LANDSCAPE AND TURF MANAGEMENT
Lesson 17: HANDLING NURSERY STOCK

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PowerPoint Slide 2: Title Slide, "Handling Nursery Stock"

PowerPoint Slide 3:
Handling Nursery Stock

- Part One – Forms of Nursery Stock
- Part Two – Maintenance of Nursery Stock

In Segment One of this lesson we'll describe how nursery stock is produced and sold, including balled and burlapped, containerized, container grown, packaged, and bareroot. Then we'll learn basic nursery maintenance skills in Part Two.

PowerPoint Slide 4: Diagram of B & B
Text, "Balled & Burlapped (B & B)"

Evergreens, shrubs and shade and flowering trees maybe sold balled and burlapped, or "B & B." The plants are dug with a soil ball intact and secured with burlap. B & B stock transplants well into the landscape because of the protection the soil ball affords the undisturbed portion of the root system. Success in transplanting is dependent upon the size of the ball in relation to the size of the plant, and keeping the soil ball intact and moist enough to sustain the plant while above ground. To determine the size ball a plant should have, refer to the standards for nursery stock compiled by the American Association of Nurserymen.

Plastic burlap should be removed from soil balls when planting. If left intact, it restricts water penetration and root growth. Even if the sides are slit, expanding roots of large trees will eventually be girdled. If B & B materials are tied around tree trunks it can girdle and kill the trees in a few years. These materials should always be removed. Identifying synthetic burlap has been easy in the past because it was green, shiny and felt like plastic. However, there is plastic burlap that is brown, soft and looks exactly like untreated natural burlap. If uncertain, light with a match. Real burlap will burn to ash while plastic burlap will melt into a ball or droplet. Specific instructions regarding the removal of plastic burlap:

- If it is possible to totally remove the plastic burlap without damaging the soil ball, do so.
- If the root ball is loose, place the plant in the hole in its final position. Peel the burlap down to the bottom of the hole and fill over it.

For natural burlap remove all batting materials and pull the burlap away from the trunk and cover with soil, wire baskets should be left intact except for removing the top rungs after the plant had been stabilized in the planting hole.

PowerPoint Slide 5: Diagram of containerized plant
Text, "Container"

Container stock can be either of two types: (a) "container grown" refers to a plant that has been grown in its container for a period long enough for the roots to be well established throughout the media and to the edge of the container; (b) "dug and potted" refers to a plant that has been recently potted and has not been grown in its container (containerized) stock. Container grown material carries less transplanting risk than material dug bareroot and potted, and compares favorably with B&B stock.

Container stock is graded by container size- e.g., #1 container, #3 container, #5 container, #7 container, #10 container, #15 container, etc.

Container stock is popular because, in sales areas, it is more easily maintained and handled (most of it is lighter in weight) than other types of stock. Besides being more likely to survive than packaged stock, container stock is convenient and appealing to customers. Its greatest benefit to the retailer is to extend the normal planting and sales season throughout the summer. Purchasers may well be cautioned, however, that the root systems of plants produced in a light medium (peat, perlite, sand, etc.) may not readily grow into a heavy clay soil when the plant is permanently located. An answer to this problem of breaking down the "interface" between the root ball and the native soils is to incorporate organic material such as peat, compost or other soil conditioner with the native soil backfill. These provide a medium more conducive to root growth away from the original root ball and into the surrounding area, where moisture and nutritional ingredients are more available. Also, remember when repotting a container plant or selling one to a customer, to disturb the perimeter roots to rectify root circling and encourage outward root growth. This prevents girdling roots from forming, which may lead to the decline of the plant over time.

PowerPoint Slide 6: Diagram of packaged plant
Text, “Packaged (Root Wrapped)”

All kinds of nursery stock are packaged for sale; however only the smaller sizes of trees, shrubs and evergreens lend themselves well to marketing by this method with the exception of bulbs, bulbs are perhaps the most packaged form survival risk is relatively high with this form of stock because the plant has been removed from the soil or other growing medium and the packing materials used to keep the roots moist usually do not provide good support for root growth. Therefore, the environment is suitable only temporarily, with the time period varying considerably among different kinds of plants. The popularity of packaged stock is due to its lower cost, light weight and convenience in handling. It can, in most cases, provide satisfactory protection of root systems for short-term merchandising in early spring.

PowerPoint Slide 7: Diagram of bareroot plant
Text, “Bareroot (B.R.)”

Bareroot stock is shipped without any packaging beyond that necessary to protect it during transport. The retailer can see exactly the condition of the entire plant including the root system and give it the care and handling it may need. Some retailers are equipped to package or to pot such material themselves. If so, they can benefit from savings on plant and shipping costs, and they are able to utilize their own labor for the packaging or potting work. Not all kinds or sizes of nursery stock can be moved safely as bareroot materials, but for those that can, the prices are less than those for the same plants marketed in other ways. Roses and fruit trees are two items easily potted at the garden center or retail nursery. Biodegradable fiberboard pots are often used to help facilitate easier planting for homeowners. Composted hardwood bark and sand make a good container medium at a 5:1 ratio with nitrogen and triple super phosphate mixed into it. Good potting procedures involving root pruning, top pruning, and immediate watering should be used. In retailing, greater losses can be expected from bareroot stock, thus accounting for a general decrease in its use.

The key to maintaining the quality of bareroot stock is to keep it cool and moist and to plant it as soon as possible.

Time Check: PowerPoint half-way mark.

☐ You should be about 10 minutes into this presentation.

PowerPoint Slide 8: Title, “Part Two – Maintenance of Nursery Stock”

PowerPoint Slide 9: Watering Nursery Stock

- Sprinkler irrigation
- Hand watering

The most common method of supplying moisture to nursery stock displayed for sale is through sprinkler irrigation. Rainfall may, of course, be helpful in lessening the amount of irrigation needed, but showers or light rains usually are insufficient unless an inch or more occurs per week. Do not depend on expected rainfall to adequately irrigate plants in need of water. Irrigation may be provided through portable oscillating or revolving sprinklers or permanent sprinklers installed in the display area.

Though less efficient relative to water use, sprinkler irrigation is far superior to hand watering with a hose because of labor costs and the natural impatience of some workers that usually results in some stock, (especially B&B material), being inadequately watered. A ball of earth stored above ground that has dried sufficiently will often not be rewet properly and the burlap will act as a shield. The use of a watering lance (root feeder) inserted into the ball in two or more places for a minute will sufficiently rewet the ball. For container stock, however, a hose and wand with breaker are satisfactory in the hands of a conscientious person who understands watering requirements.

Where appropriate, drip irrigation can also be used to irrigate nursery stock.

PowerPoint Slide 10: Drainage

- Provide drainage base for B & B and container plants
- Punch drainage holes in packaged plants

Is drainage adequate? The soil or soil mix in containers should be such that free water drains readily from pore spaces to admit air. Soggy, wet soil does not admit air and does not permit good root growth. Both container plants and balled and burlapped stock should be displayed on a base that will allow good drainage. Gravel, wood chips, sawdust and bark are all satisfactory as a base for displaying plants. These materials prevent plants from sitting in water, if drainage is adequate. Packaged stock, if watered, should be drained too. Holes punched in the bottom of the package or ball is often appropriate for this purpose.

PowerPoint Slide 11: Protection from Drying

- Keep bare root stock cool and wet; plant as soon as possible
- Protect packaged plants
- Heel in B & B plants
- Mulch fiber containers

Protection from drying is an important part of good nursery stock care. Failure to provide this protection may mean damage in only a matter of hours.

Rose packagers go to great lengths to retard drying by using a generous amount of carefully prepared moistened material for the root pack; plastic or moisture-resistant paper for the wrap; and special wax for protection of the canes during the distribution and sales period.

In considering the water requirements of packaged stock, the aim is to keep moisture, not free water, in the packing material around the roots. If water is added, it should be done sparingly and drainage provided. Adding water tends to initiate growth of dormant plants in warm temperatures and should be supplied only when definitely needed.

The use of a heeling medium around unprotected soil balls to prevent fast drying is vital to good care. It is also a common practice to heel in nursery stock as temporary holding protection. Sand, weathered sawdust, wood chips, peat soil, hardwood bark or combinations of these and other such materials are used. More recently shrink-wrap has also been used to prevent drying of root balls. In all cases, the purpose is to prevent rapid drying, thus keeping roots alive and lessening the watering requirements.

Container stock obtains some protection against drying from the container itself; however, containers made of fiber permit faster drying than those made of plastic. Additional protection is afforded by mulch on top of the soil or mix. This may be bark, fiber mats, peat or other material.

PowerPoint Slide 12: Over-wintering Nursery Stock

- Quonset
- Storage building
- Thermal blankets outdoors
- Thermal blankets in unheated greenhouse
- Heeling in
- Anti-desiccants

Container and B & B nursery stock remaining on the lot at the end of the sales season should be protected against winter injury. There are several methods that can be utilized to protect plants against winter damage.

- One of the most effective means of over-wintering nursery stock is to place plants under white plastic covered structures shaped like quonsets.
- Some dealers over-winter plants in storage buildings or barns, which are satisfactory if and facilities to water are available if needed.
- The thermal blanket system does not require any structures. Lay upright plants on their sides, with the foliage lying over the pots. Dwarf or spreading plants may be left standing. Cover the plants with a single layer of thermal blanket and a single layer of white polyethylene, and seal the edges to the ground with soil. Remove the thermal blanket when minimum temperatures generally rise above root-killing temperatures.
- Thermal blankets have also been successfully used over winter plants in unheated plastic greenhouses during the colder months.
- In colder areas, a thermal blanket composed of a plastic-straw-plastic sandwich usually provides the best protection from damaging winter temperatures; 12-15 inches of straw are recommended.
- If structures or thermal blankets are not available, plants should be “heeled-in”. That is, the soil ball or container should be thoroughly covered with a protective material, since the roots are more prone to low-temperature injury than the stem or foliage tissue. The root system can be covered with soil or completely mulched with wood chips, shredded bark, aged sawdust or any other available organic mulching material.
- Anti-desiccants are used primarily to reduce transplant stress and winter injury on evergreens. Winter injury due to desiccation is a serious problem on broad-leaf evergreens and on some species of narrow-leaf evergreens. This type of winter injury generally occurs on sunny, windy days when the ground is frozen. Because the soil is frozen, the roots are unable to replenish the moisture lost by the foliage, beginning at the ends of the branches, and even the branches if the winter is severe.

PowerPoint Slide 13: Moving Nursery Stock

- B & B – keep root ball intact
- Container – handle the pot, not the stem
- Avoid mechanical damage; handle with care
- Transport covered to prevent drying
- Make sure plants are well hydrated

One of the biggest problems with balled and burlapped plants is the weight of the plant itself. The root ball must be maintained intact during transport. Loading and off-loading root balls in excess of 30" in diameter requires some sort of mechanical equipment adapted to handling root balls. Nylon slings and front-end loaders or cranes will handle these chores easily.

Containerized plants are among the easiest to transport. The container provides support and the plant's lightweight means that it can be moved easily from place to place on the truck without damage to the plant. Containerized plants must of course, be handled by the container itself, not by the stem of the plant. This is also true with balled and burlapped and container -grown plants, which should be handled by the root ball and not by the stem of the plant.

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