

**Controlling Weeds**

**2.7 Controlling Weeds**

Weed growth around a young tree steals soil moisture, nutrients, and sunlight, all which the tree needs for rapid growth. In the first year of planting, weeds can be kept out by pre-planting chemical control, or by hand weeding, tillage, surface mulching, etc. In the second year, and succeeding years, chemical herbicides can be applied to prevent weed growth. It is usually hazardous to use chemical weed control the first season because of possible injury to unestablished trees. Therefore, your weed control should start the year before your trees are placed in the ground.

Maintainning young trees free of competition from weeds or sod is very important for the vigor of the tree. Weed-free trees will result in larger trees and a good oportunity to produce nuts on young trees. It has been shown repeatedly that maintaining weed-free conditions in an orchard will promote the production of increased nut yields as a result of increased of tree size.

How do weeds reduce the growth of trees? Weeds compete directly with trees for soil moisture and nutrients and often serve as hosts for insects, diseases and varmints. It is imperitive to provide optimum growing conditions the first few seasons if you are going to produce healthy trees with strong trunks and scaffold branches.

How much of my field needs to have weed control? Controlling weeds in an area 3 to 4 feet from the trunk is adequate for the first 3 years. As the tree becomes larger and its root system spreads over larger areas, weed control must be increased to an area larger than 4 ft from the trunk or at least to the drip-line of the tree. This should also help in surveyng your trees health and picking up nuts.

*Weed barriers*—The best way to control weeds is by reducing sunlight to the weeds growing around the trees. Weed barriers or mats can be bought at orchard supply houses or through orchard management catalogs. This is generally more expensive than chemical weed control (see below) but the benefits to you and the environment may out weigh the cost of the barrier. By using weed barriers, you may find yourself elgible for organic certification in three or four years down the road. Weed barriers should last more than one season and how you treat them will determine their overall longivity.

Mulching is always a good idea, but in our observations with mulching, we find few growers willing to stay up with the mulching in terms of weed control. A nice mulch offers a great environment for weed growth. If the weeds in the mulch are not removed periodically, they will set deep roots in the moist soil beneath the mulch and they may be harder to remove than if the mulch was not in place.

*Chemical control*—Herbicides can hurt young trees and you must be deligent in not getting the material on the young trunks or leaves. Generally, trees gain herbicide tolerance with age. Newly planted trees are more suceptible to herbicide injury, but generally gain some tolerance when two- to
three-years old, and become much more tolerant when older. Trees growing in sandy soils, which are low in organic matter, are more suceptible to soil-applied herbicides than trees growing on heavier, loamy soils.

There are a limited number of herbicides registered for use on chestnut trees. Due to this limitation, we can only work with the following herbicides:

**Pre-emergent**
Surflan (Oryzalin)
Simazine (Princep)

**Post-emergent**
Roundup Ultra (glyphosate)
Gramoxone extra (paraquat)

Pre-emergents are a class of herbicides that kill the germinating weed seeds that fall to soil and sprout. They will not kill established weeds.

**Surflan (40.4 % a. i.)** can be used safely on newly planted fruit trees after the soil has settled and no soil cracks are present which would provide an avenue to the root zone. It is effective in controlling annual grasses and many annual broad-leafed weeds. Its strength is in combination with gramoxone (formerly known as paraquat) or Roundup where the paraquate or Roundup will kill established weeds and then the Surflan will prevent weed regrowth. Rain or sprinkler irrigation are need to move Surflan into the weed seed germination zone. The water also activates the herbicide.

**Simazine (90 % a. i.)** is effective primarily on germinating, annual broad-leaf weeds and grasses. It can be combined with paraquat or Roundup to control already established weeds. This herbicide does not build up in the soil from annual application. Plant injury has been when applied on extremely sandy soils, therefore manipulating the rates of application on different types of soil is very important.

Emergent herbicides control plants that are already growing. Some will kill all plants and others are specific for type of plants.

**Roundup (41 % a. i.)** controls both annual and perennial weeds, grasses and broad leafed plants. It has a systemic quality in that it moves from the leaves to the roots. This is called translocation. This herbicide can cause serious damage to nut and fruit trees if contact occurs on any green tissue (leaves or shoots), or on young trunk bark. Apply only near trees that have been planted for 2 or more years. Be careful of material drifting to young green tissues of the trees. It can be used all year long, but you should attempt to use this to knock down the early weed load, before the trees break bud. This material works takes about 9 -12 hours to work on sunny days, but the weeds may take two weeks to die. You should notice a slight yellowing within a few days. If you mow the weeds before application, wait for the weeds to begin active growth for best uptake of the material. It does nothing by itself to prevent weed seeds from germinating.

**Gramoxone extra** (formerly known as **paraquat [37 % a. i.])** provides rapid kill of annual and perennial weeds, and may be utilized in all fruit plantings. This material should be applied when weeds and grasses are suculents. It has no activity on the roots to prevent further weed growth and eventually many of the weed roots will send up shoots which will be evident in 30 to 40 days after application. Do not allow paraquat to contact foliage or areas of the trunk where bark has not formed. Painting trunks of young trees with latex paint or using tree guards lowers the possibility of injury.

Below, we have provided you with some information to help you choose and mix your herbicides.

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| **Chemical** | **Lb/acre (active ingredient)** | **Time of Application** | **Remarks and Limitations** |
| **Surflan (oryzalin)** | 2 to 4 | Apply to weed-free ground. Usually apply early spring | Use lower rate on lighter soils (sandy soils) |
| **Simazine (princep)** | 2 to 4 | Apply if you have weed with 2 to 4 inches high. But best apply late fall or early spring. | Use granular formulation. Use low rates in young plantings (12 mo to 3 years.) Use lower rates on lighter soils (sandy soils). Very effective if followed by paraquat 1/2 lb/acre in the spring. Apply only once a year. |
| **Roundup Ultra (glyohosat)** | 1 to 3 | Can kill almost every annual and perennial weed. For maximum benefit, apply when weeds less than 6 inches tall. | Will not prevent annual weeds from coming up again from seed. If weeds have been mowed or tilled, do not treat until plants have resumed active growth. |
| **Gramoxone extra (Paraquat)** | 1/2 to 1 | Apply during the year as needed and when weeds are greater than 4 to 6 inches high for maximum benefit. | Do not allow spray to touch foliage of trees. Do not spray high on the trunks of newly planted trees. |

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| **Volume Desired** |
| **Chemical from the bottle** | **1 gallon** | **4 gallon backpack** | **40 gallon/acre** |
| **Surflan (oryzalin)** | 2 to 4 oz | 8 to 16 oz | 5 to 10 pints |
| **Simazine (princep)** | 1 to 1 3/4 oz | 4 to 7 oz | 2p 3 oz |
| **Roundup ultra (glyphosate)** | 1 1/3 to 1 3/4 oz | 5 1/3 to 7 oz | 3 p 5 oz to 4 p 6 oz |
| **Gramoxone extra (Paraquat)** | 1/2 to 1 oz | 2 to 4 oz | 1p 6 oz to 2p 11 oz |

Pounds per active ingredient (a.i.) per acre

Springtime treatment for orchards with established young trees with an existing weed problem—By following these simple steps, you can gain control over the weeds in your orchards. First, mow your weeds getting very close to the trunks of your trees. You may want to hand cut around the base of your trees. This is a good time to adjust your tree guards or paint the trunks (since you are bending over near the trunks). About a week later, after weed growth has re-initiated, put your herbicides on the weeds. In this case I would use Roundup-Surflan, Roundup-Simazine, Paraquat-Surflan or Paraquat-Simazine. Why Paraquat? Just to play it safe. We know that this herbicide burns green tissue, but it does not kill the entire plant. You have to be very careful to handle paraquat when you spray it, because if you burn your trees, this stress can eventually kill them. The combination of the above listed herbicides (Roundup or Gramoxone) with either Surflan and Simazine is designed to stop current weed growth and the continuous germination of weed seeds for the rest of the summer. Roundup and Gramoxone will kill current green tissue and Surflan and Simazine will kill germinating weeds seeds later, especially if used at least twice a year (early spring and middle of summer). In combination, these pre-emergent herbicides will reduce your overall weed problem.

Remember, weed barriers are also effective tools in reducing weeds, but your labor will be greater. We strongly suggest attempting control with some trees using weed barriers to see if that form of control will work for you.

## Study Quantifies Corn Yield Loss if Atrazine Banned

Monday, November 14th, 2011

A comprehensive simulation analysis of the use and benefits of chloro-s-triazine herbicides (atrazine and simazine), in U.S. field corn, sweet corn and grain sorghum was conducted by David Bridges, Ph.D., Abraham Baldwin Agricultural College, and released last week.

Scenario analysis employed methods used in previous assessments coupled with 2009 regionally-specific data on weed incidence by species, crop yield losses by weed species, herbicide efficacy by weed species and herbicide use data by active ingredient, Bridges explained.

One scenario assumes that corn farmers would not have access to atrazine or simazine and that the glyphosate market share would remain constant at 2009 levels-approximately 75 percent of corn acres. (This scenario is highly likely because glyphosate-resistant weeds would probably increase quickly if more glyphosate is used, and, therefore, this would not be a likely alternative.)

In this scenario, field corn yields declined between 5.7 bushels and 17.6 bushels per current atrazine-treated acre. Averaged across all acres in the analysis, yield declines ranged from 2.9 to 13.6 bushels per planted acre. Averaged across all U.S. field corn acres, the projected yield decline without atrazine or simazine yield declines would range from 25 percent to 33 percent per atrazine-treated acre and approximately 20 percent per planted acre.