

PEAR (*Pyrus* spp.) DESCRIPTORS

II ACCESSION MANAGEMENT, MULTIPLICATION/REGENERATION DESCRIPTORS

Descriptor code	Descriptor scale (score)	Reference values	Reference varieties	Remarks
II/1	Number of times accession regenerated			

II/2	Patent status			
	0	Non-patented cultivar		
	1	Patented cultivar		

II/3	Number of plants sampled			
				Approximate number of plants collected (sampled) in the field to produce this accession.

II/4	Nature of vegetative sample			
	0	Not vegetative (seed)		
	1	Cuttings - for grafting		
	2	Cuttings - for rooting		
	3	Rooted plants		
	4	Tissue culture		
	5	Other (specify in NOTES descriptor, II/11)		

II/5	Virus disease status (including mycoplasma)			
	1	Virus disease free**		** Record results of virus tests in the NOTES descriptor, II/11 (positive or negative)
	2	Virus disease tested (infected)**		
	3	Not tested		

II/6	End use			
	1	Scion cultivar – dessert		
	2	Scion cultivar – processing		

	3	Dual or multipurpose consumption			
	4	Clonal rootstock			
	5	Clonal interstock			
	6	Seedling rootstock			
	7	Ornamental/pollinator (pollinizer)			
	8	Botanical (wild) species			
	9	Other (specify in NOTES descriptor, II/11) for example 'valuable unnamed selections from a breeding programme'			

II/7	Other notes from collector				
					Collectors should record ecological/climatic information. For cultivated crops, cultivation practices should be recorded.

II/8	Rootstock				
					Name of rootstock on which accession is grafted, if any.

II/9	Condition of tree				
	1	Dead			
	2	Dying			
	3	Old – declining			
	4	Mature – diseased			
	5	Mature - non-vigorous			
	6	Mature – vigorous			
	7	Young - not yet bearing			
	8	Other (specify in NOTES descriptor, II/11)			

II/10	Propagation method				
	1	Grafting (including budding)			
	2	Hardwood cuttings			

	3	Softwood cuttings			
	4	Stool beds			
	5	Layering			
	6	Micropropagation			
	7	Seed			
	8	Other (specify in NOTES descriptor, II/11)			
II/11	Notes				

III CHARACTERIZATION AND EVALUATION DESCRIPTORS

Descriptor code	Descriptor scale (score)	Reference values	Reference varieties	Remarks
III/1	Tree habit (of branches)			
	1 Fastigiated		Delbias, President Heron, General Lelerc, Kieffer	Natural habit of an untrained, non-juvenile tree. Figure 1, Appendix.
	2 Upright		Beurrè Clairgeau, Doyennè du Comice, Williams' Bon Chrétien	
	3 Semi upright		Conference	
	4 Spreading		Glou Morceau, Magness	
	5 Drooping		Beurrè Alexandre Lucas, Clapp's Favourite, Mac	
	6 Weeping		NY 4885	

III/2	Tree vigour			
	1 Extremely weak			Based on height and spread measurements of adult trees on their own roots, or relative to reference cultivars on the same rootstock (use reference cultivars or species on a common rootstock for each site).
	3 Weak		Dr. Jules Guyot	
	5 Intermediate		Louise Bonne d'Avranches	
	7 Vigorous		Doyennè du Comice	
	9 Extremely vigorous		Beurrè Hardy	

III/3	Affinity to guince			
	0 No affinity		some <i>P. ussuriensis</i>	Specify the

	1	Extremely poor		Clapp's Favourite, Gieser Wildeman, Beurré Bosc, Triomphe de Vienne, Winter Rietpeer	quince rootstock cultivar in the NOTES descriptor II/11, if it differs from descriptor II/8
	3	Poor		Dr. Jules Guyot, St- Rémy, Epine du Mas	
	5	Intermediate		Louise Bonne d'Avranches, Précoce de Trévoux, Williams' Bon Chrétien	
	6	Intermediate/good		Conference	
	7	Good		General Leclerc, Old Home	
	8	Good/extremely good		Curé	
	9	Extremely good		Passe Crassane, Beurré Hardy, Doyenné du Comice	

ROOTSTOCKS AND/OR INTERSTOCKS (restricted to *Pyrus*)

III/4	Suckering tendency			
	0	Absent		The tendency of the rootstock to produce suckers (adventitious shoots) under normal field conditions.
	1	Extremely low		
	2	Extremely low/low		
	3	Low		
	5	Medium		
	7	High		
	9	Extremely high		

III/5	Dwarfing			
	3	Invigorating		Direct growth controlling effect of the rootstock or interstock on the cultivar.
	5	Intermediate		
	7	Dwarfing		

III/6	Yield efficiency			
	1	Extremely poor		A high yield efficiency is defined as the induction in
	3	Poor		
	5	Intermediate		
	7	Good		

	9	Extremely good			the scion of a high yield of fruit relative to the cross sectional area of the trunk.
--	---	----------------	--	--	---

III/7	Ease of propagation				
	1	Extremely poor			Using the method indicated above, descriptor II/10.
	3	Poor			
	5	Intermediate			
	7	Good			
	9	Extremely good			

III/8	Anchorage				
	3	Poor			
	5	Intermediate			
	7	Good			

III/9	Leaf blade: attitude in relation to shoot				
	1	Upwards			Figure 3, Appendix
	2	Outwards			
	3	Downwards			

III/10	Leaf blade: shape of base				
	1	Acute			Figure 4, Appendix
	2	Right-angled			
	3	Obtuse			
	4	Truncate			
	5	Cordate			

III/11	Leaf blade: shape of apex (excluding pointed tip)				
	1	Acute			Figure 5, Appendix
	2	Right-angled			
	3	Obtuse			
	4	Rounded			

III/12	Leaf blade: incisions of margin (upper half)				
	1	Absent			Figure 6, Appendix
	2	Crenate			
	3	Bluntly serrate			
	4	Sharply serrate			

III/13	Fruit: depth of stalk cavity				
	1	Shallow			Figure 8, Appendix
	2	Medium			

	3	Deep			
--	---	------	--	--	--

III/14	Fruit: depth of eye basin (at harvest)				
	1	Shallow			Figure 8, Appendix
	2	Medium			
	3	Deep			

III/15	Fruit: width of eye basin (at harvest)				
	1	Narrow			Figure 8, Appendix
	2	Medium			
	3	Wide			

III/16	Fruit: attitude of sepals (at harvest)				
	1	Converging			Figure 9, Appendix
	2	Erect			
	3	Spreading			

INFLORESCENCE AND FRUIT

III/17	Season of flowering				
	1	Extremely early		<i>P. serrulata</i>	Date of full flower.
	2	Extremely early/early		Directeur Hardy, Beurré Alexandre Lucas	
	3	Early		Passe Crassane, Précoce de Trévoux, Louise Bonne d'Avranches, Kieffer	
	5	Intermediate		Conference, Williams' Bon Chrétien	
	7	Late		Triomphe de Vienne	
	8	Late/extremely late		Doyenné du Comice	
	9	Extremely late		Poirier Fleurissant Tard	

III/18	Duration of flowering				
					In days (average of at least 4 years).

III/19	Regularity of flowering				
	1	Extremely irregular		Gieser Wildeman	
	2	Very irregular/irregular		Magness	
	3	Irregular		Surecrop	

	5	Intermediate		Louise Bonne d'Avranches, Anjou	
	7	Regular		Conference, Williams' Bon Chrétien, Beurré Bosc	
	9	Extremely regular		Packham's Triumph, Kieffer	

III/20	Secondary flowering				
	1	Extremely rare		Beurré Hardy	
	2	Extremely rare/rare		Conference	
	3	Rare		Doyenné du Comice, Kieffer	
	5	Intermediate/frequent		Williams' Bon Chrétien	
	7	Frequent		Clapp's Favourite, Durondeau, Triomphe de Vienne, Laxton's Superb	
	9	Extremely frequent		Passe Crassane, General Leclerc, Abbé Fétel	

III/21	Parthenocarpic tendency				
	3	Rare		Doyenné du Comice	
	5	Occasionally		Williams' Bon Chrétien	
	7	Often		Passe Crassane, Conference, Beurré Hardy, Triomphe de Vienne	
	9	Always		Belle de Bruxelles, Précoce de Trévoux (4x)	

III/22	Precocity of bearing				
	1	Extremely low precocity		Doyenné du Comice, Magness	Precocious trees are defined as ones which start to crop at an early age relative to
	3	Low precocity		Williams' Bon Chrétien	
	5	Intermediate		Mailing' Beth, Devoe	
	7	High precocity		Delbias, Kieffer	

	9	Extremely high precocity		<i>P. calleryana</i>	other varieties on the same rootstock
--	---	--------------------------	--	----------------------	---------------------------------------

III/23	Cropping efficiency (Productivity)				
	1	Extremely low		Magness	Yield per unit area of land relative to other cultivars on the same rootstock, under the same management system and at the same site.
	3	Low		Doyenné du Comice, Anjou	
	5	Intermediate		Williams' Bon Chrétien	
	7	High		Pierre Corneille, Kieffer	

III/24	Fruit size				
	1	Extremely small		<i>P. calleryana</i>	Average size after commercial grading of all fruits. Information on the uniformity of size can be recorded in the NOTES descriptor, III/71
	2	Very small		Doyenné d'Etè	
	3	Small		Moscattellina, Seckel	
	4	Small/intermediate		Tyson, Beurré Giffard	
	5	Intermediate		Mailing' Beth, Clapp's Favourite	
	6	Intermediate/large		Conference, Anjou, Williams' Bon Chrétien	
	7	Large		Passe Crassane, Aurora, Merton Pride	
	8	Very large		Parburton, Yakimo, Pitmaston Duchess	

III/25	Fruit attractiveness				
	1	Extremely poor		Harbin	Varying between regions and between experts.
	3	Poor		Old Home	
	5	Intermediate		Seckel	
	7	Good		Williams' Bon Chrétien	
	9	Extremely good		Devoe	

III/26	Fruit shape				
					Reference varieties will vary between sites and

				sometimes between years. Insert the shape number from the outlines in Figure 10, Appendix
--	--	--	--	---

III/27	Length of fruit stalk			
	1	Extremely short		Passe Crassane, Anjou
	3	Short		Doyennè du Comice, Seckel
	5	Intermediate		Williams' Bon Chrétien
	7	Long		Moscattellina, Beurré Giffard
	8	Long/extremely long		Beurré Bosc
	9	Extremely long		<i>P. calleryana</i>

III/28	Ground colour			
	1	Red		Red Clapp's Favourite
	3	Yellow		Passe Crassane, Williams' Bon Chrétien
	5	Green-yellow		Conference, Moonglow
	7	Green		Anjou

III/29	Over colour			
	1	Mostly absent		Moonglow
	3	Pink		Williams' Bon Chrétien
	5	Bright red		Red Clapp's Favourite, Devoe
	7	Dark red		Max Red Bartlett

III/30	Ground colour			
		RHS colours reference number		

III/31	Over colour			
	RHS colours reference number			

III/32	Russet amount				
	1	Extremely low		Moonglow, Clapp's Favourite	High season-to-season variability can be recorded in the NOTES descriptor, III/71
	3	Low		Packham's Triumph	
	4	Low/intermediate		Williams' Bon Chrétien	
	5	Intermediate		Kieffer	
	7	High		Conference, Aurora	
	8	High/complete russet		Beurré Bosc	
	9	Complete russet		Russet Bartlett	

III/33	Harvest maturity				
	1	Extremely early		Doyennè d'Etè, Kruidenier	Season of maturity for picking.
	2	Extremely early/early		Précoce de Trévoux, Beurrè Giffard	
	3	Early		Clapp's Favourite	
	4	Early/intermediate		Williams' Bon Chrétien	
	5	Intermediate			
	6	Intermediate/late		Conference	
	7	Late		Anjou	
	8	Late/extremely late		Comtesse de Paris, Doyennè du Comice	
	9	Extremely late		Passe Crassane, Kieffer	

III/34	Maximum storage life			
				Maximum number of days storage in air under the best commercial conditions.

III/35	Eating maturity				
	1	Extremely early		4x Mirandino Rosso	Time fruit ripe for eating following storage in air at optimum
	2	Extremely early/early		Beurré Giffard, Précoce de Trévoux	
	3	Early		Clapp's Favourite	

	5	Intermediate		Williams' Bon Chrétien	commercial temperature, and ripened for one week at 18 degrees centigrade
	6	Intermediate/late		Conference	
	7	Late		Doyennè du Comice, Anjou	
	9	Extremely late		Passe Crassane, Kieffer	

III/36	Eating quality				
	1	Extremely poor		Old Home	Combined assessment: flavour, acidity, sweetness, aroma and astringency (at optimum eating time, if necessary following storage in air under the best commercial storage temperature).
	3	Poor		Kieffer	
	5	Intermediate		Moonglow	
	7	Good		Magness, Anjou	
	9	Extremely good		Williams' Bon Chrètien, Doyennè du Comice	

III/37	Breakdown rapidity				
	1	Extremely slow		Kieffer	
	3	Slow		Anjou	
	5	Intermediate		Conference	
	6	Intermediate/fast		Williams' Bon Chrétien	
	7	Fast		Clapp's Favourite	
	9	Extremely fast		Beurré Giffard	

III/38	Bruising susceptibility				
	3	Low		Passe Crassane	Susceptibility to bruising (fully mature fruit); condition of sample in storage tray.
	5	Intermediate			
	6	Intermediate/high		Williams' Bon Chrétien	
	7	High		Doyennè du Comice	

III/39	Firmness				
	1	Extremely soft		Beurré Giffard, Doyennè du Comice	The firmness of the flesh of the fruit when

	3	Soft		Aurora, Seckel	ripe.
	5	Intermediate		Conference, Williams' Bon Chrétien	
	7	Firm		Anjou	
	9	Extremely firm		Kieffer	

III/40	Texture				
	1	Extremely coarse		Old Home	The texture of the flesh of the fruit when ripe.
	3	Coarse		Pitmaston Duchess, Kieffer	
	5	Intermediate		Anjou	
	7	Fine		Passe Crassane, Williams' Bon Chrétien	
	9	Extremely fine		Doyenné du Comice, Aurora	

III/41	Amount of grit cells				
	3	Low (very light)		Ananas de Courtrai, Williams' Bon Chrétien	
	5	Intermediate (medium)		Beurré Bosc	
	7	High (heavy)		Kieffer, Old Home	

STRESS SUSCEPTIBILITY

LOW TEMPERATURE

III/42	Low temperature - late autumn/early winter				
	1	Extremely low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Extremely high susceptibility			

III/43	Low temperature - mid-winter				
	1	Extremely low susceptibility		Harbin, John	
	3	Low susceptibility		Magness, Moe, Old Home	
	5	Medium susceptibility		Williams' Bon Chrétien	
	7	High susceptibility		Beurré Bosc	
	9	Extremely high susceptibility			

III/44	Low temperature - spring				
	1	Extremely low susceptibility			Especially at critical stages
	3	Low susceptibility			

	5	Medium susceptibility			in relation to flowering.
	7	High susceptibility			
	9	Extremely high susceptibility			

III/45	Drought				
	1	Extremely low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Extremely high susceptibility			

III/46	High soil moisture				
	1	Extremely low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Extremely high susceptibility			

III/47	Chlorosis				
	1	Extremely low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Extremely high susceptibility			

PEST AND DISEASE SUSCEPTIBILITY

PESTS

III/48	<i>Psylla pyricole</i> pear sucker/psylla				
	1	Very low susceptibility		Phillips, Harbin, Taitdropmore	
	3	Low susceptibility		Honeysweet	
	5	Medium susceptibility		Seckel, Sierra, Maxine, Beurrè Bosc	
	7	High susceptibility		Anjou, Kieffer, Magness, Williams' Bon Chrétien	
	9	Very high susceptibility		Old Home	

III/49	<i>Psylla pyri</i> pear psylla				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/50	<i>Cvdiia pomonella</i> codling moth				
---------------	---	--	--	--	--

	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/51	<i>Eriosoma pyricola</i> woolly pear aphid				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/52	<i>Aspidiotus perniciosus</i> San Jose scale				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/53	<i>Eriophyes pyri</i> pear leaf blister mite				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/54	<i>Pratylenchus spp.</i> root lesion nematode				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

FUNGI

III/55	<i>Fabraea maculata</i> leaf spot				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/56	<i>Venturia pirina</i> scab				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			

	9	Very high susceptibility			
--	---	--------------------------	--	--	--

III/57	<i>Nectria galligena</i> canker				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

III/58	<i>Phytophthora cactorum</i> collar rot, root rot				
	1	Very low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

BACTERIA

III/59	<i>Erwinia amylovora</i>¹ fireblight				
	1	Very low susceptibility		<i>P. ussuriensis</i>	
	2	Very low susceptibility / Low susceptibility		Old Home	
	3	Low susceptibility		Kieffer	
	5	Medium susceptibility		Anjou	
	7	High susceptibility		Williams' Bon Chrétien	
	9	Very high susceptibility		Aurora	

¹The 1-9 scale corresponds to the Van der Zwet scale and the portion of the tree blighted as follows:

	Van der Zwet scale	Portion of tree blighted
1	10+9	0-3%
2	8	4-6%
3	7	7-12%
4	6	13-25%
5	5	26-50%
6	4	51-75%
7	3	76-88%
8	2	89-99%
9	1	100%

III/60	<i>Pseudomonas syringae</i> bacterial blossom blight, blossom blast				
	1	Very low susceptibility			
	2	Very low susceptibility / Low susceptibility			
	3	Low susceptibility			
	5	Medium susceptibility			
	7	High susceptibility			
	9	Very high susceptibility			

VIRUS AND MYCOPLASMA

III/61	Stony pit			
	1	Very low susceptibility		
	2	Very low susceptibility / Low susceptibility		
	3	Low susceptibility		
	5	Medium susceptibility		
	7	High susceptibility		
	9	Very high susceptibility		

III/62	Pear decline			
	1	Very low susceptibility		
	2	Very low susceptibility / Low susceptibility		
	3	Low susceptibility		
	5	Medium susceptibility		
	7	High susceptibility		
	9	Very high susceptibility		
III/63	Notes			
III/64	Cytological characteristics and identified genes			
III/65	Number of chromosome			
III/66	Molecular markers			
III/67	Pictures			

Appendix

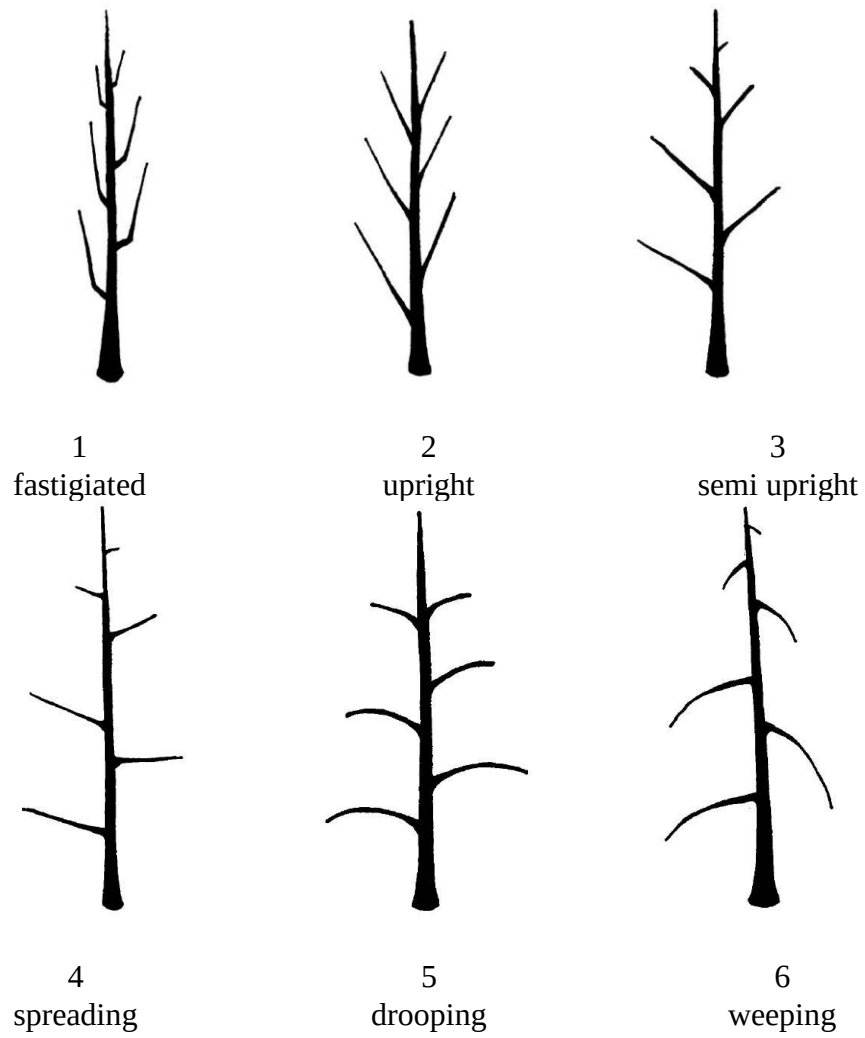
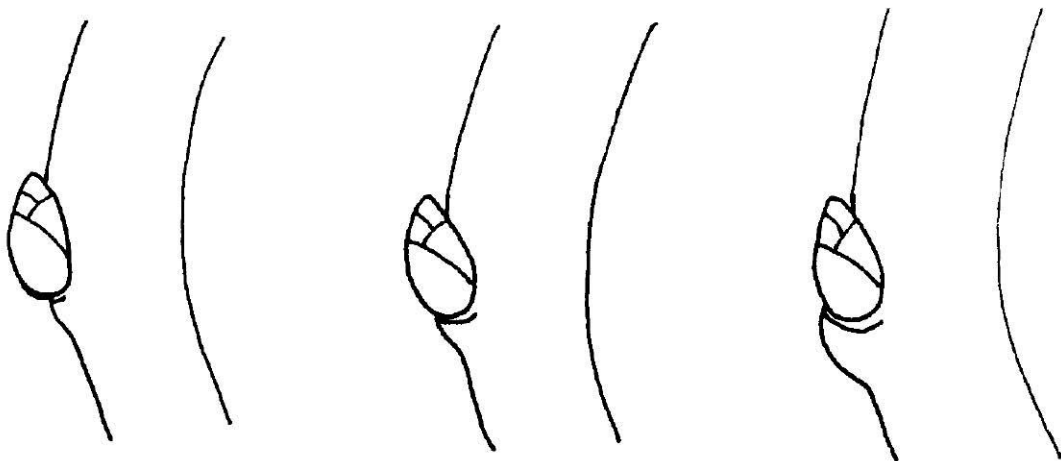


Figure 1 **Tree habit (of branches)**

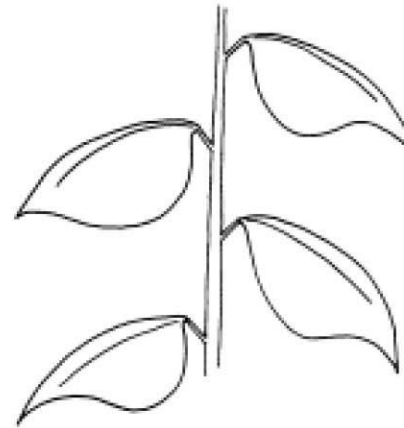
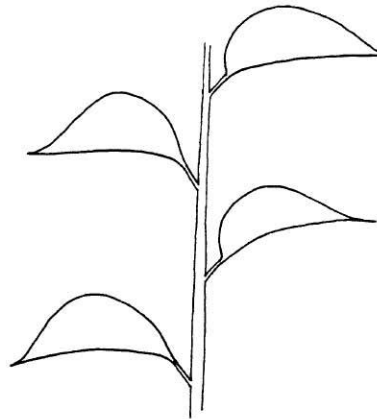
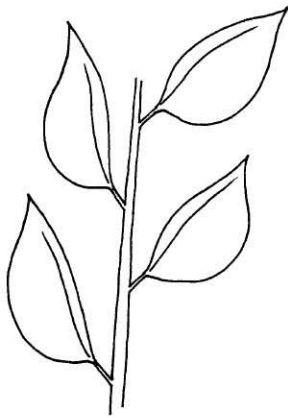


3
small

5
medium

7
large

Figure 2 **One-year-old shoot: size of bud support**

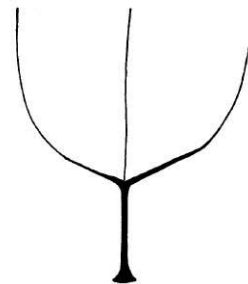
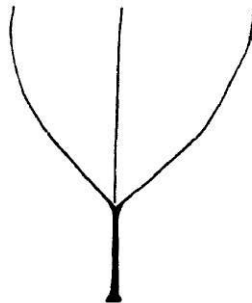
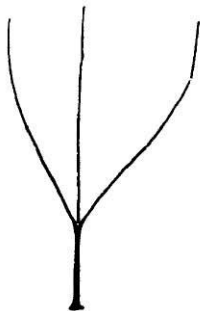


1
upwards

2
outwards

3
downwards

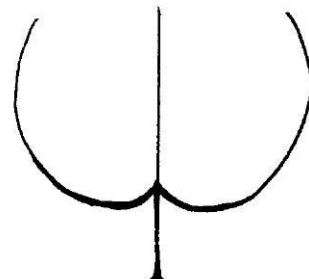
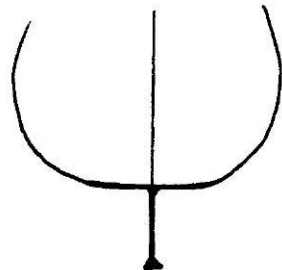
Figure 3 **Leaf blade: attitude in relation to shoot**



1
acute

2
right-angled

3
obtuse



4
truncate

5
cordate

Figure 4 **Leaf blade: shape of base**

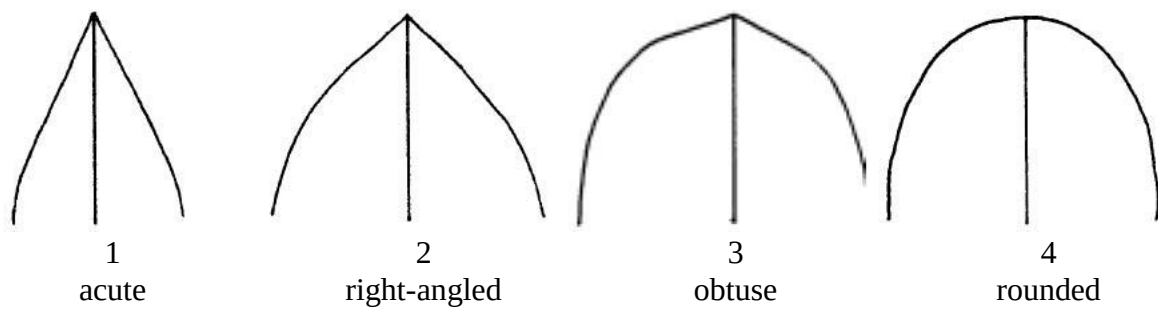


Figure 5 **Leaf blade: shape of apex (excluding pointed tip)**

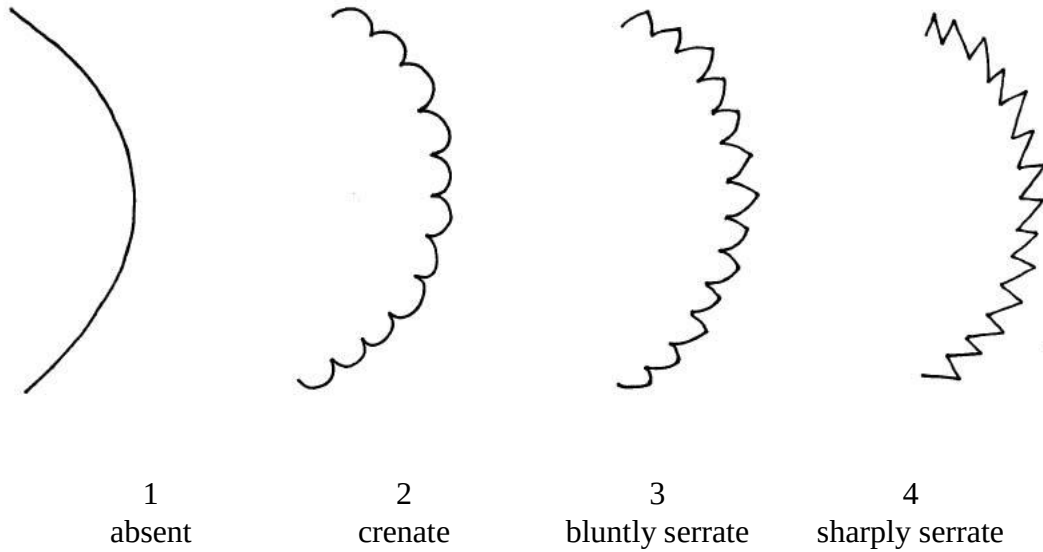
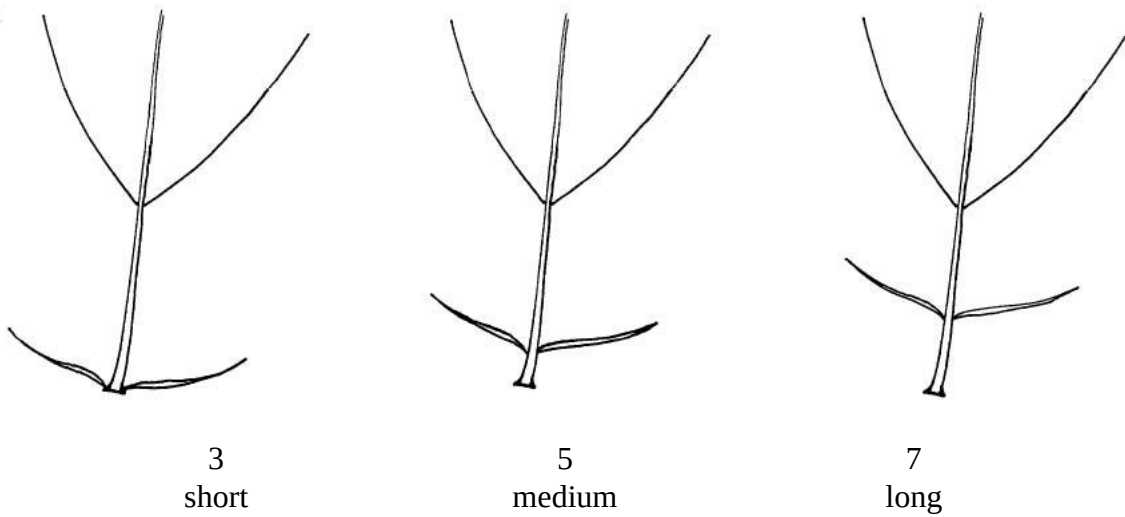
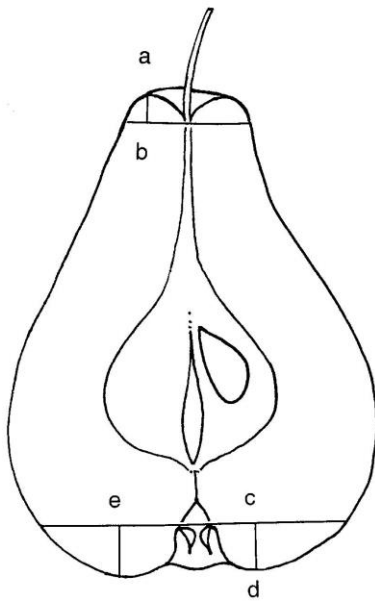


Figure 6 **Leaf blade: incisions of margin (upper half)**



7.attēls **Petiole: distance of stipules from basal attachment of petiole**



ab = depth of stalk cavity (characteristic 16)
 cd = depth of eye basin (characteristic 17)
 ce = width of eye basin (characteristic 18)

Figure 8 **Fruit: depth of stalk cavity**

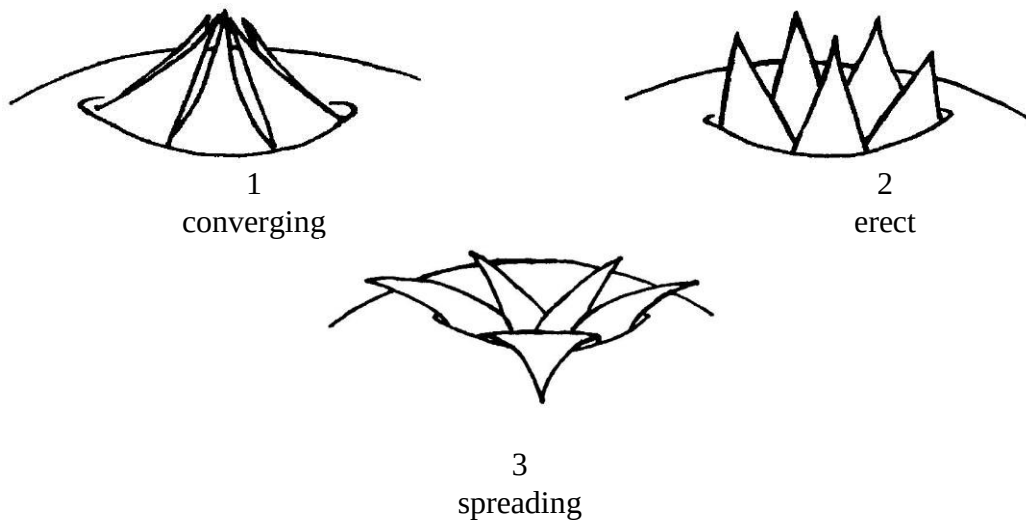


Figure 9 **Fruit: attitude of sepals (at harvest)**

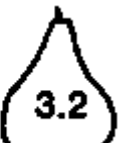
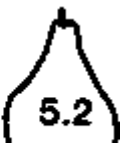
Fruit length max. diameter	Relative position of the maximum diameter					
	Towards the middle	Towards the eye	Towards the middle	Towards the eye	Towards the middle	Towards the eye
very short < 1.1	 1.1	 1.2	 1.3	 1.4	 1.5	 1.6
short 1.1-1.25	 3.1	 3.2	 3.3	 3.4	 3.5	 3.6
intermediate 1.26-1.50	 5.1	 5.2	 5.3	 5.4	 5.5	 5.6
elongate 1.51- 1.80	 7.1	 7.2	 7.3	 7.4	 7.5	 7.6
very elongate >1.80	 9.1	 9.2	 9.3	 9.4	 9.5	 9.6
Profile	Concave		Straight		Convex	

Figure10 **Fruit shape**