

Comparison of Sustainable and Conventional Weed Management Systems in Junebearing Strawberry Production

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Introduction

Few herbicides are registered for use in Junebearing matted-row strawberry culture. This study was conducted to develop alternative methods of weed management. The experiment evaluated the effects of two conventional and two alternative weed management systems on Junebearing matted-row strawberry production.

Materials and Methods

The experiment consisted of four weed management treatments in a randomized complete block design with four replications. The experimental plots were 30 ft × 30 ft. Plots contained seven rows of strawberries spaced 42 in. apart, center-to-center. Dormant crowns of Jewel Junebearing strawberries were planted on June 1, 2004. Experimental treatments were:

- 1) living mulch of sorghum-sudangrass hybrid,
- 2) compost + corn gluten meal + straw mulch,
- 3) methyl bromide fumigation + herbicide,
- 4) herbicide + no fumigation.

Results and Discussion

In 2006, total yield, marketable yield, and marketable berry number from plants in the fumigation treatment was greater than all other treatments (Table 1). Total yield from plants in the fumigation treatment was greater than all

other treatments by 41%, 11%, and 16% (living mulch, straw mulch, and herbicide treatments, respectively). Marketable yield from plants in the fumigation treatment was greater than all other treatments by 56%, 18%, and 26% (living mulch, straw mulch, and herbicide treatments, respectively). Marketable berry size of fruit was similar among all treatments.

There were no differences in percentage weed cover or dicot (broad leaf) weed biomass (in the strawberry row) among the four weed management treatments in July or August 2004 or in May or August 2005 and 2006 (data not presented). Weed number between strawberry rows was negligible in all treatments in all years. In May 2006, monocot (grass-like) weed biomass was greater in the living mulch treatment than all other treatments. Earthworm counts were not different among treatments in fall 2004 or 2005 (data not presented).

All weed management systems provided comparable weed control in all three years of 2004 to 2006. However, perennial weeds increased in one of the straw mulch treatment plots (hand-weeded only) in 2006. Plants in fumigated treatment plots produced more total and marketable strawberry yield in 2006 than the other treatment plots, but the difference in yield between the treatments was smaller than in 2005. This study will continue in 2007.

Table 1. Yield of Jewel Junebearing strawberry grown under four weed management treatments in 2006.

| Treatment ^z | Total yield (kg) | 2006 ^y | | |
|--------------------------|------------------|-----------------------|----------------------|---------------------------|
| | | Marketable yield (kg) | Marketable berry no. | Marketable berry size (g) |
| Herbicide | 13.4 b | 7.3 b | 23 b | 6.4 |
| Fumigation | 15.6 a | 9.2 a | 27 a | 6.6 |
| Living mulch | 11.1 c | 5.9 c | 16 c | 6.2 |
| Straw mulch | 14.1 b | 7.8 b | 20 b | 6.6 |
| LSD ^x (P<.05) | 1.4 | 1.2 | 3 | NS |

^zMeans of four replications. Each replication=berries from five linear feet of row from five, 30-ft rows.

^yMeans for marketable data=total yield – culls; for entire season.

^xLeast significant difference; values with the same letter are not different from each other. NS=not significant.