NAFI naktuinbouw

NAFI Conditions 2023

for the monitoring of seed production

Naktuinbouw - Quality in Horticulture

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Introduction

It is intended that Naktuinbouw Authorized Field Inspection (**NAFI**) will become a voluntary module under the **Verification Program (VP)** of Naktuinbouw, a verification program for seed production and market access. This alongside other modules, like Naktuinbouw Authorized Laboratories (**NAL**). It will be monitored by or on behalf of Bureau team International Systems (**TIS**). The standard is developed by the participants in conjunction with Naktuinbouw. From 2017 onwards, it is possible to participate officially. The participants in conjunction with Naktuinbouw will evaluate this module, and ensure that the standard will be adapted when necessary.

Why NAFI?

1. It is in the participants' interest to ensure that monitoring of seed production is state-of-the-art and associated reports will give reliable information, reflecting the true quality of the production. This will make a contribution towards ensuring seed contaminated with a non desired pathogen is prevented from being shipped.
2. It must become a system where Naktuinbouw can rely upon results concerning official inspection, therefore we will begin in the Netherlands. This fits with the philosophy of Naktuinbouw, whereby companies are competent in this matter.
3. It must become a system for market access, where also the Dutch National Plant Protection Organization (**NPPO**), the NVWA, can rely upon results (e.g. regarding issuing phytosanitary certificates).
4. We are aiming to make it global, making it possible to authorise foreign productions as well. Therefore it must become a secure system, with the appropriate checks and balances, in which it is demonstrated that it is justified to have confidence in it. When this is a fact, we will begin to gain acceptance of the standard (in the following order): Naktuinbouw, NVWA and other NPPOs.

For who is NAFI?

For the moment NAFI will be the exclusive domain of seed companies: companies with production and marketing of seeds from their varieties as core business. In the future it may become open for and extended to other branches (e.g. arboriculture, plant nurseries, etc.).

Companies can become authorized when they comply (according to authorization regulations) with the NAFI Conditions:2023:

- Naktuinbouw module quality management system requirements **and**
- Naktuinbouw module authorized field inspection

The NAFI Conditions:2023 are based upon for this purpose relevant requirements from:

- Algemene voorwaarden voor de teelt van in voorkoop gekochte zaaizaden (ATV):2002 (General conditions for seed production), Plantum NL
- The Netherlands Seeds and Planting Materials Act:2005 (covering all relevant EU-regulations, like 2000/29/EU, 2002/55/EU and 2004/117/EU)
- Voorschriften voor de verhandeling van teeltmateriaal van bloemisterij-, boomkwekerij- en groentegewassen:2008 (Regulations for negotiation of propagation material), Naktuinbouw NL
- Inspection Regulations:2018, Naktuinbouw NL
- NEN-EN-ISO 9001:2015
- OECD Seed schemes:2021
- Official Controls Regulation 2017/625/EU
- Plant Health Regulation 2016/2031/EU

The NAFI authorization of a company will be demonstrated through the NAFI-certificate, stating for which scope the authorization has been granted. This will be displayed on the website of Naktuinbouw.

The NAFI-authorized company can only bring crops under the scope that are under the supervision of Naktuinbouw inspections in the Netherlands: all varieties of floricultural (except the bulb crops as mentioned in 'Landbouwkwaliteitsbesluit bloembollen' (6 September 1999), **appendix I**), arboricultural and vegetable crops.

Determined by the Board of Naktuinbouw
Roelofarendsveen, 9 December 2022

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NAKTUINBOUW MODULE QUALITY MANAGEMENT SYSTEM REQUIREMENTS

1. Identity

1.1 The participant must be legally identifiable (e.g. registered in a national chamber of commerce)

2. Scope

2.1 The participant must mention its scope in the quality manual, and make clear what / which activities are carried out under authorization

2.2 The participant must keep this up to date

3. Quality management system (QMS)

3.1 The participant must develop, define, document and implement a QMS as a means of ensuring that all activities that are brought under authorization demonstrably satisfy specified requirements / conditions

3.2 The participant must improve this QMS continuously whenever there is a reason to, based upon the principle of the Deming circle: plan – do – check – act

4. Quality manual

4.1 The participant must have at least one quality manual

4.2 This quality manual can be either digital or a hard copy

4.3 This quality manual must contain at least:

- Scope (also indicating which paragraphs of the concerning scheme are declared not to be applicable)
- QMS-documents (procedures, working instructions, protocols, format of forms), as required by the concerning scheme, or a reference to them

4.4 The quality manual and the QMS-documents must be written in Dutch or English:

- If the participant wants to have some documents (like working instructions) in the local language as well, this is only allowed when the format, the content and the revision indication are the same as the English revision; in case of differences between both versions, the English version will prevail
- If the participant wants to have some documents (like working instructions) in the local language only, then the participant must provide an independent interpreter during the audit
- The above is not applicable for protocols, they must be written in Dutch or English at all times

5. Organization

5.1 The participant must (where and when necessary) explicitly have obtained the required approval of authorities involved

5.2 The participant must in case of confirmation of detection of a Quarantine-organism, demonstrably inform the National Plant Protection Organization (unless national legislation is different from this obligation)

5.3 The participant must have a quality manager (irrespective of title), directly responsible for the QMS (regarding e.g. building, implementing, monitoring and maintenance of the QMS), including reporting to a technical managing director about its functioning

5.4 The participant must define tasks, responsibilities and competences needed (including substitution for key personnel), for ensuring proper functioning and control of all processes

5.5 The participant must appoint a process owner for each process

5.6 The participant's staff must be informed clearly about the tasks and responsibilities assigned to them, by means of: procedures / working instructions / protocols, job descriptions, qualification / training / experience / craftsmanship and / or adequate supervision

5.7 The participant's staff must be demonstrably competent for the tasks and responsibilities assigned to them

5.8 Even if certain tasks have been outsourced, the participant is still responsible for these outsourced processes; the participant must ensure that these have been carried out in compliance with the requirements of the concerning scheme at all times

5.9 The participant must determine any product / process requirements needed for specific or intended use, legal or statutory requirements

5.10 The participant must be organized in such a way that the employees are not under any financial, commercial, or other kind of pressure that could influence the performance of the work of that what is brought under authorization (in relation to its scope)

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5.11 Every influence on results, by people / organizations outside the participant, must be excluded
5.12 The remuneration of employees involved in that what is brought under authorization (in relation to its scope), must not depend on the amount of work or the outcome of the work
5.13 The participant must refrain from activities that could endanger the trust in the independence of assessments and the integrity of its activities
5.14 In case of external service, the participant must deal with contract review, ensuring that only client requests are accepted when the participant knows the requirements / specifications and that she has the capability of meeting those requirements / specifications
5.15 In case of external service, the participant must deal with control of verification, storage and maintenance of all customer supplied products

6. Document control

6.1 Documents must be controlled
6.2 Documents must be approved by a process owner, prior to use
6.3 Documents must be implemented
6.4 Each document must have a revision indication (either a date or a number)
6.5 Relevant external documents must be controlled / implemented either
6.6 Documents must be kept up to date
6.7 Unintended use of obsolete documents must be prevented
6.8 It must be clear which obsolete documents have to be kept (for how long and where) and that every obsolete document that is filed for legal purposes and / or to maintain knowledge, is identified in a suitable manner

7. Control of records

7.1 The participant must control all records
7.2 Records must be kept in such a way that the participant is able to demonstrate its compliance to the requirements of the concerning scheme, that critical control points in the process have been monitored and that the outcome of this has led to a process / product within specifications / requirements for at least 7 years
7.3 The participant must deal with access to, and identifying, collecting, indexing, archiving, storing, storing term, maintaining and disposal of records
7.4 The reliability of the quality records must be guaranteed
7.5 Where systems for electronic data processing are used, the reliability and stability of the system must be tested demonstrably and a backup has to be made within determined intervals
7.6 Data security must be ensured, including prevention or unauthorized access and unauthorized modification of data
7.7 All calculations and data transfer must be subjected to suitable inspection

8. Audits

8.1 The participant must conduct internal audits to verify whether or not daily practices are in line with its QMS and the requirements of the concerning scheme
8.2 Internal audits:
  8.2.1 Must be planned in good time for all processes
  8.2.2 Must be completed for secondary processes once per 3 years
  8.2.3 Must be completed for primary processes annually (where relevant)
  8.2.4 Furthermore the planning must be based upon all relevant aspects (e.g. outcome of earlier audits, ring tests, process performance, possible changes, etc.)
  8.2.5 Must be planned in good time for possible Multi Location Module-sites (for sampling):
    - If there are no NCs established during the external audit (once per 3 years), then there is no obligation to conduct an internal audit for this site; but of course it remains the responsibility of the participant to decide upon this, based upon their view / information gathered during monitoring of the process
    - If there are NCs established during the external audit, Bureau TIS Naktuinbouw will then (given the weight and nature of the NCs) indicate to the participant whether it is required to conduct an internal audit in the next year
    - If an internal audit is required, the participant must determine, according to its own findings, whether it is necessary to conduct an internal audit in the following year
8.3 Internal auditors must be independent regarding the process which they have to audit

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8.4 Internal auditors must have attended an auditor training course, which:
8.4.1 Must last for four day parts at least
8.4.2 Must deal with:
- General information about the audit process
- Drawing up an audit program
- Conducting an audit
- Interview techniques (dealing with personal communicative skills)
- How to assess non conformities
- Reporting

8.5 The results of internal and external audits must be recorded and reported to the process owner
8.6 In case of a non-conformity established during internal and external audits, there must be drawn up a CAR

9. Complaints
9.1 The participant must deal with written or verbal (internal and external) complaints
9.2 In the event of a connection between the complaint and the scope for the concerning scheme, the participant must draw up a CAR

10. Corrective (and / or Preventive) Action Requests (CARs)
10.1 The participant must deal with CARs adequately
10.2 This paragraph is applicable to various deficiencies, which become apparent e.g. by either observing / monitoring the process by staff, audits, calibration, ring tests, proficiency tests, clients and / or complaints
10.3 All CARs must be analyzed to determine the root cause (underlying problem)
10.4 The participant must determine an adequate corrective action to solve the underlying problem
10.5 The participant must implement this corrective action
10.6 The participant must be able to demonstrate evidence of this corrective action
10.7 The participant must verify the corrective action after an appropriate amount of time, to understand if the corrective action itself was sufficient / effective in relation to the underlying problem

11. Management responsibility
11.1 Management must be able to demonstrate its commitment to comply with the requirements of the concerning scheme
11.2 The management must conduct a management review annually
11.3 The participant must determine, collect and analyse suitable data, in order to substantiate the suitability and efficacy of the QMS and its compliance to the requirements of the concerning scheme, to enable it to decide where improvements are necessary
11.4 The input for the management review must therefore provide information on the following points as a minimum:
- Outcome of internal and external audits
- Outcome of job appraisals **/** need for training
- Feedback from clients
- Process performance and product conformity
- Status of CARs
- Follow-up on quality policy / objectives / measures / action points from previous management review(s)
- Changes in / on the (environment of the) participant that will have an impact on the QMS

11.5 The output of the management review must indicate conclusions of the management regarding all input, including decisions and measures with regard to the improvement of the QMS (e.g. the need for extra training, means, etc.) by means of quality objectives
11.6 The management review must be demonstrable by means of minutes
11.7 The participant must present an overview of results / process performance / product conformity to the Bureau TIS Naktuinbouw on request

12. Human resources management
12.1 The participant must ensure that suitable communication processes are established within and between the departments or functions in question
12.2 Staff must be demonstrably qualified (based upon suitable education, training and / or experience / craftsmanship)
12.3 The participant must identify whether there is a need for training

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12.4 The participant must provide training where necessary

13. Equipment, means, devices and reference materials

13.1 The participant must be equipped with (or have access to) appropriate equipment, means, devices and reference materials, required / necessary where and when needed

13.2 The participant must identify and keep a log of all equipment, means, devices and reference materials which may (even unintentionally) influence the quality and accuracy of results. This log makes reference to:

- A unique reference (name, identification, type, reference and / or serial number)
- The condition in which it was received (e.g. new, used, overhauled)
- The name of manufacturer / supplier
- The service contractor for maintenance and / or calibration
- The date of receipt and /or date of activation
- The current location
- The details of any maintenance and / or calibration carried out
- The history of all damage, overload, faults, modification or repairs, incorrect handling, when it produces doubtful results or when it is defective and it has been taken out of use

13.3 All equipment, means, devices and / or reference material which has been taken out of use:

- Must be clearly marked or stored at a designated location, until it has been repaired, calibrated and / or validation demonstrates that it is performing correctly again
- The participant must draw up a CAR

13.4 The participant must (where relevant) for this equipment, means, devices and / or reference materials (in relation to intended use) ensure / manage / make demonstrable:

- Acceptance / release
- Appropriate use
- Appropriate disposal, to protect the participant's integrity / the environment
- Maintenance
- Specified requirements
- Storage

13.5 The participant must (where relevant) for these devices determine how and to ensure / manage / make demonstrable:

- Tolerances allowed by the participant itself (specs)
- Measuring capacity / accuracy (the accuracy of devices used must be one digit more than the lowest value where it is used for. Example: if you need to measure exactly 1 gram, this scale needs to be able to measure 0,1 grams, where it matters if the quantity measured is 1,0 or 0,9 grams).
- Monitoring indicated values (in relation to critical control points)
- Calibration of the device:
  - At by the participant prescribed intervals
  - With calibration instruments which are known to have a valid reference to (inter)nationally recognized standards; if such a reference is not applicable, the participant must provide sufficient evidence of conformity / accuracy of results
  - If the device is out of spec:
    - Adjustment of the device
    - Draw up a CAR (with the purpose of finding out what the impact is on the process where it has been used for)
- Calibration of the calibration instrument:
  - Deviation for the calibration instrument must be max 10% of the tolerances as determined for the device that needs to be calibrated. Examples:
    - If a scale does have tolerances of +/- 2 grams; the 'stones' itself used for calibration must have a max deviation of +/- 0,2 grams
    - If it is allowed that the temperature in a growth chamber may vary +/- 2°C, the thermometer or logger that is used for maintaining that temperature must be calibrated by a calibration instrument that itself is having a max deviation of +/- 0,2°C
- The requirement above is not applicable for the following devices:

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- The pH-meter, in case the device is calibrated by using calibration fluid, e.g. pH 4.01, pH 7.00 or pH 10.01. That what is on the market is okay and sufficient. Good practices are nevertheless important (e.g. preventing contamination of the calibration fluid by means of dirty sensors, storage in a dark place and application by proper temperatures).
- (Real-Time) PCR instruments, in case the apparatus is calibrated through an appropriate calibration service (like CYCLERtest or instrument performance verification), which enables laboratories to assure its thermocyclers to perform according to specifications

- For the execution of calibration, it is allowed to:
  - Subcontract calibration to a competent subcontractor that is accredited by an accreditation body (like a2La, COFRAC, DAkkS, ISRAC or Raad voor Accreditatie) to perform calibration services.
  - Do calibration internally, by the participant itself or by a non-accredited subcontractor. In that case, proper calibration instruments must be available, correct and accurate functioning must be demonstrable and only when good practices are used, such as:
    - Touching small stones: with a glove/tweezers
    - Repeatability and eccentric load: multiple measurements (measuring precision)
    - Calibration in the range of the intended use
    - Calibration of a pipette at proper temperatures (e.g. 20°C)

    Proof of calibration for the calibration instruments itself must be demonstrable

14. Purchasing

14.1 The participant must ensure the facilities, services and materials used are fit for purpose

14.2 The participant must where applicable and relevant:

- Provide purchase details of the product (on batch level) and / or service, giving consideration to the requirements
- Establish and introduce tests or other activities needed, to ensure that the products and / or service meet the requirements
- Evaluate suppliers and select them on the basis of their capacity to satisfy the requirements of the delivery contract

14.3 The participant must:

- Define the type and degree of inspection of the product; this is dependent on the product, the influence that the supplied product has on the process where it will be used for and, in so far as applicable, on the reports of the quality audits and / or quality registrations and previous performance
- Create and maintain quality registrations of accepted suppliers
- Maintain a list of approved subcontractors

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15. Risk assessment seed production process

15.1 The participant must define the seed production process in a process flow

15.2 The participant must ensure that the seed production process (alterations must follow the same process) is reviewed and controlled by a multidisciplinary team (only relating to the scope, e.g.: QA function / seed production experience / pathologist / breeder):

15.2.1 Identify possible hazards in relation to the scope

15.2.2 Analyze all identified hazards (for cause + probability + possible impact), in order to determine if a hazard poses a risk.

15.2.3 If a hazard poses a risk, it must be determined if control measures are necessary. It can be that control measures are not necessary, because a process step later in the process does eliminate or mitigate the risk well enough. When control measures are necessary (to eliminate or mitigate the risk), the participant must determine:

- If present control measures are sufficient
- If present control measures need to be adapted
- If new control measures need to be developed

15.3 The participant must determine whether a control measure needs to be monitored (and how)

16. Field inspector

16.1 The field inspector must be competent and familiar with general principles of biology, plant and seed physiology, genetics and propagation / seed production

16.2 The field inspector must:

16.2.1 Have been trained at an approved institute:

16.2.1.1 Naktuinbouw

16.2.1.2 Other institutes / companies that are demonstrably approved by bureau TIS Naktuinbouw

16.2.2 And have obtained knowledge of and access to information(-systems) regarding:

16.2.2.1 Relevant procedures / instructions

16.2.2.2 Monitoring techniques

16.2.2.3 Hygiene aspects

16.2.2.4 Reporting

16.2.2.5 And concerning the scope:

- Varietal identity / true to type

16.3 The field inspector must be trained / have knowledge of / access to information (systems) regarding issues as (only relating to the scope):

16.3.1 Varietal identity / true to type:

- UPOV test guidelines (http://www.upov.int/test_guidelines/en/)
- Descriptions of varieties / parental lines (and which mother line A + father line B will produce hybrid C)

16.3.2 Varietal purity:

- Company standards
- Degeneration / off-types

16.3.3 Physical purity:

- Company standards
- Weeds (features, noxious or not, whether it is hard to clean out or not)

16.3.4 Plant health:

- Company standards
- Appearance of diseases / pathogens / pests
- Diagnosis / deduction methods

16.4 The field inspector must have practical experience in field inspection

16.5 The field inspector must have been appointed as field inspector (and it must be indicated for which crops)

16.6 The field inspector must maintain expertise and attend an internal harmonization meeting or refresher course annually

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16.7 The field inspector must be witnessed by a colleague field inspector at least one day biennially; as an equivalent an internal ringtest is possible (where several inspectors inspect the same plot and draw conclusions, where these / results are compared and discussed afterwards

16.8 The field inspector must participate in a proficiency test, when organized by Bureau TIS Naktuinbouw and where appropriate (appointment / crop)

16.9 The field inspector can be assisted by a trainee, as long as the trainee is working under his / her supervision on the job

17. Field inspection

17.1 The participant must determine method / frequency / stage(s) of inspection:

17.1.1 E.g. based upon the outcome of 15.2)

17.1.2 At least an inspection at the end of production, which will cover the entire production as much as possible

17.1.3 Which option is chosen for plant health:

1. Production healthy, except for what is perceived/observed or
2. Production healthy, except for what is excluded on beforehand or
3. Production healthy, regarding a predetermined selection.

17.2 A control measure as result of a field inspection (cleaning or mitigation) must always be followed by a field inspection to check the result of this

17.3 The inspector must check / compare the assignment with what he observes in the field

17.4 The participant must have an appropriate administration, indicating or making a reference to the following information:

17.4.1 The assignment and identification (e.g. plot code, crop, variety) of the production

17.4.2 The address or co-ordinates of the production location

17.4.3 The plot size (it must be indicated which metric system is applied)

17.4.4 The observations of the inspector must be recorded, e.g. (only relating to the scope + general):

17.4.4.1 General

- Expected yield in relation to the forecast
- Whether the necessary control measures have been carried out
- The name or initials of the field inspector
- The date(s) of field inspection and stage(s) of the crop (e.g. started flowering, around harvest 31st cluster, etc.)
- Possible irregularities / remarks; these must be brought to the attention of a function which is appointed to manage / correct such irregularities; it must be demonstrable who is informed about these, when and what the follow up is on these

17.4.4.2 Varietal identity / true to type

- Whether the production (or parental lines) can be regarded to be true to type (because it meets the descriptions) or not

17.4.4.3 Varietal purity

- Uniformity of the production / parental lines (indicated in percentage or description)
- Whether the company standard is met or not
- For hybrids: ratio female / male parent lines and whether female flowering is sufficiently overlapped by male flowering or not
- Whether the distance / separation to neighboring productions / relevant crops / weeds (e.g. in verge) is sufficient, in order to avoid undesired cross pollination or mixture (harvest!)

17.4.4.4 Physical purity

- Occurrence of weeds (percentage, degree, center, etc.) and whether (according pest management plan):
  - It is possible to clean or not
  - There is a need to clean

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- It is possible to separate a contaminated / deviating part from the healthy rest (to be clearly defined in the field, plus drawing or picture)
- There was a need to bring the occurrence to the attention of the NPPO

- Whether the company standard has been met or not
- Whether samples have been taken for verification at a (diagnostic) lab or that an expert visit has taken place (and the result of that)

17.4.4.5 Plant health

- Occurrence of diseases / pathogens / pests (percentage, degree, center, etc.) and whether (according pest management plan):
  - It is possible to clean or not
  - It is possible to separate a contaminated / deviating part from the healthy rest (to be clearly defined in the field, plus drawing or picture)
  - The whole production must be regarded as lost
  - The occurrence is brought to the attention of the NPPO
- Whether the company standard has been met or not
- Whether samples have been taken for verification at a (diagnostic) lab or that an expert visit has taken place (and the result of that)

17.5 Final conclusion regarding inspection

17.5.1 The participant must determine the final conclusion, considering:

- The (various) inspection result(s)
- Whether control measures as cleaning or mitigation were sufficient, as determined in a field inspection afterwards (note: not meant here are control measures that are taken afterwards, e.g. by means of processing, treatment or laboratory testing)
- Whether or not the final result can be determined, even in cases where not every inspection (as intended) has taken place

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MISCELLANEOUS

18. Revision history (NAFI Conditions 2023 compared to NAFI Conditions 2022)

We have made the following changes in the requirements:

Condition 13

Changed wording, restructure of subparagraphs. For instance replaced measuring device by device. Clarification of requirements on calibration.

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Appendix I

Bulb crops as mentioned in 'Landbouwkwaliteitsbesluit bloembollen' from 6 September 1999

I	II
Bravoa	Agavaceae
Polianthes	Agavaceae
Pseudobravoa	Agavaceae
Allium	Alliaceae
Ancrumia	Alliaceae
Androstephium	Alliaceae
Bessera	Alliaceae
Bloomeria	Alliaceae
Brodiaea	Alliaceae
Caloscordum	Alliaceae
Dandya	Alliaceae
Dichelostemma	Alliaceae
Erinna	Alliaceae
Garaventia	Alliaceae
Gethyum	Alliaceae
Gilliesia	Alliaceae
Ipheion	Alliaceae
Latace	Alliaceae
Leucocoryne	Alliaceae
Miersia	Alliaceae
Milla	Alliaceae
Milula	Alliaceae
Muilla	Alliaceae
Nectaroscordum	Alliaceae
Nothoscordum	Alliaceae
Petronymphe	Alliaceae
Solaria	Alliaceae
Speea	Alliaceae
Trichlora	Alliaceae
Tristagma	Alliaceae
Triteleia	Alliaceae
Triteleiopsis	Alliaceae
Tulbaghia	Alliaceae
Amaryllis	Amaryllidaceae
Ammocharis	Amaryllidaceae
Apodolirion	Amaryllidaceae
Bokkeveldia	Amaryllidaceae
Boophone	Amaryllidaceae

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Braxireon	Amaryllidaceae
Brunsvigia	Amaryllidaceae
Caliphruria	Amaryllidaceae
Calostemma	Amaryllidaceae
Carpolyza	Amaryllidaceae
Castellanoa	Amaryllidaceae
Champmanolirion	Amaryllidaceae
Chlidanthus	Amaryllidaceae
Clivia	Amaryllidaceae
Crinum	Amaryllidaceae
Cryptostephanus	Amaryllidaceae
Cybistetes	Amaryllidaceae
Cyrtanthus	Amaryllidaceae
Elisena	Amaryllidaceae
Eucharis	Amaryllidaceae
Eucrosia	Amaryllidaceae
Eustephia	Amaryllidaceae
Famatina	Amaryllidaceae
Galanthus	Amaryllidaceae
Gemmaria	Amaryllidaceae
Gethyllis	Amaryllidaceae
Griffinia	Amaryllidaceae
Habranthus	Amaryllidaceae
Haemanthus	Amaryllidaceae
Hannonia	Amaryllidaceae
Haylockia	Amaryllidaceae
Hessea	Amaryllidaceae
Hieronymiella	Amaryllidaceae
Hippeastrum	Amaryllidaceae
Hyline	Amaryllidaceae
Hymenocallis	Amaryllidaceae
Ismene	Amaryllidaceae
Lapiedra	Amaryllidaceae
Leucojum	Amaryllidaceae
Lycoris	Amaryllidaceae
Mathieua	Amaryllidaceae
Namaquanula	Amaryllidaceae
Narcissus	Amaryllidaceae
Pamianthe	Amaryllidaceae
Pancratium	Amaryllidaceae
Paramongaia	Amaryllidaceae
Phaedranassa	Amaryllidaceae
Placea	Amaryllidaceae
Plagiolirion	Amaryllidaceae

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Proiphys	Amaryllidaceae
Pseudostenomesson	Amaryllidaceae
Pyrolirion	Amaryllidaceae
Rauhia	Amaryllidaceae
Rhodophiala	Amaryllidaceae
Scadoxus	Amaryllidaceae
Sprekelia	Amaryllidaceae
Stenomesson	Amaryllidaceae
Sternbergia	Amaryllidaceae
Strumaria	Amaryllidaceae
Tedingea	Amaryllidaceae
Traubia	Amaryllidaceae
Ungernia	Amaryllidaceae
Urceolina	Amaryllidaceae
Vagaria	Amaryllidaceae
Vallota	Amaryllidaceae
Zephyranthes	Amaryllidaceae
Aphyllanthes	Aphyllanthaceae
Amorphophallus	Araceae
Arisaema	Araceae
Arum	Araceae
Biarum	Araceae
Dracontium	Araceae
Dracunculus	Araceae
Helicodiceros	Araceae
Pinellia	Araceae
Sauromatum	Araceae
Zantedeschia	Araceae
Asphodelus	Asphodelaceae
Bulbine	Asphodelaceae
Bulbinella	Asphodelaceae
Eremurus	Asphodelaceae
Hemiphylacus	Asphodelaceae
Jodrellia	Asphodelaceae
Paradisea	Asphodelaceae
Simethis	Asphodelaceae
Trachyandra	Asphodelaceae
Dahlia	Asteraceae
Begonia tuberhybrida	Begoniaceae

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Blanfordia	Blanfordiaceae
Canna	Cannaceae
Androcymbium	Colchicaceae
Baeometra	Colchicaceae
Bulbocodium	Colchicaceae
Burchardia	Colchicaceae
Camptorrhiza	Colchicaceae
Colchicum	Colchicaceae
Gloriosa	Colchicaceae
Hexacyrtis	Colchicaceae
Iphigenia	Colchicaceae
Littonia	Colchicaceae
Merendera	Colchicaceae
Neodregea	Colchicaceae
Onixotis	Colchicaceae
Ornithoglossum	Colchicaceae
Sandersonia	Colchicaceae
Wurmbea	Colchicaceae
Cyanastrum	Cyanastraceae
Eriospermum	Eriospermaceae
Albuca	Hyacinthaceae
Alrawia	Hyacinthaceae
Amphisiphon	Hyacinthaceae
Androsiphon	Hyacinthaceae
Bellevalia	Hyacinthaceae
Bowiea	Hyacinthaceae
Brimeura	Hyacinthaceae
Camassia	Hyacinthaceae
Chionodoxa	Hyacinthaceae
Chlorogalum	Hyacinthaceae
Daubenya	Hyacinthaceae
Dipcadi	Hyacinthaceae
Drimia	Hyacinthaceae
Drimiopsis	Hyacinthaceae
Eucomis	Hyacinthaceae

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Fortunatia	Hyacinthaceae
Galtonia	Hyacinthaceae
Hastingsia	Hyacinthaceae
Hesperocallis	Hyacinthaceae
Hyacinthella	Hyacinthaceae
Hyacinthoides	Hyacinthaceae
Hyacinthus	Hyacinthaceae
Lachenalia	Hyacinthaceae
Ledebouria	Hyacinthaceae
Leopoldia	Hyacinthaceae
Litanthus	Hyacinthaceae
Massonia	Hyacinthaceae
Muscari	Hyacinthaceae
Muscarimia	Hyacinthaceae
Neopatersonia	Hyacinthaceae
Ornithogalum	Hyacinthaceae
Polyxena	Hyacinthaceae
Pseudogaltonia	Hyacinthaceae
Pseudomuscari	Hyacinthaceae
Puschkinia	Hyacinthaceae
Rhadamanthus	Hyacinthaceae
Rhodocodon	Hyacinthaceae
Schizobasis	Hyacinthaceae
Schoenolirion	Hyacinthaceae
Scilla	Hyacinthaceae
Sypharissa	Hyacinthaceae
Thuranthos	Hyacinthaceae
Urginea	Hyacinthaceae
Veltheimia	Hyacinthaceae
Whiteheadia	Hyacinthaceae
Curculigo	Hypoxidaceae
Empodium	Hypoxidaceae
Hypoxidia	Hypocidaceae
Hypoxis	Hypoxidaceae
Molineria	Hypoxidaceae
Pauridia	Hypoxidaceae
Rhodohypoxis	Hypoxidaceae
Saniella	Hypoxidaceae
Spiloxene	Hypoxidaceae

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Ainea	Iridaceae
Alophia	Iridaceae
Anapalina	Iridaceae
Anomatheca	Iridaceae
Antholyza	Iridaceae
Aristea	Iridaceae
Babiana	Iridaceae
Barnardiella	Iridaceae
Belamcanda	Iridaceae
Bobartia	Iridaceae
Calydorea	Iridaceae
Cardenanthus	Iridaceae
Chasmanthe	Iridaceae
Cipura	Iridaceae
Cobana	Iridaceae
Crocosmia	Iridaceae
Crocus	Iridaceae
Cypella	Iridaceae
Devia	Iridaceae
Dierama	Iridaceae
Dietes	Iridaceae
Diplarrhena	Iridaceae
Duthiastrum	Iridaceae
Eleutherine	Iridaceae
Ennealophus	Iridaceae
Eurynotia	Iridaceae
Ferraria	Iridaceae
Fosteria	Iridaceae
Galaxia	Iridaceae
Geissorhiza	Iridaceae
Gelasine	Iridaceae
Geosiris	Iridaceae
Gladiolus	Iridaceae
Gynandriris	Iridaceae
Herbertia	Iridaceae
Hermodactylus	Iridaceae
Hesperantha	Iridaceae
Hesperoxiphion	Iridaceae
Hexaglottis	Iridaceae

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Homeria	Iridaceae
Iris excl. I.germanica, I.kaempferi, I.ensata, I.pumila, I.foetidissima, I.laevigata, I.sibirica, I.japonica (incl. I.Chinensis), I.chrysographes, I.halophila (I.spuria ssp halophila) en I.spuria	Iridaceae
Isophysis	Iridaceae
Ixia	Iridaceae
Kelissa	Iridaceae
Klattia	Iridaceae
Lapeirousia	Iridaceae
Larentia	Iridaceae
Lethia	Iridaceae
Libertia	Iridaceae
Mastigostyla	Iridaceae
Melasphaerula	Iridaceae
Micranthus	Iridaceae
Moraea	Iridaceae
Nemastylis	Iridaceae
Neomarica	Iridaceae
Nivenia	Iridaceae
Olsynium	Iridaceae
Onira	Iridaceae
Orthrosanthus	Iridaceae
Pardanthopsis	Iridaceae
Patersonia	Iridaceae
Phalocallis	Iridaceae
Pillansia	Iridaceae
Pseudotrimezia	Iridaceae
Radinosiphon	Iridaceae
Rheome	Iridaceae
Rigidella	Iridaceae
Roggeveldia	Iridaceae
Romulea	Iridaceae
Savannosiphon	Iridaceae
Schizostylis	Iridaceae
Sessilanthera	Iridaceae
Sessilistigma	Iridaceae
Solenomelus	Iridaceae
Sparaxis	Iridaceae
Sphenostigma	Iridaceae
Syringodea	Iridaceae

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Tapeinia	Iridaceae
Thereianthus	Iridaceae
Tigridia	Iridaceae
Trimezia	Iridaceae
Tritonia	Iridaceae
Tritoniopsis	Iridaceae
Watsonia	Iridaceae
Witsenia	Iridaceae
Zygotritonia	Iridaceae
Ixiolirion	Ixioliriaceae
Calochortus	Liliaceae
Cardiocrinum	Liliaceae
Erythronium	Liliaceae
Fritillaria	Liliaceae
Gagea	Liliaceae
Korolkowia	Liliaceae
Lilium	Liliaceae
Lloydia	Liliaceae
Nomocharis	Liliaceae
Notholirion	Liliaceae
Tulipa	Liliaceae
Zigadenus	Melanthiaceae
Mirabilis	Nyctaginaceae
Oxalis	Oxalidaceae
Cyclamen excl. C. persicum cultivars	Primulaceae
Anemone apennina	Ranunculaceae
A. blanda	Ranunculaceae
A. coronaria	Ranunculaceae
A. cylindrica	Ranunculaceae
A. flaccida	Ranunculaceae
A. fulgens	Ranunculaceae
A. ranunculoides	Ranunculaceae
A. trifolia	Ranunculaceae

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Eranthis	Ranunculaceae
Ranunculus ficaria	Ranunculaceae
R. asiaticus	Ranunculaceae
R. millefoliatus	Ranunculaceae
Conanthera	Tecophilaeaceae
Cyanella	Tecophilaeaceae
Odontostomum	Tecophilaeaceae
Tecophilaea	Tecophilaeaceae
Walleria	Tecophilaeaceae
Zephyra	Tecophilaeaceae
Abolboda	Xyridaceae
Achlyphila	Xyridaceae
Aratitiyopea	Xyridaceae
Orectanthe	Xyridaceae
Xyris	Xyridaceae
Aframomum	Zingiberaceae
Alpinia	Zingiberaceae
Amomum	Zingiberaceae
Aulotandra	Zingiberaceae
Boesenbergia	Zingiberaceae
Burbidgea	Zingiberaceae
Camptandra	Zingiberaceae
Caulokaempferia	Zingiberaceae
Cautleya	Zingiberaceae
Curcuma	Zingiberaceae
Curcumorpha	Zingiberaceae
Cyphostigma	Zingiberaceae
Elettaria	Zingiberaceae
Elettariopsis	Zingiberaceae
Etlingera	Zingiberaceae
Gagnepainia	Zingiberaceae
Geocharis	Zingiberaceae
Geostachys	Zingiberaceae
Globba	Zingiberaceae
Haniffia	Zingiberaceae
Haplochorema	Zingiberaceae
Hedychium	Zingiberaceae
Hemiorchis	Zingiberaceae

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Hitchenia	Zingiberaceae
Hornstedtia	Zingiberaceae
Kaempferia	Zingiberaceae
Leptosolena	Zingiberaceae
Mantisia	Zingiberaceae
Nanochilus	Zingiberaceae
Paracautleya	Zingiberaceae
Parakeampferia	Zingiberaceae
Plagiostachys	Zingiberaceae
Pleuranthodium	Zingiberaceae
Pommereschea	Zingiberaceae
Pyrgophyllum	Zingiberaceae
Renealmia	Zingiberaceae
Rhynchanthus	Zingiberaceae
Riedelia	Zingiberaceae
Roscoea	Zingiberaceae
Scaphochlamys	Zingiberaceae
Siliquamomum	Zingiberaceae
Siphonochilus	Zingiberaceae
Stadiochilus	Zingiberaceae
Stahlianthus	Zingiberaceae
Vanoverberghia	Zingiberaceae
Zingiber	Zingiberaceae

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