

# Do Bloom Applications of Apple Fungicides Affect Fruit Set?

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We reported previously [Fruit Notes 56(4):18-19, 1991] that researchers in Great Britain found that the fungicide captan may be toxic to apple pollen, and thereby reduce fruit set. Since then, a test in Virginia has shown similar reductions in fruit set, apparently caused by captan applied at bloom. Furthermore, growers have on occasion speculated that sterol-inhibiting fungicides reduce fruit set. In the work reported here, we asked two questions. First, does captan or the sterol-inhibiting fungicide, fenarimol, applied at bloom reduce fruit set? Second, does captan or fenarimol interact with oil or copper to reduce fruit set?

In 1992, mature McIntosh/M.7 apple trees were selected at the University of Massachusetts Horticultural Research Center in Belchertown. In the first experiment, six limbs of similar blossom density were selected per tree. Three of the limbs were treated with copper hydroxide (Kocide 50 WP, 2 lbs/100 gal.) at tight cluster. Each of the three limbs treated with copper hydroxide and each of the three not treated with it were sprayed with captan (Captan 50 WP, 2 lbs/100 gal.) or fenarimol (Rubigan 1.6 EC, 12 oz./100 gal.) or left untreated. A second experiment was identical except that oil (1 gal./100 gal.) applied at tight cluster replaced the copper hydroxide treatment. For both experiments, fungicide applications began when the primary blossoms were expanded completely, and captan and fenarimol applications continued at seven- or ten-day intervals, respectively, until mid-June. Treatments were applied to the drip point using a handgun. After June drop was complete, final

fruit set was counted on each limb.

In the first year of study, captan and fenarimol, with or without oil or copper hydroxide application, did not

Table 1. Fruit set following various treatments in 1992 and 1994. Within an experiment, no significant differences were found among treatment means.

Treatment	Fruit set (number/cm <sup>2</sup> )
<i>1992, Experiment 1</i>	
Check	3.8
Captan	5.7
Fenarimol	6.7
Copper hydroxide	5.7
Copper hydroxide plus captan	5.8
Copper hydroxide plus fenarimol	5.1
<i>1992, Experiment 2</i>	
Check	5.8
Captan	8.3
Fenarimol	6.8
Oil	4.9
Oil plus captan	5.3
Oil plus fenarimol	4.6
<i>1994 Experiment</i>	
Check	4.2
Captan at king bloom	5.3
Captan at king bloom + 1 day	5.6
Captan at king bloom + 2 days	4.4

alter fruit set significantly (Table 1). The results from Great Britain were very specific in terms of time of sensitivity to captan, possibly explaining some of the lack of effect that we observed.

In 1994, we conducted an additional experiment to study the specific timing of captan application. Mature Marshall McIntosh/M.26 trees were selected and blocked according to blossom density. Within each block, one tree was treated with captan (Captan 50 WP, 2 lbs/100 gal.) when king blossoms were expanded fully, one was treated one day later, and one was treated two days later. A fourth tree was left untreated. Other

than these captan treatments at bloom, all trees were managed similarly. After June drop was complete, final fruit set was counted on two limbs per tree.

The different timings of captan application did not result in any significant reduction in fruit set (Table 1). Therefore, none of our experiments confirmed the results of studies conducted in Great Britain and Virginia. We can only speculate that our growing conditions in 1992 and 1994 did not interact with captan in a way that caused reduced fruit set. Clearly, New England apple growers should not be overly concerned that captan will reduce fruit set on McIntosh.



## Publications Available

Two publications recently released by Agriculture and Agri-Food Canada should be of interest to many readers of *Fruit Notes*. One is titled "Techniques for controlled atmosphere storage of fruits and vegetables" (Research Branch Technical Bulletin 1993-18E), and it is a brief general review of the techniques currently in use for CA storage. The second is titled "Postharvest disorders of apples and pears" (Publication 1737/E), and it is a detailed review and update on postharvest physiological disorders of these fruit, including numerous photographs of the disorders. Both of these publications can be obtained without cost by sending your request to:

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