

Draft Descriptor List *Thymus vulgaris* L.

Highly discriminating descriptors in this descriptor list are marked with an asterisk [★].

Characterization should preferably be done during the second year after establishment to allow plants to fully express their characteristics. Characters should be recorded on an average of minimum 10 plants per accession.

Locality: Country, GPS

Date [YYYYMMDD]:

Specimen No. (In case of *in situ* characterization):

Accession No. (In case of *ex situ* characterization/evaluation):

In situ *Ex situ*

CHARACTERIZATION

7. Plant descriptors

7.1 Vegetative

Observations should be made on 10 randomly chosen, fully developed plants at inflorescence emergence.

★	7.1.1	Plant habit 1 Erect 2 Sub-erect 3 Prostrate 4 Caespitose 5 Decumbent 6 Radicant 7 Sub-tended 99 Other (remarks)	√	√
★	7.1.2	Plant height [mm] Measured from ground level to the top of the plant.	√	√
★	7.1.3	Plant diameter [mm] Average of two measurements per plant taken at the widest point situated at ground level.	√	√
★	7.1.4	Foliage density 1 Very sparse 3 Sparse 5 Medium 7 Dense 9 Very dense	√	√
★	7.1.5	Stem length [cm] Average of measurements on 3 stems per plant.	√	√

Draft Descriptor List *Thymus vulgaris* L.

		<i>In situ</i>	<i>Ex situ</i>
*	7.1.6 Distribution of leaves on stem	√	√
	1 Only at the base		
	2 Only in the middle		
	3 Mostly in the upper part		
	4 Along the whole stem		
	99 Other (remarks)		
	7.1.7 Position of flowering part	√	√
	1 Only at the tip of the stem		
	2 Along the upper quarter of the stem		
	3 Along the upper half of the stem		
	4 Along the upper two thirds of the stem		
	5 Along the whole stem	√	√
	99 Other (remarks)		
	7.1.8 Leaf		
	Observations on plants and average of measurements on 3 leaves per plant.		
	7.1.8.1 Leaf shape	√	√
	1 Acicular		
	2 Linear		
	3 Lanceolate		
	4 Oblanceolate		
	5 Oblong		
	6 Spathulate		
	7 Elliptic		
	8 Orbicular		
	9 Obovate		
	10 Ovate		
	11 Rhomboid		
	12 Spathulate		
	13 Oblong-obovate		
	14 Triangular-ovate		
	15 Lanceolate-ovate		
	99 Other (remarks)		
*	7.1.8.2 Leaf surface	√	√
	1 Glabrous		
	2 Sub-glabrous		
	3 Tomentose		
	4 Velutinous		
	5 Puberulent		
	6 Scabrous		
	7 Sparsely hirsute		
	99 Other (remarks)		
*	7.1.8.3 Leaf ciliation	√	√
	1 Sparsely ciliate		
	2 Ciliate at the base		
	3 Not ciliate at the base		
	99 Other (remarks)		

		<i>In situ</i>	<i>Ex situ</i>
	7.1.8.4 Cross-section of leaf		√
	1 Flat		
	2 Revolute		
	3 Sub-revolute		
	4 Convolute		
	99 Other (remarks)		
*	7.1.8.5 Marginal veins of leaf	√	√
	Observed on the lower side of the leaf.		
	0 Absent		
	1 Indistinct		
	2 Distinct		
	99 Other (remarks)		
*	7.1.8.6 Leaf length (blade + petiole) [mm]	√	√
	Average of 3 to 5 leaves per plant.		
*	7.1.8.7 Length of leaf blade [mm]	√	√
	Average of 3 to 5 leaves measured at their longest point per plant.		
*	7.1.8.8 Width of leaf blade [mm]	√	√
	Average of 3 to 5 leaves measured at their widest point per plant.		
	7.1.8.9 Leaf colour		√
	(as below or using RHS Colour Chart)		
	1 Green		
	2 Pale green		
	3 Light greyish-green		
	99 Other (remarks)		
	7.1.9 Glands		
	7.1.9.1 Glands type		√
	1 Trichome, peltate		
	2 Trichome, capitate		
	99 Other (remarks)		
*	7.1.9.2 Trichomes appearance	√	√
	1 Glabrous, glabrate (lacking hairs or trichomes; surface smooth)		
	2 Hirsute (coarsely hairy)		
	3 Hispid (having bristly hairs)		
	4 Downy (having an almost wool-like covering of long hairs)		
	5 Pilose (pubescent with long, straight, soft, spreading or erect hairs)		
	6 Puberulent (minutely pubescent; having fine, short, usually curly, hairs)		
	7 Pubescent (bearing hairs or trichomes of any type)		
	8 Strigillose (minutely strigose)		
	9 Strigose (having straight hairs all pointing in more or less the same direction as along a margin or midrib)		
	10 Villosulous (minutely villous)		
	11 Villous (having long, soft hairs, often curved, but not matted)		
	99 Other (remarks)		

			<i>In situ</i>	<i>Ex situ</i>
*	7.1.9.3	Trichomes density 1 Very sparse 3 Sparse 5 Medium 7 Dense 9 Very dense	√	√
*	7.1.9.4	Predominating gland distribution 1 Leaves 2 Stems 3 Corolla 4 Petiole 5 Calyx 6 Pedicel 7 Bract 99 Other (remarks)	√	√
7.2 Inflorescence and fruit				
7.2.1 Inflorescence				
*	7.2.1.1	Density of flowers 1 Very sparse 3 Sparse 5 Medium 7 Dense 9 Very dense	√	√
*	7.2.1.2	Length of the flowering part [mm] Average of 3 flowering stems per plant measured from the insertion point of the first flower to the last.	√	√
*	7.2.1.3	Inflorescence shape 1 Oblong 2 Oblong-conical 3 Globose 4 Subglobose 5 Capituliform 6 Elongate 7 Capitata 8 Sub-capitata 9 Ovoid 10 Cylindrical 11 Spiciform 99 Other (remarks)	√	√
7.2.2 Bracts				
	7.2.2.1	Bracts 1 Not similar to the leaves of stems 2 More or less similar to the leaves of stems 3 Similar to the leaves of stems 99 Other (remarks)	√	√
*	7.2.2.2	Bracts broader than the leaves 0 Absent 1 Present	√	√

Draft Descriptor List *Thymus vulgaris* L.

			<i>In situ</i>	<i>Ex situ</i>
*	7.2.2.3 Bracts length		√	√
	1	Not exceeding the verticillasters		
	2	Mostly exceeding the verticillasters		
*	7.2.2.4 Bracts shape			√
	1	Ovate-lanceolate		
	2	Ovate		
	3	Ovate-elliptic		
	4	Oblong-ovate		
*	5	Elliptic		
	99	Other (remarks)	√	√
	7.2.3 Flower			
*	7.2.3.1 Flower length [mm]		√	√
	Measured from the calyx to the corolla, on an average of 3 flowers per plant.			
	7.2.3.2 Pedicel presence		√	√
	0	Absent		
	1	Present		
*	7.2.3.3 Pedicel length [mm]		√	√
	Average of 3 flowers per plant.			
*	7.2.3.4 Length of style [mm]		√	√
	Average of 3 per plant.			
*	7.2.3.5 Calyx pubescence		√	√
	1	Glabrous		
	2	Sub-glabrous		
	3	Pubescent		
	4	Puberulent		
	5	Shortly tomentose		
	6	Villous		
	7	Velutinous		
	8	Long patent hairs		
	9	Hirsute		
	10	Scabrous		
	99	Other (remarks)		
*	7.2.3.6 Calyx tube shape		√	√
	1	Dorsally flattened		
	2	Dorsally convex		
	3	Cylindrical		
	4	Sub-cylindrical		
	5	Campanulate		
	6	Tubular-campanulate		
	7	Almost actinomorphic		
	99	Other (remarks)		
*	7.2.3.7 Calyx tube length		√	√
	1	Distinctly shorter than lips		
	2	Shorter than lips		
	3	About as long as lips		
	4	As long as or slightly longer than lips		
	5	Longer than lips		

Draft Descriptor List *Thymus vulgaris* L.

			<i>In situ</i>	<i>Ex situ</i>
*	7.2.3.8	Calyx teeth appearance 1 Obsolete 2 Distinct 99 Other (remarks)	√	√
*	7.2.3.9	Lower calyx teeth shape 1 Almost leaf-like 2 As long as wide 3 Subulate 99 Other (remarks)	√	√
*	7.2.3.10	Calyx teeth margins 1 Not ciliate 2 Sparsely ciliate 3 Ciliate 4 Long ciliate 99 Other (remarks)	√	√
*	7.2.3.11	Upper calyx teeth margins 1 Not ciliate 2 Sparsely ciliate 3 Ciliate 4 Long ciliate 99 Other (remarks)	√	√
	7.2.3.12	Calyx lips length 1 Upper lip shorter than the lower 2 Upper lip longer than the lower 3 Upper lip equally or slightly longer than tube 4 About as long as tube 5 As long as tube 6 Longer than tube 7 Lips of equal length 99 Other (remarks)	√	√
	7.2.3.13	Calyx glands punctuation 3 Sparse 7 Dense	√	√
	7.2.3.14	Calyx glands colour (as below or using RHS Colour Chart) 1 Reddish 2 Yellowish 3 Brown 4 Amber 99 Other (remarks)		√

Draft Descriptor List *Thymus vulgaris* L.

		<i>In situ</i>	<i>Ex situ</i>
	7.2.3.15 Corolla colour (as below or using RHS Colour Chart)	√	√
	1 Whitish		
	2 Pink		
	3 Pale pink		
	4 Red		
	5 Purple		
	6 Pale purple		
	7 Pale lilac		
	8 Purplish-violet		
	9 Pinkish-purple		
	10 Creamy		
	11 Creamy-white		
	12 Yellow		
	99 Other (remarks)		
*	7.2.3.16 Corolla length [mm] Average of 3 per plant.	√	√
	7.2.3.17 Corolla tube length	√	√
	1 Scarcely longer than calyx		
	2 Distinctly longer than calyx		
	99 Other (remarks)		
	7.2.3.18 Main colour of style (as below or using RHS Colour Chart)		√
	1 White		
	2 Pink		
	3 Light violet		
	4 Dark violet		
	99 Other (remarks)		
	7.2.3.19 Presence of a more intensely coloured zone on the style		√
	0 Absent		
	1 Present		
*	7.2.4 Date of appearance of inflorescence [YYYYMMDD] Recorded when 50% of plants have inflorescence, per accession.		√
*	7.2.5 Date of beginning of flowering [YYYYMMDD] Recorded when 50% of inflorescences have flower buds, per accession.		√
*	7.2.6 Date of full flowering [YYYYMMDD] Recorded when 50% of flowers are completely open, per accession.	√	√
*	7.2.7 Date of the end of flowering [YYYYMMDD] Recorded when 50% of plants are beginning the fruit maturation, per accession.		√
*	7.2.8 Male sterility	√	√
	0 Absent		
	1 Present		

		<i>In situ</i>	<i>Ex situ</i>
	7.2.9 Fruit		
*	7.2.9.1 100-fruit weight [g] Harvested from each plant or per population.	√	√
*	7.2.9.2 1000-seed weight [g] Harvested from each plant or per population		√
	7.3 Remarks Any additional information, especially in the category “99 = Other” under various descriptors above, may be specified here.		√

EVALUATION

8. Plant descriptors

	8.1 Fresh biomass per plant [FWg]	√	√
	8.2 Dry matter of flowered aerial parts Artificial drying at 30-35°C ± 48 h until material breakable.	√	√
	8.3 Dry biomass per plant [DWg]	√	√
	8.4 Chemical composition	√	√
*	8.4.1 Essential oil content in dry flowering aerial parts [% DW] [v/w]		
*	8.4.2 Relative amount of main oil components [% DW] [v/w]		
	8.4.2.1 Thymol content [%]		
	8.4.2.2 Carvacrol content [%]		
	8.4.2.3 Linalool content [%]		
	8.4.2.4 Geraniol content [%]		
	8.4.2.5 Sabinene hydrate (= Thujanol-4) [%]		
	8.4.2.6 α-Terpineol content [%]		
	8.4.2.7 1,8-Cineol content [%]		
*	8.4.3 Polyphenol content in dry flowering aerials parts [% DW] [v/w]		
	8.4.3.1 Apigenin content [%]		
	8.4.3.2 Luteolin content [%]		
	8.4.3.3 Caffeic acid content [%]		
	8.4.3.4 Rosmarinic acid content [%]		

	<i>In situ</i>	<i>Ex situ</i>
8.5 Cytological characters		√
* 8.5.1 Chromosome number		
* 8.5.2 Ploidy level		

BIBLIOGRAPHY

- Adzet T, Granger R, Passet J, San Martin R. 1977. Le polymorphisme chimique dans le genre *Thymus*: sa signification taxonomique. *Biochemical Systematics and Ecology* 5:269-272.
- Bioversity International. 2007. Guidelines for the development of crop descriptor lists. Bioversity Technical Bulletin Series no.13. Bioversity International, Rome, Italy.
- Coutinho AXP. 1939. Flora de Portugal (Plantas Vasculares). Disposta em Chaves Dicotómicas. 2nd edition. Bertrand Ltd., Lisboa.
- Cunha AP, Silva AP, Roque OR. 2003. Plantas e produtos vegetais em fitoterapia. Serviço de Educação e Bolsas. Fundação Calouste Gulbenkian, Lisboa.
- EDQM. 2007. European Pharmacopoeia. 6th edition. European Directorate for the Quality of Medicines and Health Care (EDQM), Council of Europe, Strasbourg.
- Franco JA. 1984. Nova Flora de Portugal (Continente e Açores). Vol. II. Clethraceae – Compositae. Escolar Editora, Lisboa.
- Infarmed. 2002. Farmacopeia Portuguesa Vol. VII. Edição oficial. Lisboa.
- Morales Valverde R. 1986. Taxonomía de los géneros *Thymus* (excluida la sección *Serpyllum*) y *Timbra* en la Península Ibérica. *Ruizia* 3:3-324.
- Morales R, Quintanar A, Cabezas F, Pujadas AJ, Cirujano S. 2010. Flora Ibérica. Plantas Vasculares de la Península Ibérica e Islas Baleares. Vol. XII. Verbenaceae - Labiatae – Callitrichaceae. Real Jardín Botánico, C.S.I.C. Madrid. (http://www.floraiberica.es/miscelania/noticias/Volumen_XII.php).
- Radford AE, Dickison WC, Massey JR, Bell CR. 1974. Vascular Plant Systematics. Harper & Row, Publishers, New York.
- RHS [The Royal Horticultural Society]. 2001. RHS Colour Chart. The Royal Horticultural Society, London.
- Stahl-Biskup E. 2002. Essential oil chemistry of the genus *Thymus* – a global view. In: Stahl-Biskup E, Sáez F, editors. Medicinal and Aromatic Plants – industrial profiles. Vol. 17. Taylor & Francis, London.
- Torrás J, Dolores grau M, López JF, de Las Heras FX. 2007. Analysis of essential oils from chemotypes of *Thymus vulgaris* in Catalonia. *Journal of the Science of Food and Agriculture* 87:2327-2333.
- Tutin TG, Heywood VH, Burges NA, Moore DM, Valentine DH, Walters SM, Webb DA. 1972. Flora Europaea. "Diapensiaceae to Myoporaceae". Vol. 3. Cambridge University Press.

CONTRIBUTORS

INRB/Unidade de Recursos Genéticos, Ecofisiologia e Melhoramento de Plantas

Ana Maria Barata
 Instituto Nacional de Recursos Biológicos, Banco Português de Germoplasma Vegetal
 Quinta de S. José, S. Pedro de Merelim
 4700-859 Braga
 Email: ana.barata@inrb.pt

Eliseu Bettencourt (*currently on leave of absence*)
 INRB/Unidade de Recursos Genéticos, Ecofisiologia e Melhoramento de Plantas
 L-INIA, Quinta do Marquês, Av. da República, 2784-505 Oeiras
 Email: eliseu.bettencourt@gmail.com

Violeta Lopes
 Instituto Nacional de Recursos Biológicos, Banco Português de Germoplasma Vegetal
 Quinta de S. José, S. Pedro de Merelim
 4700-859 Braga
 Email: violeta.lopes@inrb.pt

Filomena Rocha
Instituto Nacional de Recursos Biológicos, Banco Português de Germoplasma Vegetal
Quinta de S. José, S. Pedro de Merelim
4700-859 Braga
Email: filomena.rocha@inrb.pt

Bioversity International

Alercia Adriana and Aixa del Greco¹
Bioversity International
Via dei Tre Denari, 472/a
00057 Maccarese
Rome, Italy
Email: a.alercia@cgiar.org

REVIEWER

Ana Cristina Figueiredo
Instituto de Biotecnologia e Bioengenharia, Centro de Biotecnologia Vegetal C2,
Departamento de Biologia Vegetal, Universidade de Lisboa
Campo Grande
1749-016 Lisboa
Email: acsf@fc.ul.pt

¹ has now left the Institute