

A Growers Guide to Predicting the Response to a Chemical Thinner Application

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To be used with Predicting Fruit Set spreadsheet:

<http://www.umass.edu/fruitadvisor/2008/predictfruitset2008.xls>

The strategy for regulating crop load on apples trees has evolved over time. We frequently recommend at least two thinner applications. The procedure outlined below will allow orchardists to assess the effectiveness of a thinner, under most circumstances, within 7 days of the application of the thinner.

1. Assessment of Bloom and Selection of a Target Final Set

Select and mark 7 trees or 2 limbs on 7 trees that are representative of the block of trees where you want to make the thinning assessment. At the pink stage of flower development count all blossom clusters on the tree or limbs and record the number. At the same time decide the number of fruit that you would like to harvest from that tree or branch portion. Average the bloom and the final desired crop load. For example, if you have an average of 200 blossom clusters and you want 100 fruit on the tree or branch, then you want 1 fruit for every 2 spurs.

2. Selecting and Tagging Fruit

Wait until fruit reach at least 6 to 7 mm in size and you can see some fruit starting to size. Select and tag 15 spurs on 7 representative trees in the block. In selecting these spurs distribute the tags so that they represent the location of flowering spurs on a tree. What you measure on these spurs will form the basis for what you predict will happen in the whole orchard. Just prior to making a thinner application number all fruit on a spur using an indelible marker, measure fruit at the equator at the location where the fruit was marked and then record this diameter. Continue marking and measure all fruit on the spurs that have been selected. All data should be entered into a spreadsheet such as Excel. The order in which the data is entered should be: tree #1 (replication #1) spur #1 and then the diameter of all of the fruit in that spur. A data set of how to set up a data sheet is attached or it has been sent to you. Apply the thinner.

3. Measuring the Fruit After Thinner Application

It generally requires about 4 days (3 to 5 days depending upon temperature) from the time of thinner application for the thinning spray to start to slow fruit growth. Since this process is temperature dependent it may be best to wait until fruit have been exposed to 40 to 50 heating degree units (base 50° F). Measure all fruit in the tagged clusters at

the point they were previously measured and record fruit diameter. At 7 days after the initial application or when the treated fruit has been exposed to 130 to 140 heating degree units (Base 50° F), measure all fruit on the tagged spurs as done previously and record in the spreadsheet. The prediction is based upon the growth rate of fruit that occur between 4 and 7 days after thinner application.

We are suggesting on a trial basis a modification this of the procedure outlined above. In the revised procedure you will do the set up at 3 to 4 days after thinner application rather than just prior to thinner application. The initial measurement of fruit should wait until the treated trees have been exposed to at least 40 to 50 heating degree unit. The final measurement should be no earlier than 7 days after application and when 130 to 140 heating degree units have been completed. The advantage of this revised procedure is that it may not be necessary to measure as many fruit because some will have naturally stopped growing and only two rather than three measurements would be required. We have not tested this approach but the same criteria are used for both; fruit growth between 4 and 7 days after thinner application.

Cut and paste the data into the spreadsheet in the input page. Fill in the dates of measuring of the fruit, block treated and the thinning treatment used. Open the Summary sheet and click on the button “Run Calculator”. All calculations will be made in a matter of a few seconds. Push the button “Print Summary Page” and this will give you a printed sheet from which to work.

4. Interpreting the Results

At bloom time you counted bloom and made a decision about how many fruit that you would like to harvest from the selected trees or limbs. Based upon the counting of the number of blossom clusters and your assessment that you wanted one fruit for each two blossom clusters. In the set up instructions we suggested tagging and measuring 105 spurs. The Excel spreadsheet is programmed to base all calculations on 105 spurs. Therefore, based upon the earlier assessment you want at the end of June drop to have 52 to 53 fruit. Assume on the spurs that you tagged, there were 430 developing fruit. Therefore to get your ideal crop load you would make the calculations $50/430 \times 100 = 12.1\%$ the percent set of tagged fruit that will give you an ideal final crop load. If set is much higher than the predicted 12.1 % then an additional thinning spray is warranted.

This is a weather driven model. Therefore, we suggest that you record at least maximum and minimum daily temperatures during the period from thinner application to 14 days after application. If you have the capability to collect solar radiation, that may be very useful information also.

This is an initial set of instructions. It is also our first attempt to extrapolate many years of research to a level that might be helpful to growers. Your participation in this trial run is most appreciated. If you have questions please get back to me and I will try to clarify gray or unclear areas.