Do Surfactants Affect Response to Chemical Thinners?

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As noted in an earlier article, chemical thinning is one of the most difficult orchard practices. At various times, we have recommended the use of surfactants and oil in the chemical thinning treatments, and at other times we have not. In 2005, we conducted a study with the objective of comparing thinning effectiveness with a range of additives.

Thirty mature Gatzke McIntosh at University of Massachusetts Cold Spring Orchard Research & Education Center were partitioned into six blocks based on blossom density. Within each block, the five trees were randomly allocated among five thinning treatments. One tree served as an untreated control. The other four were treated (June 9, fruit diameter 9.9 mm) with NAA (7 ppm) + carbaryl (1.25 lbs Sevin 80S/100 gallons): one without any additional surfactant, one with Regulaid (1 pint/100 gallons), one with Silwet (6.4 ounces/100 gallons), and one with Ultrafine Spray Oil (1 quart/100 gallons). Tree-row volume was calculated to require 125 gallons for a dilute application, and all treatments were applied at dilute rates. Final fruit set was assessed in August and return bloom was counted in late April, 2006.

Thinning treatments resulted in significant reductions in fruit set and significant increases in return bloom, but there were no significant differences among thinning treatments with or without the various surfactants (Table 1). These data suggest that surfactant in an NAA plus carbaryl treatment does not provide a benefit, contrary to our earlier assumptions.

Table 1.   Effects of NAA plus carbaryl, with or without additional surfactants, on fruit set and return bloom of Gatzke McIntosh.*

Treatment	Fruit set, 2005 (no./cm^2 limb cross-sectional area)	Return bloom, 2006 (no. of clusters/cm^2 limb cross-sectional area)
Untreated control	9.2 a	8.8 b
NAA+carbaryl	6.6 b	13.5 a
NAA+carbaryl+Regulaid	5.7 b	13.2 a
NAA+carbaryl+Silwet	6.8 b	15.3 a
NAA+carbaryl+oil	5.9 b	13.1 a

*Means within columns not followed by the same letter are significantly different at odds of 19 to 1.

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