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Choosing nursery stock for landscaping, conservation, and reforestation

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Many types of nursery stock (young trees and shrubs) are grown or sold in Idaho. Whether you plan to plant nursery stock in your front yard or on the back forty, you'll need to sort through the somewhat confusing array of nursery stock types. These types vary in size and in the conditions under which they were grown. Buying from a reputable retailer who sells locally grown trees is always a good idea, but you still need to understand nursery stock terminology and your own needs to make the best use of expert advice.

Before buying any nursery stock, know your planting goals. For reforestation (forest plantings), make sure your choice of species and seedling seed source are correct for your site. The Extension agricultural agent in your county, an Idaho Department of Lands woodland forester, or a private consulting forester can help you. For conservation plantings (windbreaks, erosion control, and wildlife habitat), planning is essential to ensure desired results. Once you know your reforestation, conservation, or landscape goals, you will need to decide which types of stock are best for you.

Bareroot stock

Bareroot plants are grown in outdoor nursery beds, dug or "lifted" in the late fall or early spring, and supplied to the customer with the roots free of soil. Generally, roots are wrapped in moss, wood shavings, or some other absorbent material and placed in a plastic bag to keep them moist.

Deciduous plants are often sold bareroot because, lacking leaves in winter, they put little demand on the roots. Fruit and shade trees, shrubs, roses, and cane fruits are commonly sold bareroot. Because bareroot plants are field grown and shipped free of soil, they often sell for half as much as container plants.

Evergreen stock for reforestation or conservation

Small evergreen seedlings for reforestation or conservation can also be purchased bareroot. These seedlings are classified by two numbers. The first number indicates how many years the plant grew in the nursery bed it was sown in, and the second number indicates how many years the plant grew in a transplant bed. The most commonly planted bareroot stock type for reforestation is 2+0, meaning the seedlings grew 2 years in their original bed and were not transplanted. Advantages and disadvantages of bareroot stock types commonly grown in Idaho are briefly described below.

1+0 These seedlings are grown just 1 year in the nursery bed. Ponderosa pine and western larch (tamarack) are probably the only two reforestation species that grow large enough in one season to be sold this way. 1+0 ponderosa pines are small and generally grow best on moist sites or where they receive supplemental water. Western larch are larger —

6 to 10 inches tall — and will grow well on larch sites. Deciduous or hardwood trees are often sold as 24- to 36-inch tall 1+0 seedlings. Their larger size allows them to do well on most sites. 1+0 plants are less expensive than other bareroot stock because they are grown for only one season.

1+1 Although not commonly grown in Idaho, 1+1 plants are grown 1 year in the nursery bed and then transplanted to another nursery bed for a second year of growth. These seedlings are stockier than 1+0 seedlings. They are sometimes stockier than 2+0 seedlings because they are transplanted into nursery beds at lower densities than those at which they originally grew. These seedlings generally have well-developed, fibrous root systems. The greater expense of these seedlings over 1+0 and 2+0 stock may be offset by increased survival and growth on difficult sites.

2+0 This is the bareroot stock type most commonly used for reforestation. Seedlings are grown 2 years in the same nursery bed and cultivated to encourage fibrous root systems. Seedlings are 8 to 18 inches tall. For Douglas-fir, grand fir, and Engelmann spruce, 2+0 seedlings are probably the minimum size that will do well in reforestation. 2+0 ponderosa pine and lodgepole pine grow better on dry, harsh sites than 1+0 plants.

2+1 Seedlings grown 2 years in the nursery bed and then transplanted to another bed for 1 year are designated 2+1. These seedlings are larger and more expensive than 2+0 seedlings but grow better on sites with brush and weed competition and in areas of heavy browsing by deer or elk. 2+1 seedlings have an extensive, fibrous root system and are more difficult to plant properly than smaller bareroot stock types.

Other bareroot stock types

Another bareroot stock type is the **rooted cutting.** Commonly used to grow deciduous trees and shrubs, cuttings are stuck into nursery beds where they root. The rooted cuttings are sold as 1+0 or 2+0 plants depending on how fast they grow new roots and shoots. Generally, they are more expensive than regular 1+0 or 2+0 plants because of the labor involved in preparing the cuttings. For species that cannot be grown from seed, such as hybrid poplar, rooted cuttings are the only plants available.

Another bareroot stock type rapidly growing in popularity is the **plug+1**. This stock type combines bareroot seedling production with a container-grown seedling. Seedlings are grown in containers in greenhouses for 4 to 8 months and then transplanted to bareroot nursery beds for an additional year. This method shortens the time needed to produce a crop, especially for slow-growing species such as true firs and spruces. The resulting seedlings are taller because of the rapid growth they achieved in the greenhouse, and they have well-developed, fibrous root systems from growing in nursery beds. Growers of true firs for Christmas trees are finding the plug+1 technique ideal for producing a larger seedling in 2 years.

Availability and selection

Bareroot plants are most available in early spring and sometimes in fall. If you order plants from nursery catalogs, you will receive bareroot plants unless the catalog specifies differently. Shipping plants bareroot reduces shipping costs.

Garden centers and local nurseries often carry a wide variety of bareroot plants, which are often potted up in containers of mulch or sometimes soil. Don't be fooled into thinking you're buying a container-grown plant when it's really a bareroot plant. Ask the salesperson if the plant is not labeled. When selecting a bareroot plant at the nursery, make sure the root system appears healthy. Roots should be moist and plump, not dry, kinked, withered, or torn. Slightly damaged roots should have just the tattered ends pruned to promote rapid healing and growth.

Planting

Plant bareroot stock immediately to ensure the roots stay moist. The need for immediate planting means you may need to delay purchase or shipment until the planting site is ready. Because you backfill the planting hole with soil you dug from the hole, the roots grow in only one type of soil. This encourages uniform water penetration and root growth into the surrounding soil. For more information on planting, contact the Extension agricultural agent in your county.

Container stock

Landscaping stock

Container-grown plants for landscaping come in a variety of sizes and prices. These plants have several advantages over bareroot plants. Some plants, especially broad-leaved evergreens, are only offered in containers. Further, container-grown

plants are available all season long, are easy to transport, and can be planted almost year-round. Plus, you can buy container-grown plants in full leaf or full bloom so you can see exactly what you are buying.

When buying container plants for landscaping, make sure they are healthy and vigorous. Avoid plants with roots showing on top of the soil or plants with large roots protruding from the drainage holes; both indicate the plant is potbound. You can also inspect the root system by gently lifting the plant from the container. If only a few small roots are circling the container, they can be cut at planting with three or four vertical slashes, about 1 inch deep, through the side of the root ball. Plants with large, heavy, circling roots should probably be left at the nursery.

Plants should have healthy looking foliage; no broken, torn, or dead branches; and not seem unusually large for the pot. They must have spent at least one season growing in the container, however. Some nurseries and garden centers sell bareroot plants that have been potted for sale. These potted bareroot plants are just that and should be priced and planted as bareroot. If you're unsure whether the plant was grown in the container or is a potted bareroot plant, ask the salesperson.

Reforestation and conservation stock

Seedlings grown for reforestation and conservation in containers are generally cultivated under the controlled environmental conditions of greenhouses, at least for part of the growing season. By controlling temperature, light, water, and fertilizer, growers can produce a crop suitable for planting in as little as 6 months. The main differences in size among container-grown seedlings result from the volumes of the containers used to produce them.

Nearly all container-grown seedlings used for reforestation in Idaho are produced in containers having a soil volume of 4 cubic inches. These seedlings are 6 to 10 inches tall when sold, depending on species. Reforestation seedlings are also grown in 5-, 6-, 7-, and 10-cubic-inch containers. Generally, as the soil volume increases, so does the depth of the container. Seedlings grown in larger containers are generally preferred for drier, harsher sites or sites where brush competition or deer and elk browsing are a problem. Seedling cost also increases with rooting volume.

Seedlings for conservation plantings are commonly grown in containers with larger volumes: 6, 7, 10, 20, and 30 cubic inches. Deciduous seedlings grow better at the nursery in larger containers and subsequently perform better at planting. Nursery managers can grow evergreens for conservation in 20-cubic-inch containers to the size of bareroot 2+0 seedlings in just 6 months, but their cost is much higher. This cost is often justified for planting on disturbed sites being converted to conservation plantings.

Balled and burlapped stock

Some plants are dug from nursery beds with a ball of soil left around the root system. The soil ball is wrapped in burlap or another sturdy material and held together with twine or wire. These balled and burlapped plants range in size from small shrubs to 20-foot-tall trees.

When purchasing a balled and burlapped plant, make sure the root ball is moist and intact. Plants with broken root balls have damaged root systems that hamper their growth once planted. Carry balled and burlapped plants by the soil ball rather than the trunk and avoid dropping them or handling them roughly. These practices disrupt the root ball and can seriously damage the roots.

Large stock versus small: Which is better?

For landscaping, a homeowner's dilemma usually comes down to what size plants to buy. Often, the solution is based on cost. Smaller nursery stock is less expensive than larger stock. Smaller nursery stock has some other advantages as well. Smaller stock is easier to transport and plant into your yard. Once planted, smaller plants usually require less water applied less frequently than larger plants. Smaller plants also seem to suffer less from transplanting and to grow vigorously once planted.

For new landscapes, however, smaller plants will take longer to fill in than larger ones. Larger plants can give an instant feeling to the landscape but require frequent and heavy watering to establish, sometimes for several years. Perhaps a mixture of both sizes is best for landscaping, with larger, more expensive plants accenting areas or quickly blocking undesirable views and smaller, less expensive plants slowly filling in other areas.

For conservation and reforestation plantings, stock size is primarily a matter of using the smallest, least expensive plant that will have a good chance of survival and growth.

Further reading

Planning

How to Plan, Plant, and Care for Windbreak, Reforestation, and Conservation Plantings, MISC 13, $1.00

Landscape Your Home Grounds, CIS 168, 35 cents
Provides some basic principles of landscaping as well as names of plants that do well in Idaho.

Native Plants from Northern Idaho, EXT 657, $1.00
Describes native plants ideal for landscaping.

Planting

Plant Your Container-Grown Seedlings Right, CIS 528, 35 cents
Gives planting instructions for container-grown reforestation and conservation seedlings.

Plant Your Trees Right, PNW 33, 25 cents
Gives planting instructions for bareroot reforestation and conservation seedlings.

How to Transplant Trees and Shrubs, CIS 320, 25 cents
Gives planting instructions for larger container-grown stock, balled and burlapped stock, and larger bareroot stock.

Ordering publications

To order publications, contact the University of Idaho Cooperative Extension System office in your county. All except MISC 13 are also available from Agricultural Publications, Idaho Street, University of Idaho, Moscow, ID 83843-4196, (208) 885-7982. MISC 13 is available from Editor, College of Forestry, Wildlife and Range Sciences, University of Idaho, Moscow, ID 83843, (208) 885-6673.

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