

Comparing the Malusim app to the 'Schwallier' and 'Ferri' versions of the fruitlet growth rate model to predict fruit set in Gala, Honeycrisp, and Pazazz® apples

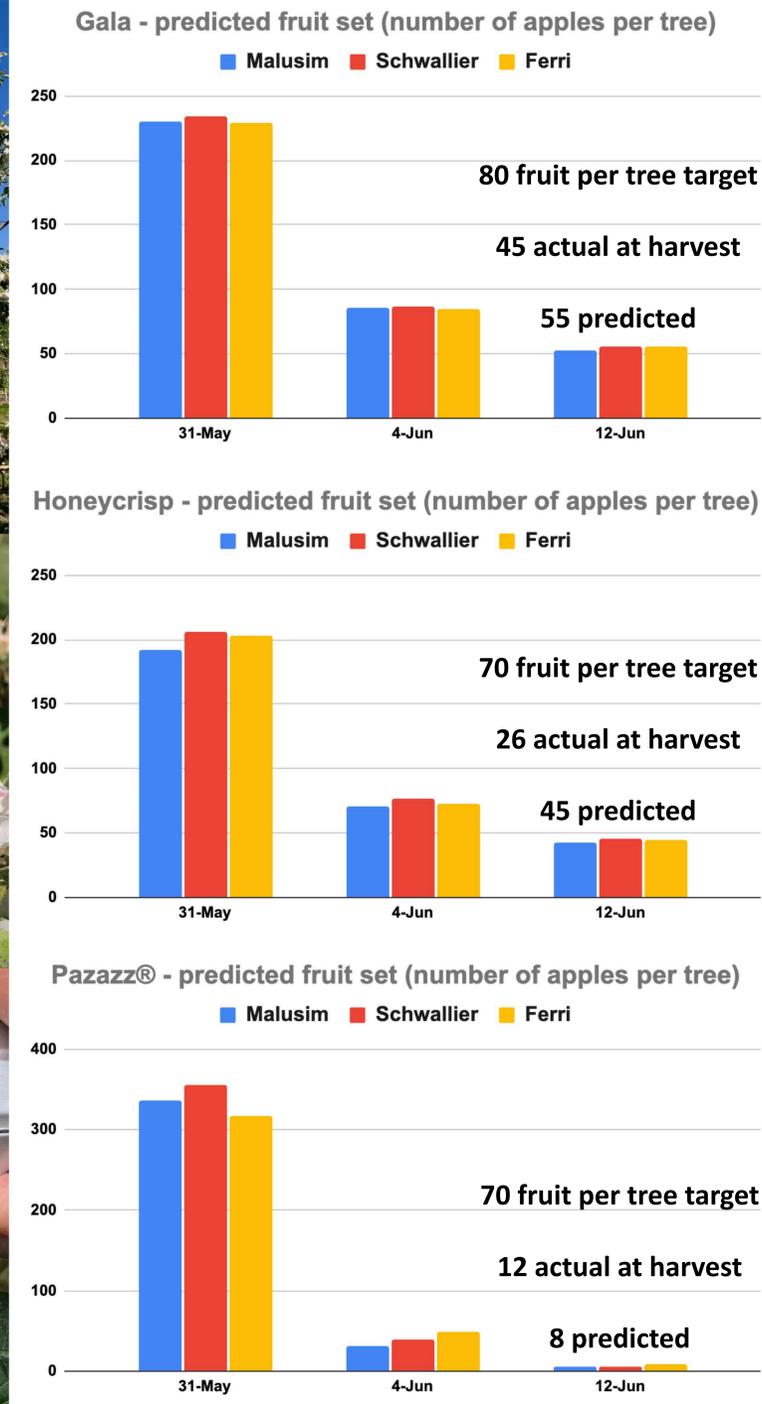
Jon Clements
UMass Amherst

INTRODUCTION

Chemical thinning sprays are the most trying yet important decisions an orchardist can make. Factors that influence chemical thinner application include weather, carbohydrate balance, and fruitlet growth rate. The Malusim app (malusim.org) uses the fruitlet growth rate and carbohydrate balance models to better inform chemical thinning decisions. Excel spreadsheets are also available for inputting fruit measurements and calculating fruit set.

METHOD

Five tall-spindle apple trees in each of three varieties – Gala, Honeycrisp, and Pazazz® – were selected. Bloom (total number of flower clusters) in each of the five trees was counted to get an estimate of potential fruit set, and fourteen flower/fruit clusters were selected and tagged for fruitlet growth measurements. Fruitlet measurements were started on 27-May, and then made on 31-May, 4-June, and 12-June. Fruitlet measurements were entered and results calculated in Malusim, and the Schwallier (apples.msu.edu) and Ferri XLS spreadsheets/apps. Output included percent fruit predicted to set and fruit numbers per tree on each measurement date so that the need for a chemical thinning spray could be better assessed.



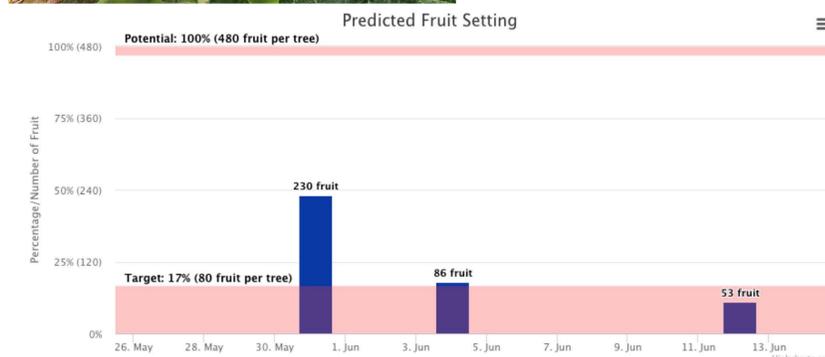
RESULTS

For each variety, all three predictions were similar as charted on the left. Therefore, any of the three apps could be used to predict fruit set. In the end, however, fruit set was less than predicted by the apps except for Pazazz®. And actual fruit number at harvest was less than the target number of fruit per tree. A severe carbohydrate deficit at the time of chemical thinner application – as indicated by the Carbohydrate Balance in Malusim depicted below – is the likely culprit.



DISCUSSION

Although the fruitlet growth rate model is a useful tool to help guide thinning decisions, setting it up and measuring fruits is an onerous process and has not been widely adopted by growers. What's needed is a faster and simpler method of assessing fruit growth rate during the chemical thinning window. To that end we are investigating, and in collaboration with Carnegie Mellon University, computer imaging and learning to visualize and calculate fruit growth rate. Early results are promising.



How to use the Malusim app in jmcextman.blogspot.com

