

Amphasys Pollen Analysis Instructions

June 2019





























The following recommendations for measurement of pollen or microspores are best practice suggestions. They are most likely to produce good results for viability, development stages and ploidy measurements. It is recommended to use fresh samples, if possible and to filter the samples before use and measure immediately. Dried pollen samples should be rehydrated before measurement. Pollen and microspores are complex particles influenced by many factors that can have an effect on the outcome of the measurements (stability at the flowers/anthers, in AF buffer, pollen/flower storage etc.).

Overview General information

Pollen size:	Pollen size can vary about 20% or even more! Polyploidy influences pollen size.
AmphaFluid (AF) buffer recommendations:	Pollen viability: column "AF buffer pollen"
	Microspores: column "AF buffer microspore"
	Further purposes: also try "alternative AF buffers"
Sample preparation:	Please refer to the Quickguides
Dried, stored pollen:	Rehydration of pollen
Sticky or oily pollen:	Add 0.05% Tween 20 or 80
For any questions or assistance, contact :	support@amphasys.com

Species	English	Family	Class Group	Pollen-Size (µm)	Form	Ampha-Chip	Filter size	AF buffer pollen	Additional infos	AF buffer microspores	alternative AF buffers
Acer campestre	field maple	Sapindaceae	Dicots	40	triangular	D	100	6			5
Acer platanoides	sycamore maple	Sapindaceae	Dicots	35	triangular	D	100	6			5
Acer pseudoplatanus	norway maple	Sapindaceae	Dicots	40	triangular	D	100	6			5
Actinidia deliciosa	kiwi fruit	Actinidiaceae	Dicots	25 - 50	triangular	D	100	5	ploidy -> size, long stability		6
Aesculus hippocastanum	buckeye	Sapindaceae	Dicots	26	round	D	50	6			5
Aesculus pavia	red buckeye	Sapindaceae	Dicots	30	round	D	50	6			5
Agapanthus	lily of the Nile	Amaryllidaceae	Dicots	55	prolate	E	100	6			5
Alcea rosea	hollyhock	Asteraceae	Dicots	135	round spiny	E	200	6			4
Allium cepa	onion	Amaryllidaceae	Monocots	30	prolate	D	100	6			4
Allium giganteum	giant onion	Amaryllidaceae	Monocots	35	prolate	D	100	6			4
Allium porrum	leek	Amaryllidaceae	Monocots	30	prolate	D	50	6			4
Allium schoenoprasum	chive	Amaryllidaceae	Monocots	26	prolate	D	50	6			4
Allium ursinum	wild garlic	Amaryllidaceae	Monocots	30	prolate	D	100	6			4
Alnus glutinosa	alder	Betulaceae	Dicots	25	round	D	50	6			5
Aloe vera	aloe	Aloaceae	Monocots	38	prolate	D	100	6			
Alstroemeria	Peruvian lily	Liliaceae	Monocots	50x120	prolate	E	50	6			
Amaryllis	amaryllis	Amaryllidaceae	Monocots	90	prolate	E	150	6			4
Amelanchier ovalis	snowy mespilus	Rosaceae	Dicots	32	triangular	D	100	6			
Anemone hupehensis	Japanese anemone	Ranunculaceae	Dicots	22	round	F	50	6			
Anemone nemorosa	anemone	Ranunculaceae	Dicots	30	round	D	50	6			
Anthemis tinctoria	mayweed	Asteraceae	Dicots	30	round spiny	D	50	6			
Anthurium	flamingo flower	Araceae	Monocots	15-20	round	F	50	6			
Aquilegia vulgaris	columbine	Ranunculaceae	Dicots	25	triangular	F	100	6			
Arabidopsis thaliana	mouse-ear cress	Brassicaceae	Dicots	15x30	prolate	F	50	7		3	3 / 5
Asparagus	asparagus	Asparagaceae	Monocots	20 - 25	prolate	F	50	4			6
Aster amelius	aster	Asteraceae	Dicots	32	round spiny	D	100	6			
Aubrieta	aubrieta	Brassicaceae	Dicots	30	prolate	D	50	7		3	3 / 5
Avena sativa	oat	Poaceae	Monocots	40-50	round	E	100	6		6	
Averrhoa carambola	carambola	Oxalidaceae	Dicots	28	round	D	50	6			
Bellis perennis	daisy	Compositae	Dicots	20	round spiny	F	50	6			4
Begonia spec	begonia	Begoniaceae	Dicots	10-25	prolate	F	50	6			5

Species	English	Family	Class Group	Pollen-Size (µm)	Form	Ampha-Chip	Filter size	AF buffer pollen	Additional infos	AF buffer microspores	alternative AF buffers
<i>Berberis thunbergii</i>	red barberry	Berberidaceae	Dicots	35	round	D	50				
<i>Beta vulgaris</i>	sugar beet and other	Amaranthaceae	Dicots	25	round	D	100			4	6
<i>Betula spec</i>	birch	Betulaceae	Dicots	18 - 30	round	F/D	50				5
<i>Betula pendula</i>	birch	Betulaceae	Dicots	22	round	F	50				5
<i>Brassica napus</i>	rape seed / canola	Brassicaceae	Dicots	20-25	prolate	F/D	50		buffer stability <0.5h	3	3 / 5
<i>Brassica napus rapifera</i>	swede	Brassicaceae	Dicots	20-26	prolate	F/D	50			3	3 / 5
<i>Brassica oleracea var. botrytis</i>	cauliflower	Brassicaceae	Dicots	20-25	prolate	F/D	50			3	3 / 5
<i>Brassica oleracea var. gongylodes</i>	kohlrabi	Brassicaceae	Dicots	20-25	prolate	F/D	50			3	3 / 5
<i>Brassica oleracea var. gemmifera</i>	Brussels sprouts	Brassicaceae	Dicots	20-26	prolate	F/D	50			3	3 / 5
<i>Brassica oleracea var. italica</i>	broccoli	Brassicaceae	Dicots	20-25	prolate	F/D	50			3	3 / 7
<i>Brassica oleracea cultivar</i>	other cultivars	Brassicaceae	Dicots	20-25	prolate	F/D	50		buffer stability !	3	3 / 5
<i>Brassica rapa chinensis</i>	Chinese cabbage	Brassicaceae	Dicots	20-25	prolate	F/D	50			3	3 / 5
<i>Bougainvillea glabra</i>	bougainvillea	Nyctaginaceae	Dicots	35	round	D	50				5
<i>Calendula officinalis</i>	marigold	Asteraceae	Dicots	30	round spiny	D	50				5
<i>Calluna vulgaris</i>	common heather	Ericaceae	Dicots	20 - 30	tetrad	D	50				
<i>Camellia japonica</i>	camellia	Theaceae	Dicots	45	triangular	D	100				
<i>Campanula spec.</i>	bell flower	Campanulaceae	Dicots	20 - 35	round	D	50				6
<i>Capsicum annuum</i>	sweet pepper	Solanaceae	Dicots	25 - 30	triangular	D	50		long stability	4	4
<i>Capsicum frutescense</i>	chilli	Solanaceae	Dicots	30 - 35	triangular	D	50		long stability	4	4
<i>Capsicum spec.</i>	pepper	Solanaceae	Dicots	20 - 35	triangular	D	50		long stability	4	6 / 4
<i>Cardamine pratense</i>	lady's smock	Brassicaceae	Dicots	32	round	D	50				5 / 6
<i>Carica papaya</i>	papaya	Caricaceae	Dicots	36	round	D	100				5 / 3
<i>Carpinus betulus</i>	common hornbeam	Betulaceae	Dicots	30 - 40	round	D	100				5
<i>Carya illinoensis</i>	pecan	Juglandaceae	Dicots	30x60	prolate	E	50				
<i>Castanea sativa</i>	chestnut	Fagaceae	Dicots	16	triangular	F	50				
<i>Cenchrus ciliaris</i>	buffel-grass	Poaceae	Monocots	60	round	E	100				
<i>Centaurea montana</i>	mountain bluet	Asteraceae	Dicots	36	round spiny	D	100				
<i>Cercis canadensis</i>	eastern redbud	Fabaceae	Dicots	25	triangular	D	50				6
<i>Chelidonium majus</i>	greater celandine	Papaveraceae	Dicots	27	triangular	D	50				5
<i>Chrysanthemum frutescens</i>	Paris daisy	Asteraceae	Dicots	42	round spiny	E	100				5
<i>Chrysanthemum grandiflorum</i>	chrysants	Asteraceae	Dicots	35	round spiny	D	100				5
<i>Chrysanthemum spec.</i>	chrysants	Asteraceae	Dicots	30 - 45	round spiny	D/E	100				5
<i>Cichorium endivia</i>	endive	Asteraceae	Dicots	80-100	round spiny	E	150				4
<i>Cichorium intybus</i>	chicory	Asteraceae	Dicots	40	round spiny	D/E	100			3	5 / 3
<i>Cirsium vulgare</i>	spear thistle	Asteraceae	Dicots	40	round spiny	D/E	100				5
<i>Citrullus lanatus</i>	water melon	Cucurbitaceae	Dicots	40x60 - 60x90	prolate	E	150	5 +Tween	ploidy -> size !	5	5
<i>Citrus x limonia</i>	rangpur	Rutaceae	Dicots	35	round	D	50			6	5
<i>Citrus x sinensis</i>	orange	Rutaceae	Dicots	32	round	D	50			6	5
<i>Clematis cultivars</i>	clematis	Ranunculaceae	Dicots	28	round	D	50				
<i>Clematis vitalba</i>	old man's beard	Ranunculaceae	Dicots	22	round	F/D	50				
<i>Coffea arabica</i>	coffee	Rubiaceae	Dicots	36	round	D	50			6	
<i>Colutea arborescens</i>	bladder-senna	Fabaceae	Dicots	38	triangular	D	100				6
<i>Coriandrum sativum</i>	coriander	Apiaceae	Dicots	15x30	prolate	F/D	50				
<i>Cornus sanguinea</i>	common dogwood	Cornaceae	Dicots	58	round	E	100				
<i>Cortaderia selloana</i>	pampas grass	Poaceae	Monocots	50	round	E	100				
<i>Corylus avellana</i>	hazelnut	Corylaceae	Dicots	20 - 30	round	F	50				5
<i>Couroupita guianensis</i>	cannonball tree	Lecythidaceae	Dicots	20x50	triangular	D	100				
<i>Cucumis melo</i>	melon	Cucurbitaceae	Dicots	50	round	E	100				5
<i>Cucumis sativus</i>	cucumber	Cucurbitaceae	Dicots	60	round	E	100	5 +Tween		5 +Tween	
<i>Cucurbita spec</i>	squash, gourds	Cucurbitaceae	Dicots	150-200	round spiny		300	5 +Tween		5	
<i>Cucurbita pepo</i>	squash, zucchini	Cucurbitaceae	Dicots	150-200	round spiny		300	5 +Tween		5 +Tween	
<i>Cyclamen persicum</i>	cyclame	Primulaceae	Dicots	15-20	round	F	100		long stability		4
<i>Cynara cardunculus</i>	artichoke	Asteraceae	Dicots	65	round spiny	E	100		buffer stability <0.5h		6
<i>Dahlia cultivars</i>	dahlia	Asteraceae	Dicots	45	round spiny	E	100			5	5 / 3

Species	English	Family	Class Group	Pollen-Size (µm)	Form	Ampha-Chip	Filter size	AF buffer pollen	Additional infos	AF buffer microspores	alternative AF buffers
Daucus carot	carrot	Umbelliferaeae	Dicots	15x30	prolate	F/D	50			4	4 / 5 / 6
Delosperma	ice plant	Aizoaceae	Dicots	20	round	F	50			5	6
Dianthus cultivars	pink	Caryophyllaceae	Dicots	30 - 50	round	D	100			6	5
Echium vulgare	blueweed	Boraginaceae	Dicots	17	round	F	50			6	
Elaeis guineensis	oil palm	Arecaceae	Monocots	30	triangular	D	50		high Freq (18-24MHz)	6	
Erica gracilis	heath	Ericaceae	Dicots	30-40	tetrade	D	100			5	
Eucalyptus spec	Eucalyptus	Myrtaceae	Dicots	26	triangular	F/D	50			6	
Euphorbia verrucosa	purge	Euphorbiaceae	Dicots	50	round	E	100			6	
Eruca sativa	rucola	Brassicaceae	Dicots	20	triangular	F	50			7	3 / 5
Fagus sylvatica	common beech	Fagaceae	Dicots	50	round	D/E	100			6	
Festuca arundinacea	tall fescue	Poaceae	Monocots	40	round	D/E	100			6	4
Foeniculum vulgare	florence fennel	Umbelliferaeae	Dicots	30	prolate	D	50			4	3 / 5 / 6
Forsythia intermedia	forsythia	Oleaceae	Dicots	25-30	round	D	100			6	5
Fragaria magna	strawberry	Rosaceae	Dicots	25	triangular	D	50			6	6
Fragaria vesca	strawberry	Rosaceae	Dicots	23	triangular	F/D	50			6	6
Fraxinus excelsior	ash	Oleaceae	Dicots	22	triangular	F/D	50			6	
Fraxinus ornus	flower ash	Oleaceae	Dicots	22	triangular	F/D	50			6	
Gaillardia	blanket flower	Asteraceae	Dicots	30	round spiny	D	50			6	
Gaura lindheimeri	gaura	Onagraceae	Dicots	150	triangular	E	100			6	
Gazania spec	ganzania	Asteraceae	Dicots	30 - 40	round textured	D	100			5	6
Geranium spec	cranesbill	Geraniaceae	Dicots	70-120	round	E	150			5	3
Gerbera spec	gerbera	Asteraceae	Dicots	50	round spiny	E	100			5	6
Gladiolus x hortulanus	gladiolus	Iridaceae	Monocots	80	round	E	150			6	
Gloriosa superba	flame lily	Colchicaceae	Dicots	40	prolate	D	100			6	
Glycine max	soy bean	Fabaceae	Dicots	20	round	F	50			6	5
Gossypium hirsutum	cotton	Malvaceae	Dicots	150+	round spiny		300			6	
Guizotia abyssinica	noog, ramtilla	Asteraceae	Dicots		round spiny	D	50			6	
Helianthus annuus	sunflower	Asteraceae	Dicots	45	round spiny	D/E	100			6	4
Helleborus spec	christmas rose	Ranunculaceae	Dicots	25 - 40	triangular	D	50			6	4
Hemerocallis	spider lily	Amaryllidaceae	Monocots	80	round	E	150			6	4
Hibiscus syriacus	hibiscus	Malvaceae	Dicots	150-200	round spiny		300			6	5
Hippeastrum gracilis	amaryllis	Amaryllidaceae	Monocots	90	round	E	150			6	
Hordeum vulgare	barley	Poaceae	Monocots	45	round	E	100			6	4
Hyacinthus orientalis	hyacinths	Asparagaceae	Monocots	40-60	prolate	E	100			6	4
Hydrangea macrophylla	hydrangea	Hydrangeaceae	Dicots	20	round	F	50			5	6
Hydrangea paniculata	hydrangea	Hydrangeaceae	Dicots	20	round	F	50			5	6
Hypericum	St John's wort	Guttiferaeae	Dicots	20 - 25	round	F/D	50			6	3
Ilex aquifolium	holly	Aquifoliaceae	Dicots	35	round	D	50			6	
Impatiens x neugininea	impatiens	Balsaminaceae	Dicots	20x60	prolate	E	100			6	5
Juglans regia	walnut	Juglandaceae	Dicots	40	round	D	100			6	
Justicia adhatoda	malabar nut	Acanthaceae	Dicots	20x50	prolate	D	100			6	6
Lactuca sativa	lettuce	Asteraceae	Dicots	30	round spiny	D	50		short flower time	7	3 / 5
Lampranthus spec		Aizoaceae	Dicots	20	round	F	50			6	
Larix	larch	Pinaceae	Pinopsida	40-60	spherical	E	100			6	
Lavandula officinalis	lavender	Lamiaceae	Dicots	40	prolate	D	100			6	5
Leucanthemum vulgare	oxeye daisy	Asteraceae	Dicots	30	round spiny	D	50			6	5
Lilium spec	lily	Liliaceae	Monocots	100	prolate	E	150			6	4
Lolium multiflorum	Italian rye-grass	Poaceae	Monocots	40	round	D/E	100			6	4
Lolium perenne	German rye-grass	Poaceae	Monocots	40	round	D/E	100			6	4
Magnolia x soulangiana	magnolia	Magnoliaceae	Magnoliids	65	prolate	E	100			5	6
Malus domestica	apple	Rosaceae	Dicots	38	round	D	50			6	5
Malva sylvestris	mallow	Malvaceae	Dicots	130	round, spiny	E	200			6	
Matricaria chamomille	chamomilli	Asteraceae	Dicots	25	round, spiny	F/D	50			6	5
Mentha x piperita	mint	Lamiaceae	Dicots	30-40	prolate	D	100			5	6

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Mentha suaveolens x piperita	mint grapefruit	Lamiaceae	Dicots	30-40	prolate	D	100	5			6
Momordica spec	bittergourd	Cucurbitaceae	Dicots	80	round	E	150	5 + Tween		5 + Tween	
Nicotiana spec	tobacco	Solanaceae	Dicots	35	round	D	50	6		4	4
Ocimum basilicum	basil	Lamiaceae	Dicots	60	round	E	100	6			5
Oenothera biennis	evening primrose	Onagraceae	Dicots	160	triangular	E	200	6			
Olea europaea	olive tree	Oleaceae	Dicots	25	triangular	D	50	6			5
Ononis arvensis	field restharrow	Fabaceae	Dicots	20	prolate	F	50	5			6
Oryza sativa	rice	Poaceae	Monocots	30-45	round	D/E	100	6	extreme short viability	4	4
Papaver nudicaule	Island poppy	Papaveraceae	Dicots	35	round	D	50	6			5
Passiflora edulis	passion flower	Passifloraceae	Dicots	40 - 70	polygonal	E	100	6			
Pentas lanceolata	spruce	Rubiaceae	Dicots	24	tetracolpate	F	50	6			
Petroselinum crispum	parsley	Apiaceae	Dicots	23	prolate	F	50	6			
Petunia spec	petunia	Solanaceae	Dicots	30	triangular	D	50	6			4
Phacelia tanacetifolia	blue tansy	Boraginaceae	Dicots	24	round	F	50	6			
Phalaenopsis	orchids	Orchidaceae	Dicots	15	round	F	50	5			
Phaseolus spec.	bean	Fabaceae	Dicots	30 - 45	triangular	D	100	5			4 / 6
Phoenix dactylifera	date palm	Arecaceae	Monocots	10x15	prolate	F	50	6			
Phlox paniculata	phlox	Polemoniaceae	Dicots	50	round	E	100	6			
Picea abies	pine	Pinaceae	Pinopsida	60-100	bisaccate	E	150	6 (floating!)			
Pinus sylvestris	pine	Pinaceae	Pinopsida	60-100	bisaccate	E	150	6 (floating!)			
Pistacia vera	pistachio	Anacardiaceae	Dicots	30	round	D	50	6			
Pisum sativum	pea	Fabaceae	Dicots	40 - 50	prolate	D	100	4		4	5 / 6
Primula vulgaris (syn. acaulis)	primrose	Primulaceae	Dicots	15-20	round	F	50	6			5
Prunus avium	cherry	Rosaceae	Dicots	40	triangular	D	100	6			
Prunus dulcis	almond	Rosaceae	Dicots	55	triangular	E	100	6			
Prunus spinosa	blackthorn	Rosaceae	Dicots	44	triangular	D	100	6			
Prunus serrulata	Japanese cherry	Rosaceae	Dicots	40	triangular	D	100	6			
Punica granatum	pomegranate	Lythraceae	Dicots	26	triangular	F	50	6			
Pyrus communis	pear	Rosaceae	Dicots	32	triangular	D	50	6			
Quercus robur	common oak	Fagaceae	Dicots	38	triangular	D	50	6			
Ranunculus asiaticus	persian buttercup	Ranunculaceae	Dicots	20 - 30	round	F/D	50	6			5
Ranunculus arvensis	corn buttercup	Ranunculaceae	Dicots	25	prolate	F	50	6			5
Raphanus sativus sativus	radish	Brassicaceae	Dicots	25	prolate	F	50	7		3	3 / 5
Raphanus sativus oleiferus	radish	Brassicaceae	Dicots	25	prolate	F	50	7		3	3 / 5
Rheum rhabarbarum	rhubarb	Polygonaceae	Dicots	35	round	D	50	6			5
Rhododendron	rhododendron	Ericaceae	Dicots	40 - 70	tetradae	E	100	6			5
Ribes nigrum	blackcurrant	Grossulariaceae	Dicots	38	round	D	50	6			
Ribes rubrum	redcurrant	Grossulariaceae	Dicots	33	round	D	50	6			
Rosa canina	dogrose	Rosaceae	Dicots	40	round	D	100	6			
Rosa indica	tearose	Rosaceae	Dicots	35	round	D	50	6			
Rosa multiflora	multiflora rose	Rosaceae	Dicots	35	round	D	50	6			
Rosmarinus officinalis	rosmarine	Lamiaceae	Dicots	45	prolate	D/E	100	5			6
Rubus fruticosus	blackberry	Rosaceae	Dicots	35	triangular	D	50	6			
Rubus idaeus	raspberry	Rosaceae	Dicots	30	triangular	D	50	6			
Rubus fruticosus x idaeus	tayberry	Rosaceae	Dicots	30	triangular	D	50	6			
Rudbeckia hirta	rudbeckia	Asteraceae	Dicots	35	round spiny	D	50	6			
Saccharum officinarum	sugarcane	Poaceae	Monocots	40-120	round	E	150	6			
Salix viminalis	basket willow, osier	Salicaceae	Dicots	20	round	F	50	6			5
Salvia farinaceae	sage	Lamiaceae	Dicots	30	prolate	D	50	6			5
Salvia officinalis	sage	Lamiaceae	Dicots	45	prolate	D	100	6			5
Salvia pratensis	meadow sage	Lamiaceae	Dicots	40 - 50	prolate	D/E	100	6			5
Sambucus nigra	elder	Caprifoliaceae	Dicots	22	round	F	50	6			
Saxifraga rosacea	rockfoil	Saxifragaceae	Dicots	30	triangular	D	50	6		6	5
Secale cereale	rye	Poaceae	Monocots	50-60	prolate	E	100	6		6	4

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<i>Silene vulgaris</i>	bladder campion	Caryophyllaceae	Dicots	40 - 50	round	D/E	100	6			
<i>Silybum marianum</i>	cardus marianus	Asteraceae	Dicots	70	round	E	100	6			5
<i>Sinapis arvensis</i>	charlock mustard	Brassicaceae	Dicots	25	prolate	F/D	50	7		3	3 / 5
<i>Solanum lycopersicon</i>	tomato	Solanaceae	Dicots	25	round	F/D	50	6	long stability	4	4 / 2
<i>Solanum melongena</i>	eggplant	Solanaceae	Dicots	25-30	round	D	50	6		4	4
<i>Solanum quitoense</i>	quito orange	Solanaceae	Dicots	25	round	D	50	6		6	4
<i>Solanum tuberosum</i>	potato	Solanaceae	Dicots	20	round	F/D	50	6		6	4
<i>Sonchus arvensis</i>	field milk thistle	Asteraceae	Dicots	40	round	D	100	6			5
<i>Sorghum bicolor</i>	sorghum, dari	Poaceae	Monocots	40-50	round	E	100	6		6	4
<i>Spinacia oleracea</i>	spinach	Amaranthaceae/Ch	Dicots	50	round	E	100	4		4	5
<i>Syringa vulgaris</i>	lilac	Oleaceae	Dicots	30	round	D	50	6			5
<i>Tagetes patula</i>	marigold	Asteraceae	Dicots	45	round spiny	D	100	6		5	5
<i>Taraxacum officinale</i>	dandelion	Asteraceae	Dicots	30	round spiny	D	50	6			5
<i>Theobroma cacao</i>	cacao	Malvaceae	Dicots	20	round	F	50	6		6	
<i>Thymus vulgaris</i>	thyme	Lamiaceae	Dicots	35 - 45	prolate	D	100	6			5
<i>Tilia platyphyllos</i>	largeleaf linden	Tiliaceae	Dicots	35	prolate	D	50	6			5
<i>Trifolium</i>	clover	Fabaceae	Dicots	30	round	D	50	5			6
<i>Triticum spp.</i>	wheat	Poaceae	Monocots	40 - 70	round	D/E	100	6	mature pollen short viability <0.5h	6 / 4	4
<i>Tulipa cultivars</i>	tulip	Liliaceae	Monocots	60	round	E	100	6		6	4
<i>Turnera diffusa</i>	damiana	Passifloraceae	Dicots	30	round	D	50	6			
<i>Ulmus glabra</i>	wych elm	Ulmaceae	Dicots	32	round	D	50	6			
<i>Viburnum opulus</i>	guelder-rose	Adoxaceae	Dicots	25	round	F/D	50	6			5
<i>Vicia spec</i>	vetches	Fabaceae	Dicots	30-40	round	D	50	5		5	
<i>Vicia faba</i>	broad bean	Fabaceae	Dicots	50	prolate	D/E	100	5		5	
<i>Vicia villosa</i>	winter vetch	Fabaceae	Dicots	35	prolate	D	50	5			6
<i>Vinca spec.</i>	vinca	Apocynaceae	Dicots	60-80	round	E	100	5			6
<i>Viola cornuta</i>	violet	Violaceae	Dicots	40	round	D/E	100	6			
<i>Viola wittrockiana</i>	violet	Violaceae	Dicots	70	round	E	100	6			
<i>Vitis vinifera</i>	grape	Vitaceae	Dicots	30	round	F/D	50	6			
<i>Wisteria sinensis</i>	glycine	Fabaceae	Dicots	30	triangular	D	50	6			5
<i>Zantedeschia aethiopica</i>	calla	Araceae	Monocots	50	round	E	100	6			
<i>Zea mays</i>	corn, maize	Poaceae	Monocots	80 - 120	round	E	150	6	mature pollen 2 - 4h viability	6	