Foliar sprays/ground applications/protocol for Peel SAP analysis of Honeycrisp

Lailiang Cheng

Professor of Horticulture

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Tree Selection & Fruit Sampling

- **Timing: July 5 to 15 at golf ball fruit size (~50g)**
- **Select 30 representative trees, take 1 well-exposed fruit at 5'-7' height of tree canopy**
- **Wet paper towel with purified water (such as Aquafina), squeeze off any extra water, & wipe out any residue on the fruit surface**

Peeling & Freezing

Factors to consider to optimize pollination this spring

Janet van Zoeren

Lake Ontario Fruit Program

Integrated Pest Management specialist

- Environmental factors
- Bee's Needs
- Bee safe pesticides

Environmental factors

Low germination colder than 41°F.

‘Effective pollination period’

time from flower opens to no longer viable
(slow pollen tube growth colder than 51°F)

Honey bees fly at ~65F, native bees at ~55-60F

ReTain (~late pink) to prolong bloom

Bee's needs

- Food
  - Apple blooms are desirable (don't stress if other flowers are open)
  - Pollinizer w/ same color blossom
- A "house"
  - *'Wild Pollinators of Eastern Apple Orchards and How to Conserve Them'*
- Safe from pesticides
  - best time to spray is late evening (bees tend to fly in morning, 65F+)

Photo curtesy of Dr. Scott McArt

Choosing bee-safe pesticides

'A Pesticide Decision Making Guide to Protect Pollinators in Tree Fruit Orchards'

Table 6.1.2. Relative toxicity of apple fungicides to beneficials.

		Beneficial Species		
Active Ingredient (Trade Name)	Bees[1]	*Amblyseius fallacis*[2]	*Typhlodromus pyri*[3]	*Stethor punctu*
difenoconazole (Inspire)	L	L	L	—
fenarimol (Rubigan)	L	L	L	—
ferbam (Ferbam)	L	—	—	—
fenbuconazole (Indar)	L	L	L	—
flurtiafol (Topguard)	L	L[c]	L[c]	—
fluopyram + pyrimethanil (Luna Tranquility)	L	—	—	—
fluxapyroxad + pyraclostrobin (*†Merivon)	L	—	—	—
kresoxim-methyl (Sovran)	L	L	L	—
mancozeb (Dithane, Manzate, Penncozeb)	L	M-H[b]	M-H[b]	—
maneb (Manex, Maneb)	L	M-H[b]	M-H[b]	—
metiram (Polyram)	L	—	—	—
myclobutanil (Rally)	L	L[c]	L[c]	—
penthiopyrad (Fontelis)	—	—	—	—
pyraclostrobin + boscalid (Pristine)	L	—	—	—
pyrimethanil (Scala)	—	—	—	—

Tables 6.1.2 and 7.1.2 of the Tree Fruit Recommends (pages 58-59 and 68)

Choosing bee-safe pesticides (A-F)

Trade Name	Toxicity Rating	Mix Synergies (do not mix with)
Aliette	Low Toxicity	
Assail	Moder./High Toxicity	Synergizes with some **fungicides** and **adjuvants**
Badge	Low Toxicity	Synergizes with **Imidacloprid** (Admire Pro, Leverage)
Cabrio	Moderate Toxicity	Synergizes with miticide used in hives, and with '**Portal**'
Captan/Captec	Moderate Toxicity	Inert ingredients may cause high toxicity. Toxic to wild bees.
Cueva	Low Toxicity	
Ferbam Granuflo	Low Toxicity	
Fireline	Low Toxicity	
Firewall	Low Toxicity	
Flint	Low Toxicity	
Fontalis	Low Toxicity	

Choosing bee-safe pesticides (I-M)

Trade Name	Toxicity Rating	Mix Synergies (do not mix with)
Indar	Moderate Toxicity	Synergizes with commonly used miticide in bee hives
Inspire Super	Moderate Toxicity	Synergizes with miticide used in hives, and with **Thiacloprid**
Intrepid	Moderate Toxicity	Causes long term sub-lethal damage
Luna Sensation	Low Toxicity	
Luna Tranquility	Low Toxicity	
Manzate	Low Toxicity	Synergizes with **pyrethroid** insecticides
Merivon	Moderate Toxicity	Synergizes with commonly used miticide in bee hives
MycoShield	Low Toxicity	

Choosing bee-safe pesticides (P-V)

Trade Name	Toxicity Rating	Mix Synergies (do not mix with)
Penncozeb	Low Toxicity	Synergizes with some **Pyrethroid** insecticides
Polyram	Low Toxicity	
Procure	Low Toxicity	Synergizes with some **Neonicitinoid** insecticides
Rally	Moderate Toxicity	Synergizes with miticide used in hives, and with **neonics**
Rhyme	Moderate Toxicity	Synergizes with some **Pyrethroid** insecticides
Serenade	Low Toxicity	**Wet application** damages bee reproductive success
Sovran	Low Toxicity	
Streptrol	Low Toxicity	
Topsin M	Moderate Toxicity	Syntergizes with **pyrethroid** and **neonicitinoid** insecticides
Vivando	Low Toxicity	

Spring insect management priorities

Art Agnello

Tree Fruit Entomology

Cornell AgriTech, Cornell University

Dogwood Borer (DWB) in Apple

Synanthedon scitula

- Clearwing moth native to the US
- Infestations increasingly common as more orchards are planted with clonal rootstocks
- Tend to be attracted to burrknots, where they feed; eventually tunnel and then spread to cambium
- Can girdle the tree; commonly cause decline in vigor and productivity
- One generation per year
- Adults begin to emerge in mid- to late June in NY

Standard Chemical Control Recommendations: Lorsban Trunk Sprays

- One early-season (PF) spray controls DWB season-long
- Infiltrates burrknot tissue and kills overwintering larvae concealed within
- Lorsban applied prebloom (as early as HIG) controls DWB season-long
- Lorsban applied postharvest in October controls DWB throughout the next season
- Lorsban infiltrates burrknots, lasts a long time in wood, giving both eradicant and protectant control of borers for the entire season when applied as early as HIG

However,

- Dedicated trunk sprays (i.e., using a handgun) are difficult and time-consuming; therefore, most growers don't do them (or don't do them well)
- Threat of losing Lorsban as a result of increased regulatory scrutiny in the future

Mating Disruption for Dogwood Borer


DWB male

- Isomate DWB (CBC America)
- Field tested in several states;
  In NY, has provided complete trap shutdown
- Combine with trunk sprays in most severe cases
- Why not just use MD, since it seems to work well by itself?
  - Some sites may not be suitable for pheromone MD (too small, or irregular shape)
  - May be adjacent to high-pressure DWB habitat (hedgerow) where MD would require more than 1 season to have its full impact

	Total average DWB/trap
Site	2010
Fowler B1E	
Isomate-DWB	0.0
Check	835.3
Fowler V1H	
Isomate-DWB	0.0
Check	361.0
Wafler Hilltop	
Isomate-DWB	0.0
Check	290.7

OFM and Codling Moth Mating Disruption Products Available

Isomate CM/OFM TT (200 ties/A)

Checkmate Sprayable
OFM-F
CM 2.0

Cidetrak
CMDA Meso-A
or OFM Meso-L
(18-36 dispensers/A)

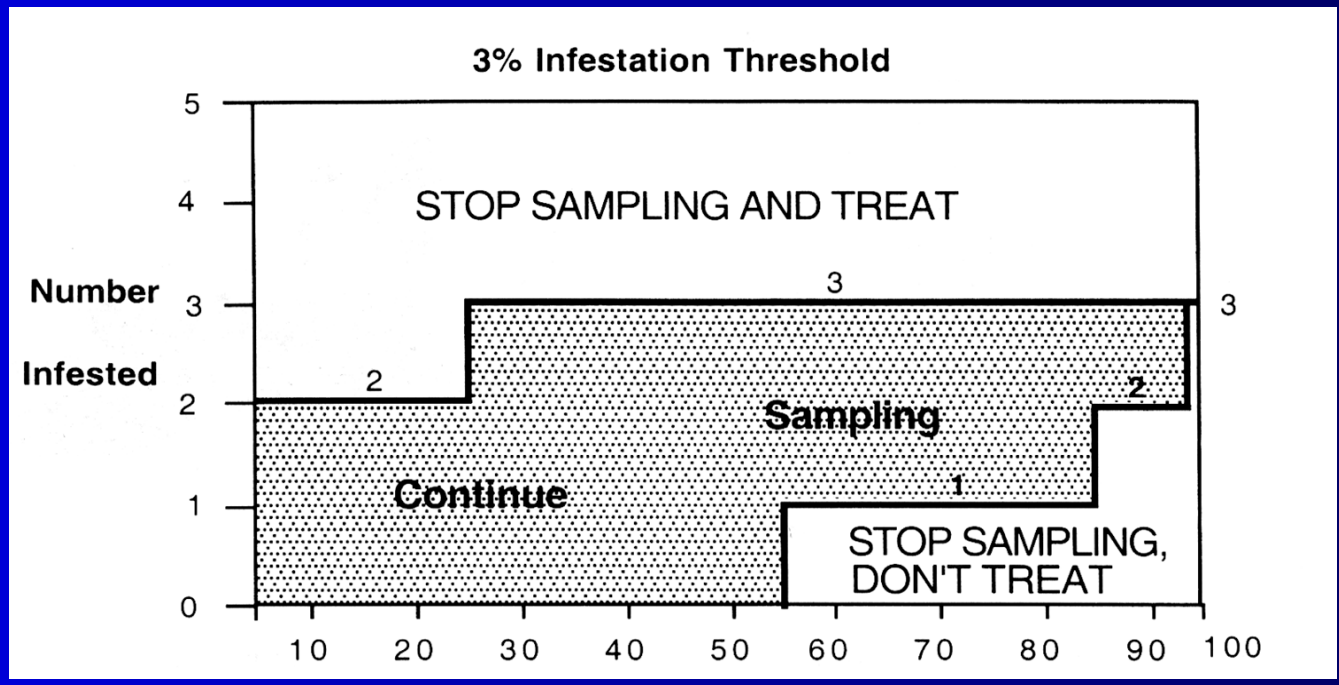
Checkmate Puffer
(1-2 units/A)

Isomate CM/OFM Mist

OBLIQUEBANDED LEAFROLLER

Late bloom period

OBLR Sampling Chart: Tree Fruit Guidelines, p. 73

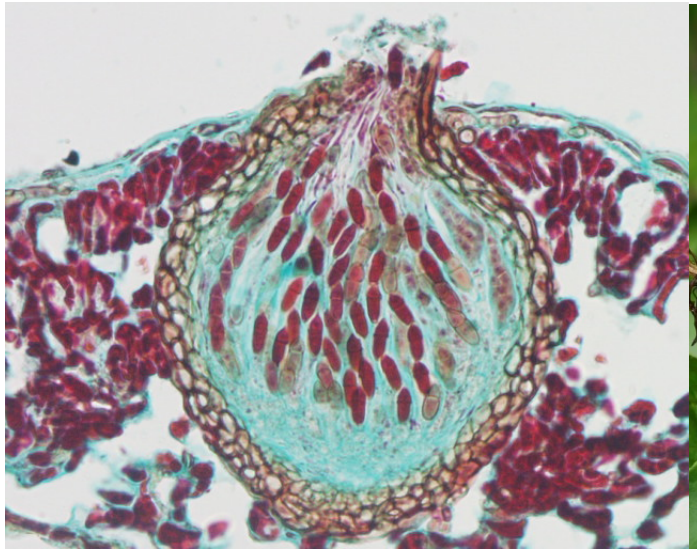


Examine bud clusters for 3% larval infestation threshold

Suggested Action Threshold: 3% of clusters infested

Treatment: B.t. product (Dipel, Agree, Javelin, etc.)

LOF Pink Disease Update

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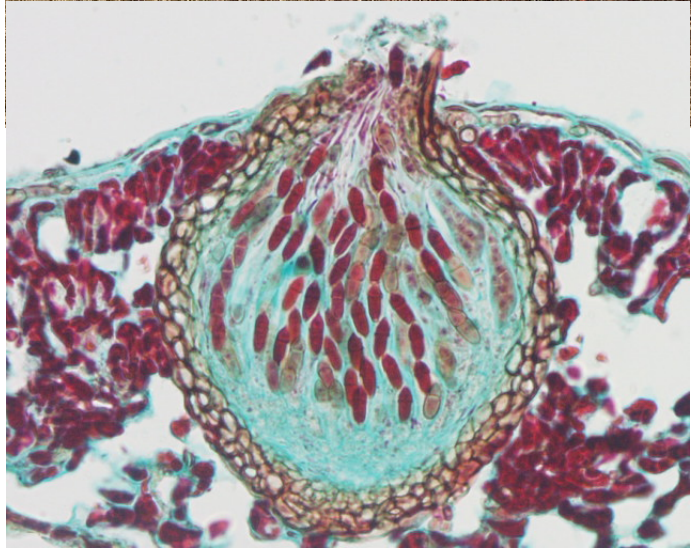
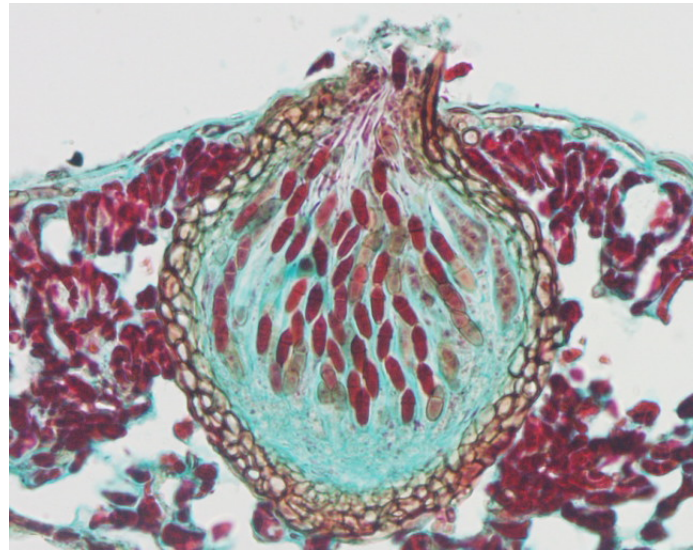
Early Season Disease Update

- Mild winter with warm weather November to early January; some cold weather in February,
- GT arrived at the end of March, which was cold and development slowed until the 1st of May with a few days of warm weather
- Low snow cover few rains at GT: Many possibilities for applying early season urea and copper



Early Season Disease Update

- There were several infection periods, but weather was cold.
- A massive infection period occurred on 4-26 with a break from 4-28 and 4-29, and continued through the 1st of May releasing nearly of the 35% of mature ascospores
- It looks like it may be cool and rainy for the rest of the month, which may make apple scab challenging

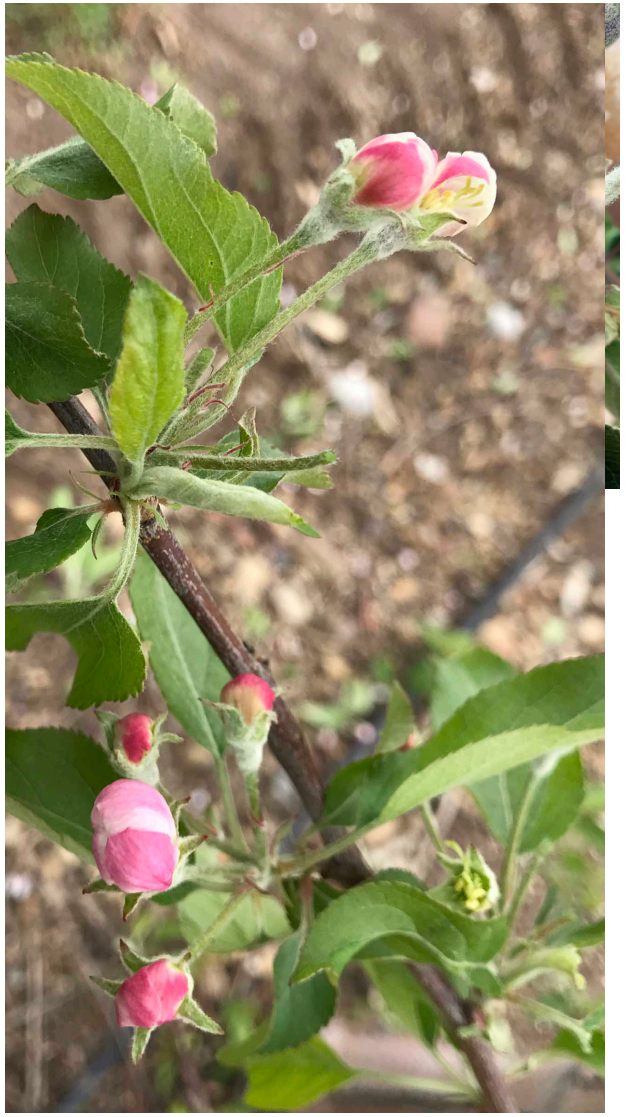


Early Season Disease Update

- Presently only orchards in the Hudson Valley may be in bloom
- March and April was cold and tree development slowed until1st of May where we've had a spike in Warm weather
- We may reach pink this week in eastern and western NY, but it should remain cold most of the week and month

Early Season Disease Update

- It may be an cold prolonged bloom, which may make for an easy fire blight season
- With the prolonged cool weather at pink > opportunity to make a pink application of Prohexadione Ca
- 3-6 oz/100 gal or 2oz PhCa+ 1 oz of Actigard /100 gal



Using Prohexadione Calcium to Mitigate Blossom Blight and Shoot Blight

- An unnoticeable amount of blossom blight can lead to shoot blight
- Host susceptibility & vigor influence level of devastation
- Prohexadione calcium (PhCa)
  highly effective
  slows vigor & establishment of young trees

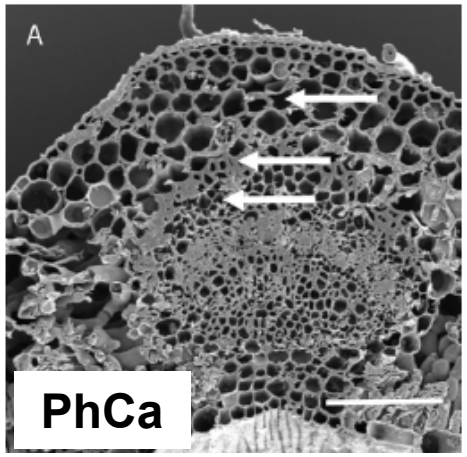
Can we optimize timing & rate of PhCa to help

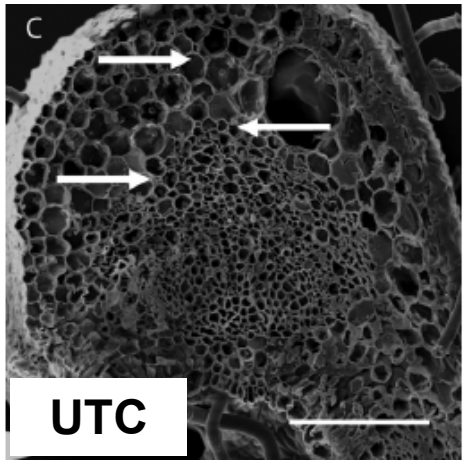
Manage blossom blight

Reduce shoot blight in advance?

PhCa Mechanism
physical barrier to pathogen invasion of tissues

Shoot tissue





McGrath et. al 2009

True for blossom pedicels?

Prevent invasion of shoot tissues