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**Plant list and introductory knowledge in botany for bachelor students (BSc)
of Faculty of Horticultural Science 2017-2018, fall semester**



BASIDIOMYCOTA – BASIDIOMYCETES

Agaricales – Euagarics

Agaricaceae

1. <i>Agaricus bisporus</i> (common mushroom)		<u>Vegetative body</u> : network of <u>hyphae</u> in the soil called <u>mycelia</u> , <u>fruit body (sporocarp)</u> : stipe + cap (pileus). White cap surface, ring on stipe (partial veil), initially pale rose, later chocolate brown gills with hymenium, saprobiotic. <u>Bazidiospores</u> . ●Cultivated mushroom
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HEPATOPHYTA - HEPATOPHYTES

Marchantiales

Marchantiaceae

2. <i>Marchantia polymorpha</i> (umbrella liverwort)		Rhizoids, vegetative body (thallus) forked, flattened, dorsiventral, dioecious, gemmae cups on the surface of the thallus. Umbrella-like reproductive structures „gametophores” ●Weed on wet surfaces (in greenhouses)
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BRYOPHYTA - BRYOPHYTES

Bryales

Ditrichaceae

3. <i>Ceratodon purpureus</i> (fire moss)		Thread-like protonema, <u>haploidic vegetative body (green plant)</u> , dense tufts fixed by rhizoids, acute lanceolate leaves. Red seta with spore bearing capsule (sporangia). Dioecious. ●Weed moss
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MONILOPHYTA

Polypodiales

Dryopteridaceae

4. <i>Dryopteris filix-mas</i> (male fern) native, cosmopolitan distribution	H.	Adventitious roots exclusively; rhizome; bipinnate leaves, pinnules lobed with crenated margins. Rounded sori on the lower surface with reniform indusia. Hardy semi-evergreen perennial. ●Ornamental plant
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Oleandraceae

5. <i>Nephrolepis exaltata</i> (sword fern) widespread in the tropical forests	E. (G.)	Adventitious roots exclusively; pinnate leaves — sporo-trophophyllum, rounded sori, <u>runners</u> . ●Indoor ornamental plant
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Polypodiaceae — Polypod ferns family

6. <i>Platycerium alcinorne</i> (elkhorn fern) SE-Asia	E.	Adventitious roots exclusively; heterophylly: humus collecting + antler shaped photosynthetic and spore producing leaves (<i>sporo-trophophylls</i>), large brown sorus fields of sporangia on the lower surface. ●Indoor ornamental plant
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GINKGOPHYTA

Ginkgoales

Ginkgoaceae

7. <i>Ginkgo biloba</i> (Ginkgo, maidenhair tree) SW China	MM.	Dioecious, deciduous tree, long- and spur (short) shoots, bilobed, fan-shape leaf blade, dichotomous venation, two seeds on long stalk, dual layered seed-coat (fleshy <i>sarcotesta</i> , stony <i>sclerotesta</i>). ●Ornamental plant
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PINOPHYTA

PINOIDSIDA (†CONIFEROIDSIDA)

Pinales († Coniferales)

Pinaceae († Abietaceae)

8. <i>Pinus sylvestris</i> (Scots pine) native, Eurasian	MM.	Monoecious. Two, <u>5-8 cm long, twisted, glaucous green needles on the dwarf shoots</u> . Woody female cones, (apophysis, umbo); anemogamy, resin ducts. Orange bark on upper part of the trunk. ●Ornamental plant, forestry tree
9. <i>Larix decidua</i> (european larch) Alps, Carpathians	MM.	Monoecious, <u>deciduous soft needles, on the short shoots 20-30 leaves in bunches, on the long shoots needles grow one by one</u> ; small cones falling with part of shoots. ●Ornamental plant, forestry tree

Cupressaceae

Cupressoideae

10. <i>Platycladus orientalis</i> (oriental arborvitae) China, E-Asia	MM.	Wide, column shaped evergreen tree with scale-like leaves. Shoots organized vertically. Cone scales with horns, wingless seeds. Drought tolerant. ●Ornamental plant
11. <i>Juniperus communis</i> (common juniper) native, circumpolar distribution	M.	Dioecious evergreen tree or shrub; spiky needles in whorls of 3; fleshy (berry-like) cones ripening to dark blue, used for flavour ●Ornamental and aromatic plant

MAGNOLIOPHYTA († Angiospermatophyta)

LILIOIDSIDA

Liliales

Colchicaceae – Colchicum family **G** *

12. <i>Colchicum autumnale</i> (meadow saffron) native, Middle-Europe	G.	<u>Cormous geophyte</u> , the leaves and tricarpetate capsule develop in spring, flowers in autumn. Flowers with perianth of 6 tepals and long perianth tube. Contains highly poisonous <i>colchicin</i> alkaloid. ●Ornamental plant
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Asparagales **G**₍₃₎

Amaryllidaceae – Amaryllis family *

Allioideae - Onions

13. <i>Allium cepa</i> (common onion) Middle-Asia	G.	<u>Bulb</u> (modified underground stem); scape and leaves cylindrical, hollow. Inflorescence umbrella with spatha; 3-merious flowers, <u>fruit capsule</u> ; <u>essential oils</u> . ●Vegetable and aromatic plant
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Asparagaceae – Asparagus family *

14. <i>Asparagus officinalis</i> (garden asparagus) native, Eurasian species	G.	Dioecious. Young etiolated stems growing from a rhizome, used as vegetables. Leaves absent, photosynthesis done by the modified stems called phylloclades (determined growth). Red
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		berry fruit. ●Vegetable plant
15. <i>Convallaria majalis</i> (lily of the valley) Native, European species	G.	Monopodial stolon with short rhizomes at the ends. Clonal structure (polycorms). 2 elliptical leaves, fused leaf sheath. Scape with single raceme of pendulous trimerous, gamopetalous flowers Poisonous red berry. ●Ornamental plant
16. <i>Ruscus aculeatus</i> (butcher's broom) Native, Atlantic-mediterranean species	N, G.	Dioecious, rhizomatous, branching evergreen plant. Broad, spiky limited growth, leaf-like stems (phyllodes) Red berries. Protected species. ●Ornamental plant

Iridaceae — Iris family $\bar{G}^* \uparrow$

17. <i>Iris germanica</i> (bearded iris) Mediterranean origin	G.	Stout rhizome; sabre-shaped <i>unifacial</i> leaves; fan inflorescence, blue perianth, perianth-like stigma lobes, only <u>3 anthers</u> ; <u>inferior ovary</u> , fruit: capsule from 3 carpels. ●Ornamental plant
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Arecales $G_{3, (3)}^*$

Areaceae – Palm family

18. <i>Phoenix canariensis</i> (canary island date palm) Canary Islands	MM.	Straight, unbranching palm trunk with leaf scars (pachycaul). <u>Pinnate leaves</u> . Lower pinnules modified into spikes. Developing inflorescence covered with spatha. Dioecious plant. Fruit: drupe. ●Ornamental plant
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Poales $G_{(2 \rightarrow 1)}^*$

Typhaceae – Cattail family

19. <i>Typha angustifolia</i> (lesser bullrush / cattail) Native, cosmopolitan species	HH.	Rhizomatous aquatic perennial. Leaves in two rows, around 1 cm wide. Air ducts in the leaves. Monoecious, cylindrical narrow spike inflorescence (spadix), lower part with female flowers, upper part with male flowers, fruit: hairy <u>caryopsis</u> ●forms large stands in water
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Cyperaceae – Sedge family $G_{(3-2)}^*$

20. <i>Cyperus alternifolius</i> (umbrella papyrus) Madagascar	G.	Rhizome; <u>calamus</u> : a long internodium emerging generative parts over. Narrow leaves with fused leaf sheaths. Anemogamous nude flowers in spikelets. Coenocarpic ovary (fused carpels). Fruit is nut. ●Ornamental plant
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Poaceae († Gramineae) — Grasses family

21. <i>Lolium perenne</i> (perennial ryegrass) native to Hungary, cosmopolitan	H.	Short runners; <u>culm</u> ; <u>open leaf sheath</u> . Spikelets form spikes. Spikelets turn to the axis of the inflorescence with their edges. Arista, <u>caryopsis</u> . Important species for lawns, water demanding species. ●Lawn component
22. <i>Cynodon dactylon</i> (Bermuda grass) native to Hungary, cosmopolitan	G.	Weed with long runners. Adventitious roots emerging from the nodes of the runner. Short, greyish green leaves. Spikelets are small and violaceous, compose regular, umbelliform, cordy spikes. <u>Caryopsis</u> . ●Sward component, weed as well
23. <i>Phragmites australis</i> (common reed) native to Hungary, cosmopolitan	G, HH.	Rhizome and runners; hollow round, lignified <u>stem</u> ("reed-stem"); open leaf sheath; tough, fibrous leaf-blade; broad <u>panicle</u> ; wind-pollination (anemogamy), <u>caryopsis</u> . ● Weed as well

24. <i>Zea mays</i> (maize) Central America	Th.	Supporting aerial roots (brace roots / stilt roots); <u>compact culm</u> . Dioecious plant; male flowers in apical panicle ("tassel"), female flowers in axillary spadix ('ear'), spathe ('husk leaf'); long styles ('silk'); bare <u>caryopsis</u> , containing starch. ● Cereal and fodder plant
25. <i>Triticum aestivum</i> (Common wheat) Western Asia	Th.	<u>Culm</u> . Open leaf sheath. Spike. Wind-pollination (anemogamy). Scaly bracts called glume and lemma (palea). <u>Caryopsis</u> containing starch and protein (gluten). ● Cereal

Commelinales $G_{(3)} * \uparrow$

Commelinaceae — Dayflower / Spiderwort family

26. <i>Zebrina pendula</i> (inchplant, wandering jew) Central America	Ch.	Adventitious roots. <u>Drooping, spraling stem with well-developed nodes</u> . Lanceolate leaves with silvery striped upper and purple-coloured lower side. <u>Fused (closed) leaf sheath</u> . Axillary cymose inflorescence. <u>Flower heterochlamydeous: 3 sepals, 3 petals</u> . Insect pollinated (entomogamy). Fruit: capsule. ● Indoor ornamental plant
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ROSOPSIDA — CLASS OF ROSOIDS

Ranunculales — Order of Buttercups

Ranunculaceae — Buttercup family $\odot G_{\infty}$

27. <i>Clematis vitalba</i> (old man's beard) native species, indigenous in Europe	N-E.	Woody climber (=liana), leaf arrangement decussate, imparipinnate compound leaves, petiole transformed into tendril. Homochlamydeous, tetramerous flowers, stamens indefinite number, gynoeceium <i>apocarpous</i> , aggregate (etaerio) of achenes with feathery permanent styles. ● Weed
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Papaveraceae — Poppy family $* \uparrow G_{(\infty-2)}$

28. <i>Chelidonium majus</i> (tetterwort / nipplewort) native, Eurasian species	H.	Thick, branching rhizome, perennial herb, pinnatisect leaves with crenate margins. Siliqua-like <u>capsule</u> formed by two carpels. Orange <u>latex</u> of alkaloid content used for curing warts. ● Medicinal plant and weed
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Proteales — Order of Proteas

Platanaceae — Sycamore family $G_{\infty} *$

29. <i>Platanus acerifolia</i> (syn. <i>P. hybrida</i>) (London plane) Western Mediterranean (debated)	MM.	Bark exfoliating in large panes, leaf arrangement alternate, palmately lobed leaves. Bud hidden in the leaf base, collar-like stipule. Monoecious, inflorescence dense umbel, wind-pollinated, apocarpous gynoeceium, composite aggregate of achenes. Park tree of high water demand, planted also in alleys. ● Ornamental tree
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Caryophyllales — Carnation order $G_{(5-3)} *$

Polygonaceae — Knotweed family $G_{(3)} *$

30. <i>Polygonum aviculare</i> (common knotgrass) native cosmopolite weed	Th.	Stem procumbent; lanceolate leaf; <u>ochrea</u> . Small axillary flowers with tepala. Coenocarpic gynoeceium developing into small three-edged nuts. Resistant to trampling and drought. ● Weed.
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Caryophyllaceae — Carnation family

Silenoideae — Campion / catchfly

31. <i>Silene latifolia</i> subsp. <i>alba</i> (syn. <i>Melandrium album</i>) (white campion) native, Eurasian species	H. (TH.)	Herb with swollen nodes; leaf arrangement decussate, narrow, lanceolate sessile leaves (without petiole). Dioecious; <i>dichasium</i> ; <u>fused calyx</u> ; <i>lysicarpic</i> gynoecium developing into <u>denticidal / valvate capsule</u> . ● Weed
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Alsinoideae — Wort

32. <i>Stellaria media</i> (chickweed) native cosmopolite weed	Th.	Overwintering, annual weed germinating in autumn, procumbent shoots rooting at the nodes; leaf arrangement decussate, ovoid leaves, free, <u>unfused calyx</u> , petals two-lobed. Internodes bearing one rows of hairs. ● Weed
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Amaranthaceae — Amaranth family G₍₂₎

33. <i>Amaranthus retroflexus</i> (redroot pigweed) cosmopolite weed from North America	Th.	Pink, thickened taproot; herb with hairy stem. Long-petiolated, ovoid leaves. Inflorescence compound, dense panicle; unisexual, homochlamydeous flowers with tepals, wind pollination. Coenocarpic gynoecium, one-seeded circumscissile capsule / pyxis. ● Weed / weed of root crops
34. <i>Chenopodium album</i> (lamb's quarters, goosefoot) indigenous, cosmopolite weed	Th.	Taproot without considerable thickening; herb with ribbed stem, long-petiolated, cuneate leaves; powder-like hairs. Compound inflorescence: panicle of small dichasial cymes; <u>homochlamydeous flowers with tepals</u> ; coenocarpic gynoecium developing into small irregularly opening capsule. ● Weed / weed of root crops
35. <i>Beta vulgaris</i> convar. <i>conditiva</i> (beetroot) Mediterranean	TH.	Small beetroot (taproot + <i>hipocotyl</i> + stem), purple colour caused by betacyanin (insensitive to pH). Special way of thickening: <u>polycambiality</u> , <u>homochlamydeous flowers</u> in cymose inflorescence, coenocarpic gynoecium developing into small nuts that form composite fruits in threes. ● Food crop, vegetable

Cactaceae — Cactus family

Opuntioideae — Prickly pear cactus

36. <i>Opuntia phaeacantha</i> (desert prickly pear) Northern America	Ch.	Stem succulent; stem of indeterminate growth, succulent, flat, leaf-like (<i>cladode</i>). Young shoots still with fleshy, cylindric leaves that fall early, axillary shoots modified into <i>areoles</i> ; spiral, homochlamydeous flowers with undetermined floral parts; pseudocarp, berry-like fruit developing carpels sunk in the cladode, frost-resistant. ● Ornamental
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Santalales — Sandalwood order

Santalaceae — Sandalwood family G₍₂₎ *

37. <i>Viscum album</i> (mistletoe) native, Eurasian species	E.	<u>Hemiparasite</u> ; evergreen woody epiphyte; haustorial roots, pseudodichotomously branching green stems; leathery, lanceolate leaves with parallel venation. Dioecious; homochlamydeous flowers; white, berry-like fruit (pseudocarp) from inferior ovary; sticky (adhesive) seed. ● Medicinal plant
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Saxifragales — Saxifrage order

Crassulaceae — Stonecrop family G_∞ *

38. <i>Sedum acre</i>	Ch.	Cushion-like habit; <u>succulent leaves</u> , ovoid, small, fleshy leaves with
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(goldmoss stonecrop) native, European species		spicy taste. Cymose inflorescence; pentamerous, yellow flowers. Apocarpous gynoecium develops into an aggregate of follicles. ● Ornamental
39. <i>Sempervivum tectorum</i> (common houseleek) Mediterranean	Ch.	Leafy stem originating from a basal rosette of flat, succulent leaves; cymose inflorescence. Dies after flowering. Offspring-rosettes develop at the end of the runners. Apocarpous gynoecium, aggregate of follicles. Ornamental of rockeries, slime squashed from the leaves heals earache. ● Ornamental

Vitales — Grape order *

Vitaceae — Grape family G₍₂₎

40. <i>Vitis vinifera</i> (common grape vine) Ancient culture plant of Mediterranean-Western Asian- Caucasian origin	M-E.	Liana (wine, woody climber) climbing with branching stem tendrils, two nodes with tendrils are followed by one bearing flowers; peeling bark; leaf arrangement alternate; palmately lobed (palmitifid-palmitipartite) leaf with dentate margin; ♂ or ♀ flowers in panicle (compound raceme); fruit is a two-loculed berry of various size and colour. ● Fruit and wine plant
41. <i>Parthenocissus inserta</i> (thicket creeper, grape woodbine) adventive species, originates from the eastern parts of North-America	M-E.	Small woody climber shrub; Stem with numerous lenticels; the shoot tendrils with few (2-5) forks; the leaves are long petiolated, palmately compound, composed of five leaflets; redish autumn foliage. Dichotomous cymose inflorescence; small deep blue, non-edible berries. Naturalised in Europe. ● Ornamental plant

Geraniales — G₍₅₎

Geraniaceae — Geranium family *, ↑

42. <i>Pelargonium zonale</i> (zonal pelargoniums, horseshoe geranium) native to Southern Africa	N.	Semishrub with succulent, erect stems; The leaves are simple, nervation palmate-netted, leaf margins crenate. Glandular trichomes produce and secrete essential oils; leaves have dark blotch in the middle of the lamina; Cymose umbel-like inflorescence. The flowers are pentamerous, polipetalous (petals are free); The fruit is a unique indehiscent fruit type - cranesbill capsule ● Ornamental plant
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Malpighiales

Salicaceae — Willow family G₍₂₎ *

43. <i>Populus × canescens</i> (<i>Populus alba</i> × <i>P. tremula</i>) (grey poplar) native to Hungary, southern Eurasian distribution	MM.	Vigorous, dioecious tree with root suckers; The bark is grey. Developmental heterophylly (topophysis): Long shoot has larger, deeply lobed and acute leaves with a canescent downy underside, Indeterminate dwarf shoot has wavy-edged, smaller, ovate leaves with a hoary or glabrous undersides. Apopetalous flowers (without calyx or corolla) inflorescences are catkins. Wind-pollinated; the fruit is a dehiscent capsule; seeds covered by white hairs ● Pulpwood for paper production, Softwood
44. <i>Salix alba</i> (white willow) native to Hungary, southern Eurasian distribution	MM.	Dioecious tree, softwood, buds having only one budscale; the leaves are lanceolate with falling (caducous) stipule; margin serrulate; leaves with adpressed, soft, silky hairs (silvery-white foliage). flowers have no calyx or corolla (apetalous); the flowers form catkins (or spikes), pollinated by insects; syncarpous gynoecium; the fruit is a dehiscent capsule; seeds covered by white hairs. Pendulous cultivars ● Ornamental plant

Fabales G

Fabaceae — Leguminous family G₁ ↑

45. <i>Trifolium repens</i> (white clover) native, Europe and central Asia, cosmopolite distribution	H.	Herbaceous, perennial. Stems creeping and rooting at the nodes. Leaves trifoliate, with stipule. Papilionaceous flower; heads of whitish flowers are at the end of long flower stalks; fruit indehiscent legume, with one seed. ● Grassland component herbaceous plant; forage crop
46. <i>Robinia pseudoacacia</i> (black locust or false acacia) adventive species, native to the Southeastern United States	MM.	Deciduous tree with root suckers; the roots have nodules with nitrogen fixing bacteria. Bark is ribbed; buds are hidden in the bark. Stipule transformed into spine; imparipinnate compound leaves (odd pinnate). Papilionaceous flower; flowers arranged in racemes; fruit dehiscent, flat legume (pod). ● Honey plant, firewood, industrial wood, park tree and invasive weed species
47. <i>Phaseolus coccineus</i> (scarlet runner bean) Central-America	Th-E. (H.)	Taproot has nodules with nitrogen fixing bacteria. Climbing habit; Twisted stem. Leaves trifoliate. Red papilionaceous flowers located in the axil of a leaf arranged in racemes; fruit dehiscent legume (pod) containing multicolored seeds (beans). ●Vegetable and food plant

Rosales G, G*

Rosaceae — Rose family

Maloideae — G₅₋₁

48. <i>Pyrus communis</i> (European pear or common pear) originates from eastern Europe and southwestern Asia	MM.	Cultivated plant, multi-hybrid specioïd. Medium-sized tree. Leaf simple leaf-arrangement alternate. The leaf blade is ovate. Leaf stalk shorter than the lamina (but longer than the one half of the lamina) Leaf base obtuse. White, pentamerous, heterochlamydeous flowers arranged in a raceme; sepals and petals are free; Gynoecium is apocarpous, inferior ovary of five carpels forming an aggregate of follicles (core). Follicles with membranous walls embedded in the fleshy receptacle forming a pyriform pome (pseudocarp). Sclereid cells give the pear its gritty texture. Sclerenchyma cells support the ovaries/follicles. ●Fruit plant: pomaceous fruit
49. <i>Malus domestica</i> (apple tree) originates from Central-Asia	M, MM.	Specioïd. Buds and apical part of the stem downy. Leaves alternately arranged, simple, lamina oval with serrated margins and downy undersides. Leaf base attenuate. Leaf stalk shorter than the one half of the lamina. Cyme inflorescence, heterochlamydeous, pentamerous flowers, whitish corolla with a pink tinge, sepals and petals free. Gynoecium is apocarpous, ovary inferior; The aggregate of five follicles (core) are embedded in the fleshy receptacle forming a pome (pseudocarp). ● Fruit plant: pomaceous fruit
50. <i>Cydonia oblonga</i> (quince) originates from South-western Asia	M, (N).	It is a small deciduous tree; The leaves are alternately arranged, lamina simple, oval with entire margins, densely pubescent undersides. Stipule; The flowers are large (5 cm across), pentamerous; The flowers one by one on the top of the shoot; Pome (pseudocarp) is pubescent, fragrant; sclereid cells in the pome. ● Fruit plant: pomaceous fruit, rootstock
51. <i>Crataegus monogyna</i> (common hawthorn, single-	M.	It is a shrub or small tree with thorns of shoot origin. The leaves are simple, deeply lobed with pinnate venation. Stipule. The pentamerous

seeded hawthorn) native, distributed in Eurasia,		flowers form a corymbs. Gynoecium is monocarpic, ovary inferior; The haw is a small, oval dark red fruit, structurally a pome (pseudocarp) inside with a lignified follicle containing a single seed. ● Medicinal plant, invasive weed species outside Eurasia
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Rosoideae — G_{∞}, G_{∞}

52. <i>Rosa canina</i> (dog rose) native, Europe, Northwestern Africa, and Western Asia,	M, N.	It is a deciduous shrub, with arched stems. Sharp, hooked spikes; The leaves are imparipinnate, with 5-7 leaflets. Stipule adnate to the petiole. Flowers are arranged in a cyme; Rose hip is an oval, red-orange fruit, contains vitamin C. Gynoecium is apocarpous, ovary inferior; Aggregate of achenes are embedded in the fleshy receptacle; During ripening sepals fall down ● Medicinal plant
53. <i>Fragaria</i> × <i>ananassa</i> (garden strawberry) (<i>Fragaria chiloensis</i> × <i>F. virginiana</i>) Parents originate from America	H.	Hybrid species. It is a herbaceous, perennial plant with runners. The leaves are trifoliolate, with stipule. The pentamerous flowers with numerous carpels and stamens; they are arranged spirally. The bracteoles make up the epicalyx. Gynoecium is apocarpous, ovary superior; The aggregate of achenes are on a fleshy stalk. Strawberry fruit is derived from the receptacle that holds the achenes. ● Fruit plant: berry fruit

Prunoideae G_I

54. <i>Prunus persica</i> (syn. <i>Persica vulgaris</i>) (peach and nectarine) originates from China	M.	It is a small deciduous tree; The leaves are alternately arranged, simple, lanceolate, pinnately veined. Petiole is short. Gynoecium is monocarpic, ovary half inferior; The fruit is a drupe with juicy mesocarp. ● Fruit plant: stone fruits
55. <i>Prunus armeniaca</i> (syn. <i>Armeniaca vulgaris</i>) (apricot) originates from China	M.	It is a small deciduous tree. The stems are reddish-brown and shiny. The leaf blade is broadly ovate, with a rounded base, pointed tip and long petiole. Heterochlamydeous, pentamerous flowers; sepals and petals are free. The sepals are red, the fruit is a drupe. ● Fruit plant: stone fruits
56. <i>Prunus domestica</i> (European plum) originates from East Europe and Caucasus	M.	Specioid. It is a small tree. The leaves are alternately arranged, simple, ovate, with crenate-serrate margins. Globose to oval drupe with a waxy coat. ● Fruit plant: stone fruits
57. <i>Prunus avium</i> (syn. <i>Cerasus avium</i>) (sweet cherry / wild cherry) native, Europe, Anatolia and Western-Asia,	MM.	It is a deciduous tree. The bark of an adult tree peels off horizontally. Young trees with straight, upward branches; they have long shoots and indeterminate dwarf shoots; phyllotaxy alternate, lamina simple, obovoid, glabrous above, with a serrated margin and acuminate tip. Small red glands (extrafloral nectaries) on the petiole. The flowers (2-6) form a corymb. The fruit is a drupe. ● Fruit plant: stone fruits; forest component tree

Elaeagnaceae — Oleaster family G_I *

58. <i>Elaeagnus angustifolia</i> (Russian olive / silver berry) adventive species, originates from Western- and Central-Asia	M.	It is a small, thorny tree or shrub with curved tree trunk. The leaves are alternate, lanceolate, leaf undersides densely covered by silvery scales (star-shaped hairs); Flowers with a four-lobed creamy yellow, fused calyx, corolla missing; Gynoecium is monocarpic, ovary inferior; Fruit is a small drupe, with a dryish, mealy texture, and covered with silvery scales. Halophyte. ● Park tree, honey plant and invasive weed species
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Cannabaceae — Hemp family

<p>59. <i>Humulus lupulus</i> (common hop) native, Europe, Western-Asia and North-America (circumpolar distribution),</p>	<p>H-E.</p>	<p>It is a dioecious, climbing perennial plant, with rhizome (twisted stem functioning as a tendril). Stiff, downward facing hooked hairs; The leaves are simple and leaf arrangement is opposite; Developmental heterophylly: The leaves on the apical part of the stem of the female plants have an undivided blade, but the leaves of the basal part of the stem are divided, with 3-5 lobes; Homochlamydeous flowers (tepals); Inflorescences are located in the leaf axils; The male flowers grow in loose panicles. The flowers and the leafy bracts of the female plants arranged in a „cone“-like structure. Lupulin secreting glands are concentrated in the leafy bracts; Gynoecium is syncarpous, ovary superior; The fruit is a small nut.</p> <p style="text-align: right;">●Plant of the brewing industry</p>
<p>60. <i>Celtis occidentalis</i> (common or American hackberry) adventive species, originates from North-America</p>	<p>MM.</p>	<p>Medium-sized tree; the bark is silvery grey, cork-like, ridged. The leaves are alternate, lamina ovate-lanceolate, with a pointed tip, rough above; The leaf-blade is asymmetric at the base; margins serrate except at the base. Gynoecium is syncarpous, ovary superior; The fruit is a fleshy drupe.</p> <p style="text-align: right;">●Tolerant park tree and invasive weed species</p>

Moraceae — Mulberry family

<p>61. <i>Morus alba</i> (white mulberry) adventive, originates from China</p>	<p>MM.</p>	<p>Leaves are orbicular, cordate. Heterophylly: leaves entire on the long shoots, palmatifid at the base of short shoots (topophysis). <u>Milky sap</u>. Flowers unisexual, monoecious and homochlamydeous; coenocarpic gynoecium, the tepales of the female flower become fleshy, <u>sorosis composite fruit</u>.</p> <p style="text-align: right;">●Weed- and fruit plant</p>
<p>62. <i>Ficus carica</i> (common fig) Eastern Mediterranean, Southwest Asia</p>	<p>M.</p>	<p>Leaf arrangement is alternate (spiral); leaves are palmately palmatifid to palmatifid. Unisexual flowers in hypanthodium; Coenocarpic gynoecium; the fleshy inflorescence becomes a <u>sorosis composite fruit</u>. Milky sap.</p> <p style="text-align: right;">●Fruit plant</p>

Urticaceae — Nettle family

<p>63. <i>Urtica dioica</i> (common nettle) cosmopolitan, worldwide distribution</p>	<p>H.</p>	<p>Vertical rhizome + runner; angular herbaceous stem with decussate leaf arrangement; leaves are ovate to lanceolate with serrate to dentate margins; <u>stinging hairs</u> (trichomes). Dioecious; inflorescence in the leaf axils; homochlamydeous. Coenocarpic gynoecium; the fruit is a <u>nut</u>.</p> <p style="text-align: right;">●Weed- and medicinal plant</p>
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Cucurbitales

Cucurbitaceae — gourd family G₍₃₎ *

<p>64. <i>Cucurbita pepo</i> (summer squash) Central-America</p>	<p>Th, Th-E.</p>	<p>Hollow stem; branched tendrils; palmately lobed pentagon-shaped leaf; setiform hairs. Unisexual and monoecious, gamopetalous flowers in the leaf axils. Variable pepo fruit.</p> <p style="text-align: right;">●Vegetable</p>
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Fagales G₍₆₋₃₋₂₎ *

Fagaceae — Beech family

Fagoideae

<p>65. <i>Fagus sylvatica</i> (common beech)</p>	<p>MM.</p>	<p>Bark is smooth and light grey. The buds are long and slender; the leaves are simple, ovate to elliptic; <u>the margins of the leaves entire or</u></p>
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native, Europe		<u>slightly crenate, when young ciliate at the margins</u> . The flowers are homochlamydeous, unisexual and monoecious; ♂ flowers in compound dense umbel, ♀ flowers in twos; wind-pollinated; two <u>triangular nuts</u> in each scaly cupule.	● Industrial- and ornamental plant
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Quercoidae

66. <i>Quercus robur</i> (pedunculate oak) native, Europe	MM.	Pyramidal crown form. The buds are accumulated at the top of the shoots. The petiole shorter than 5 mm (very short-stalked). Leaves are obovate, lobed and auriculate at the base. Monoecious. Homochlamydeous flowers in <u>catkins</u> of unisexual biparous cymes. Wind-pollinated; smooth cupule. <u>Nuts called acorn with a long acorn stalk</u> .	● Industrial- and ornamental plant
67. <i>Castanea sativa</i> (sweet chestnut) native, southern Europe	MM.	Shoot covered by whitish lenticels; leaves are oblong-lanceolate with <u>toothed margins</u> ; monoecious; homochlamydeous; compound ♂ catkin with ♀ flowers at the base; Wind- or insect-pollinated. Coenocarpic gynoecium; three nuts in <u>scaly cupule</u> .	● Fruit- and ornamental plant

Juglandaceae — Walnut family G₍₂₎ *

68. <i>Juglans regia</i> (common walnut) Balkan Peninsula, Asia Minor, Caucasus	MM.	Bark is light grey; leaf arrangement alternate, <u>imparipinnate compound leaves</u> , heart-shaped leaf scar (cicatrix). Wind-pollinated; homochlamydeous, compound dense umbel <u>catkins</u> (♂); ♀ flowers at the top of the shoots. Coenocarpic gynoecium; nut with closed cupule ("walnut fruit"), oily seeds.	● Fruit plant
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Betulaceae — Birch family G₍₂₎

69. <i>Betula pendula</i> (silver birch) native, Eurasian	MM.	Shoots are pendulous; white peeling bark; the margin of the leaves are doubly serrate. Monoecious, ♂ and ♀ flowers in <u>catkins</u> ; wind-pollinated; coenocarpic gynoecium; fruits are winged nutlets (=samara).	● Ornamental plant
70. <i>Corylus avellana</i> (common hazel) native, European	N, M.	Multi-stemmed shrub or a small tree; leaves are cordate, ovate to orbicular with doubly serrate margins. Monoecious, ♂ flowers in <u>dense umbel catkins</u> , ♀ flowers in mixed buds; wind-pollinated. Coenocarpic gynoecium; the fruit is a <u>nut</u> in cupule.	● Fruit plant
71. <i>Carpinus betulus</i> (common hornbeam) native, European	MM.	Bark is silver to dark grey (with vertical markings). Venation pinnately ovate with doubly serrate margin. Monoecious, wind-pollinated; ♂ flowers in <u>compound (dense umbel) catkins</u> , ♀ flowers in spike. <u>Nut</u> with a three-lobed leafy involucre.	● Industrial- and ornamental plant

Brassicales G

Brassicaceae († Cruciferae) — Cabbage family (crucifers) †

72. <i>Brassica oleracea</i> convar. <i>capitata</i> provar. <i>capitata</i> (headed cabbage)	TH.	Storage taproot; initial leaves form a rosette, later produce an unbranched leafy stem; large flower bud (winterer). Pungent taste (sinigrin glycoside). Corymb inflorescence; 4 sepal, 4 petal, cruciform (bisymmetric) flowers, <u>4 long and 2 short stamens</u> (A ₂₊₄). Fruit is a	
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Mediterranean		<u>siliqua</u> with replum.	●Vegetable
73. <i>Raphanus sativus</i> (radish) Mediterranean	Th, TH.	Leaves are arranged in a rosette; tuber transformed from the hypocotyl stem part. Herbaceous stem with alternate leaf arrangement. <u>Leaves have a lyrate shape</u> . Cruciform flowers white or purplish colour, 4 long and 2 short stamens (A2+4). Fruit indehiscent <u>siliqua</u> with replum.	●Vegetable

Malvales G₍₅₎ *

Malvaceae — Mallow family

74. <i>Tilia tomentosa</i> (silver lime) native, Balkan-Pannonian distribution	MM.	Usually producing offshoots; leaf arrangement alternate; big leaves with serrate margins, slightly asymmetric and cordate; the leaf underside is densely hairy, tomentose because of white hairs. Cymose inflorescence with leafy bracts; flowers with many stamens; insect-pollinated. Coenocarpic gynoecium; the fruit is smooth-walled <u>nut</u> with involucre.	● Melliferous- and ornamental plant
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Sapindales G *

Simaroubaceae — Quassia family G₅₋₆

75. <i>Ailanthus altissima</i> (tree of heaven) adventive, originates from China, Korea	MM.	<u>Invasive tree</u> species, spreading with stump sprouts and root suckers. Sparse branching; big imparipinnate compound leaves with unpleasant odor. Flowers appear in large panicles at the end of new shoots, each with five or six petals and sepals (heterochlamydeous). Apocarpous gynoecium, <u>aggregate of fruits grow in clusters and each is encapsuled in a samara</u> . Tolerates well urban habitats.	●Weed
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Sapindaceae — Soapberry family

76. <i>Aesculus hippocastanum</i> (horse-chestnut) originates from the Balkan	MM.	Terminal bud with gluey bud scales; leaf arrangement is decussate, leaves are palmately compound; forming a specific leaf mosaic. Inflorescence cymes in large panicle; fruits are spiky and fleshy capsules; seeds with a whitish chalaza.	●Ornamental plant
77. <i>Acer campestre</i> (field maple) native, European	MM.	Slightly fissured bark. Leaf arrangement is decussate; leaves are small-sized with five blunt, rounded lobes; milky sap in the long petioles. Cyme inflorescence, the fruit is a double-samara with two wings.	●Ornamental plant
78. <i>Acer negundo</i> (boxelder maple) adventive, originates from North-America	MM.	Green coloured, waxy shoots. Leaf arrangement is decussate; <u>imparipinnate compound leaves</u> that usually have three to seven leaflets. Floppy raceme inflorescence; unisexual apetalous flowers, dioecious. The fruit is a double-samara.	●Ornamental plant and weed

Gentianales G_{2,(2)} *

Apocynaceae — Dogbane family

79. <i>Vinca minor</i> (small periwinkle) native, Central-European distribution	Ch.	Evergreen subshrub, stems easily rooting, forms large clones covering the soil. Leaf arrangement is decussate; leathery leaves are simple, sessile and <u>attenuate</u> . Solitary flowers at the leaf axils, with a <u>distorted actinomorphic five-lobed gamopetalous corolla</u> . Apocarpous gynoecium, fruit is a double follicle. Alkaloid content. Shade tolerant plant that can be used to replace lawn. ●Ornamental- and pharmaceutical plant
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Lamiales $G_{(2)}$ * \uparrow
Oleaceae — Olive family

80. <i>Fraxinus ornus</i> (manna ash) native, submediterranean distribution	MM, M.	Leaf arrangement is decussate; <u>imparipinnate compound leaves</u> ; broad leaflets; grey bud scales. Flowers form a large white cymose inflorescence; insect-pollinated. Fruit is a slender samara. ●Ornamental plant
81. <i>Syringa vulgaris</i> (common lilac) adventive species, originates from the Balkan	M, N.	Shrub or small tree; self-propagating by woody sprouts and runners; leaf arrangement decussate, leaf base cordate, entire leaf margins. Flowers in terminal <u>panicles</u> ; gamopetalous, insect pollinated; <u>capsules</u> have 2 cavities. ●Ornamental plant
82. <i>Ligustrum vulgare</i> (wild privet) native, European	N, M.	Leaf arrangement decussate, glabrous, narrow-lanceolate. White flowers in panicles; gamopetalous, 4 petal and 4 sepal lobes, fruit is a black <u>berry</u> . ●Ornamental plant

Plantaginaceae — Plantain Family $G_{(2)}$ \uparrow

83. <i>Plantago lanceolata</i> (narrowleaf plantain) native, Eurasian	H.	Short rhizome; parallel leaf venation, decurrent, narrow-lanceolate leaves. <u>Leaf rosette</u> and <u>scape</u> with 2–4 cm long spike; gamopetalous flowers with 4-lobed petals; wind-pollinated, fruit a circumscissile <u>capsule</u> (pyxis). ●Weed and medicinal herb
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Lamiaceae († Labiatae) — Mint (Deadnettle) Family $G_{(2)}$ \uparrow

84. <i>Lavandula angustifolia</i> (true lavender) West-Mediterranean	N.	The young shoots dies in winter (<i>subshrub</i>); naked buds; <u>angular stem</u> . Long, linear lamina with glandular and pubescent hairs, decussate <u>leaf arrangement</u> . Terminal inflorescences are pseudowhorls formed by cymes. Sepals are persistent. <u>Zygomorphic, gamopetalous flowers, bilabiate corolla</u> . <u>Didynamous flower</u> (2 longer and 2 shorter stamens): A_{2+2} . Schizocarp fruits, from the coenocarp gynoecium developing <u>four 1-seeded nutlets</u> . Essential oils. ●Perfume and ornamental plant
85. <i>Salvia officinalis</i> (garden sage) Mediterranean	N.	Evergreen shrub; <u>angular stem</u> . Oblong-lanceolate, opposite leaf arrangement. Glandular and pubescent hairs. Inflorescence is a pseudowhorl; purplish blue, <u>bilabiate, zygomorphic flower, gamopetalous</u> . <u>Four 1-seeded nutlets</u> in permanent calyx. Two stamens became nectar glands: A_{2+0} . ●Medicinal herb and ornamental plant

Solanales — Nightshade Order $G_{(2)}$ *

Convolvulaceae — Morning Glory Family

Convolvuloideae — Morning Glory

86. <i>Convolvulus arvensis</i> (field bindweed) cosmopolitan distribution		G. Herbaceous, self-propagating by <u>runners</u> , creeper; tendril; Glabrous, <u>hastate leaves</u> with sagittate base. Actinomorphic (star-shaped) flowers solitary at the leaf-axils. Gamopetalous corolla, funnel-shaped; fruit is a capsule. ●Dangerous weed
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Solanaceae — Nightshade Family

87. <i>Capsicum annuum</i> (pepper) Central-America	Th.	Sympodial stem branching, stems often becoming woody at the base. Alternate leaf arrangement, simple, oblong-ovate leaves. Actinomorphic flower symmetry (star-shaped), 5 lobed flowers; <u>fruit is a capsule, usually with fleshy pericarp</u> . Sepals are permanent; pungent taste (peppery from the capsaicin alkaloid). ●Condiment and vegetable
88. <i>Solanum lycopersicon</i> (<i>Lycopersicon esculentum</i>) (tomato) South-America	Th(N.)	Glandular, sympodial branching, herbaceous stem, often woody at the base. Leaves consist of alternating size of leaflets: <u>interruptedly imparipinnate</u> , leaflets are pinnatifid. Cymose inflorescence, flowers are 5-lobed, <u>actinomorphic with fused, yellow petals</u> . The fruit is a fleshy berry. Contains lycopene pigment. ●Vegetable
89. <i>Solanum tuberosum</i> (potato) South-America	Th(G.)	Cultivated as an annual plant. Herbaceous stem, short runners bearing <u>terminal</u> , starch containing <u>tubers</u> ; Alternate leaf arrangement, <u>interruptedly imparipinnate leaves</u> , with entire, ovate leaflets. White or purple flowers grow in clusters, in short cymose inflorescences at the leaf-axils. Fruit is a green, toxic berry. ●Vegetable
90. <i>Petunia × hybrida</i> (petunia) South-America	Th.	Glandular, sympodial, herbaceous stem. Leaves are simple, ovate-lanceolate, with entire margins, leaf arrangement alternate. Gamopetalous, actinomorphic, funnel-shaped corolla. Fruit is a septifragal <u>capsule</u> (splitting along the partitions between the carpels). ●Ornamental plant

Apiales — Parsley Order G(5) *

Araliaceae — Aralia Family

91. <i>Hedera helix</i> (common ivy) native, Atlantic-Mediterranean species	N-E.	Evergreen woody climber (vine) with <u>aerial (climbing) roots</u> ; alternate leaf arrangement, leathery leaves; heterophylly: palmately five-lobed juvenile leaves on the creeping and climbing stems, and entire leaf lamina on the flowering stems; 5-lobed flowers bloom in autumn; Inflorescence a <u>raceme of umbels</u> ; coenocarp gynoecium, ovary inferior, black pseudocarp <u>berry-like fruit</u> ; volatile oils. ●Ornamental plant: broadleaf evergreen plant
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Apiaceae († Umbelliferae) — Parsley Family

92. <i>Petroselinum crispum</i> (parsley)	Th.	Biennial. Storage taproot; the basal leaves (in rosette) are bi- or tripinnate with lobed leaflets. Inflorescence is a <u>compound</u>
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Mediterranean		(double) umbel. Petals are yellow, early falling off. Fruit is a <u>cremocarp (schizocarp)</u> . Contains volatile oils and vitamin C. ●Root vegetable and condiment
93. <i>Daucus carota</i> subsp. <i>sativus</i> (carrot) Western- and Central-Asia	TH.	Biennial; carotin containing storage taproot; herbaceous stem; leaves are multiple pinnate. <u>Compound umbel</u> , as the fruits develop, the umbel curls up at the edges; involucre are pinnatisect. Fruit is a <u>cremocarp (schizocarp)</u> with hooked spines; Contains essential oils. ●Root vegetable

Asterales — Sunflower Order G (2) *, ↑

Asteraceae — Sunflower Family

Carduoideae — Thistles

94. <i>Cirsium arvense</i> (creeping thistle) native Eurasian species	G.	Far-creeping roots bearing adventitious shoots + cylindrical rhizome; herbaceous stem; basal leaves in rosette. Leaves lanceolate, pinnatifid, with spinulose margins. Dioecious, <u>only disc florets (flowers)</u> in the <u>capitula</u> . The male capitula is globular, the female cylindrical. Fruit is a <u>cypsela</u> with pappus-hairs. ●Noxious weed
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Cichorioideae

95. <i>Cichorium intybus</i> (chicory) native Eurasian species	H, TH.	Stout taproot; herbaceous stem; leaf rosette; runcinated-pinnatifid. In the <u>capitula with blue coloured ray florets</u> . Fruit is a small, glabrous <u>cypsela</u> ; contains latex. ●Weed
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Asteroideae

96. <i>Solidago canadensis</i> (Canada goldenrod) adventive, North-American origin	H, G.	Creeping rhizome, rigid herbaceous stem. Alternate leaf arrangement, lamina simple, narrow-lanceolate with dentate margins. Small, yellow <u>capitula</u> forming a dense, sidelong drooping panicle. Fruit is a small <u>cypsela</u> with pappus-hairs. ●Invasive Weed
97. <i>Ambrosia artemisiifolia</i> (<i>A. elatior</i>) (common ragweed) adventive, cosmopolitan weed of North-American origin	Th.	Herbaceous stem; leaves 1–2-pinnatisect, the lowers are arranged opposite, the uppers alternate; unisexual, monoecious; male <u>capitula</u> is small, growing in terminal spikes; female capitula in axillary clusters. Wind-pollinated. The fruit is a <u>cypsela</u> . ●Invasive, allergenic weed
98. <i>Helianthus annuus</i> (common sunflower) North-American species	Th.	Stout herbaceous stem; cordate leaf base with coarse, scabrid hairs; flat inflorescence axis (receptacle, disc), wide terminal capitula; large, ovate involucral bracts. Sterile zygomorphic, yellow <u>ray florets</u> , hermaphrodite, actinomorphic inner <u>disc florets</u> . The fruit is a <u>cypsela</u> . ●Oil plant

<p>99. <i>Dahlia × variabilis</i> (garden dahlia) North-America</p>	<p>Th, (H.)</p>	<p><u>Tuberous roots</u>; herbaceous stem; opposite leaf arrangement, imparipinnate leaves, the leaflets with serrated margins. Inflorescence is a <u>capitula</u> with both central <u>disc florets</u> and surrounding <u>ray florets</u>, in some varieties, the ray florets dominate. The fruit is a <u>cypsela</u>. ●Ornamental plant</p>
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Dipsacales — Teasel Order G 3)

Adoxaceae — Moschatel (Muskroot) Family *

<p>100. <i>Sambucus nigra</i> (black elder) native, European</p>	<p>M. (N.)</p>	<p>Thick pith, twigs have clearly visible, <u>large lenticels</u>. Decussate leaf arrangements, imparipinnate leaves with leaflets having serrated margins. Inflorescence is a large, flat, compound multiparous cyme; stamens inserted in throat of the fused petals. Fruit is a black <u>drupe</u> with 3-5 <u>pyrenes</u>. Nitrogen indicator. ●Weed and medicinal plant</p>
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Legend

Gynoecium (ovary)

G = superior

\overline{G} = inferior

$\overline{\overline{G}}$ = half inferior

The lower numeral refers to the number of the carpels, if it is in brackets means fused

Flower symmetry

- ⊙ spirally arranged flower parts
- * actinomorphic, symmetrical in all directions (more than two axes)
- ↔ bisymmetric flower, symmetrical in two directions
- ↑ zygomorphic flower, symmetrical in one direction
- ∴ asymmetric flower

Life forms according to Raunkiaer

MM. = tall trees (more than 8 m high, *mega et macrophanerophytes*).

M. = small trees (2–8 m, *microphanerophytes*).

N. = shrubs (½–2 m, *nanophanerophytes*).

Ch. = dwarf shrubs or semi-shrubs, cushion-like growth, or cushion-like succulents, having overwintering buds on the organs sustaining above the ground level (up to 1–50 cm) (*chamaephytes*).

H. = perennials, overwintering buds at the ground level (*hemikryptophytes*).

G. = geophytes, overwintering buds on the underground modified organs, deep in the soil. Ec. rhizome, tuber, corm... (*geophytes*).

HH. = aquatic plants, overwintering buds deep in the water mud (*hydato-helophytes*).

TH. = biannuals (*hemitherophytes*), first year taproot and a dwarf shoot, second year generative organs that produce seeds and die

Th. = annuals (*therophytes*), life cycle in one year overwintering in seeds.

E. = usually perennials living on the trees, in the canopy (*epiphytes*).

N-E. = woody climbers, vines (liana, *nano-erepophytes*).

H-E. = climbers with green stem (*hemikrypto-erepophytes*).

Others

- = uses
- † = former name
- syn. = synonym, not valid name but oftently used

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