RESPONSE OF MAYGOLD PEACHES TO VARIOUS RATES AND APPLICATION DATES OF ALAR

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ABSTRACT

Maygold peaches were sprayed with concentrations of 0, 500, 1000, 2000 and 4000 ppm Alar at 5 day intervals until 30 days after full bloom. Sprays were applied to runoff with an orchard plot sprayer.

Fruit was harvested at shipping maturity and data were obtained on fruit firmness, weight, and diameter. Sprays of 1000 ppm applied 25 days after full bloom had the lowest firmness reading which indicated the most advanced maturity while 1000 ppm applied 20 days after full bloom resulted in the largest fruit. It appears that application of 1000 ppm Alar 20-25 days after full bloom would be optimum from the standpoint of uniformity of maturity.

INTRODUCTION

The cost and shortage of labor has prompted growers to seek ways of reducing the amount of labor required to produce peaches. The use of mechanical harvesters would require uniform crop maturity and uniform ripening would reduce the number of pickings. Also the possibility of advancing maturity on portions of an orchard in order to better utilize packing facilities would be helpful.

Alar (succinic acid 2,2-dimethyl hydrazide), a plant growth regulator referred to as SADH in this paper, has been reported to advance fruit maturity by as much as 7 days, the response varying with variety, application date and concentration (1, 3, 5). SADH has also increased uniformity of ripening (4, 6), and external red color without reducing vegetative growth (3). A reduction in oxidative browning of peach flesh with applications of SADH has been reported also (2). However, tip burn, chlorosis, shot-hole of leaves, and leaf drop have occurred at excessively high concentrations of 4000 and 8000 ppm (3).

The lack of data on the use of SADH in North Florida prompted this research.

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MATERIALS AND METHODS

Concentrations of 500, 1000, 2000 and 4000 ppm SADH were applied at 5, 10, 15, 20, 25, and 30 days after full bloom to 9-year-old 'Maygold' trees in a commercial orchard at Quincy, Florida. Single-tree plots replicated 3 times were used in this experiment. Full bloom was March 20, 1969, and plots were harvested on June 3, 1969.

SADH solutions were applied as foliar sprays to run-off using a portable pumping unit operating at 100 psi and applying 1.0-1.5 gallons of spray per tree depending upon tree size. All sprays were applied in the morning.

All treatments were harvested when the untreated check was at approximate shipping maturity. One bushel samples were taken from randomly selected limbs. From each 1 bushel sample, 30 fruit were randomly selected, weighed collectively, and firmness determined on 15 of these selected at random. Firmness was determined with a Magness Pressure Tester Model 30 A equipped with a 7/16 inch plunger.

All treatments were hand thinned prior to pit-hardening. A standard insect and disease spray program was followed throughout the season consisting primarily of parathion and sulfur and sulfur alone near harvest.

RESULTS AND DISCUSSION

Application of SADH at any of the concentrations or application dates significantly lowered the fruit firmness except for 500 ppm applied 5 and 25 days after full bloom (Table 1). The firmness value was used as an index of fruit maturity, the lower the firmness value the more advanced the fruit maturity. The treatment of 1000 ppm SADH applied 25 days after full bloom produced the softest fruit, however, this was not significantly different from the other treatments except as noted previously.

In contrast to the influence that SADH has on fruit maturity, no significant differences in fruit weight occurred (Table 2). The weights ranged from 75.7 g to 108.5 g with the check being 82.9 g. When the fruit weight was converted to fruit diameter using a standard curve based on fruit weight, the difference in diameter between extremes was only 1.2 cm.

Table 1. Effect of SADH on firmness, kilograms, of Maygold peaches.

Application Date[1]	Concentration, ppm 500	1000	2000	4000
5	7.4	4.5*	4.9*	4.8*
10	4.8*[2]	4.4*	3.8*	3.3*
15	3.8*	3.2*	4.7*	3.7*
20	4.9*	4.7*	3.3*	4.1*
25	5.4	2.6	3.7*	4.2*
30	4.0*	4.1*	3.1*	3.3*

Untreated check = 8.0

[1] Days after full bloom.

[2] Significant at the 1% level.

Table 2. Effect of SADH on fruit weight, grams, of Maygold peaches.

Application Date[1]	Concentration, ppm[2] 500	1000	2000	4000
5	75.7	82.3	77.0	86.4
10	92.6	87.3	79.4	91.1
15	97.5	94.4	100.5	79.8
20	76.1	108.5	70.8	86.0
25	95.8	94.9	103.7	95.3
30	91.7	87.9	86.0	107.8

Untreated check = 82.9

[1] Days after full bloom.

[2] No significant difference in fruit weight at the 1% level.

No visible retardation of vegetative growth was observed although treatments applied 5 and 10 days after full bloom appeared to produce darker green foliage than did applications applied later. Phytotoxic symptoms were not observed on any of the trees.

The use of SADH in commercial peach orchards in north Florida could assist the grower in several ways. First, it would allow the grower to have a more uniform crop and thus fewer pickings, and secondly, it would allow the grower to treat only a portion of an orchard thus lengthening the harvest season. A longer harvest season would require fewer pickers and less packinghouse capacity. Overall, the use of SADH would tend to reduce the total cost of peach production in North Florida.

Realizing that this data represents only 1 experiment but also considering the vast amount of research conducted in the Southeast on SADH, it is suggested that growers use SADH at concentrations of 1000 ppm and apply as full coverage spray 15-25 days after full bloom.

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