Welcome to the 2019 In-depth School **Precision Crop Load Management**

Sponsored by the Cornell Fruit Program Work Team

Objectives of the School

- 1. Help apple growers understand the potential income from each orchard block and how to use precision crop load management to capture that potential.
- 2. Generate discussion among eastern apple growers about the current and future technologies to precisely manage crop load to improve profitability.
- 3. Give input to a 2020 federal SCRI grant proposal to fund a national project on precision crop load management.



Precision Crop Load Management

Precision crop load management is a management philosophy that seeks to the number of apples on each tree in a precise manner to obtain the best possible economic outcome.

With apple there are 4 management activities that influence fruit number per tree.

-pruning,-chemical thinning,-hand thinning-return bloom treatments.



Basic Principles of Precision Orchard Management

- 1. Measure something and acquire data
- 2. Make management decision based on the data.
- Some things, which must be measured to increase precision, can be done with little effort by the grower but other things will require significant effort by the grower.
- There will be a cost in time money and effort. Nothing is free.
- However, the returns for the extra effort can be very large.



Precision Crop Load Management may Help Capture Profits We Don't Know We are Losing

An important question to ask is:

- What potential income are we losing or not capturing by not managing crop load more precisely.
- How much money are we leaving on the table and can precision crop load management help capture that money?



The Counter Balancing Responses to Crop Load Adjustment

- As crop load is reduced by thinning or by pruning, fruit size of the remaining fruits increases.
- As crop load is reduced by thinning or by pruning, yield is also reduced.



In most years there is a consistent strong relationship between fruit size and crop load that is defined by the climate.

• Years with stress have a different relationship

Relationship between Fruit Size and Cropload in 5 Gala Orchards.







The Optimum Crop Load is When Crop Value is Maximized

The best way to evaluate the benefits or costs of thinning is to convert yield/acre to crop value/acre taking into consideration fruit size.



There is a Huge Financial Cost of Over Thinning



Is precision crop load management worth the effort

- There will be a cost in time money and effort.
- However, the returns for the extra effort can be very large.

With Gala – mostly bags returns \$11,000 per acre
– mostly 88's returns \$20,000 per acre
With Honecrisp – mostly 100's returns \$24,000 per acre
– mostly 72's returns \$32,000 per acre





