Fruit Tree Weed Control

By Paul Vossen

As I travel around and visit new orchards I see that many of them do not have adequate weed control to a point where the weeds have hindered the growth of the young trees. We have good research data that shows how weed competition reduces the growth of fruit trees especially in the first few years of growth up until the trees have reached maturity (almost touching). Remember in the first few years of the tree's growth you are just growing branches and leaves. The faster the trees fill their allotted space the quicker the full return on investment occurs. Tree growth rate depends on climate, irrigation, fertility, and weed control; a stress free environment.

In one study comparing different weed control and different cover crops on tree growth the trees with the best weed control grew more, a lot more. The trial compared mulched trees (wood chips), herbicide treated area below trees (bare ground), cultivation below trees, annual clover growing right up to the base of the trees, and annual grasses growing up to the base of the trees. The most growth occurred with the mulched trees followed by the herbicide treated trees and thirdly by the cultivated trees, but they had similar growth rates. The trees with clover "weed - cover crop" grew about one-half the rate of the mulched trees and the trees with the grass "weed-cover crop" grew about one-fourth the rate of the trees with good weed control.

Tree growth in this experiment was measured in both shoot length and trunk diameters and the moisture content of the soils was maintained evenly. Translating the growth rates of this experiment over to a poorly weeded fruit tree orchard means that it may take two to four times as long to get full sized trees instead of what is optimal. In other words weed control is very important.

Weeds compete with trees in several ways - primarily through competition for moisture, but also for nutrients, and for physical space in the soil. One of the best ways to stunt young trees is to allow a grass cover crop to dry the soil out around the trees in the spring of the year. Many orchard managers have good intentions of removing the winter weeds in the spring but get to it too late. New growth in fruit trees can begin as early as April, but root growth probably starts sooner. I therefore recommend that no weed competition be allowed within three feet of the tree trunks - ever.

There are really 5 ways to accomplish this:

1. Herbicides: Preemergent herbicides can be applied right after planting right over the top of the trees. Registered preemergent herbicides will hot harm trees, even young trees. They must be applied to bare ground (recently tilled) and incorporated with a light sprinkler irrigation or rain. They will control the weeds for about 6-8 months. Other herbicides can also be used on older trees to maintain the area weed free including several contact materials, which can be mixed with the preemergents to

provide residual weed control. The only problem is that this is not classified as an organic control.

2. Organic Mulches: This is the best option for small plantings. I recommend using at least 3 to 4 inches of fresh wood chips. In many cases chips can be purchased locally from counties and municipalities trying to reduce landfill inputs. Organic mulch is really the ultimate in weed control because as it breaks down slowly it creates a loose tilth to the soil and releases nutrients. Water absorption and retention is also aided. In ground harvest for nuts, it may be difficult to separate fallen nuts from wood chips and another big problem is cost, not only for the material but also for hauling and application. One acre of trees with rows planted 20 feet apart would use 150 to 160 $yards^3$ of material costing about $3,000 for the material and delivery alone (based on 4" deep and a 6 ft. wide strip). Closer spaced trees would cost that much more.

3. Fabric Mulches: One product that I have tested, called Lumite 994G6, is a black weed control fabric that allows water to pass through but no weeds grow through it. You probably have seen it at container nurseries where they use it in their growing grounds to control weeds. In my trials it has lasted ten years, the manufacturer guarantees it for five. The cost per acre for an orchard with a row spacing of 20 ft. and that would apply a 3' wide strip down each side of the trees would cost $533 per acre. For a tree row spacing of 12 feet the cost would be about $900 per acre plus the wire staples to pin it down and labor to apply it. This method effectively controls the weed headache for ten years at a minimal long-term cost.

4. Cultivation: There are several cultivation devices that move in and out of tree rows to remove the weeds right around the trees. These include triggered rototillers and weed blades, the French plow, and various hydraulic rotating heads attached to tractors. They vary in cost from about $2,000 to $10,000. They must be manipulated by a skilled tractor driver and be used in orchards with early spring access. Two to three cultivations are needed every year to keep the area under the trees completely weed free during the growing season. Irrigation systems that maintain constant moisture over most or the entire orchard floor will require more frequent cultivations. Cultivation is complicated by systems of irrigation that have sprinklers or drip hoses in the way.

5. Flamers: Propane powered weed burning torches have been used in orchards for weed control. Tractor mounted torches along with a propane tank have been designed by growers to move through the orchard and "cook" the young weeds in the tree row. The heat can injure young trees and only very small weeds are easily controlled. Many grasses with their low growing point are much harder to kill with the flamer system. Because of the cost of propane this weed control method is usually reserved for very high value crops.

One thing for sure is that you will always have weeds, so be prepared to deal with them right from the start.