

# Effect of SADH Treatments on the Response of 'McIntosh' Apple Trees to Chemical Thinners<sup>1</sup>

F. W. Southwick, D. W. Greene and W. J. Lord<sup>2</sup>  
*University of Massachusetts, Amherst*

**Abstract.** Previous season application of succinic acid-2,2-dimethylhydrazide (SADH) increased fruit set on 'McIntosh' apple trees but had no influence on the thinning ability of naphthaleneacetic acid (NAA), naphthaleneacetamide (NAAM), carbaryl (Sevin) or the combination of NAA plus carbaryl.

In a recent report (4), it was shown that mid-August treatments of SADH to 'McIntosh' apple trees at 2000 ppm may significantly retard and reduce young fruit abscission the following year. Limited observations from a related experiment and by growers and county agents (1, 2, 3) suggested that carbaryl, NAA or NAAM may not thin effectively the year following SADH application. Consequently, an experiment was designed to determine whether an increased fruit set resulting from a previous season's SADH treatment would reduce the thinning capability of these chemicals.

Four limbs were selected on each of 28 mature trees. Two limbs were sprayed with 2000 ppm SADH in mid-August, 1971, and 2 were left unsprayed.

Four chemical thinning treatments were applied in 1972 (Table 1). Each tree received a single treatment. One SADH treated limb and one unsprayed limb on each tree received a thinning treatment. The remaining SADH-treated

limb and the unsprayed limb on each tree served as the chemical thinning controls. Each thinning treatment was replicated on 7 trees. Bloom and fruit set records were obtained from the 4 tagged limbs on each tree.

No significant differences in bloom occurred in 1972 between limbs sprayed with SADH in 1971 and unsprayed limbs within each thinning treatment and therefore no data are presented.

Fruit set counts made 11 days after petal-fall (PF + 11), 6 days prior to the application of the chemical thinners in 1972, showed that with the exception of one treatment (SADH + NAAM control), the application of SADH in 1971 retarded young fruit abscission in

1972. Nevertheless, the application of SADH in 1971 had no influence on the ability of any of the chemical thinners to reduce fruit set. NAA and NAA plus carbaryl seriously overthinned while the milder materials, carbaryl and NAAM resulted in very satisfactory thinning. Also, except in one case (SADH + NAAM control) the carry-over effect of SADH at PF + 11 on fruit set was no longer evident at completion of the June drop.

## Literature Cited

1. Dellamano, F. 1970. 1968 and 1969 Alar results in central New York. *Proc. New York State Hort. Soc.* 115:187.
2. Henion, D. 1970. Our experience with Alar in 1968 and 1969. *Proc. New York State Hort. Soc.* 115:190.
3. McNicholas, F. Experience with Alar in the Champlain Valley. *Proc. New York State Hort. Soc.* 115:191-192.
4. Southwick, F. W., W. J. Lord, D. W. Greene, L. G. Cromack, and M. R. Shipway. 1971. The carryover effect of summer applications of Alar on the flowering, seed development, fruiting, abscission and flesh firmness of McIntosh apples. *Proc. Mass. Fruit Growers' Assoc.* 77:89-94.

Table 1. Effect of SADH (2000 ppm) applied in 1971 on early fruit set in 1972 and on fruit set after thinning materials applied in 1972.<sup>z,y</sup>

Treatment		Thinning materials, 1972			
1971	1972	Carbaryl	NAAM	NAA	NAA + Carbaryl
No. fruits/100 blossoming clusters before thinning <sup>x</sup>					
None	None	125.8 ab	112.8 a	114.0 a	107.0 a
None	Thinned	114.7 a	138.8 ab	115.7 a	85.0 a
SADH	None	203.1 c	132.6 ab	158.5 b	140.7 b
SADH	Thinned	158.5 bc	182.1 b	185.6 b	140.0 b
No. fruits/100 blossoming clusters after thinning <sup>w</sup>					
None	None	49.4 b	39.8 b	48.7 b	43.9 b
None	Thinned	28.0 a	24.6 a	8.5 a	1.2 a
SADH	None	65.8 b	53.1 c	60.7 b	51.6 b
SADH	Thinned	27.9 a	21.8 a	4.9 a	1.6 a

<sup>z</sup>Applied 17 days after petal fall: Carbaryl [227 g (50% WP) / 378.5 liters]; NAAM (50 ppm); NAA (10 ppm).

<sup>y</sup>Mean separation in columns within dates by Duncan's multiple range test.

<sup>x</sup>Counts made at petal fall + 11 days.

<sup>w</sup>Counts made July 19, 1972, after June drop.

<sup>1</sup>Received for publication February 15, 1973.

<sup>2</sup>Department of Plant and Soil Sciences.

# Preharvest Drop of 'Stayman' Apples as Influenced by SADH in Dilute and Concentrate Form<sup>1</sup>

Benjamin L. Rogers and Elroy R. Krestensen<sup>2</sup>  
*University of Maryland Fruit Laboratory,  
 Hancock*

**Abstract.** Concentrate spray equipment which had given good pest control in apple orchards when sprays were applied up to 33x, failed to provide adequate preharvest drop control on 'Stayman' apple trees when

succinic acid 2,2-dimethylhydrazide (SADH) was applied at 3x or higher approximately 60 days prior to harvest.

and concentrate SADH<sup>3</sup> sprays applied in August for controlling preharvest drop of vigorous, mature 'Stayman' apple trees.

Concentrate applications were applied with spray machines which had been used quite successfully in disease and insect control in experimental work on apples using regular pesticides (4). All sprayers were calibrated on the basis of 3,739 liters per ha (400 gal per acre) of dilute spray. At 2-, 3-, 10- and 33x concentrates, 1,870, 1,021, 308 and 93 liters per ha (200, 109, 33 and 10 gal per acre), respectively, were applied. Dilute SADH was applied by hand gun at 1,000 ppm (1 lb. per 100 gal of 85% product). We mixed 2-, 3-, 10- and 33x concentrates at .24, .36, 1.2 and 3.96 kg

The effects of dilute applications of SADH on apple preharvest drop, fruit set, fruit shape, yield and fruit quality have been reported (1, 3, 5, 6, 8, 9). Virtually nothing has been reported on concentrate SADH sprays. This paper deals with the effectiveness of dilute

<sup>3</sup>Supplied as Alar 85 through courtesy of Uniroyal Chemical Company, Naugatuck, Connecticut.

<sup>1</sup>Received for publication March 30, 1973. Scientific Article No. A-1888. Contribution No. 4804. Maryland Agricultural Experiment Station.

<sup>2</sup>Departments of Horticulture and Entomology, respectively.