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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS

Geneva

DRAFT

ASPARAGUS

UPOV Code(s): ASPAR_OFF

Asparagus officinalis L.

GUIDELINES

FOR THE CONDUCT OF TESTS

FOR DISTINCTNESS, UNIFORMITY AND STABILITY

prepared by an expert from the Kingdom of the Netherlands

to be considered by the

*Technical Working Party for Vegetables at its fifty-ninth session,
to be held virtually from 2025-05-05 to 2025-05-08*

Disclaimer: this document does not represent UPOV policies or guidance

Alternative Names:*

Botanical name	English	French	German	Spanish
<i>Asparagus officinalis</i> L.	Asparagus	Asperge	Spargel	Espárrago

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Asparagus officinalis* L.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of seeds or plants.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

Seed-propagated varieties: 600 seeds
Vegetatively propagated varieties: 30 plants

In the case of seed, the seed should meet the minimum requirements for germination, species and analytical purity, health and moisture content, specified by the competent authority.

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

3.1.1 The minimum duration of tests should normally be two independent growing cycles.

3.1.2 The two independent growing cycles may be observed from a single planting, examined in two separate growing cycles.

3.1.3 The testing of a variety may be concluded when the competent authority can determine with certainty the outcome of the test.

3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness".

3.3 *Conditions for Conducting the Examination*

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 The optimum stage of development for the assessment of each characteristic is indicated by a number in the Table of Characteristics. The stages of development denoted by each number are described in Chapter 8.

3.4 *Test Design*

3.4.1 In the case of seed-propagated varieties, each test should be designed to result in a total of at least 40 plants which should be divided between at least 2 replicates.

3.4.2 In the case of vegetatively propagated varieties, each test should be designed to result in a total of at least 20 plants which should be divided between at least 2 replicates.

3.4.3 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants or Parts of Plants to be Examined

In the case of seed-propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 40 plants or parts taken from each of 40 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 20.

In the case of vegetatively propagated varieties, unless otherwise indicated, for the purposes of distinctness, all observations on single plants should be made on 20 plants or parts taken from each of 20 plants and any other observation made on all plants in the test, disregarding any off-type plants.

In the case of observations of parts taken from single plants, the number of parts to be taken from each of the plants should be 10.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the Table of Characteristics (see document TGP/9 "Examining Distinctness", Section 4 "Observation of characteristics"):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants"):

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 *Uniformity*

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 These Test Guidelines have been developed for the examination of seed-propagated varieties and vegetatively propagated varieties. For varieties with other types of propagation, the recommendations in the General Introduction and document TGP/13 "Guidance for new types and species" Section 4.5 "Testing Uniformity" should be followed.

4.2.3 The assessment of uniformity for seed-propagated should be according to the recommendations for cross-pollinated varieties in the General Introduction.

4.2.4 For the assessment of uniformity of vegetatively propagated varieties and male F1 hybrids, a population standard of 1% and an acceptance probability of at least 95% should be applied. In the case of a sample size of 20 plants, 1 off-type is allowed. In the case of a sample of 40 plants, 2 off-types are allowed.

4.3 *Stability*

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be further examined by testing a new seed or plant stock to ensure that it exhibits the same characteristics as those shown by the initial material supplied.

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

5.3 The following have been agreed as useful grouping characteristics:

- (a) Spear: anthocyanin coloration of apex (characteristic 2)
- (b) Plant: intensity of green coloration of foliage (characteristic 11)
- (c) Stem: length (characteristic 12)
- (d) Type of flowering (characteristic 15)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction and document TGP/9 "Examining Distinctness".

6. Introduction to the Table of Characteristics

6.1 *Categories of Characteristics*

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 *States of Expression and Corresponding Notes*

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 All relevant states of expression are presented in the characteristic.

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 "Development of Test Guidelines".

6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 Legend

English				français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1	2	3	4	5	6	7			
		Name of characteristics in English		Nom du caractère en français		Name des Merkmals auf Deutsch	Nombre del carácter en español		
		states of expression		types d'expression		Ausprägungsstufen	tipos de expresión		

- 1 Characteristic number
- 2 (*) Asterisked characteristic – see Chapter 6.1.2
- 3 Type of expression
 - QL Qualitative characteristic – see Chapter 6.3
 - QN Quantitative characteristic – see Chapter 6.3
 - PQ Pseudo-qualitative characteristic – see Chapter 6.3
- 4 Method of observation (and type of plot, if applicable)
 - MG, MS, VG, VS – see Chapter 4.1.5
- 5 (+) See Explanations on the Table of Characteristics in Chapter 8.2
- 6 (a)-(x) See Explanations on the Table of Characteristics in Chapter 8.1
- 7 Growth stage key (if applicable) See Explanations on the Table of Characteristics in Chapter 8.3

7. Table of Characteristics/Tableau des caracteres/Merkmalstabelle/Tabla de caracteres

		English		français		deutsch		español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
1.	(*)	QN	MS	(+)	(a)					
		Time of emergence of spears								
		very early								1
		very early to early								2
		early							Gijnlim	3
		early to medium								4
		medium							Darbella, Herkolim	5
		medium to late								6
		late							Backlim	7
		late to very late								8
		very late								9
2.	(*)	QL	VG	(+)	(a)					
		Spear: anthocyanin coloration of apex								
		absent							Steiniva, Xenolim	1
		present							Backlim	9
3.	(*)	QN	VG	(+)	(a)					
		Only varieties with <u>Spear: anthocyanin coloration of apex present</u> Spear: intensity of anthocyanin coloration of apex								
		very weak							Primaverde	1
		weak							Robbems	2
		medium							Spartacus	3
		strong							Terralim	4
		very strong							Erasmus	5
4.	(*)	QN	VG	(+)	(a)					
		Spear: shape of apex								
		acute							Dariana	1
		obtuse							Grolim	2
		rounded								3

		English		français		deutsch		español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
5.		QN	VG	(+)	(a)					
		Spear: opening of bracts								
		weak							UC 157	1
		moderate							Gijnlim	2
		strong								3
6.	(*)	QN	MS/VG		(a)					
		Spear: size of first bracts at base of apex								
		very small								1
		small								2
		medium							Grolim, Herkolim	3
		large							Sanukinomezame Violeta	4
		very large								5
7.		QL	VG	(+)	(a)					
		Spear: anthocyanin coloration of stem (excluding bracts)								
		absent							Spartacus	1
		present							Sanukinomezame Violeta	9
8.		QN	VG		(a)					
		<u>Only for varieties with</u> Spear: anthocyanin coloration of stem (excluding bracts): present Spear: intensity of anthocyanin coloration of stem								
		very weak								1
		weak								2
		medium								3
		strong								4
		very strong								5

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
9.	(*)	QN	VG		(b)				
		Plant: number of stems							
		very few							1
		very few to few							2
		few						Atlas, Darbella	3
		few to medium							4
		medium						Avalim	5
		medium to many							6
		many						Amadeus	7
		many to very many							8
		very many							9
10.		QN	VG	(+)	(b)				
		Plant: density of phylloclades							
		very sparse							1
		very sparse to sparse							2
		sparse						Magnus	3
		sparse to medium							4
		medium						Grolim	5
		medium to dense							6
		dense						Amadeus	7
		dense to very dense							8
		very dense							9
11.	(*)	QN	VG		(b)				
		Plant: intensity of green coloration of foliage							
		very light							1
		very light to light							2
		light						Atlas	3
		light to medium							4
		medium						Vegalim	5
		medium to dark							6
		dark						Avalim, Grolim	7
		dark to very dark							8
		very dark							9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
12.	(*)	QN	MS/VG	(+)	(b)				
		Stem: length							
		very short							1
		very short to short							2
		short						Argenteuil	3
		short to medium							4
		medium						Vitalim	5
		medium to long							6
		long						Vegalim	7
		long to very long							8
		very long						Inkalim	9
13.	(*)	QN	MS/VG	(+)	(b)				
		Stem: length up to first ramification							
		very short							1
		very short to short							2
		short						Argenteuil	3
		short to medium							4
		medium						Avalim, Gijnlim	5
		medium to long							6
		long						Thielim	7
		long to very long							8
		very long							9
14.	(*)	QN	VG		(b)				
		Stem: diameter at ground level							
		very small							1
		very small to small							2
		small						Primaverde	3
		small to medium							4
		medium						Gijnlim	5
		medium to large							6
		large						Darbella, Grolim	7
		large to very large							8
		very large							9

		English		français		deutsch	español	Example Varieties Exemples Beispielssorten Variedades ejemplo	Note/ Nota
15.	(*)	QL	VG	(+)					
		Type of flowering							
		only plants with male flowers without style rudiments						Cumulus	1
		plants with male flowers and plants with female flowers						Argenteuil	2
		plants with male flowers with style rudiments						Backlim, Gijnlim	3
		only plants with female flowers						L324	4

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

Characteristics containing the following key in the Table of Characteristics should be examined as indicated below:

- (a) to be observed at emergence of spears
- (b) to be observed on non harvested plants at the end of the growing season, when the plants and phylloclades are fully developed.

8.2 *Explanations for individual characteristics*

Ad. 1: Time of emergence of spears

The time of emergence of spears is when at least 30% of the plants have at least 1 spear emerged.

Ad. 2: Spear: anthocyanin coloration of apex

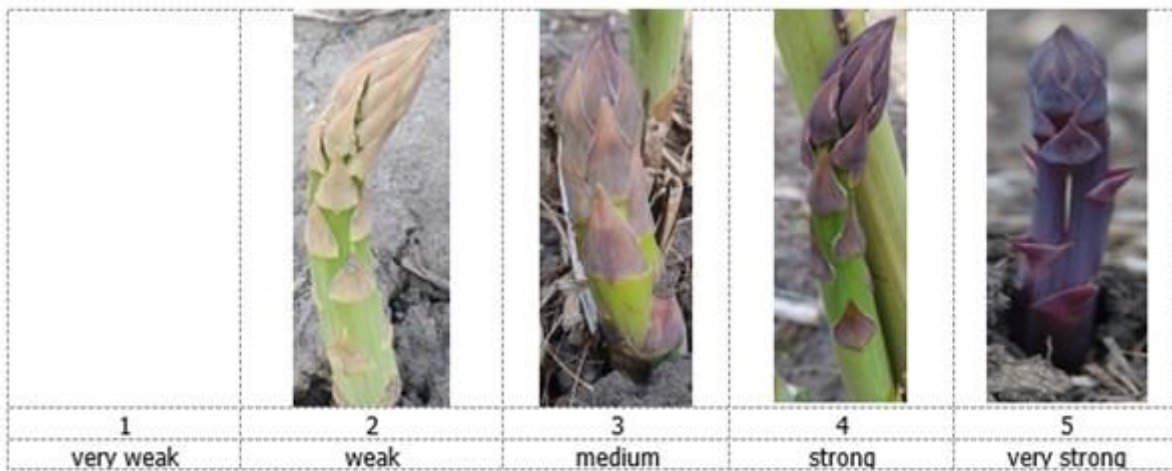


1
absent

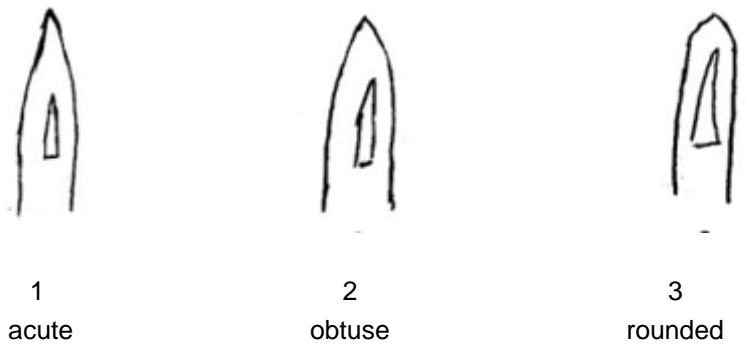


9
present

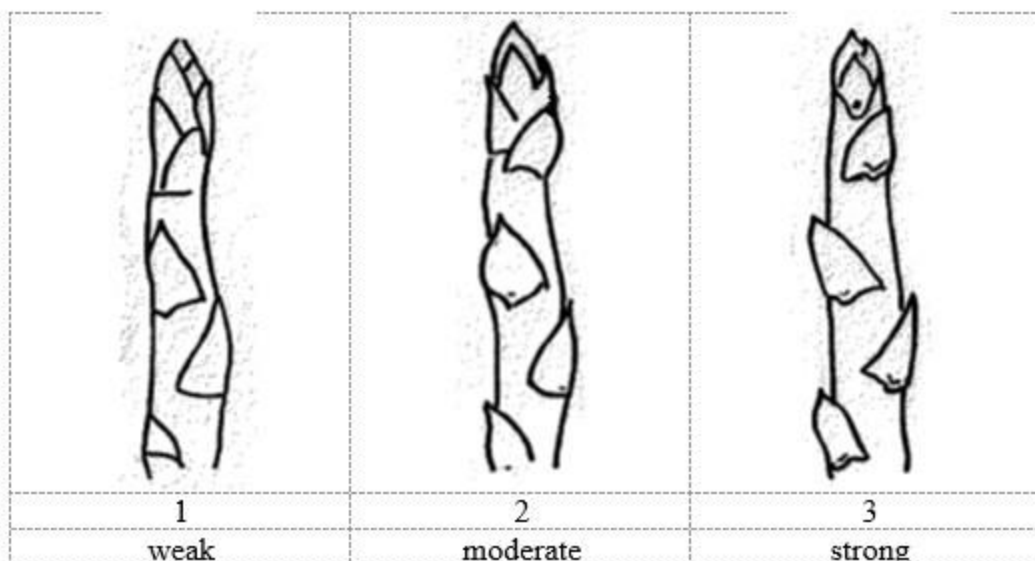
Ad. 3: Only varieties with Spear: anthocyanin coloration of apex present Spear: intensity of anthocyanin coloration of apex



Ad. 4: Spear: shape of apex



Ad. 5: Spear: opening of bracts



To be observed when the spear is 5-10 cm above soil surface.

Ad. 7: Spear: anthocyanin coloration of stem (excluding bracts)



The assessment of this characteristic should be based on the area and intensity of anthocyanin coloration of the stem from the ground to the apex, excluding the bracts, when spears have reached their harvest length.

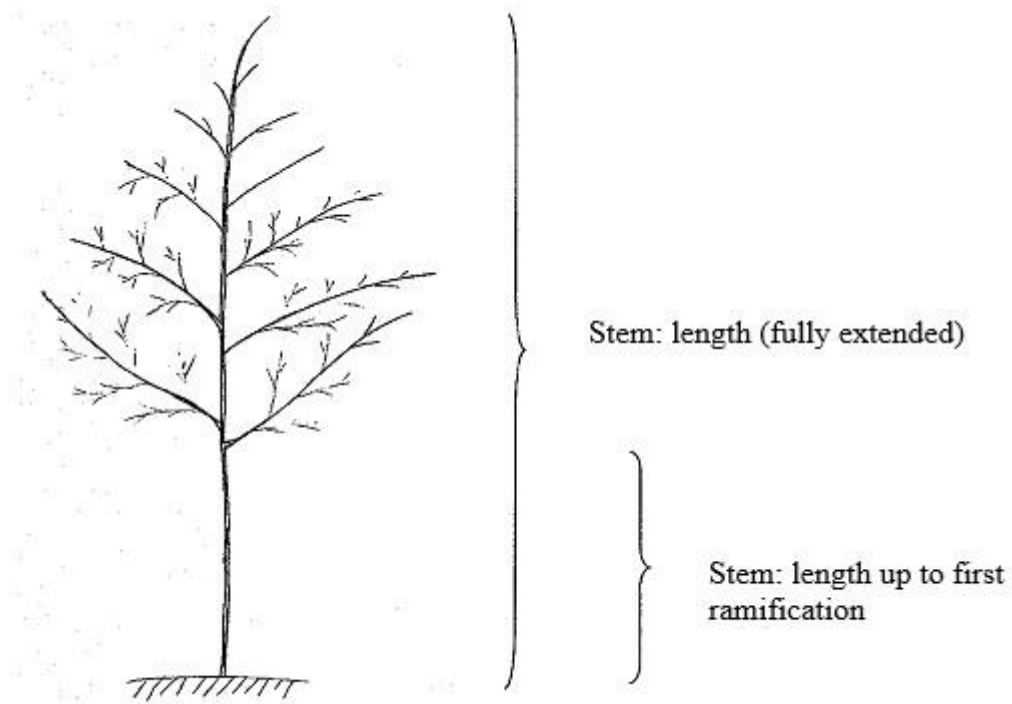
Ad. 10: Plant: density of phylloclades

The density of phylloclades should be observed on the middle third of the plant.

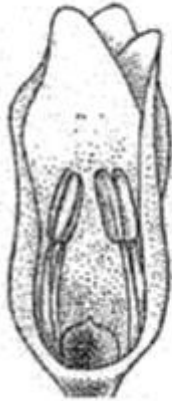
Ad. 12: Stem: length

See Ad. 13.

Ad. 13: Stem: length up to first ramification



Ad. 15: Type of flowering



male flower
(without style rudiment)

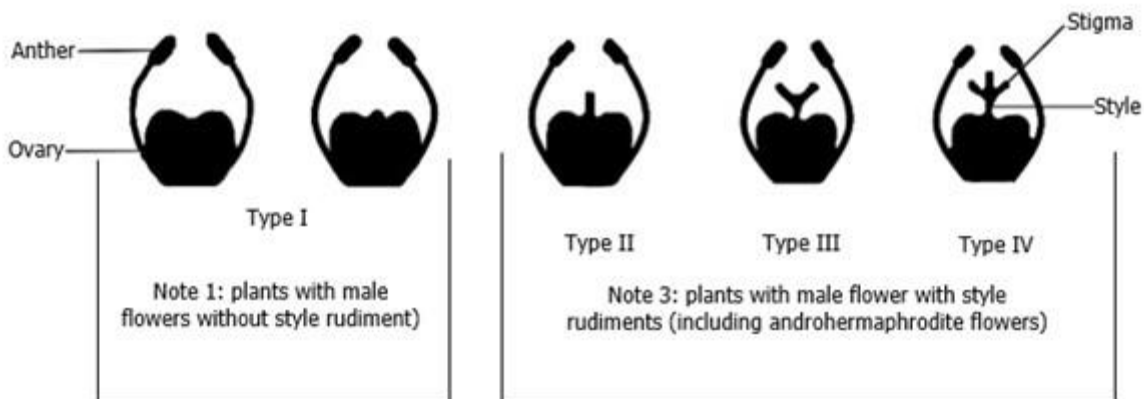


male flower
(with style rudiment including
androhermaphrodite)



female flower

Type of male flowers



Type of male flowers: the flowers always have fully developed anthers; the style can be from absent to fully developed (Type I to IV), but the stigmas are always rudimentary or absent. Even when two of the three stigmas are present, the flower is considered to be male. The male flower will not produce seeds.

The androhermaphrodite flower (Type IV) has three stigmas and anthers which produce pollen. The flower has the possibility, when self-pollinated, to produce a berry with some seeds. These berries are always smaller and with less seeds than on female plants and in much smaller quantities.

Varieties with note 3 (plants with male flower with style rudiments) can also have plants with androhermaphrodite flowers. Within these varieties the ratio between male flowers with style rudiments (type II and III) and androhermaphrodite flowers (type IV) can vary, leading to a smaller or larger percentage of male plants with small berries.

9. Literature

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10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Application date: (not to be filled in by the applicant)
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TECHNICAL QUESTIONNAIRE
to be completed in connection with an application for plant breeders' rights

1. Subject of the Technical Questionnaire

1.1.1 Botanical name ☐

1.1.2 Common name

2. Applicant

Name

Address

Telephone No.

Fax No.

E-mail address

Breeder (if different from applicant)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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3. Proposed denomination and breeder's reference

Proposed denomination
(if available)

Breeder's reference

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

- (a) controlled cross []
- (b) partially known cross []
- (c) unknown cross []

4.1.2 Mutation
(please state parent variety)

4.1.3 Discovery and development
(please state where and when discovered and how developed)

4.1.4 Other
(Please provide details)

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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4.2 Method of propagating the variety

4.2.1 Seed-propagated varieties

- (a) Self-pollination []
(b) Cross-pollination []
(c) Hybrid []
(d) Inbred line []
(e) Other (please provide details) []

4.2.2 Vegetative propagation

- (a) Cuttings []
(b) In vitro propagation []
(c) Other (state method) []

4.2.3 Other
(Please provide details) []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).

Characteristics	Example Varieties	Note
5.1 (2) Spear: anthocyanin coloration of apex		
absent	Steiniva, Xenolim	1 []
present	Backlim	9 []
5.2 (11) Plant: intensity of green coloration of foliage		
very light		1 []
very light to light		2 []
light	Atlas	3 []
light to medium		4 []
medium	Vegalim	5 []
medium to dark		6 []
dark	Avalim, Grolim	7 []
dark to very dark		8 []
very dark		9 []
5.3 (12) Stem: length		
very short		1 []
very short to short		2 []
short	Argenteuil	3 []
short to medium		4 []
medium	Vitalim	5 []
medium to long		6 []
long	Vegalim	7 []
long to very long		8 []
very long	Inkalim	9 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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	Characteristics	Example Varieties	Note
5.4 (14)	Stem: diameter at ground level		
	very small		1 []
	very small to small		2 []
	small	Primaverde	3 []
	small to medium		4 []
	medium	Gijnlim	5 []
	medium to large		6 []
	large	Darbella, Grolim	7 []
	large to very large		8 []
	very large		9 []
5.5 (15)	Type of flowering		
	only plants with male flowers without style rudiments	Cumulus	1 []
	plants with male flowers and plants with female flowers	Argenteuil	2 []
	plants with male flowers with style rudiments	Backlim, Gijnlim	3 []
	only plants with female flowers	L324	4 []

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6. Similar varieties and differences from these varieties

Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. This information may help the examination authority to conduct its examination of distinctness in a more efficient way.

Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>Stem: length</i>	<i>long</i>	<i>short</i>
<div>Comments</div>			

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#7. Additional information which may help in the examination of the variety

7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?

Yes ☐ No ☐

(If yes, please provide details)

7.2 Are there any special conditions for growing the variety or conducting the examination?

Yes ☐ No ☐

(If yes, please provide details)

7.3 Other information

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8. Authorization for release

(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?

Yes ☐ No ☐

(b) Has such authorization been obtained?

Yes ☐ No ☐

If the answer to (b) is yes, please attach a copy of the authorization.

9. Information on plant material to be examined or submitted for examination

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If the plant material has undergone such treatment, full details of the treatment must be given. In this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

(a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes ☐ No ☐

(b) Chemical treatment (e.g. growth retardant, pesticide) Yes ☐ No ☐

(c) Tissue culture Yes ☐ No ☐

(d) Other factors Yes ☐ No ☐

Please provide details for where you have indicated "yes".

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes ☐

(please provide details as specified by the Authority)

No ☐

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature

Date

[End of document]