

DEVELOPING OR REDEVELOPING AN ORCHARD

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Whether you are developing a new orchard from open ground or redeveloping an old one, you need to do things just right. A properly developed orchard will provide maximum profit for years to come.

Clean Up

If there is crop residue of any type, it must be thoroughly disced in and decomposed. This is especially important if you are going to level the field. Even dead and dry residues can cause big problems if buried and they begin to decompose anaerobically. Old roots can serve as a source of nematodes and some diseases. As many large roots as possible should be dug up and removed from the field. This often involves deep tillage followed by crews hand-picking any roots that have surfaced. This whole process may need to be repeated several times to remove all but the smallest roots.

Leveling or Re-leveling

If you are going to furrow, basin, or border-check irrigate, accurate leveling and having the correct slope is a must for uniform irrigation.

Since state and federal regulations place many restrictions on off-site drainage, it is best to plan on containing all water on your farm. If you are going to install drip or sprinkler systems, make the field dead-level so there is no off-site drainage and water does not pool in low spots. Most leveling operations result in differing degrees of compaction. Never scrape, rip or level wet soil. Rip or subsoil to remedy compaction after leveling. Hillside fields need to have low swales filled to avoid ponding.

Backhoeing and Ripping

Unless the soil is absolutely uniform all the way down to 6-7 feet, and these soils are few and far between, it is almost always beneficial to backhoe. While ripping the subsoil can shatter a cemented hardpan, it does not mix the soil. Furthermore, the cost of ripping with large tracklayers can exceed the cost of a backhoe. Ripping is not of much value for clay pans and silt pans because they will re-form after a few irrigations. Only cemented hard pans will stay shattered. When ripping a field, UC research has shown that ripping in two directions at 45° angles is much more effective to ripping at 90° angles. Ripping at 45° angles will shatter the hardpan for a much longer distance from the shank.

Even when there are no pans of any type, water and roots can be impeded by changes in soil texture, for example: a clay loam over a sand layer. Mixing the soil will result in a much better environment for roots to explore. In general, the larger the hole, the larger the root system that can be developed in the early years of the tree. Holes 6' x 6' x 6' are very common. Slip plowing will mix the soil more than plain ripping, but is still not as effective as backhoeing. Many people prefer to rip or slip plow after the backhoeing operation so they can rip from hole to hole, making it easier to keep the shank down.

Planting a Rotation Crop

To do a really nice job of developing an orchard and to be able to do all the steps in an unhurried manner, it often takes two seasons. By planting a grain crop in November, you can give the soil a rest, and reduce the nematode population that is only partially controlled with fumigation. Small grains such as barley or Merced rye are the best rotational crops as they are poor hosts for the kinds of nematodes that attack trees. The grain crop can be sold or incorporated into the soil to add organic matter. In the north San Joaquin Valley, sweet potatoes are a popular rotation crop if the soil texture is sand or loamy sand.

Touch-up Leveling

During the winter, the backhoe sites are going to settle down, creating basins. Discing up the grain stubble also will leave the surface a bit unlevel. For this reason, you will want to touch-up level and float before fumigating around September. Remember, you do not want to move any soil around after fumigating – to do so will just recontaminate the fumigated soil.

Fumigating

Recent information on how nematodes migrate shows they can move much farther and faster than we previously thought. For this reason, when developing a whole block or even several rows, it is best to solid fumigate. You only have one chance to fumigate, so do it right.

The fumigant shanks should be set no farther than 18” apart. The fumigant should be injected 18” deep. The soil needs to be dry enough for the fumigant to penetrate deeply. Each material has an optimum soil moisture and temperature where it is most effective. Talk to your Pest Control Advisor about recommendations for specific materials.

Preplant Weed Control

If you have a weed problem, especially perennials such as Bermuda and Johnsongrass, they need to be taken care of the summer and fall before planting. It is also good practice to eliminate annual weeds from the tree row sometime in December or early January. You can do this by discing or spraying a contact herbicide. If you build up a ridge or berm and plant on top of that, you can control weeds at that time. Do not use preemergent herbicides at this time, as the soil will be disturbed, reducing the herbicide’s effectiveness. Also, some herbicides should not be mixed into the soil around the roots. A clean strip will make it easy to lay out and mark where the trees go. Eliminating weed competition will greatly increase the vigor of young trees.

Planting

From the time the new trees are dug at the nursery to when they are planted, they should never be allowed to dry out, even for a couple of hours. Store the trees in bins of moist wood shavings or cover the roots with clean, moist, fumigated soil.

Trees that are planted in mid-January will have a head start on trees that are planted in March. Even though a tree hasn’t leafed out yet, the roots can still be active.

Trim the roots only enough to fit into the hole you are going to dig. The bigger the hole the better. I prefer hand digging the hole, but augers can give good results if done correctly and the sides of the hole are not smooth. Successful machine planting requires careful supervision by the owner. Planting a tree too deep often results in crown rot. It is better to plant a tree a little too high than too deep. Plant the tree just deep enough to cover the top roots. How much you lean a new tree into the prevailing winds depends on where you are located. Don't overdo it.

Do not add fertilizer, manure or mulches to the hole when planting. Plant into the same soil that the root system will have to expand into. The value of Vitamin B1 dips has never been demonstrated. Spraying the entire root system with Galltrol is very effective in preventing crown gall disease from developing on the roots.

Tamp the soil in firmly around the roots while backfilling. If the soil is wet, tamp very gently or it will turn into concrete. Unless the soil is already very wet, all newly planted trees should be tank-watered in to eliminate air pockets around the roots.

After trimming and topping, paint the entire tree with a light-colored, water-based latex paint. This prevents sunburn and discourages borers. Milk cartons or tree wraps can also be used. They aid against sunburn and rodent damage while offering some protection from herbicides.

Post-plant Weed Control

After planting, spray the tree rows with a safe preemergent herbicide, (e.g. Prowl, Surflan or Devrinol). Weed competition can rob young trees of much or all of their vigor. Post-emergent weed control around young trees, whether with herbicides or hoes, is more difficult and carries the risk of tree damage.

Irrigation

By the time the trees are planted, the irrigation system needs to be fully installed, tested, and operational. An early, warm spring following a dry winter may necessitate irrigating much earlier than you expected. You may even want to use the system to water in the newly planted trees.

Summary

In the preceding discussion, I have attempted to outline the steps needed to properly develop the orchard. While space did not allow including all the details, I tried to mention those items that I feel are particularly important. Remember that you have just one chance to properly develop the orchard that you will be depending on for income for many years.