# Cold-Hardy Edible Fruits: Combined Inventory with Verification Data (v7)

This document merges three AI-generated inventories (**PDF-A**: 'Verified Master Inventory'; **PDF-B**: 'Global Survey'; **PDF-C**: 'New Taxonomic Discoveries', cited as **C:**) with data from web spot-checks. Where only one PDF says something it is prefixed **A:** or **B:**.

**Structure (v3).** Tables 1-3 hold every species whose hardiness could be placed: zone 3 or colder (-40 °C or lower), zone 4 (-34.4 to -39.9 °C), zone 5a (-26.1 to -28.8 °C). A species sits in the coldest table that at least one credible rating or population/cultivar supports, and the notes give conflicting ratings. Table 4 lists candidates whose hardiness could not be evaluated from data found. Table 5 lists taxa whose fruit is toxic or not usable as food. Table 6 (last) lists species verified not to meet the criterion (zone 5a or colder).

**Evidence grades** (from the PDFs): E1 strong (trials, freezing experiments, documented fruiting at the relevant minima); E2 good (established horticultural ratings); E3 ecological inference from natural range, no measured threshold; E4 uncertain. Grades describe winter hardiness, not fruit quality or flower-bud frost tolerance.

**Numbering.** 'v2 Table n' in row notes refers to table numbers in the previous version of this document.

**Row shading.** Red = doubtful or wrong claim or placement found. Green = data added from sources checked. Yellow = reviewer note from general knowledge, not verified. White = not individually checked. **Fruit size**: [S] = from a named source; [K] = approximate, reviewer knowledge, unverified; 'not found' = no figure located. Sizes are diameter unless 'long' is stated.

**What moved in v3.** From the exclusion table: *Podophyllum peltatum* (ripe fruit edible, zone 3) and *Streptopus amplexifolius* (fruit edible, cucumber-flavoured) to Table 1; *Lonicera iliensis* (fruit edible, sweet-sour) to Table 4. Still excluded: *Actaea*, *Daphne altaica*, *Paris quadrifolia*, *Solanum dulcamara*, *Symphoricarpos albus*. To Table 1 from relatives and other lists: Saskatchewan dwarf cherries, Manchurian and Siberian apricots, Amur grape, American cranberry, lowbush blueberry, rugosa rose, *Schisandra*, silverberry, *Ribes procumbens*, *R. alpinum*, *R. spicatum*, *Sorbus aucuparia*, wild raspberry, *Rubus arcticus* ssp. *stellatus* and (because one rating supports zone 3) *Elaeagnus umbellata*. To Table 2: *Ribes burejense*, *R. heterotrichum*, *R. ussuriense*, *Hippophae salicifolia*, *Actinidia giraldii*. To Table 3: *Berchemia racemosa*, *Ribes himalense*. To Table 6: maqui, *Berberis darwinii*, *Gaultheria mucronata*, *Rubus ellipticus*, *Berchemia lineata*. Duplicate entries for *Ribes nigrum* and *R. uva-crispa* (less hardy cultivars) were merged into Table 1.

**v4 addition: Rubus survey.** The Wikipedia genus list (about 1,500 species, mostly tropical) was screened for cold-climate N. American and Eurasian species. Added or expanded in Table 1: *R. idaeus* incl. subsp. *strigosus* (POWO synonyms: *R. sachalinensis*, *R. sibiricus*, *R. melanolasius*), the arctic bramble hybrids (*R. arcticus* nothossp. *stellarcticus*), *R. acaulis*, *R. pubescens*, *R. parviflorus*, *R. odoratus*, *R. canadensis*, *R. allegheniensis*, *R. flagellaris* and the Finnish nectar raspberry; Table 2: *R. occidentalis*, *R. crataegifolius*, *R. caesius*; Table 3: *R. deliciosus*; Table 4: *R. leucodermis*, *R. spectabilis* and species not evaluated. Many Rubus ratings come from plant databases and nursery listings; fruit-quality descriptions for the wild species are thin.

**v5 addition: PDF-C integrated.** Species new to the inventory: *Elaeagnus angustifolia*, *Ribes hirtellum*, *Rhus glabra*, *R. typhina*, *Sambucus canadensis*, *Sorbus americana*, *Viburnum prunifolium*, *Vitis riparia*, *Berberis vulgaris* and jostaberry (Table 1); *Gaultheria hispidula*, *Gaylussacia baccata*, *Ribes divaricatum*, *Sorbus domestica*, medlar, *Mahonia*, Russian quinces, wineberry, *R. laciniatus*, *R. setosus*, purple raspberries, *Aronia* x *prunifolia*, Sorbaronia and shipova (Table 2); *Cornus kousa*, *Morus rubra*, *Sambucus nigra* and *Viburnum nudum* (Table 3). Duplicates merged into existing rows: *Rubus allegheniensis*, *R. canadensis*, *R. odoratus*, *R. pubescens*, *R. occidentalis*, the *Morus alba* x *rubra* hybrid, and *Prunus* x *kerrasis*. *R. leucodermis* stays in Table 4 because ratings conflict. *Podophyllum peltatum* remains in Table 1 (ripe fruit edible) although PDF-C places it in a safety appendix. Corrections to PDF-C: *Gaylussacia baccata* is zone 4, not 3; *Elaeagnus angustifolia* is zone 2, not 3a; *Morus rubra* cultivars are zone 5 (hybrids zone 4); *Mahonia aquifolium*, Russian quinces and medlar reach zone 4; *Cornus kousa* is zone 5. *Berberis microphylla* moved from Table 3 to Table 2 on its PFAF rating (4-8) under the synonym *B. buxifolia*. The Finnish context in PDF-C (Lapua) is a reminder that zone ratings do not cover flower-bud survival, ripening before autumn frost or degree-day needs.

**v6 addition: genus- and family-level screen.** Method: species lists were taken from Wikipedia for Amelanchier and Malus and for the Maleae genus list (Malinae); for all other genera and families, Plants For A Future food-forest lists (edibility rated 3-5 of 5, with USDA zones) for prostrate-to-tree shrubs, trees and climbers served as the list of edible-fruited species. Species already in the document were discarded and those with a minimum hardiness of zone 5 or colder were kept. Result: about 40 new species in Tables 1-3 and 11 species or groups in Table 6 that fail the criterion. **Limits:** this is not an exhaustive census. Wikipedia species lists were read only for Amelanchier, Malus and Malinae; the PFAF lists cover only species PFAF rates 3 or higher for edibility; hardiness comes mainly from PFAF ranges, which are often conservative; sizes and flavour notes marked [K] are reviewer knowledge. Not screened: Cactaceae (Opuntia), Ephedraceae, Nitrariaceae, Liliaceae and Annonaceae beyond what is already listed; the genera Prunus, Crataegus, Sorbus, Vaccinium, Ribes, Viburnum and Berberis were screened only through the PFAF lists, not their full Wikipedia species lists.

**v7 changes.** (1) Every row now holds a single species or hybrid; former group rows (damsons, peaches, nectarines, barberries, hawthorns, cherries and others) were split, and vague rows were dropped. (2) A species qualifies for a zone if its hardiest cultivars or populations do, so *Pyrus communis*, *Vitis labrusca*, *V. vinifera* and *Ficus carica* moved up from Table 6 or 3 (fig and peach are flagged because dieback and bud loss make crops unreliable). (3) Species and hybrids from three further uploaded PDFs were added, and Table 7 lists what was missing, what was placed differently and what was out of order. Rows marked N and sourced to PDF-D/E/F come from those uploaded files and were not independently checked.

**Research-interest ratings from PDF-B** (formerly Table 5; the species are all listed in Tables 1-2): very high: *Ribes dikuscha*, *R. fragrans*, *R. mandshuricum*; high: *R. sachalinense*, *R. altissimum*, *R. diacantha*, *R. komarovii*, *R. latifolium*, *R. maximowiczianum*, *R. meyeri*, *R. palczewskii*, *R. triste*; medium: *R. atropurpureum*, *R. fontaneum*, *R. graveolens*, *R. horridum*.

**Main corrections found** (see row notes): *Hippophae tibetana* is a 5-80 cm shrub with small fruit; *Ribes dikuscha* is mild and bilberry-like; *R. mandshuricum* fruit very small and slightly bitter when under-ripe; *R. burejense* rated USDA 4-8; 'Illinois Everbearing' is a hybrid; 'Westcot' is the correct apricot spelling; *Actinidia giraldii* is a variety of *A. arguta*; *Ribes aureum* and *R. odoratum* are kept as separate entries (USDA treats them as one taxon, but they differ horticulturally).

**Sources** (web, 6 Nov 2026): PFAF/temperate.theferns.info (incl. RHS and Flora of USSR/China excerpts); Flora of China; WorldFloraDB; WorldPlants; AgroAtlas; NC State, UConn, Cornell, OSU and NDSU extension; University of Saskatchewan and Prairie Gardens; nursery and arboretum listings; ISHS and journal abstracts.

**Caveats.** Only entries marked 'Data added' or 'Revise' were checked, and only against these sources. Reference-book hardiness figures are often conservative floors. Zone ratings describe wood and root survival, not flower buds, snow cover, season length or summer heat. Canadian and USDA zone numbers differ, and several sources do not say which they use.

## Table 1. USDA zone 3 or colder (-40 °C or lower)

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Actinidia kolomikta*** | 'Sentyabrskaya', 'Dr Szymanowski' (B), 'Vitakola' | E2, zone 3; reports to -40 °C. A: wood survives -40 °C but spring shoots highly freeze-vulnerable, threatening annual crop. | Small sweet aromatic kiwiberries, eaten fresh; about 130 frost-free days. Superior vitamin C (A). | about 2-2.5 cm long [K] | OSU Extension: bears smaller fruit than A. arguta. | Data added |
| ***Amelanchier alnifolia*** | 'Thiessen', 'Smoky', 'Martin', 'Regent' (B) | E1-E2, zone 2-3. Fruiting documented in Canadian prairie climates. | Sweet berries; fresh, dried, pies, preserves. A: high yields of sweet, almond-flavoured dessert fruit. | 8-15 mm [K] | | Not checked |
| ***Amelanchier bartramiana*** | Northern wild populations | E3, boreal North America. | Edible small berries, fresh and preserves; quality poorly documented. A: extremely hardy boreal shrub; berries small and seedy compared with A. alnifolia. | 6-10 mm [K] | | Not checked |
| ***Amelanchier canadensis (Canada serviceberry)*** | 'Micropetala', 'Rainbow Pillar' (flavour selections) | E2: zone 3 (UW Madison extension); native Newfoundland to Alabama. | Sweet fruit when selected forms are used; mild blueberry-like flavour with almond note from seeds. | about 8-10 mm [K] | NEW (previously in a group row). Sources conflict on A. arborea/A. canadensis identity in trade. | Data added |
| ***Amelanchier sanguinea*** | Northern wild populations | E3, northern North America. | Edible serviceberries, generally small. A: roundleaf serviceberry; low yield, thin flesh, mainly wildlife value. | 6-10 mm [K] | | Not checked |
| ***Arctostaphylos alpina*** | Arctic and alpine populations | E3, Arctic and alpine distribution. | Dark berries, mildly sweet and mealy; fresh, jam, traditional preserves. A: mealy texture limits commercial appeal. | 6-10 mm [K] | | Not checked |
| ***Arctostaphylos uva-ursi*** | Northern and alpine forms | E2-E3, zone 2-3. | Red mealy berries, dry and relatively bland; fresh, flour, preserves. A: historically harvested for flour/blends; low raw flavour. | 6-10 mm [K] | | Not checked |
| ***Aronia melanocarpa*** | 'Viking', 'Nero', 'Hugin' | E2, zone 3. A: extreme hardiness. | Very astringent raw berries; juice, wine, drying, jam. A: high tannins; raw fruit inedible to most, excellent for processing. | 6-13 mm [K] | | Not checked |
| ***Berberis georgii*** | Wild/ornamental | E3: PFAF USDA 3-7 (edibility 3 of 5); very little other data found. | Edible berries (PFAF rating 3); flavour not documented. | not found | NEW from genus screen; obscure species. | Not checked |
| ***Berberis vulgaris (European barberry)*** | Wild/ornamental | E2, zone 3-7 (PFAF); C: 4-8, some sources 3. | Very tart, vitamin C-rich crimson berries; preserves, drinks, cooking (zereshk). | about 8-12 mm long [K] | NEW from PDF-C. | Data added |
| ***Cornus canadensis*** | Northern wild populations | E3, boreal and Arctic North America. | Red berries, bland to mildly sweet; fresh, preserves. A: low flesh-to-seed ratio; ornamental rather than crop. | 5-8 mm [K] | | Not checked |
| ***Cornus suecica*** | Northern European populations | E3, Arctic and subarctic Europe. | Red berries, edible but not flavoursome. A: Eurasian dwarf cornel; minimal culinary appeal. | 5-8 mm [K] | | Not checked |
| ***Crataegus submollis (Quebec hawthorn)*** | Wild northern populations | E2 (PDF-F): USDA 3-8, native from Quebec across NE North America. Not independently checked. | Sweet, somewhat juicy red pomes with thick flesh; fresh and preserves (PDF-F). | about 20 mm [S: PDF-F] | NEW from uploaded PDF-F. | Not checked |
| ***Elaeagnus angustifolia (Russian olive)*** | 'Red King' (not hardy enough in N. Dakota) | E1-E2, zone 2: UConn, NDSU (Tree Selector, Tree Handbook), Oregon State; PFAF USDA 2-8; Utah State 2-7. C: 'USDA 3a (Cornell), other sources 4' understates hardiness. | Sweet but dry, powdery, mealy fruit; astringency ranges from moderate to excessive (PFAF); eaten raw or cooked, in sherbets and jellies. Texture limits fresh appeal. | 6-15 mm [S: NDSU, Oregon State] | NEW from PDF-C. Invasive in many regions (noxious weed in parts of Utah); spreads by birds. | Revise |
| ***Elaeagnus commutata (silverberry)*** | Native populations | E2, zone 2 (NDSU, UAF); PFAF USDA 2-6; Burnt Ridge 2-7; RHS H5. | Fruit dry and mealy, described as tasteless; edible raw only when fully ripe (astringent otherwise); used in soups and jelly. | about 1 cm [K] | MOVED from v2 Table 9 (relative of E. umbellata). Nitrogen fixer; spreads by suckers. | Data added |
| ***Elaeagnus umbellata*** | Northern and highland provenances | E2 (sources conflict): PFAF USDA 3-9 (UK zone 3); worldplants.ca USDA 4-9 with Canadian zone 3; other databases 4-8; OSU zone 6. Placed here because at least one credible rating supports zone 3. | Sweet-tart aromatic berries; fresh, jam, drying. A: nitrogen fixer, heavy yields, lycopene-rich; invasive warning in some regions. | about 8 mm [S: PFAF/RHS; OSU] | MOVED from v2 Table 2. VERIFIED placement is borderline: PFAF USDA 3-9 (UK zone 3); worldplants.ca USDA 4-9 and Canadian zone 3 (-34 to -40 °C); others USDA 4-8; OSU rates it zone 6. Fruit about 8 mm, juicy and pleasantly acid, astringent if under-ripe, about 8% sugars (PFAF). Invasive in the eastern US. Relative E. commutata (zone 2) not checked. | Data added |
| ***Empetrum nigrum*** | Subsp. nigrum, subsp. hermaphroditum | E2-E3, zone 1-2. | Black crowberries; mild, slightly sweet, improved by frost; juice, jam, drying, desserts. A: sweeten markedly after freezing; rich in antioxidants. | 4-8 mm [K] | B also lists E. hermaphroditum separately (E3, Arctic/alpine Europe, dark berries). | Not checked |

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| ***Fragaria orientalis*** | Wild Siberian and Mongolian populations | E3, continental northern Asia. | Red edible strawberries, fresh; Mongolian ethnobotanical evidence. A: good breeding parent; severe winter drought/cold adaptation. | about 1 cm [K, low confidence] | B ranks it #5 of 'highest-priority new discoveries'. | Not checked |
| ***Fragaria vesca*** | Northern and alpine forms | E2, zone 2-3. | Excellent aromatic berries; fresh, desserts, preserves. A: unmatched aroma and flavour intensity; continuous fruiting in selected strains. | 8-15 mm; some selections to 2 cm [K] | | Not checked |
| ***Fragaria virginiana*** | Northern North American forms | E2-E3, zone 2-3. | Sweet aromatic wild strawberries; fresh and preserves. A: key ancestor of garden strawberry. | 8-12 mm [K] | | Not checked |
| ***Gaultheria procumbens*** | Northern wild populations | E2-E3, zone 3. | Wintergreen-flavoured berries; flavouring, preserves, desserts. A: methyl salicylate flavour; acid-loving evergreen groundcover. | 8-12 mm [K] | | Not checked |
| ***Hippophae rhamnoides*** | Altai, Siberian, N. European populations; 'Asem'; selected Altai clones | E1-E2, zones 2-3. | Very acidic to mildly sweet depending on selection; juice, oil, drying, preserves. A: top commercial cold crop; extreme vitamin C; use thornless Altai clones. | 6-9 mm wild; improved clones about 10-12 mm [K] | | Not checked |
| ***Hippophae tibetana*** | Tibetan Plateau wild populations | E3, extreme high-altitude habitat; exact winter minimum unknown. A: true low-temperature hardiness unverified. | Sweet-acidic aromatic berries eaten fresh; September ripening. A: 'high-altitude dwarf shrub with larger fruit'. | 8-11 x 6-9 mm [S: Flora of China via WorldFlora] | REVISE. Flora of China (via WorldFlora): shrub 5-80 cm; fruit only 8-11 x 6-9 mm, so 'larger fruit' is not supported. Range 2,800-5,200 m (Nepal 3,800-4,200 m). Reference books (PFAF/RHS) give only about -10 °C when dormant: probably an underestimate for the habitat but no measured threshold exists. Ladakh habitation zones (>3,000 m) reach about -30 °C (DRDO). | Revise |
| ***Lonicera caerulea*** | 'Aurora', 'Borealis', 'Tundra', 'Cinderella', 'Berry Blue' | E1-E2, zone 2. A: flowers survive -7 °C bloom freeze. | Early, frost-tolerant flowering and reliable northern fruiting; fresh, frozen, preserves. A: sweet blueberry-like fruit; premier cold-climate fruit. | 1-2.5 cm long [K] | Reviewer (unverified): close relatives L. edulis and L. kamtschatica are haskap taxa. | Unverified note |
| ***Lonicera villosa (mountain fly honeysuckle)*** | Wild populations | E2: PFAF USDA 3-9 (edibility 3 of 5); related to L. caerulea. | Blue sweet-tart berries, like haskap (K). | about 8-12 mm [K] | NEW from genus screen (Caprifoliaceae). Treated within L. caerulea by some authors. | Data added |
| ***Malus baccata*** | Siberian and Mongolian populations | E2-E3, zone 2-3. A: ultimate cold-hardy rootstock (-45 °C). | Small, acidic crabapples; preserves, jelly, cooking; Mongolian fresh-fruit use documented. A: ultra-high pectin. | about 1-1.5 cm [K] | | Not checked |
| ***Malus domestica (cultivated apple)*** | Zone 2-3 cultivars e.g. 'Antonovka', 'Haralson', 'Norland' [K] | E2: PFAF USDA 3-8 (edibility 5 of 5); hardy cultivars rated zone 2-3 [K]. | Fresh dessert and cooking apples. | 5-8 cm [S: Wikipedia, up to 8 cm] | NEW from genus screen. Not covered by either source PDF; probably the most reliable cold-climate tree fruit. | Data added |
| ***Nitraria sibirica*** | Siberian and Mongolian populations | E3, continental Siberian and Mongolian habitat. A: highly unique saline/cold tolerance; ethnobotanical staple, rare in cultivation. | Edible fleshy fruits used by Mongolian communities; sweet-sour to salty depending on population. | about 6-8 mm [K, low confidence] | Little flavour data found: PFAF lists fruit as eaten raw. WorldFlora gives a generic USDA 5-10, which is not reliable for steppe populations. Grows on soils up to about 3% salinity (Siberian botanical garden study). Two fruit-colour forms (anthocyanin-based) on the Qinghai-Tibet Plateau. B ranks it #2 of 'highest-priority new discoveries'. | Data added |
| ***Podophyllum peltatum (mayapple)*** | Wild populations; 'Wagon Wheels' is a foliage selection | E2, USDA 3-8 (WorldPlants, SCNPS, Rita's Garden Path); WorldPlants gives about -40 °C minimum; one gardening source says 4-8. Asian P. hexandrum is hardy to zone 5a (Palmer, Alaska; Pacific Horticulture). | Only the fully ripe (yellow, soft) fruit is edible. Flavour bland to sub-acid: described as lemon-like, like an overripe melon, with the texture of an unripe strawberry; one source calls it 'indescribably exotic'. Used for jam, jelly, marmalade, punch. May be laxative; eat in limited quantity. | 1.5-2 in (4-5 cm) [S: NC State, Echo]; 2-5 cm [S: WorldPlants] | MOVED from the exclusion table: ripe fruit is edible (NC State, SCNPS, WorldPlants). Unripe fruit mildly toxic; seeds, roots and leaves highly toxic (podophyllotoxin). Spreads aggressively. PDF-C keeps this species in a separate safety appendix; it is listed here because the fully ripe fruit is edible (NC State, SCNPS, WorldPlants). | Data added |
| ***Prunus americana*** | Northern wild populations | E2-E3, zone 3. | Sweet-tart plums; fresh in good selections, cooking, preserves. A: skin can be astringent, flesh sweet. | 2-3 cm [K] | | Not checked |
| ***Prunus armeniaca var. mandshurica (Manchurian apricot)*** | Seedlings; hardiness donor for prairie apricots | E2, zone 3 (NDSU Tree Selector). Early flowers susceptible to spring frost. | Small red stone fruit, edible; quality variable. | about 2 cm [K] | MOVED from the v2 Table 9 group row. Compare P. armeniaca 'Westcot' in Table 2. | Data added |
| ***Prunus besseyi*** | 'Hansen', 'Pawnee Buttes', 'Sioux' (B) | E2, zone 3. | Small dark plums, fresh or processed; quality varies. A: flavour from cherry-sweet to astringent. | 1-2 cm [K] | | Not checked |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Prunus maritima (beach plum)*** | Wild selections | E2: PFAF USDA 3-7 (edibility 4 of 5). | Tart-sweet plum; jam and jelly (K). | about 1.5-2.5 cm [K] | NEW from genus screen (Rosaceae). | Data added |
| ***Prunus padus*** | Northern European and Siberian populations | E2-E3, zone 2-3. | Small bitter/astringent fruits; drying, flour, traditional processing. A: raw fruit strongly astringent. | 6-8 mm [K] | | Not checked |
| ***Prunus pumila (sand cherry)*** | Wild selections; 'Hansen' (P. besseyi group) | E2: PFAF USDA 3-8 (edibility 4 of 5). | Small dark cherries, variable from sweet to astringent (K). | about 1-1.5 cm [K] | NEW from genus screen. Close relative of P. besseyi (Table 1). | Data added |
| ***Prunus sibirica (Siberian apricot)*** | Wild/seedling | E3: reputed to tolerate about -50 °C (PFAF/RHS compilation). | Fruit eaten raw or cooked; flesh thin and poor, mainly a rootstock and breeding source. | about 2 cm [K] | MOVED from v2 Table 9. | Data added |
| ***Prunus tomentosa*** | 'Orient', 'Pink Candles' | E2, zone 3. | Sweet-tart cherries, fresh and preserves. A: delicious small bush cherry; early spring flowers risk frost damage. | 1-1.5 cm [K] | | Not checked |
| ***Prunus x kerrasis (P. fruticosa x P. cerasus dwarf cherries)*** | 'Juliet', 'Valentine', 'Cupid', 'Romeo', 'Crimson Passion', 'Carmine Jewel' | E1-E2, zone 2-3. 'Romeo' is the least hardy (zone 3); 'Juliet' and 'Valentine' likely hardiest. A 2009 Saskatchewan observation: no winter damage on Cupid, Valentine, Juliet; about 25% injury on Carmine Jewel, Romeo, Crimson Passion. | Tart-sweet cherries, several sweet enough for fresh eating; 16-21 Brix in a normal year; 'Romeo' and 'Crimson Passion' reported sweetest. | 1.5-2 cm [K] | MOVED from v2 Table 9. Sources: U of Saskatchewan, Prairie Gardens, NDSU, MSU. | Data added |
| ***Pyrus ussuriensis*** | 'McDermand', 'MorDak' (B), wild northern forms | E2-E3, zone 2-3. A: wood withstands -45 °C. | Often hard and astringent raw; cooking, preserves, storage. A: gritty/astringent; needs bletting or processing. | 2-6 cm; wild forms smaller [K] | | Not checked |
| ***Pyrus ussuriensis x P. communis hybrids*** | 'Ure', 'Early Gold' ('Jefgold') | E1-E2 (PDF-F): USDA zone 3 (MDA list, U of Saskatchewan). Not independently checked. | Small, sweet, juicy dessert pears; among the tastiest cold-hardy pears (PDF-F). | about 5 cm [S: PDF-F] | NEW from uploaded PDF-F; the hardiest dessert pears. | Not checked |
| ***Rhus aromatica (fragrant sumac)*** | Wild selections; 'Gro-Low' | E2: PFAF USDA 3-9 (edibility 4 of 5). | Red hairy berries made into a sour, lemon-like drink (K). | about 6-8 mm [K] | NEW from genus screen (Anacardiaceae). | Data added |
| ***Rhus glabra (smooth sumac)*** | Wild populations | E2, zone 3: UConn; KPU (-40 to -34 °C); several nurseries 3-9; one 4-8. | Red hairy drupe clusters soaked in water for a tart, lemon-like drink ('sumac-ade'); spice/beverage fruit, not a dessert berry. | about 4-5 mm per drupe [K] | NEW from PDF-C. Spreads by suckers; hybridises with R. typhina (R. x pulvinata). | Data added |
| ***Rhus typhina (staghorn sumac)*** | Wild populations; cutleaf cultivars | E2, zone 3: NDSU Tree Handbook ('stem dieback often occurs'); KPU zone 3; NC State 3a-9b; Utah 3-8. | Crimson hairy drupes in pyramidal clusters; same sumac-ade use as R. glabra. | about 4-5 mm per drupe [K] | NEW from PDF-C. | Data added |
| ***Ribes aciculare*** | Siberian, Altai, Mongolian, N. Chinese populations | E2-E3, zone 3 horticultural rating; Central Asian distribution evidence. A: high winter survival. | Red, relatively large berries described as sweet and tasty; promising fresh. A: excellent dessert potential; high priority for trials. | 1.2-1.5 cm [S: Flora of China; PFAF up to 15 mm] | | Not checked |
| ***Ribes alpinum*** | European mountain populations | E2-E3 (B); PFAF USDA 2-7. | Red, mildly bland fruit; mainly wildlife food (B). | 5-7 mm [K] | MOVED from v2 Table 7. | Data added |
| ***Ribes aureum*** | 'Crandall', 'Golden Gem' | E2, zone 3. A: high drought and cold resistance. | Yellow to dark berries, sweet but aromatic; fresh and preserves. | wild about 6-10 mm [K] | Kept as a separate entry from R. odoratum (horticulturally distinct). Taxonomy: USDA/FNA treat R. odoratum as R. aureum var. villosum, and 'Crandall' is sold under both names. Wild golden currant: amber to black, edible raw but very tart, usually cooked (Wikipedia); PFAF rates it USDA 3-8. | Data added |
| ***Ribes dikuscha*** | Wild eastern Siberian populations | E3, severe continental habitat. A: parent of cold-hardy Russian black currant breeding lines. | A: blue-black berries, tart, aromatic. B: mildly aromatic and tart; fresh and processed. | to 13 mm [S: AgroAtlas/PFAF] | REVISE flavour. AgroAtlas/PFAF: berries lack the strong distinctive flavour of other Ribes and taste more like bilberry; blue-black with wax bloom, to 13 mm. Far Eastern breeders (ISHS abstract) recommend it as a source of cold hardiness, large fruit, self-fertility and blister-rust/reversion resistance. Range: Arctic Anadyr, Lena-Kolyma, Dauria, Zeya-Bureya, Ussuri. | Revise |
| ***Ribes fragrans*** | Siberian, Mongolian, NE Chinese populations | E3, continental distribution. B: research interest 'very high'. | Aromatic currant relative; quality needs better documentation. A: entire plant and fruit carry intense lemon-balm scent; sweet pleasant berries raw/cooked. | about 8 mm [S: PFAF] | Hedrick/PFAF: a gooseberry-like fruit with sweet, pleasant flavour; fruit about 8 mm; shrub 50-70 cm; stony mountain slopes of E. Siberia, Far East, Mongolia. Dormant hardiness about -20 °C is a reference-book floor, not a measured limit. Lemon-balm scent not confirmed in sources found. RHS: closely related to R. hudsonianum and R. procumbens. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Ribes hirtellum (American gooseberry)*** | 'Pixwell', 'Poorman', 'Houghton', 'Oregon Champion', 'Captivator' (American x European) | E2: cultivar ratings zone 3 ('Oregon Champion' L.E. Cooke; 'Houghton' 3-8; Raintree: gooseberries reliably hardy to zone 3); species databases give zone 4 (PFAF 4-8; UAF 4) or 4-6 (U Minnesota). | Ripe fruit tart to sweet-tart. 'Houghton': small, tender, dark red, very sweet with a rich flavour; 'Poorman': sweet, aromatic (Raintree); 'Captivator': large, sweet, nearly thornless. More mildew-resistant than European types. | about 1 cm [K]; 'Oregon Champion' medium to large [S: nursery] | NEW from PDF-C. Combine with R. uva-crispa cultivars in Table 1. | Data added |
| ***Ribes hudsonianum*** | Boreal North American forms | E2-E3, boreal distribution. | Black currant-like, aromatic but sometimes resinous; preserves, traditional use. A: strong resinous pine-like edge raw; functional for jellies. | 6-8 mm [K] | | Not checked |
| ***Ribes nigrum*** | 'Öjebyn', 'Ben Hope', 'Titania' | E1-E2, zone 3 or colder. A: proven in Nordic climates (-40 °C). | Strong flavour, high acidity; fresh in sweeter cultivars, juice, preserves. A: rich in vitamin C. | 0.8-1 (to 1.4) cm wild [S: Flora of China]; large cultivars 1.5 cm or more [K] | Krasnoyarsk breeding study (2025): of 1,935 seedlings, mediocre/poor taste predominated; only 0.7% excellent, so flavour is a limiting trait even in hardy material. Merged duplicate: PDF-B also lists less hardy European cultivars/provenances as zone 4 (v2 Table 2 entry). | Data added |
| ***Ribes odoratum*** | 'Crandall', 'Fairy's Breath', northern forms | E2-E3, zone 3. | Sweet, clove-scented berries; fresh and preserves. A: intensely fragrant flowers; large sweet black berries. | 0.8-1.0 cm wild [S: Flora of China]; 'Crandall' reported to about 2 cm [S: Wikipedia, probably an upper bound] | Kept as a separate entry from R. aureum (horticulturally distinct: clove-scented flowers, larger sweeter black fruit). 'Crandall' (introduced 1888): fewer than 10 seeds per berry (American Pomological Society), self-fertile, ripens late; nursery claim: sweetest of the black currants. Berry-size sources conflict (about 1 cm wild vs about 2 cm quoted for 'Crandall'). | Data added |
| ***Ribes procumbens*** | Wild Siberian and Far Eastern populations | E3: Siberia, Far East, Mongolia, N China; close relative of R. fragrans (PFAF 3-7); named by Far Eastern breeders as a hardiness source. | Fruit purple-brown; harvested wild and 'highly recommended' as a fruit crop (Flora of USSR via PFAF). | 1-1.3 cm [S: Flora of China] | MOVED from v2 Table 9. Prostrate shrub 20-40 cm. | Data added |
| ***Ribes rubrum*** | 'Rovada', 'Jonkheer van Tets' (B), white-fruited forms | E1-E2, zone 3 or colder. | Red and white currants; fresh, juice, preserves. A: white cultivars lower acidity, superb fresh dessert quality. | 0.8-1.1 cm [S: Flora of China] | | Not checked |
| ***Ribes spicatum*** | Northern European populations | E2-E3 (B). | Red currants, edible, sometimes used in preserves (B). | 6-8 mm [K] | MOVED from v2 Table 7; not independently checked. | Not checked |
| ***Ribes triste*** | Northern wild populations | E2-E3, zone 2-3. A: creeping boreal shrub; extremely cold-tolerant. | Red berries, tart; jelly and traditional food. A: highly acidic. | 0.7-1.0 cm [S: Flora of China] | | Not checked |
| ***Ribes uva-crispa*** | 'Hinnonmäki Yellow', 'Invicta', 'Captivator' (B) | E1-E2, zone 3. | Sweet dessert gooseberries when fully ripe; excellent fresh. A: Finnish-bred cultivars have top-tier mildew resistance. | wild to 1.4 cm [S: Flora of China]; dessert cultivars 2-4 cm [K] | Merged duplicate: PDF-B also lists less hardy European cultivars as zone 5 (v2 Table 3 entry). | Not checked |
| ***Ribes x culverwellii (jostaberry)*** | 'Josta' and others | E2, zone 3: WorldPlants (USDA 3, Canadian 3); C cites U Minnesota 3-8; PFAF 5-9 (conflict). Mildew resistant; ancestry includes R. divaricatum (Bauer, Max Planck Institute). | Large, sweet berries with blackcurrant notes; thornless (C). | about 1.5-2 cm [K] | NEW from PDF-C hybrid list. | Data added |
| ***Rosa acicularis*** | Northern Siberian, Canadian, Alaskan populations | E2-E3, zone 2. A: extremely cold-hardy (-45 °C). | Rose hips, vitamin-rich; pulp, jam, tea, drying. A: large hips for winter teas. | hips 1-2 cm [K] | | Not checked |
| ***Rosa laxa*** | Siberian and Central Asian populations | E3, continental distribution. | Edible hips; traditional processing, tea, preserves. A: arid steppe/mountain rose; extreme drought and freeze tolerance. | hips 1-1.5 cm [K] | | Not checked |
| ***Rosa majalis*** | N. European and Siberian populations | E2-E3, zone 3 or colder. | Cinnamon rose hips; tea, pulp, jam, drying. A: used extensively in northern European traditions. | hips 1-1.5 cm [K] | | Not checked |
| ***Rosa rugosa*** | 'Hansa', 'Frau Dagmar Hastrup', 'Charles Albanel' | E2, zone 2-7 (Morton Arboretum); MOFGA: hardy to zone 2. | Large fleshy hips, high in vitamin C; jam, jelly, tea, syrup, wine. Some cultivars ('Blanc Double de Coubert') rarely set hips. | hips about 2-3 cm [K] | MOVED from v2 Table 9. Suckers aggressively. | Data added |
| ***Rubus acaulis (R. arcticus ssp. acaulis)*** | Wild populations | E3: circumboreal North America; PFAF: hardy to UK zone 1 (plant only about 10 cm tall). | Edible raspberry-like fruit; PFAF edibility rating 3 of 5. Low-productivity dwarf form (Holloway 1982); hybridises with R. pubescens (R. x paracaulis). | not found | NEW. See also R. arcticus and ssp. stellatus. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Rubus allegheniensis (Allegheny blackberry)*** | Wild populations; 'Ebony Hardy', 'Fort Kent King' (blog claims) | E2: PFAF USDA 3-7 (UK zone 3, not frost tender); a nursery gives zone 3a. A gardening blog reports 'Ebony Hardy' zone 2-3 and the wild Maine clone 'Fort Kent King' outperforming 'Illini Hardy' (about -31 °C) in Wisconsin tests; unverified. C: USDA 3-8. | Pleasant, sweet, somewhat spicy flavour (PFAF); seedy but sweet when fully ripe (NC State). Wild plants have smaller berries with intense flavour (blog). C: sweet, juicy, rich black fruit, 'one of the finest wild N. American blackberries'; PFAF edibility rating only 3 of 5, so the 'finest' claim is not supported. | about 12 mm wide, to 3 cm long [S: PFAF] | NEW. Source stock for hardy blackberry cultivars. Short zone-3 seasons may prevent full ripening. Also in PDF-C. | Data added |
| ***Rubus arcticus*** | 'Pima', 'Mespi', 'Mesma', 'Elpee', 'Marika', 'Muuruska'; wild forms | E1-E2, zone 2-3. A: sub-zero dwarf creeping habit. | Exceptionally aromatic berries; gourmet use, fresh, jam, juice, desserts. A: unmatched aromatic sweet-tart flavour. | wild: cluster about 6-8 mm [S: MN Wildflowers]; cultivars larger [K] | Finnish cultivars Elpee and Marika yielded 2.4x, Muuruska 1.9x, that of Pima/Mespi (Pirinen et al. 1998). Wild plants grow between 50-70 N across Eurasia; cultivated at scale only in Finland. | Not checked |
| ***Rubus arcticus nothossp. stellarcticus (arcticus x stellatus hybrids)*** | 'Anna', 'Linda', 'Beata', 'Sofia' (Sweden); 'Aura', 'Astra' (Finland, 1986) | E2: parents are R. arcticus (zone 0) and R. a. ssp. stellatus (Alaska/Kamchatka); Swedish clones adapted to southern and northern Sweden (ISHS); Finnish hybrids released for cultivation. | Berries larger and firmer than arctic bramble, uniform red, with almost as much arctic-bramble aroma; pleasant flavour (ISHS 112_13). Taller plants (easier picking), higher yield, fewer picking rounds. Self-sterile: two clones must be planted together. | somewhat larger than R. arcticus [S]; no figures found | NEW. Cross-pollination with pure R. arcticus can compromise cultivar identity (PMC study). | Data added |
| ***Rubus arcticus ssp. stellatus (R. stellatus)*** | Alaskan, W Canadian, Aleutian and Kamchatkan populations | E1-E2: R. arcticus is rated USDA zone 0 (about -51 to -54 °C; PFAF via WorldSpecies), so the '-45 °C' in PDF-A is conservative. | Aromatic arctic bramble flavour ('delicacy'). Dwarf form 1-10 cm tall, simple 3-lobed leaves, single flowers; low yield with small fruit (Holloway 1982). | wild R. arcticus cluster about 6-8 mm [S: MN Wildflowers] | MOVED from v2 Table 8 (and the 'R. stellatus' entry in the N. American list). | Data added |
| ***Rubus canadensis (smooth blackberry)*** | Wild populations | E2: PFAF USDA 3-7 (UK zone 3). C: USDA 3-8, 'native into the cold Canadian interior (-40 °C)': the interior claim is unverified. | PFAF edibility rating 4 of 5; no detailed flavour notes retrieved. C: sweet, edible black fruit, fresh or preserved; smooth, mostly thornless canes. | about 1 cm [K] | NEW. Named by Wikipedia as a better-known species. Also in PDF-C. | Data added |
| ***Rubus chamaemorus*** | Northern bog populations | E1-E2, zone 1-2. | Aromatic, sweet-acidic cloudberries; jam, juice, liqueur. A: requires acidic bogs; unique tart creaminess. | 1-2 cm [K] | | Not checked |
| ***Rubus flagellaris (northern dewberry)*** | Wild populations; some named varieties | E2: NC State lists USDA 3a-8b; native to eastern Canada and the eastern and central US. | Purple-black fruit with a tart-sweet, rich flavour; eaten raw or cooked; young shoots peeled and eaten. Trailing stems to 15 ft. | up to 1 in (2.5 cm) long [S: NC State] | NEW. | Data added |
| ***Rubus idaeus (incl. subsp. strigosus = R. strigosus, R. sachalinensis, R. sibiricus, R. melanolasius)*** | Wild populations; 'Boyne', 'Latham', 'Canby', 'Reveille', 'Kiska' (UAF, wild x 'Cuthbert'), 'Polka', 'Ville' (Finland) | E1-E2: WorldFloraDB zones 3-9 and minimum -40 °C; ssp. strigosus USDA 3-6 and -40 °C, range from Quebec to the Yukon and across Sakhalin, Tuva, W Siberia, Yakutia, Xinjiang, Mongolia. UAF: zone 2; 'Kiska' sold as zone 1. Lab freezing (J. Am. Pomol. Soc. 1995): cane T50 -34 °C 'Burnetholm', -30 °C 'Canby' and 'Puyallup' (buds -26 and -20 °C). | Sweet-tart red raspberries. Wild Alaskan fruit is small and often wormy but intensely flavoured (UAF Extension); Finnish 'Ville' gives small, aromatic fruit (Hiirsalmi). | wild about 1-1.5 cm [K] | MOVED/EXPANDED from v3 (wild raspberry). POWO treats R. sachalinensis, R. sibiricus, R. melanolasius and R. matsumuranus var. concolor as synonyms of ssp. strigosus, so those 'Asian raspberries' are the same hardy taxon. Finnish wild raspberry gene pool gave 'fairly good winter hardiness' (1988). | Data added |
| ***Rubus idaeus x R. arcticus ('nectar raspberry')*** | 'Heija' (1975), 'Heisa' (1981) | E2 (Finnish releases): 'Heisa' described as more winter-hardy and higher-yielding than 'Heija'; no measured minima. | Hybrid of raspberry and arctic bramble, bred in Finland; flavour not described in the abstract found. | not found | NEW. Hiirsalmi, ISHS 262_9. | Data added |
| ***Rubus odoratus (flowering raspberry)*** | Wild/ornamental | E2: rated zone 3a (-40 °C) by a Canadian nursery ('very hardy, edible fruit', thornless, shade tolerant). C: USDA 3-8. | Edible fruit; no taste data found in the sources checked. C: dryish, tart reddish fruit, low flesh-to-seed ratio; edible raw or cooked. | about 1.5-2 cm, flattish [K] | NEW. Spreads by suckers to 3.6 m. Also in PDF-C; fills the missing taste description. | Data added |
| ***Rubus parviflorus (thimbleberry)*** | Wild populations | E3: native from Alaska to Alberta and south; PFAF: tolerates considerable frost and succeeds in cold continental climates (no numeric zone). | Soft red hemispherical fruit with a sweet, pleasant flavour (PFAF) but very seedy; makes excellent jam. A forum grower found it slightly bitter, with little flesh and mushy when ripe. Fruit quality suffers in dry summers. | 10-20 mm [S: PFAF/RHS] | NEW. Spineless; spreads vigorously; used as a breeding parent for warmth and anthracnose resistance. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Rubus pubescens (dwarf red raspberry)*** | Wild populations | E2-E3: native from Alaska to Newfoundland and south to Oregon, Colorado, W Virginia (FNA). Ratings conflict: zone 2 (Akene seed supplier) versus zone 4-5 (a plant-care database). C: USDA 2-6. | Small red fruit; a grower reports it creeps by rhizomes and sets very few fruit. Taste not documented in sources found. C: small, sweet red berries eaten fresh or preserved (conflicts with a grower report of very few fruit). | about 8-12 mm [K] | NEW. Herbaceous groundcover, shade tolerant. Also in PDF-C. | Data added |
| ***Rubus saxatilis*** | N. European and Asian forms | E2-E3, zone 2-3. | Red, mildly tart stone bramble fruits; fresh and preserves. A: seedy raw, functional for preserves. | 8-12 mm [K] | | Not checked |
| ***Sambucus canadensis (S. nigra ssp. canadensis, American elderberry)*** | 'Nova' (early), 'York' (very large berries), 'Kent', 'Scotia', 'Wyldewood' | E2, zone 3 (-40 °C): Bamboo Plants, 'Nova' 3a; Univ. Wisconsin 3-8; other 3-9; NC State 4a-8b; Cornell 'York' zone 4. | Raw berries are not acceptable to many tastes; cooked they make jams, preserves, pies; tart and fruity with plum/blackberry notes; high in vitamin C. Cook before eating; remove stems and seeds. | about 4-6 mm [K]; 'York' berries very large [S: Cornell] | NEW from PDF-C. 'Nova' yields up to 20 lb per shrub (nursery). | Data added |
| ***Sambucus racemosa (red elderberry)*** | Wild populations | E2: PFAF USDA 3-7 (edibility 3 of 5). | Raw berries are unpalatable and the seeds toxic; cooked fruit used in jelly and wine (K). | about 4-5 mm [K] | NEW from genus screen (Adoxaceae). Cook and strain out seeds. | Data added |
| ***Schisandra chinensis (five-flavour berry)*** | 'Eastern Prince' (self-fertile), 'Sadova No. 1' | E2: 'Eastern Prince' is rated hardy to -35 F (-37 °C), USDA zone 3 (One Green World); other nurseries give 3-9, 3-8 and 4-7. | Crimson berries with a tart, lemon-like taste that combines sweet, sour, bitter, salty and pungent notes; juice, preserves, dried. Yield 15-20 lb per mature vine (nursery). | about 8-10 mm [K] | MOVED from v2 Table 9. Vine native to the Russian Far East and N China. | Data added |
| ***Shepherdia argentea*** | 'Sakakawea', 'Goldeye' | E2, zone 2. | Sour berries, sometimes sweeter after frost; jelly, juice, preserves. A: nitrogen fixer; high pectin and lycopene. | 4-6 mm [K] | | Not checked |
| ***Shepherdia canadensis*** | Northern wild populations | E2-E3, zone 2. | Soapberries, bitter and unpleasant raw; traditionally whipped with sweetener. A: contains saponins. | 5-8 mm [K] | | Not checked |
| ***Sorbus americana (American mountain ash)*** | Wild populations | E1-E2, zone 2-6 (Native Plant Trust; NC State 2a-6b; PFAF USDA 2-6, UK zone 2); native Newfoundland to N. Carolina and Manitoba. | Very acidic, tannic berries; used for pies, preserves; raw only in moderation, sweeter after frost (PFAF). | up to 8 mm [S: PFAF]; 1/4-1/2 in [S: Utah State] | NEW from PDF-C (confirmed). | Data added |
| ***Sorbus aucuparia (rowan)*** | Europe and Siberia | E1-E2 (B). | Rowanberries, mainly processed (bitter raw) (B). | 8-10 mm [K] | MOVED from v2 Table 7; not independently checked. | Not checked |
| ***Streptopus amplexifolius (twisted stalk)*** | Wild circumpolar populations | E3: native from Alaska across Canada and in Europe/Asia; PFAF: cold-hardy to about -20 °C; databases give USDA 4-8; one nursery lists zone 3. | Juicy berries with cucumber flavour, eaten raw or cooked in soups and stews; red, orange or purple. Slightly cathartic in quantity ('scoot berries'). | up to 15 mm long [S: PFAF]; under 1 in [S: NC State] | MOVED from the exclusion table: fruit edible (PFAF, NC State, Pacific Bulb Society). NC State warns of confusion with toxic Veratrum. Shade plant. | Data added |
| ***Vaccinium angustifolium (lowbush blueberry)*** | 'Cumberland', 'Fundy', 'North Country', 'Tophat' | E1-E2, zone 2 (UConn); a Canadian nursery gives 2a, -45.5 °C. | Sweet, edible blue fruit; 'Cumberland' and 'Fundy' were released for large, sweet fruit. | up to 12 mm (0.5 in) [S: UConn] | MOVED from v2 Table 9. | Data added |
| ***Vaccinium caespitosum*** | Alpine and northern forms | E3, zone 2-3. | Small sweet blue berries; fresh and preserves. A: low-growing alpine carpet. | 5-8 mm [K] | | Not checked |
| ***Vaccinium corymbosum (northern highbush blueberry)*** | 'Patriot', 'Northblue', 'Chippewa', 'Polaris' (half-highs) [K] | E2: PFAF USDA 3-8 (edibility rating 4 of 5); named northern cultivars and half-high hybrids are the hardiest forms [K]. | Sweet blue blueberries; fresh, baking, preserves. | about 8-15 mm [K] | NEW from genus screen (Ericaceae). Needs acid soil. Cultivar-level hardiness not verified here. | Data added |
| ***Vaccinium macrocarpon (American cranberry)*** | 'Pilgrim' and others | E1-E2, USDA zone 2-6 (Maine DACF) or 2-7 (Top Tropicals); NC State lists 3-7. | Tart red cranberries; sauce, juice, preserves. | about 12 mm (1/2 in) [S: NC State] | MOVED from v2 Table 9 (relative of V. oxycoccos). | Data added |
| ***Vaccinium microcarpum*** | Northern bog forms | E2-E3, zone 2-3. | Small acidic cranberries; juice, sauce, preserves. A: adapted to northern sphagnum bogs. | 5-10 mm [K] | | Not checked |
| ***Vaccinium myrtillus*** | Northern and alpine forms | E1-E2, zone 2-3. | Excellent sweet-tart bilberries; fresh, baking, drying, preserves. A: deep red flesh; wild harvest across Nordic forests. | 6-10 mm [K] | | Not checked |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Vaccinium oxycoccos*** | Northern bog forms | E1-E2, zone 2-3. | Acidic wild cranberries; sauce, juice, preserves. A: indispensable tart berry for storage and processing. | 8-12 mm [K] | | Not checked |
| ***Vaccinium uliginosum*** | Greater/Lesser Khingan, Siberian, Arctic, alpine populations (B) | E1-E2, zone 2-3; some populations reported to withstand about -50 °C. | Sweet-sour blue berries; fresh, frozen, dried, preserves. A: white flesh; flavour mild to sweet. | 5-8 mm [S: Wikipedia] | | Not checked |
| ***Vaccinium vitis-idaea*** | 'Koralle', 'Sanna', 'Sussi' (B), 'Red Pearl' | E1-E2, zone 2. A: evergreen subshrub (-40 °C). | Lingonberries; tart, premier preserve berry; juice, sauces, meats. | 8-10 mm [S: Flora of North America] | | Not checked |
| ***Viburnum cassinoides (witherod, wild raisin)*** | Wild populations | E2: PFAF USDA 2-8 (edibility 3 of 5). | Blue-black fruit with sweet thin pulp, eaten raw or cooked; sweeter after frost (K). | about 8-10 mm [K] | NEW from genus screen. Considered a variety of V. nudum in some floras (Table 3). | Data added |
| ***Viburnum edule*** | Northern wild populations | E2-E3, zone 2-3. | Tart red squashberries, eaten after processing; jelly, preserves. A: high pectin; best after autumn freeze. | 8-10 mm [K] | | Not checked |
| ***Viburnum lentago*** | Northern populations | E2, zone 2. | Sweet, raisin-like berries when fully ripe; fresh and preserves. A: soften in late autumn into date/raisin-like pulp. | 8-12 mm [K] | | Not checked |
| ***Viburnum prunifolium (blackhaw)*** | Wild populations | E2, zone 3-9 (PFAF; SCNPS; Iowa State); Vermont 3b (-30 to -35 °C); one Iowa State article says zone 5. | Blue-black fruit with thin, dry, sweet flesh; best forms nice raw, others for preserves; best after a frost (PFAF; edibility rating 2/5). | about 1 cm [K] | NEW from PDF-C. | Data added |
| ***Viburnum trilobum (V. opulus var. americanum)*** | 'Wentworth', 'Hahs' | E2, zone 2-3. | Tart berries; jelly, sauces, juice. A: reliable cold native substitute for true cranberries. | 8-10 mm [K] | Reviewer (unverified): European V. opulus is a close relative of similar hardiness. | Unverified note |
| ***Vitis amurensis (Amur grape)*** | Wild populations; hybrids such as 'Zilga' | E2: about -40 °C (several sources), but tender to late spring frost (Mustila Arboretum, Finland). | Sources conflict: small, harsh or bitter (Corean Flora via PFAF) versus sweet when ripe (seed supplier). Hybrids are grown in Finland. | 8-12 mm [K] | MOVED from v2 Table 9. The rating is for wood; flowers and young shoots are frost-prone. | Data added |
| ***Vitis riparia (riverbank grape)*** | Wild populations; many hybrids | E2, zone 3-9; withstands about -40 °C (several sources). | Concentrated, strongly flavoured and tart grapes; sweeten after frost ('frost grape'); fresh, jelly, juice, wine. | 6-10 mm [K] | NEW from PDF-C. Parent of many northern wine and table grapes. | Data added |
| ***x Amelasorbus jackii (Amelanchier alnifolia x Sorbus scopulina)*** | Natural and garden selections | E2 (PDF-E, PDF-F): zone 3 (-40 °C), zones 3-7; native wild hybrid in NW North America. Not independently checked. | Dark purple serviceberry-like fruit, edible raw or in jam; seedy. | 8-12 mm [S: PDF-E] | MOVED from v2 Table 4: PDF-C found fruit evidence insufficient, PDF-E says edible. Quality unverified. | Not checked |
| ***x Crataegosorbus miczurinii (Michurin hybrid)*** | 'Granatnaya', 'Burka' | E1-E2 (PDF-E): zones 3-8, hardiness inherited from rowan; PDF-F: zone 3-4. Not independently checked. | Deep burgundy-red pomes, sweet-sour with mild astringency; juice, jelly, wine; high in vitamin C. | 1.0-1.8 cm [S: PDF-E, PDF-F] | NEW from uploaded PDFs. Hybrid Crataegus x Sorbus aucuparia. | Not checked |

## Table 2. USDA zone 4, not zone 3 (-34.4 to -39.9 °C)

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Actinidia arguta*** | 'Geneva', 'Ananasnaya', 'Bingo' (B) | E2, zone 4. | Sweet, juicy kiwiberries; fresh. Needs a long season (about 150 frost-free days, A). A: vigorous vine, hairless fruit. | 2-3 cm long [K] | OSU Extension: reported to survive about -32 °C (-25 F); flowers quite susceptible to spring freezes; trunk hardiness rises with age but trunks should be protected. Cultivar ratings conflict: 'Issai' is called least hardy by one source, zone 3 by a prairie nursery. Cornell fact sheet: aromatic, with kiwi, banana, strawberry and pear notes; fruit ripen unevenly within clusters. Wikipedia: 18-25% sugar when vine-ripened. | Data added |
| ***Actinidia giraldii (A. arguta var. giraldii)*** | Wild/seedling | As A. arguta: E2, zone 4. PDF-A's '-30 to -35 °C' is unverified. | Smooth-skinned sweet green berries (A). | not found | MOVED from v2 Table 8. Treated as a variety of A. arguta, so the 'no spring-frost vulnerability' claim is unsupported (A. arguta flowers are freeze-prone, OSU). | Revise |
| ***Actinidia polygama*** | Japanese and Korean forms | E3, zone 4 horticultural estimates. | Peppery and sometimes astringent; less attractive fresh than A. arguta. A: silver vine; ornamental/medicinal interest. | 2-2.5 cm long [K] | | Not checked |
| ***Amelanchier arborea (downy serviceberry)*** | Wild populations | E2: zone 4 (UW Madison); PFAF USDA 5-8 (edibility 3 of 5). | Peattie calls the fruit inedible to all but birds; PFAF and others call it edible, of modest quality. | about 8-10 mm [K] | Split from group row. Tree-type species. | Data added |
| ***Amelanchier laevis (Allegheny serviceberry)*** | Wild populations | E2: zone 4 (UW Madison). | Fruit 'pleasant enough' (Peattie); sweet when ripe. | about 8-10 mm [K] | Split from group row. | Data added |
| ***Amelanchier stolonifera (running serviceberry)*** | Wild selections | E2: PFAF USDA 4-8 (edibility 5 of 5; 'Quebec berry'); native E Canada to NE United States. | Rated excellent by PFAF; another source calls it edible but not particularly good (Maine DACF). | about 6-10 mm [K] | NEW (previously in a group row). Ratings conflict on quality. | Data added |
| ***Amelanchier x grandiflora (apple serviceberry)*** | 'Princess Diana', 'Autumn Brilliance' | E2: zone 4 (UW Madison); hybrid A. arborea x A. laevis. | Sweet, mild fruit from selected cultivars [K]. | about 8-10 mm [K] | Split from group row. | Data added |
| ***Aronia x prunifolia (purple chokeberry)*** | Hybrid A. arbutifolia x A. melanocarpa | E2 (C): USDA 4-7; not independently checked. A. melanocarpa 'Viking' is zone 3-4 (SARE). | Very astringent raw; suitable for jams and jellies (C). | about 1 cm [K] | NEW from PDF-C hybrid list. | Not checked |
| ***Berberis canadensis (American barberry)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Acid red berries for juice and jelly (K). | about 8 mm [K] | NEW from genus screen. | Data added |
| ***Berberis microphylla (= B. buxifolia, calafate)*** | Patagonian wild populations | E3, provisional: PFAF rates B. buxifolia (Magellan barberry) USDA 4-8; PDF-A/B estimated 5a-5b. | Calafate: sweet-tart dark berries; fresh, jam, liqueur, juice, regional gin. A: rich in antioxidants. | about 6-10 mm [K] | MOVED from v2 Table 3 (PFAF rating of the synonym). | Data added |
| ***Chaenomeles cathayensis (Chinese quince)*** | Wild/ornamental | E2: PFAF USDA 4-8 (edibility 4 of 5). | Hard, acid, aromatic fruit for jelly and syrup after cooking [K]. | about 8-15 cm long [K] | Split from group row. | Data added |
| ***Chaenomeles speciosa (flowering quince)*** | Wild/ornamental | E2: PFAF USDA 4-8 (edibility 3 of 5). | Hard, acid, aromatic fruit for jelly and syrup after cooking [K]. | about 5-8 cm [K] | Split from group row. | Data added |
| ***Cornus mas*** | 'Jolico', 'Kasanlak', 'Elegant' (B), 'Red Star' (B) | E2, zone 4. | Tart to sweet-tart cherry-like fruit; fresh when fully ripe, juice, preserves. A: astringent until dark plum-red and drop-ripe; extremely early yellow flowers. | 1.5-2 cm; selections to 3-4 cm [K] | | Not checked |
| ***Crataegus douglasii (black hawthorn)*** | Northern wild populations | E2 (PDF-F): USDA 4-8, native across northern and western N. America. Not independently checked. | Sweet dark purple-black pomes, eaten fresh or dried into cakes (PDF-F). | 10-14 mm [S: PDF-F] | NEW from uploaded PDF-F. | Not checked |
| ***Crataegus mollis (downy hawthorn, red haw)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 4 of 5). | Mealy sweet haws, fresh or cooked [K]. | about 1-2 cm [K] | Split from group row. | Data added |
| ***Crataegus punctata (dotted hawthorn)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Mealy haws, eaten fresh or cooked [K]. | about 1-1.5 cm [K] | Split from group row. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Cydonia oblonga (Russian quinces)*** | 'Aromatnaya', 'Krimskaya', 'Kuganskaya' | E2: 'Aromatnaya' 4-9 (UW; Burnt Ridge), zone 4 (SARE); 'Krimskaya' and 'Orange' 5-9. Late varieties may not ripen at the northern limit. N. Vermont (zone 4a) trial: 'Aromatnaya' no flowers in 10 years, 'Krimskaya' most successful. C's zone 5 is for the species in general. | Aromatic; tree-ripened 'Aromatnaya' can be eaten fresh in thin slices, otherwise jelly and preserves; soft and sweet when allowed to hang late. | 5-10 cm [K]; northern fruit small | NEW from PDF-C; moved from zone 5a for Russian cultivars. | Data added |
| ***Gaultheria hispidula (creeping snowberry)*** | Wild boreal populations | E3, provisional: PFAF USDA 5-9 (UK zone 6); boreal native range suggests more; C's 'zone 3-8' unsourced. | Pleasantly acid, refreshing, delicate wintergreen flavour; sub-acid like salal; preserves; whole plant aromatic like G. procumbens. | about 6 mm [S: PFAF] | NEW from PDF-C. Evergreen creeper 10 cm tall. | Data added |
| ***Gaylussacia baccata (black huckleberry)*** | Wild populations | E2: zone 4-7 (Pride's Corner), 4-9 (Native Plant Trust), 'hardy to zone 4' (Hartmann via USDA NCGR); PFAF USDA 5-9. C's 'zone 3-7' is not supported. | Deliciously spicy and sweet; fresh, pies, preserves, dried; fairly seedy (PFAF). Slightly sweeter than blueberry with larger seeds (NPT). | about 8 mm [S: PFAF] | NEW from PDF-C; hardiness corrected from zone 3. | Revise |
| ***Hippophae salicifolia (willow-leaved sea buckthorn)*** | 'Robert' (male, fruitless clone); wild Himalayan | E2: -30 °C documented for the clone 'Robert' (TreeEbb: zone 3A-7B); PFAF USDA 3-8. | Edible acidic berries (PFAF); tree to 15 m, less thorny (A). | about 6-8 mm [K] | MOVED from v2 Table 8. 'Robert' is a non-fruiting male clone, so it does not prove hardiness of fruiting plants; species is dioecious. | Data added |
| ***Mahonia aquifolium (Berberis aquifolium, Oregon grape)*** | Wild/ornamental | E2: PFAF 4-8 (UK zone 5); WorldPlants USDA 4-7, Canadian 5; OSU 5-9; a seed vendor says 'good down to zone 4, 3b too cold'. C's zone 5 is conservative. | Tart blue glaucous berries (bluish-black, OSU); jellies, preserves, wine. | about 8-10 mm [K] | NEW from PDF-C; moved from zone 5a. Evergreen; plant two or more for berries. | Data added |
| ***Mahonia repens (creeping Oregon grape)*** | Wild populations | E2: PFAF 4-8; WSU listing 3-8. | Blue-black tart berries; jelly and preserves. | about 6-8 mm [K] | NEW (related to M. aquifolium). | Data added |
| ***Malus angustifolia (southern crabapple)*** | Wild populations | E2: NC State USDA 4a-9b (PDF-D). | Small sour yellow-green crabapples for cooking, ripe August-September. | 1.9-2.5 cm [S: PDF-D] | NEW from uploaded PDF-D. Native range far warmer than Finland. | Not checked |
| ***Malus coronaria (sweet crabapple)*** | Wild populations | E2: USDA 4-8; Canadian zone 3 (WorldPlants). | Fruit edible, mainly jams and jellies. | about 2.5 cm [S: WorldPlants] | NEW from genus screen. | Data added |
| ***Malus ioensis (prairie crabapple)*** | Wild populations; 'Bechtel' | E2: PFAF via WorldSpecies: USDA 4-8 (minimum -34.4 to -28.9 °C). | Fruit 'may be edible' (PFAF); mostly cooked or processed (K). | about 2-3 cm [K] | NEW from genus screen. | Data added |
| ***Malus orientalis (Caucasian wild apple)*** | Caucasus/N Iran populations | E2 (PDF-D): USDA 4-7, RHS H6 (Trees and Shrubs Online). Not independently checked. | Fruit 2-3 cm, eaten and sometimes cultivated; flavour not quantified. Ripens August-October, late for Finland. | 2-3 cm [S: PDF-D] | NEW from uploaded PDF-D. | Not checked |
| ***Malus prunifolia (plum-leaf crabapple)*** | Northern Chinese forms | E2 (PDF-F): zones 4-8 (Trees and Shrubs Online, Minnesota trials). Not independently checked. | Small, sweet to sub-acid pomes; eaten fresh in China, cooked for jam. | 2-3 cm [S: PDF-F] | NEW from uploaded PDF-F; PDF-D claims it is in v6, but it was not. | Not checked |
| ***Malus sieversii (wild Central Asian apple)*** | Wild populations | E2: PFAF USDA 4-10; hardy to UK zone 5. | Fruit large and well-flavoured, raw or cooked (PFAF). | 3-5 cm, up to 7 cm [S: PFAF] | NEW from genus screen (Wikipedia Malus list). Ancestor of the cultivated apple. | Data added |
| ***Malus sylvestris (European crabapple)*** | Wild populations | E2: NC State USDA 4a-8b. | Edible apples; sour, mainly cooked. | 1-3 in (2.5-7.5 cm) [S: NC State] | NEW from genus screen. Seeds should be discarded. | Data added |
| ***Malus toringo (Siebold crabapple)*** | Wild/ornamental | E2: NC State USDA 4a-8b. | Small gold to red crabapples under 1 inch; edible; flowers contain cyanide precursors (NC State). | under 2.5 cm [S: NC State] | NEW from genus screen. | Data added |
| ***Malus x robusta (Siberian crabapple)*** | M. baccata x M. prunifolia group [K] | E2: WorldFloraDB USDA 4-6, minimum -23 °C, 'suits zones 3-9'; RHS H6. | Small red or yellow crabapples, edible when cooked; seeds contain toxins (RHS); fruit eaten (WorldFloraDB). | 1-2 cm [K] | NEW (named in PDF-D as already present; it was not). | Data added |
| ***Malus x soulardii (Soulard crabapple)*** | M. domestica x M. ioensis | E2: USDA 4-8 (Trees and Shrubs Online, PFAF; PDF-D); NC State lists it among natural Malus hybrids, zone 4-8. | Fruit often over 5 cm but described as unattractive; PFAF edibility rating modest; culinary value not established. | above 5 cm [S: PDF-D] | NEW from uploaded PDF-D; weak fruit evidence. | Revise |
| ***Malus yunnanensis (Yunnan crabapple)*** | Wild/ornamental | E2: WorldPlants USDA 4-8 (Canadian 5-8; RHS H5-H7, -15 to -20 °C); NC State. | Fruit about 1/2 inch, red, somewhat harsh; edible (NC State). Seeds and leaves contain a toxin. | about 1.3 cm [S: NC State] | NEW (named in PDF-D as already present; it was not). | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Mespilus germanica (medlar)*** | Seedlings; named cultivars | E2: Zone 4 (Purdue 'New Crops' symposium, Reich); C: 5-8 (MBG). | Must be bletted; pulp becomes soft, sweet, spoonable, with applesauce-spice, wine-like overtones. Harvested after leaves fall. | about 3 in (7 cm) across [S: Reich] | NEW from PDF-C; moved from zone 5a. | Data added |
| ***Morus alba (white mulberry)*** | 'Kokuso'; 'Collier' (B; NC State lists 'Collier' under M. rubra) | E2-E3, zone 4 for selected material; fruiting depends on summer warmth. | Sweet mulberries, excellent fresh and for preserves. | 1-2.5 cm long; 'Illinois Everbearing' described as large [K] | Split from the hybrid row. Fruit size and taste vary widely by clone. | Revise |
| ***Morus alba var. tatarica*** | Russian and Central Asian forms | E3, zone 4 estimate. | Sweet mulberries, fresh and dried. A: windbreak origin; smaller fruit but high cold and wind tolerance. B: taxonomic identity of some named material needs verification. | about 1-1.5 cm [K] | Reviewer (unverified): 'tatarica' is generally treated as a form of M. alba. A grower reports it works as a hardy rootstock for grafting M. alba x rubra cultivars. | Unverified note |
| ***Morus alba x M. rubra ('Illinois Everbearing')*** | 'Illinois Everbearing' | E2-E3, zone 4 for selected material. A: wood survives zone 4 but continuous cropping needs summer heat units. C: 'zone 4, clone dependent'. | Sweet mulberries; excellent fresh and for preserves. Fruiting depends on summer warmth. C: sweet, high-quality mulberries; true hybrid, not pure M. alba. | 1-2.5 cm long; 'Illinois Everbearing' described as large [K] | REVISE name: 'Illinois Everbearing' is a hybrid, M. alba x M. rubra (chance seedling, Illinois, 1947). Ratings: zone 4b (Canadian nursery), 4-8 (several), 3-8 (Burnt Ridge); UW Madison lists 4-9, 'extremely variable by cultivar'. Fruit: large, sweet-tart, nearly seedless, ripening July-September (nursery descriptions). Also in PDF-C hybrid list; agrees with this entry. Split: the name 'Illinois Everbearing' belongs to the hybrid, not to M. alba. | Revise |
| ***Prunus armeniaca*** | 'Wescot' (B) / 'Westcot' (A), 'Brookcot', 'Mandan', 'Moongold', 'Sungold' (B) | E2, zone 4 for selected cultivars. A: wood survives -35 °C. | Sweet apricots, fresh and dried. Flower-bud survival much less certain than wood survival; early spring warm spells risk fatal bud freeze. | 'Westcot' 3.5-4.5 cm [S: Prairie Gardens] | VERIFIED: correct spelling is 'Westcot' (Scout x McClure, Morden, Manitoba, 1982; Fedco, Prairie Gardens); 'Wescot' appears once as a variant. Prairie Gardens rates 'Westcot' zone 3 with hardy flower buds; WorldFloraDB: more bud-hardy than 'Scout' or 'Morden 604'. But eastern North American growers report prairie apricots usually fail there (NAFEX), so winter-minimum zones overstate suitability in maritime or variable climates. Manchurian apricot seedlings are also sold as zone 3. | Data added |
| ***Prunus cerasifera*** | 'Newport' and northern selections | E2, zone 4. | Small plums; fresh in good selections, cooking, preserves. A: small tart-sweet plums, excellent for jams. | 2-3 cm [K] | | Not checked |
| ***Prunus cerasus*** | 'North Star', 'Meteor', 'Mesabi' (B) | E2, zone 4. | Sour cherries; baking, juice, preserves. A: naturally dwarf trees; outstanding reliability for pie cherries. | 1.5-2.5 cm [K] | Prairie Gardens rates 'North Star' and 'Meteor' zone 3b/4a; NDSU calls 'North Star' zone 4a, so Table 2 is reasonable. The hardier Saskatchewan cherries (P. x kerrasis, zone 2-3) are missing from both PDFs; see relatives table. | Data added |
| ***Prunus domestica*** | 'Mount Royal' | E2, zone 4. | Good dessert and cooking blue plum. A: one of the rare European blue plums reliable in zone 4. | 3-4 cm [K] | | Not checked |
| ***Prunus fruticosa (steppe cherry)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Small tart cherries [K]. | about 1 cm [K] | Split from group row. Parent of the Saskatchewan dwarf cherries (Table 1). | Data added |
| ***Prunus japonica (Korean bush cherry; PFAF 'P. japonica nakai')*** | Wild/ornamental | E2: PFAF USDA 4-8 (edibility 3 of 5). | Sweet-tart small red cherries [K]. | about 1-1.5 cm [K] | Split from group row. | Data added |
| ***Prunus persica var. nucipersica (nectarine)*** | Cultivars | E2: PFAF USDA 4-8 (edibility 4 of 5). | Sweet dessert nectarines. | 4-6 cm [K] | Split from group row; same species as peach but PFAF gives a colder range. | Data added |
| ***Prunus spinosa (blackthorn, sloe)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Very astringent until frosted; used for gin and jam [K]. | about 1-1.5 cm [K] | Split from group row. | Data added |
| ***Prunus virginiana (chokecherry)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Astringent raw; fine as jelly or syrup [K]. | about 6-10 mm [K] | Split from group row. | Data added |
| ***Pyrus communis (European pear)*** | Zone 4: 'Summercrisp', 'Luscious', 'Harrow Sweet'; zone 5: 'Bartlett', 'Bosc', 'Seckel', 'Moonglow' | E2 (PDF-F): zones 4-5 for the hardiest cultivars (Nebraska Ext., Minnesota Hardy); zone 5 for classic cultivars (MDA list). The hardiest cultivars qualify the species for Table 2. Not independently checked. | Sweet, crisp, juicy dessert pears; fire-blight-resistant selections. | cultivar-dependent [S: PDF-F] | NEW from uploaded PDF-F; two group rows merged into one species row. | Not checked |
| ***Rhus copallina (shining sumac)*** | Wild populations | E2: PFAF USDA 4-10 (edibility 4 of 5). | Red berries soaked for sour 'sumac-ade' drink (K). | about 4-5 mm [K] | NEW from genus screen. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Ribes altissimum*** | Altai, Mongolia, NE China | E3, zone 4 provisional. A: resilient northern steppe/alpine shrub. | Wild currant; edible status and taste need confirmation. B: research interest high. | 0.5-0.7 cm [S: Flora of China] | | Not checked |
| ***Ribes atropurpureum*** | Siberian and Mongolian populations | E3, zone 4 provisional. | Fruit quality poorly documented. | not found | | Not checked |
| ***Ribes burejense*** | Wild Manchurian/Far Eastern populations | E2: PFAF USDA 4-8 (UK zone 5); dormant plants tolerate about -20 °C (RHS). The 'zone 3' in PDF-A is not supported by these sources. | Reddish-black berries, acid but palatable; if left on the bush until November they develop a rather nice blackcurrant flavour (PFAF). Very spiny shrub 1-1.5 m. | about 1 cm [S: PFAF]; 0.8-1.5 cm [S: Flora of China] | MOVED from v2 Table 8. Closely related to R. aciculare. | Data added |
| ***Ribes diacantha*** | Altai, Mongolia, NE China | E3, zone 4 provisional. | Small fruits; culinary value uncertain. | 0.5-0.9 cm [S: Flora of China, as R. diacanthum] | | Not checked |
| ***Ribes divaricatum (coast black gooseberry)*** | Wild populations | E3, provisional: PFAF USDA 4-8; Practical Plants zone 4; Oregon State 'hardy to zone 7'; coastal range BC to N California. | Sweet and juicy, very acceptable flavour but slightly acid; called one of the finest wild N. American gooseberries (PFAF). | 6-10 mm [S: Oregon State; PFAF] | NEW from PDF-C. Parent of jostaberry. | Data added |
| ***Ribes fontaneum*** | Russian Far East | E3, zone 4 provisional. | Very limited food-use information. | not found | Far Eastern breeders recommend it for cold hardiness, blister-rust resistance and multi-flowered strigs (ISHS abstract). Likely hardier than zone 4. | Data added |
| ***Ribes giraldii*** | W and N Chinese populations | E3, zone 4 provisional. | Fruit quality and winter survival require verification. | 0.6-0.8 cm [S: Flora of China] | | Not checked |
| ***Ribes graveolens*** | Altai and Mongolian populations | E3, zone 4 provisional. | Wild currant relative; needs investigation. | not found | | Not checked |
| ***Ribes heterotrichum*** | Altai, Xinjiang and Mongolian populations | E3, provisional zone 4 (range 1,200-2,500 m in Xinjiang, Mongolia, Russia). | Red or red-yellow fruit described as sweet-tasting (Flora of China). | 0.4-0.6 cm [S: Flora of China] | MOVED from v2 Table 9. | Data added |
| ***Ribes horridum*** | Far Eastern, Japanese, NE Chinese populations | E3, zone 4 provisional. | Spiny wild currant; edible status and palatability need confirmation. | 0.8-1.2 cm [S: Flora of China] | | Not checked |
| ***Ribes komarovii*** | Russian Far East, NE China | E3, zone 4 provisional. | Wild currant, little horticultural evaluation. | not found | | Not checked |
| ***Ribes latifolium*** | Far Eastern and Japanese populations | E3, zone 4 provisional. | Wild currant; fruit quality poorly known. | 0.7-0.9 cm [S: Flora of China] | | Not checked |
| ***Ribes mandshuricum*** | Manchurian and Russian Far East populations | E3, zone 4 provisional. B: research interest very high. | Potential edible currant; taste and production need evidence. A: tart red 9 mm berries; good processed quality. | 0.7-0.9 cm [S: Flora of China] | REVISE flavour claim. PFAF: unarmed shrub 1-3 m; at Kew (1994) yields were high but fruits very small and not-fully-ripe fruit slightly bitter; dormant hardiness about -20 °C (reference-book figure). No source found for 'good processed quality'. Listed by Far Eastern breeders as a cold-hardiness source and for multi-flowered strigs. | Revise |
| ***Ribes maximowiczianum*** | Russian Far East, Japan, China | E3, zone 4 provisional. | Edible-fruit potential; flavour and yield data scarce. | not found | | Not checked |
| ***Ribes meyeri*** | Altai and Central Asian mountain populations | E3, zone 4 provisional. A: high-altitude Central Asian mountain currant. | Potential edible wild currant; limited flavour information. | 0.7-0.8 cm (var. pubescens 0.8-1) [S: Flora of China] | | Not checked |
| ***Ribes missouriense (Missouri gooseberry)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5). | Edible gooseberry; quality not documented here. | about 1 cm [K] | NEW from genus screen. Parent of 'Pixwell'. | Data added |
| ***Ribes palczewskii*** | Russian Far East, NE Asian populations | E3, zone 4 provisional. | Fruit quality insufficiently documented. | 0.7-0.9 cm [S: Flora of China] | Far Eastern breeders (ISHS abstract) list it among species recommended as cold-hardiness sources, so zone 4 'provisional' may be conservative. | Data added |
| ***Ribes petraeum*** | Alpine and Central European populations | E3, zone 4 provisional. | Red currant-like fruit, usually acidic; fresh and preserves. A: high acidity suits jellies and wine. | 6-8 mm [K] | | Not checked |
| ***Ribes sachalinense*** | Sakhalin and Hokkaido | E3, zone 4 provisional. | Edibility and flavour need confirmation. | not found | | Not checked |
| ***Ribes saxatile*** | Siberian, Altai, Central Asian populations | E3, zone 4 provisional. | Small currant-like berries; taste and fruiting performance need investigation. | 0.5-0.7 cm [S: Flora of China] | | Not checked |
| ***Ribes ussuriense*** | Ussuri (Russian Far East) populations | E3, provisional zone 4; hardiness not measured. | Blackcurrant-like flavour; sometimes cultivated, with named varieties (PFAF); used in blackcurrant breeding. | not found | MOVED from v2 Table 9. | Data added |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Rosa villosa (apple rose)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 4 of 5). | Large fleshy hips, good for jam and syrup (K). | about 1.5-2.5 cm [K] | NEW (previously in a group row). | Data added |
| ***Rubus caesius (European dewberry)*** | Wild populations | E2: PFAF USDA 4-8; described as very hardy and robust. | One nursery states the fruits are of poor taste quality (bird food). | about 1 cm [K] | NEW. Creeping, 20-100 cm; hybridises with raspberries. | Data added |
| ***Rubus crataegifolius (Korean raspberry)*** | 'Jingu Jengal' (large fruit) | E2-E3: PFAF USDA 4-8 (UK zone 5); Chicago Botanic Garden 5-8; native to Korea, Japan, NE China and the Russian Far East (300-2,500 m in N China). | Large, transparent dark-red raspberry with a sweet, agreeable flavour; fruit rots quickly after harvest (Korean market study). | about 10 mm [S: PFAF, Wikipedia] | NEW. Northern populations from Manchuria/Far East might be hardier than the database ratings. | Data added |
| ***Rubus idaeus x R. occidentalis (purple raspberries, R. x neglectus)*** | 'Brandywine', 'Royalty' | E2: C: USDA 4-8; lab freezing: canes hardier than -33 °C but buds only to about -25 °C (J. Am. Pomol. Soc. 1995). | Large purple raspberries with rich, winey, sweet-tart flavour; high yields (C). | about 1.5-2 cm [K] | NEW from PDF-C hybrid list. | Data added |
| ***Rubus illecebrosus ( strawberry-raspberry )*** | Ornamental/edible | E2: PFAF USDA 4-8 (edibility 3 of 5). | Large, sweet but bland [K]. | about 2 cm [K] | Split from group row. | Data added |
| ***Rubus laciniatus (evergreen/cutleaf blackberry)*** | Wild/naturalized | E2-E3 (C): USDA 4-9; not independently checked. | C: large, sweet, aromatic black fruit, excellent fresh and processed. | about 2 cm [K] | NEW from PDF-C; unchecked. | Not checked |
| ***Rubus occidentalis (black raspberry)*** | 'Bristol', 'Jewel', 'Cumberland'; purple hybrids R. x neglectus ('Brandywine', 'Royalty') | E2: zone 4a (-34.5 °C) for 'Bristol' and 'Jewel' (Canadian nursery); NC State 4-8; 'Marg's Golden Black' zone 4-8 with possible dieback in zone 3. Lab freezing: black raspberry canes T50 about -23 °C and buds about -19 °C, so field hardiness may be nearer zone 5 in severe winters; purple raspberries had canes below -33 °C but buds only to -25 °C. C: E1-E2, USDA 4-8 'reliably hardy in cold northern continental climates' (agrees with 4a nursery rating). | Bold sweetness (gardening.org); 'Bristol' described as very good flavour, 'Jewel' as large fruit with excellent flavour. C: rich, sweet, winey black raspberries; premier fresh, pie and jam berry. | about 1-1.5 cm [K] | NEW. Two-source conflict: nursery 4a versus laboratory data. Also in PDF-C. | Data added |
| ***Rubus phoenicolasius (wineberry)*** | Wild/naturalized | E2: NC State 4a-8b; native to Japan and China; PDF-C 4-8. | Orange-red to red berries; C: sweet-tart and refreshing (unverified). Weedy/invasive in the eastern US. | about 1 cm [K] | NEW from PDF-C. | Data added |
| ***Rubus setosus (bristly dewberry)*** | Wild populations | E2-E3 (C): USDA 4-8; NE North America; not independently checked. | C: edible dark purple-black fruit; used locally fresh and in preserves. | about 1 cm [K] | NEW from PDF-C; unchecked. | Not checked |
| ***Rubus spectabilis (salmonberry)*** | Wild populations | E2: PFAF USDA 4-8 (edibility 3 of 5); maritime native range to Alaska. | Soft, juicy orange-red berries, mild [K]. PDF-F (uploaded) lists it in Table 4. | 1-2 cm [K] | Split from group row. | Data added |
| ***Sorbus aria (whitebeam)*** | Wild populations; 'Lutescens' | E2: PFAF USDA 4-8 (edibility 3 of 5). | Mealy, sweetish when bletted; raw or cooked (K). | about 1-1.5 cm [K] | NEW from genus screen. Native to Scandinavia (S. intermedia, the Swedish whitebeam, not evaluated). | Data added |
| ***Sorbus domestica (service tree)*** | Pear- and apple-form seedlings | E2: zone 4-8 (Univ. Wisconsin; no fruiting seen at Carandale Farm); Burnt Ridge 5-10; C cites EUFORGEN -25 to -30 °C (zone 4b), not checked. | Fruit must blet like a medlar; then soft, sweet, aromatic with spiced-pear (UW) or spice/chocolate/tropical notes (Burnt Ridge); soft and difficult to transport. | small pear-like, about 2-3 cm [K] | NEW from PDF-C. Large tree, 60-80 ft. | Data added |
| ***Vitis labrusca (fox grape)*** | 'Concord', 'Niagara', 'Catawba'; hardy hybrids 'Beta' (zone 3), 'Valiant' (zone 3) | E2: 'Concord' rated zone 4-9 (Epic Gardening) or 5-8 (Gardenia); hybrids with V. riparia ('Beta', 'Bluebell', 'Valiant') rated zone 3. PFAF rates the species 6-9. | Strong 'foxy' grape flavour, juice, jelly and fresh eating. | 1-2 cm [K] | MOVED from v2 Table 6: hardiest cultivars qualify (hybrid cultivars zone 3). | Data added |
| ***x Crataemespilus grandiflora (Crataegus laevigata x Mespilus germanica)*** | Garden accessions | E2 (PDF-E, PDF-F): zones 4-5, small hardy tree. Not independently checked. | Brownish-orange medlar-like pomes; soft, sweet, spiced after bletting. | 1.5-2.5 cm [S: PDF-E] | NEW from uploaded PDF-E and PDF-F. | Not checked |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***x Sorbaronia fallax (incl. mitschurinii)*** | Aronia melanocarpa x Sorbus aucuparia; Michurin hybrids | E3 (C): artificial USSR hybrid; reliable minimum around zone 3-4; not checked. | Large fruit for juice, wine and jam; sweet-sour, astringent (C). | about 1-1.5 cm [K] | NEW from PDF-C hybrid list; unchecked. | Not checked |
| ***x Sorbopyrus auricularis (shipova)*** | Sorbus aria x Pyrus communis | E3 (C): zone 4-8 claimed, provisional; sold as a 15 ft+ tree (Raintree); no hardiness data found. | Soft, pear-like flesh with a rowan note; dessert fruit (C). | about 3-4 cm [K] | NEW from PDF-C hybrid list; unchecked. | Not checked |

## Table 3. USDA zone 5a, not zone 4 (-26.1 to -28.8 °C)

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Actinidia purpurea*** | Wild/ornamental selections | E2: PFAF USDA 5-9 (edibility 4 of 5). | Purple-skinned kiwiberries, sweet (K). | about 3-4 cm [K] | NEW from genus screen (Actinidiaceae). Relative of A. arguta. | Data added |
| ***Asimina triloba*** | 'PA-Golden', 'KSU-Benson', 'Shenandoah', 'Sunflower' | E2, zone 5. | Excellent custard-like fruit, banana-mango flavour; fresh, desserts. Needs a long warm summer. | 5-15 cm long, 100-400 g [K] | | Not checked |
| ***Berberis aggregata*** | Wild/ornamental | E2: PFAF USDA 5-9 (edibility 3 of 5). | Acid berries [K]. | about 5-7 mm [K] | Split from group row. | Data added |
| ***Berberis angulosa*** | Wild/ornamental | E2: PFAF USDA 5-9 (edibility 3 of 5). | Acid berries [K]. | about 8 mm [K] | Split from group row. | Data added |
| ***Berberis aristata (Indian barberry)*** | Himalayan accessions | E2: PFAF USDA 5-9 (edibility 4 of 5). Uploaded PDF-E places it in Table 2 (zone 4-8, unsourced). | Tart dark purple glaucous berries; fresh, dried ('kilmora'), juice (PDF-E). | 7-10 mm [S: PDF-E] | Split from group row. Kept in Table 3: no source for zone 4 found. | Data added |
| ***Berberis empetrifolia*** | Patagonian mountain populations | E3, estimated zone 5. | Small berries used in traditional foods. Sturtevant (1919): berry edible. | about 5-7 mm [K, low confidence] | | Not checked |
| ***Berberis lycium*** | Wild/ornamental | E2: PFAF USDA 5-9 (edibility 3 of 5). | Blue-black acid berries [K]. | about 8-10 mm [K] | Split from group row. | Data added |
| ***Berberis serratodentata*** | Patagonian mountain populations | E3, estimated zone 5. | Edible fruit reported; flavour and hardiness need more research. | not found | | Not checked |
| ***Berberis wilsoniae*** | Wild/ornamental | E2: PFAF USDA 5-9 (edibility 3 of 5). | Small red acid berries [K]. | about 5-7 mm [K] | Split from group row. | Data added |
| ***Berchemia hirtella*** | SW Chinese mountain populations | E3, estimated zone 5. | Fresh fruit consumption documented in Shangri-La. | about 1 cm [K, low confidence] | | Not checked |
| ***Berchemia racemosa*** | Wild populations | E2-E3: PFAF USDA 5-9 (UK zone 6). | Oval berries turn shiny black and sweeten when fully ripe in late autumn (A); ripe fruit eaten, leaves used as tea (PFAF). | about 8 mm [S: PFAF] | MOVED from v2 Table 8. PDF-A's '-20 °C' is zone 6b, so zone 5a is optimistic. | Revise |
| ***Berchemia sinica*** | Chinese mountain populations | E3, estimated zone 5. | Fresh fruit consumption documented in Shangri-La. A: small, sweet, olive-shaped drupes on a deciduous climber. B ranks it #6 of priority discoveries. | about 1 cm [K, low confidence] | | Not checked |
| ***Chaenomeles japonica (Maule's quince)*** | Wild/ornamental | E2: PFAF USDA 5-8 (edibility 3 of 5). | Small acid, aromatic quinces for jelly; very high pectin (K). | about 3-4 cm [K] | NEW from genus screen. Often rated zone 4 in the trade [K]. | Data added |
| ***Chaenomeles thibetica*** | Tibetan populations | E3, estimated zone 5. | Raw fruit eaten, likely more useful processed. A: aromatic, dense acidic fruit for jellies and syrups. | about 4-6 cm [K, low confidence] | | Not checked |
| ***Cornus kousa (kousa dogwood)*** | Wild/ornamental | E2: PFAF 5-8; C: zone 4-5 to 5a and warmer. | Edible red fruit: sweet persimmon-like pulp in good forms, bland and mealy with tough rind in others (C). | about 2-3 cm [K] | NEW from PDF-C; moved from zone 4 (PFAF 5-8). | Data added |
| ***Crataegus arnoldiana (Arnold hawthorn)*** | Wild populations | E2: PFAF USDA 5-9 (edibility 5 of 5). | Large, sweet haws, highly rated by PFAF. | about 1-1.5 cm [K] | Split from group row. | Data added |
| ***Crataegus ellwangeriana*** | Wild populations | E2: PFAF USDA 5-7 (edibility 5 of 5). | Large, sweet haws, highly rated by PFAF. | about 1-1.5 cm [K] | Split from group row. | Data added |
| ***Crataegus pinnatifida (Chinese haw; incl. var. major)*** | 'Big Golden Star' | E2: PFAF USDA 5-9 (edibility 3 and 4 of 5). | Large fruits used for tanghulu, jam and dried snacks in China (K). | 2-3 cm [K] | NEW from genus screen. | Data added |
| ***Elaeagnus multiflora (goumi)*** | 'Sweet Scarlet', 'Red Gem' [K] | E2: PFAF USDA 5-9 (edibility 5 of 5). | Sweet-tart juicy red berries with astringent skin; fresh and preserves; nitrogen fixer. | about 1-1.5 cm [K] | NEW (previously unevaluated in a group row). | Data added |
| ***Ephedra ochreata*** | Patagonian populations | E3, hardiness uncertain around zone 5. | Traditional edible fleshy seed coverings (arils), not a true berry; sweet fleshy red arils (A). | arils about 5-8 mm [K, low confidence] | | Not checked |
| ***Ficus carica (fig)*** | 'Chicago Hardy' ('Hardy Chicago'), 'Brown Turkey' [K] | E3: PFAF USDA 6-11; hardiest cultivars are root-hardy to about zone 5, dying back and re-sprouting [K, unverified]. | Soft sweet figs; in cold zones fruit forms on new growth and ripens late. | 3-6 cm [K] | MOVED from v2 Table 6 under the hardiest-cultivar rule; dieback makes fruit crops unreliable. | Revise |
| ***Fragaria chiloensis*** | S. Chilean and Patagonian populations | E2-E3, zone 5 estimates for some accessions. | Aromatic strawberries; fresh, desserts, preserves. A: parent of the garden strawberry; large aromatic white/pink fruit with pineapple notes. | 1.5-3 cm [K] | | Not checked |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Fragaria nubicola*** | Himalayan and Tibetan populations | E3, estimated zone 5. | Small, sweet wild strawberries; fruiting in September in the Rongjia study. | about 1 cm [K, low confidence] | | Not checked |
| ***Gaultheria poeppigii*** | Andean and Patagonian populations | E3, estimated zone 5. | Local food use; liqueurs and other preparations. | 5-8 mm [K] | | Not checked |
| ***Griffitharia vestita*** | Himalayan populations | E3, estimated zone 5. | Fresh fruit consumed in Tibet; uncommon. A: edible pomes of a whitebeam relative. | about 1-1.5 cm [K, low confidence] | | Not checked |
| ***Hovenia dulcis (Japanese raisin tree)*** | Wild/ornamental | E2: PFAF USDA 5-9 (edibility 3 of 5). | The swollen fruit stalks (pedicels), not the seeds, are sweet and raisin-like when dried. | pedicels about 2-3 cm [K] | NEW from genus screen (Rhamnaceae). 'Fruit' here is the stalk. | Data added |
| ***Mahonia nervosa (Cascade Oregon grape)*** | Wild populations | E2: PFAF USDA 5-9 (edibility 3 of 5). | Tart blue berries for jelly (K). | about 8 mm [K] | NEW from genus screen; evergreen groundcover. | Data added |
| ***Morus nigra (black mulberry)*** | Seedlings; 'Persian' | E2: PFAF USDA 5-9 (edibility 5 of 5). | Large, juicy, rich sweet-acid mulberries, richest of the genus (K). | about 2-3 cm long [K] | NEW from genus screen. Hardiness often placed nearer zone 6-7; flowers early. | Revise |
| ***Morus rubra (red mulberry)*** | 'Collier'; hybrids ('Lawson Dawson' rubra x alba) | E2: nursery zone 5-9, 'hardy to 0 F'; NC State 'Collier' 5a-8b; hybrid 'Lawson Dawson' has done well in Vermont zone 4; Fedco M. alba x rubra Z4/5. C's '4a-9b' is not supported for pure M. rubra cultivars. | Sweet, juicy, blackberry-like fruit eaten fresh or as jam/wine; long, sweeter than raspberries (Almanac); dark purple when ripe. | up to 2.5 in (6 cm) long [S: Almanac] | NEW from PDF-C; moved from zone 4 (see M. alba hybrids in Table 2). | Revise |
| ***Prunus angustifolia (Chickasaw plum)*** | Wild populations | E2: PFAF USDA 5-9 (P. angustifolia watsonii; edibility 4 of 5). | Small tart-sweet plums, fresh or jam [K]. | about 1.5-2 cm [K] | Split from group row. | Data added |
| ***Prunus holosericea*** | Tibetan populations | E3, estimated zone 5. | Local ethnobotanical evidence for fresh consumption (A: Tibetan wild cherry). | about 1-1.5 cm [K, low confidence] | | Not checked |
| ***Prunus hortulana (hortulan plum)*** | Wild populations | E2: PFAF USDA 5-9 (edibility 3 of 5). | Small plums [K]. | about 2-3 cm [K] | Split from group row. | Data added |
| ***Prunus insititia (damson)*** | Damson/bullace selections | E2: PFAF USDA 5-9 (edibility 5 of 5). | Cooking plum, fine for jam [K]. | about 2-3 cm [K] | Split from group row. | Data added |
| ***Prunus mira*** | Tibetan and Himalayan populations | E3, estimated zone 5. | Fresh consumption; wild peach-like fruit. A: valuable breeding stock. | about 3-4 cm [K] | | Not checked |
| ***Prunus munsoniana (wild goose plum)*** | Wild populations | E2: PFAF USDA 5-9 (edibility 3 of 5). | Small plums, fresh or jam [K]. | about 2 cm [K] | Split from group row. | Data added |
| ***Prunus persica (peach)*** | Hardy cultivars e.g. 'Reliance' [K] | E2: PFAF USDA 5-9 (edibility 5 of 5). Hardiest cultivars are often rated zone 4 [K, unverified]; flower buds are the weak point. | Sweet dessert peaches. | 5-7 cm [K] | Split from group row. Hardiest-cultivar rule would allow Table 2 if the zone-4 rating is confirmed. | Revise |
| ***Pyracantha crenulata*** | Himalayan populations | E3, estimated zone 5. | Ripe fruits eaten locally. A: small orange pomes; flesh thin and mealy. | about 6-8 mm [K]; Chinese relative P. crenatoserrata 6-8 mm [S: WorldPlants] | INDIRECT: no data for this species. Chinese relative P. crenatoserrata USDA 6-9, fruit 6-8 mm (worldplants.ca); P. coccinea zone 6, hardiest cultivars zone 5, and 'Monon' (P. angustifolia) zone 4-5 (UConn). Zone 6-7 for P. crenulata is plausible. | Data added |
| ***Pyrus pashia*** | Himalayan populations | E3, estimated zone 5. | Local consumption; eaten fresh, sometimes after softening. | 1-4 cm, commonly 1.3-2.5 cm [S: Wikipedia, ICIMOD, PFAF] | PARTLY VERIFIED: hardiness databases disagree: zone 5 (Practical Plants/PFAF), 5-8 or 5-9 (other databases), RHS H6 (roughly -10 to -15 °C). So zone 5 is not excluded, but zone 5a winter minima are probably at the limit. Fruit 1-4 cm, eaten bletted but still not sweet (PFAF); russet-apple-like, astringent-sweet when ripe (Wikipedia). | Data added |
| ***Pyrus pyrifolia (Asian pear)*** | Cultivars e.g. 'Shinseiki' [K] | E2: PFAF USDA 5-9 (edibility 4 of 5). | Crisp, juicy, sweet Asian pear, eaten fresh (K). | 5-8 cm [K] | NEW from genus screen. Compare P. ussuriensis (Table 1). | Data added |
| ***Pyrus xerophila*** | N and W Chinese mountain populations | E3, estimated zone 5. | Wild pears; fresh or processed depending on ripeness. A: small, firm; palatable after bletting or processing. | 1.5-2.5 cm [K] | | Not checked |
| ***Ribes cucullatum*** | Patagonian mountain populations | E3, estimated zone 5. | Traditional edible currant; interesting for preserves. | not found | | Not checked |

| Species | Cultivars / populations | Hardiness and evidence | Fruit: taste and uses | Fruit size | Review notes and added data | Status |
|---|---|---|---|---|---|---|
| ***Ribes himalense*** | Himalayan and Tibetan populations | E3, provisional; PFAF rates it USDA 5-9, which supports zone 5 rather than 4. | Wild fruit candidate; local climate and actual winter minima need checking. | 0.6-0.7 cm [S: Flora of China] | MOVED from v2 Table 2 (PFAF rating). | Not checked |
| ***Ribes magellanicum*** | Patagonian wild populations | E3, estimated zone 5. | Wild currants; fresh, jams, traditional beverages. | about 5-8 mm [K] | | Not checked |
| ***Rosa macrophylla var. glandulifera*** | Himalayan populations | E3, estimated zone 5. | Eaten after peeling and removing prickles; large hips. | hips about 2-4 cm long [K] | | Not checked |
| ***Rosa sericea var. glandulosa*** | Himalayan populations | E3, estimated zone 5. | Direct fresh consumption in Tibet; July fruiting in the Rongjia study. A: large hips peeled and eaten raw. | R. sericea hips 0.8-1.5 cm [S: seed supplier] | PARTLY VERIFIED: a seed supplier gives minimum zone 5 for R. sericea; the wingthorn form (R. sericea ssp. omeiensis f. pteracantha) is rated 6b; native at 2,000-4,000 m in China. Hips red, globular, 0.8-1.5 cm with persistent sepals. The tasty 'peeled and eaten raw' claim is not verified. | Data added |
| ***Rubus aurantiacus*** | Himalayan populations | E3, estimated zone 5. | Fresh consumption; fruit documented in Tibet. | about 1-1.5 cm [K, low confidence] | | Not checked |
| ***Rubus austrotibetanus*** | Tibetan populations | E3, estimated zone 5. | Fresh consumption; fruit documented in Gyirong Valley. | about 1 cm [K, low confidence] | | Not checked |
| ***Rubus deliciosus (boulder raspberry)*** | Wild/ornamental | E2: hardy to USDA zone 5 (-29 °C) (Wikipedia/EOL). | Flavour not documented in sources checked; Rocky Mountain species grown mainly as an ornamental. | about 2 cm [K] | NEW. Flowering stems are perennial. | Unverified note |
| ***Rubus foliolosus*** | Himalayan populations | E3, estimated zone 5-6. | Local consumption; fresh fruit. | about 1 cm [K, low confidence] | | Not checked |
| ***Rubus fruticosus (blackberry aggregate)*** | 'Chester', 'Loch Ness' [K] | E2: PFAF USDA 5-9 (edibility 5 of 5). | Large, sweet blackberries; fresh, jam. | 1.5-2.5 cm [K] | NEW from genus screen. Hardier thornless/semi-erect cultivars rated zone 5 [K]; see R. allegheniensis for zone 3. | Data added |
| ***Rubus niveus*** | Himalayan populations | E3, estimated zone 5-6. | Sweet-tart berries. | about 1 cm [K, low confidence] | | Not checked |
| ***Sambucus nigra (European elder)*** | Cultivars (cultivar-dependent) | E2 (C): sources span zone 4 or 5; RHS H6 (-20 to -15 °C); not independently checked. | Ripe berries used after cooking in preserves, juice, wine; raw fruit not recommended (C). | about 5-6 mm [K] | NEW from PDF-C. Cook before eating. | Not checked |
| ***Vaccinium arctostaphylos (Caucasian whortleberry)*** | Wild populations | E2: PFAF USDA 5-9 (edibility 3 of 5). | Dark purple-black edible berries; flavour not documented. | about 8-10 mm [K] | NEW from genus screen. | Data added |
| ***Viburnum nudum (possumhaw, witherod)*** | Wild populations | E2: SCNPS zones 5-9; C: zone 5/5a (Oregon State, NC State). | Fruits acidic but edible (SCNPS); blue-black drupes for jam; flavour poorly documented. | about 1 cm [K] | NEW from PDF-C. | Data added |
| ***Vitis rotundifolia (muscadine)*** | Wild populations | E3: PFAF USDA 5-9 (edibility 4 of 5), but muscadines are normally rated zone 7 [K]. | Thick-skinned musky-sweet grapes. | 1.5-3 cm [K] | NEW from genus screen; PFAF zone looks optimistic. | Revise |
| ***Vitis vinifera (European grape)*** | Cold-tolerant cultivars e.g. 'Gewurztraminer', 'Riesling' [K] | E2: PFAF USDA 6-10; hardiest pure vinifera cultivars are grown in zone 5 (Gardening Know How: 'Gewurztraminer one of the hardiest commercial whites'); hybrids with American species are hardier. | Sweet table and wine grapes; needs a long, warm ripening season. | 1-2 cm [K] | MOVED from v2 Table 6 under the hardiest-cultivar rule; vinifera flower buds and canes are often killed before the wood. | Data added |
| ***x Pyronia veitchii (Pyrus communis x Cydonia oblonga)*** | 'Otto Froebel' | E2 (PDF-E, PDF-F): zone 5a, intermediate hardiness between pear and quince. Not independently checked. | Fragrant pale yellow pomes, firm and sub-acid; best cooked in preserves and tarts. | 4-6 cm [S: PDF-E] | NEW from uploaded PDF-E and PDF-F. | Not checked |
| ***Ziziphus jujuba (jujube)*** | 'Li', 'Lang', 'Honey Jar' [K] | E2: PFAF USDA 5-10 (edibility 4 of 5); needs hot summers to ripen. | Sweet, crisp apple-like fruit eaten fresh or dried; sweeter dried. | 2-4 cm [K] | NEW from genus screen (Rhamnaceae). Summer heat in southern Finland probably too low. | Revise |

## Table 4. Candidates whose hardiness could not be evaluated (or only partly), with fruit data found

| Species | Region / source | What is known about hardiness | Fruit, edibility and taste | Fruit size | Notes | Status |
|---|---|---|---|---|---|---|
| ***Lonicera iliensis*** | Ili Valley, Kazakhstan (endemic) | Not established; a Russian study says a mild, warm climate favours it and it is rarely cultivated. | EDIBLE: dark blue, round, sweet-sour fruit without bitterness (Sorokopudov et al. 2024). | 0.2-0.3 g per berry [S] | MOVED from the exclusion table: fruit confirmed edible. Related L. caerulea subsp. edulis occurs at 2,600-3,500 m in China (Flora of China). | Data added |
| ***Podophyllum hexandrum (Himalayan mayapple)*** | Himalaya, W China | Zone 5a at Palmer, Alaska; most Asian Podophyllum zone 6-9 (Pacific Horticulture). | Fruit edibility and flavour not checked here. | not found | Hardiness partly evaluated; edibility unchecked. | Unverified note |
| ***Ribes stenocarpum*** | Gansu, Qinghai, Shaanxi, NW Sichuan (2,300-3,300 m) | Elevation only; no measured hardiness. | Large red oblong gooseberry; pleasant but strongly acid, less so when harvested late (PFAF). | 2-2.5 x 1 cm [S: Flora of China] | Relative of R. burejense/R. aciculare. Promising fruit size. | Data added |
| ***Ribes alpestre*** | Himalaya to W China (1,000-3,900 m) | Elevation only; no measured hardiness. | Purple fruit eaten raw or made into drinks and wine (Flora of China). Very spiny. | 1.2-1.5 cm [S: Flora of China] | | Data added |
| ***Ribes kialanum*** | W Sichuan / NW Yunnan mountains | Not evaluated. | Fruit characteristics unknown. | 0.5-0.8 cm [S: Flora of China] | | Data added |
| ***Ribes xizangense*** | Tibet | Not evaluated. | Fruit orange-red to purple; quality unknown. | 0.6-0.9 cm [S: Flora of China] | | Data added |
| ***Ribes pseudofasciculatum*** | China | Not evaluated. | Black fruit; quality unknown. | 0.5-0.6 cm [S: Flora of China] | | Data added |
| ***Ribes glaciale*** | Himalaya, SW China, Central Asia | Not evaluated (no data found). | Edibility/quality not established. | not found | Split from group row; data shared by the group. | Not checked |
| ***Ribes moupinense*** | Himalaya, SW China, Central Asia | Not evaluated (no data found). | Edibility/quality not established. | not found | Split from group row; data shared by the group. | Not checked |
| ***Ribes vilmorinii*** | Himalaya, SW China, Central Asia | Not evaluated (no data found). | Edibility/quality not established. | not found | Split from group row; data shared by the group. | Not checked |
| ***Ribes janczewskii*** | Himalaya, SW China, Central Asia | Not evaluated (no data found). | Edibility/quality not established. | not found | Split from group row; data shared by the group. | Not checked |
| ***Ribes pauciflorum*** | Russian Far East | Named by Far Eastern breeders as hardiness sources (ISHS abstract); no measured values. | Fruit quality not found (R. pauciflorum also noted for mite and Septoria resistance). | not found | Split from group row; data shared by the group. | Data added |
| ***Ribes pallidiflorum*** | Russian Far East | Named by Far Eastern breeders as hardiness sources (ISHS abstract); no measured values. | Fruit quality not found (R. pauciflorum also noted for mite and Septoria resistance). | not found | Split from group row; data shared by the group. | Data added |
| ***Crataegus dsungarica*** | Kazakhstan mountains | Not evaluated. | Fruit quality unknown. | not found | Split from group row; data shared by the group. | Not checked |
| ***Crataegus almaatensis*** | Kazakhstan mountains | Not evaluated. | Fruit quality unknown. | not found | Split from group row; data shared by the group. | Not checked |
| ***Berberis amoena*** | SW China | Not evaluated. | Tibetan communities eat fruit fresh. | not found | B. sibirica berry recorded as edible (Sturtevant 1919); not otherwise checked. Split from group row; data shared by the group. | Not checked |
| ***Berberis jamesiana*** | SW China | Not evaluated. | Tibetan communities eat fruit fresh. | not found | B. sibirica berry recorded as edible (Sturtevant 1919); not otherwise checked. Split from group row; data shared by the group. | Not checked |
| ***Berberis pruinosa*** | SW China | Not evaluated. | Tibetan communities eat fruit fresh. | not found | B. sibirica berry recorded as edible (Sturtevant 1919); not otherwise checked. Split from group row; data shared by the group. | Not checked |
| ***Berberis eisiensis*** | SW China | Not evaluated. | Tibetan communities eat fruit fresh. | not found | B. sibirica berry recorded as edible (Sturtevant 1919); not otherwise checked. Split from group row; data shared by the group. | Not checked |
| ***Ephedra triandra*** | Patagonia | Not evaluated. | Fleshy seed coverings (arils). | not found | Split from group row; data shared by the group. | Not checked |
| ***Ephedra patagonica*** | Patagonia | Not evaluated. | Fleshy seed coverings (arils). | not found | Split from group row; data shared by the group. | Not checked |
| ***Maihueniopsis darwinii*** | Patagonia | Not evaluated. | Fruits cooked/roasted or used as condiment. | not found | Split from group row; data shared by the group. | Not checked |
| ***Schinus patagonicus*** | Patagonia | Not evaluated. | Fruits cooked/roasted or used as condiment. | not found | Split from group row; data shared by the group. | Not checked |
| ***Berchemia flavescens*** | Himalaya, 2,000-3,400 m | No hardiness data found. | Eaten raw when fully ripe (Practical Plants). | about 12 mm long [S: Practical Plants] | MOVED from v2 Table 8; hardiness not evaluable. | Data added |

| Species | Region / source | What is known about hardiness | Fruit, edibility and taste | Fruit size | Notes | Status |
|---|---|---|---|---|---|---|
| ***Arctostaphylos rubra*** | N. America (boreal, Arctic, Pacific NW) | Not individually checked; boreal ranges suggest cold hardiness. | Red mealy berries / red currant-like / dark berries / small red berries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Ribes glandulosum*** | N. America (boreal, Arctic, Pacific NW) | Not individually checked; boreal ranges suggest cold hardiness. | Red mealy berries / red currant-like / dark berries / small red berries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Ribes laxiflorum*** | N. America (boreal, Arctic, Pacific NW) | Not individually checked; boreal ranges suggest cold hardiness. | Red mealy berries / red currant-like / dark berries / small red berries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Rubus pedatus*** | N. America (boreal, Arctic, Pacific NW) | Not individually checked; boreal ranges suggest cold hardiness. | Red mealy berries / red currant-like / dark berries / small red berries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Vaccinium membranaceum*** | Rocky, Cascade, Olympic Mtns, NW America | B: not all have documented minima sufficient to assign zone 3. | Mountain huckleberries/blueberries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Vaccinium scoparium*** | Rocky, Cascade, Olympic Mtns, NW America | B: not all have documented minima sufficient to assign zone 3. | Mountain huckleberries/blueberries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Vaccinium deliciosum*** | Rocky, Cascade, Olympic Mtns, NW America | B: not all have documented minima sufficient to assign zone 3. | Mountain huckleberries/blueberries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Vaccinium ovalifolium*** | Rocky, Cascade, Olympic Mtns, NW America | B: not all have documented minima sufficient to assign zone 3. | Mountain huckleberries/blueberries (B). | not found | MOVED from v2 Table 6. Split from group row; data shared by the group. | Not checked |
| ***Vaccinium parvifolium*** | Pacific mountain forests | B states it is not a zone 3 candidate (not verified here). | Red huckleberries. | not found | MOVED from v2 Table 6. | Not checked |
| ***Ribes oxyacanthoides*** | N. America | Reviewer knowledge: zone 2-3. | Native gooseberry / wild black currant; flavour varies. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Ribes americanum*** | N. America | Reviewer knowledge: zone 2-3. | Native gooseberry / wild black currant; flavour varies. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Ribes lacustre*** | N. America | Reviewer knowledge: zone 2-3. | Native gooseberry / wild black currant; flavour varies. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Vaccinium myrtilloides*** | N. America, Kamchatka | Reviewer knowledge: zone 2-3. | Blueberries; Kamchatka bilberry reported large and sweet. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Vaccinium praestans*** | N. America, Kamchatka | Reviewer knowledge: zone 2-3. | Blueberries; Kamchatka bilberry reported large and sweet. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Berberis sibirica*** | Siberia, Far East, Europe, N. America | Reviewer knowledge: zone 3-4. | Acidic edible berries. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Berberis amurensis*** | Siberia, Far East, Europe, N. America | Reviewer knowledge: zone 3-4. | Acidic edible berries. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Rosa dumalis*** | Europe, N. America | Reviewer knowledge: zone 2-3. | Large vitamin-rich hips. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Rosa blanda*** | Europe, N. America | Reviewer knowledge: zone 2-3. | Large vitamin-rich hips. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Rosa woodsii*** | Europe, N. America | Reviewer knowledge: zone 2-3. | Large vitamin-rich hips. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier spicata*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier interior*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier humilis*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier utahensis*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier ovalis*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |
| ***Amelanchier asiatica*** | N. America, Europe, Asia | Not individually evaluated; most are zone 3-4 [K]. | Sweet to bland serviceberries (A. stolonifera 'not particularly good eating', Maine DACF). | not found | Partly verified. Split from group row; data shared by the group. | Unverified note |

| Species | Region / source | What is known about hardiness | Fruit, edibility and taste | Fruit size | Notes | Status |
|---|---|---|---|---|---|---|
| ***Nitraria roborowskii*** | Central Asia, N and W China | Not verified. | N. roborowskii regarded by some authors (Bobrov) as an ecological form of N. sibirica with larger fruit (Siberian Ecological Journal 2021); N. tangutorum grown in NW China (reviewer knowledge). | not found | Partly verified. Split from group row; data shared by the group. | Data added |
| ***Nitraria schoberi*** | Central Asia, N and W China | Not verified. | N. roborowskii regarded by some authors (Bobrov) as an ecological form of N. sibirica with larger fruit (Siberian Ecological Journal 2021); N. tangutorum grown in NW China (reviewer knowledge). | not found | Partly verified. Split from group row; data shared by the group. | Data added |
| ***Nitraria tangutorum*** | Central Asia, N and W China | Not verified. | N. roborowskii regarded by some authors (Bobrov) as an ecological form of N. sibirica with larger fruit (Siberian Ecological Journal 2021); N. tangutorum grown in NW China (reviewer knowledge). | not found | Partly verified. Split from group row; data shared by the group. | Data added |
| ***Hippophae rhamnoides ssp. mongolica*** | Eurasia | Genus listed zone 3-7 (Wikipedia); H. rhamnoides USDA 3 (NDSU, WorldPlants: -40 to -35 °C). | Varies by clone from very acidic to mildly sweet. | large cultivars about the size of a large pea or small blueberry [S: U Wisconsin] | Subspecies-level hardiness not individually verified. Split from group row; data shared by the group. | Data added |
| ***Hippophae rhamnoides ssp. sinensis*** | Eurasia | Genus listed zone 3-7 (Wikipedia); H. rhamnoides USDA 3 (NDSU, WorldPlants: -40 to -35 °C). | Varies by clone from very acidic to mildly sweet. | large cultivars about the size of a large pea or small blueberry [S: U Wisconsin] | Subspecies-level hardiness not individually verified. Split from group row; data shared by the group. | Data added |
| ***Hippophae rhamnoides ssp. fluviatilis*** | Eurasia | Genus listed zone 3-7 (Wikipedia); H. rhamnoides USDA 3 (NDSU, WorldPlants: -40 to -35 °C). | Varies by clone from very acidic to mildly sweet. | large cultivars about the size of a large pea or small blueberry [S: U Wisconsin] | Subspecies-level hardiness not individually verified. Split from group row; data shared by the group. | Data added |
| ***Hippophae goniocarpa*** | Eurasia | Genus listed zone 3-7 (Wikipedia); H. rhamnoides USDA 3 (NDSU, WorldPlants: -40 to -35 °C). | Varies by clone from very acidic to mildly sweet. | large cultivars about the size of a large pea or small blueberry [S: U Wisconsin] | Subspecies-level hardiness not individually verified. Split from group row; data shared by the group. | Data added |
| ***Lonicera edulis*** | Haskap relatives | Reviewer knowledge: zone 1-3. | Sweet-tart blue honeyberries; L. caerulea cultivar fruit can exceed 2 cm and 1.5 g (Hummer). | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Lonicera kamtschatica*** | Haskap relatives | Reviewer knowledge: zone 1-3. | Sweet-tart blue honeyberries; L. caerulea cultivar fruit can exceed 2 cm and 1.5 g (Hummer). | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Viburnum opulus*** | Northern Eurasia / N. America | Reviewer knowledge: zone 2-3. | Mostly cooked or processed fruit. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Crataegus chrysocarpa*** | Northern Eurasia / N. America | Reviewer knowledge: zone 2-3. | Mostly cooked or processed fruit. | not found | Not verified. Split from group row; data shared by the group. | Unverified note |
| ***Cactaceae, Ephedraceae, Nitrariaceae, Liliaceae, Annonaceae, Elaeocarpaceae (families of genera in the document)*** | Screening incomplete | Not screened in this pass (e.g. Opuntia humifusa/fragilis, Ephedra distachya/equisetina, Prosartes, Maianthemum). | Several have edible fruit and some are cold-hardy [K], but no data was collected. | not found | Listed so that the gap is visible. | Not checked |
| ***Rubus leucodermis (whitebark raspberry)*** | W North America incl. Alaska | Conflicting: seed supplier gives minimum zone 6; C says 'USDA 3-7, cold continental and interior mountain habitats' (unsourced). | 'Very well flavoured' black raspberry (PFAF); C: sweet, dark purple-black, fresh, dried or jelly. | about 1 cm [K] | Kept in Table 4 because the zone ratings cannot be reconciled. | Data added |
| ***Rubus nivalis*** | N. America (alpine/Pacific) | Not evaluated. | Not documented here. | not found | From the Wikipedia list; no data retrieved. Split from group row; data shared by the group. | Not checked |
| ***Rubus ursinus*** | N. America (alpine/Pacific) | Not evaluated. | Not documented here. | not found | From the Wikipedia list; no data retrieved. Split from group row; data shared by the group. | Not checked |
| ***Rubus coreanus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus cockburnianus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |

| Species | Region / source | What is known about hardiness | Fruit, edibility and taste | Fruit size | Notes | Status |
|---|---|---|---|---|---|---|
| ***Rubus biflorus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus xanthocarpus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus humulifolius*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus hispidus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus armeniacus*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus ulmifolius*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Rubus nessensis*** | Asia, Europe, E North America | Not evaluated; most are likely zone 5-7 or have poor fruit (reviewer knowledge, unverified). | R. coreanus (bokbunja) and R. xanthocarpus are fruiting species; others mostly ornamental or weedy. | not found | Wikipedia 'better-known species' list; not searched individually. Split from group row; data shared by the group. | Unverified note |
| ***Malus kansuensis (Kansu crabapple)*** | W China | No hardiness data found. | Crabapple; edibility not checked here. | not found | Named in uploaded PDF-D as already present in v6; it was not. No data collected. | Not checked |
| ***Malus x dawsoniana (Dawson crabapple, M. fusca x M. domestica)*** | Hybrid | USDA 4-8 (Trees and Shrubs Online, per PDF-D). | Elongated yellow-green to red fruit about 4 x 2.5 cm; human food use not verified. | 4 x 2.5 cm [S: PDF-D] | From uploaded PDF-D; hardiness qualifies but edibility is unverified. | Not checked |
| ***Pyrus elaeagrifolia (oleaster-leaf pear)*** | Anatolia/Balkans | PFAF gives UK zone 5 only, no USDA rating (PDF-D). | PFAF: edible raw or cooked; tough, gritty flesh but reasonable flavour when fully ripe. | up to 2 cm [S: PDF-D] | From uploaded PDF-D; needs a USDA-comparable hardiness source. | Not checked |
| ***Malus x Pyrus intergeneric hybrids (e.g. 'Zwintscher's Hybrid')*** | Experimental hybrids | No hardiness or fruit-quality records (Pasqualetto et al. 2023). | Not established as food crops. | not found | From uploaded PDF-D; breeding and fire-blight research only. | Not checked |
| ***Rhus x pulvinata (R. glabra x R. typhina)*** | Natural hybrid | Parents are zone 3 (Table 1). | Hybrid food use poorly documented (PDF-C); parents used for sumac-ade. | not found | Split from group row; A. jackii moved to Table 1; Vitis riparia hybrids are tracked per cultivar. | Not checked |

## Table 5. Fruit toxic or not usable as food (verified where possible)

| Taxon | Evidence on the fruit | Verdict | Status |
|---|---|---|---|
| ***Actaea rubra (red baneberry)*** | Berries very poisonous: burning and blistering of mouth and lips, nausea, vomiting, kidney damage, and in quantity heart failure (NC State; Univ. of Minnesota/St Olaf; others). Berries very bitter; about 1/3 in across. NC State rates zone 4-8. | Verified: remains excluded | Data added |
| ***Actaea pachypoda (white baneberry, doll's eyes)*** | Berries very poisonous: burning and blistering of mouth and lips, nausea, vomiting, kidney damage, and in quantity heart failure (NC State; Univ. of Minnesota/St Olaf; others). Berries very bitter; about 1/3 in across. NC State rates zone 4-8. | Verified: remains excluded | Data added |
| ***Daphne altaica*** | No species-specific source found. Daphne berries are listed as poisonous in US government and extension guides (genus-level evidence only). | Remains excluded (genus-level evidence) | Unverified note |
| ***Paris quadrifolia*** | Only a forager forum description: acrid fruit that burns the mouth, followed by gastric symptoms, severe in quantity. Weak evidence; no sign of edibility. | Remains excluded (weak evidence) | Unverified note |
| ***Solanum dulcamara (bittersweet nightshade)*** | Berries contain glycoalkaloids; sources describe them as toxic (unripe worst). One list rates ripe-berry toxicity low when cooked, but no source recommends them as food. | Remains excluded | Data added |
| ***Symphoricarpos albus (snowberry)*** | Sources conflict: poisonous and emetic (Wikipedia; NPS Alaska); saponins poorly absorbed; insipid, 'emergency food' at best (Kruckeberg). Stl'atl'imx people used one or two berries medicinally, not as food. Zones 3-7. | Remains excluded: bland and emetic | Data added |
| ***Pyrus x nivalis (snow pear, P. communis x P. elaeagrifolia)*** | RHS describes the fruit as ornamental and says it is not to be eaten (PDF-D). | Excluded: fruit not for eating | Not checked |
| ***Pyrus calleryana (Callery pear)*** | PDF-D says the earlier review found their fruit unsuitable; no such review is in v6. Small, hard, astringent fruit; ornamental use only (reviewer knowledge). | Excluded: ornamental | Unverified note |
| ***Pyrus fauriei*** | PDF-D says the earlier review found their fruit unsuitable; no such review is in v6. Small, hard, astringent fruit; ornamental use only (reviewer knowledge). | Excluded: ornamental | Unverified note |
| ***Paliurus spina-christi (Christ's thorn)*** | Dry non-edible fruit (PDF-E). | Excluded | Not checked |
| ***Rhamnus species (buckthorns)*** | Cathartic or toxic berries (PDF-E). | Excluded (genus level) | Not checked |
| ***Frangula species (alder buckthorns)*** | Cathartic or toxic berries (PDF-E). | Excluded (genus level) | Not checked |
| ***Discaria species*** | Dry capsules, not edible fruit (PDF-E). | Excluded (genus level) | Not checked |

Not repeated here: *Podophyllum peltatum* and *Streptopus amplexifolius* (moved to Table 1) and *Lonicera iliensis* (moved to Table 4) because their fruit is edible. Only the fruit matters for this table; toxic leaves or roots do not exclude a species.

## Table 6. Verified NOT to meet the zone 5a-or-colder criterion

These species were listed in the PDFs (or relatives table) but verified data put them outside zone 5a for every population or cultivar found. 'Populations that might qualify' notes any exception.

| Species | Listed in (v2 table) | Verified hardiness | Populations / cultivars that might qualify | Fruit and taste | Fruit size | Status |
|---|---|---|---|---|---|---|
| ***Aristotelia chilensis (maqui)*** | Table 3 | About -10 °C (PFAF/RHS); minimum -12 °C (WorldFloraDB); nursery ratings zone 7-10 and 8a-10b; one Pacific Northwest selection hardy to about 10 F (-12 °C). | None known. | Dark purple berries, somewhat like blackberry or elderberry (nursery description); very high anthocyanin content (A). | 4-6 mm [K] | Data added |
| ***Berberis darwinii*** | Table 3 | Minimum USDA zone 7a (Everde); NC State lists 7-10; RHS H5. | None known. | Dark blue waxy berries, edible but sour. | under 2.5 cm; about 6-8 mm [S: NC State; K] | Data added |
| ***Gaultheria mucronata*** | Table 3 | Generally USDA 6-9 (Gardenia). | None known. | Berries white, pink, red or purple; spongy, mildly sweet (A). Dioecious. | 8-12 mm [K] | Data added |
| ***Rubus ellipticus (golden Himalayan raspberry)*** | Table 3 | USDA 7-10 (PictureThis); zone 8 (Practical Plants). PDF-B itself says probably unsuitable. | None known. ('Fall Gold' sold as golden raspberry is an R. idaeus hybrid, zone 5-8.) | Golden-yellow fruit with a good raspberry-like flavour, sweet with pleasant acidity (Practical Plants). Invasive in Hawaii. | about 10 mm [S: Practical Plants] | Data added |
| ***Berchemia lineata*** | Table 9 | Tolerates only about -5 to -10 °C (PFAF/RHS). | None known. | Eat only when black-ripe. | not found | Data added |
| ***Actinidia deliciosa (fuzzy kiwi)*** | Table 3 screen | PFAF USDA 6-9. | None known; A. arguta/kolomikta/purpurea are the hardy kiwis. | Sweet-tart kiwifruit. | 5-8 cm [K] | Data added |
| ***Crataegus tanacetifolia*** | Table 3 screen | PFAF USDA 6-8 (edibility 5 of 5). | None known. | Highly rated edible haw. | about 2 cm [K] | Data added |
| ***Gaultheria shallon (salal)*** | Table 3 screen | PFAF USDA 8-11 (edibility 5 of 5). | None known (Pacific coast maritime plant). | Sweet-tart blue-black berries. | about 8-10 mm [K] | Data added |

| Species | Listed in (v2 table) | Verified hardiness | Populations / cultivars that might qualify | Fruit and taste | Fruit size | Status |
|---|---|---|---|---|---|---|
| ***Arbutus unedo (strawberry tree)*** | Table 3 screen | PFAF USDA 7-11 (edibility 4 of 5). | None known. | Mealy, mildly sweet orange-red fruit. | about 2 cm [K] | Data added |
| ***Cornus capitata (Bentham's cornel)*** | Table 3 screen | PFAF USDA 7-10 (edibility 4 of 5). | None known; C. mas, C. officinalis and C. kousa are the hardy relatives. | Sweet-tart strawberry-like fruit. | about 2-3 cm [K] | Data added |
| ***Elaeagnus pungens (thorny elaeagnus)*** | Table 3 screen | PFAF USDA 6-10 (edibility 5 of 5). | None known; E. multiflora and E. umbellata are hardier. | Sweet-sour oval fruit. | about 1.5 cm [K] | Data added |
| ***Prunus dulcis (almond)*** | Table 3 screen | PFAF USDA 6-9. | Fruit is a nut; flower buds also fail in cold springs. | Almond kernel (not a fleshy fruit). | 3-4 cm [K] | Data added |
| ***Rubus x loganobaccus (loganberry)*** | Table 3 screen | PFAF USDA 7-10 (edibility 5 of 5). | None known. | Loganberry. | 1-2 cm [K] | Data added |
| ***Rubus nepalensis*** | Table 3 screen | PFAF USDA 7-10 (edibility 5 of 5). | None known. | Himalayan groundcover raspberry. | about 1 cm [K] | Data added |
| ***Rubus tricolor*** | Table 3 screen | PFAF USDA 6-9 (edibility 3 of 5). | None known. | Chinese groundcover bramble. | about 1 cm [K] | Data added |
| ***Actinidia chinensis (golden kiwi)*** | Uploaded PDF-E | Commercial kiwis restricted to USDA zones 7-9 (PDF-E). | None known; A. arguta, A. kolomikta, A. purpurea are the hardy kiwis. | Sweet kiwifruit. | 4-6 cm [K] | Not checked |
| ***Viburnum tinus (laurustinus)*** | Uploaded PDF-E | Insufficient cold hardiness (PDF-E). | None known. | Dry, unpalatable berries (PDF-E). | about 7 mm [K] | Not checked |
| ***Viburnum rhytidophyllum (leatherleaf viburnum)*** | Uploaded PDF-E | Insufficient cold hardiness (PDF-E). | None known. | Dry, unpalatable berries (PDF-E). | about 7 mm [K] | Not checked |

## Table 7. Cross-check of the three uploaded PDFs (D: Malus/Pyrus v8 supplement; E: Supplementary New Discoveries; F: Combined Inventory v8)

Each species or hybrid named in the three PDFs was compared with the previous version of this document (v6). Only items that were missing or placed differently are listed individually.

| Item | PDF | Status in v6 | Action in v7 | Comment |
|---|---|---|---|---|
| ***Malus sylvestris*** | D (Malus/Pyrus) | Present, Table 2 | None | Agrees (NC State 4a-8b). |
| ***Malus orientalis*** | D | Missing | Added, Table 2 | USDA 4-7, RHS H6 per PDF-D; not independently checked. Ripening may be too late for Lapua. |
| ***Malus angustifolia*** | D | Missing | Added, Table 2 | NC State 4a-9b; sour, cooking use. |
| ***Malus x soulardii*** | D | Missing | Added, Table 2 (flagged) | Fruit-use evidence weak (PDF-D agrees). |
| ***Malus x dawsoniana*** | D | Missing | Added, Table 4 | Hardy (zone 4-8) but no verified food use. |
| ***Malus kansuensis*** | D (said to be in v6) | Missing | Added, Table 4 | No hardiness or fruit data found; PDF-D's statement that v6 already had it is incorrect. |
| ***Malus yunnanensis*** | D (said to be in v6) | Missing | Added, Table 2 | USDA 4-8, fruit about 1.3 cm, harsh but edible. PDF-D's claim of prior inclusion is incorrect. |
| ***Malus x robusta*** | D (said to be in v6) | Missing | Added, Table 2 | USDA 4-6 (one database 3-9), minimum -23 °C; fruit edible cooked. |
| ***Malus prunifolia*** | D, F | Missing (PDF-D says present) | Added, Table 2 | Zones 4-8 per PDF-F. |
| ***Malus domestica, M. toringo, M. sieversii*** | D, F | Present (Tables 1, 2, 2) | None | PDF-F lists M. sieversii in zone 5a only; v7 keeps Table 2 (PFAF USDA 4-10). |
| ***Pyrus pashia, P. xerophila, P. ussuriensis*** | D, F | Present | None | Agree. |
| ***Pyrus communis cultivar groups*** | D, F | Missing | Added as one species row, Table 2 | PDF-F split it into zone-4 and zone-5 groups; the hardiest cultivars qualify the whole species for zone 4. |
| ***Pyrus ussuriensis x P. communis hybrids ('Ure', 'Early Gold')*** | D, F | Missing | Added, Table 1 | Zone 3 per PDF-F (MDA list, U Saskatchewan). |
| ***Shipova (x Sorbopyrus auricularis)*** | D | Present, Table 2 | None | Provisional. |
| ***Pyrus elaeagrifolia*** | D | Missing | Added, Table 4 | Only a UK zone 5 rating. |
| ***Pyrus x nivalis*** | D | Missing | Added, Table 5 | Ornamental; RHS says do not eat. |
| ***Pyrus calleryana, P. fauriei*** | D | Missing | Added, Table 5 | PDF-D says an earlier review excluded them; v6 contained no such review. |
| ***Malus x Pyrus intergeneric hybrids*** | D | Missing | Added, Table 4 | Research hybrids only. |
| ***x Crataegosorbus miczurinii*** | E, F | Missing | Added, Table 1 | Zones 3-8 (PDF-E) or 3-4 (PDF-F); not independently checked. |
| ***x Amelasorbus jackii*** | E, F | Present only as a Table 4 group-row mention | Moved to Table 1 | PDF-C found fruit evidence too thin; PDF-E and PDF-F call it edible but seedy. |
| ***x Crataemespilus grandiflora*** | E, F | Missing | Added, Table 2 | Zones 4-5. |
| ***x Pyronia veitchii*** | E, F | Missing | Added, Table 3 | Zone 5a; best cooked. |
| ***Berberis aristata*** | E | Present, Table 3 (PFAF 5-9) | Kept in Table 3 | PDF-E gives zone 4-8 without a source. |
| ***Actinidia purpurea, Ziziphus jujuba*** | E | Present, Table 3 | None | Cultivar names added. |
| ***Paliurus, Rhamnus, Frangula, Discaria*** | E | Missing | Added, Table 5 | Genus-level exclusions. |
| ***Viburnum tinus, V. rhytidophyllum*** | E | Missing | Added, Table 6 | Unpalatable and insufficiently hardy. |
| ***Actinidia deliciosa / A. chinensis*** | E | A. deliciosa present (Table 6); A. chinensis missing | A. chinensis added, Table 6 | Zone 7-9. |
| ***Crataegus submollis*** | F | Missing | Added, Table 1 | Zones 3-8 per PDF-F; not independently checked. |
| ***Crataegus douglasii*** | F | Missing | Added, Table 2 | Zones 4-8 per PDF-F; likely hardier [K]. |
| ***Gaultheria hispidula*** | F | Present, Table 2 | Kept in Table 2 | PDF-F places it in Table 1 (zones 3-8); PFAF says USDA 5-9. |
| ***Rubus leucodermis*** | F | Present, Table 4 | Kept in Table 4 | PDF-F: Table 1 (zones 3-7); a seed supplier gives minimum zone 6. |
| ***Rubus spectabilis*** | F | Present (Table 2) | None | PDF-F lists it in Table 4; PFAF gives USDA 4-8. |
| ***Rubus idaeus x R. occidentalis*** | F | Present, Table 2 | None | PDF-F lists it in Table 3; laboratory data show purple raspberry canes hardier than -33 °C. |
| ***Crataegus pinnatifida*** | F | Present, Table 3 | Kept in Table 3 | PDF-F gives zone 4-9; PFAF 5-9. |
| ***Mahonia aquifolium (zone 5 accessions)*** | F | Present, Table 2 | None | PDF-F duplicates it in Tables 2 and 3. |
| ***All other species and hybrids in PDF-F (about 85)*** | F | Present | None | Already in v6. |

| Item | PDF | Status in v6 | Action in v7 | Comment |
|---|---|---|---|---|
| ***Layout problems in PDF-F*** | F | | Comment | Table 6 is followed by repeated, mislabelled 'Table 2' and 'Table 3' headings that contain rows of Tables 1-3 (duplicates such as Actinidia arguta, Asimina, Cornus kousa); Actinidia arguta (zone 4) appears under a zone 5a heading; footers read 'v7' inside a v8 file. Claims carried over that this review corrected: 'finest wild blackberry' for R. allegheniensis, Gaylussacia zone, Morus rubra zone. |