



Factsheet: Planting Fruit Trees

The ideal time to plant trees is during the dormant season for bare root trees and during the early spring or fall for containerized trees, when weather conditions are cool, allowing trees to get their roots well established before the summer heat. Please keep in mind that well cared for trees may be planted in just about any month where conditions allow (i.e. the ground is not frozen, heat stress is not too great), as long as the best-available establishment practices are carefully followed, so do not feel limited by the time of year.

Preparing the tree planting site properly with good maintenance and care practices will ensure that the tree experiences reduced transplant shock and allow it to thrive. Please follow these steps carefully so that your tree will establish its roots quickly and develop vigorous growth.

1. Dig a shallow, broad planting hole. Make the hole wide, at least two times the diameter of the root ball, but *only* as deep as the root ball (when planting bareroot trees, dig to the depth of the tree's root system). It is important to make the hole wide because the tree roots on the newly establishing tree must push through the surrounding soil in order to get established. Breaking up the soil in a large area around the tree (but not under it) allows the newly emerging roots room to expand into the loose soil to achieve proper establishment. Studies show that newly-planted trees benefit from holes up to 5 times as wide as the root ball, so dig as wide as you have the energy to, aiming for twice as wide as the minimum. Also, remove any competing vegetation or weeds in a circular pattern around each tree placement, about 5 feet in diameter. Roughen the sides of the planting hole if they appear glossy, especially in clay soils (this will give roots a better handle to branch out into adjacent soils). Remove large rocks and break up clods of soil.

If planting bareroot trees, soak the roots in water for several hours just prior to planting (up to 24 hours, but no longer). Do not allow roots to remain in the direct sunlight and open air for long; they can be damaged in as little as fifteen minutes. If the planting process is interrupted, remember to cover the bareroot trees or place the roots back in a tub of water.

2. Look for trunk flare. The trunk flare is where the roots spread at the base of the tree. This area should be clearly visible when the tree is planted. For containerized trees, if trunk flare is not visible, gently remove some soil from the top of the root ball. Uncover trunk flare prior to digging in order to accurately gauge how deep to make the planting hole. Inspect roots and the gently loosen the outside of the root ball. If the root zone is root-bound with

large, circling roots on the outside of the root mass, you may need to gently pull the circling roots apart, or cut them with pruners, so that they are pointing outward when the tree is planted.

3. Plant at the right depth. Before planting, make sure that the hole is the right depth, with the top of the hole meeting the point where the trunk flare is visible and laterals roots emerge from the trunk. The majority of the roots on a newly planted tree will develop in the top 12 to 18 inches of soil. If the tree is planted too deep or it settles below grade, then water can collect at the trees base and cause it to decay or soil can accumulate around the sensitive root crown area and eventually suffocate the tree. It is always better to plant the tree a little high (i.e. ½ - 1 inch above the base of the trunk flare) than to plant it below the original growing level. Erring on the high side will allow for the tree to be at the right depth after some settling. Make sure any graft union (i.e. the bulbous area near the base of the trunk) is above ground level and is not covered with soil. Point the “eye” of the graft away from the prevailing sun (e.g. north in the northern hemisphere). To avoid damage when setting the tree in the hole, always lift it with one hand underneath the root ball and never grab the tree too high on the trunk.

On *bareroot trees*, the root crown is much easier to identify because the roots are completely exposed. Position the root crown relative to the surrounding soil level in the same way as for containerized trees—at soil level or just slightly above. An easy method to determine this depth is to grab the trunk of the tree with a closed fist, then slide your fist all the way down until it stops on the first lateral root of the tree. If you imagine the bottom of your hand (at pinky level) as the soil, this will give you the proper depth that the tree should be planted. Build a small mound at the bottom of the planting hole with backfill soil. Tamp it very firmly to make a pedestal. Spread the roots of the bareroot tree over this pedestal. For reference, the surrounding soil level should *a/ways* be several inches below the graft union.

4. Straighten the tree in the hole. View the tree from several directions before you begin backfilling to confirm the tree is straight. If grafted, position the tree so that the graft union is facing away from the prevailing sun (e.g. north in the northern hemisphere). Once the planting hole is backfilled it will be difficult to reposition. Remember, this tree will be in the ground for decades, so if it is planted too deep in the hole or is crooked, please take an extra 5 minutes to ensure that it is at the proper depth and angle. The tree will love you for it!

5. Resist the urge to amend or over-fertilize the backfill. Overuse of soil amendments can 1) create a situation where roots are not encouraged to penetrate native soils once they reach the outer boundaries of the hole, essentially creating a pot in the ground where roots can circle, and 2) create drainage issues by introducing different strata of soils. To avoid this and ensure that the tree thrives, do not amend the soil, using only native soils to backfill. In the rare situation where amendments are absolutely necessary, amend by no more than 10% using an organic amendment.

6. Fill the hole, gently but firmly. Fill the hole about 1/2 full and gently settle the soil around the base of the root ball by tamping or watering. As the hole is filled in, make sure all air pockets are broken up to prevent roots from drying out. Continue this process until the hole is filled and the tree is firmly planted. It is also important to create a berm to retain water for the first couple of years. The berm should be at least 2 times the diameter of the actual root ball, firmly packed and about 2 to 3 inches high to help hold water. After planting, soak the planting area well by filling in the water basin inside the berm fully.

7. Stake the tree, only if necessary. If the tree is well-grown with a sturdy trunk, staking for support is not necessary in most situations. *Trees will establish more quickly and develop a stronger trunk and root system if they are not staked at the time of planting.* Protective staking may be necessary in some situations where vandalism, windy conditions, or other concerns may prevent the tree from developing a straight trunk. Some dwarf rootstocks also require staking due to instability, but these types are rare. If staking is necessary for support, always use two stakes opposite each other with a wide, flexible tie material (narrow, or sharp-edged ties are more likely to cause friction wounds on the trunk). Stakes should be placed perpendicular to the direction of the prevailing wind. Be careful not to drive the stake through the root ball and remember, flexibility is essential as this will help increase the trunk diameter, so do not stake the tree too tightly, allowing the tree to have a natural degree of movement. Tie the tree to the stake using a figure-eight pattern at the lowest point possible that provides the necessary support. Be sure to remove stakes after the tree has stabilized (we find many trees with old ties on them that become embedded into the bark).

8. Mulch around the base of the tree. Mulch is organic matter that is applied to the area around the base of the tree. Mulch acts as a covering that holds moisture in the soil, can reduce soil temperature extremes (both hot and cold), prevents weed germination and competition, and can improve soil quality as it decomposes by making soils more friable while slowly feeding microorganisms in the soil that release nutrients to your plants. Lastly, a thick mulch can provide improved aesthetic qualities. The best choices for mulch include aged, coarse materials like shredded bark or wood chips, but other good choices include straw, leaf litter, and home compost. Apply mulch in 3 to 6 inch layers without touching the base of the tree, which can cause decay at the tree's crown. Taper the mulch so that it is thicker as you move away from the trunk.

9. Water the tree. Remember, this is the most stressful day in the life of your newly planted tree as it deals with transplant shock. Water your tree thoroughly before completing the planting. A rule of thumb for watering is to water *deeply but infrequently*. Apply enough water so that it reaches the bottom of the rootball. Water the tree about twice a week as it becomes established, always adjusting your watering schedule to account for soil types and the weather (heavy rains count as a watering). See our "Aftercare" factsheet for more on watering schedules and caring for your tree beyond the planting day.

Planting Procedure Checklist

- ✓ Time the planting and obtain trees
- ✓ Spot trees in the planting layout
- ✓ Gather tools and materials
- ✓ Remove grasses and vegetation in a circular pattern around each tree placement
- ✓ Dig the planting hole exactly as deep as the root-ball and at least twice as wide
- ✓ Place the tree in the planting hole and adjust to prevent burying the root crown
- ✓ Gently untangle circling roots and massage the root-ball
- ✓ Face the tree's graft union away from the sun
- ✓ Straighten the tree
- ✓ Backfill the hole without amending the backfill
- ✓ Create a 6-inch (15.2-cm) tall berm just beyond the tree's dripline
- ✓ Add a thin layer of compost inside the water well.
- ✓ Add a 3-to-4-inch (7.6 to 10.2 cm) layer of mulch in the water well, keeping a 2-inch (5.1 cm) radius around the trunk clear
- ✓ Only when necessary, stake trees with two posts forming a line perpendicular to the prevailing wind
- ✓ Water the newly planted trees by filling the water wells two to five times



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Create a 6" (15 cm) tall circular berm just beyond dripline to hold water.

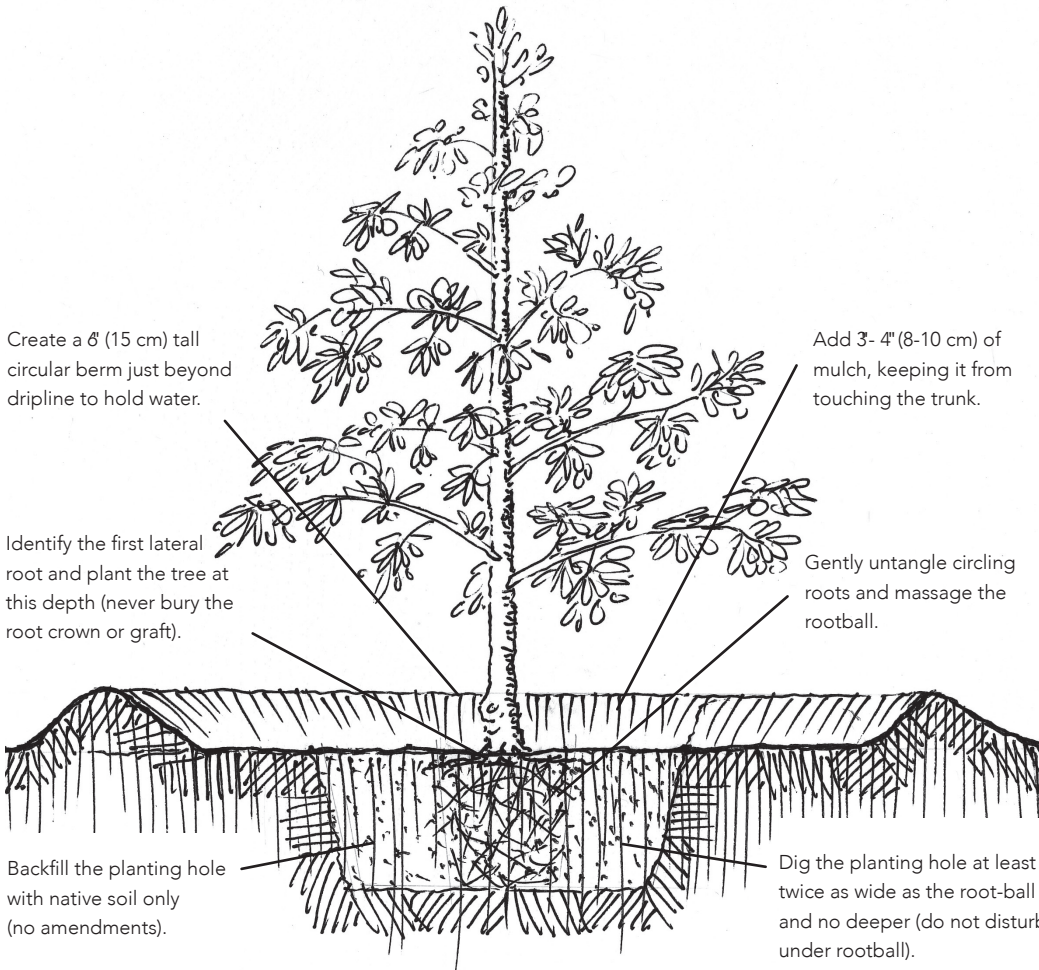
Identify the first lateral root and plant the tree at this depth (never bury the root crown or graft).

Add 3- 4" (8-10 cm) of mulch, keeping it from touching the trunk.

Gently untangle circling roots and massage the rootball.

Backfill the planting hole with native soil only (no amendments).

Dig the planting hole at least twice as wide as the root-ball and no deeper (do not disturb under rootball).



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