Orchard Floor Management in North Coast Organic Pear Orchards.

John Roncoroni and Rachel Elkins

Abstract:

Weed Control is a major challenge for growers of organic tree crops and is closely linked to soil moisture and fertility. Elimination or reducing weeds in the tree row can increase crop water and nutrient availability. Clean tree row strips are difficult to achieve in organic orchards without the use of tillage. Many organic orchards are seeking 'to-till' alternatives for weed control because the potential loss of soil quality, soil erosion and damage to tree roots. There is growing interest in the use of mulches in organic orchards. Available organic herbicides are relatively ineffective, but can reduce weed growth to tolerable levels alone and in combination with mulch, with multiple applications.

Objective:

The objective of this project was is to determine the efficacy of several weed methods, 3 organic herbicides (Acetic acid, GreenMatch and Matran), EcoCover (a mulch derived from recycled shredded paper), tree mulch (made from shredded trees) and combinations of these. This experiment is being conducted in a young orchard in Kelseyville, that is still not bearing, in the future fruit parameters such as yield and quality can be taken.

Procedure:

Ten treatments where initiated February 9th, 2011 (5 organic herbicide treatments, and EcoCover paper mulch applied; tree mulch was applied Feb 12th). The herbicide treatments where applied at 70 GPA with a CO2 backpack sprayer. The mulches were applied by hand. Each treatment is replicated four times. The organic herbicides were reapplied on April1st, 2011. A third application was made to 3 of the treatments and a treatment to the tree mulch (see table below) on June 16th , 2011

Results

The table below summarizes the visual weed control ratings taken during the growing season.

Treatments	15-Mar	20-Apr			27-Jun		bindweed
		overall	Grass	Broadleaf	Grass	Braodleaf	perennial
1. UNTREATED CONTROL	1.50	1.50	1.50	6.50	1.00	5.50	4.25
2. Acetic Acid 20% 2-Application	4.25	4.75	5.25	6.25	5.00	5.75	3.75
3. Acetic Acid 20% 3-Applications	3.50	4.00	4.25	7.00	2.75	8.00	6.50
4. GreenMatch 10% -2 Applications	2.50	2.75	2.75	6.50	1.75	6.50	3.25
5. GreenMatch 10% -3 Appplications	3.25	2.75	2.75	5.50	2.25	7.00	4.50
6. Matran 10% -3 Applicatons	2.50	3.25	2.50	7.50	1.25	8.25	5.25
7 Ecocover paper mat-alone	9.00	7.25	7.50	7.25	7.00	7.75	6.75
8. Ecocover + tree mulch	9.00	8.75	9.00	8.75	9.00	8.00	5.50
9. Tree mulch alone	8.50	8.25	8.25	9.00	7.75	8.00	6.00
10. Tree mulch + Acidic Acid(as needed)	8.25	7.5	8	7.50	8.25	7.50	7.25

Ratings are based on a 1-10 scale; 1=no control; 10= complete control

Discussion:

As expected the organic herbicides were more effective on broadleaf weeds then on grasses. This is due to the growing point of grasses, they will regrow. The tree mulch provided control of weeds throughout the season. The paper mulch alone began to break down and may not provide weed control for more than one season. Unfortunately, a perennial weed, field bindweed (*Convolvulus arvensis*) growing in the orchard middles over-took the weed plots in much of the trial. A second year of applications is necessary to determine if the treatments are effective because the weeds were well established in this orchard at the commencement of the trial.