

The European Cooperative Programme for Plant Genetic Resources (ECPGR) Cucurbits Working Group

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INTRODUCTION

The establishment of the Cucurbits Working Group (CWG) was approved by the Steering Committee in October 2003 (<http://www.ecpgr.cgiar.org/Workgroups/Cucurbits/Cucurbits.htm>). Currently 28 European countries belong to the WG. The general objective of the Group is the organization of the genetic resources of cucurbits in Europe. The main achievements of the Cucurbits WG has been the creation of the European Central Cucurbits Database (ECCUDB), the development of lists of minimum descriptors for primary characterization on melon, cucumber, *Cucurbita* and *Lagenaria* and watermelon, the increase of safety duplicates among European collections of cucurbits and the exploration of European institutions involved in on farm conservation activities on cucurbits. The Group concentrates at present its activity on the four network goals for ECPGR Phase VIII, among them to AEGIS: (1) Develop mechanisms for determining Most Appropriate Accessions (MAA) (2) Agreement on quality standards for maintaining MAAs (3) Adaptation of the Central Crop Database for the identification of MAAs and (4) Improvement of the level of safety-duplication. Regarding these four areas, the Group developed in its last meeting held in Tbilisi (Georgia) the criteria to be followed by the Working Group for the selection of MAAs for cucurbits, both general and additional crop specific criteria. General guidelines for regeneration, processing and storing of cucurbit species has been developed and agreed for all members of the WG. The Working Group has met six times. Detailed reports of the meetings can be found in the webpage of the WG.

THE EUROPEAN CENTRAL CUCURBITS DATABASE (ECCUDB)

The database at present includes passport data of 27.489 accessions of 21 genera and 72 species. 42% of the accessions belong to the genus *Cucumis*, followed by the genus *Cucurbita* with 30% of the accessions and the genus *Citrullus* with 25%. Characterization data of 775 accessions of *Cucumis sativus*, 107 of *Citrullus lanatus* and 53 of *Cucurbita pepo* are also available as well as 223 images of *Citrullus lanatus*, *C. sativus* and *C. pepo*. Information about a core collection of *Cucurbita pepo*, including characterization data and images, is included. The data come from 39 institutions in 23 countries. Information about taxonomy and web pages of interest related to cucurbits are included in the section 'On line taxonomy'. The database is currently searchable for passport and characterization data. Improvements of the ECCUDB are being conducted in order to facilitate the selection of the MAA.



ECPGR Cucurbits Database List of Contributors	Number of accessions				TOTAL
	<i>Citrullus</i> sp.	<i>Cucumis</i> sp.	<i>Cucurbita</i> sp.	Others	
ARM002. Armenian Agricultural Academy (Armenia).		7			7
ARM008. Research Center of Vegetables, Melons and Industry Crops (Armenia).	2	7			9
AUT025. Institute of Special Crops Agricultural Research Center (Austria).		4		1	5
AZE004. Institute of Botany, Azerbaijan Academy of Sciences (Azerbaijan).	1	1	2		4
AZE005. Vegetable Growing Research Institute. Ministry of Agriculture (Azerbaijan).	19	22	4		45
AZE014. Azerbaijan State Agricultural Academy (Azerbaijan).	3	14	3	1	21
AZE015. Azerbaijan National Academy of Sciences, Genetic Resources Institute (Azerbaijan).		43	3		46
BGR001. Institute for Plant Genetic Resources "K. Malkov" (Bulgary).	169	1308	344		1821
CHE001. Station Fédéral de Recherches en Production Végétale de Changins (Switzerland).		5	4		9
CHE063. Pro Specie Rara (Switzerland).			1		1
CZE122. Research Institute of Crop Production, Olomouc, Czech Republic (Czech Republic).	8	988	740	37	1773
DEU146. Genebank, Institute of Plant Genetics and Crop Plant Research. Gatersleben (Germany).	274	1148	1105	157	2684
ESP026. Genebank of the Polytechnical University of Valencia (Spain).	251	761	772	38	1822
ESP058. Estación Experimental "La Mayora" (Spain)		185			185
FRA011. Unité de Génétique et Amélioration des Fruits et Légumes (France)		82			82
GBR006. Horticultural Research International Genetic Resources Unit (United Kingdom).	11	13	12		36
GEO001. Scientific Research Institute of Farming (Georgia).	2	5	4		11
HUN003. Institute for Agrobotany (Hungary).	215	431	899	51	1596
ISR020. Agricultural Research Organization Volcani Center (Israel).		356			356
ITA004. Germplasm Institute, Bari (Italy).	74	158	162	29	423
LTU001. Lithuanian Institute of Agriculture (Lithuania).		8			8
LVA010. Plant Genetics Laboratory Institute of Biology (Latvia).		5			5
NLD037. Centre for Genetic Resources (The Netherlands).		934			934
POL030. Plant Genetic Resources Laboratory, Research Institute of Vegetable Crops (Poland).		537	381	4	1013
PRT001. Banco Portugues de Germoplasma Vegetal (Portugal).	32	184	305	11	532
PRT005. Banco de Germoplasma, Estacao Agronomica Nacional. Instituto Nacional de Investigacao (Portugal).	1	5	14		20
PRT025. Departamento de Genetica e Biotecnologia, Universidade Tras-os-Montes e Alto Douro (Portugal).		12	45		57
ROM007. Suceava Genebank (Romania).	4	63	227	1	295
ROM019. Research Institute for Vegetables and Flower Gardening (Romania).	16	9	11		36
ROM020. Medicinal and Aromatics Plants Research Station Fundulea (Romania).				1	1
ROM021. Central Research Station for Crops on Sandy Soils Daduleni-Dolj (Romania).	47	10			57
ROM023. University of Agricultural Sciences and Veterinary Medicine. Timisoara (Romania).		5	51		56
RUS001. N.I. Vavilov Research Institute of Plant Industry (Russian Federation).	2412	2998	5771	217	11398
SVK001. Research Institute of Plant Production. Piestany (Slovakia).	10	2	1		13
SVK013. Research and Breeding Institute of Vegetables and Special Crops (Slovakia).	4	12	7		23
SWE002. Nordik Genebank (Sweden).		72	5		77
TUR001. Aegean Agricultural Research Institute (Turkey).		638	633		1271
UKR008. Ustimivka Experimental Station of Plant Industry (Ukraina).	6	9	25		40
UKR021. Institute of Vegetable and Melon Growing (Ukraina).	92	215	31		338
UKR023. Donets'k Experimental Station (Ukraina).		1			1
UKR048. Institute of the Southern Vegetable and Melon Growing (Ukraina).	170	145	50		365
UKR093. Poltava State Regional Agricultural Experimental Station (Ukraina).		1			1
TOTAL	3914	11401	11622	548	27485



MEETINGS

The WG has meet 6 times. The reports of the meetings are available on the webpage of the Cucurbits WG:

- 1) *Ad hoc* Meeting , 19 January 2002, Adana, Turkey
- 2) *First Meeting* of the Cucurbits Working Group, 1-2 September 2005, Plovdiv, Bulgaria
- 3) *Parallel Meeting* during the Vegetables Network Second Meeting, 26-28 June 2007. Meeting Olomouc
- 4) *Ad hoc Meeting*, 23-24 October 2008, Warsaw, Poland
- 5) *Parallel Meeting* during the Vegetables Network Third Meeting, 10-12 November 2009, Catania, Italy
- 6) *Second Meeting* of the Cucurbits Working Group, 8-10 November 2010, Tbilisi, Georgia

MINIMUM DESCRIPTOR LISTS

A minimum descriptor list for melon, cucumber, watermelon and *Cucurbita* USDA/ARS/GRIN Descriptors by the WG. The descriptors from Bioversity (formerly IBPGR/IPGRI), the USDA/ARS/GRIN Descriptors for watermelon and the UPOV descriptors have been followed wherever possible for the elaboration of this descriptor list. The descriptor list for *Citrullus lanatus* is shown below as an example.

Number	Descriptor name	Descriptor state	Notes
Plant			
Observations must be made at least on 10 plants			
1	Plant growth habit	1 Bushy 2 Runner	
Leaf			
Observations must be made at least on 10 leaves			
2	Leaf blade: degree of secondary lobing	3 Weak 5 Intermediate 7 Strong	See Fig. 1. The incisions should be observed at the largest leaf between the fifteenth and twentieth node of the main stem
Flower			
Observations must be made at least on 10 flowers			
3	Hermaphroditic flowers	0 Absent 1 Present	
Fruit			
Observations must be made at least on 10 fruits			
4	Fruit weight [kg]		To be recorded at maturity stage (table use)
5	Fruit shape	1 Flattened 2 Round 3 Broad elliptical 4 Elliptical 5 Pyriform 6 Oblong	See Fig. 2
6	Predominant (or ground) fruit skin colour	1 Light green 2 Medium green 3 Dark green 4 Yellow 5 White 6 Brown 99 Other (specify in descriptor 13. Notes)	To be observed at physiological maturity
7	Secondary fruit skin colour pattern	0 No secondary fruit skin colour 1 Solid 2 Striped 3 Spotted 4 Mixed 99 Other (specify in descriptor 13. Notes)	Design produced by secondary fruit skin colour. To be observed at physiological maturity
8	Fruit skin stripe colour	1 Light green 2 Medium green 3 Dark green 4 White 5 Yellow 6 Brown 99 Other (specify in descriptor 13. Notes)	To be observed at physiological maturity
9	Flesh colour	1 Red 2 Pink 3 Canary yellow 4 Salmon yellow 5 White 6 Mixed 7 Orange 8 Green 99 Other (specify in descriptor 13. Notes)	Colour of ripe fruit flesh
10	Thickness of pericarp [mm]		See Fig. 3. Measured at maturity stage
11	Distribution of grooves	0 Absent 1 At basal half 2 At apical half 3 On whole fruit	
12	Fruit bitterness	0 Absent 1 Slightly bitter 2 Bitter	
Additional information			
13	Notes		Any additional information, especially in the category of "Other" under various descriptors above may be specified here
14	Photograph		It is recommended to take a photograph of one or some fruits

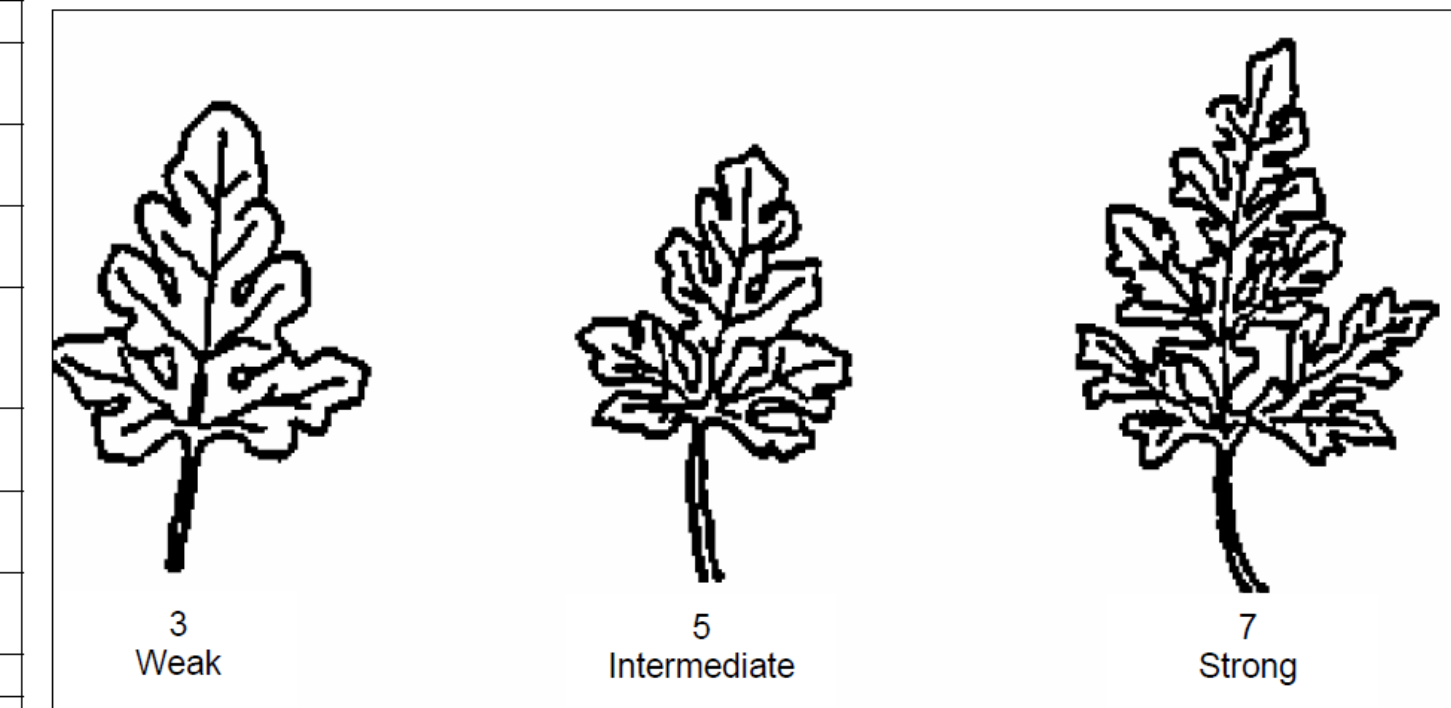


Fig. 1. *Citrullus lanatus*: Leaf blade: degree of secondary lobing (descriptor 2). (Adapted from: UPOV 2004).

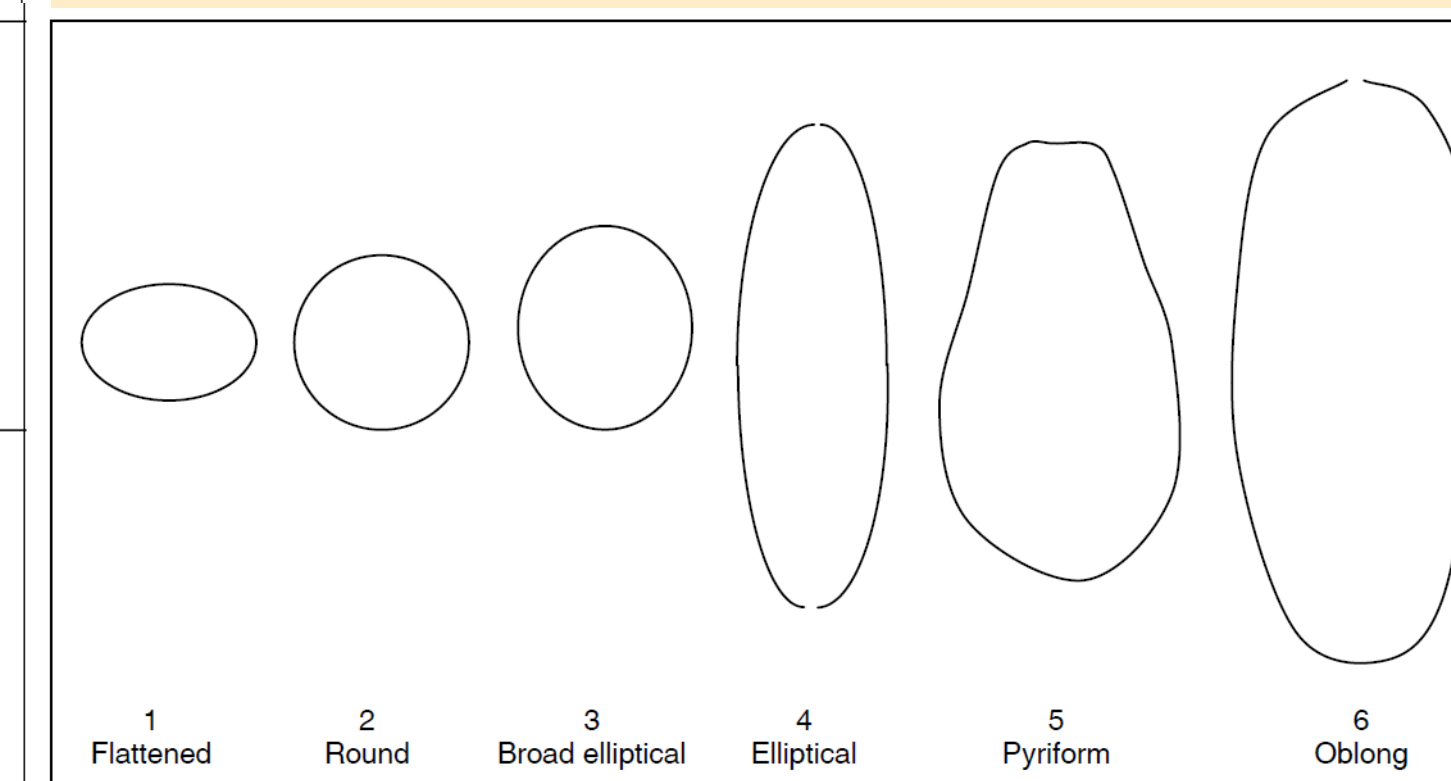


Fig. 2. *Citrullus lanatus*: Fruit shape (descriptor 5). (Adapted from: UPOV 2004).

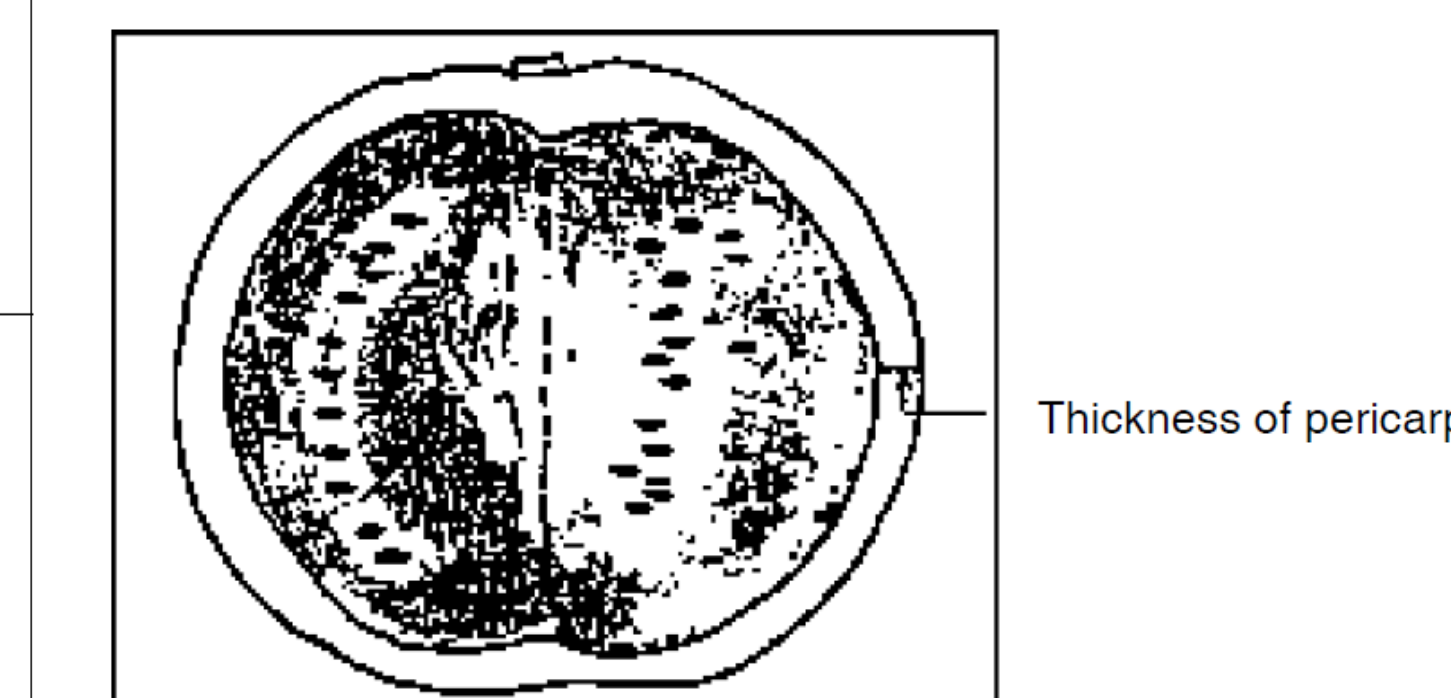


Fig. 3. *Citrullus lanatus*: Thickness of pericarp (descriptor 10). (Adapted from: UPOV 2004).

- Esquinas-Alcazar, J.T. and P.J. Gulick. 1983. Genetic resources of Cucurbitaceae; a global. 1983. IBPGR Secretariat, Rome, Italy.

- UPOV. 2004. Watermelon (*Citrullus lanatus* (Thunb.) Matsum. et Nakai). Guidelines for the conduct of tests for distinctness, homogeneity and stability. TG/142/4. (http://www.upov.int/en/publications/tg-rom/tg142/tg_142_4.pdf).

- USDA/ARS/GRIN. 2006. [NPGS descriptors. Watermelon]. Germplasm Resources Information Network (GRIN)/National Plant Germplasm System (NPGS). (<http://www.ars-grin.gov/npgs/descriptors/watermelon>).



Number of minimum descriptor list per crop and different part of the plant

Crop or Species	Plant	Leaf	Fruit	Inflorescence or Flower	Additional information
<i>Citrullus lanatus</i>	1	1	9	1	2
<i>Cucumis melo</i>	-	-	11	1	2
<i>C. sativus</i>	1	2	7	1	1
<i>Cucurbita</i> and <i>Lagenaria</i>	2	-	12	-	2

ARRANGEMENT OF SAFETY DUPLICATES

Advances in the level of safety duplicates have been achieved arranging the implementation of a black box containing 1064 accessions of cucurbits from Bulgaria at CGN, The Netherlands. First arrangements for safety duplicating of Georgian cucurbits at CGN are in progress.