

PROPAGATION OF ALASKA NATIVE PLANTS

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Below is a list of propagation techniques for Alaska native woody plant species. It is a compilation of information gathered from the literature (see bibliography); from experiments conducted by the author at the University of Alaska, Fairbanks; from records of propagation experiments at the Alaska Department of Natural Resources, Division of Agriculture Plant Materials Center in Palmer; and from experiences of commercial growers and gardeners throughout Alaska. This list is not complete, and the methods included may or may not be successful depending on individual grower's source of plant materials, propagating environment and methods of handling propagated plant material. However, this list will provide some guidelines for determining possible techniques for those interested in propagating Alaska native plants.

Abies amabilis (Pacific silver fir)

Seeds: Germinate, uncovered, at 20 C (68 F). Some seed sources need stratification for 60 days at 4 C (40 F). Alternating temperatures may speed germination (15/25 C; 59/77 F).

Grafting: veneer grafts on seedlings in late summer or winter. Use only upright growth

Abies lasiocarpa (subalpine fir)

Seeds: Germinate, uncovered, at 20/30 C (68/86 F) alternating temperatures. Some seed sources need stratification for 90 days at 4 C (40 F) prior to germination

Grafting: see Abies amabilis

Acer glabrum var. douglasii (Douglas maple)

Seeds: Sow in fall or stratify for 75-90 days at 4 C (40 F)

Alnus crispa (green alder)

Seeds: Sow in fall or spring. Seeds germinate readily in light when fresh at 25 C (77 F), but dry seeds may need stratification for 60 days at 4 C (40 F). Alternating temperatures may increase germination (20/30 C; 68/86 F)

Alnus incana (thinleaf alder)

Seeds: Sow in fall or spring. Seeds germinate readily in light when fresh at 20-25 C (68-77 F), but dry seeds may need stratification for 180 days at 4 C (40 F). Germination may be enhanced by following the stratification period with 3 days at -4 C. Alternating temperatures may increase germination (20/30 C; 68/86 F)

Grafting: side veneer grafts in mid winter

Amelanchier alnifolia (Saskatoon serviceberry)

Seeds: Fall sow or stratify 120 days at 4 C (40 F). Germinate at 21 C (70 F) on sand, 1:1 sand/peat or paper

Grafting: may be grafted onto Crataegus or Cotoneaster rootstocks

Root cuttings: 4-6" long roots planted horizontally and covered with 2" of substrate

Cuttings: hardwood cuttings under mist

Layering: simple or mound layering in spring using wood of previous season's growth. Rooting is enhanced by wounding the buried portion of the stem and treating with rooting powder; takes 2 seasons to become well rooted

Amelanchier florida (Pacific serviceberry)

Seeds: Fall sow or stratify 90 days at 4 C (40 F). Germinate on sand, 1:1 sand/peat or paper at 21 C (70 F)

Andromeda polifolia (bog rosemary)

Seeds: Fall sow or stratify 90-120 days at 4 C (40 F). Germinate in continuous light at 20-25 C (68-77 F)

Layering: simple layering in August. This method is reliable but very slow, producing a salable plant in 18-24 months

Cuttings: semi-hardwood cuttings with a heel of older wood attached; hardwood cuttings taken in spring using non-flowering wood. Propagate in sand or peat in a mist bench or shaded cold frame.

Treatment with rooting powder and bottom heat is beneficial

Division: in spring

Arctostaphylos alpina (alpine bearberry)

Seeds: Remove seeds as soon as berries are ripe and sow in flats of sand or 1:1 sand/peat. Keep flats outdoors year round, but germination is very slow (2-5 years); or treat seeds with sulfuric acid for 3-5 hours, then warm stratify at 24 C (75 F) for 60 days followed by cold stratification for 60-120 days at 4 C (40 F). Germinate at 21 C (70 F) on filter paper or sand

Arctostaphylos uva-ursi (bearberry)

Seeds: see Arctostaphylos alpina

Cuttings: 3-5" semi-hardwood or hardwood cuttings in sand, 1:1 sand/peat or perlite; roots best with treatment of rooting powder. Cuttings root easily but are difficult to transplant

Betula glandulosa (resin birch)

Seeds: Fall sow or stratify 60-75 days at 4 C (40 F). Germinate in light at 20-25 C (68-77 F). Some seeds germinate fresh, but percentages are often improved by stratification

Betula nana (Dwarf arctic birch)

Seeds: Fall sow or germinate seeds in continuous light at 21-24 C (70-75 F) on paper or sand. For more complete germination, stratify seeds at 2-3 C (35-37 F) for 20 days or soak 24 hours in 1000 ppm gibberellic acid. Seeds germinate in 12-15 days

Betula papyrifera (paper birch)

Seeds: Fall sow or germinate seeds in continuous light at 21-24 C (70-75 F) on paper or sand. For best germination stratify seeds for 60 days at 4 C (40 F). Germinate at 10-25 C (50-77 F).

Cassiope Mertensiana (Mertens cassiope)

Seeds: Sow seeds in mid winter in peat and germinate at 15-25 C (60-77 F). Do not cover seeds; takes nearly 2 years to produce a salable plant

Cuttings: 2-4" softwood cuttings with heel; hardwood cuttings taken in fall and inserted into peat, 1:1 peat/sand or sand. Treatment with rooting powder and bottom heat is beneficial.

Layering: simple layering in peat or 1:1 peat/sand. Keep moist at all times. Layering is faster if buried portion is wounded and treated with rooting powder

Division: in spring

Cassiope tetragona (four-angled cassiope)

Seeds: see Cassiope Mertensiana

Cuttings: see Cassiope Mertensiana

Layering: see Cassiope Mertensiana

Division: see Cassiope Mertensiana

Chamaecyparis nootkatensis (Alaska cedar)

Seeds: Sow in spring for germination the following spring; or warm stratify seeds 30 days at alternating temperatures (20/30 C; 68/86 F) followed by cold stratification at 4 C (40 F) for 30 days. Germinate in continuous light at 20 C (68 F) on paper

Cuttings: hardwood cuttings in early winter in sand with bottom heat; or collect in fall and allow stem cuttings to callus at 10 C (50 F) in sand for 4-6 weeks. Raise temperature to 21-25 C (70-77 F) for rooting

Layering: simple layering in spring; ready the following season

Chamaedaphne calyculata (leatherleaf)

Seeds: Fall sow or stratify 80-100 days at 4 C (40 F). Germinate in continuous light at 25 C (77 F) or alternating temperatures (10/25 C; 50/77 F). Some seeds may germinate fresh in continuous light at 20-25 C (70-77 F), but germination is best with cold stratification

Chimaphila umbellata (pipsissewa)

Cuttings: hardwood cuttings in late fall in sand or peat; semi-hardwood cuttings containing a heel. Rooting is slow. Keep cuttings shaded. Treatment with rooting powder is beneficial

Cornus canadensis (bunchberry)

Seeds: remove seeds from berry immediately upon collection and soak in 1000 ppm gibberellic acid for 24 hours. Germinate at 21 C (70 F) or alternating temperatures (25/10 C; 77/50 F) on paper or sand. If seeds are dried, stratify for 120-180 days at 4 C (40 F) prior to germination

Division: in spring

Cornus sericea (redosier dogwood)

Seeds: Sow in fall or stratify dry seeds 90 days at 2-4 C (35-39 F).

Fresh seeds that are not permitted to dry out may germinate readily if planted immediately in sand and kept moist

Cuttings: softwood cuttings; hardwood cuttings of one-year-old wood.

Propagate under mist in sand or perlite. Bottom heat and treatment with rooting powder are beneficial

Division: remove rooted suckers in early summer

Layering: simple or mound layers in spring

Crataegus douglasii (hawthorn)

Seeds: Immerse seeds in sulfuric acid for 3-5 hours followed by stratification at 4 C (40 F) for 80-112 days. Germinate in peat or sand at 21 C (70 F)

Grafting: many methods of budding and grafting are possible

Diapensia lapponica (diapensia)

Seeds: Sow in fall or stratify 80-120 days at 4 C (40 F). Germinate in continuous light in peat, sand or paper

Division: in late summer or spring; best grown in peat

Dryas integrifolia (entire-leaf mountain avens)

Seeds: Sow in fall or stratify 80-120 days at 2-4 C (35-40 F). Germinate on paper at 21 C (70 F). Some seeds will germinate without pretreatment at 20 C (70 F) under continuous light, but germination is best after cold stratification

Dryas octopetala (white mountain avens)

Seeds: see Dryas integrifolia

Cuttings: semi-hardwood cuttings treated with rooting powder and inserted into sand

Elaeagnus commutata (silverberry)

Seeds: Fall sow or stratify 90 days at 4 C (40 F). Germinate on paper or in sand

Empetrum nigrum (crowberry)

Seeds: Fall sow or scarify 20 minutes in sulfuric acid followed by warm stratification at 20 C (68 F) for 200-225 days, then cold stratification, 90-120 days in sand at 4 C (40 F). Germinate in sand or on paper at 21 C (70 F)

Cuttings: softwood or semi-hardwood cuttings taken with heel. Propagate in 3:1 sand/peat in shaded cold frame or mist bench. Rooting is enhanced by treatment with rooting powder

Division: in spring

Gaultheria Miqueliana (Miquel wintergreen)

Seeds: Sow immediately in moist peat. Place flats in shaded frame or cover with newspaper until seeds germinate.

Cuttings: hardwood cuttings before flowering in spring. Treat cuttings with rooting powder or liquid and stick into flats of peat.

Maintain in mist bench or shaded cold frame until rooted

Ledum decumbens (narrow-leaf labrador tea)

Seeds: Fall or spring sow. Germinate in continuous light at 21 C (70 F) on paper or in peat

Cuttings: see Ledum groenlandicum

Layering: see Ledum groenlandicum

Linnaea borealis (twin flower)

Seeds: Some seeds will germinate fresh at 20-25 C (68-77 F), but best germination occurs after stratification at 4 C (40 F). Germinate in continuous light at 20-25 C (68-77 F)

Cuttings: 3-5" softwood or semi-hardwood cuttings taken with heel and stuck into moist sand or peat in shaded cold frame or mist bench

Division: in early to mid summer; plant in peaty soil

Loiseleuria procumbens (alpine azalea)

Seeds: Fall sow or stratify 70-90 days at 4 C (40 F). Germinate at 20-25 C (68-77 F) in continuous light

Cuttings: softwood cuttings or non-flowering stems treated with rooting powder and inserted into peat in shaded cold frames or mist bench

Layering: simple layering in spring

Division: in early summer; use well-rooted sections

Lonicera involucrata (bearberry honeysuckle)

Seeds: Fall sow or stratify 90 days at 4 C (40 F) and germinate in sand or peat

Malus diversifolia (Oregon crabapple)

Seeds: Fall sow or stratify 90 days at 4 C (40 F). Germinate on paper or in sand

Phyllodoce aleutica (Aleutian mountain heath)

Cuttings: semi-hardwood tip cuttings with heel and treated with rooting powder. Stick cuttings into flats of peat in shaded cold frame or in sand or perlite in mist bench

Phyllodoce coerulea (blue mountain heath)

Seeds: Fall sow or germinate in milled Sphagnum or peat. This method is very slow

Cuttings: see Phyllodoce aleutica

Layering: simple or mound layering in spring with buried portion of the stem wounded and treated with rooting powder

Division: in spring

Picea glauca (white spruce)

Seeds: Fall or spring sow or germinate on filter paper or in 3:1 peat/vermiculite at 20-25 C (68-77 F). Pretreatments generally do not increase germination percentages of fully mature seeds

Grafting: veneer side grafts in mid winter into containerized seedlings. Maintain very high humidity until grafts take

Picea mariana (black spruce)

Seeds: Fall or spring sow or germinate in light at 10-20 C (50-68 F) on

Gaultheria shallon (salal)

Seeds: Extract seeds immediately and store near freezing temperatures. Sow on top of peat or sand at 21 C (70 F). Light is required for germination.

Division: in spring when new shoots are about 3" long; grow in moist peat/sand (1:1)

Cuttings: semi-hardwood cuttings in sand under mist. Treatment with rooting powder and bottom heat is beneficial

Layering: simple layering in spring

Juniperus communis (Common juniper)

Seeds: Sow in fall. Seeds will germinate the second season after sowing. Stratify 90-120 days at 25 C (77 F) followed by 90-120 days at 4 C (40 F). Germinate in sand or peat at 21 C (70 F)

Cuttings: softwood or semi-hardwood cuttings treated with rooting powder and propagated in a mist bench in sand or perlite; hardwood cuttings in early winter propagated as above; rooting may be very slow

Layering: simple layering using current season's wood in late summer. Buried portion of the shoot should be wounded and treated with rooting powder. Cuttings are rooted by the end of the following growing season

Juniperus horizontalis (creeping juniper)

Seeds: see Juniperus communis

Cuttings: see Juniperus communis

Kalmia polifolia (bog kalmia)

Seeds: Sow seeds in flats of finely-milled peat or Sphagnum moss immediately after fruit ripens; germination may be slow. Some sources may require a 60-90 day stratification period at 4 C (40 F)

Cuttings: semi-hardwood cuttings, 3-5" long, taken with a heel. Treat with rooting powder and root in peat, sand/peat (1:1) or sand

Layering: simple layering in June. Wound the buried portion of the stem and peg down; can be dug the following fall

Grafting: veneer grafting

Larix laricina (larch)

Seeds: Fall sow or store at freezing temperatures until seeded. Germinate at 21 C (70 F) on paper, sand or fine loam. Some sources germinate best with 5-30 days stratification at 4 C (40 F) before germination

Ledum groenlandicum (labrador tea)

Seeds: germinate in light at 21-27 C (70-80 F) on paper or sand. Application of gibberellic acid (1000 ppm) is not necessary but may speed germination. Growth after germination is slow

Cuttings: 3-5" softwood or semi-hardwood cuttings treated with rooting powder and stuck in sand or perlite in mist bench

Layering: simple layering in spring or fall using one-year-old wood with at least a 4" tip exposed

paper or in sand. Some sources will not germinate when seeds are covered unless seeds are first stratified at 3-4 C (37-40 F) for 2 weeks prior to germination

Cuttings: semi-hardwood or hardwood cuttings of juvenile tissue under mist. Rooting is best when cuttings are treated with rooting powder and given supplemental light

Layering: simple layering in spring

Pinus contorta var. latifolia (lodgepole pine)

Seeds: Fall or spring sow or germinate in light on filter paper or sand at 20/30 C (68/86 F) alternating temperatures. Some sources benefit from stratification for 30 days at 3-5 C (37-41 F)

Populus balsamifera (balsam poplar)

Seeds: Sow in mid summer immediately after collection on moist mineral soils or germinate on paper or sand at 10-25 C (50-77 F). Seeds lose viability very rapidly and should be stored, dry, at or slightly below freezing temperatures if not germinated immediately

Cuttings: semi-hardwood or hardwood cuttings of one-year-old wood stuck in sand or perlite

Division: sever young rooted suckers in spring to mid-summer and replant

Root cuttings: 4-6" pieces planted immediately after collection in late summer in peat or store at 0-2 C (32-35 F) and plant in spring

Populus tremuloides (quaking aspen)

Seeds: see Populus balsamifera

Root cuttings: in spring; 4-6" cuttings

Root grafting: whip and tongue or cleft graft in spring

Potentilla fruticosa (cinquefoil)

Seeds: Germinate on paper or in sand at 21 C (70 F)

Cuttings: semi-hardwood or hardwood cuttings with heel. Stick in sand or perlite after treatment of cuttings with rooting powder

Layering: simple layering in spring; wounding of buried portion of the stem plus treatment with rooting powder is beneficial

Division: in spring

Rhododendron lapponicum (lapland rosebay)

Seeds: Stratify 60-90 days at 4 C (40 F) or soak seeds 24 hours in 1000 ppm gibberellic acid. Germinate in light on paper at 15-25 C (60-77 F)

Layering: simple layering in spring; root production is very slow

Ribes hudsonianum (northern black currant)

Seeds: Fall sow or stratify 60-90 days at 3-4 C (37-39 F). Germinate on paper or in sand

Cuttings: hardwood cuttings treated with rooting powder and stuck in peat or sand

Ribes triste (American red currant)

Seeds: Fall sow or stratify 90-120 days at 4 C (40 F). Germinate in

sand or a peaty soil mix
Cuttings: see Ribes hudsonianum

Rosa acicularis (wild rose)

Seeds: Fall sow in flats of 3:1 peat/vermiculite and keep at 20-25 C (68-77 F) for 2 months. Following warm treatment, stratify at 0-4 C (32-40 F) for 30-60 days. When seeds begin to germinate, return to warm temperatures for seedling growth

Division: in spring

Rubus arcticus (nagoonberry)

Seeds: Fall sow or stratify 90-120 days at 4 C (40 F). Germinate in peat or 1:1 peat/sand

Division: in spring or fall

Rubus idaeus (raspberry)

Seeds: Fall sown seed may take 2 years to germinate. Scarify seeds in sulfuric acid for 60 minutes, then warm stratify at 25 C (77 F) for 200-250 days followed by stratification for 90-120 days at 4 C (40 F). Germinate in sand or on paper at alternating temperatures (25/10 C; 77/50 F)

Division: sever one-year-old suckers from the plant in spring prior to bud break. Use only well-rooted suckers

Rubus spectabilis (salmonberry)

Seeds: Fall sow or warm stratify 90 days at 20-30 C (68-86 F) followed by cold stratification for 90-120 days at 4 C (40 F). Germinate in peat, 1:1 peat/sand or sand

Salix alaxensis (feltnleaf willow)

Seeds: Sow immediately after collection at 15-25 C (60-77 F) on sand or peat or store, frozen, then germinate on paper, sand or 3:1 peat/sand at 15-25 C (60-77 F)

Cuttings: softwood or hardwood cuttings in aerated water, sand or perlite. Cuttings also may be direct planted outdoors in spring into a moist substrate

Salix arbusculoides (littletree willow)

Seeds: see Salix alaxensis

Salix arctica (arctic willow)

Seeds: Sow in fall or germinate on paper or 1:1 peat/sand at 25 C (77 F). For optimum germination, stratify seeds at 5 C (41 F) for 30 days prior to germination

Salix barrattiana (Barratt willow)

Seeds: See Salix alaxensis

Salix bebbiana (Bebb willow)

Seeds: see Salix alaxensis

Cuttings: semi-hardwood or hardwood cuttings in sand or perlite

Salix brachycarpa ssp. niphoclada (Barren-ground willow)

Salix scouleriana (Scouler willow)

Seeds: see Salix alaxensis

Cuttings: hardwood or softwood cuttings stuck in sand or perlite in mist bench

Sambucus racemosa (Pacific red elder)

Seeds: extract from pulp and germinate immediately in 1:1 peat/sand at 21 C (70 F)

Cuttings: 6-8" hardwood cuttings of one-year-old wood with a heel of older tissue or 3-4" semi-hardwood cuttings stuck in sand or perlite. Treat cuttings with rooting powder

Shepherdia canadensis (soapberry)

Seeds: Fall sow or scarify in sulfuric acid for 20-30 minutes, then stratify for 60-90 days at 4 C (40 F). Germinate on paper, sand or vermiculite using alternating temperatures (20/30 C ; 68/86 F)

Root cuttings: 4-6" cuttings planted in flats of peat immediately after collection in fall. Grow at 21-25 C (70-77 F)

Sorbus aucuparia (European mountain ash)

Seeds: Fall sow or stratify at 4 C (40 F) for 90-120 days. Some seeds germinate best when warm stratified for 90 days at 25 C (77 F) prior to cold stratification

Grafting: T-budding in mid to late summer

Sorbus sambucifolia (Siberian mountain ash)

Seeds: Fall sow or stratify for 75-90 days at 4 C (40 F). Germinate in sand or 1:1 sand/peat at 21 C (70 F)

Sorbus scopulina (green mountain ash)

Seeds: see Sorbus aucuparia. Germinate at alternating temperatures (20/30 C ; 68/86 F)

Grafting: see Sorbus aucuparia

Sorbus sitchensis (Sitka mountain ash)

Seeds: see Sorbus scopulina

Spiraea Beauverdiana (Beauverd spiraea)

Seeds: Fall sow or stratify 90 days at 4 C (40 F). Germinate in continuous light at alternating temperatures (25/10 C ; 77/50 F) or at 20-25 C (68-77 F) continuous temperature

Cuttings: semi-hardwood or hardwood cuttings stuck in peat or sand in mist bench

Symphoricarpos albus (snowberry)

Seeds: Fall sow or warm stratify 90-120 days at 21 C (70 F) followed by 160-180 days cold stratification at 4 C (40 F). Germinate on paper or 1:1 sand/peat

Cuttings: 6-10" semi-hardwood or hardwood cuttings of one-year-old wood with heel and treated with rooting powder. Propagate in sand or perlite

- Seeds: see Salix arctica
- Salix chamissonis (Chamisso willow)
Seeds: see Salix alaxensis
- Salix fuscescens (Alaska bog willow)
Seeds: see Salix alaxensis
- Salix glauca (grayleaf willow)
Seeds: Fall sow or stratify 90 days at 5 C (41 F). Germinate on paper or in sand at 20-25 C (68-77 F)
- Salix hastata (Halberd willow)
Seeds: see Salix alaxensis
- Salix interior (Sandbar willow)
Seeds: see Salix alaxensis
- Salix lanata ssp. richardsonii (Richardson willow)
Seeds: see Salix alaxensis
- Salix monticola (Park willow)
Seeds: see Salix alaxensis
- Salix myrtillofolia (low blueberry willow)
Seeds: see Salix alaxensis
- Salix novae-angliae (tall blueberry willow)
Seeds: see Salix alaxensis
Cuttings: hardwood cuttings collected in late spring in aerated water, sand or perlite
- Salix ovalifolia (ovalleaf willow)
Seeds: see Salix arctica. Germination is best under alternating temperatures (6/27 C; 42/80 F)
- Salix phlebophylla (skeletonleaf willow)
Seeds: see Salix arctica
- Salix planifolia ssp. pseudopolaris (polar willow)
Seeds: see Salix arctica
- Salix reticulata (netleaf willow)
Seeds: see Salix arctica
Cuttings: softwood or semi-hardwood cuttings with a heel and stuck in sand in shaded cold frame or mist bench
- Salix rotundifolia (least willow)
Seeds: see Salix arctica
- Salix setchelliana (Setchell willow)
Seeds: see Salix alaxensis

Taxus brevifolia (yew)

Seeds: Fall sown seeds germinate in 2-3 years. Warm stratify 120 days at 25 C (77 F) followed by cold stratification for 270+ days at 4 C (40 F). Germinate in sand

Thuja plicata (arborvitae)

Seeds: Fall or spring sow or germinate in light on paper or sand at 21 C (70 F) or alternating temperatures (20/30 C; 68/86 F). Some seed sources may require stratification for 30-60 days at 4 C (40 F) prior to germination

Tsuga heterophylla (western hemlock)

Seeds: Germinate in light on filter paper or sand at 20 C (68 F). Some seed sources may require stratification for 90 days at 4 C (40 F) prior to germination

Tsuga mertensiana (mountain hemlock)

Seeds: see Tsuga heterophylla

Vaccinium caespitosum (dwarf blueberry)

Seeds: Fall sow or germinate in 1:1 peat/sand at 21 C (70 F)
Cuttings: softwood or semi-hardwood cuttings in 1:1 peat/sand in shaded cold frame or mist bench

Vaccinium uliginosum (wild blueberry)

Seeds: Fall sow or stratify 120-150 days at 4 C (40 F). Germinate in peat at 21 C (70 F)
Rhizome cuttings: 4-6" pieces collected in fall and planted immediately in peat

Vaccinium vitis-idaea (lingonberry)

Seeds: Fall sow or germinate fresh seeds immediately in light at 21 C (70 F). Stratify dry seeds 30 days at 4 C (40 F) prior to germination. Some dry seeds will germinate without pretreatment, but percentages are greater following stratification
Cuttings: semi-hardwood or hardwood cuttings of one-year-old wood treated with rooting powder and stuck in sand, perlite or peat. Rooted cuttings may not produce new rhizomes
Rhizome cuttings: 4-6" pieces collected in late fall and planted immediately in peat
Division: in spring

Viburnum edule (highbush cranberry)

Seeds: Fall sow or stratify in 1:1 peat/vermiculite at 4 C (40 F) for 90 days. Move to warm temperatures (25-30 C; 77-86 F) for 60 days, then return to 4 C (40 F) for 75 days. Finally, return to warm temperatures above 20 C (68 F) for germination
Cuttings: softwood and semi-hardwood cuttings treated with rooting powder and stuck in sand under mist
Rhizome cuttings: 4-6" pieces planted immediately after fall harvest into flats of peat and grown at 21 C (70 F) or stored at 2-4 C (35-40 F) until spring
Division: remove rooted suckers in spring

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