

2007 Organic Herbicide Trial

Richard Smith, Farm Advisor

University of California Cooperative Extension, Monterey County

Methods: Conducted at the Hartnell East Campus in Salinas, CA. The soil type at the site is Chualar Loam soil with 2.2% organic matter and pH of 7.4. Beds were shaped and 0.75 inch of sprinkler irrigation water was applied to beds on May 14 and 21 to germinate and establish weed populations. Each plot was one 40-inch bed wide by 15 feet long and replicated four times in a randomized complete block design.

The trial was initiated on June 7, 2007 when a single, post-emergence application of each of the herbicide treatments was made. The weeds at the time of application were 3 weeks old and were generally small. All materials were applied with a CO₂ backpack sprayer at 30 psi using a single nozzle wand. The nozzle tip was a Teejet 8004E and two passes of the wand were made over each plot applying the equivalent of 40 GPA.

Weed control evaluations (percent control ratings 0 – 100 scale: 0 = no control to 100 = 100% weed control) were made on June 11, June 15 and June 21, which were 4, 8 and 14 days after treatment (DAT), respectively. Weed control ratings were made of the 5 major weeds present at the site and total weed control ratings were calculated from the average weed control of each species. The weed control assessment data were analyzed by using an analysis of variance and mean separation was Fishers Protected LSD (P=0.05).

Results: Increasing rates of Scythe improved weed control on all evaluation dates (Tables 1, 2 & 3). In particular higher rates of Scythe were needed to control burning nettle. Matran EC provided only partial control of the weeds at both the low and high rates tested. In particular it was weak on purslane, but moderately effective on the other weed species present. Racer provided moderate weed control at the lower rate, but effective in controlling all weed species at the higher rate. Natures Avenger provided good initial control but some of the weeds recovered from the application, and as a result, at 8 and 14 DAT it provided moderate weed control; it was particularly effective on purslane. Liberty was included as a chemical control for comparison purposes and was highly effective in controlling all weed species, especially at the 8 and 14 DAT evaluations.

Table 1. Weed control ratings (percent control: rating of 0 – 100) on June 11 (4 DAT)

| Material | Rate | Shepherd's Purse | Burning Nettle | Purslane | Malva | Hairy Nightshade | Total Weeds |
|---|----------------------------------|------------------|----------------|----------|-------|------------------|-------------|
| Scythe 4.2 EC | 3.0% v/v | 60.0 | 35.0 | 42.5 | 37.5 | 33.6 | 40.0 |
| Scythe 4.2 EC | 6.0% v/v | 85.0 | 60.0 | 68.7 | 100.0 | 63.6 | 69.0 |
| Scythe 4.2 EC | 9.0% v/v | 95.0 | 90.0 | 98.7 | 100.0 | 90.0 | 90.0 |
| Matran EC Natural Wet ¹ Sulfur | 5.0% v/v 0.25% v/v 5 lbs/A | 77.5 | 35.0 | 40.0 | 55.0 | 42.5 | 50.0 |
| Matran EC Natural Wet ¹ Sulfur | 8.0% v/v 0.25% v/v 5 lbs/A | 77.5 | 72.5 | 55.0 | 80.0 | 67.5 | 70.5 |
| Racer ² | 2.0% wt/v | 70.0 | 52.5 | 78.5 | 45.0 | 41.9 | 50.5 |
| Racer ² | 6.0% wt/v | 95.0 | 87.5 | 85.0 | 100.0 | 100.0 | 88.5 |
| Natures Avenger 23 EC | 25.0 % v/v | 90.0 | 75.0 | 92.5 | 80.0 | 85.0 | 84.5 |
| Liberty 1.67 EC | 0.5 lb a.i./A | 95.0 | 82.5 | 87.5 | 77.5 | 100.0 | 88.5 |
| Untreated | --- | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| LSD (0.05) | | 3.9 | 4.6 | 7.0 | 4.8 | 12.0 | 5.8 |

1- Natural wet is an organically acceptable spreader

Table 2. Weed control ratings (percent control: rating of 0 – 100) on June 15 (8 DAT)

| Material | Rate | Shepherd's Purse | Burning Nettle | Purslane | Malva | Hairy Nightshade | Total Weeds |
|---|----------------------------------|------------------|----------------|----------|-------|------------------|-------------|
| Scythe 4.2 EC | 3.0% v/v | 60.0 | 37.5 | 55.0 | 45.0 | 40.2 | 45.5 |
| Scythe 4.2 EC | 6.0% v/v | 87.5 | 80.0 | 87.5 | 100.0 | 92.5 | 89.5 |
| Scythe 4.2 EC | 9.0% v/v | 97.5 | 92.5 | 100.0 | 100.0 | 95.0 | 97.0 |
| Matran EC Natural Wet ¹ Sulfur | 5.0% v/v 0.25% v/v 5 lbs/A | 50.0 | 45.0 | 12.5 | 60.0 | 42.5 | 72.0 |
| Matran EC Natural Wet ¹ Sulfur | 8.0% v/v 0.25% v/v 5 lbs/A | 72.5 | 62.5 | 52.5 | 85.0 | 77.5 | 70.0 |
| Racer ² | 2.0% wt/v | 47.5 | 42.5 | 60.0 | 45.0 | 53.6 | 47.0 |
| Racer ² | 6.0% wt/v | 100.0 | 92.5 | 85.0 | 85.0 | 99.7 | 87.5 |
| Natures Avenger 23 EC | 25.0 % v/v | 27.5 | 42.5 | 75.0 | 67.5 | 47.5 | 52.0 |
| Liberty 1.67 EC | 0.5 lb a.i./A | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Untreated | --- | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| LSD (0.05) | | 3.9 | 3.6 | 6.2 | 7.1 | 5.5 | 4.3 |

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Table 3. Weed control ratings (percent control: rating of 0 – 100) on June 21 (14 DAT)

| Material | Rate | Shepherd's Purse | Burning Nettle | Purslane | Malva | Hairy Nightshade | Total Weeds |
|---|----------------------------------|------------------|----------------|----------|-------|------------------|-------------|
| Scythe 4.2 EC | 3.0% v/v | 45.0 | 35.0 | 47.5 | 45.0 | 60.0 | 46.5 |
| Scythe 4.2 EC | 6.0% v/v | 82.5 | 72.5 | 90.0 | 100.0 | 100.0 | 89.0 |
| Scythe 4.2 EC | 9.0% v/v | 95.0 | 92.5 | 97.5 | 100.0 | 97.5 | 96.5 |
| Matran EC Natural Wet ¹ Sulfur | 5.0% v/v 0.25% v/v 5 lbs/A | 55.0 | 50.0 | 15.0 | 55.0 | 60.0 | 47.0 |
| Matran EC Natural Wet ¹ Sulfur | 8.0% v/v 0.25% v/v 5 lbs/A | 55.0 | 65.0 | 25.0 | 82.5 | 55.0 | 56.5 |
| Racer ² | 2.0% wt/v | 27.5 | 40.0 | 57.5 | 37.5 | 72.5 | 47.0 |
| Racer ² | 6.0% wt/v | 97.5 | 92.5 | 92.5 | 100.0 | 100.0 | 96.5 |
| Natures Avenger 23 EC | 25.0 % v/v | 37.5 | 45.0 | 75.0 | 60.0 | 52.5 | 54.0 |
| Liberty 1.67 EC | 0.5 lb a.i./A | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Untreated | --- | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| LSD (0.05) | | 5.0 | 4.1 | 6.4 | 4.8 | 4.2 | 2.3 |

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Table 4. Summary of weed control ratings (percent control: rating of 0 – 100) on June 15 and total weeds on June 21

| Material | Rate | June 15 | | | | | | June 21 |
|---|----------------------------------|------------------|----------------|----------|-------|------------------|-------------|-------------|
| | | Shepherd's Purse | Burning Nettle | Purslane | Malva | Hairy Nightshade | Total Weeds | Total Weeds |
| Scythe 4.2 EC | 3.0% v/v | 60.0 | 37.5 | 55.0 | 45.0 | 40.2 | 45.5 | 46.5 |
| Scythe 4.2 EC | 6.0% v/v | 87.5 | 80.0 | 87.5 | 100.0 | 92.5 | 89.5 | 89.0 |
| Scythe 4.2 EC | 9.0% v/v | 97.5 | 92.5 | 100.0 | 100.0 | 95.0 | 97.0 | 96.5 |
| Matran EC Natural Wet ¹ Sulfur | 5.0% v/v 0.25% v/v 5 lbs/A | 50.0 | 45.0 | 12.5 | 60.0 | 42.5 | 72.0 | 47.0 |
| Matran EC Natural Wet ¹ Sulfur | 8.0% v/v 0.25% v/v 5 lbs/A | 72.5 | 62.5 | 52.5 | 85.0 | 77.5 | 70.0 | 56.5 |
| Racer ² | 2.0% wt/v | 47.5 | 42.5 | 60.0 | 45.0 | 53.6 | 47.0 | 47.0 |
| Racer ² | 6.0% wt/v | 100.0 | 92.5 | 85.0 | 85.0 | 99.7 | 87.5 | 96.5 |
| Natures Avenger 23 EC | 25.0 % v/v | 27.5 | 42.5 | 75.0 | 67.5 | 47.5 | 52.0 | 54.0 |
| Liberty 1.67 EC | 0.5 lb a.i./A | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Untreated | --- | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| LSD (0.05) | | 3.9 | 3.6 | 6.2 | 7.1 | 5.5 | 4.3 | 2.3 |

1- Natural Wet is an organically acceptable spreader