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Harvest Aid Management



EXTENSION

Late Season Management

- Coast to a finish
- Efficient irrigation use and timely with nutrients – don't want to end up with excess water or nitrogen
- Cotton wants to defoliate, let it do the heavy lifting and use harvest aids to nudge it along
- Much easier to defoliate when it's naturally matured rather than trying to force it



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Categories of Harvest Aids

- Defoliants – herbicidal (tribufos or PPOs); tribufos effective on mature leaves
PPOs better for removing regrowth
- Boll Openers – hormonal (ethephon); defoliation activity depending on weather and crop condition
- Regrowth Inhibitors – hormonal and herbicidal (thidiazuron + diuron); some defoliation activity
- Desiccants – herbicidal (paraquat); condition crop for stripper harvest, minimal boll opening and defoliation activity



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What Harvest Aid Mix Do I Need?

- What is the crop condition/primary need?
 - Defoliation; boll opening; regrowth inhibition?
 - Field to field decision
- What does the 5 – 10 day forecast look like?
 - High and low temperatures (freeze?)
 - Precipitation?
- **What is my budget?**

Impact of Temperature vs DD60s



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- Applying defoliant and boll opener in favorable weather 4 days prior to killing freeze (21°) resulted in successful boll opening and leaf drop
 - Daytime highs of 72°, 81°, 89°, and 64° preceding freeze event



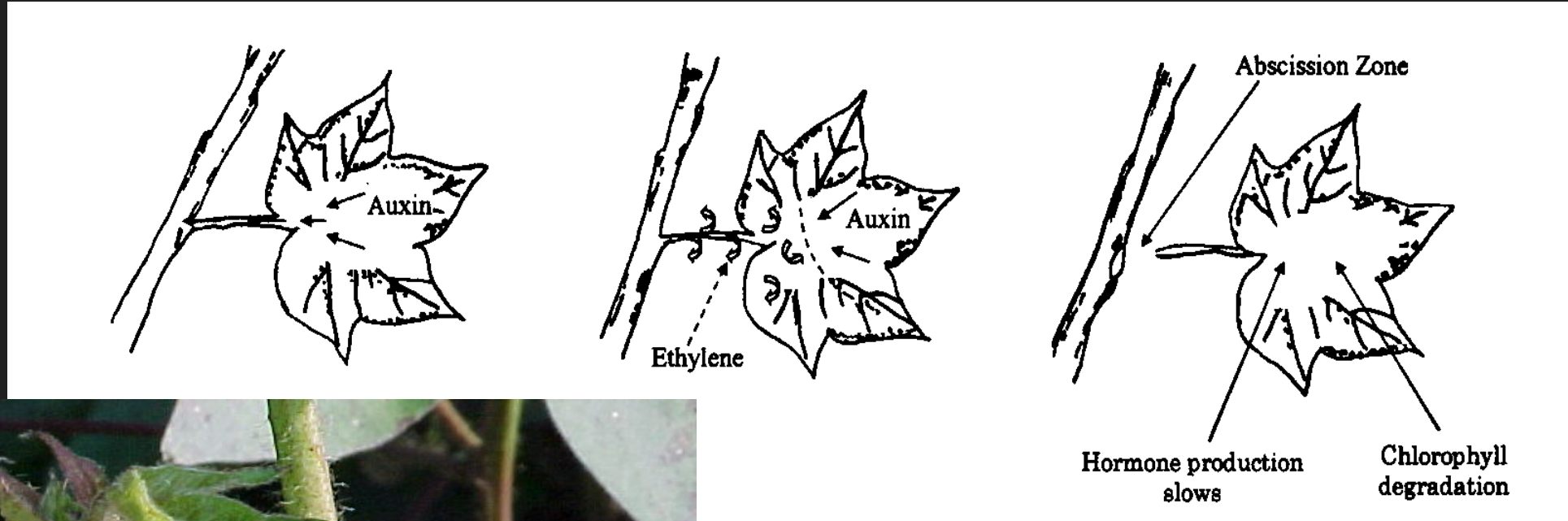


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How Harvest Aids Work

- Defoliation and boll opening is a natural process, similar to trees in the fall
- Objective: speed up this process to preserve quality and allow for optimal harvest timing
- Harvest aids can't enhance fiber maturity, so timing is key.

Cotton Leaf Abscission



Cotton Defoliation - basic process

Jones

Why don't we want to kill leaves rapidly or completely??
-Leaf moisture
-Ethylene response



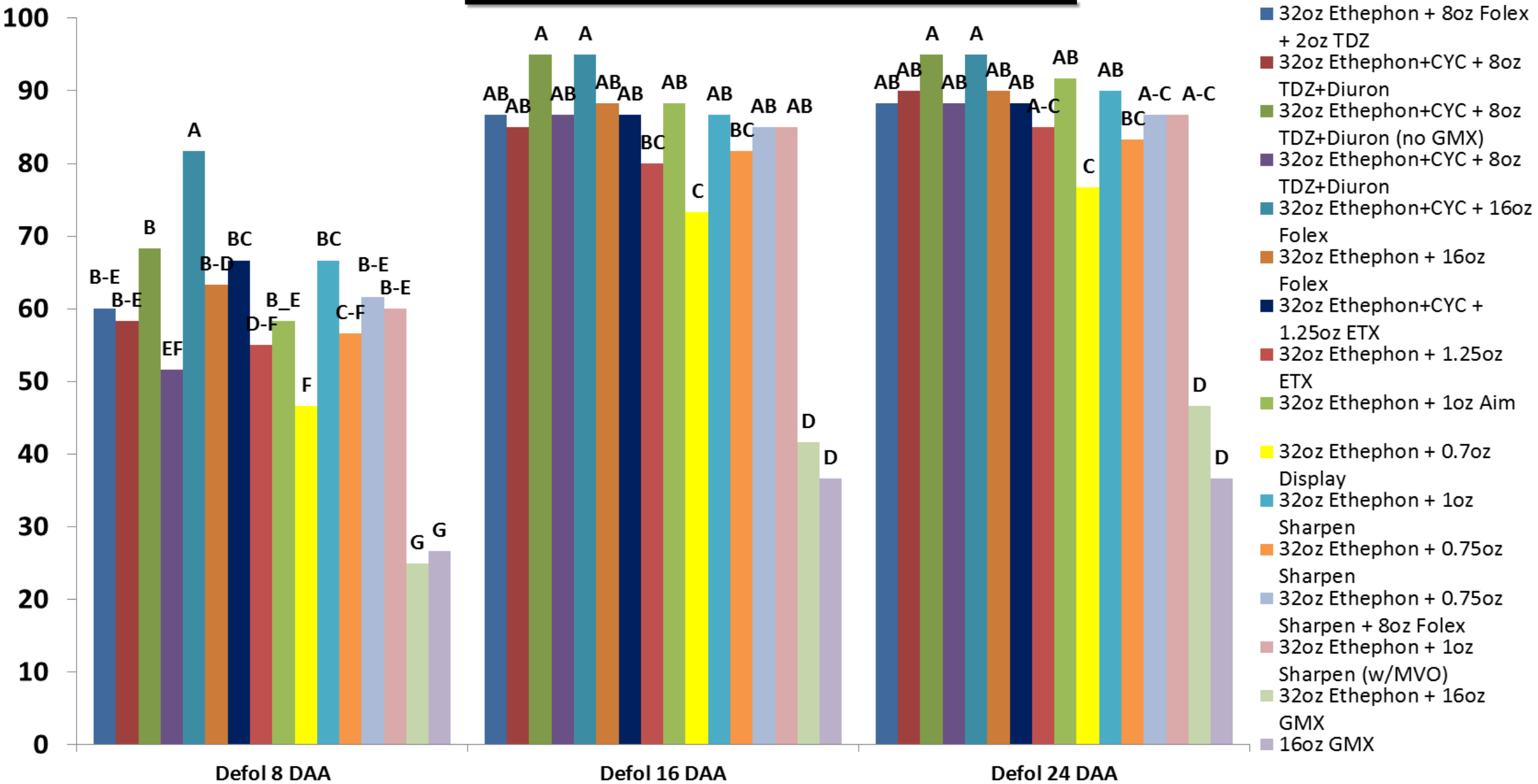
Auxin accumulation
- Promotes cell growth

Abscission Zones



Ethylene accumulation
-Weakens / loosens membranes, releasing degradative enzymes
-Stress signals for more ethylene production

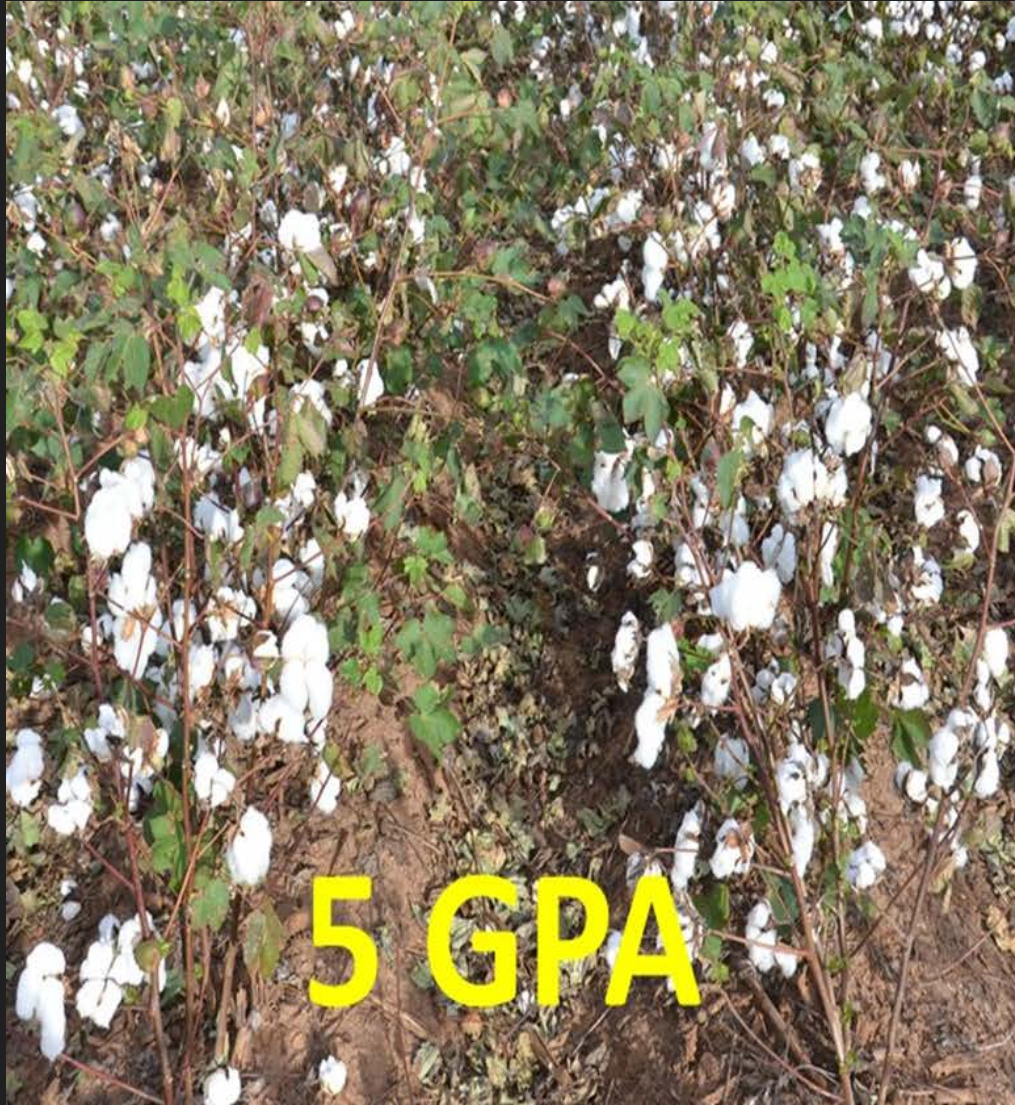
Leaf Removal in 2016



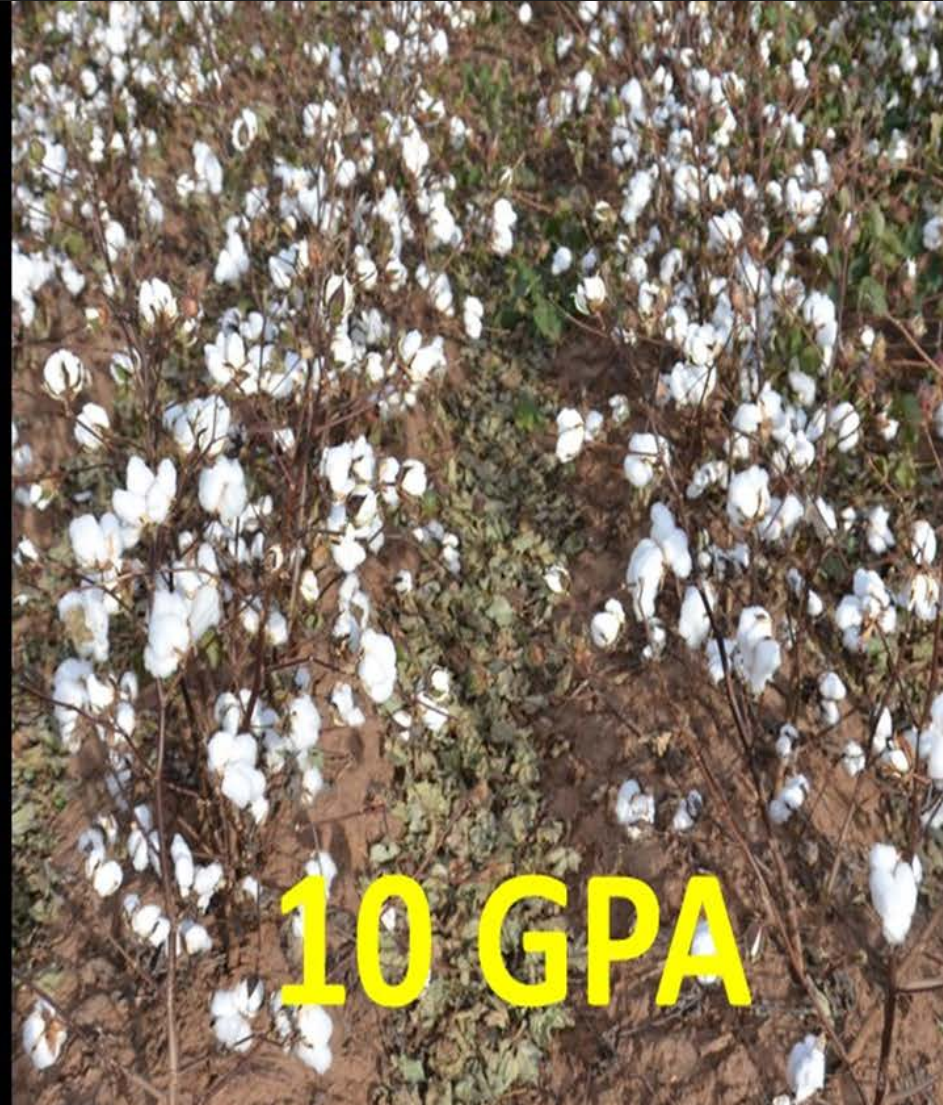
Carrier Volume is Key!



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5 GPA



10 GPA

Cotton Defoliation Timing

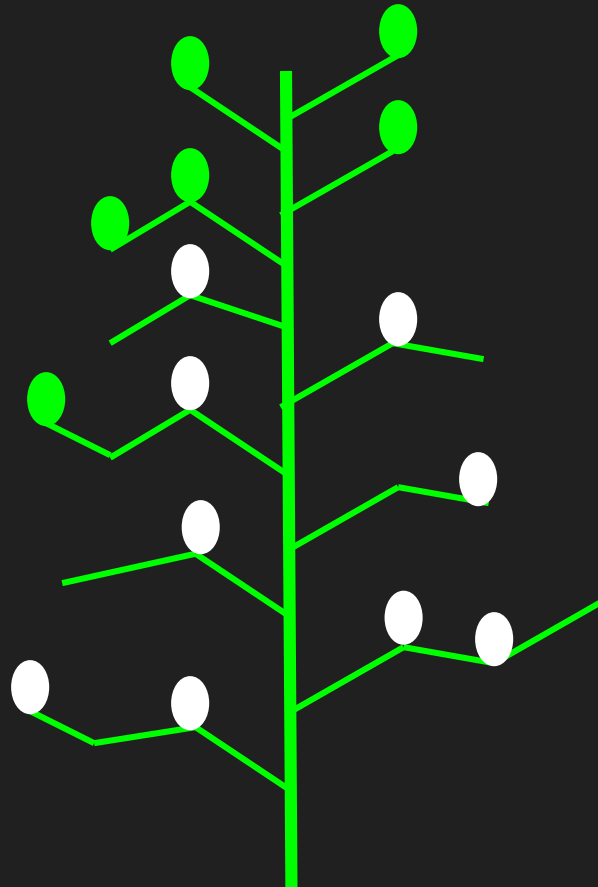
- 3 Methods:
 - Open Boll Percentage (60 – 75%)
 - Nodes Above Cracked Boll (3-4)
 - Cutting/Slicing Bolls
- These are all based off the proportion of harvestable bolls







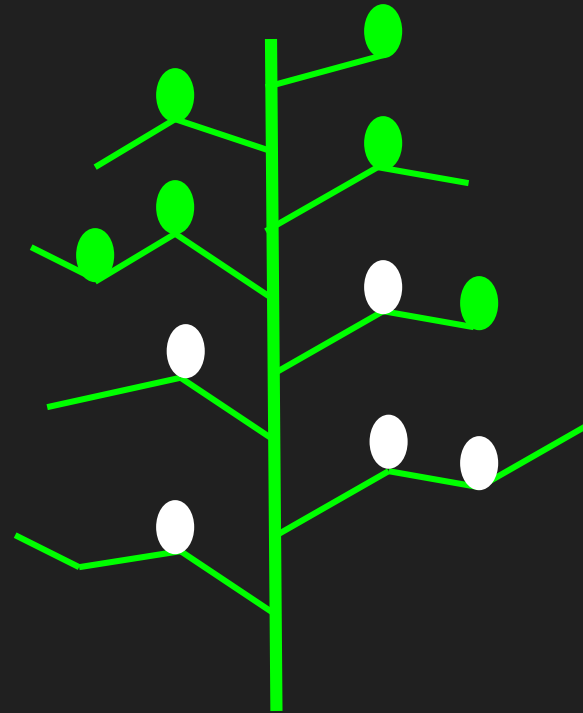
Defoliation Timing



60 % open bolls - 4 NACB



Defoliation Timing

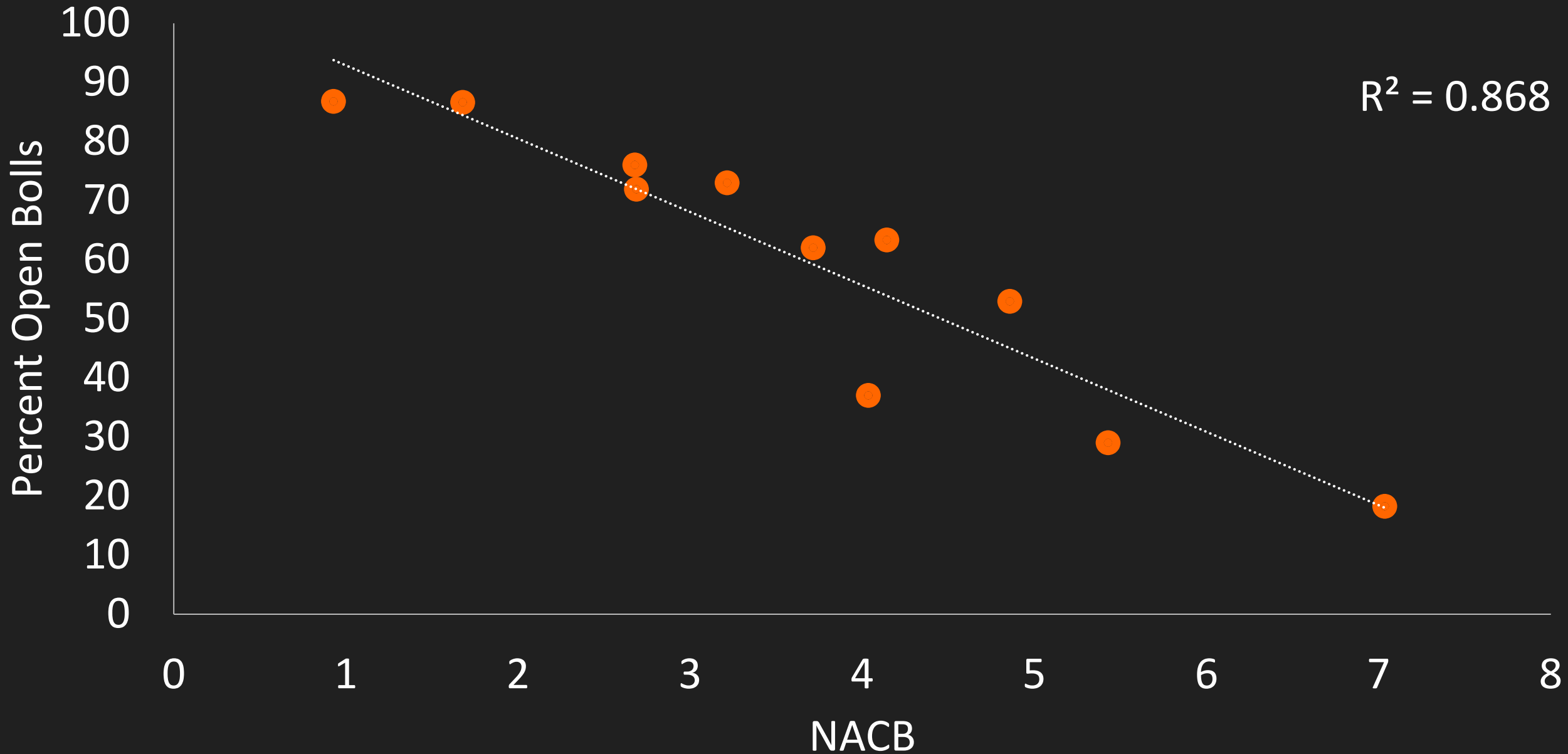


45 % open bolls - 4 NACB

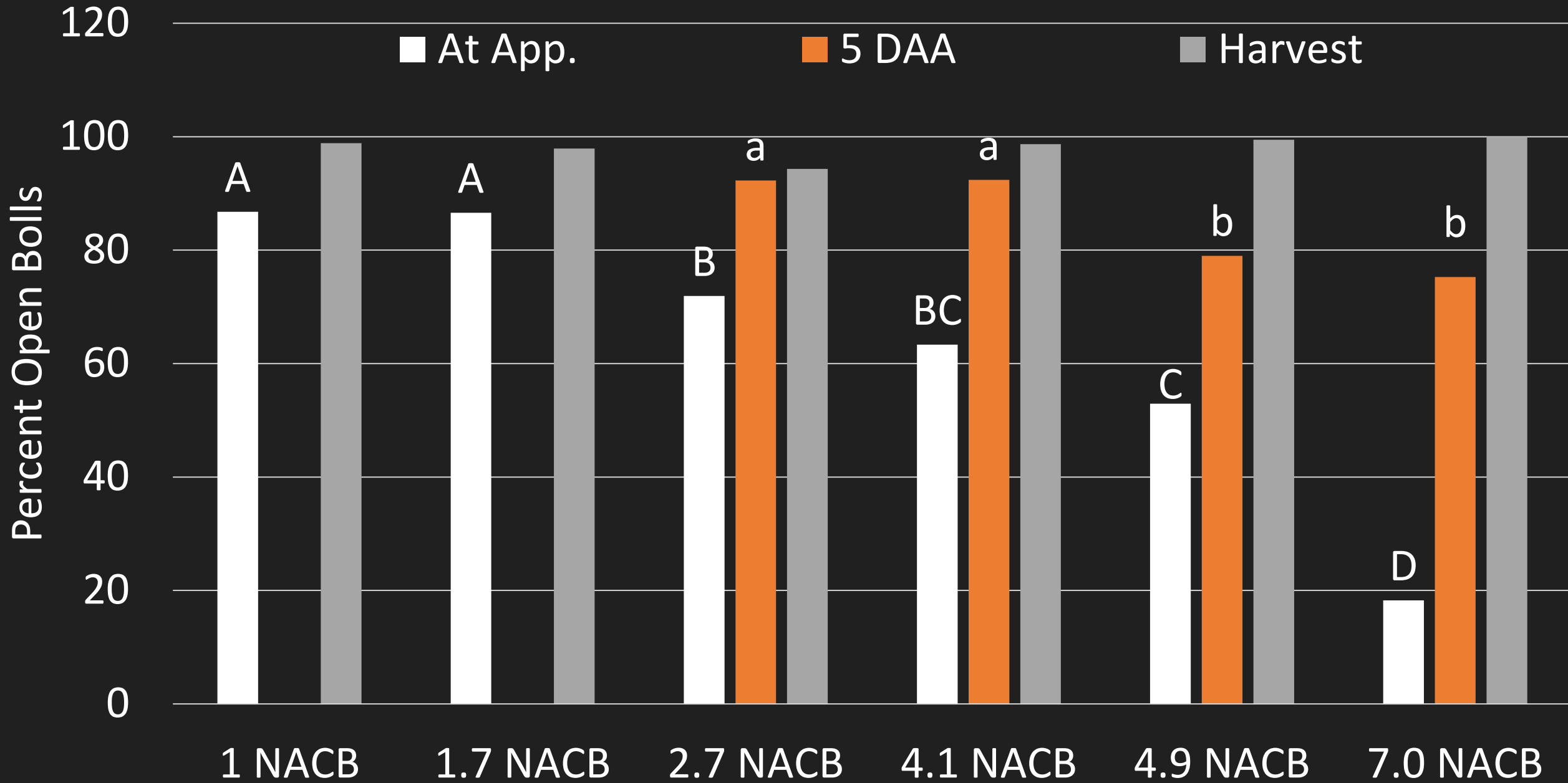
Defoliation Timing: Open Boll Percentage and NACB

- Depending on plant growth and development
- These can be largely influenced by:
 - environmental conditions (square/boll shed, fruiting gaps)
 - water situation (irrigated, limited water, dryland)
 - temperature (DDs) and
 - variety maturity class (early vs. late)
- These will effect boll distribution

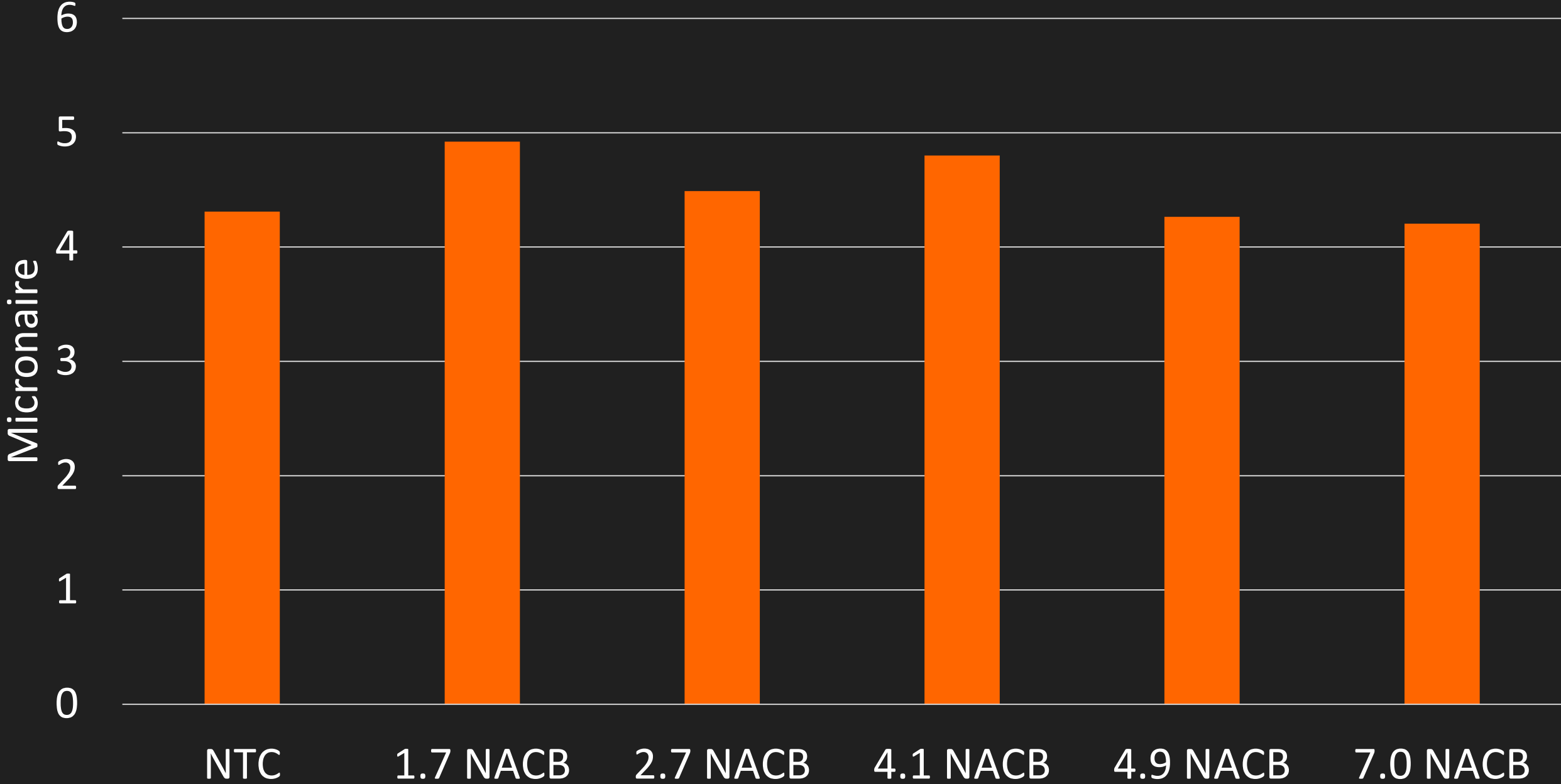
NACB & Percent Open Oklahoma 2019



Boll Opening Fort Cobb 2019



Fort Cobb Harvest Aid Timing 2019





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Timing for Harvest-Aids

- Use the product timing and your own schedule to best determine when to apply
- Harvest schedule - rather wait a little past 4 NACB or 70% open than have defoliated cotton exposed to weathering
- Defoliated cotton with 100% open bolls is prime for regrowth
- While tempting, it's often not financially feasible to try to open every boll on the plant
 - Desiccated small bolls will be handled by field cleaner, green bolls can be passed over by picker



Thank You

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