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Trees for mountain communities

James R. Feucht¹

Quick Facts

- Trees are the most restricted of all higher elevation plants, and establishing trees often is difficult.
- Trees should be planted in the spring as soon as the soil can be worked.
- Regrowth of roots is the most important factor in the establishment of transplanted stock.
- The placement of a mulch on the soil over the root area or the encouragement of a snow-cover mulch will extend root growing time.
- Trunks of thin-barked trees should be wrapped with commercial tree wrap for two growing seasons.
- Adequate drainage and water-holding capacity of the soil should be checked and corrected before planting.
- Nursery stock from northern sources is likely to be more hardy than stock from southern and Pacific Coast sources.



Of all the plants that can be grown at higher elevations, trees are the most restricted. A survey of 66 mountain communities in Colorado showed that, with the exception of a few native trees, only three nonindigenous species (not native to the area) could be found thriving above 9,000 feet (2,743 meters) elevation. Of these, two (Pinon Pine and Rocky Mountain Juniper) were actually native but were considered to be above their natural range. The third, Green Ash, was not reliably hardy above 8,500 feet (2,591 m) elevation except in very protected locations. Thus, the dividing

line for a wide variety of trees seems to be at or near 8,500 feet (2.59 m). Above this elevation, locally native species should be considered the primary source of trees. The following lists include

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trees considered reliably hardy for various elevations above 6,000 feet (1,829 m).

Establishment

Even if a given tree is known to survive in a particular location, getting a transplanted one established is often difficult, particularly where the growing season is less than 80 days. The following suggestions can help insure tree survival.

—Trees should be planted as early in the spring as the soil can be worked. Fall planting should be avoided.

—Regrowth of roots is the most important factor in establishment of transplanted stock. The growing season for roots can be extended by applying a 4- to 6-inch (10.2- to 15.2-centimeters) mulch of pine needles, wood chips or other loose, organic material on the surface before the ground freezes in the fall. The same mulch, however, may slow warming of the soil in spring; thus, it should be removed in early spring unless snow cover presents this.

—Snow cover also can serve as an excellent mulch; allowing root growth to occur even during some periods of the winter. Accumulation of snow in drifts over the root zone of young plants can be encouraged by using temporary snow fences or evergreen boughs in appropriate locations. Exact location of fences will vary from one site to another and some trial-and-error placements may be necessary.

In general, snow will accumulate best around a tree if the barrier is placed on the leeward side of the planting. An additional fence can be placed on the windward side but should be located some distance from the planting. The distance of the fence from the tree will depend upon the wind velocity and height of the barrier. The stronger the wind during a snow storm, the farther away the snow barrier should be.

—Trunks of young, thin-barked trees (non-evergreen types) should be wrapped with a commercial tree wrap in the fall from the base up to the first or second main branch. The trunks should be wrapped for two growing seasons.

—Before planting, soil should be checked for adequate drainage and water-holding capacity. Many mountain soils are formed from decomposed granite and may be almost devoid of organic matter. The addition of peat or compost to this soil condition will improve the water-holding capacity. A soil test may assist in determining nutritional needs. The local Colorado State University Cooperative Extension county office can be consulted for soil-test information.

—When purchasing trees from a nursery, it is a good idea to find out where the stock was grown. Stock originating from southern and Pacific Coast sources may be less hardy even though it may be sold under the same name as in northern nurseries. Where possible, nursery stock originating from only northern areas should be selected.

Tree Selection

Trees hardy at least up to 10,000 feet (3,048 m) elevation.

Deciduous

<i>Alnus tenuifolia</i> Thin-leaf Alder	Native. Often shrubby but can be trained to small tree or tree-clump effect.
<i>Populus acuminata</i> Waxleaf Cottonwood	Native. For soils that stay moist.
<i>Populus angustifolia</i> Narrowleaf Cottonwood	Native. Best used where there is soil that stays moist. Narrow leaves resemble willow.
<i>Populus balsamifera</i> Balsam Poplar	Native. Foliage handsome, thick-textured. Moist soils.
<i>Populus candicans</i> White Poplar	Native. Foliage nearly heart-shaped. Upper bark a showy, smooth gray. Moist soils.
<i>Populus tremuloides</i> Quaking Aspen	Native. Best where soil stays moist. Sites having at least 9 inches (22.9 cm) of rich, mountain soil are best.

Trees hardy at least up to 10,500 feet (3,200 m) elevation.

Evergreen

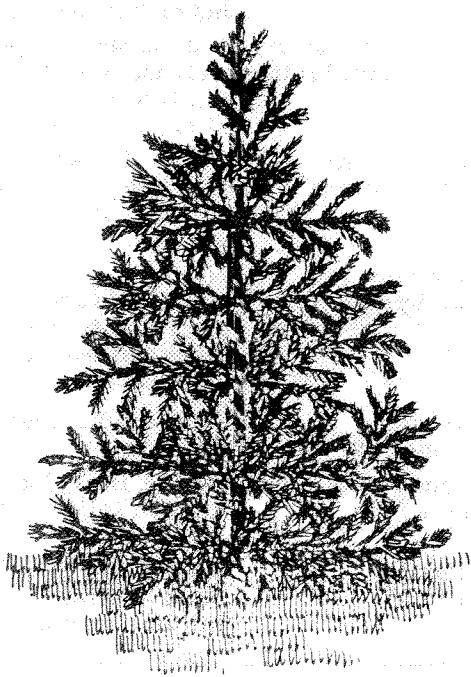
<i>Abies lasiocarpa</i> Subalpine Fir	Native. A timberline tree. Needs good drainage but not on hot, dry slopes.
<i>Juniperus scopulorum</i> Rocky Mountain Juniper	Native. May not perform well above 9,500 feet (2,896 m). Tolerates dry slopes after establishment.
<i>Picea engelmanni</i> Engelmann Spruce	Native. Grows to timberline. Will tolerate wet soils such as along streams and springs.
<i>Picea pungens</i> Colorado Spruce	Native. May not perform well above 9,500 feet (2,896 m). Tolerates wet stream sides and seepage from springs.
<i>Pinus aristata</i> Bristlecone Pine	Native. Soil must be well drained.
<i>Pinus contorta latifolia</i> Lodgepole Pine	Native. Best placed in well-drained soils up to 10,000 feet (3,048 m).
<i>Pinus flexilis</i> Limber Pine	Native. Use in well-drained soils. Tolerates dry, rocky hilltops, once established.

Tree Selection (continued).

Trees hardy at least up to 8,500 feet (2,591 m) elevation*.

Deciduous	
<i>Acer negundo</i> Box elder	Native. Best in protected gullies and canyons at higher elevation ranges. Subject to limb breakage during heavy snows.
<i>Betula pendula</i> European White Birch	Should be used where soils will stay moist in top 18 inches (45.7 cm).
<i>Fraxinus pennsylvanica lanceolata</i> Green Ash	Hot, dry, south slopes should be avoided.
<i>Malus adstringens</i> Hopa Crab	Some protection may be needed at elevations over 8,000 feet (2,438 m).
<i>Malus domestica</i> Domestic Apple	Native. Fruit rare where frost-free days are less than 90. Early transparent and similar "summer" varieties are most likely to succeed.
<i>Prunus virginiana</i> 'Shubert' Shubert Chokecherry	Foliage changes from green to purple. A small tree or large, multi-trunked shrub.
<i>Ulmus pumila</i> Siberian Elm	Seems to thrive in all but very hot sites.
Evergreen	
<i>Pinus ponderosa</i> Ponderosa Pine	Native. Dry to semi-dry slopes.

*Includes, also, all trees listed for higher elevations.



Trees hardy at least up to 7,500 feet (2,286 m) elevation*.

Deciduous	
<i>Acer platanoides</i> Norway Maple	Slow growing. Needs protected sites.
<i>Acer saccharum</i> Sugar Maple	Best used in rich, mountain soils. North or west exposure.
<i>Acer saccharinum</i> Silver Maple	Best used in rich, mountain soils.
<i>Crataegus mollis</i> Downy Hawthorn	Other species including the native <i>C. monogyna</i> are hardy to 8,000 feet (2,438 m).
<i>Elaeagnus angustifolia</i> Russian-olive	Tolerates dry, alkaline soils. Sometimes hardy above 7,500 feet (2,286 m) in protected sites.
<i>Gleditsia triacanthos inermis</i> Thornless Honeylocust	Bark should be protected from sunscald (with shade or tree wrap) for at least two years after planting.
<i>Populus alba</i> 'Bolleana' Bolleana Poplar	Stiffly upright tree with whitish lower leaf surfaces and gray-green bark.
<i>Populus nigra</i> 'Italica' Lombardy Poplar	Much like 'Bolleana' in growth habit but foliage is deep green. Short lived.
<i>Prunus armeniaca</i> Apricot	May not consistently fruit where growing season is less than 80 days.
<i>Prunus cerasus</i> Sour Cherry	Varieties Montmorency, Meteor, North Star, and Early Richmond are reliable for fruit.
<i>Prunus domestica</i> Plum	The Italian prune varieties, such as Green Gage, are reliable for fruit.
<i>Prunus blireiana</i> 'Newport' Newport Purpleleaf Plum	May be marginal at 7,500 feet (2,286 m) elevation in some areas.
<i>Rhus typhina</i> Staghorn Sumac	Often more shrub-like at higher elevations. Dry slopes.
<i>Robinia pseudoacacia</i> Black Locust	Best with some protection from winds.
<i>Sorbus aucuparia</i> European Mountain-ash	Red-orange fruit may not mature where growing season is less than 80 days.
Evergreen	
<i>Abies concolor</i> Concolor Fir	Occasionally found above 8,500 feet (2,591 m) elevation but more reliable at lower. Well-drained soils with consistent moisture.
<i>Picea glauca</i> 'Densata' Black Hills Spruce	May be hardy above 7,500 feet (2,286 m) elevation. Moist sites.
<i>Pinus edulis</i> Pinon Pine	Tolerates dry, south slopes once established.
<i>Pinus nigra</i> Austrian Pine	Needs some protection from winds. Well-drained soils.
<i>Thuja occidentalis</i> Western Arbor-vitae	Needs protection from drying, cold winter winds.