

HEMP (*Cannabis sativa* L.) DESCRIPTORS

I PASSPORT DESCRIPTORS

Additionally for hemp, the following passport descriptors are used:

Descriptor code	Number of trait in other descriptors	Descriptor Scale (score)	Reference values	Remarks
I/36		Type of use 1 Bast fibre and woody core 2 Oil seed 3 Pharmaceuticals 4 Other (please provide details)		

III CHARACTERIZATION AND EVALUATION DESCRIPTORS

Hemp genetic resources evaluation methodology:

Plot size: minimum 10 m², at least 3 replications, random plot layout. Seed rate: bast fibre accessions – 300 and oil seed accessions – 150 seeds able to germinate per m². Non-treated seed will be used. 2 year average data will be used for final evaluation.

Characterization of testing location:

- a. Country of characterization
- b. Institute name and address
- c. Institute site (latitude, longitude, elevation)
- d. Sowing date
- e. Harvest date
- f. Percentage seed germination
- g. Percentage field establishment
- h. Plot size
- i. Number of replications
- j. Fertilizer (types, doses)
- k. Plant protection

ENVIRONMENT CHARACTERISTIC

- l. Soil type
- m. Relief
- n. Soil pH
- o. Soil organic matter content
- p. Soil texture
- q. Temperature range (year and/or the seasonal mean, maximum, minimum)
- r. Precipitation (sum of year or season)
- s. Frost (date and lowest temperature of most recent frost)

Descriptor code	Number of trait in other descriptors	Descriptor Scale (score)	Reference values	Remarks
III/1		Plant: anthocyanin coloration of petiole		
	¹ CPVO 4 ² UPOV 7	1 absent or very weak 3 weak 5 medium 7 strong 9 very strong		³ 1006 (Stage of development) Visual assessment (VG) of trait
III/2		Leaf: number of leaflets		
	CPVO 5 UPOV 8	1 few 2 medium 3 many	≤ 5 6-8 ≥ 9	Accounting number of leaflets for 1 leaf for 100 randomised plants, determine the dominant (> 70%) plant leaf lets number
III/3		Time of male flowering		
	CPVO 8 UPOV 11	1 very early 3 early 5 medium 7 late 9 very late	35-39 40-44 45-49 50-55 >56	*Number of days from sowing to day when 50 % of male plants first male flower open
III/4		Inflorescence: THC content		
	CPVO 10 UPOV 13	1 absent or very low 3 medium 5 very high	< 0.2 0.2-1 >1	The sample (mixture of 20 plants) should be taken from the upper 30 cm of the main stem, containing the female inflorescence. Sampling should be carried out in the period from 20 days after the beginning of female flowering up to end of flowering. The sample should be dried as soon as possible (within 48 hours) at a temperature below 70°C. The method to determine the THC content is based on a quantitative

				determination Δ^9 -tetrahydrocannabinol by gas chromatography
III/5		Plant: proportion of hermaphrodite plants		
	CPVO 11 UPOV 14	1 low 3 medium 5 high	$\leq 5\%$ 36-65% $\geq 96\%$	2102-2304 GE Proportion should be based on at least 200 plants
III/6		Plant: proportion of female plants		
	CPVO 12 UPOV 15	1 low 3 medium 5 high	$\leq 5\%$ 36-65% $\geq 96\%$	2102-2304 GE Proportion should be based on at least 200 plants
III/7		Plant: proportion of male plants		
	CPVO 13 UPOV 16	1 low 3 medium 5 high	$\leq 5\%$ 36-65% $\geq 96\%$	2102-2304 GE Proportion should be based on at least 200 plants
III/8		Plant : natural height		
	CPVO 14 UPOV 17	3 short 5 medium 7 long	<150 cm 200-250 >300	2202-2302 GE Mean should be calculated based on at least 100 plants
III/9		Main stem: color		
	CPVO 15 UPOV 18	1 yellow 2 medium green 3 dark green 4 purple		2202-2302 GE Visual assessment (VG) of trait
III/10		Seed: 1000 seed weight		
	CPVO 20 UPOV 23	1 very low 2 low 3 medium 4 high 5 very high	< 9 g 9.1-11.0 11.1-13.0 13.1-15.0 >15.1	2205-2307 GE Representative sample from all replications. 2 x 500 seeds kernels are counted.
III/11		Seed: color of testa		
	CPVO 21 UPOV 24	1 light grey 2 medium grey 3 grey brown 4 yellowish brown		2205-2307 GE Visual assessment (VG) of trait

		5 brown		
III/12		Seed: marbling		
	CPVO 22 UPOV 25	1 weak 2 medium 3 strong	Figure 1, Appendix.	2205-2307 GE Visual assessment (VG) of trait
III/13		Seeds yield (for oil seed genotypes only)		
		1 low 3 medium 5 high	< 0.5 t ha ⁻¹ 0.6 -1.4 t ha ⁻¹ > 1.4 t ha ⁻¹	Recalculated to 8 % moisture
III/14		Seeds: oil content		
		1 very low 3 low 5 intermediate 7 high 9 very high	<23 % 24-29 % 30-34 % 35-39 % >40 %	Recalculated to 8 % moisture. Method should be specified
III/15		Seeds: linolenic acid content		
			Obtained value	Method should be specified
III/16		Straw yield (for fibre genotypes only)		
		1 low 3 medium 5 high	< 10 t ha ⁻¹ 10-15 t ha ⁻¹ > 15 t ha ⁻¹	
III/17		Fibre content in straw (for fibre genotypes only)		
		1 Very low 3 Low 5 Medium 7 High 9 Very high	<25 % 26-30 % 31-35 % 36-39 % >40 %	
III/18		Susceptibility to diseases (identify any)		
		1 Very low 3 Low 5 Medium 7 High 9 Very high		Identify methodology of evaluation
III/19		Inflorescence: anthocyanin coloration of male flower		

		1 absent or very weak 3 weak 5 medium 7 strong 9 very strong		2102-2304 GE. Visual assessment (VG) of trait
III/20		Notes		Any other additional information
III/21		Cytological characteristics and identified genes		
III/22		Molecular markers		
III/23		Pictures		

EXPLANATIONS AND REFERENCES

¹ Protocol For Distinctness, Uniformity and Stability Tests Cannabis sativa L., CPVO-TP/276/1, 28.11.2012.

² Guideliness for the conduct of tests for distinctness, uniformity and stability, Cannabis sativa L., TG/276/1, 28.03.2012.

³Vito Mediavilla, Manuel Jonquera, Ingrid Schmid-Slembrouck and Alberto Soldati. (1998) Decimal code for growth stages of hemp (Cannabis sativa L.,). Journal of the International Hemp Association 5(2): 65, 68-74.

APPENDIX

Marbling of testa: black mosaic patterns



1
weak



2
medium



3
strong

Graph 1. Hemp seeds: marbling of testa