

Precision Thinning of Gala and Honeycrisp using the Carbohydrate and Fruit Growth Rate Models

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During the chemical thinning period of 2013 (May) we organized a statewide group effort to manage chemical thinning of Gala and Honeycrisp more precisely. We enlisted the cooperation of 19 growers and 2 private consultants along with the extension field staff and faculty to manage fruit chemical thinning according to the precision crop load management protocol which we have developed. The following persons participated in this group precision thinning effort.

Table 1. Participants in the 2013 Precision Thinning Group Effort.

Person	Location	Variety
Andrea Rufato (visiting scientist)	Geneva	Gala
Craig Kahlke/Pete Russell	Niagara	Gala
Craig Kahlke/Bill Gerling	Orleans	Honeycrisp
Mario Miranda/Jeff Smith	Orleans	Gala
Jim Misiti/Eric Brown	Orleans	Gala and Honeycrisp
Jim Misiti/Patrick Woodworth	Orleans	Gala
Rod Farrow	Orleans	Gala and Honeycrisp
Jim Eve	Wayne	Gala
JD Fowler	Wayne	Gala and Honeycrisp
Todd Furber	Wayne	Gala
Scott Vandewalle	Wayne	Honeycrisp
Steve Hoying/Joe Porgiglia	Ulster	Gala
Steve Hoying	Ulster	Gala
Mike Fargione/Bob Fix	Columbia	Gala
Jay Tuhill	Clinton	Honeycrisp
Seth Forrence	Clinton	Honeycrisp
Tom Everett	Clinton	Honeycrisp
William Abbott	Onondaga	Gala and Honeycrisp
Mike Biltonen	Ontario	Gala and Honeycrisp
Rick Reisinger	Schyler	Gala and Honeycrisp
Jon Clements	Massachussetts	Honeycrisp
Win Cowgill	New Jersey	Gala
Barney Hodges	Vermont	Honeycrisp

Methods

At each location the cooperator counted the number of flower buds on 5 representative trees at pink and then calculated the target number of fruits per tree needed to achieve a desired high yield. The cooperators then tagged 17 representative spurs per tree on the 5 test trees. At petal fall each fruit in each cluster was marked with a number

or dot to identify its position in the cluster. After the petal fall spray the fruit diameter of each fruit in the 17 tagged clusters on each of the 5 trees (425 fruits) was measured 3 days after spraying and then again 7 or 8 days after spraying. These diameter data were sent electronically to Terence Robinson who analyzed the data with the fruit growth rate model and within 24 hours sent the cooperators the results with his recommendation for the next spray. The cooperators then sprayed the test blocks sequentially with one of two spray protocols (bloom + PT +12mm +18mm sprays or PF +12mm+18mm sprays). After each spray the cooperators measured fruit diameters at 3 and 7 days after spraying and the data was analyzed by Terence Robinson and a new recommendation was sent back to the cooperators.

Results

The 2013 season brought an intense bloom in most of NY State resulting from the low crop in 2012. In general it was difficult to thin adequately in most Gala and Honeycrisp orchards. Multiple thinning sprays gave better results than just one spray with the hard to thin varieties.

At each location participating in the precision thinning group effort the fruit diameter measurements gave good estimates of the thinning effect of the previous thinning spray. The real-time recommendations allowed cooperating growers to make real time decisions about the next spray. That information combined with the results of the carbohydrate model gave much greater confidence concerning the timing and dosage of thinning sprays in 2013.

At almost all locations the final cropload of Gala was still too high despite 3 or 4 sprays and this required significant hand thinning during the summer. The precision protocol gave many growers confidence to keep applying more sprays with then gave results closer to the target and resulted in less hand thinning.

To extend the benefits of the precision thinning group effort, we published summaries of the results in the WNY and ENY newsletters with area wide recommendations on thinning. We recommended several sequential sprays for Gala which was beneficial to most growers. At one particular point in the season, warm weather caused us to recommend lower rates out of fear of overthinning, however even full rates did not do enough thinning in that period.

Precision thinning measurements at Geneva, indicated that bloom sprays with either Promalin, Maxcel or ATS were helpful in reducing crop load compared starting thinning at PF. Although bloom thinning carries risks, in 2013 it was a valuable tool and should be considered in other high crop years.

Table 1. Effect of Precision Thinning on Fruit Number per Tree of Gala/M.9 apple trees at Geneva, NY 2013.

Treatment	Initial Fruit Number	After Bloom Spray	After PF Spray	After 10mm Spray	After 18mm Spray	After At 22mm	Target Fruit Number
Untreated Control	4430	1536	1217	1299	980	1288	335
Promalin then 3 Maxcel/Sevin	4430	1524	992	933	756	673	335
Maxcel then 3 Maxcel/Sevin	4430	1051	992	981	579	567	335

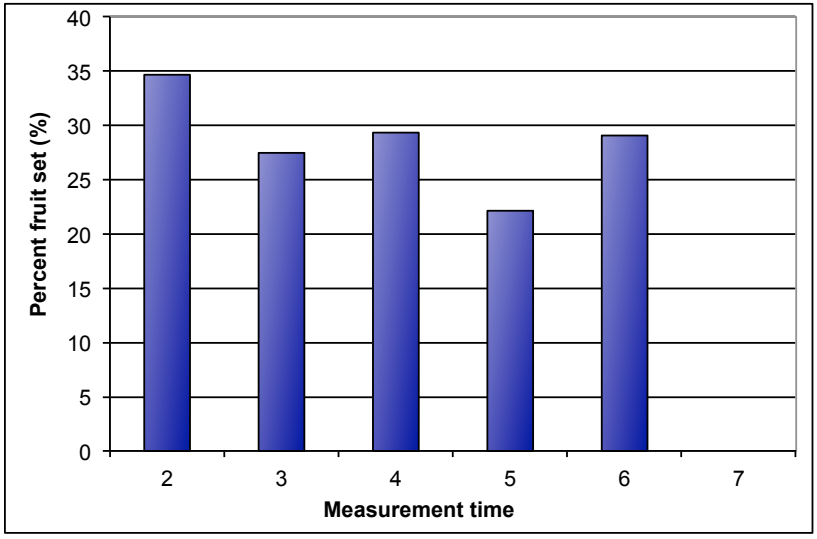


Fig. 1. Gala fruit set when trees were untreated in 2013

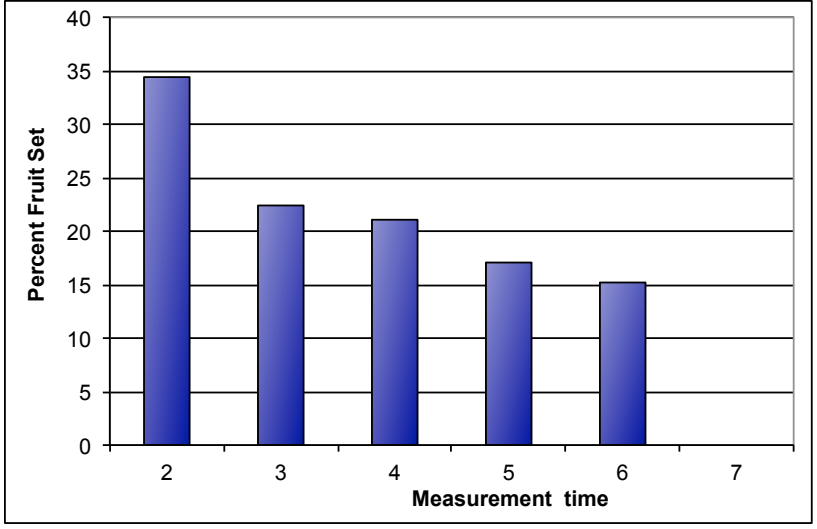


Fig. 2. Gala fruit set when trees were treated with Promalin then 3 Maxcel/Sevin sprays 2013

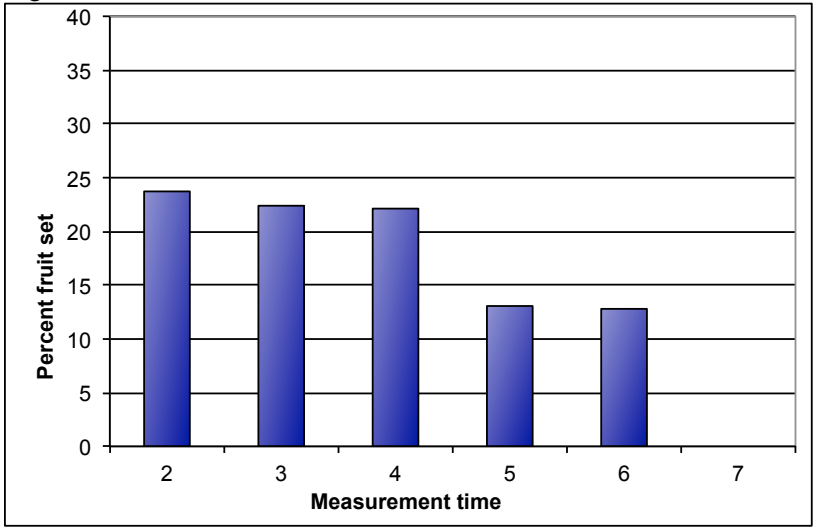


Fig. 3. Gala fruit set when trees were treated with Maxcel then 3 Maxcel/Sevin Sprays 2013