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## Transplanting Landscape Plants

Successfully transplanting landscape and garden plants depends on many things, including: type of plant; how the plant was established (natural/native grown vs. planted by someone); how large the plant is (a tree vs. shrub or smaller); how well the plant can recover and regrow roots after transplanting; what type of irrigation it received before transplanting; the plant's dormant period; and other factors.

Herbaceous (non-woody) plants vary with respect to transplanting. Herbaceous plants with taproots often do not transplant well. A good example is California or Mexican poppy (*Eschscholzia californica*). These are best when grown from seed. Conversely, native perennial grasses can easily be moved and/or divided. You will be most successful if you move grasses during their season of growth, but before the plant has flowered. Blue grama, buffalograss and sand dropseed are examples of grasses that successfully transplant. Once established, native grasses are great at mitigating erosion and occupying spaces that would otherwise support annual weeds.

Cacti and succulents are also easy to transplant and propagate from cuttings. Cacti should be transplanted during the growing season (summer). If roots are damaged, they should be pruned off and the wounds allowed to air dry and scab over for two or more days. Similarly, cactus cuttings should be allowed to air dry and scab over before planting. Many agaves produce "pups" which can be removed and transplanted.

Transplanting woody plants is a more complex matter. It depends in the size of the root system and how much of it is removed during transplanting. It also depends on the species of plant and how well adapted it is to your local climate. Native grown plants tend to grow large root systems and roots proliferate where they encounter favorable conditions. Plants adapted to disturbance, such as willows and cottonwoods, often grow a new root system after being disturbed by floods and debris flows. These plants can be transplanted but the feasibility is limited by the size of the tree. Both willows and cottonwoods can be grown from "pole cuttings".

Pine trees and many other coniferous evergreens are difficult to move because the roots may be growing further away from the trunk than other species. Conifers also keep their leaves and require water to support those leaves year round. If you dare to move a coniferous evergreen, always do it in the fall after temperatures are lower. This makes water demand lower and coincides with the tree's least active period. Deciduous trees should also be transplanted in fall. Woody shrubs may be easier to transplant and have a higher rate of survival because the roots system is proportionally small.

There are some general steps to follow when moving trees and shrubs. The first step is root pruning. Root pruning should started six months before the plant is to be moved. Begin root pruning by marking a circle the size of the desired ball around the tree or shrub, and then dig a trench just outside the circle. Backfill the trench with the removed soil, water the soil, remove air pockets, provide adequate moisture for new root development, then wait to transplant at the appropriate time of year.

Before transplanting woody plants, tie up branches if necessary. Dig up the trench made six months earlier and try to minimize soil disturbance on the root ball. Larger plants may need a backhoe or other large equipment. Commercial operators often use a specialized tool called a tree spade. Either way, large root balls are very heavy. Have the planting hole ready to receive the plant and make sure the soil line remains the same in the planting hole as it was prior to transplanting. The hole should only be as deep as the root ball and the backfill should only consist of mineral soil.

Irrigate all transplanted plants until they become established and longer if they are not drought adapted. One year is a common length of time to provide supplemental irrigation for reestablishment of transplants. Sandy soils are prone to fast drying and will require more frequent irrigation. Heavy soils are prone to poor drainage, so make sure not to over-water. Transplanted woody plants should be mulched to reduce soil evaporation and to keep the soil cooler. There is much more to know, so study your species and be patient.

## Root Stimulators

Some vendors recommend various products to minimize the negative effects of transplanting. However, these products may not produce the intended results. Vitamin B1 (thiamine) is one product that makes claims that cannot be supported by science. So, why do sellers of vitamin B1 products say they “prevent transplant shock” and “stimulate new root growth” if these claims are not true?

The “Vitamin B1 for Transplant Shock” myth arose from early work on plant growth regulators, called auxins, which were mixed with vitamin B-1. Further research throughout the last half of the 20th century investigating the application of auxins to root systems suggested that auxins may stimulate root growth, but that vitamin B-1 on its own does not. Delving deeper into manufacturer claims, many rely on early research (late 1930s and early 1940s) which has been refuted by subsequent research and/or research done on plant roots excised from the mother plant or grown in artificial media (without soil).

Various studies using woody plants, annual flowers, and crop plants failed to demonstrate that vitamin B1 treatments provide any subsequent growth response. Conversely, vitamin B-1 (thiamine) is an important component of tissue culture media where plant tissues are propagated using sterile conditions and artificial growth media. “Miracle growth” claims used by companies selling vitamin B-1 are usually taken from tissue culture research. Healthy plants manufacture their own vitamin B-1 making it unnecessary to add any additional amounts. Many fungi and bacteria associated with plant roots also produce vitamin B-1, so it’s likely that healthy soils will contain adequate levels of this vitamin without amendment.

Some products are marketed as root stimulators. While these products often list vitamin B-1 as an ingredient, they may also contain auxins and/or fertilizers. Common auxins are indole butyric acid (IBA) and naphthylacetic acid (NAA). These are common ingredients in “rooting compounds” sold by retail garden and horticultural suppliers and are excellent for propagating cuttings. IBA has had some success in root regeneration in transplanted trees and some evidence indicates that it may redirect resources to the roots by suppressing crown growth.

Proper irrigation has been shown to help plant root systems become established successfully in our arid climate. That’s right, plain old water is often the most important factor in transplant success. To this end, make sure that applied irrigation not only saturates the root ball, but also some of the adjacent native soil. This will encourage new roots to expand and colonize a greater soil volume and hence help the plant to be better able to utilize available soil nutrients and natural precipitation.

**Additional Resources:**  
**University of Arizona**  
[Planting Pole Cuttings](#)  
[How to Transplant a Cactus](#)

*October 2, 2023*

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