



Stop Drop Options
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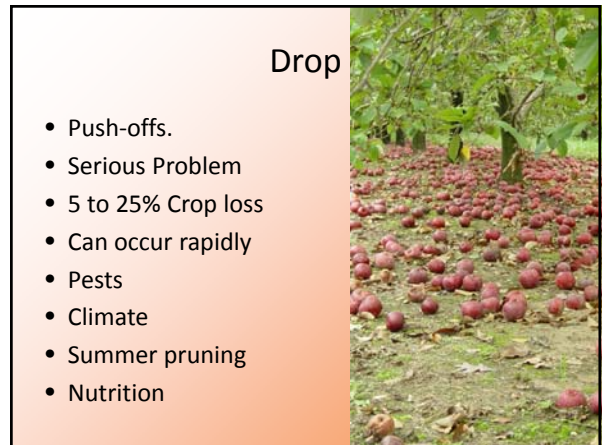
Thanks to:
 Michigan Apple Research Committee
 Michigan State Horticulture Society
 Valent BioSciences, Valent USA
 AmVac

MICHIGAN STATE UNIVERSITY
 EXTENSION
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STOP Drop Options

- NAA
- ReTain
- ReTain + NAA
- Harvista



Drop

- Push-offs.
- Serious Problem
- 5 to 25% Crop loss
- Can occur rapidly
- Pests
- Climate
- Summer pruning
- Nutrition

Varieties

- McIntosh
- Honeycrisp
- Reds
- Goldens
- Idared
- Macoun
- Rome

Reason to Use

- Hold for maturity
- Hold for quality
- Hold for pickers or extend U-pick
- Survive predicted storm
- Hold because of heavy crop.

NAA

- Apply as 1st fruit drop
- Uniform coverage, dilute
- Apply with warm temps
- 2-3 days to take effect
- Lasts about 7 days
- Reapply in 7 days

NAA

- Inhibits abscission
- Turns on ethylene
- Fruit will continue to ripen
- Higher rates and multiple applications will increase ripening

ReTain
AVG, aminoethoxyvinylglycine
An ethylene biosynthesis inhibitor.

- Manage Harvest
- Blocks Ethylene
- Delays Maturity
- **Time Dependent**
- **Rate Dependent**
- **Variety Sensitivity**

ReTain

- Improve fruit quality, firmness, shelf life
- Increase packing, processing packout yield,
- Reduce drop,
- Reduce greasiness,
- Reduce watercore,
- Reduce cracking,
- Deliver higher quality to consumers,
- Increase repeat demand value of your crop.
- Longer effect on stop drop

ReTain

ReTain has many effects on apples.

- Slows fruit **growth**, but overall increases fruit size.
- Improves quality.
- Delays red **color** development, but returns.
- Late application, less color impact.
- Apply multiple times.
- Apply split applications.

2010 – Imperial Gala
Red Color

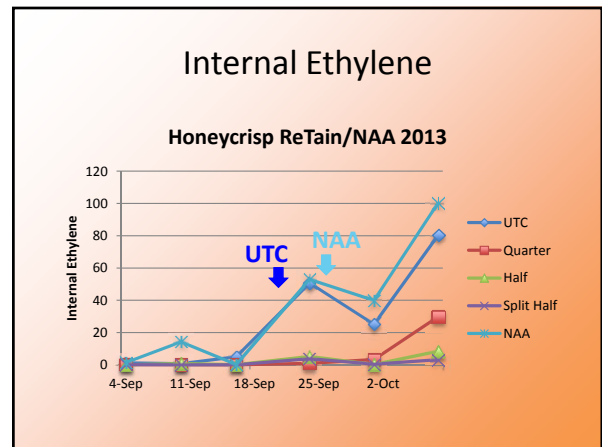
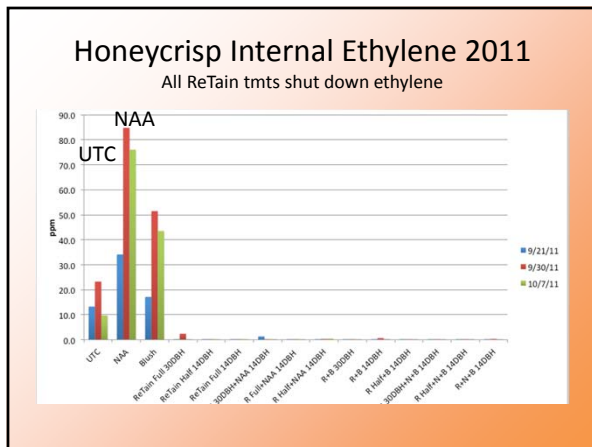
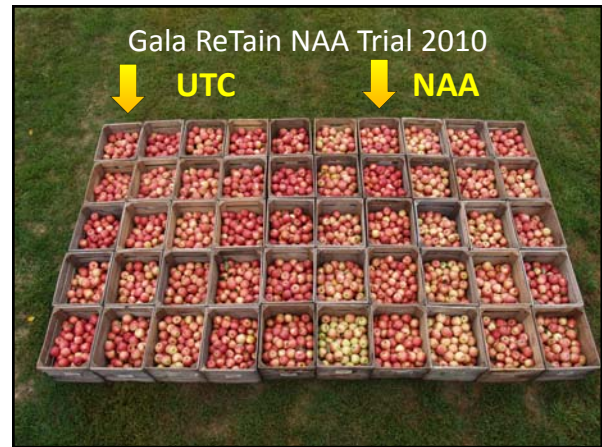
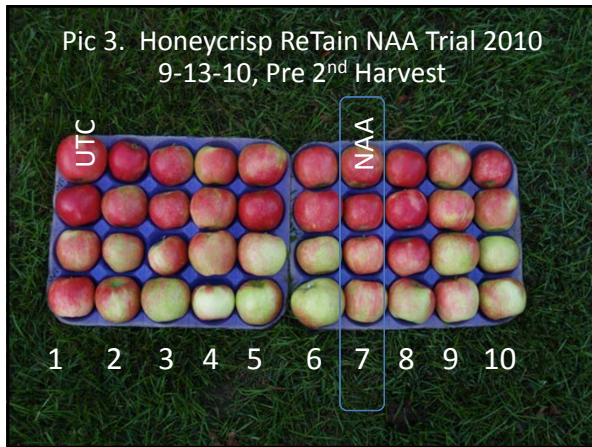
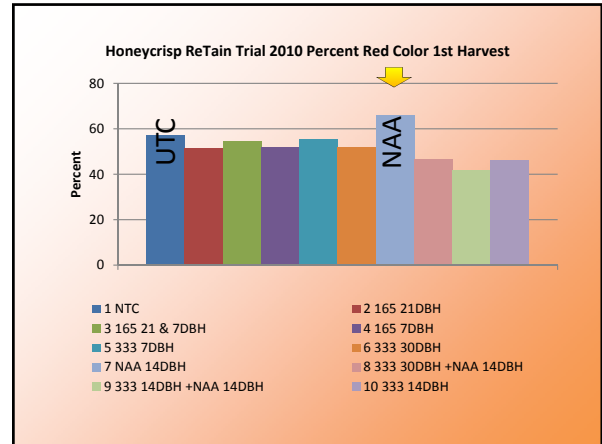
Retain

UTC

Treatment applied 28 days prior to harvest

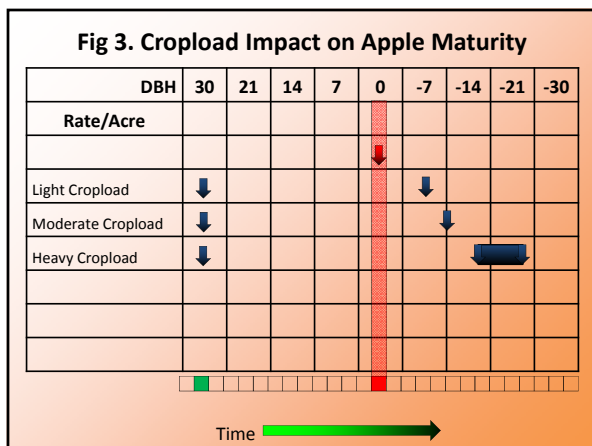
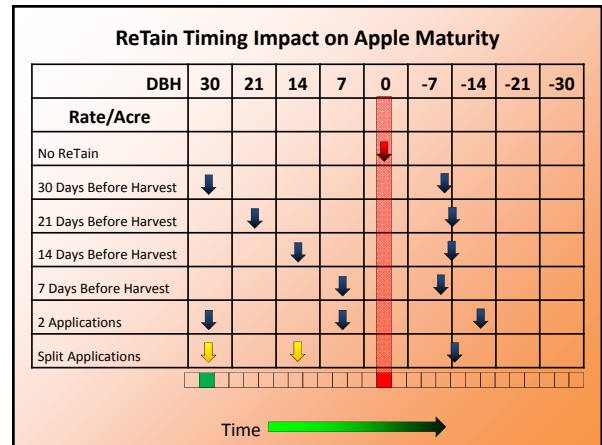
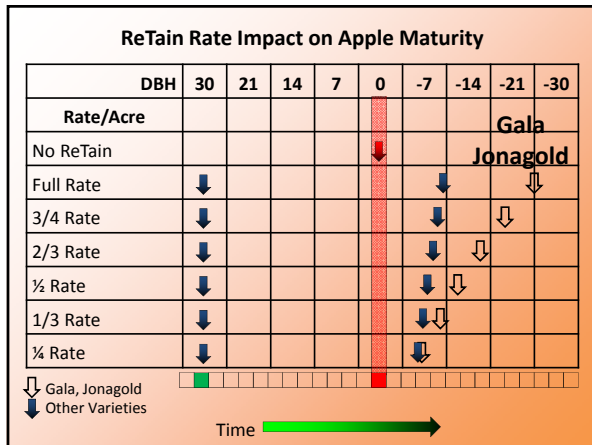
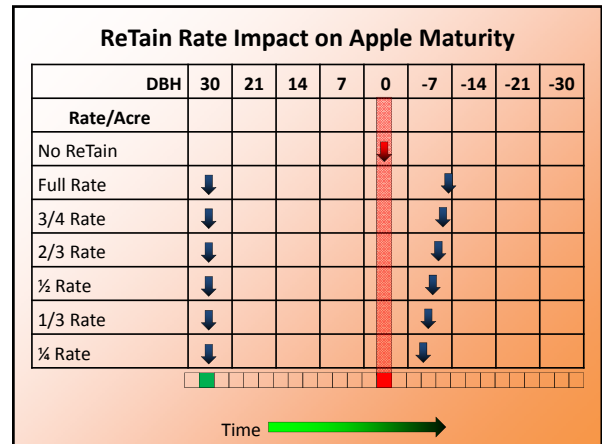
ReTain Trials

- Full Rate
- Half Rate
- 30 DBH
- 14 DBH
- With and without NAA



ReTain

Some varieties are more sensitive to ReTain than others. **Gala, Jonagold and Honeycrisp** have an increased sensitivity and a recommended half rate will perform similar to other varieties treated with full rate. The **gold standard** for ReTain applied alone is 30 DBH at full rate (except for sensitive varieties).

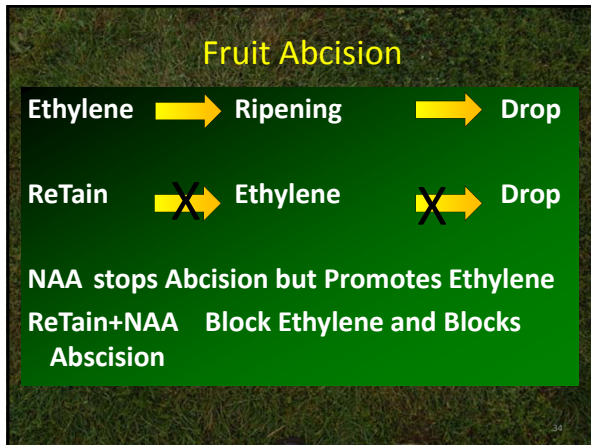


- #### GOLD STANDARD
- ### ReTain 30 Days Before Harvest
- The "Gold Standard"
 - Full Rate
 - Most Normal Varieties
 - Best ReTain results,
 - Best repeatable results year to year
 - Label confidence from Valent
 - Summer varieties especially Macs, need ReTain early to give maximum stop drop protection.

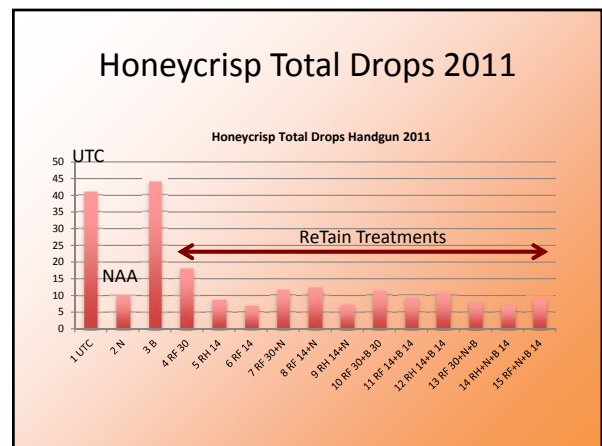
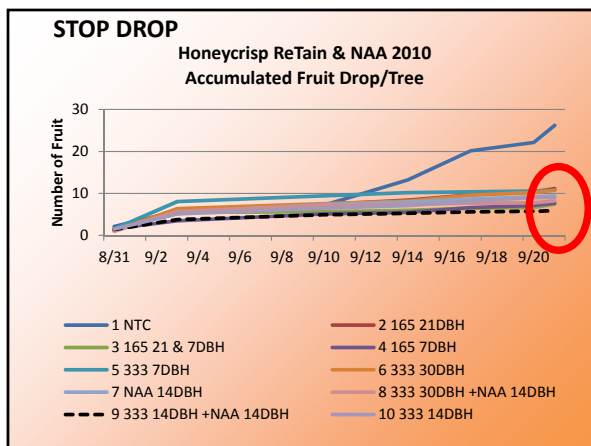
ReTain and Varieties

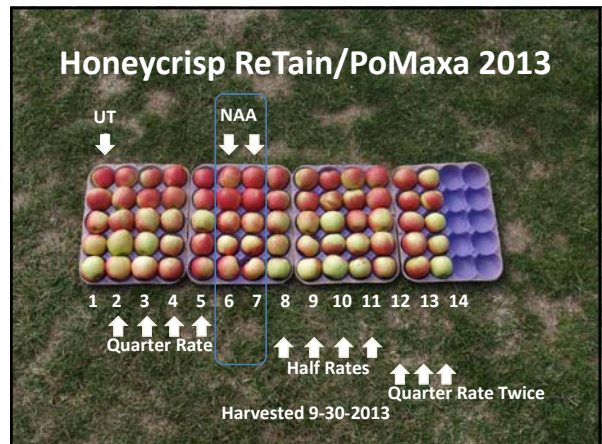
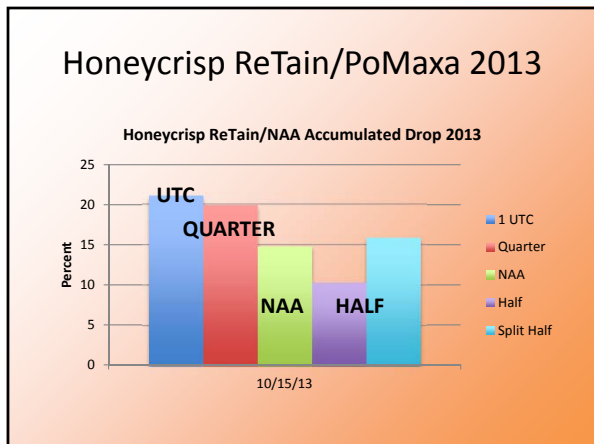
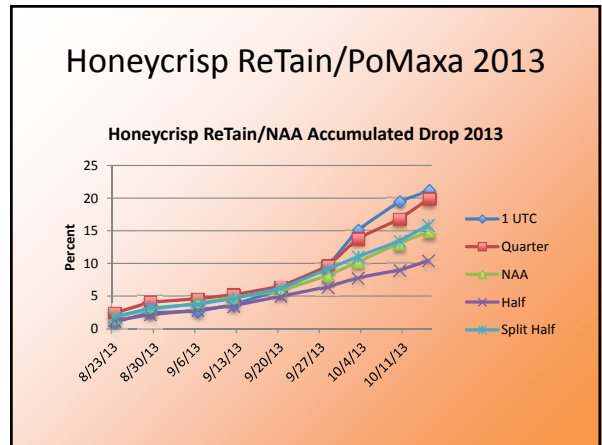
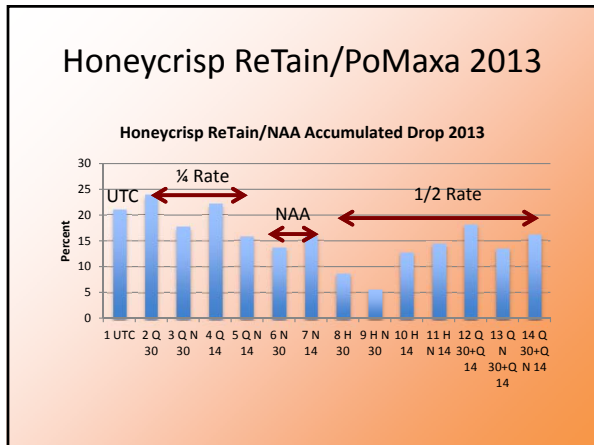
Sensitivity	Variety	Recommendations
Very	Gala, Jonagold	Reduced Rates ½ rate is Full Rate
Moderately	Honeycrisp	Reduced Rates ½ rate is Full Rate
Normal	All other major varieties	Normal Rate
Special	McIntosh, other summer apples	Make early applications (30 to 21 DBH). Variable maturity, High ethylene variety.

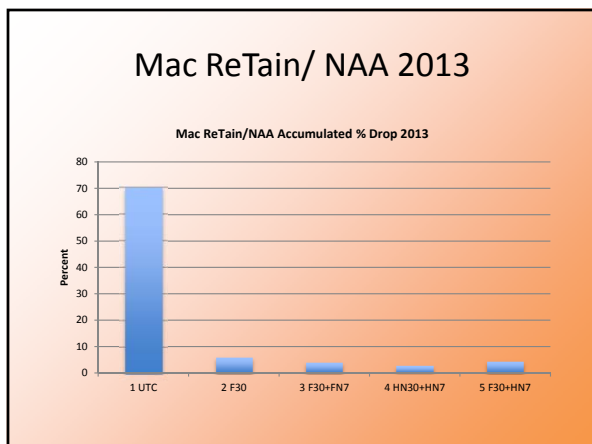
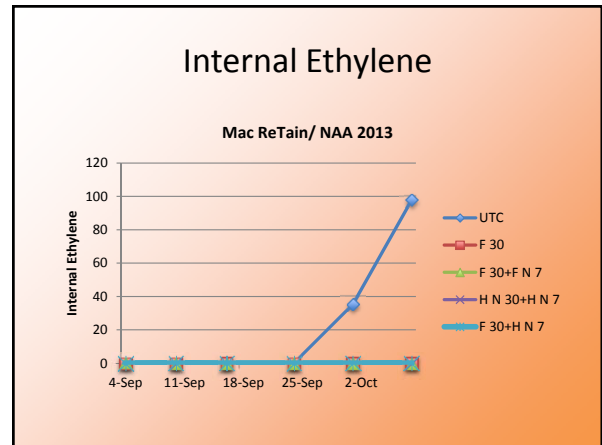
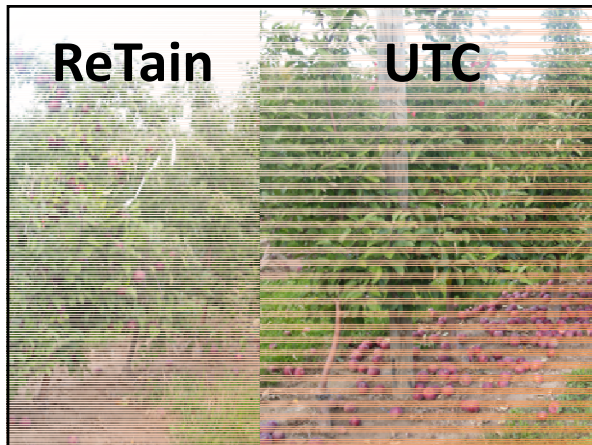
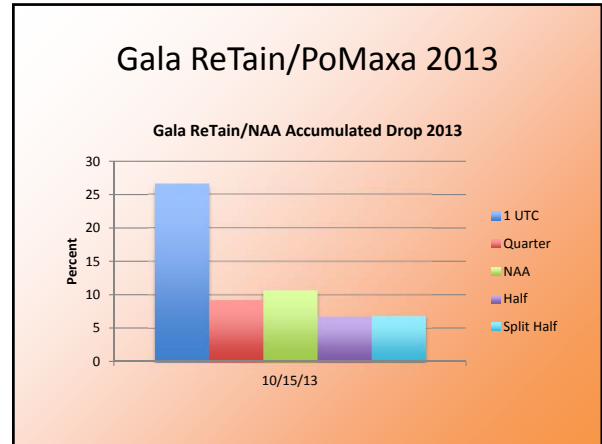
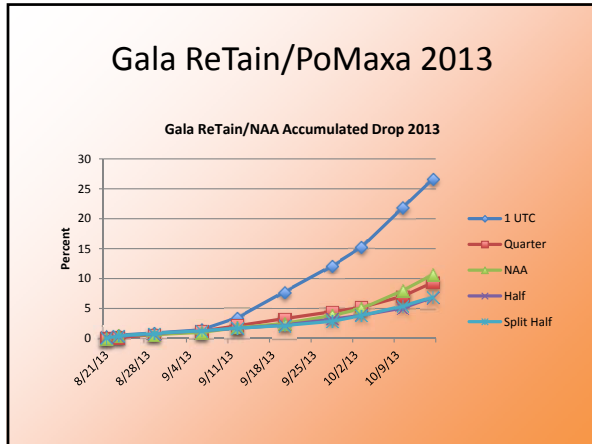
- ### RETAIN+NAA
- #### ReTain
- All rates and timings shut down ethylene.
 - Best stop drop:
 - ReTain + NAA, 14 DBH
 - ReTain + NAA, anytime 30 to 14 DBH
 - Stressful years
 - Apply ReTain earlier 30 to 21 DBH.
 - Or increase ReTain rate



- ### ReTain + NAA
- Combination improves performance of both materials.
 - NAA inhibits abscission zone for 7 days.
 - However, NAA stimulates ethylene.
 - ReTain blocks ethylene, prevents “NAA ethylene”.
 - Thus a better combined performance.







ReTain Stop Drop

For best performance use with NAA at 14 DBH.

Stressful years, apply ReTain earlier and/or consider higher application rate.

On sensitive varieties use 1/2 rate of ReTain.

ReTain
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An ethylene biosynthesis inhibitor.

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- Control Maturity
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ReTain & NAA

ReTain
 Harvest management, stop drop, greasiness, watercore, cracking, improve fruit quality and storage.

NAA
 Stop Drop.

Summary

NAA
 ReTain
 Harvista

