Bioversity International

Descriptors for

Crocus

(*Crocus* spp.)

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Castilla-La Mancha

Unión Europea

Fondo Europeo de Desarrollo Regional

UNIVERSIDAD DE CASTILLA-LA MANCHA

List of Descriptors

Allium (E, S)	2000
Almond (Revised)* (E)	1985
Apple* (E)	1982
Apricot* (E)	1984
Avocado (E, S)	1995
Bambara groundnut (E, F)	2000
Banana (E, S, F)	1996
Barley (E)	1994
Beta (E)	1991
Black pepper (E, S)	1995
Brassica and *Raphanus* (E)	1990
Brassica campestris L. (E)	1987
Buckwheat (E)	1994
*Capsicum** (E/S)	1995
Cardamom (E)	1994
Carrot (E/S/F)	1999
Cashew* (E)	1986
Chenopodium pallidicaule (S)	2005
Cherimoya (E/S)	2008
Cherry* (E)	1985
Chickpea (E)	1993
Citrus (E/F/S)	1999
Coconut (E)	1992
Coffee (E/S/F)	1996
Cotton (Revised)* (E)	1985
Cowpea* (E)	1983
Cultivated potato* (E)	1977
Date palm (F)	2005
Durian (E)	2007
Echinochloa millet* (E)	1983
Eggplant (E/F)	1990
Faba bean* (E)	1985
Fig (E)	2003
Finger millet* (E)	1985
Forage grass* (E)	1985
Forage legumes* (E)	1984
Grapevine (E/S/F)	1997
Groundnut (E/S/F)	1992
Hazelnut (E)	2008
Jackfruit (E)	2000
Kodo millet* (E)	1983
Lathyrus spp. (E)	2000
Lentil* (E)	1985
Litchi (E)	2002
Lupin* (E/S)	1981
Maize (E/S/F/P)	1991
Mango (Revised) (E)	2006
Mangosteen (E)	2003
Medicago (Annual)* (E/F)	1991
Melon (E)	2003
Mung bean* (E)	1980
Oat* (E)	1985
Oca* (S)	2001
Oil palm (E)	1989
Panicum miliaceum and *P. sumatrense* (E)	1985
Papaya (E)	1988
Peach* (E)	1985
Pear* (E)	1983
Pearl millet (E/F)	1993
Pepino (E)	2004
Phaseolus acutifolius (E)	1985
*Phaseolus coccineus** (E)	1983
Phaseolus lunatus (E/P)	2001
*Phaseolus vulgaris** (E/P)	2001
Pigeonpea (E)	1993
Pineapple (E)	1991
Pistacia (excluding *P. vera*) (E)	1998
Pistachio (E/F/A/R)	1997
Plum* (E)	1985
Potato varieties* (E)	1985
Quinoa (E/F/S)	2013
Rambutan (E)	2003
Rice* (E/P)	2007
Rocket (E/I)	1999
Rye and Triticale* (E)	1985
Safflower* (E)	1983
Sesame* (E)	2004
Setaria italica and *S. pumila* (E)	1985
Shea tree (E)	2006
Sorghum (E/F)	1993
Soyabean* (E/C)	1984
Strawberry (E)	1986
Sunflower* (E)	1985
Sweet potato (E/S/F)	1991
Taro (E/F/S)	1999
Tea (E/S/F)	1997
Tomato (E/S/F)	1996
Tree tomato (E)	2013
Tropical fruit* (E)	1980
Ulluco (S)	2003
Vigna aconitifolia and *V. trilobata* (E)	1985
Vigna mungo and *V. radiata* (Rev.)* (E)	1985
Walnut (E)	1994
Wheat (Revised)* (E)	1985
Wheat and *Aegilops** (E)	1978
White clover (E)	1992
Winged bean* (E)	1979
*Xanthosoma** (E)	1989
Yam (E/S/F)	1997

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Descriptors for

Crocus

(*Crocus* spp.)

Bioversity International is a global research-for-development organization. We have a vision – that agricultural biodiversity nourishes people and sustains the planet.

We deliver scientific evidence, management practices and policy options to use and safeguard agricultural biodiversity to attain sustainable global food and nutrition security. We work with partners in low-income countries in different regions where agricultural biodiversity can contribute to improved nutrition, resilience, productivity and climate change adaptation.

Bioversity International is a member of the CGIAR Consortium – a global research partnership for a food secure future.

www.bioversityinternational.org

The Plant Physiology Research Group is a structure belonging to the Plant Production Department at the **Universitat Politècnica de València** (Spain), which undertakes educational and research work at the High Technical School of Agricultural Engineering and Environment (ETSIAMN). This group brings together researchers in diverse fields of Plant Physiology, including photosynthesis and carbohydrate metabolism, abiotic stresses, as well as the developmental process. Over the last 14 years, this group has been working on different research activities related to Crocus genus in order to improve and modernise production systems.

The Genetics and Biotechnology Group of the **Universidad de Castilla-La Mancha** (Spain), carries out its research effort at the Institute for Regional Development (IDR) and its educational tasks at the High Technical School of Agricultural Engineering and Forestry (ETSIAM) in Albacete, Spain. Its research has been focused on saffron biotechnology and therapeutic properties of saffron apocarotenoids, as well as on the genetic variability in *Crocus* genus.

The Bank of Plant Germplasm of Cuenca (BGVCU) is placed in the facilities of the Agricultural Centre of Albaladejito, Spain, belonging to the Department of Agriculture of the Government of Castilla – La Mancha (**Junta de Comunidades de Castilla-La Mancha**). The activities related to the conservation and management of plant genetic resources were initiated nearly 30 years ago and have been focused on several crops of interest for rain-fed semiarid conditions, mainly grain-legumes and aromatic and medicinal plants. The BGVCU belongs to the Spanish Network of Genebanks for plant genetic resources (code FAO ESP124). Currently the BGVCU preserves and manages the World Saffron and *Crocus* Collections.

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CONTENTS

PREFACE

The list of **Descriptors for Crocus (*Crocus* spp.)** has been developed within the framework of the EU funded Programme AGRI GEN RES, (Action 018, www.crocusbank.org), coordinated by the Universidad de Castilla-La Mancha (Spain). One of the main achievements of this Programme has been the creation of the World Saffron and Crocus Collection (WSCC), maintained by the Bank of Plant Germplasm of Cuenca (BGVCU), which belongs to the Junta de Comunidades de Castilla – La Mancha (JCCM, Spain). The overall coordination of the development of the list of Descriptors for *Crocus* has been carried out by Prof. Rosa V. Molina and her Plant Physiology Research Group at the Universitat Politècnica de València (Spain). They have developed a preliminary list of descriptors based on evaluation studies carried out on saffron and *Crocus* accessions and taking into account taxonomic criteria for the genus *Crocus*. Other organizations such as the Aristotle University of Thessaloniki and the Agricultural University of Athens (Greece), the University of Leicester (United Kingdom) and the University of Catania (Italy) have also provided valuable scientific contributions to the elaboration of this document.

The scientific overview of this document was provided by Stefano Padulosi and the technical advice by Adriana Alercia, both from Bioversity International, who prepared a draft using the international accepted format for descriptor lists. This was then circulated among international experts for further review and consolidation. A full list of the names and addresses of those involved in the production of this publication is given in the *Contributors* section.

Bioversity International (formerly known as IPGRI) encourages the collecting of data for all five types of descriptors (see Definitions and Use of the Descriptors), whereby data from the first four categories—*Passport, Management, Environment and Site*, and *Characterization*—should be made available for any accession. The number of descriptors selected in each of the categories will depend on the crop and its importance to the crop's description. Descriptors listed under *Evaluation* allow for a more extensive description of the accession, but generally require repeated trials over a period of time.

Although the suggested coding should not be regarded as the definitive scheme, this format represents an important tool for a standardized characterization system and it is being promoted by Bioversity throughout the world.

This descriptors list provides an international format and thereby produces a universally understood 'language' for plant genetic resources data. The adoption of this scheme for data encoding, or at least the production of a transformation method to convert other schemes into the Bioversity format, will produce a rapid, reliable, and efficient means of information storage, retrieval and communication, and will assist with the use of germplasm. It is recommended, therefore, that information should be produced by closely following the descriptor list with regard to ordering and numbering descriptors, using the specified descriptors and recommended descriptor states.

This descriptors list is intended to be comprehensive for the descriptors it contains. Bioversity does not, however, assume that curators will characterize accessions of their collections using all descriptors given. Descriptors should be used when they are useful to users, either collections' curators for the management and maintenance of their germplasm material or to all other users of plant genetic resources for promoting their sustainable use. To

this end, highly discriminating descriptors are listed at the beginning of the *Characterization* section (highlighted text) to facilitate selection of descriptors.

The 'List of Multi-crop Passport Descriptors' (Alercia *et al*., 2012) was developed to provide consistent coding schemes for common passport descriptors among crops. They are marked in the text as [MCPD]. Owing to the generic nature of the multicrop passport descriptors, not all descriptor states for a particular descriptor will be relevant to a specific crop.

In Annex I the reader will find a 'Collecting form for *Crocus* spp.' that will facilitate data collection.

Any suggestions for improvement of the 'Descriptors for Crocus (*Crocus* spp.)' will be highly appreciated by Bioversity[1], Universitat Politècnica de València, Universidad de Castilla-La Mancha and Junta de Comunidades de Castilla-La Mancha.

1 Contact: a.alercia@cgiar.org

INTRODUCTION

Common names of saffron according to literature

Arabic	safran, zafaran
English	saffron
French	safran
Dutch	saffraan
German	safran
Greek	krokos, zafora, safrani
Italian	zafferano
Portuguese	açafrão
Russian	shafran
Spanish	azafrán
Turkish	zaferen, safran

The *Crocus* genus is part of the *Iridaceae* family and consists of more than 88 corm-bearing perennial species distributed from Central and Southern Europe, to North Africa, Southwest Asia and Western China, with the centre of species diversity located in Asia Minor and the Balkan Peninsula (Mathew 1982; Goldblatt *et al.*, 2008; Petersen *et al.*, 2008; Harpke *et al.*, 2013). Many *Crocus* species are highly appreciated as garden plants for their colourful flowers, but the genus is mainly known for the species *C. sativus*, commercially cultivated for the production of saffron, the world's most expensive spice (Fernández 2004).

Saffron has been widely known since the pre-Hellenic and Hellenic periods. On the wall of the Palace of Minos in Knossos (Crete, Greece), dating 1700–1600 BC, frescoes depicting crocus-gatherers can be observed. Other important records are found in the palace of Akrotiri in Thera (now Santorini, Greece, 1700-1450 BC) where frescoes represent young women collecting crocuses and offering them to a divinity. Unfortunately, it is not possible to determine with certainty which *Crocus* species (*C. sativus* or *C. cartwrightianus*) had inspired these paintings. The Mediterranean region is one of the most probable sites of origin of saffron; another possible site is located in the Turkey–Iran–India area, where saffron cultivation is reported to be thousands of years old (Grilli-Caiola and Canini, 2010). According to some authors (Alberini 1990; Winterhalter and Straubinger, 2000) saffron originated first in Iran and Kashmir, from where the Phoenicians introduced it to the Greek and Romans. Later on, it was brought by the Arabs to Spain. The term used in ancient Greek for *Crocus* is 'koricos', whereas the Romans used the term '*crocum*'. By contrast, 'saffron' probably originates from the Arabic word 'zafaran' or 'zaafar'. The Arabic 'safran' is quite similar in various other languages as listed below.

Ancient civilizations used saffron to dye clothes, as a food additive and even as a medical remedy (Basker and Negbi, 1983). There is a long history of the use of saffron in traditional medicines of many cultures. Its applications in the medical field have been extensively tested as well and it is worth noting its reported tumoricidal and anti-carcinogenic properties (Abdullaev, 2003, Chryssanthi *et al.*, 2007).

Although concern in the *Crocus* genus is mainly related to *C. sativus*, there is also growing interest in other ornamental and wild related species. Many *Crocus* species could be used as a

source of food colorants and nutraceuticals, and are also rich in high added value compounds possessing biological activity (fungicidal, antioxidant or insecticidal) that can be extracted from corms, tepals and leaves. Furthermore, the recorded tolerance to summer drought and winter cold, together with their showy flowers, makes wild species interesting as ornamental in areas with severe climatic conditions. Wild species can also be used as sources of useful genes in improvement programmes of the cultivated species.

Conservation of saffron and allies is particularly concerning because of the shrinking of their populations both in the wild and in cultivated areas. In this regard, the descriptors developed for these species represent a valuable instrument for a better comprehension of these dwindling resources in support of their enhanced conservation and use and following an international agreed protocol (Bioversity International, 2007).

DEFINITIONS AND USE OF THE DESCRIPTORS

Bioversity uses the following definitions in genetic resources documentation:

Passport descriptors: These provide the basic information used for the general management of the accession (including registration at the genebank and other identification information) and describe parameters that should be observed when the accession is originally collected.

Management descriptors: These provide the basis for the management of accessions in the genebank and assist with their multiplication and regeneration.

Environment and site descriptors: These describe the environmental and site-specific parameters that are important when characterization and evaluation trials are held. They can be important for the interpretation of the results of those trials. Site descriptors for germplasm collecting are also included here.

Characterization descriptors: These enable an easy and quick discrimination between phenotypes. They are generally highly heritable, can be easily seen by the eye and are equally expressed in all environments. Furthermore, these may include a limited number of additional traits thought desirable by a consensus of users of the particular crop.

Evaluation descriptors: The expression of many of the descriptors in this category will depend on the environment and, consequently, special experimental designs and techniques are needed to assess them. Their assessment may also require complex biochemical or molecular characterization methods. These types of descriptors include characters such as yield, agronomic performance, stress susceptibilities and biochemical and cytological traits. They are generally the most interesting traits in crop improvement.

Characterization will normally be the responsibility of genebank curators, while evaluation will typically be carried out elsewhere (possibly by a multidisciplinary team of scientists). The evaluation data should be fed back to the genebank, which will maintain a data file.

Highly discriminating descriptors are highlighted in the text and are listed at the beginning of the *Characterization* section.

The following internationally accepted norms for the scoring, coding and recording of descriptor states should be followed:

(a) the Système International d'Unités (SI);

(b) the units to be applied are given in square brackets following the descriptor name;

(c) standard colour charts, e.g. Royal Horticultural Society Colour Chart, Methuen Handbook of Colour, or Munsell Color Chart for Plant Tissues, are strongly recommended for all ungraded colour characters (the precise chart chosen should be specified in the section where it is used);

(d) the three-letter abbreviations from the *International Standard (ISO) Codes for the representation of names of countries are used*
(http://unstats.un.org/unsd/methods/m49/m49alpha.htm)

(e) quantitative characters, i.e. those that are continuously variable, should preferably be measured quantitatively. Alternatively, in cases where it is difficult to measure in this way, it is acceptable to score instead on a 1–9 scale, where:

1	Very low	6	Intermediate to high
2	Very low to low	7	High
3	Low	8	High to very high
4	Low to intermediate	9	Very high
5	Intermediate		

is the expression of a character. The authors of this list have sometimes described only a selection of the states, e.g. 3, 5 and 7 for such descriptors. Where this has occurred, the full range of codes is available for use by extension of the codes given or by interpolation between them, e.g. in Section 10 (*Biotic stress susceptibility*), 1 = very low susceptibility and 9 = very high susceptibility;

(f) when a descriptor is scored using a scale, such as in (e), '0' would be scored when (i) the character is not expressed; (ii) a descriptor is inapplicable. In the following example, '0' will be recorded if an accession does not have leaf hairs:

Leaf hairiness
Observed on abaxial side

0	Absent (glabrous)
1	Puberulent
2	Pubescent
3	Pilose
4	Tomentose

(g) absence/presence of characters is scored as in the following example:

Presence of stone cell aggregates in mesocarp

0	Absent
1	Present

(h) blanks are used for information not yet available;

(i) for accessions which are not generally uniform for a descriptor (e.g. mixed collection, genetic segregation), the mean and standard deviation could be reported where the descriptor is continuous. Where the descriptor is discontinuous, several codes in the order of frequency could be recorded; or other publicized methods can be utilized, such as Rana *et al*. (1991) or van Hintum (1993), that clearly state a method for scoring heterogeneous accessions;

(j) Dates should be recorded numerically as YYYYMMDD, where

YYYY	-	4 digits to represent the year
MM	-	2 digits to represent the month
DD	-	2 digits to represent the day

If the month or days are missing, this should be indicated with hyphens or '00' [double zero] (e.g. 1975----, 19750000; 197506--, 19750600).

PASSPORT

All descriptors listed under Passport, belonging to the multicrop passport descriptors category, are indicated in the text as [MCPD].

1. Accession descriptors

1.1 Institute code [MCPD]

FAO WIEWS code of the institute where the accession is maintained. The codes consist of the 3-letter ISO 3166 country code of the country where the institute is located, plus a number. The current set of institute codes is available from http://apps3.fao.org/wiews/wiews.jsp.

1.2 Accession number [MCPD]

This number serves as a unique identifier for accessions within a genebank, and is assigned when a sample is entered into the genebank collection. Once assigned, this number should never be reassigned to another accession in the collection. Even if an accession is lost, its assigned number should never be reused. Letters should be used before the number to identify the genebank or national system (e.g. CGN indicates an accession from the genebank in Wageningen, the Netherlands; PI indicates an accession within the USA system).

1.3 Donor institute code [MCPD]

FAO WIEWS code of the donor institute. (See instructions under *Institute code*, **1.1**).

1.3.1 Donor institute name

Name of the donor institute (or person). This descriptor should be used only if DONORCODE cannot be filled because the FAO WIEWS code for this institute is not available.

1.4 Donor accession number [MCPD]

Identifier assigned to an accession by the donor. (See instructions under *Accession number*, **1.2**).

1.5 Other identifiers associated with the accession [MCPD]

Any other identifiers known to exist in other collections for this accession. Use the following format: INSTCODE:ACCENUMB;INSTCODE:identifier;… INSTCODE and identifier are separated by a colon without space. Pairs of INSTCODE and identifier are separated by a semicolon without space. When the institute is not known, the identifier should be preceded by a colon.

1.6 Genus [MCPD]

Genus name for taxon. Initial uppercase letter required.

1.7 Species [MCPD]

Specific epithet portion of the scientific name in lowercase letters. Only the following abbreviation is allowed: 'sp.'.

1.7.1 Species authority [MCPD]

Provide the authority for the species name.

1.8 Subtaxon [MCPD]

Subtaxon can be used to store any additional taxonomic identifier. The following abbreviations are allowed: 'subsp.' (for subspecies); 'convar.' (for convariety); 'var.' (for variety); 'f.' (for form); 'Group' (for 'cultivar group').

1.8.1 Subtaxon authority [MCPD]

Provide the subtaxon authority at the most detailed taxonomic level.

1.9 Ancestral data [MCPD]

Information about either pedigree or other description of ancestral information (i.e. parent variety in the case of mutant or selection).

1.10 Accession

1.10.1 Accession name [MCPD]

Either a registered or other designation given to the material received other than the *Donor accession number*, **1.4** or *Collecting number*, **2.2**. First letter uppercase. Multiple names are separated by a semicolon without space. Example: Accession name: Bogatyr;Symphony;Emma.

1.10.2 Synonyms

Include here any names other than the current one. Newly assigned station names are frequently used as synonyms.

1.10.3 Common crop name [MCPD]

Common name of the crop. Example: 'malting barley', 'macadamia', 'maïs'.

1.11 Acquisition date [YYYYMMDD] [MCPD]

Date on which the accession entered the collection where YYYY is the year, MM is the month and DD is the day. Missing data (MM or DD) should be indicated with hyphens or double zero.

1.12 Remarks

The *Remarks* field is used to add notes or to elaborate on descriptors with value '99' or '999' (= Other).

2. Collecting descriptors

2.1 Collecting institute code [MCPD]

FAO WIEWS code of the institute(s) collecting the sample. If the holding institute has collected the material, the collecting institute code should be the same as the holding institute code. Multiple values are separated by a semicolon without space. (See instructions under *Institute code*, **1.1**).

2.1.1 Collecting institute name [MCPD]

Name of the institute collecting the sample. This descriptor should be used only if the Collecting institute code cannot be filled because the FAO WIEWS code for this institute is not available. Multiple values are separated by a semicolon without space.

2.1.1.1 Collecting institute address [MCPD]

Address of the institute collecting the sample. This descriptor should be used only if *Collecting institute code* cannot be filled since the FAO WIEWS code for this institute is not available. Multiple values are separated by a semicolon without space.

2.2 Collecting number [MCPD]

Original identifier assigned by the collector(s) of the sample, normally composed of the name or initials of the collector(s) followed by a number (e.g. 'FM9909'). This identifier is essential for identifying duplicates held in different collections. It should be unique and always accompany subsamples wherever they are sent.

2.3 Collecting date of sample [YYYYMMDD] [MCPD]

Collecting date of the sample where YYYY is the year, MM is the month and DD is the day. Missing data (MM or DD) should be indicated with hyphens or double zero [00].

2.4 Collecting mission identifier [MCPD]

Identifier of the collecting mission used by the *Collecting institute* **2.1** or **2.1.1** (e.g. 'CIATFOR-052', 'CN426').

2.5 Country of origin [MCPD]

Three-letter ISO 3166-1 code of the country in which the sample was originally collected (landrace, crop wild relative, farmers' variety), bred or selected (breeding lines, GMOs, segregating populations, hybrids, modern cultivars, etc.).

2.6 Breeding institute code [MCPD]
FAO WIEWS code of the institute that has bred the material. If the holding institute has bred the material, the breeding institute code should be the same as the holding institute code. Follow the *Institute code* **1.1** standard. Multiple values are separated by a semicolon without space.

2.6.1 Breeding institute name [MCPD]
Name of the institute (or person) that bred the material. This descriptor should be used only if BREDCODE cannot be filled because the FAO WIEWS code for this institute is not available. Multiple names are separated by a semicolon without space.

2.7 Location of collecting site [MCPD]
Location information below the country level that describes where the accession was collected, preferably in English. This might include the distance in kilometres and direction from the nearest town, village or map grid reference point (e.g. 7 km south of Curitiba in the state of Parana).

Geographical coordinates

- For latitude and longitude descriptors, two alternative formats are proposed, but the one reported by the collecting mission should be used.

- Latitude and longitude in decimal degree format with a precision of four decimal places corresponds to approximately 10 m at the Equator and describes the point-radius representation of the location, along with geodetic datum and coordinate uncertainty in metres.

The following two mutually exclusive formats can be used for latitude and longitude:

2.8 Latitude of collecting site [DDMMSSH] [MCPD]
Degrees (2 digits), minutes (2 digits) and seconds (2 digits) followed by N (North) or S (South) (e.g. 103020S). Every missing digit (minutes or seconds) should be indicated with a hyphen. Leading zeros are required (e.g. 10----S; 011530N; 4531--S).

2.8a Latitude of collecting site [-/+DD.DDDD] [MCPD]
Latitude expressed in decimal degrees. Positive values are North of the Equator; negative values are South of the Equator (e.g. -44.6975).

2.9 Longitude of collecting site [DDDMMSSH] [MCPD]
Degrees (3 digits), minutes (2 digits) and seconds (2 digits) followed by E (East) or W (West) (e.g. 0762510W). Every missing digit (minutes or seconds) should be indicated with a hyphen. Leading zeros are required (e.g. 076 ----W).

2.9a Longitude of collecting site [-/+DDD.DDDD] [MCPD]
Longitude expressed in decimal degrees. Positive values are East of the Greenwich Meridian; negative values are West of the Greenwich Meridian (e.g. +120.9123).

2.10 Coordinate uncertainty [m] [MCPD]
Uncertainty associated with the coordinates in metres. Leave the value empty if the uncertainty is unknown.

2.11 Coordinate *datum* [MCPD]
The geodetic *datum* or spatial reference system upon which the coordinates given in decimal latitude and decimal longitude are based (e.g. WGS84, ETRS89, NAD83). The GPS uses the WGS84 *datum*.

2.12 Georeferencing method [MCPD]
The georeferencing method used (GPS, determined from map, gazetteer, or estimated using software). Leave the value empty if georeferencing method is not known.

2.13 Elevation of collecting site [m asl] [MCPD]
Elevation of collecting site expressed in metres above sea level. Negative values are allowed.

2.14 Collecting /acquisition source [MCPD]
The coding scheme proposed can be used at 2 different levels of detail: either by using the general codes (in **boldface**) such as 10, 20, 30, 40, etc., or by using the more specific codes, such as 11, 12, etc.

10 Wild habitat
- 11 Forest or woodland
- 12 Shrubland
- 13 Grassland
- 14 Desert or tundra
- 15 Aquatic habitat

20 Farm or cultivated habitat
- 21 Field
- 22 Orchard
- 23 Backyard, kitchen or home garden (urban, periurban or rural)
- 24 Fallow land
- 25 Pasture
- 26 Farm store
- 27 Threshing floor
- 28 Park

30 Market or shop
40 Institute, Experimental station, Research organization, Genebank
50 Seed company
60 Weedy, disturbed or ruderal habitat
61 Roadside
62 Field margin
99 Other (elaborate in descriptor **2.25 Remarks**)

2.15 Biological status of accession [MCPD]

The coding scheme proposed can be used at 3 different levels of detail: either by using the general codes (in **boldface**) such as 100, 200, 300, 400, or by using the more specific codes such as 110, 120, etc.

100 Wild
110 Natural
120 Semi-natural/wild
130 Semi-natural/sown
200 Weedy
300 Traditional cultivar/landrace
400 Breeding/research material
410 Breeder's line
411 Synthetic population
412 Hybrid
413 Founder stock/base population
414 Inbred line (parent of hybrid cultivar)
415 Segregating population
416 Clonal selection
420 Genetic stock
421 Mutant (e.g. induced/insertion mutants, tilling populations)
422 Cytogenetic stocks (e.g. chromosome addition/substitution, aneuploids, amphiploids)
423 Other genetic stocks (e.g. mapping populations)
500 Advanced/improved cultivar (conventional breeding methods)
600 GMO (by genetic engineering)
999 Other (elaborate in descriptor **2.25 Remarks**)

2.16 Collecting source environment

Use descriptors **6.1** to **6.2** in section **6**.

2.17 Type of sample

Type of material collected. If different types of material have been collected from the same source, each sample (type) should be designated with a unique collecting number and a corresponding unique accession number.

1 Vegetative
2 Seed
99 Other (specify which part of the plant is used in descriptor **2.25 Remarks**)

2.18 Number of plants sampled

Appropriate number of plants collected in the field to produce this accession.

2.19 Number of seeds collected

2.20 General appearance of population

Provide a subjective assessment of the general appearance of the population:

3 Poor
5 Medium
7 Good

2.21 Population isolation [km]

Straight line distance between two adjacent collecting sites.

2.22 Ethnobotanical data

Information on traditional attributes of the sample in place for collecting runs (community): uses, methods of preparation, native names, healing properties, cultural beliefs and other characteristics.

2.22.1 Ethnic group

Name of the ethnic group of the donor of the sample or of the people living in the collecting area.

2.22.2 Local vernacular name

Name given by farmer to crop and cultivar/landrace/clone/wild form. State local language or dialect if the ethnic group is not provided.

2.22.2.1 Translation

Provide translation of the local name into English, if possible.

2.22.3 History of plant use

1 Ancestral/indigenous (always associated with the place and community)
2 Introduced (but in unknown distant past)
3 Introduced (time of introduction known)

2.22.4 Parts of the plant used

If more than one part is used, multiple values are allowed, separated by a semicolon (;).

1 Entire plant
2 Flower/inflorescence (calyx, corolla, style)
3 Root or corm
99 Other (specify in descriptor **2.25 Remarks**)

2.22.5 Plant use

1 Spices, aromatic
2 Medicinal
3 Industrial
4 Ornamental
99 Other (specify in descriptor **2.25 Remarks**)

2.22.6 Cultural characteristics

Is there any folklore associated with the collected *Crocus* species (e.g. taboos, stories and/or superstitions)? If so, describe it briefly in descriptor **2.25 Remarks**.

0 No
1 Yes

2.22.7 Prevailing stresses

Information on main associated biotic (pests and diseases) and abiotic (drought, salinity, temperature) stresses.

2.22.8 Cultural practices

2.22.8.1 **Sowing date** [YYYYMMDD]

2.22.8.2 **First harvest date** [YYYYMMDD]

2.22.8.3 **Last harvest date** [YYYYMMDD]

2.22.9 Cropping system

1 Monoculture
2 Intercropped (specify other crops in descriptor **2.25 Remarks**)

2.22.10 Mode of reproduction

1 Vegetative
2 Seed
3 Both

2.22.11 Associated flora

Other dominant crop/or wild plant species, including other *Crocus* species, found in and around the collecting site.

2.22.12 Seasonality

1 Available only in season/at particular period
2 Available throughout the year

2.23 Photograph

Was/were (a) photograph(s) taken of the sample or habitat at the time of collecting? If so, provide (an) identification number(s).

0 No
1 Yes

2.23.1 Photograph identification number

2.24 Herbarium specimen

Was a herbarium specimen collected? If so, provide an identification number and indicate in which place (herbarium) the *Crocus* specimen was deposited.

2.24.1 Specimen identification number

2.24.2 Herbarium name

2.25 Remarks

Specify here any additional information recorded by the collector or any specific information on descriptors with value "99" or "999" (=Other).

MANAGEMENT

3. Management descriptors

3.1 Accession number (Passport **1.2**)

3.2 Population identification (Passport **2.2**)
Collecting number, pedigree, cultivar name, etc., depending on the population type.

3.3 Storage address
Building, room, shelf number/location in medium-term and/or long-term storage.

3.4 Type of germplasm storage [MCPD]
If germplasm is maintained under different types of storage, multiple choices are allowed, separated by a semicolon (e.g. 20;30). [Refer to FAO Genebank Standards for Plant Genetic Resources for Food and Agriculture (2014) for details on storage type].

10 Seed collection
- 11 Short term
- 12 Medium term
- 13 Long term

20 Field collection
30 *In vitro* collection
40 Cryopreserved collection
50 DNA collection
99 Other (elaborate in **3.18 Remarks**)

3.5 Accession size
Approximate number or weight of seeds, cuttings, or plants of an accession in the genebank.

3.6 Acquisition date [YYYYMMDD] [MCPD]
Date on which the accession entered the collection where YYYY is the year, MM is the month and DD is the day. Missing data (MM or DD) should be indicated with hyphens or 00 [double zero].

3.7 Location of safety duplicates [MCPD]
FAO WIEWS code of the institute(s) where a safety duplicate of the accession is maintained. Multiple values are separated by a semicolon without space. It follows **1.1** Institute code.

3.7a Institute maintaining safety duplicates [MCPD]
Name of the institute where a safety duplicate of the accession is maintained. This descriptor should be used only if INSTCODE cannot be filled because the FAO WIEWS code for this institute is not available. Multiple values are separated by a semicolon without space.

3.8 MLS status of the accession [MCPD]
The status of an accession with regard to the Multilateral System (MLS) of the International Treaty on Plant Genetic Resources for Food and Agriculture. Leave the value empty if the status is not known.

0 No (not included)
1 Yes (included)
99 Other (elaborate in Remarks field, e.g. 'under development')

3.9 Storage date [YYYYMMDD]

3.10 Seed germination at storage [%]

3.11 Date of last seed germination test [YYYYMMDD]

3.12 Seed germination at the last test [%]

3.13 Date of last regeneration [YYYYMMDD]

3.14 Date of next seed germination test [YYYYMMDD]
(Estimate)

3.15 Date of next regeneration [YYYYMMDD]
(Estimate)

3.16 Seed moisture content at harvest [%]

3.17 Seed moisture content at storage (initial) [%]

3.18 Remarks
Any additional information may be specified here.

4. Multiplication/regeneration descriptors

4.1 Accession number (Passport **1.2**)

4.2 Population identification (Passport **2.2**)
Collecting numbers, pedigree, cultivar name, etc., depending on the population type.

4.3 Field plot number

4.4 Collaborator(s) name
Name(s) and address(es) of the person(s) in charge of the multiplication/regeneration.

4.5 Propagation
1 Seed
2 Vegetative (cuttings)
3 Vegetative (*in vitro* culture)

4.6 Substrate/medium for propagation
Indicate the substrate or *in vitro* growing medium used for propagation.

4.7 Percentage of seed germination [%]

4.8 Percentage of cuttings/explants rooting and giving plantlets [%]
For vegetatively reproduced accessions.

4.9 Number of plants used as seed/cuttings/explants source for each regeneration

4.10 Cultural practices

4.10.1 Sowing or vegetative propagation date [YYYYMMDD]

4.10.2 Transplanting date [YYYYMMDD]

4.10.3 Harvest date [YYYYMMDD]

4.10.4 Irrigation
Specify frequency.

4.10.5 Pruning date [YYYYMMDD**]**

4.10.5.1 Pruning frequency
Specify frequency.

4.10.6 Field spacing

4.10.6.1 Distance between plants in a row [cm]

4.10.6.2 Distance between rows [cm]

4.10.7 Fertilizer application [g/m^2]

Indicate the type of fertilizer used and the number of applications made.

4.11 Type of pollination

1 Artificial
2 Natural
3 Both

4.12 Pollination method

1 Self-pollinated
2 Mixed
3 Cross-pollinated

4.13 Previous multiplication and/or regeneration

4.13.1 Location

4.13.2 Transplanting/*in vitro* culture date [YYYYMMDD]

4.14 Date of last regeneration or multiplication [YYYYMMDD]

4.15 Number of times accession regenerated

Since the date of acquisition.

4.16 Remarks

Any additional information may be specified here.

ENVIRONMENT AND SITE

5. Characterization and/or evaluation site descriptors

5.1 Country of characterization and/or evaluation

(See instructions in descriptor **2.5 Country of origin**).

5.2 Site (research institute)

5.2.1 Latitude

(See format under **2.8/2.8a**).

5.2.2 Longitude

(See format under **2.9/2.9a**).

5.2.3 **Elevation** [m asl]

5.2.4 Name of farm or institute

5.2.5 Planting site in the field

Give block, strip and/or row/plot numbers as applicable, plants/plot, replication.

5.3 Evaluator's name and address

5.4 **Sowing date** [YYYYMMDD]

5.5 **Transplanting date** [YYYYMMDD]

5.6 **Harvest date** [YYYYMMDD]

5.7 Evaluation environment

Environment in which characterization/evaluation was carried out:

1 Field
2 Screenhouse
3 Greenhouse
4 Laboratory
99 Other (specify in descriptor **5.9 Remarks**)

5.8 Environmental characteristics of site

Use descriptors **6.1.1** to **6.2** in section **6**.

5.9 Remarks

Any other site-specific information.

6. Collecting and/or characterization/evaluation site environment descriptors

6.1 Site environment

6.1.1 Topography

This refers to the profile in elevation of the land surface on a broad scale. (From FAO 1990).

1	Flat	0	-	0,5%
2	Almost flat	0,6	-	2,9%
3	Gently undulating	3	-	5,9%
4	Undulating	6	-	10,9%
5	Rolling	11	-	15,9%
6	Hilly	16	-	30%
7	Steeply dissected	>30%, moderate elevation range		
8	Mountainous	>30%, great elevation range (>300m)		
99	Other (elaborate in descriptor **6.2 Remarks**)			

6.1.2 Higher level landform (general physiographic features)

The landform refers to the shape of the land surface in the area in which the site is located (adapted from FAO, 1990).

1 Plain
2 Basin
3 Valley
4 Plateau
5 Upland
6 Hill
7 Mountain

6.1.3 Land element and position

Description of the geomorphology of the immediate surroundings of the site (adapted from FAO 1990). See Fig. 1.

1	Plain level	17	Interdunal depression
2	Escarpment	18	Mangrove
3	Interfluve	19	Upper slope
4	Valley	20	Midslope
5	Valley floor	21	Lower slope
6	Channel	22	Ridge
7	Levee	23	Beach
8	Terrace	24	Beachridge
9	Floodplain	25	Rounded summit
10	Lagoon	26	Summit
11	Pan	27	Coral atoll
12	Caldera	28	Drainage line (bottom position in flat or almost-flat terrain)
13	Open depression		
14	Closed depression	29	Coral reef
15	Dune	30	Other (specify in appropriate section's Notes)
16	Longitudinal dune		

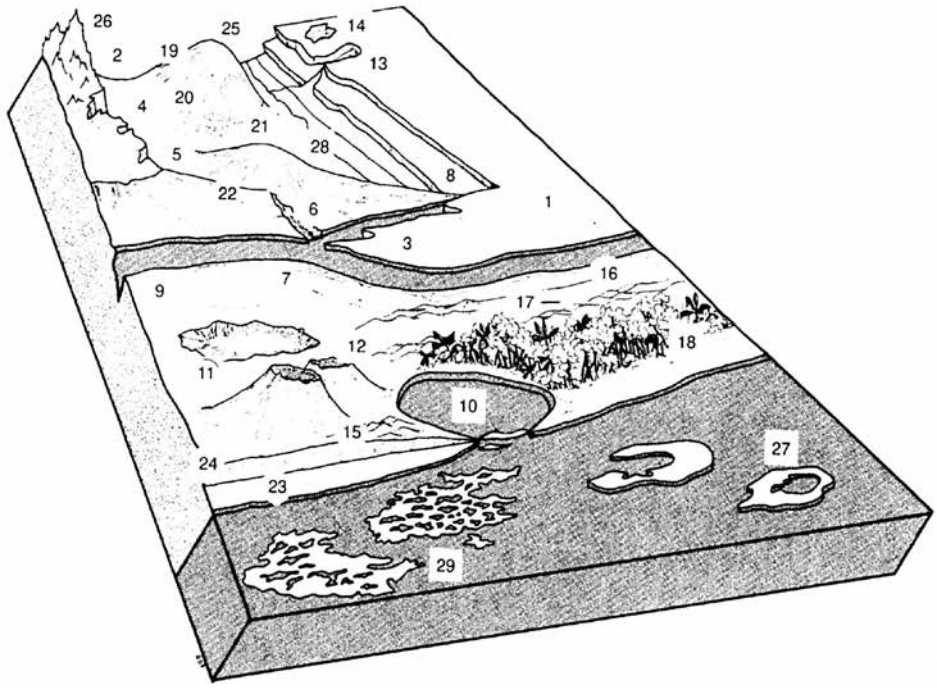


Fig. 1. Land element and position

6.1.4 Slope [°]

Estimated slope of the site.

6.1.5 Slope aspect

The direction the slope faces on which the accession was collected. Describe the direction with symbols N, S, E, W (e.g. a slope that faces a south-western direction has an aspect of SW).

6.1.6 Crop agriculture

(From FAO, 2006)

1 Annual field cropping
2 Perennial field cropping
3 Tree and shrub cropping

6.1.7 Overall vegetation surrounding and at the site

(Adapted from FAO, 2006).

10 Herbaceous
  11 Grassland
  12 Forbland
20 Closed forest (continuous tree layer, crowns overlapping, large number of tree and shrub species in distinct layers)
30 Woodland (continuous tree layer, crowns usually not touching, understory may be present)
40 Scrubland
50 Dwarf shrubs
99 Other (specify in descriptor **6.2 Remarks**)

6.1.8 Soil drainage

(Adapted from FAO, 2006).

3 Poorly drained
5 Moderately drained
7 Well drained

6.1.9 Soil matrix colour

(Adapted from FAO, 2006).

The colour of the soil matrix material in the root zone around the accession is recorded in moist condition (or both dry and moist condition, if possible) using the notation for hue, value and chroma as given in the Munsell Soil Color Charts (Munsell, 1975). If there is no dominant soil matrix colour, the horizon is described as mottled and two or more colours are given and should be registered under uniform conditions. Early morning and late evening readings are not accurate. Provide depth of measurement (cm). If colour chart is not available, the following states may be used:

1	White	7	Reddish brown	13	Greyish
2	Red	8	Yellowish brown	14	Blue
3	Reddish	9	Yellow	15	Bluish-black
4	Yellowish red	10	Reddish yellow	16	Black
5	Brown	11	Greenish, green		
6	Brownish	12	Grey		

6.1.10 Soil texture classes

(Adapted from FAO, 2006). For convenience in determining the texture classes of the following list, particle size classes are given for each of the fine earth fractions listed below. See Fig. 2.

1 Clay
2 Loam
3 Clay loam
4 Silt
5 Silt clay
6 Silt clay loam
7 Silt loam
8 Sandy clay
9 Sandy clay loam
10 Sandy loam
  10.1 Fine sandy loam
  10.2 Coarse sandy loam
11 Loamy sand
  11.1 Loamy very fine sand
  11.2 Loamy fine sand
  11.3 Loamy coarse sand
12 Sand (unspecified)
  12.1 Very fine sand
  12.2 Fine sand
  12.3 Medium sand
  12.4 Coarse sand

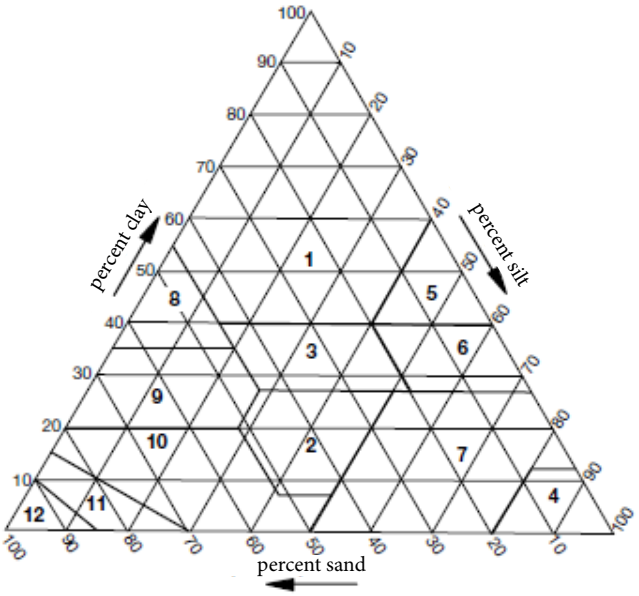


Fig. 2. Soil texture classes (adapted from FAO, 2006)

6.1.11 Soil organic matter content

1 Nil (as in arid zones)
2 Low (as in long-term cultivation in a tropical setting)
3 Medium (as in recently cultivated but not yet much depleted)
4 High (as in never cultivated, and in recently cleared forest)
5 Peaty

6.1.12 Water availability

1 Rain-fed
2 Irrigated
3 Flooded
4 River banks
5 Sea coast
99 Other (specify in appropriate descriptor **6.2 Remarks**)

6.1.13 Soil fertility

General assessment of the soil fertility based on existing vegetation.

3 Low
5 Moderate
7 High

6.1.14 Climate of the site

It should be assessed as close to the site as possible.

6.1.14.1 Temperature [°C]

Provide either the monthly or the annual mean.

6.1.14.1.1 Number of recorded years

6.1.14.2 Duration of the dry season [d]

6.1.14.3 Rainfall [mm]

Provide either the monthly or the annual mean (state number of recorded years).

6.1.14.3.1 Number of recorded years

6.2 Remarks

Provide here any additional information related to the site (i.e. if data collected refers to collecting or to characterization/evaluation sites).

CHARACTERIZATION

7. Plant descriptors

Corms of uniform size and able to flower must be used and the initial corm size (length and width) should be recorded. For all colour descriptors the use of the Royal Horticultural Society (RHS) Colour Chart codes is recommended. If these are not available, the colour codes as suggested throughout the text can be used.

List of minimum highly discriminating descriptors[1]

Number	Name
Characterization	
7.1.1	Corm tunic (coat) texture and aspect
7.2.1	Presence of leaves at flowering
7.2.6	Leaf cross-sectional shape
7.4.2	Comparison of size between the inner and outer tepals whorls
7.4.3	Tepal shape (Inner and outer tepals)
7.4.7/8	Background colour of inner/outer tepals (Inner and outer surface)
7.4.11/12	Mottled pattern in inner and outer tepals (outer surface)
7.4.13/14	Veining pattern of inner/outer tepals
7.4.15	Stripes or veins aspect of the inner and outer tepals
7.4.19/20	Presence of blotches different from the rest of flower on inner/outer tepals
7.4.21/22	Colour of the blotches of the inner/ outer tepals
7.4.24	Outer tepals length [mm]
7.4.29	Colour of the floral tube throat
7.4.36	Anther colour before dehiscence
7.4.37	Style branching
7.4.38	Style colour
7.4.40	Style dry weight [mg DW]
7.5.7	Seed shape
7.5.14	Seed surface colour
7.5.15	Development of caruncle

1 Minimum key descriptors are highlighted.

Evaluation	
8.8	Season of sprouting
8.11	Season of flowering
8.21	Number of replacement corms per mother corm
8.22	Weight of the replacement corms [g]
8.23	Number of flowering buds per corm
8.24	Number of flowers per corm
8.25.1	Colouring strength of stigmas [DW]
9.6	Reaction to soil acidity
9.7	Reaction to soil alkalinity
10.3.1	*Fusarium oxysporum* f.sp *gladioli* (Basal rot)

7.1 Corms and roots

7.1.1 Corm tunic (coat) texture and aspect

Observed after corm harvest. See Fig.3.

1 Smooth and splitting into acute teeth at base
2 Membranous or papery thin
3 Papery or tough and smooth splitting at the base and forming basal rings
4 Wholly parallel-fibrous
5 Membranous with parallel fibres those sometimes are less conspicuous towards the apex
6 Finely reticulate (like a fish net) fibres
7 Coarsely reticulate (netted) fibres
8 Interwoven fibres
9 Tunic fibrous with parallel fibres but slightly reticulated at the apex of the corm
10 Papery and splitting into longitudinally parallel strips
99 Other (specify in descriptor **7.6 Remarks**)

7.1.2 Corm tunic colour

Observed on the external coat of tunics of less than one-year-old. If possible, use the RHS Colour Chart codes. If these are not available, use the following colour codes:

1 Yellow
2 Tan
3 Brown
4 Dark brown
99 Other (specify in descriptor **7.6 Remarks**)

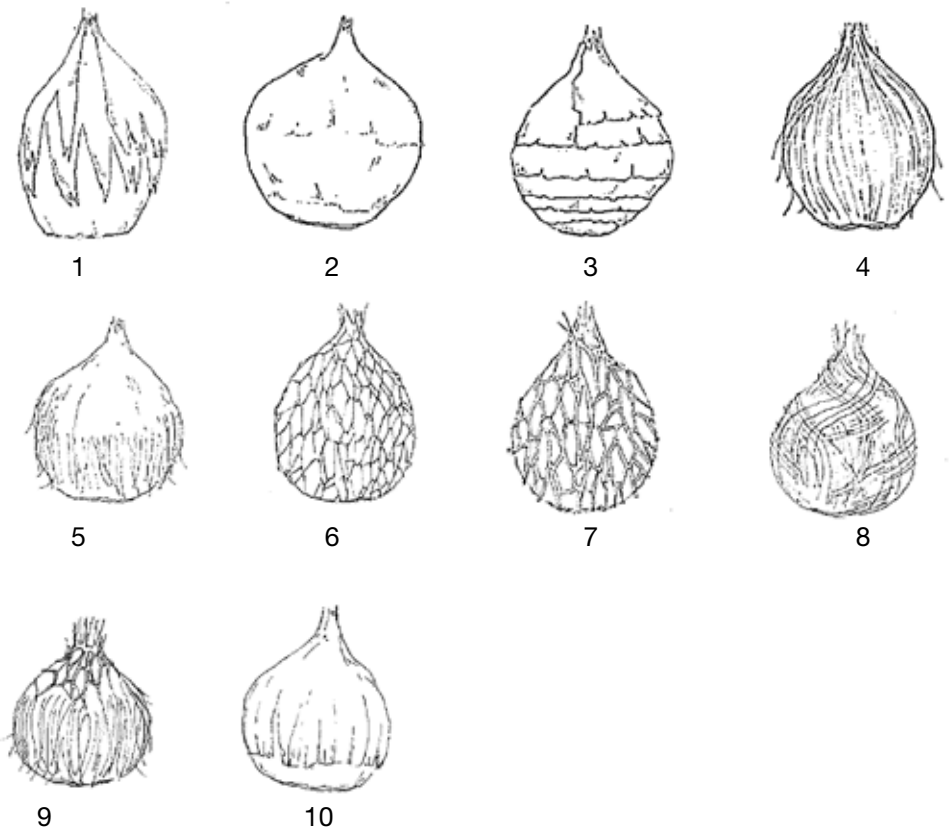


Fig. 3. Corm tunic (coat) texture and aspect

7.1.3 Corm tunic persistence

0 No [outermost tunics rapidly rot away (common in species from damp habitats)]
1 Yes [great build-up of old tunics (common in species from dry regions)]

7.1.4 Shape of naked corms

Recorded on corms able to flower, without the old corm tunics. See Fig. 4

1 Flattened
2 Subglobose
3 Ovoid
4 Flattened-globose
5 Elongated-ovoid
99 Other (specify in descriptor **7.6 Remarks**)

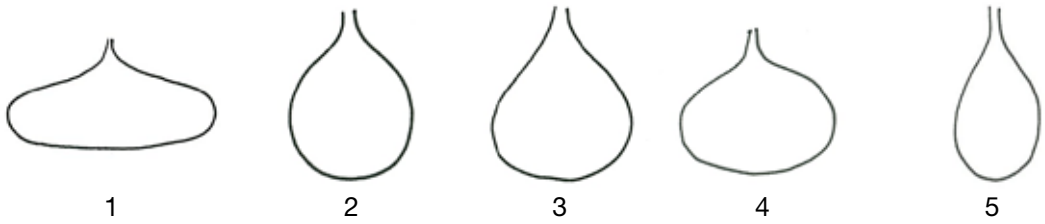


Fig. 4. Shape of naked corms

7.1.5 **Corm length** [cm]

Recorded from the corm base up to the apex.

7.1.6 **Corm width** [cm]

Recorded at the widest point.

7.1.7 **Presence of stolon forming corms**

0 Absent
1 Present

7.1.8 **Root branching**

0 Absent (unbranched)
1 Present (branched)

7.2 Leaves

7.2.1 **Presence of leaves at flowering**

0 Absent
1 Present

7.2.2 **Leaf length** [cm]

(Young and adult). Measured from the soil level up to the apex at flowering. Average of 10 longest leaves taken from different plants.

7.2.3 **Adult leaf length** [cm]

Measured from the soil level up to the apex when flowering has finished. Average of 10 longest leaves taken from different plants.

7.2.4 **Leaf lamina thickness** [mm]

Measured at the middle of the leaf. Average of 20 fully developed leaves taken from 10 different plants.

7.2.5 Foliage colour

1 Light green
2 Green
3 Dark-green
4 Grey-green
5 Bluish-green
99 Other (specify in descriptor **7.6 Remarks**)

7.2.6 Leaf cross-sectional shape

See Fig. 5.

1 T-shaped
2 Semi-cylindrical
3 Squared outline

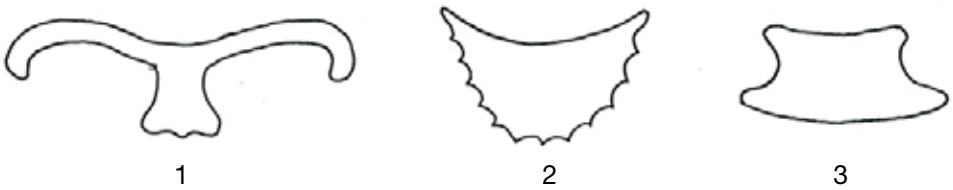
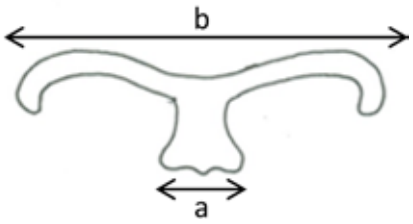


Fig. 5. Leaf cross-sectional shape

7.2.7 Ratio of leaf keel/lamina width

See Fig. 6.

1 Same size
2 Lamina wider than the leaf keel but less than twice
3 Lamina at least two times wider than leaf keel



a = Leaf keel
b = Lamina

Fig. 6. Ratio of leaf keel/lamina width

7.2.8 Number of ridges or ribs in the grooves of leaf abaxial side

See Fig. 7.

Fig. 7. Number of ridges or ribs in the grooves of leaf abaxial side

7.2.9 Location of the hairs on the leaf

0 Absent
1 Adaxial
2 Abaxial
3 Both sides

7.2.10 Presence of a white or pale stripe in the leaf centre

0 Absent
1 Present

7.2.11 Ratio of white stripe (a) to total leaf lamina width (b): a/b

7.3 Flowering sprouts

7.3.1 Number of cataphylls

(Sheathing leaves)

7.3.2 Cataphylls colour

1 White
2 Greenish
3 Brownish
99 Other (specify in descriptor **7.6 Remarks**)

7.3.3 Presence of a prophyl subtending the scape

0 No
1 Yes

7.3.4 Bract visibility

0 No (not clearly visible)
1 Yes (clearly visible above ground)

7.3.5 Bract texture

1 Tender
2 Rigid

7.3.6 Bract colour

1 White
2 Greenish
3 Brownish
99 Other (specify in descriptor **7.6 Remarks**)

7.3.7 Bracteole texture

1 Tender
2 Rigid

7.3.8 Bracteole colour

1 White
2 Greenish
3 Brownish
99 Other (specify in descriptor **7.6 Remarks**)

7.3.9 Size of the bracteole relative to the bract

1 Same size
2 Smaller

7.4 Flower

7.4.1 Perianth tube length [mm]

Measured from the base of tepals to the top of ovary.

7.4.2 Comparison of size between the inner and outer tepal whorls

1 Similar
2 Different

7.4.3 Tepal shape

Specify if inner or outer tepal shape. See Fig. 8.

1 Linear
2 Elliptic
3 Oblanceolate
4 Obovate
99 Other (specify in descriptor **7.6 Remarks**)

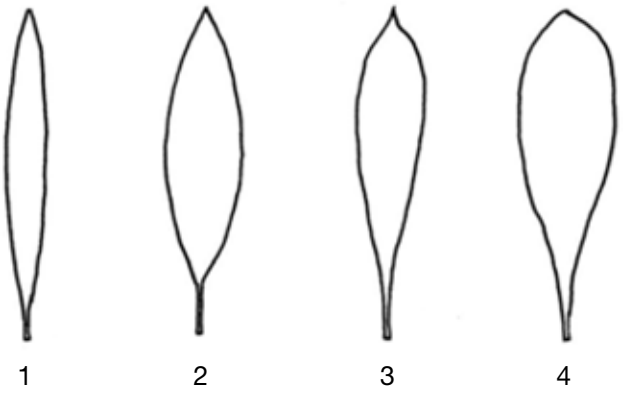


Fig. 8. Tepal shape

7.4.4 Tepal apex shape

Specify if inner or outer tepal. See Fig. 9.

1 Acute
2 Acuminate
3 Obtuse
4 Rounded
5 Mucronate
6 Emarginate
99 Other (specify in descriptor **7.6 Remarks**)

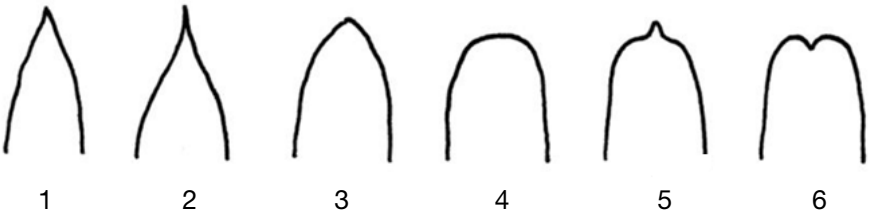


Fig. 9. Tepal apex shape

7.4.5 Uniformity of colour pattern of tepals (inner surface)

Discarding the presence of veins, tiny dots or blotches. Specify if inner or outer tepals

0 No
1 Yes

7.4.6 Uniformity of colour pattern of tepals (outer surface)

Discarding the presence of veins, tiny dots or blotches. Specify if inner or outer tepals.

0 No
1 Yes

7.4.7 Background colour of inner tepals

If coloured pattern is uniform. Specify if inner or outer surface.

1 White
2 Cream
3 Yellow
4 Light violet
5 Violet
6 Dark violet
7 Purplish
99 Other (specify in descriptor **7.6 Remarks**)

7.4.8 Background colour of outer tepals

If coloured pattern is uniform. Specify if inner or outer surface.

1 White
2 Cream
3 Yellow
4 Light violet
5 Violet
6 Dark violet
7 Purplish
99 Other (specify in descriptor **7.6 Remarks**)

7.4.9 Colour gradation of inner tepals

Observe the apical to basal part along the segment. Specify if inner or outer surface.

0 Absent
1 Violet-cream
2 Violet-white
3 Purple-violet
4 Dark purple-light purple
99 Other (e.g. 'Blackish'specify in descriptor **7.6 Remarks**)

7.4.10 Colour gradation of outer tepals

Observe the apical to basal part along the segment. Specify if inner or outer surface.

0 Absent
1 Violet-cream
2 Violet-white
3 Purple-violet
4 Dark purple-light purple
99 Other (specify in descriptor **7.6 Remarks**)

7.4.11 Mottled pattern of inner tepals (outer surface)

0 Absent
1 Uniformly mottled
2 No uniformly mottled

7.4.12 Mottled pattern of outer tepals (outer surface)

0 Absent
1 Uniformly mottled
2 No uniformly mottled

7.4.13 Veining pattern of inner tepals

Specify if inner or outer surface.

0 Absent
1 Uniformly veined
2 Only the main veins are marked
3 More marked at the base of the segments
4 Discontinuous veining
99 Other (specify in descriptor **7.6 Remarks**)

7.4.14 Veining pattern of outer tepals

Specify if inner or outer surface.

0 Absent
1 Uniformly veined
2 Only the main veins are marked
3 More marked at the base of the segments
4 Discontinuous veining
99 Other (specify in descriptor **7.6 Remarks**)

7.4.15 Stripes or veins aspect of the inner and outer tepals

Specify if inner or outer tepals.

1 Slightly defined
2 Clearly defined
3 "Feathering" (Similar to a feather aspect)
4 "Feathering" and the colour of the main veins merges to give a large blotch of different colour
99 Other (specify in descriptor **7.6 Remarks**)

7.4.16 Colour of stripes or veins of the inner tepals

Specify if inner or outer surface.

1 Violet
2 Purplish
3 Green
4 Blue
99 Other (specify in descriptor **7.6 Remarks**)

7.4.17 Colour of stripes or veins of the outer tepals

Specify if inner or outer surface.

1 Violet
2 Purplish
3 Green
4 Blue
99 Other (specify in descriptor **7.6 Remarks**)

7.4.18 Stripes of external tepals along the perianth tube

0 Absent
1 Present

7.4.19 Presence of blotches different from the rest of the flower on the inner tepals

Specify if inner or outer surface.

0 Without blotches
1 Blotches at the base of the segment
2 Blotches at the base of the segment continues down to the throat
3 Irregular pattern of blotches
99 Other (specify in descriptor **7.6 Remarks**)

7.4.20 Presence of blotches different from the rest of the flower on the outer tepals

Specify if inner or outer surface.

0 Without blotches
1 Blotches at the base of the segment
2 Blotches at the base of the segment continues down to the throat
3 Irregular pattern of blotches
99 Other (specify in descriptor **7.6 Remarks**)

7.4.21 Colour of the blotches of the inner tepals

Specify if inner or outer surface.

0 Without patches
1 White
2 Cream
3 Yellow
4 Violet
5 Dark violet
6 Purplish
7 Bronze
8 Orange
99 Other (specify in descriptor **7.6 Remarks**)

7.4.22 Colour of the blotches of the outer tepals

Specify if inner or outer surface.

0 Without patches
1 White
2 Cream
3 Yellow
4 Violet
5 Dark violet
6 Purplish
7 Bronze
8 Orange
99 Other (specify in descriptor **7.6 Remarks**)

7.4.23 Blotches of outer tepals along the perianth tube

0 Absent
1 Present

7.4.24 Outer tepals length [mm]
Average length of 10 tepals taken from 10 flowers.

7.4.25 Outer tepals width [mm]
Average width of 10 tepals taken from 10 flowers.

7.4.26 Inner tepals length [mm]
Average length of 10 tepals taken from 10 flowers.

7.4.27 Inner tepals width [mm]
Average width of 10 tepals taken from 10 flowers.

7.4.28 Colour of the floral tube apex

1 White-cream
2 Violet-purplish
3 Mottled with violet tiny dots
4 Mottled with purplish tiny dots
5 Yellow
6 Blue
99 Other (specify in descriptor **7.6 Remarks**)

7.4.29 Colour of the floral tube throat

1 White-cream
2 Yellow
3 With a ring of yellow blotches
4 With a purple ring
5 Orange
6 Violet
99 Other (specify in descriptor **7.6 Remarks**)

7.4.30 Pubescence of the floral tube throat

1 Glabrous
2 Pubescent (with a ring of hairs at about the point of attachment of the filaments)

7.4.31 Stamen filament colour

1 White
2 Light yellow
3 Orange yellow
4 Orange
5 Violet
6 Purplish
7 With black stain at the base
8 White or cream with dark tiny dots near of the anther
99 Other (specify in descriptor **7.6 Remarks**)

7.4.32 Stamen filament surface

1 Glabrous
2 Pubescent
3 Strongly pubescent
4 Papillose

7.4.33 Stamen filament length [mm]

Average length of 10 filaments from 10 flowers.

7.4.34 Anther length [mm]

Average length of 10 anthers from 10 flowers before dehiscence.

7.4.35 Form of anther tip

1 Separated
2 Continuous

7.4.36 Anther colour before dehiscence

1 Yellow
2 White
3 Blackish-maroon
99 Other (specify in descriptor **7.6 Remarks**)

7.4.37 Style branching

0 Non visible branching
1 Three-branches
2 Four branches
3 Six-branches
4 > 6 branches (multifid)
99 Other (specify in descriptor **7.6 Remarks**)

7.4.38 Style colour

1 Whitish
2 Yellow
3 Orange
4 Red
5 White with tiny purplish dots
6 Orange with darker tiny dots
7 Red with darker tiny dots
99 Other (specify in descriptor **7.6 Remarks**)

7.4.39 Style length [mm]

Average style length observed at 1 cm from the throat of 10 flowers.

7.4.40 Style dry weight [mg DW]

Average weight of styles from 10 flowers.

7.5 Capsules and seeds

7.5.1 Seed fertility

0 No
1 Yes

7.5.2 Capsules elevation above ground [cm]

After fruit development, observe 10 capsules from 10 plants.

1 At ground level
2 <2cm elevation above ground
3 >2cm elevation above ground

7.5.3 Capsule shape

See Fig. 10.

1 Oblong
2 Ellipsoid
3 Fusiform

Fig. 10. Capsule shape

7.5.4 Capsule length [mm]
Average length of 10 capsules from 10 plants.

7.5.5 Capsule width [mm]
Average width of 10 capsules from 10 plants at the widest point.

7.5.6 Capsule colour

1 Green
2 Green with purplish stripes
3 Green with greenish stripes
4 Purple with purplish stripes
99 Other (specify in descriptor **7.6 Remarks**)

7.5.7 Seed shape
See Fig. 11.

1 Globose
2 Subglobose
3 Ellipsoid
99 Other (specify in descriptor **7.6 Remarks**)

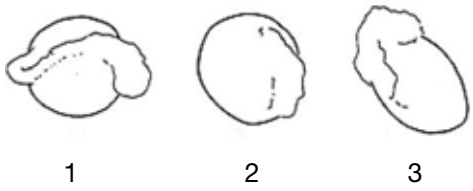


Fig. 11. Seed shape

7.5.8 Seed length [mm]
Average length of 50 seeds taken from 10 plants.

7.5.9 Seed width [mm]
Measured at the widest part. Average width of 50 seeds taken from 10 plants.

7.5.10 50-seed weight [mg]
Average seed weight taken from 10 different plants.

7.5.11 Number of seeds per fruit
Average number of 10 capsules from 10 plants.

7.5.12 Seed surface aspect

1 Glossy
2 Dull

7.5.13 Seed surface

1 Smooth
2 Slightly wrinkled
3 Wrinkled
4 Sharply wrinkled

7.5.14 Seed surface colour

1 Reddish-brown
2 Deep red-brown
3 Pale brown
4 Brown
5 Deep brown
99 Other (specify in descriptor **7.6 Remarks**)

7.5.15 Development of caruncle

1 Indistinct
2 Poorly developed
3 Prominent
4 Very prominent

7.5.16 Degree of development of raphe

1 Indistinct
2 Poorly developed
3 Prominent
4 Wing-like

7.6 Remarks

Specify here any additional information.

EVALUATION

Corms of uniform size, free from pest and diseases and planted 10-15 cm deep in the soil must be used. The initial corm size and weight has to be recorded.

For some characters, a comparison with a control cultivar or commercial variety should be done. The control genotype and test accession should be sown at the same time and if possible, should have the same corm size. For the evaluation of wild *Crocus*, autumn and spring flowering commercial varieties could be used. For the evaluation of saffron, because there are not commercial varieties, the BCU001584 accession from the CROCUSBANK collection could be used.

8. Plant descriptors

8.1 Number of days to 50% of seed germination [d]

Relative to a control genotype. This depends on temperature and light and postharvest time and conditions should be recorded during the trials. The control genotype and test accession should be sown at the same time. The commencement of germination should be recorded for the test relative to the standard. The data to be presented as (-3), i.e. three days earlier or (+2), two days later than the control.

8.2 Requirements for breaking of dormancy

0 No requirements (seeds do not require cold stratification or after-ripening treatments to germinate)
1 Seeds require a period of moist cold (cold stratification) before they germinate
2 Seeds require a period of dry storage at room temperature (after-ripening) before they germinate

8.3 Optimum temperature for seed germination

1 <10°C
2 10-15°C
3 15-20°C
4 >20°C

8.4 Requirements of light for seed germination

0 No (seeds do not require light to germinate)
1 Yes (seeds require light to germinate)

8.5 Weight of corms [g FW]

Average weight of 10 corms formed from a seedling.

8.6 Minimum weight of corms [g FW]
Minimum average weight of 10 corms able to flower.

8.7 Number of days from sprouting to leaf senescence [d]
Average number of days observed on 10 plants.

8.8 Season of sprouting
1 Spring
2 Summer
3 Autumn
4 Winter

Descriptors 8.9 and 8.10 are relative to a control cultivar. The control cultivar and test accession should be sown at the same time. The commencement of sprouting/flowering should be recorded for the test relative to the standard. The data to be presented as (-3), i.e. three days earlier or (+2), two days later than the control.

8.9 Number of days from sowing to 50% sprouting [d]

8.10 Number of days from sowing to 50% flowering [d]

8.11 Season of flowering
1 Spring
2 Summer
3 Autumn
4 Winter

8.12 Number of days from flowering until flower senescence [d]
(Only for ornamental species). Average number of days observed on 10 flowers of 10 plants.

8.13 Number of days from flowering until capsule emergence [d]
Average number of days observed on 10 flowers of 10 plants.

8.14 Number of days from capsule emergence until fruit ripening [d]
Average number of days from capsule appearance until the opening of the valves. Observed on 10 capsules of 10 plants.

Corm, flower and leaf production

Corms of uniform size, able to flower and coming from the main sprouts of corms flowered in previous year must be used. A control genotype and the test accession should be planted at the same time. All the material should be cultivated in uniform conditions the year before testing. Traits for the test and the standard should be recorded.

8.15 Number of buds per corm

Average number of 10 corms.

8.16 Number of sprouted buds per corm

Average number of 10 corms.

8.17 Number of leaves per corm

Average number of 10 corms.

8.18 Number of leaves in the main sprout

Average number of 10 corms. (If there are more than one sprout, record the one with the highest number of leaves).

8.19 Diameter of the replacement corms [mm]

Average diameter of replacement corms of 10 initial mother corms after one crop cycle.

8.20 Length of the replacement corms [mm]

Average length of replacement corms of 10 initial mother corms after one crop cycle.

8.21 Number of replacement corms per mother corm

Average number of replacement corms from 10 initial mother corms after one crop cycle.

8.22 Weight of the replacement corms [g]

Average weight of replacement corms of 10 initial mother corms after one crop cycle.

8.23 Number of flowering buds per corm

Average number of 10 corms.

8.24 Number of flowers per corm

Average number of 10 corms.

8.25 Biochemical characteristics

8.25.1 Colouring strength of stigmas [DW]

$E^{1\%}_{1cm}$ at 440 nm on dry basis, according to ISO 3632-2. Fresh stigmata should be dried at 35°C during 24h

$E^{1\%}_{1cm}$ = D x 10000 / m [100-H]

D: the absorbance value

m: the mass of the test portion [g]

H: the moisture and volatile content of the sample [% w/w]

8.25.2 Apocarotenoid analysis by HPLC-DAD

- Plant Material: Fresh stigmata dried at 35ºC for 24h
- Extraction of apocarotenoids: Methanol-water (50:50, v/v) mixture instead of water should be used as the extraction solvent prior to HPLC-DAD analysis according to Kyriakoudi *et al.* (2012)
- Chromatographic examination: Analysis of crocins, picrocrocin and safranal in the methanol-water extracts of *C. sativus* L. and other *Crocus* species should be carried out using the protocol of Tarantilis *et al.* (1995) with slight modifications: test metabolites were separated on a LiChroCART Superspher 100 RP-18 (125 x 4 mm i.d, 4 µm) end-capped column (Merck, KGaA, Darmstadt, Germany) after injection of a 20 µL aliquot and gradient elution with a mixture of water-acetic acid 1%, v/v, (A) -acetonitrile (B) (20 to 100% B in 20 min) at a flow rate of 0.5 mL/min.

8.25.2.1 Trans-4-GG-crocetin ester content [% DW]

By RP-HPLC-DAD, monitor at 440 nm (crocins). Quantification of the percentage of trans-4-GG crocetin ester content should be made using the equation described by Sanchez *et al.* (2008):

A x (E1% 440 / εt,c) x (MWi/10) where:

A: the percentage peak area of the trans-4-GG-crocetin ester at 440 nm

E 1% 440: colouring strength value

εt,c: molar coefficient absorbance value (89000 for *trans* crocins)

MW: molecular weight of the *trans*-4GG-crocetin ester (976.96 g mol-1)

8.25.2.2 Picrocrocin content [% DW]

Estimated using a five-point calibration curve of isolated picrocrocin in water at 250 nm (RP-HPLC-DAD at 250 nm). Isolation of picrocrocin can be made according to the protocol of Sanchez *et al.* (2008).

8.26 Inflorescence fragrance in the morning

0 Absent
1 Light
2 Medium
3 Strong

8.27 Inflorescence fragrance in the evening

0 Absent
1 Light
2 Medium
3 Strong

8.28 Remarks

Specify here any additional information.

9. Abiotic stress susceptibility

Scored under artificial and/or natural conditions, which should be clearly specified. These are coded on a susceptibility scale from 1 to 9, viz.:

1 Very low or no visible sign of susceptibility
3 Low
5 Intermediate
7 High
9 Very high

9.1 Reaction to low temperature

9.2 Reaction to high temperature

9.3 Reaction to drought

9.4 Reaction to high soil moisture

9.5 Reaction to soil salinity

Specify water conductivity ($dS \cdot m^{-1}$) and main salt involved (NaCl, Na_2CO_3, $CaCl_2$, etc.).

9.6 Reaction to soil acidity

Specify soil pH.

9.7 Reaction to soil alkalinity

Specify soil pH.

9.8 Remarks

Specify any additional information here.

10. Biotic stress susceptibility

In each case, it is important to state the origin of the infestation or infection, i.e. natural, field inoculation, laboratory. Record such information in descriptor **10.6 Remarks**. These are coded on a susceptibility scale from 1 to 9, viz:

1 Very low or no visible signs of susceptibility
3 Low
5 Intermediate
7 High
9 Very high

The organisms considered most important by breeders and pathologists are indicated by asterisks (*) and **boldface.**

10.1 Arthropods

	Causal Organism	Common name
10.1.1	*Rhizoglyphus robini*	Saffron bulb mite
10.1.2	*Thrips tabaci*	Corm thrips
10.1.3	*Mylabris macilenta*	Blister beetle

10.2 Nematodes

10.2.1	*Ditylenchus dipsaci*	Stem and bulb nematode

10.3 Fungi

***10.3.1**	***Fusarium oxysporum* f.sp *gladioli***	**Basal rot**
10.3.2	*Fusarium verticillioides* (=*Fusarium moniliforme*) *Fusarium solani*	Corm rot
10.3.3	*Rhizoctonia violacea*	Violet root rot
10.3.4	*Penicillium cyclopium* *Penicillium gladioli* *Penicillium hirsutum* (=*Penicilium corymbiferum*) *Penicillium crocicola*	
10.3.5	*Phoma crocophyla*	
10.3.6	*Macrophomina phaseolina*	
10.3.7	*Sclerotinia bulborum*	
10.3.8	*Pythium* sp.	

10.4 Bacteria

10.4.1 *Erwinia carotovora*

10.4.2 *Burkholderia gladioli* Soft root

10.5 Virus

10.5.1 Bean yellow mosaic virus (BYMV)
10.5.2 Narcissus mosaic virus (NMV)
10.5.3 Cucumber mosaic cucumovirus (CMV)
10.5.4 Turnip mosaic virus (TuMV)
10.5.5 Narcissus mosaic virus (NMV)
10.5.6 Iris mild mosaic virus (IMMV)
10.5.7 Iris severe mosaic virus (ISMV)
10.5.8 Tobacco necrosis virus (TNV)
10.5.9 Tobacco rattle virus (TRV)
10.5.10 Arabis mosaic virus (ArMV)

10.6 Remarks

Specify any additional information here.

11. Metabolic based markers

11.1 Anthocyanin content of perianth segments [relative %]

Content on the malonated anthocyanins. Identification of anthocyanins and data processing should be carried out according to Norbaek *et al.* (2002). The descriptor should indicate the relative percentages of each anthocyanin as +++ correspond to >55%; ++ correspond to >30%; + correspond to >10% and ± correspond to <5%.

11.1.1	**A1**	Delphinidin 3,7-*di*-*O*-β-glucoside
11.1.2	**A2**	Petunidin 3,7-*di*-*O*-β-glucoside
11.1.3	**A3**	Delphinidin 3,5-*di*-*O*-β -glucoside
11.1.4	**A4**	Petunidin 3,5-*di*-*O*- β-glucoside
11.1.5	**A5**	Delphinidin 3-*O*- β-rutinoside
11.1.6	**A6**	Petunidin 3-*O*- β -rutinoside
11.1.7	**A7**	Delphinidin 3-*O*- β -glucoside-5-*O*- β -(6-*O*- malonyl) glucoside
11.1.8	**A8**	Petunidin 3,7-*di*-*O*- β -(6-*O*-malonyl) glucoside
11.1.9	**A9**	Malvidin 3,7-*di*-*O*- β -(6-*O*-malonyl) glucoside

11.2 Flavonoid content of perianth segments [relative %]

Identification of flavonoids and data processing should be carried out according to Norbaek *et al.* (2002). The descriptor should indicate the relative percentage of each flavonoid as +++ correspond to >55%; ++ correspond to >30%; + correspond to >10% and ± correspond to <5%.

11.2.1	**F10**	Dihydrokaempferol 7-*O*-β-glucoside
11.2.2	**F11**	Myricetin 3-*O*-α-(2-*O*-β-glucosyl)- rhamnoside-7-*O*-β-glucoside
11.2.3	**F12**	Quercetin 3-*O*- α-(2-*O*-β -glucosyl)- rhamnoside-7-*O*-β-glucoside
11.2.4	**F13**	Kaempferol 3-*O*- α-(2-*O*-β-glucosyl)- rhamnoside-7-*O*-β-glucoside
11.2.5	**F14**	Quercetin 3-*O*-β-sophoroside
11.2.6	**F15**	Quercetin 3,4´-*di*-*O*-β-glucoside
11.2.7	**F16**	Kaempferol 3,4´-*di*-*O*-β-glucoside
11.2.8	**F17**	Isorhamnetin 3,4´-*di*-*O*-β-glucoside
11.2.9	**F18**	Kaempferol 3-*O*-β-sophoroside
11.2.10	**F19**	Kaempferol 3-*O*-β-(2-*O*- α-rhamnosyl)- glucoside
11.2.11	**F20**	Isorhamnetin 3-*O*-β-(2-*O*- α-rhamnosyl)- glucoside
11.2.12	**F21**	Kaempferol 3-*O*- α-(2-*O*-β-glucosyl)- rhamnoside-7-*O*-β-(6-*O*-malonyl) glucoside
11.2.13	**F22**	Kaempferol 3-*O*- α -(2,3-*di*-*O*-β -glucosyl) rhamnoside
11.2.14	**F23**	Kaempferol 3-*O*- α -(2-*O*-β -glucosyl) rhamnoside-7-*O*-β-(6-*O*-acetyl) glucoside
11.2.15	**F24**	Apigenin 7-*O*-β-glucoside
11.2.16	**F25**	Kaempferol 3-*O*- α -(2-*O*-β-glucosyl)- rhamnoside
11.2.17	**F26**	Quercetin 3-*O*-β-glucosidea
11.2.18	**F27**	Kaempferol 3-*O*-β-glucoside

11.3 Volatile compounds content of *Crocus* styles [relative%]

Isolation of volatile compounds should be carried out according to Kanakis *et al.* (2004). Volatile constituents can be tentatively identified and quantified by comparing their elution order and mass spectra with data from the NBS75K mass spectral library and published data (Zarghami and Heinz, 1971; Rödel and Petrzika, 1991; Tarantilis and Polissiou, 1997; Adams, 2001; Kanakis *et al.*, 2004). The descriptor should indicate the relative percentage of each volatile compound.

11.3.1	**V1**	Isophorone
11.3.2	**V2**	4- ketoisophorone
11.3.3	**V3**	2,2,6-trimethyl-1,4-cyclohexanedione
11.3.4	**V4**	Safranal
11.3.5	**V5**	Isomer of 4-hydroxy-3,5,5-trimethyl-2-cyclohexen-1-one
11.3.6	**V6**	4-hydroxy-2,6,6-trimethyl-3-oxocyclohexa- 1,4-diene-1-carboxaldehyde
11.3.7	**V7**	HTCC

11.4 FT-IR spectra profile of intact stigmas [cm^{-1}]

Or of an extract of pure crocins in the spectral region 2000-800. Samples preparation and measurements should be made according to Tarantilis *et al.* (1998)

0 Absence (band at 1708 cm^{-1} and band at 1233 cm^{-1})
1 Weak presence (band at 1708 cm^{-1} and band at 1233 cm^{-1})
2 Strong presence (band at 1708 cm^{-1} and band at 1233 cm^{-1})

11.5 RAMAN spectra profile of intact stigmas of *C. sativus* L. and allies

In the spectral region 1800-800 cm^{-1}. Samples preparation and measurements should be made according to Anastasaki *et al.* (2010).

0 No Raman spectrum
1 <6% crocetin esters
2 6 - 10 % crocetin esters
3 >10 % crocetin esters

12. Molecular markers

12.1 AFLP

Universal name: CsAFLP primer E-AAC/M-CTT
Canonical name: Xusca001
Marker of unknown function (X), developed by UCLM-Santaella (us), for *Crocus* (c), as AFLP marker (a).

13. Cytological markers

13.1 Chromosome number
13.2 Ploidy level
13.3 DNA content (C-value)
13.4 Meiosis chromosome associations
13.5 Number of satellite chromosomes
13.6 Number and position of 45S and 5S rDNA sites
13.7 Characterization of heterocromatin
13.8 Other cytological characters

14. Identified genes

Describe any known specific mutant present in the accession.

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Annex I. COLLECTING FORM for *Crocus* spp.

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SAMPLE IDENTIFICATION

COLLECTING INSTITUTE CODE (2.1):

COLLECTING NUMBER (2.2):

PHOTOGRAPH No. (2.23): HERBARIUM SPECIMEN (2.24):

COLLECTING DATE OF SAMPLE [YYYYMMDD] (2.3):

GENUS (1.6): SPECIES (1.7): SUBTAXON (1.8):
COMMON CROP NAME (1.10.3):

==========

COLLECTING SITE LOCATION

COUNTRY OF ORIGIN (2.5):

LOCATION (2.7): km: direction: from:

LATITUDE (2.8/a): LONGITUDE (2.9/a): ELEVATION (2.13): m asl

Additional notes:

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COLLECTING SITE ENVIRONMENT

COLLECTING/ACQUISITION SOURCE (2.14):
10. Wild habitat
20. Farm or cultivated habitat
30. Market or shop
40. Institute, Experimental station, Research Org., Genebank
50. Seed company
60. Weedy, disturbed or ruderal habitat
99. Other (specify):

HIGHER LEVEL LANDFORM (6.1.2):
1. Plain 2. Basin 3. Valley 4. Plateau
5. Upland 6. Hill 7. Mountain:

SLOPE [°] (6.1.4): SLOPE ASPECT (6.1.5): (code N,S,E,W)

SOIL TEXTURE CLASSES (6.1.16): Specify class (e.g. clay, silt, loamy sand)

OVERALL VEGETATION SURROUNDING AND AT THE SITE (6.1.7):
11.Grassland 12.Forbland 20.Closed forest 30.Woodland
40.Scrubland 50.Dwarf shrubs 99.Other (specify):

SOIL DRAINAGE (6.1.8):
3.Poorly drained 5.Moderately drained 7.Well drained

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SAMPLE

BIOLOGICAL STATUS OF ACCESSION (2.15):
100. Wild
200. Weedy
300. Traditional cultivar/landrace
400. Breeding/research material
500. Advanced/improved cultivar (conventional breeding)
600. GMO (by genetic engineering)
999. Other (specify):

TYPE OF SAMPLE (2.17):
1.Vegetative 2.Seed 99.Other (specify):

No. PLANTS SAMPLED (2.18): No. SEEDS COLLECTED (2.19):

GENERAL APPEARANCE OF POPULATION (2.20):
3.Poor 5.Medium 7.Good

POPULATION ISOLATION (2.21) [km]

PREVAILING STRESSES (2.22.7):
Information on main associated biotic (pests and diseases) and abiotic (drought, salinity, temperature) stresses

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ETHNOBOTANICAL DATA

LOCAL/VERNACULAR NAME (2.22.2):

ETHNIC GROUP (2.22.1):

HISTORY OF PLANT USE (2.22.3):
1.Ancestral/indigenous (always associated with the place and community)
2.Introduced (but in unknown distant past) 3.Introduced (time of introduction unknown)

PARTS OF THE PLANT USED (2.22.4):
1.Entire plant 3.Root or corm
2.Flower/inflorescence (calyx, corolla, style) 99.Other (specify):

PLANT USE (2.22.5):
1. Spices, aromatic 2. Medicinal 3. Industrial 4. Ornamental
99.Other (specify):

CULTURAL CHARACTERISTICS (2.22.6): Mention if there is any folklore (i.e., taboos, stories and/or superstitions)
0. No 1. Yes: specify in REMARKS (2.25)

CULTURAL PRACTICES (2.22.8):
Sowing date [YYYYMMDD] (2.22.8.1):

First harvest date [YYYYMMDD] (2.22.8.2):

Last harvest date [YYYYMMDD] (2.22.8.3):

MODE OF REPRODUCTION (2.22.10):
1.Vegetative 2.Seed 3.Both

SEASONALITY (2.22.12):
1.Available only in season/at particular period 2.Available throughout the year

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ASSOCIATED FLORA (2.22.11):
Other dominant crop/or allies species, including other *Crocus* species, found in and around the collecting site

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REMARKS (2.25):

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