratensis		Asteraceae
Tragus racemosus	1.82	*40*	1	**2C**, 4C	ad	Klitgras	FL	Poaceae
Trapa natans	1.22	44-90	1	2C	0	Waternoot		Lythraceae
Trichophorum caespitosum ssp. germanicum	0.65	104	1	2C	6	Veenbies		Cyperaceae
Trientalis europaea	6.01	c. 160	2	2C, (4C)	5	Zevenster		Primulaceae
Trifolium alexandrinum	1.24	*16*	1	**2C**, 4C	ad	Alexandrijnse klaver		Fabaceae
Trifolium arvense	0.94	14	2	**2C**, 4C, 8C	8	Hazenpootje		Fabaceae
Trifolium campestre #	0.79	14	1	2C, 4C, (8C)	8	Liggende klaver		Fabaceae
Trifolium diffusum		16			ad	Wijdvertakte klaver		Fabaceae
Trifolium dubium	1.58	32	3	**2C**, 4C	9	Kleine klaver		Fabaceae
Trifolium fragiferum	1.17	16	1	2C, **4C**, 8C	7	Aardbeiklaver		Fabaceae
Trifolium hybridum	0.99	*16*	1	2C, **4C,** 8C	8	Basterdklaver		Fabaceae
Trifolium incarnatum	1.21	14	1	**2C**, 4C, 8C	ad	Incarnaatklaver		Fabaceae
Trifolium medium	8.43	80	1	2C	6	Bochtige klaver		Fabaceae
Trifolium micranthum	0.77	*16*	1	**2C**, 4C	5	Draadklaver		Fabaceae
Trifolium nigrescens	0.88	*16*	1		ad	n. d.	BZ	Fabaceae
Trifolium ornithopodioides		18			3	Vogelpootklaver		Fabaceae
Trifolium pratense	1.14	14	2	**2C**, 4C	9	Rode klaver		Fabaceae
Trifolium repens	2.23	16	3	2C, **4C**, 8C	9	Witte klaver		Fabaceae
Trifolium rubens	2.25	16	5	**2C**, 4C	ad	Purpere klaver	BZ	Fabaceae
Trifolium resupinatum	0.87	*14, 16, 32*	1	**2C, 4C**, 8C	ad	Perzische klaver		Fabaceae
Trifolium scabrum	1.00	10	1	**2C**, 4C	4	Ruwe klaver		Fabaceae
Trifolium striatum	0.85	14	1	2C, **4C,** 8C	5	Gestreepte klaver		Fabaceae
Trifolium subterraneum	1.31	16	1	2C, **4C,** 8C	3	Onderaardse klaver		Fabaceae
Trifolium suffocatum #	0.87	16	2	2C	2	Gedrongen klaver		Fabaceae
Triglochin maritima	3.67	48	1	**2C,** 4C, 8C	7	Schorrenzoutgras		Juncaginaceae
Triglochin palustris #	1.01	24	2	2C, **4C**, 8C, 16C	8	Moeraszoutgras		Juncaginaceae
Triglochin maritima x palustris	2.35	BZ: 36	2	2C, **4C**, 8C, 16C	9	Moeras- x Schorrezoutgras	BZ	Juncaginaceae
Trigonella foenum-graecum	6.02	*16*	3	2C, **4C**, (8C)	ad	Fenegriek		Fabaceae
Tripleurospermum inodorum #	5.89	18, 36	10	**2C**, 4C	9	Reukloze kamille	BZ	Asteraceae
Tripleurospermum maritimum #	9.85	18 (36)	9	**2C**, 4C	6	Reukloze kamille		Asteraceae
Trisetum flavescens	5.53	28	1	**2C**, 4C	7	Goudhaver		Poaceae
Triteleia laxa	23.4	16, 28, 42	1		cu			Asparagaceae
Triticosecale X		*42, 56*			cu	Triticale:Secale x Triticum		Poaceae
Triticordeum X					cu	Triticum x Hordeum		Poaceae
Triticum aestivum	34.9	42	5	2C	cu	Broodtarwe		Poaceae
Triticum aestivum 'Spelta'	33.8	42	3	**2C**, 4C	cu	Spelt		Poaceae
Triticum durum		28			cu	Pasta, gries, couscous	BZ	Poaceae
Tropaeolum majus	2.36	28	2	(2C), 4C, **8C**, 16	cu	Oost-Indische kers	FL	Tropaeolaceae
Tsuga canadensis	37.2	24	2	2C	cu	Oostenlijke hemlockspar		Pinaceae
Tsuga heterophylla	34.4	*24*	1	2C	cu	Westelijke hemlockspar		Pinaceae
Tuberaria guttata	7.60	36	5		2	Gevlekt zonneroosje		Cistaceae
Tulipa kaufmanniana	53.2	24	5	2C	cu	Kaufmann's tulp		Liliaceae
Tulipa suaveolens	61.7	24	5	2C	cu	Schrenk's tulp		Liliaceae
Tulipa sylvestris #	116	*24, 36, 48*	9	2C	4	Bostulp		Liliaceae
Tulipa x gesneriana	68.6	*24, 36, 48*	5	2C	cu	Gesner's tulp		Liliaceae
Tussilago farfara	3.70	60	2	2C,	9	Klein hoefblad		Asteraceae
Typha angustifolia	0.52	*30, 60*	5	2C	8	Kleine lisdodde		Typhaceae
Typha latifolia	0.57	30	2	2C	9	Grote lisdodde		Typhaceae
Typha laxmannii	0.85	30	2	2C	cu	n. d.	FL	Typhaceae

A Species (mainly Heukels Flora)	B 2C	C Chrom. nr.	D n	E Peak	F Status	G Dutch name	H new	I family
Typha minima	0.79	30	2	2C	cu	Kleinste lisdodde		Typhaceae
Typha x glauca					ad	Typha angustifolia.x latifolia		Typhaceae
Ulex europaeus	6.61	96 (32, 64)	1	2C	5	Gaspeldoorn		Fabaceae
Umbilicus rupestris	0.88	48	4	2C, 4C, 8C	1	Muurnavel	FL	Crassulaceae
Ulmus glabra s.s.	4.17	28	1	2C	6	Ruwe iep		Ulmaceae
Ulmus laevis	3.18	*28*	1	2C	4	Fladderiep		Ulmaceae
Ulmus minor	3.93	*28*	1	2C, (4C)	7	Gladde iep		Ulmaceae
Ulmus x hollandica	3.84	*28*	1	2C	7	Hollandse iep, Ulmus glabra x minor		Ulmaceae
Urtica dioica ssp. dioica #	2.41	(26) 48, 52	10	2C, 4C, 8C	9	Grote brandnetel		Urticaceae
Urtica dioica ssp. subinermis #	1.38	24 (26) 48	14	2C, 4C, 8C		Ooibos brandnetel'	BZ	Urticaceae
Urtica membranacea	1.75	22	2	**2C**, 4C, 8C	ad	Zuidelijke brandnetel	FL	Urticaceae
Urtica urens	0.94	24	1	2C, 4C, 8C, 16C	9	Kleine brandnetel		Urticaceae
Utricularia australis	0.48	*44*	1	2C, (4C)	4	Loos blaasjeskruid		Lentibulariaceae
Utricularia intermedia		*44*			4	Plat blaasjeskruid		Lentibulariaceae
Utricularia minor	0.60	*36*	1	**2C**, 4C	5	Klein blaasjeskruid		Lentibulariaceae
Utricularia ochroleuca		*44*			0	Bleekgeel blaasjeskruid		Lentibulariaceae
Utricularia vulgaris	0.49	44	4	**2C**, 4C,	6	Groot blaasjeskruid		Lentibulariaceae
Vaccaria hispanica	2.93	*30*	1	2C, **4C,** 8C, 16C	cu	Koekruid		Caryophyllaceae
Vaccinium angustifolium		*48*				n. d.		Ericaceae
Vaccinium corymbosum	2.71	*48*	3	2C	4	Trosbosbes (cory. x angustif.?)		Ericaceae
Vaccinium macrocarpon	1.19	*24*	3	2C	5	Cranberry		Ericaceae
Vaccinium myrtillus	1.23	24	2	2C	8	Blauwe bosbes		Ericaceae
Vaccinium oxycoccos	1.18	*(24) 48, 72*	1	2C	6	Kleine veenbes		Ericaceae
Vaccinium uliginosum #	2.94	39, 48	1	2C	3	Rijsbes		Ericaceae
Vaccinium vitis-idaea	1.26	24	1	2C	7	Rode bosbes		Ericaceae
Vaccinium x intermedium		24			1	Vaccinium myrtilis x vitis-idaea		Ericaceae
Valeriana dioica male	3.17	16	4	**2C**, 4C	6	Kleine valeriaan		Caprifoliaceae
Valeriana dioica female	3.42	16	3	**2C**, 4C	7	Kleine valeriaan		Caprifoliaceae
Valeriana officinalis	9.29	14, 28	2	**2C**, 4C	9	Echte valeriaan		Caprifoliaceae
Valerianella carinata	0.53	*14, 16, 18*	1	**2C**, 4C	3	Gegroefde veldsla		Caprifoliaceae
Valerianella dentata cf	0.46	*14, 16*	1	2C, (4C)	2	Getande veldsla		Caprifoliaceae
Valerianella locusta	0.42	*14, 16, 18*	14	**2C**, 4C	9	Veldsla		Caprifoliaceae
Valerianella rimosa		*14, 16*			1	Geoorde veldsla		Caprifoliaceae
Vallisneria spiralis	21.7	*20, 30, 40*	1	2C, 4C	1	Vallisneria		Hydrocharitaceae
Verbascum blattaria	0.72	*30, 32*	1	**2C**, 4C	3	Mottenkruid		Scrophulariaceae
Verbascum densiflorum cf	1.04	*32, 34, 36*	2	2C, (4C)	5	Stalkaars		Scrophulariaceae
Verbascum lychnitis cf	0.82	*26, 32, 34*	1	2C, 4C	4	Melige toorts		Scrophulariaceae
Verbascum nigrum	0.81	30	2	**2C**, 4C	7	Zwarte toorts		Scrophulariaceae
Verbascum phlomoides	1.00	*32, 34*	2	2C, (4C)	6	Keizerskaars		Scrophulariaceae
Verbascum phoeniceum	0.91	*32 (36)*	1	2C, (4C)	cu	Paarse toorts	HD	Scrophulariaceae
Verbascum pulverulentum	0.94	32	1	2C, (4C)	1	Vlokkige toorts		Scrophulariaceae
Verbascum speciosum	1.12	30	1	**2C**, 4C	ad	Kandelaartoorts	FL	Scrophulariaceae
Verbascum thapsus cf	0.87	36	3	2C, (4C)	7	Koningskaars		Scrophulariaceae
Verbascum virgatum	1.42	32, 64, 66	2	**2C**, 3C	ad	Beklierd mottekruid	FL	Scrophulariaceae
Verbena bonariensis	1.69	*28*	1	**2C**, 4C	cu	Stijf ijzerhard		Verbenaceae
Verbena hastata cf	1.04	14	3	2C, (4C)	ex	Blauwe verbena	BZ	Verbenaceae
Verbena officinalis	0.66	14	1	2C, (4C)	6	IJzerhard		Verbenaceae
Verbena rigida	2.41	42	1	2C	ad	Hoofsjesverbena	BZ	Verbenaceae
Verbena rigida Venosa	2.42	42	1	2C	ad	n. d.	BZ	Verbenaceae
Verbesina alternifolia	7.82	68	2	2C, (3C)	ad	n. d.	FL	Asteraceae
Veronica acinifolia		*14, 16*			1	Steentijmereprijs		Plantaginaceae
Veronica agrestis	1.42	28	2	2C	7	Akkerereprijs		Plantaginaceae
Veronica anagallis-aquatica	2.66	36	1	2C, (4C)	6	Blauwe waterereprijs		Plantaginaceae
Veronica arvensis	0.90	16	4	2C, (4C)	9	Veldereprijs		Plantaginaceae
Veronica austriaca ssp. teucrium	4.59	*64 (68)*	4	2C, (4C)	4	Brede ereprijs		Plantaginaceae
Veronica beccabunga	1.61	18	4	2C, (4C)	8	Beekpunge		Plantaginaceae
Veronica catenata	2.47	36	4	2C, (4C)	8	Rode waterereprijs		Plantaginaceae
Veronica chamaedrys #	3.86	32	3	2C	9	Gewone ereprijs		Plantaginaceae
Veronica cymbalaria	2.74	(18) 36, 54	2	2C, 4C, 8C	ad	Schijnklimopereprijs	FL	Plantaginaceae
Veronica filiformis	0.78	*14*	2	2C, 4C	8	Draadereprijs		Plantaginaceae
Veronica hederifolia #	3.01	36, 54	10	**2C,** 4C, 8C	9	Akkerklimopereprijs		Plantaginaceae
Veronica hederifolia ssp. lucorum #	4.12	36	8	2C, **4C**	3	Bosklimopereprijs		Plantaginaceae
Veronica longifolia	3.72	*34, 68*	1	2C, (4C)	6	Lange ereprijs		Plantaginaceae
Veronica montana	1.46	18	2	2C	5	Boserepriis		Plantaginaceae
Veronica officinalis	2.13	36	3	2C, (4C)	7	Mannetjesereprijs		Plantaginaceae
Veronica opaca		28	1		5	Doffe ereprijs		Plantaginaceae
Veronica peregrina #	2.06	*52*	5	2C	6	Vreemde ereprijs		Plantaginaceae
Veronica persica	1.57	*28*	1	2C, (4C)	8	Grote ereprijs		Plantaginaceae
Veronica polita	0.86	14	3	2C	6	Gladde ereprijs		Plantaginaceae
Veronica praecox	1.17	*18*	1	2C	1	Vroege ereprijs		Plantaginaceae
Veronica prostrata cf	4.95	*18*	3	2C	1	Liggende ereprijs		Plantaginaceae
Veronica (x?)prostrata 'Christy'	1.17	16	1	2C	2	Liggende ereprijs ?	BZ	Plantaginaceae
Veronica scutellata	1.77	18	1	2C	7	Schildereprijs		Plantaginaceae
Veronica serpyllifolia	0.90	14	2	2C	8	Tijmereprijs		Plantaginaceae
Veronica spicata	3.08	*34, 68*	3	2C	cu	Aarereprijs		Plantaginaceae
Veronica triphyllos #	0.97	*14*	1	**2C**, 4C, 8C	4	Handjesereprijs		Plantaginaceae
Veronica verna		16		**2C**, 4C	1	Kleine ereprijs		Plantaginaceae
Veronica x lackschewitzii		36		**2C**, 4C	1	V.anagallis-aquatica x catenata		Plantaginaceae
Viburnum lantana	8.68	18	2	2C, (4C)	5	Wollige sneeuwbal		Adoxaceae
Viburnum opulus	8.62	18	2	2C	8	Gelderse roos		Adoxaceae
Viburnum rhytidophyllum	9.24	*18*	1	2C	cu	Sneeuwbal	FL	Adoxaceae
Vicia bithynica	7.31	*14*	1	2C	ad	Bithynische wikke	FL	Fabaceae

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Vicia cracca	11.3	28	2	**2C**, 4C	9	Vogelwikke		Fabaceae
Vicia faba	26.3	*12*	2	**2C**, 4C	cu	Tuinboon		Fabaceae
Vicia hirsuta	7.79	14	1	2C	9	Ringelwikke		Fabaceae
Vicia lathyroides	4.36	10, 12	1	**2C**, 4C	6	Lathyruswikke		Fabaceae
Vicia lutea		*14*			4	Gele wikke		Fabaceae
Vicia sativa ssp. nigra	3.87	12	5	**2C**, 4C		Smalle wikke		Fabaceae
Vicia sativa ssp. *sativa*	3.88	12	1	**2C**, 4C, 8C	cu	Voederwikke		Fabaceae
Vicia sativa ssp. segetalis cf	3.91	12	1	**2C**, 4C, 8C		Vergeten wikke		Fabaceae
Vicia sepium	7.58	14	2	**2C**, 4C, 8C	8	Heggenwikke		Fabaceae
Vicia tenuifolia		*24*			3	Stijve wikke		Fabaceae
Vicia tetrasperma ssp .gracilis		*14*			1	Slanke wikke		Fabaceae
Vicia tetrasperma ssp. tetrasperma	5.96	14	2	2C, **4C**, 8C	6	Vierzadige wikke		Fabaceae
Vicia villosa	3.58	*14*	2	**2C**, 4C	6	Bonte wikke		Fabaceae
Vinca major	4.07	92	1	2C	cu	Grote maagdenpalm	FL	Apocynaceae
Vinca minor	1.53	46	1	2C	7	Kleine maagdenpalm		Apocynaceae
Vincetoxicum hirundinaria	0.69	22	3	**2C**, 4C, 8C	2	Witte engbloem		Apocynaceae
Vincetoxicum nigrum	0.66	22, 44	1	**2C**, 4C, 8C	1	Zwarte engbloem		Apocynaceae
Viola alba	1.71	20	2	**2C**, 4C, 8C	ad	Wit viooltje	BZ	Violaceae
Viola arvensis	5.20	34	2	**2C**, 4C	9	Akkerviooltje		Violaceae
Viola canina	2.45	40	3	**2C**, 4C	7	Hondsviooltje		Violaceae
Viola cornuta	3.93	22 (44)	3		cu	Hoornviooltje	BZ	Violaceae
Viola cornuta x hortensis cf	3.60	26	1		cu	Tuinviooltje, Orange	BZ	Violaceae
Viola hirta	1.48	20	4	2C, 4C	6	Ruig viooltje		Violaceae
Viola lutea ssp. calaminaria	6.23	48, 50	1	2C	1	Zinkviooltje		Violaceae
Viola odorata	1.57	20	4	**2C**, 4C, 8C	7	Maarts viooltje		Violaceae
Viola palustris	4.24	48	1	**2C, 4C**	7	Moerasviooltje		Violaceae
Viola reichenbachiana	1.39	20	3	**2C**, 4C, 8C	4	Donkersporig bosviooltje		Violaceae
Viola riviniana	2.49	40	8	2C, (4C)	6	Bleeksporig bosviooltje		Violaceae
Viola rupestris	1.14	20	1	**2C**, 4C, 8C	4	Zandviooltje		Violaceae
Viola sororia 'Albiflora'	3.01	54	1	**2C**, 4C, 8C	cu	n. d.	BZ	Violaceae
Viola stagnina var. *lacteaeoides*	c1.12	*20*	1	2C	4	Heidemelkviooltje		Violaceae
Viola stagnina var. *stagnina*	1.34	*20*	1	**2C**, 4C	4	Veenmelkviooltje		Violaceae
Viola tricolor ssp. curtisii	4.47	26	3	2C, (4C)	6	Duinviooltje		Violaceae
Viola tricolor ssp. tricolor	4.12	26	4	**2C**, 4C	7	Driekleurig viooltje		Violaceae
Viola x bavarica					1	Viola reichenbachiana x riviniana		Violaceae
Viola x contempta		26, 28, 30			2	Viola arvensis x tricolor		Violaceae
Viola x intersita					1	Viola canina x riviniana		Violaceae
Viola x ritschliana					1	Viola canina x persicifolia		Violaceae
Viola x scabra					1	Viola hirta x odorata		Violaceae
Viola x wittrockiana	6.59	48-50	2	2C	cu	Tuinviool	BZ	Violaceae
Viscum album Haem72	177	20	11	2C, (4C)	4	Maretak		Santalaceae
Vitis vinifera	1.33	*38, 76*	6	**2C**, 4C	cu	Druif		Vitaceae
Vulpia bromoides	5.12	14	1	**2C**, 4C	6	Eekhoorngras		Poaceae
Vulpia ciliata ssp. ambigua	8.81	28	1	2C	1	Duinlangbaardgras		Poaceae
Vulpia ciliata ssp. ciliata	8.99	28	1	**2C**, 3C	1	Gewimperd langbaardgras		Poaceae
Vulpia fasciculata cf	12.7	28	1	2C	3	Dicht langbaardgras		Poaceae
Vulpia membranacea		28			3	Zandlangbaardgras		Poaceae
Vulpia myuros	13.3	14 (28) 42	4	2C	8	Gewoon langbaardgras		Poaceae
Wahlenbergia hederacea #	1.99	36	3	**2C**, 4C, (8C)	1	Klimopklokje		Campanulaceae
Waldsteinia ternata	3.38	42	1	2C, **4C**, 8C	1	n. d.		Rosaceae
Weigelia florida 'Nana Purpurea'	2.03	36	1	2C	cu	Weigelia	HD	Caprifoliaceae
Wisteria sinensis	1.69	32	2	2C, (4C)	cu	Chinese blauwe regen	HD	Fabaceae
Wolffia arrhiza (de echte)	4.65	30-80	3	2C	7	Wortelloos kroos		Araceae
Wolffia australiana	0.95	20, 40	1	2C	1	Smalle wolffia	FL	Araceae
Wolffia columbiana (oude arrhiza)	2.55	30-70	11	2C	2	Columbiaanse wolffia	FL	Araceae
Wolffia globosa	3.50	29-60	2	2C		n. d.	BZ	Araceae
Wolffia minigibba/Wolffiella	1.61		1	2C		n. d.		Araceae
Xanthium spinosum		*36*		2C	ad	Stekende stekelnoot		Asteraceae
Xanthium strumarium	4.96	*36*	4	2C	6	Late stekelnoot		Asteraceae
Xanthium orientale	5.37	*36*	1	2C	1	Grote stekelnoot	FL	Asteraceae
Yucca flaccida	5.65	*60*	1	2C	cu	n. d.	HD	Asparagaceae
Yucca gloriosa L.	6.13	*50, 60*	1			n. d.	HD	Asparagaceae
Zannichellia palustris ssp. major		24, 36			0	Brede zannichellia		Potamogetonaceae
Zannichellia palustris ssp. palustris	1.23	24, 36	2	**2C, 4C**, 8C	8	Zittende zannichellia		Potamogetonaceae
Zannichellia palustris ssp. pedicillata	1.83	24, 36	1	**2C**, 4C, (8C)	5	Gesteelde zannichellia		Potamogetonaceae
Zea mays	5.55	*20*	3	2C, 4C	cu	Mais		Poaceae
Zinnia elegans	5.09	*24*	1	2C	ad	Zinnia	BZ	Asteraceae
Zostera marina	1.37	12	3	**2C**, 4C, 8C,	4	Groot zeegras		Zosteraceae
Zostera noltei	1.71	12	2	**2C**, 4C, 8C,	3	Klein zeegras		Zosteraceae

For further details, see Table 5 in Electronic Supplement
http://www.forum-geobotanicum.net/articles/vol_8-2018/zonneveld_flora-of-the-netherlands/zonneveld_flora-of-the-netherlands_supplement.pdf