

Module 4: Selection, Installation and Establishment of Landscape Plants



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Welcome to the Iowa Certified Nursery Professional Training program Module 4:
Selection, Installation and Establishment of Landscape Plants.

Objectives

1. Place plants in the proper location
2. Understand heat-tolerance and cold-hardiness zones
3. Understand how plants can be used in the landscape
4. Know how to identify high quality plant material
5. Know the proper technique for planting container, B&B, and bare root plants
6. Understand proper post-planting care and maintenance

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Upon completion of this module you will be able to:

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2. Understand heat-tolerance and cold-hardiness zones
3. Understand how plants can be used in the landscape
4. Know how to identify high quality plant material
5. Know the proper technique for planting container, B&B, and bare root plants
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How to Use Different Types of Plants

- Annuals
 - Temporary, colorful displays
 - Containers, borders



- Biennials
 - Used where re-seeding is not a concern

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Annuals are used in the landscape to add seasonal color. Annuals are brightly colored, inexpensive, and easily planted and changed yearly. Containers, hanging baskets, borders, and as focal points are all places where annuals can be used.

Biennials are more like perennials in how they are used. Because they are not particularly attractive during the first season of growing, they are usually planted among other plants to hide that stage. When planting biennials, be sure there is space and it is acceptable for them to re-seed. Biennials tend to re-seed and that way behave more like perennials in the landscape.

How to Use Different Types of Plants

- Perennials
 - Provide bulk of landscape plantings
 - Borders, beds, berms, etc.



- Bulbs
 - Some perennial, others more like annuals
 - Provide early color, signs of spring

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Perennials are the bulk filler in most landscapes. They can provide continuous floral and foliar features. They are predictable and reliable. Perennials can be used in beds, borders, berms and anywhere else in the landscape.

Bulbs are a special feature of the landscape. They typically provide early color; bulbs, like squill and crocus, bloom early in the spring providing color in the landscape before most other plants have broken the soil surface. Bulbs can be used like annuals or perennials depending on the intended use and the type of bulb.

How to Use Different Types of Plants

- Shrubs and Trees
 - Woody perennials
 - Provide structure to the landscape
 - Define space



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Shrubs and trees are essential to providing structure within the landscape. They are typically used to define space. Small trees and shrubs are used to create “walls” within the landscape. Trees can be used to create a roof of the garden and give a sense of enclosure. They are also important for year round interest in the landscape.

Plant Selection Criteria

1. Environmental suitability
2. Functional intention
3. Aesthetic value

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Now we will discuss the selection criteria that need to be considered carefully before adding or changing plants within the landscape. The three criteria are environmental suitability, functional intention, and aesthetic value. We will discuss each one in more detail.

1. Environmental Suitability

- Sun Exposure
 - Full, part sun/part shade, full shade
 - Consider shadows from buildings, trees
- Wind Exposure
 - Harsh winter winds can
 - limit selection of broad
 - leaved evergreens



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Environmental considerations should be the first used to evaluate a plant's suitability for a location. There are many factors that go into determining a plant's environmental suitability. They are sun exposure, wind exposure, preferred soil conditions, cold hardiness and heat tolerance. We will discuss each on in further detail. Placing plants in an inappropriate site will limit the success of that plant and may even lead to its death.

Sun exposure is probably the first environmental consideration most people think of. Plants require and thrive in different levels of sun light. Some plants, like daylilies and cone flowers, require full sun and if planted in a location where they get some shade, will not thrive. Plants that require part shade may not thrive well in the deep shade of a garage shadow. They would thrive, though, in the more dappled shade of the big maple tree in the front yard. Shade does not always mean deep, shadowed shade. Dappled shade will sometimes provide the better site.

The hosta in the up right corner was planted where it gets too much sun. Shade plants in too much sun often scorch and dry out.

Wind exposure is sometimes over-looked as an environmental criteria. Especially in the mid-west, harsh winter winds can cause problems for some plants. Winter winds are not necessarily related to the winter hardiness. Winter winds are particularly dangerous for broad leaved evergreen plants like rhododendrons and azaleas. Driving winds at any time of the year can cause plants to loose water through transpiration faster than water can be drawn up by the roots.

1. Environmental

- Soil Conditions
 - Compaction
 - Quality of fill



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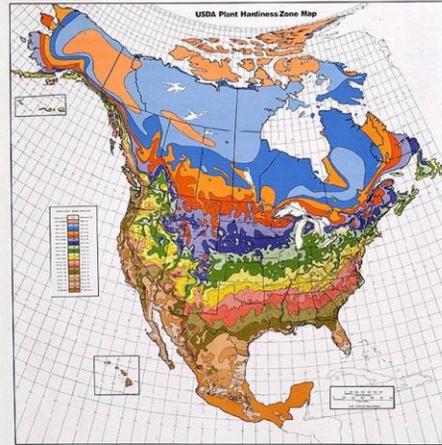
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In addition to considering the characteristics of a quality soil as we discussed in Module 3, the soil compaction is proving to be of greater concern. Sites that have been recently constructed, and some that are even 10 years old, have heavily compacted soils that can limit plant growth. Compacted soils have decreased pore space limiting water and air that is available to growing roots. Growing roots often have difficulty working through compacted soil. New construction sites have the top soil removed, stock piled and returned when the project is complete. However most contractors don't use to best quality or enough top soil for landscape plantings. A depth of 8-12 inches of top soil would be better than the 2-4 inches that is often put down. Some top soils may have pieces of metal, wood, glass, or other garbage.

1. Environmental

- Cold Hardiness
 - Average minimum winter temperature
 - Listed on plant tags
 - 1990 map used
 - Global warming has changed zone locations



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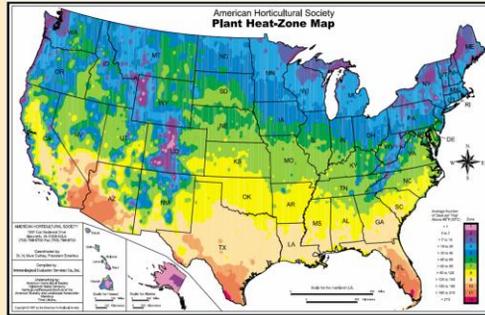
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The Plant Hardiness map used today is the 1990 map published by the United States Department of Agriculture. The map shows the average minimum winter temperatures. The map has gone through a revision since global warming has caused a warming shift in the zones. However, horticulture professionals can not agree on which map to use, because the colder winter temperatures are still possible.

As I hinted to earlier, the lowest temperature is not necessarily the only winter event that could prove deadly to plants. Winter winds, late season drought, light snow cover, heavy snow cover, and wild life feeding habits are all threats to plants during the winter months.

1. Environmental

- Heat Tolerance
 - Average number of days with temperature above 86 degrees



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In combination with the cold hardiness, one should consider the heat tolerance of a plant. The American Horticultural Society developed a heat tolerance map. This map divides the country into zones based on the longest period of heat expected in that region. The twelve zones are based on the average number of days with a temperature above 86 degrees Fahrenheit.

The heat tolerance map is not as commonly used by horticulturalists as the cold hardiness map, but it is worth being aware of because average temperatures are warming and winter temperatures might not play as important a role in plant selection as it has.

2. Functional

- Provide structure
 - Walls, ceilings
 - Shade



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Plants often play important functional roles in a landscape. Plants can provide structure for the landscape by acting like the skeleton. Many plants that are used to create structure in the landscape are woody plants like shrubs and trees. Gardens are like rooms in the landscape; they have walls, ceilings, and floors. The walls and ceilings are those features that provide structure to the landscape.

In the picture in the upper right corner shows plants as a wall enclosing a garden space. In the lower right picture the plants have been incorporated with pillars to form a wall. In the lower left picture the plants are echoing the up-right columns of the arbor.

2. Functional

- Frame view
- Separate spaces
- Screen view
- Direct traffic



See the
walkway
through
here?

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Plants can direct traffic that moves through the landscape, a hedge of thorny plants would slow kids running through them. In the picture here where the plants follow the curve of the bed and lawn edge, they emphasize that line and clearly separate the flower bed from the lawn area. In the picture with the weeping evergreen, there is a bench in the opening that is hidden from view unless you are standing at the right spot. Some plants are used to screen undesired views. The row of pencil-like trees in front of the house is an attempt to screen that house; however the plants are not quite appropriate for that site or that application.

2. Functional

- Environment control
 - Erosion control
 - Sound barrier



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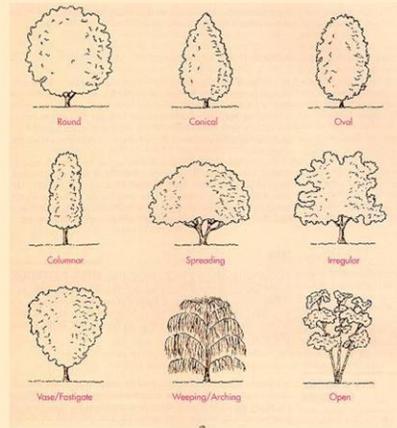
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Some times plants serve a totally functional role with almost no aesthetic component. Plants with quick growth habits and fibrous roots are often used to control erosion. Steep slopes that would be dangerous to mow can be planted with a ground cover or other erosion control plant. Plants can also be used as a sound barrier where busy traffic interferes with outdoor activities.

3. Aesthetic

- Form
 - Outline and 3-D mass
 - Mature size different than size at planting



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Now on to the fun stuff! Aesthetic considerations include mature plant size and shape, texture, and color.

Form is the outline and 3-D shape of a plant as well as its mature size. Some plants are tall and skinny, while other are short and round. The shape of the plant can give a garden a very different feeling to those who enjoy the space. Carefully selecting the appropriate shapes will ensure the landscape is one the client would enjoy.

When we place young plants in the landscape sometimes we forget that they grow bigger. A plant will not stay the same size for long. Some plants grow slower than others, but their mature size could be 4 times as big as when you bought the plant. Always remember to check the mature size of a plant before putting it next to the house or under the power lines.

3. Aesthetic



- Texture
 - Relationship between twig/stem and leaf size
 - Influenced by light patterns

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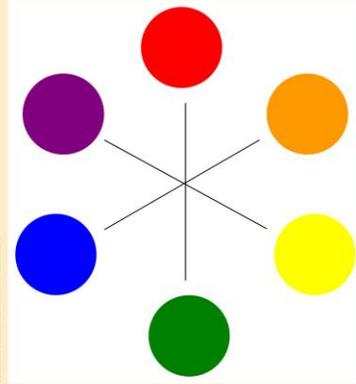
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Texture is the relative size of the twig or stem to the leaves. Some plants, like the canna pictured above, have large leaves giving them a coarse texture. While others like the ornamental grasses, have a fine, wispy texture. Mixing textures within the garden can create a dynamic landscape with lots of visual interest. Too much texture contrast will distract from the beauty of the plants. Placing a coarse textured plant among fine textured plant will make the coarse texture stand out. Light patterns that create shadows can influence how the texture looks. In full sun the texture may look more fine, but in part sun with dark shadows throughout the plant, it may look more coarse.

3. Aesthetic

- Color
 - When: bloom time
 - What color
 - How long it lasts: length of bloom



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Color is the most obvious aesthetic feature of a plant. Bright red and yellow flowers will catch any wandering eye. When selecting plants, consider when the prime bloom period is; some plants bloom in early spring and then offer a pleasant green background for the rest of the growing season. Others begin blooming during early summer and continue until frost. By selecting a variety of bloom periods that overlap, the garden will never be without color. Don't forget about fall color. Many trees and shrubs will bloom early in the season and then fade from prominence only to jump back into the spot light in fall with a spectacular show.

When picking what colors go together, there are few rules. Make sure the combinations are pleasing to the homeowner. A color wheel can help determine if two colors "go together" or not. Those colors that are opposite one another will provide strong contrast. Yellow and purple or red and green are strongly contrasting colors that will always look bright and cheerful. Colors that are next to one another on the wheel will be more subdued, and create a sense of blending in the colors. Pinks, reds, and purples will blend together if planted near-by. Although grey does not appear on the standard 6-color color wheel, it can often soften the garden palette.

Plant Quality in the Nursery

- Container
 - Annuals, perennials, shrubs, trees
- Balled and Burlapped (B&B)
 - Trees and larger shrubs
- Bare root
 - Trees, shrubs, some fruit crops

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Once you know what plants will grow in your area and which ones you want to plant, you need to know how to select a high quality plant from the nursery or garden center. Starting with healthy, high quality plant material is critical to getting plants established and thriving. At the nursery there are several different ways that plants are sold. Container grown or containerized plants are those that have a plastic or recycled paper pot around the root system. This includes annuals, perennials, shrubs, and trees. Balled and burlapped or B&B plants are typically trees and larger shrubs. Bare root plants can be trees, some shrubs, and some fruit crops like blueberries, raspberries and fruit trees. We will discuss each of these in more detail.

Plant Quality in the Nursery

- Container plants
 - Easy to move
 - Reasonable price per unit
 - Plant smaller, quicker to establish
 - Prone to root system malformation
 - Canopy of trees can be misshapen
 - Weeds can grow in container



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Container plants have become popular in the nursery industry for several reasons. They are easy to move because they come in several standard sizes and can be moved around by machinery. Container plants are typically less expensive because the plants are started in the container from seed or cuttings and spend their whole life in the container. The plants are also smaller which makes establishing them in the landscape easier because they tend to establish quicker. Unfortunately there are a few problems that are common in container plants. They are more prone to root system malformation because the roots grow to the sides of the container and then begin circling the inside of the container because they have no where else to go. This circling root system can range from mild and correctable to severe and can later lead to the death of the plant if planted. Sometimes nurseries are cramped for space and place container plants so close together the canopy gets misshapen. As the number of plants decreases, they should be spaced out so the canopy doesn't grow into an unusual shape. Containers also sometimes host weeds.

When purchasing container plants in the nursery be sure to check the root system for circling roots. Do not purchase plants with major roots that circle the inside of the container. Circling roots is more a concern with shrubs and trees that have been grown in containers. Also select the plants with the fullest, most uniform shape to the canopy. Dead zones can develop in the nursery where plants are too close together. Remove any weeds that may be growing on the top of the container. The last thing you want to introduce a new weed to your landscape. Leave them at the nursery.

Plant Quality in the Nursery

- Balled and burlapped (B&B)
 - Larger plant material available
 - More expensive
 - Difficult to maneuver
 - Roots may be damaged
 - Trunks may be covered with soil



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Balled and burlapped, B&B, plants are typically trees, although some larger shrubs can be found as B&B. B&B plants are larger specimens; trees can have trunks that are one inch to two and a half inches in trunk diameter and are 15 to 20 feet tall. These trees are great when a more mature look is desired for a newly planted landscape. B&B plant material is more expensive than container or bare root material. They are also tricky to maneuver into a planting hole and often require a small tractor or loader. Many B&B plants suffer serious root damage when they are dug from the ground where they were being grown. The trunks of the trees may be covered with soil from the growing field from the cultivation practices to reduce weed growth. The trunk flare can be under 6 inches of soil.

When assessing balled and burlapped plant material look for plants that have a full canopy and a general look of good health. Then check to make sure that the trunk does not move easily in the root ball. Having a sturdy root ball will make planting and moving that specimen much easier. Also see how far below the burlap the trunk flares to meet the roots. If this point is difficult to find, maybe that particular plant isn't a good choice and one with a more obvious trunk flare would be better.

Plant Quality in the Nursery

- Bare root
 - Young, vigorous plants establish quickly
 - Limited selection
 - Root rot common problem
 - Must be planted immediately



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Bare root plants are the third way plants can be purchased. Bare root plants are shipped when they are just breaking winter dormancy in early spring. The plants are fragile and need to be planted immediately to get them established. Healthy bare root material when planted promptly will establish quickly. The variety of bare root plants that are available to the general public is somewhat limited. Nurseries can often order perennials as bare root plants which they then pot and grow before selling them to you. Some fruit trees and raspberries and blueberries are sold as bare root. A major problem with bare root material is the potential for root rots developing during the storage and shipping period. If the humidity and temperature are not right, molds and rots can develop killing the young roots.

Many bare root plants are available only through mail order companies which means you can't personally inspect the quality of the material before you purchase it. Be sure to check the return and refund policy of the mail order company should you receive a poor quality plant. When purchasing bare root stock from a nursery where you can inspect the material be sure the roots look healthy and whitish or light yellow; brown or black roots is not a good sign. The plants may have small leaves or buds that are ready to break. Again check to see what the return and refund policy is because sometimes bare root plants are still dormant when we purchase them and they do not leaf out when they are planted and the weather is right.

Summary of Plant Types

- Container
 - Easy to move, decent price, circling roots, misshapen canopy
- B&B
 - Larger material, tricky to move, expensive, root damage, trunk flare
- Bare root
 - Establish quickly, root rot potential, immediate planting

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Let's start with a quick review of what we covered in the last module about selecting healthy, high quality plant material. Container plants are easy to move, are decently priced but may have circling roots and misshapen canopies. B&B material is much larger and more expensive, tricky to move and may have root damage and a hidden trunk flare. Bare root plants are quick to establish but may have root rot problems and require immediate planting.

Now you have high quality plants and need to know how to plant them so they will have the best chance of survival. We will start with some basic things that apply to planting all types of plants.

Planting General Information

- Call to locate utilities
 - Look for over head utilities and interferences
- Transplant shock
 - Longer for larger plants
 - Smaller plants recover and begin growing faster

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The first thing to do before planting or digging any major holes in the yard, is to call your local utility companies to have them come out and locate underground utilities. The last thing you want to do is cut a wire or pipe and injury yourself or incur the cost of having to repair a cable or pipe. While thinking about utilities don't forget to look up; make sure there are no over head wires or other things that might complicate the planting process.

Another thing to remember is that all plants will suffer some degree of transplant shock. Transplant shock is the plant's response to being put into a new environment. They get used to growing in a container or B&B and then suddenly they are growing in the ground. With proper post-planting care, transplant shock can be minimized, but not eliminated. As a general rule, larger plants will show more transplant shock than younger, smaller plants. Plants are like people; older people don't heal as quickly or as well as a young child. This may be a reason for selecting smaller, younger plants because over time, they will establish and start growing before an older, larger plant.

Planting General Information

- Basic Technique:
 - Dig planting hole that is 2-3 times the width of the root ball
 - Hole depth should be as deep as plant is in container or to the trunk flare



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The basic technique for properly planting a tree, perennial, annual or shrub is the same. The size of the planting hole is important. Digging a hole that is 2 to 3 times wider than the root ball will give you plenty of room to move around and having looser soil immediately around the root ball will be easier for new roots to grow through. The only situation where the width of the planting hole is not as critical is for annuals. Since annual plants are only needed for one growing season and they are typically used for mass blocks of color, they can be planted closer together in smaller holes.

The depth of the planting hole should be either as deep as the plant is in the container or to the trunk flare. The trunk flare is the portion of the trunk or stem that widens slightly to meet the root system as you can see in the picture in the upper right. The trunk flare is usually just above the first major root. This feature is extremely important for trees. A tree that is planted with the trunk flare below ground level can suffer a number of problems including rotting, animal damage, and root girdling. Root girdling is when the primary roots grow into the trunk restricting the trunks outward growth. Trees that have been planted with the trunk flare too low look like telephone poles coming out of the ground like in the picture on the lower left. The trunk flare should create a gradual slope to the ground or be slightly above the surrounding grade.

Planting General Information

- Place plant in hole
- Backfill around root ball
 - Amending the soil not necessary



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Once you have a hole dug, then you need to place the plant in the hole. Level the plant so it grows straight upwards and does not lean one way or another. Use soil compacted slightly at the base of the root ball to stabilize the plant while leveling. Then backfill the hole. When backfilling, use the soil that you removed from the hole if at all possible. Amending the soil is not necessary in most situations. Altering the soil that surrounds the root system, especially if it is of significantly lower quality than the soil with the root ball, can create a soil interface where the roots will not grow beyond the good soil. If amending the soil is absolutely necessary (if the soil is heavy clay) add compost, peat moss or other high organic matter material to all the soil removed from the hole. Then use the mixture to back fill.

Now we will discuss some special situations that you may encounter with the different types of plants.

Planting Container Material

- All containers must be removed
 - Even “plantable” types
- Check location of trunk flare
- Remove weeds on top
- Carefully separate circling roots
 - Perennials can be cut with knife, spade



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When planting container material it is critical to remove any and all containers, even those that are “plantable.” If a “plantable” container is left around the root system it can wick water away from the growing roots creating a drought like situation which could lead to plant decline. So called plantable containers are typically a compressed fiber product that decomposes over time. However that time is not fast enough for an establishing plant.

Double check the location of the trunk flare on shrubs and trees that are in containers. Remove any weeds that are growing on the soil surface.

For plants with circling roots, try to gently separate the major circling roots or cut them if they are fibrous with a sharp knife or spade.

Once the plant has been removed from container and is ready to be placed in the planting hole, the procedure is the same as the basic technique we discussed earlier.

Planting B&B Material

- Hole depth depends on depth of trunk flare
- Place plant in hole, straighten
- Remove top 1/3 of burlap and twine or wire cage
 - More if possible



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When planting B&B plants the planting hole depth depends on how tall the root ball is to the trunk flare. The trunk flare is often covered up with soil from the cultivation that is done around the plants when they are growing in a field. The trunk flare can be found by carefully removing soil from around the trunk, or by using a prodding stick and poking it into the root ball until it hits a solid major root, then excavate the soil around that area to double check.

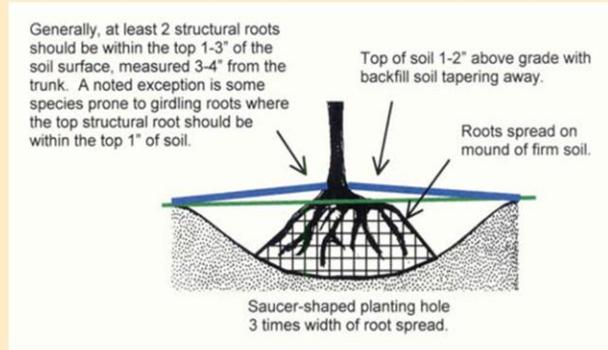
Once the planting hole is dug to the proper depth and width, carefully move the plant into the hole. Move B&B plant material by the root ball, not the trunk. Straighten the plant so it looks the way you want it to. Back-fill just a little around the very bottom of the root ball. This will help keep the plant in the upright position you want while you remove the burlap and cage or twine.

If the burlap is left around the root ball, it acts like the plantable containers, and wicks water away from the growing roots. It is critical to remove at least the upper third of the burlap. B&B plants have either a wire cage or twine cage around it to hold the burlap in place. Remove as much of the cage as well. Be careful removing the burlap and cage, nails are often used to hold the burlap layers to each other. If you are able to remove more than a third of the burlap that is good, just don't remove so much that you cause the root ball to fall apart.

Once the burlap is removed, proceed with back filling as described earlier.

Planting Bare Root Material

- Planting hole must be wide enough
- Back fill and water alternately



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Bare root plants have one major disadvantage in the planting process: they don't have soil with their roots. When planting bare root plants it is important that the planting hole be wide enough to accommodate the entire root system without twisting, pruning or bunching the roots. In the center of the planting hole, build a mound to hold up the plant and spread the root system out. The mound should be high enough that the trunk flare of the plant is at or slightly above the surrounding grade. Once the plant is in place, begin back filling. Back fill a portion then water. Back fill some more soil, and water again. Alternating the back fill and water helps remove the air pockets that are in the soil that will later settle and may cause the plant to lean. If the plant is leaning after it has been back filled, gently push the plant in the direction to straighten it up.

Post Planting Care

- Watering
 - Frequent watering decreases establishment
 - Water where the roots are
 - Always check soil before watering
 - Use 1-2 gallons per inch of trunk diameter



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Water is important to a newly installed plant. Frequent and regular watering can help decrease the establishment time period of newly planted material. When watering, water is only useful to the plant if the roots can reach it. Water where the roots are. Always check the soil around the root ball to be sure the plant needs watering before giving it more water. As a general rule of thumb for watering use 1 to 2 gallons of water for each inch of trunk diameter. For example a tree with a 3 inch diameter trunk might need 3 to 6 gallons of water when it needs watering. As the plant begins to establish in the landscape the roots will grow outward; if you continue watering be sure to change your watering habits with the plant.

Post Planting Care

- Mulching
 - Prevent mower, weed eater damage
 - Conserve soil moisture
 - Reduces weed competition
 - Adds organic matter
 - Requires replenishing yearly



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Mulching newly planted trees is important. Having a mulch circle around a tree instead of grass will prevent any damage from a lawn mower or weed eater. Tree trunks can be greatly damaged by a bump or swipe from a lawn mower or weed eater. Mulch will also conserve soil moisture, reducing the amount of water required at each watering. A layer of mulch will also reduce the weed competition that may occur on exposed soil. Unfortunately mulch requires annual replenishing to keep it effective, because it is organic and as it decomposes it adds nutrients into the soil.

Post Planting Care

- Mulching
 - Proper depth 3 inches
 - Keep mulch away from trunks
 - Ideal circle extends to drip line

NO!



YES!



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There are a few things that should be avoided when mulching a new planting. The proper depth of mulch is three inches. That is all the deeper it needs to be; in this case more is not always better. Piling mulch up around the trunk of a newly planted tree can cause a situation favorable to fungal pathogens and habitat for rodents that may chew at the bark. Mulch “volcanoes” are not necessary and not helpful to the plant. The mulch circle should really be a doughnut with no mulch closer than 6 inches to the trunk. The ideal width of the mulch would be to the drip line, or the edge of the canopy, of the plant. However, this is often limited by the space available and money. The larger the circle can be the better.

Post Planting Care

- Fertilizing
 - Adding at planting will stimulate canopy growth; not root growth
 - No research has shown it to be beneficial to establishing plants

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A brief note on fertilizing. Adding fertilizer at the time of planting, by incorporating it into the backfill, will stimulate canopy growth. Extra canopy growth on a limited root system is not a good situation for a young plant. Fertilizing will not stimulate root growth. It does not decrease the establishment period and may cause extra, unneeded stress for the plant.

Post Planting Care

- Staking
 - Not all trees need staking
 - Install stakes low on the trunk, outside planting hole, opposite, and perpendicular to wind
 - Wide, smooth, flexible material to wrap around tree
 - Remove after one year

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Not all newly planted trees require staking. Only those trees that have been planted in an open, windy location where the wind pushes the plant in one direction all the time or those that are larger in size should be staked. Plants that are permitted to move with the wind because that movement triggers the plant to develop girth to the trunk as well as height.

If a newly planted tree needs staking the stakes should be installed as low on the trunk as possible. The lowest point on the trunk where you can deflect it and still get the tree to return to an upright position is the proper place to stake the tree. The stakes should be placed outside the planting hole, into firm soil, opposite one another and perpendicular to the direction of the deflecting wind.

Use a wide, smooth, flexible material to attach the tree to the stakes. It is important that this be flexible to permit the tree to move in the wind and smooth so that it does not cut into the bark.

All stakes need to be removed from the plant after one year of use. Stakes left on after that point serve no purpose and create hazards for people working in the landscape. Not to mention they don't look very nice.

Post Planting Care

- Staking Don'ts



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Some staking don'ts:

Picture 1: These trees are staked too high on the trunk and the trees are attached to the stakes with a thin metal wire.

Picture 2: Dead trees do not require staking. Although the material used to stake this tree looks nice and soft, wide and flexible, it caused great damage to the tree because it was tightened too much.

Picture 3: This is what can happen to bark of a tree if the ties are too tight, too thin, and cut into the bark. Those cuts, if they go deep enough into the tree can cut off the xylem and phloem tissue and eventually kill the tree.

Post Planting Care

- Pruning
 - Limit pruning on young, newly planted material
 - Remove only broken, diseased, dead, or dying branches
 - For trees with multiple central leaders, select one and remove the other
 - Removing other limbs for shape should be put off until later seasons

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Pruning of newly planted trees and shrubs should be limited to broken, diseased, dead or dying branches. Branches that are rubbing against one another could also be removed if they are damaging each other significantly. On young trees with competing central leaders, remove the undesired leader. All other pruning for shape should be left for later growing seasons. You never want to remove more than 25% of a young tree's canopy. They really need the leaf mass to produce sugars for growing and establishing in the landscape.

Planting Annuals and Perennials

- Similar basic technique
 - Dig hole, insert plant, back fill, water, mulch
- Fertilization important for annuals
- Watering may be more frequent
- Mulching still important for perennials
- Staking, pruning not a concern

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The basic techniques for planting annuals and perennials are similar to the techniques we have already discussed. Annuals and perennials are smaller and don't require so large a planting hole. Annuals will benefit from a fertilizer or compost incorporated at the time of planting to help them get established and growing. Perennials will also benefit from having compost incorporated into the soil at planting. Post-planting watering may be more frequent, especially for plant being grown in containers on the patio or deck. Mulching is important for perennials and annuals too. Although many gardeners do not mulch annuals because they replace the annuals every year and find adding mulch a tedious step. Staking and pruning are usually not a concern with perennials or annuals.

That concludes this module.

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That concludes this module.