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New York State Agricultural Experiment Station

Apple IPM Intensive Worshop

Management Programs for Diseases




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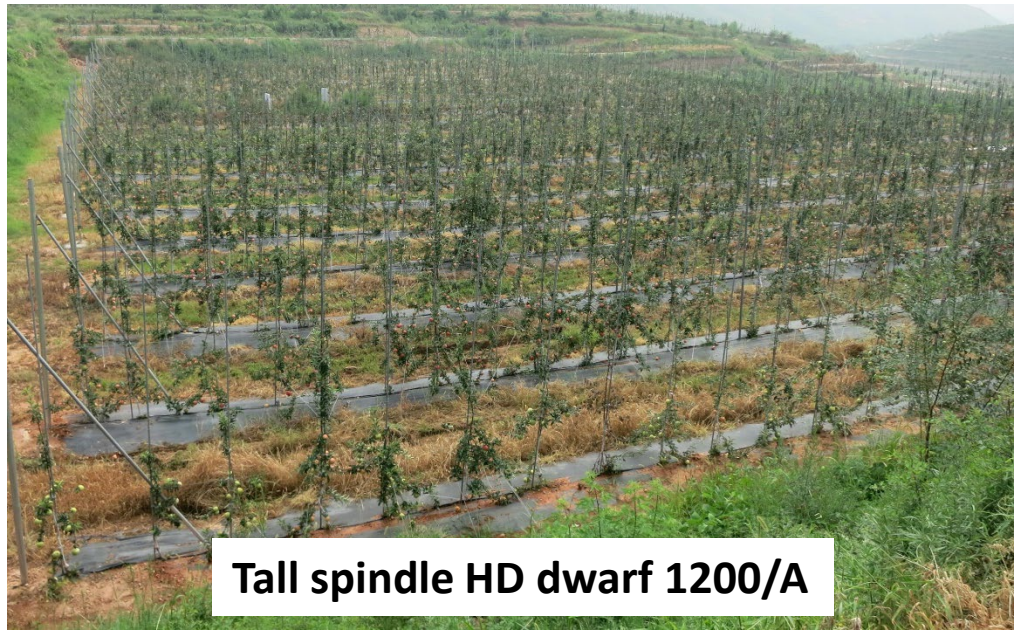
IPM: General

- **Implement the best horticultural practices**: high-density plantings are better for color, yield per acre, agrichemical applications, drying time & air circulation for disease protection


Tall spindle semi-dwarf 300/A


Tall spindle HD dwarf 1200/A

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IPM: General

- **Implement the best horticultural practices**:
  - Water management: select the best sites, tile orchards, manage drip irrigation
  - Prune dead plant material & manage weeds to increase air circulation

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IPM: General

- **Sanitation**: remove & destroy fruit drops, leaf litter, and prunings, or other dead plant material: Avoids accumulation of inoculum
  - Fall or spring Leaf Shredding (rake into middles, scalp the sod) or Urea application (40lbs/100) or Dolomitic lime (2.5 tons/Acre)
  - Delayed Dormant Copper application at silver tip (15% MCE)

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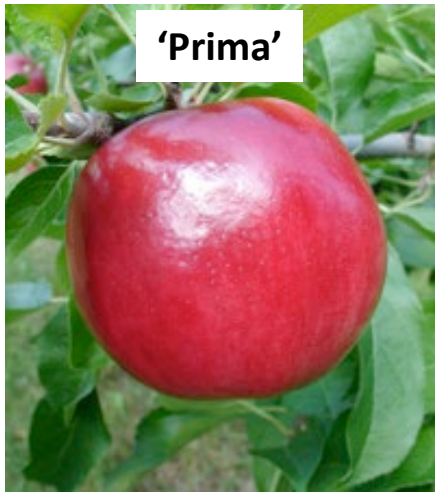
IPM: General

- **Implement the best horticultural practices**: use resistance cultivars
  - Enterprise, Freedom, Goldrush, Jonafree, Liberty, Pristine, Redfree, Topaz, William's Pride, Crimson Crisp, Prima, Ariane, Honeycrisp
  - Immunity to apple scab **(*Rvi6* gene) NOT** other diseases (e.g. Topaz & PRR)

http://kuffelcreek.wordpress.com/



http://www.eatlikenoone.com/prima-apples.htm

http://www.plant.photos.net/index.php?title=File:Apple_williams_pride.jpg

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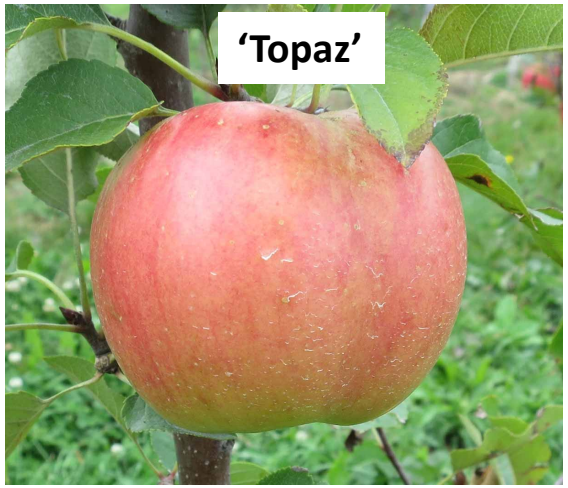

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IPM: General

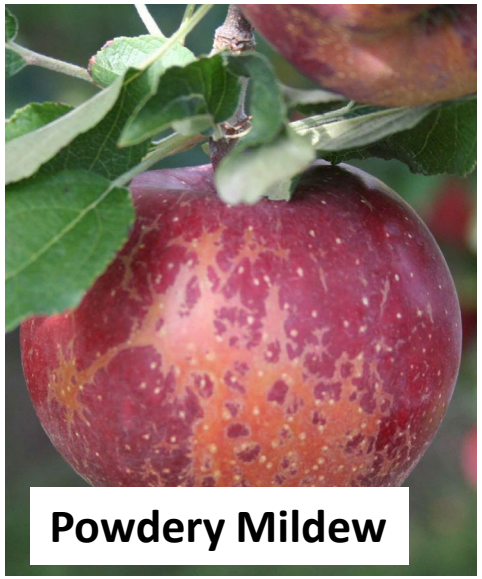
- **Implement the best horticultural practices**: use less sensitive cultivars
  - Not a lot of information & options for resistance for many/multiple diseases

DISEASE SUSCEPTIBILITY OF COMMON APPLES

Cortland	Highly Susceptible[1,4]; Moderately Susceptible[4]; Susceptible[7,8,9]	Highly Susceptible	Susceptible	Susceptible[1]; Highly Susceptible[2, 3]
Cox's Orange Pippin	Moderately Resistant[4]			Susceptible[3]
Creston				Susceptible[3]
Crimson Beauty		Susceptible		
Crimson Crisp (Co-op 39)	Moderately Resistant[7]	Highly Resistant	Susceptible	Moderately Resistant[1]; Highly Susceptible[3]
Crimson Topaz		Resistant		
Cripps Pink (Pink Lady)				Susceptible[3]


Fire Blight


Bitter Rot


Powdery Mildew

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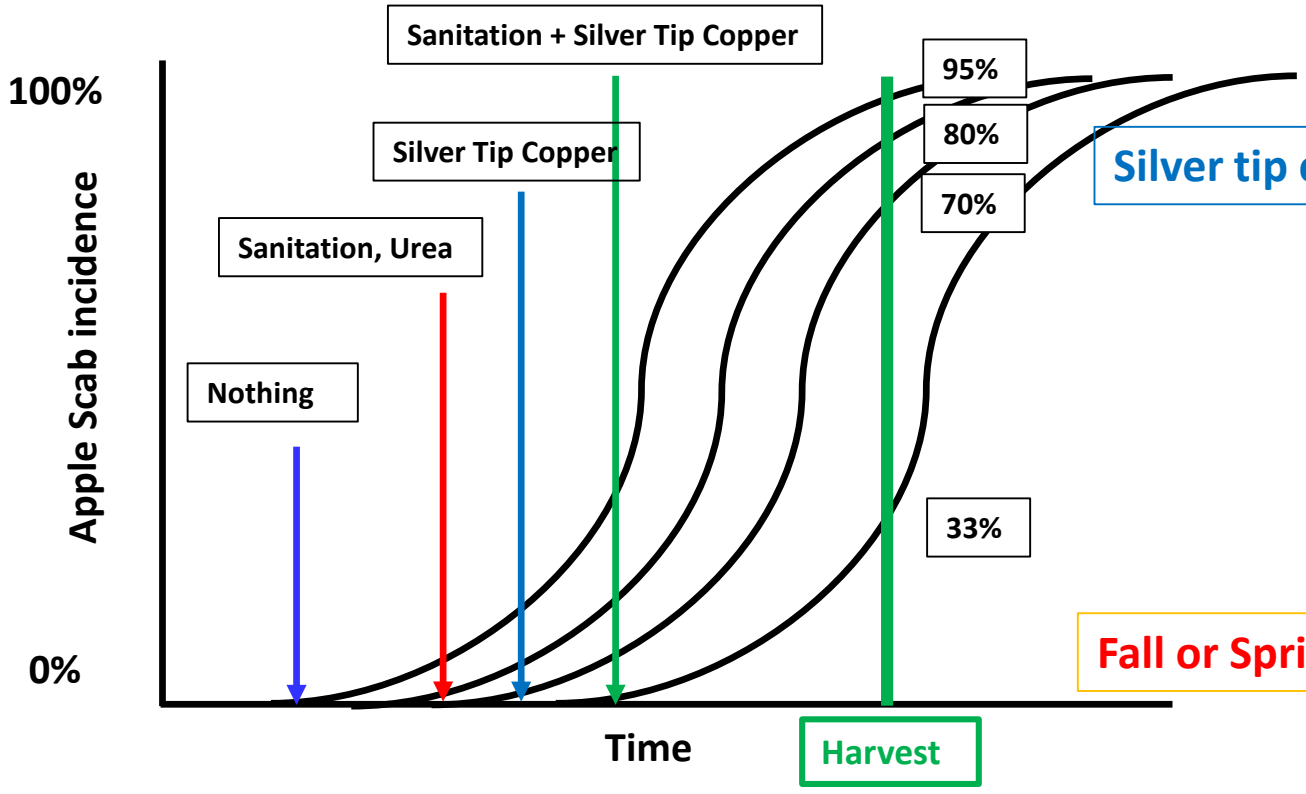
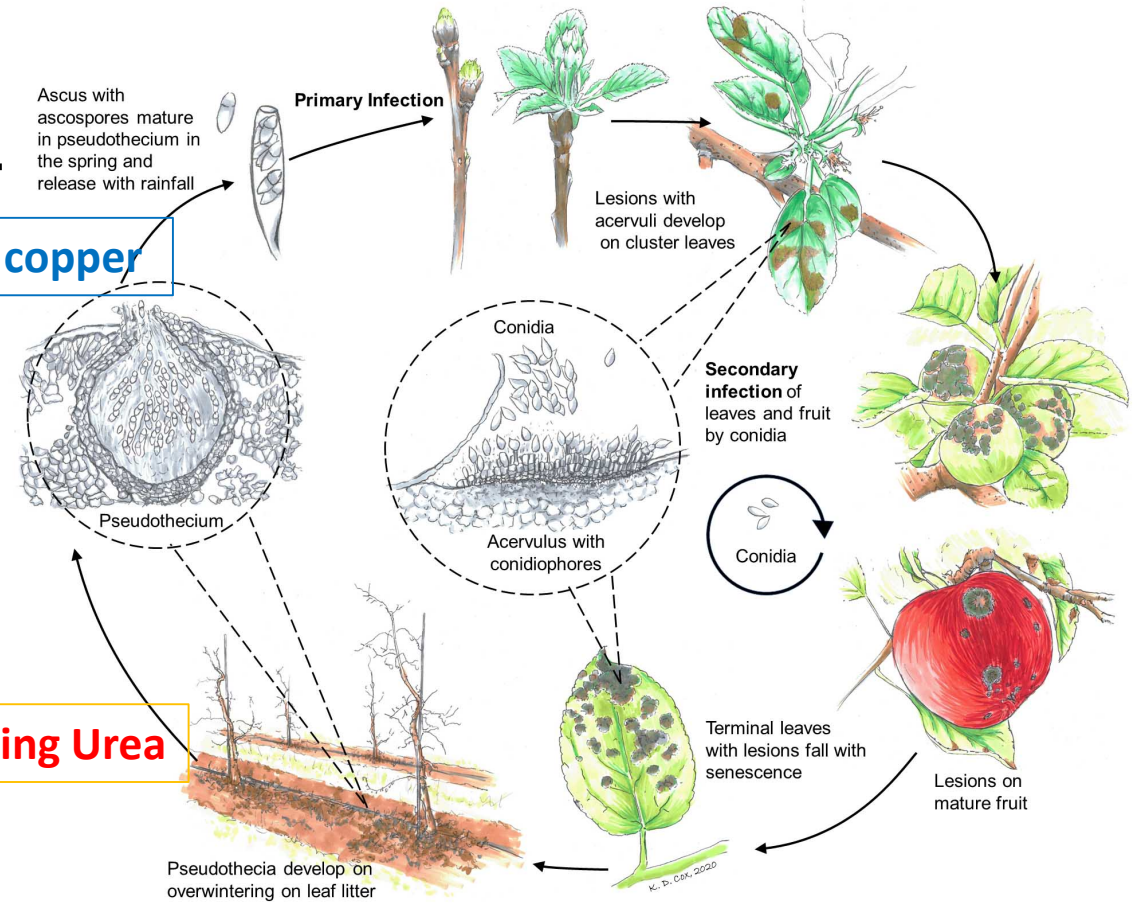
IPM: Apple scab



Silver tip copper

Fall or Spring Urea



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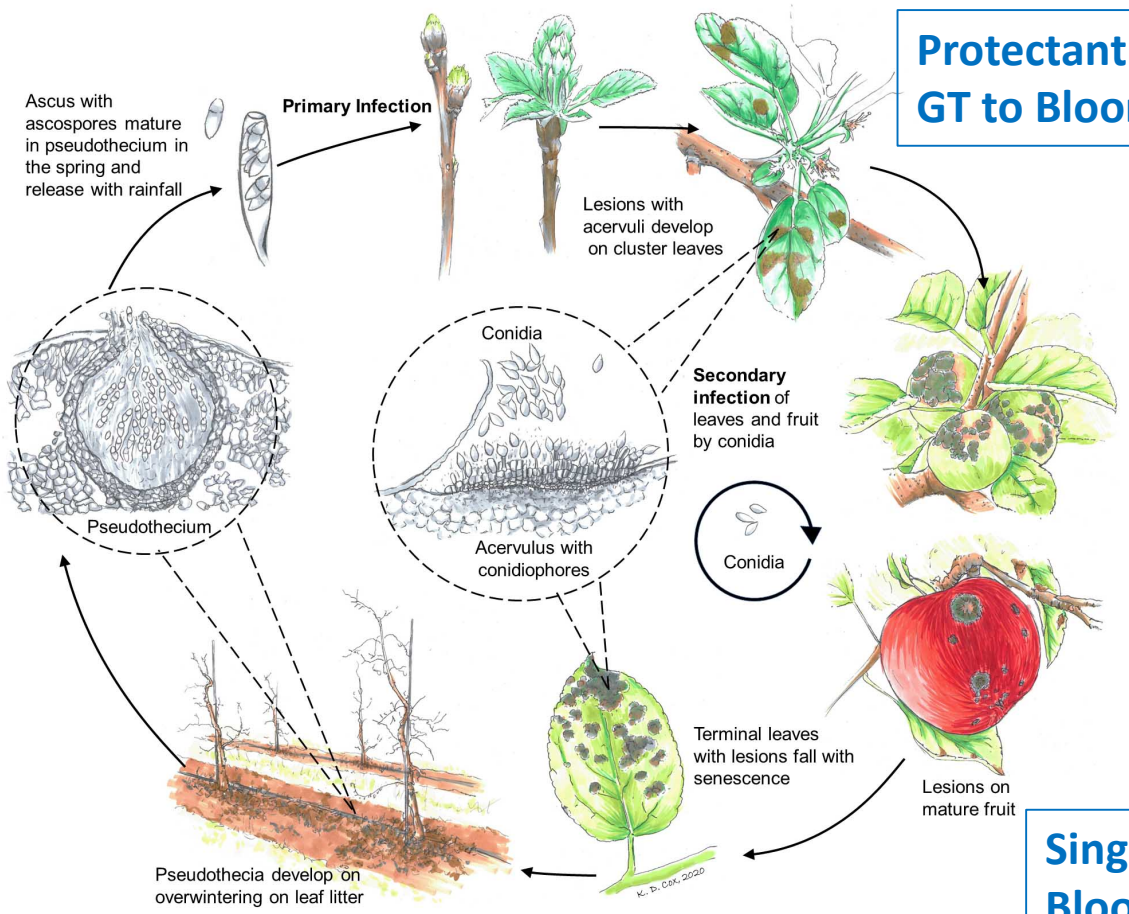
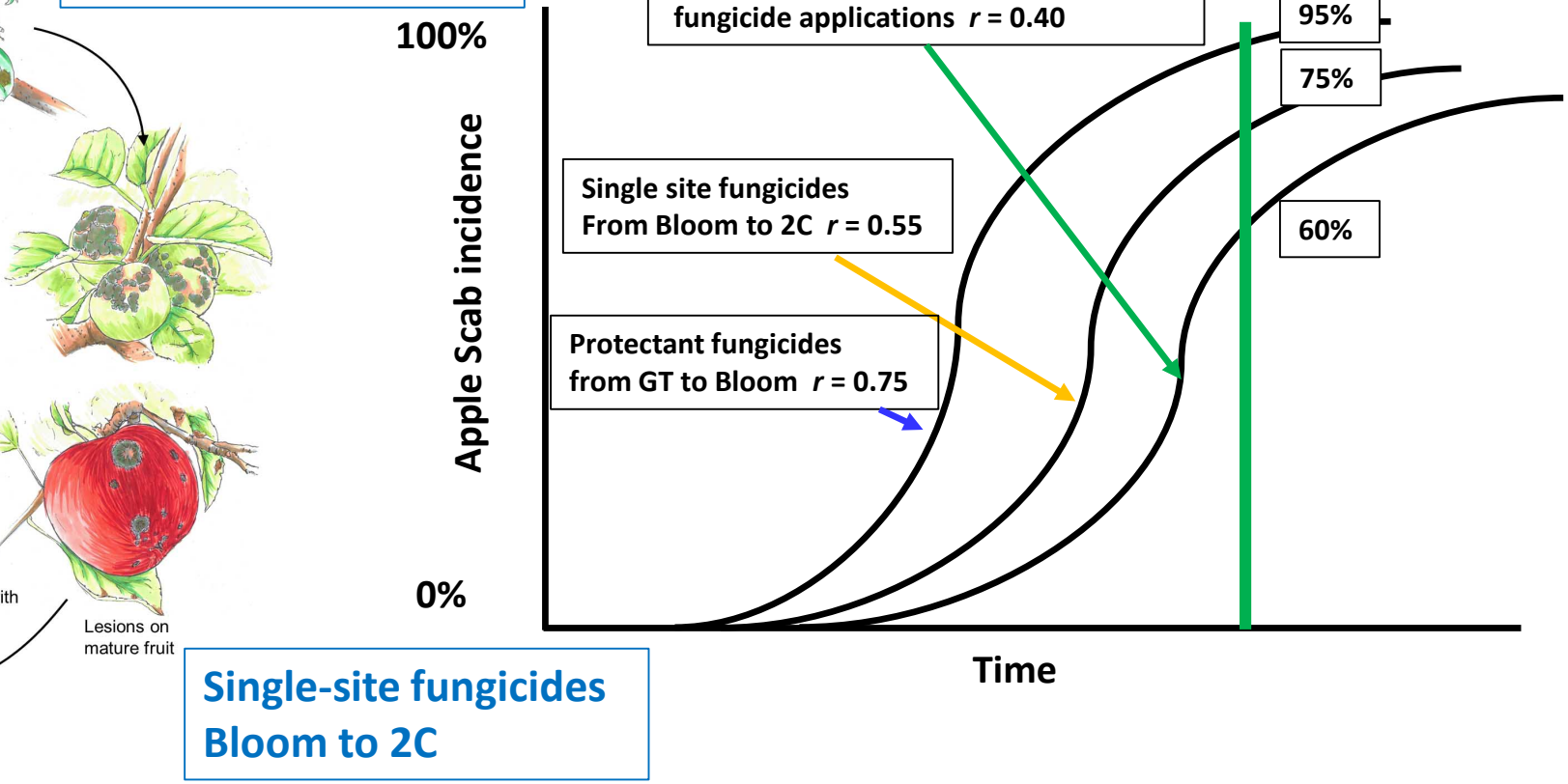
IPM: Apple scab



Protectant fungicides GT to Bloom



Single-site fungicides Bloom to 2C

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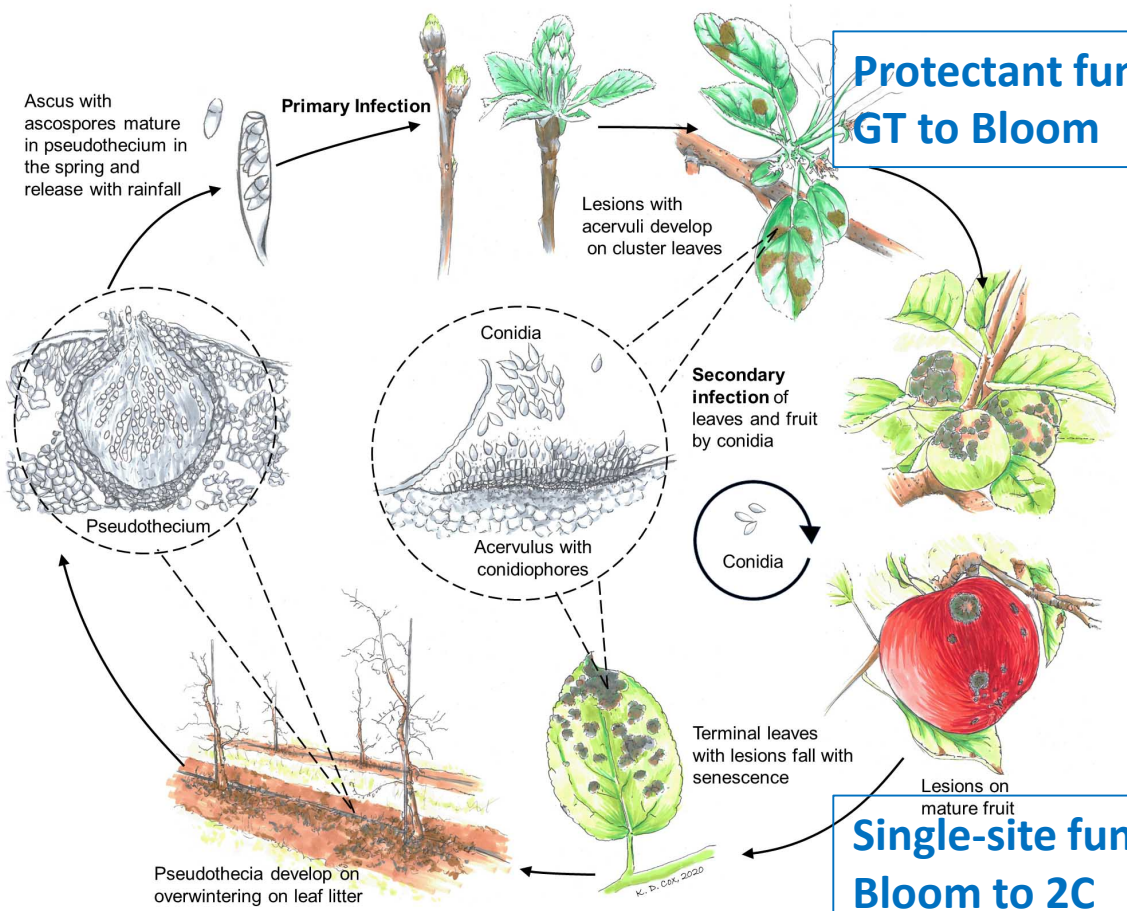
IPM: Apple scab

- **Chemical management**:
  - Primary apple scab: Protectant fungicides 5-7 days from green tip to petal fall: captan, mancozeb, sulfur, dodine
  - Secondary apple scab: Single site fungicides 5-7 days bloom to 2-3rd cover: DMIs, QoIs, SDHIs



Protectant fungicides GT to Bloom

Single-site fungicides Bloom to 2C

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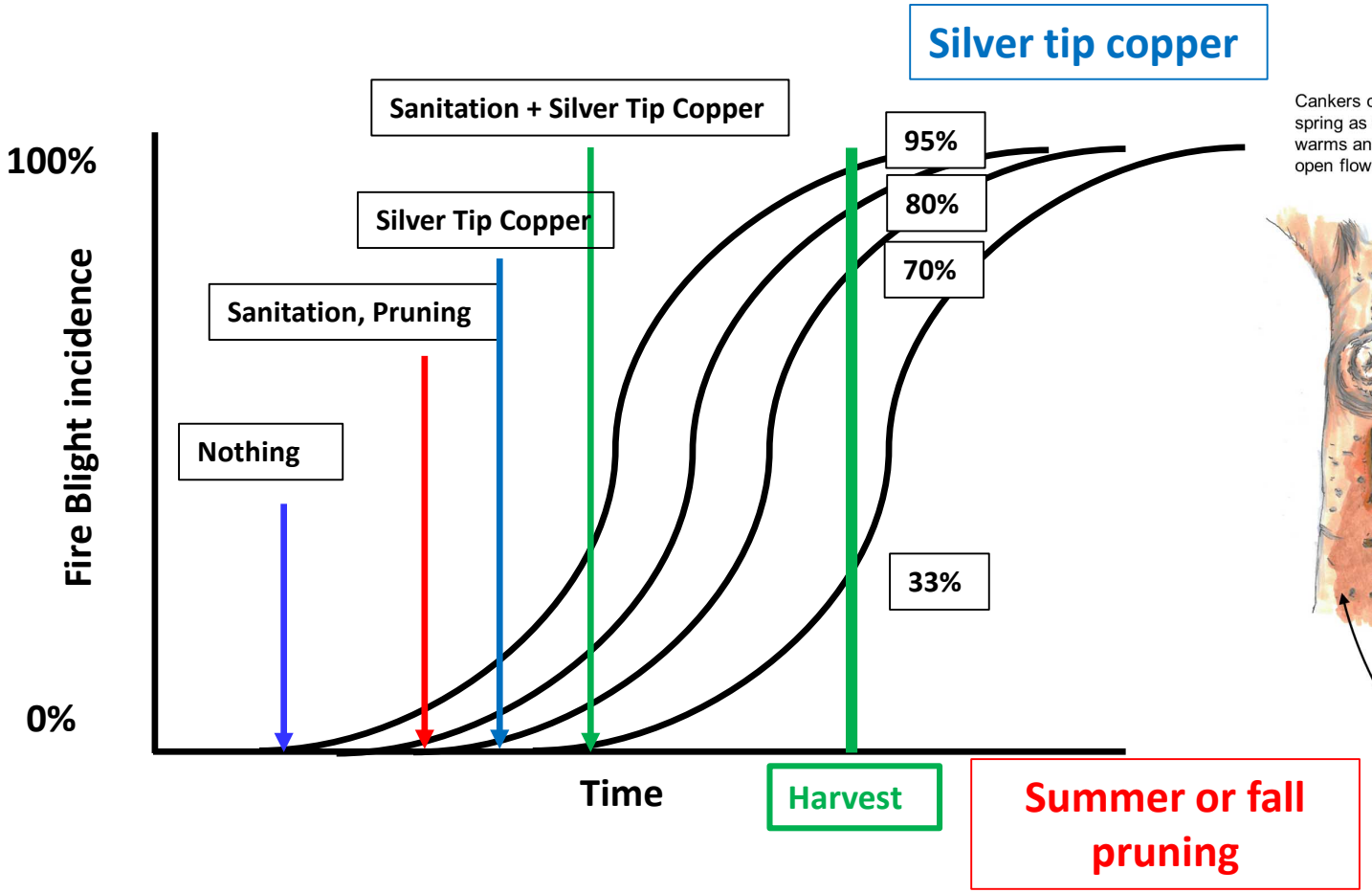
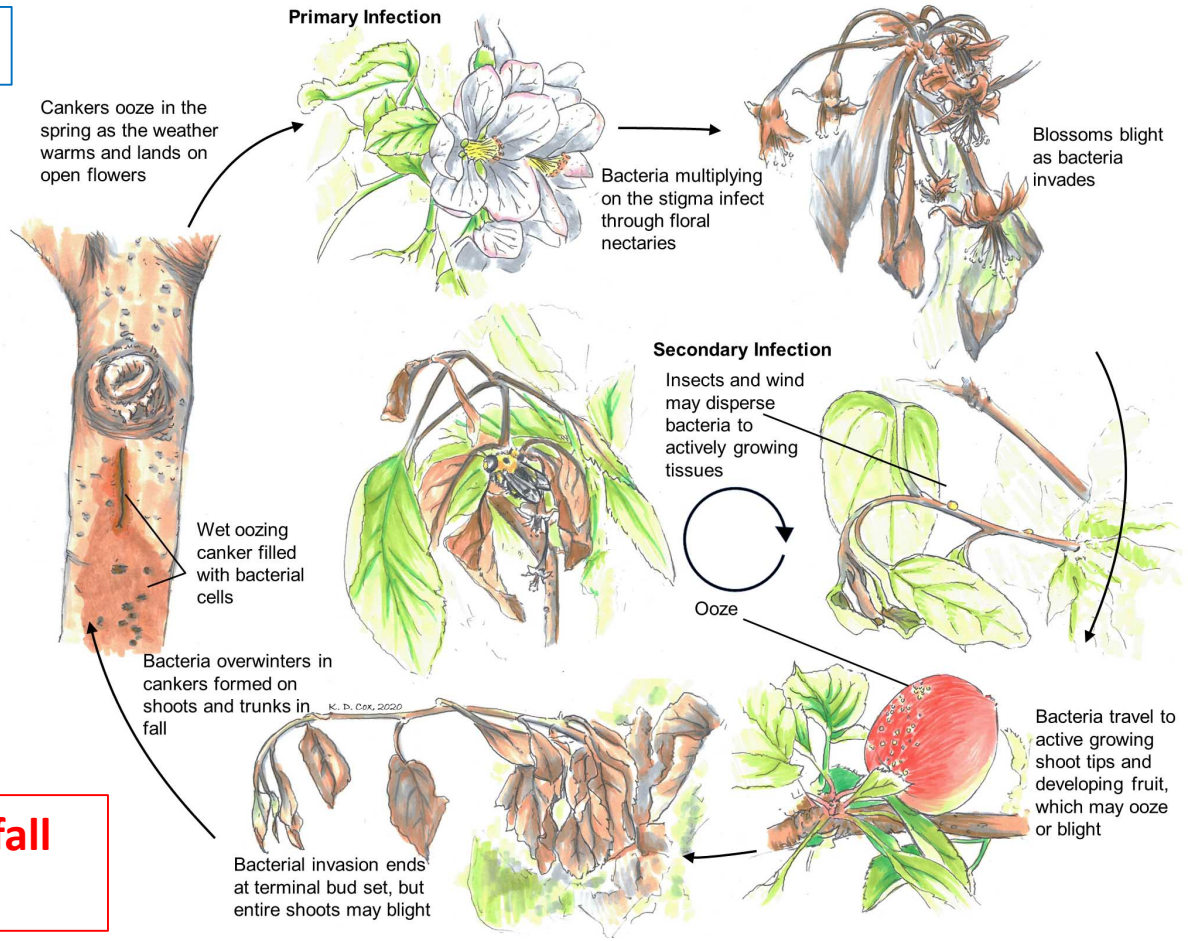
IPM: Fire Blight





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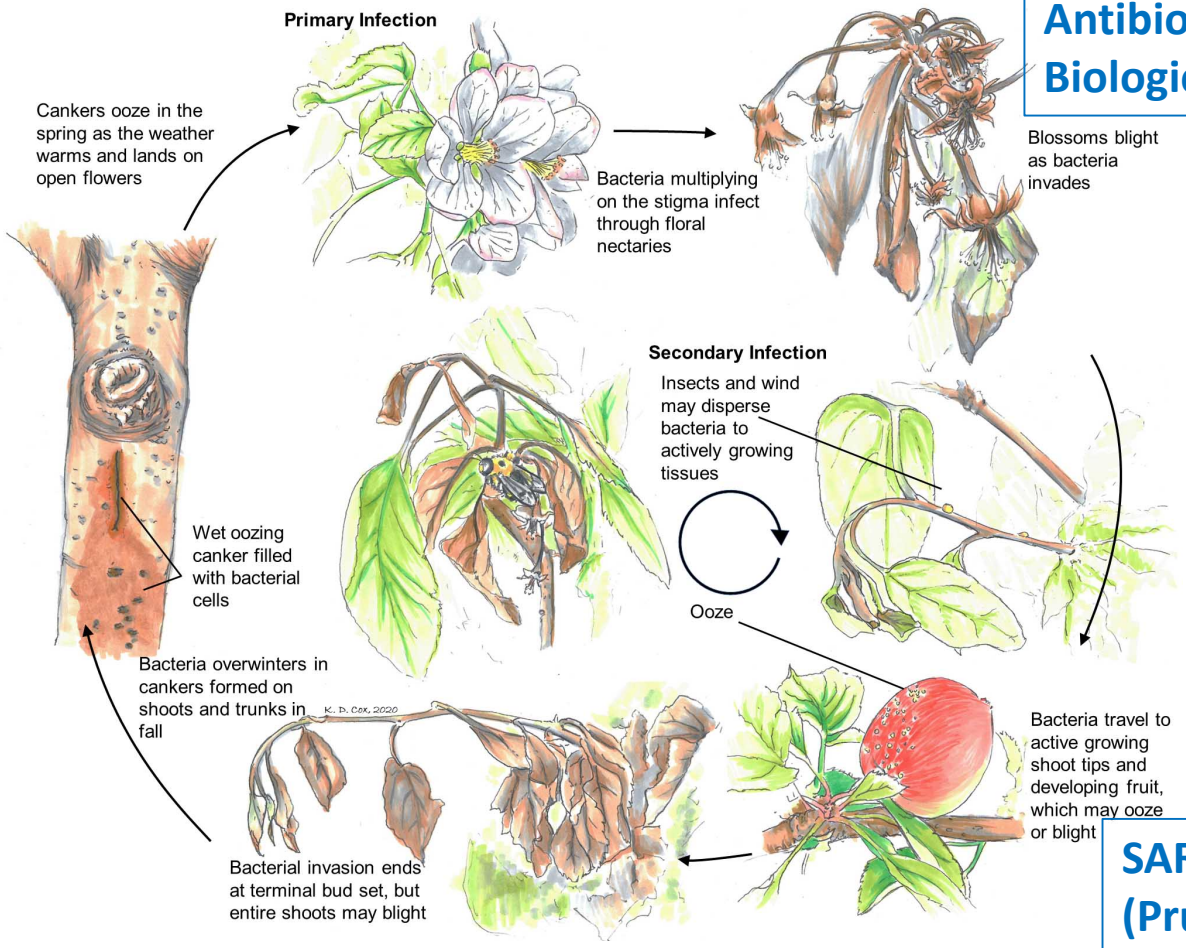
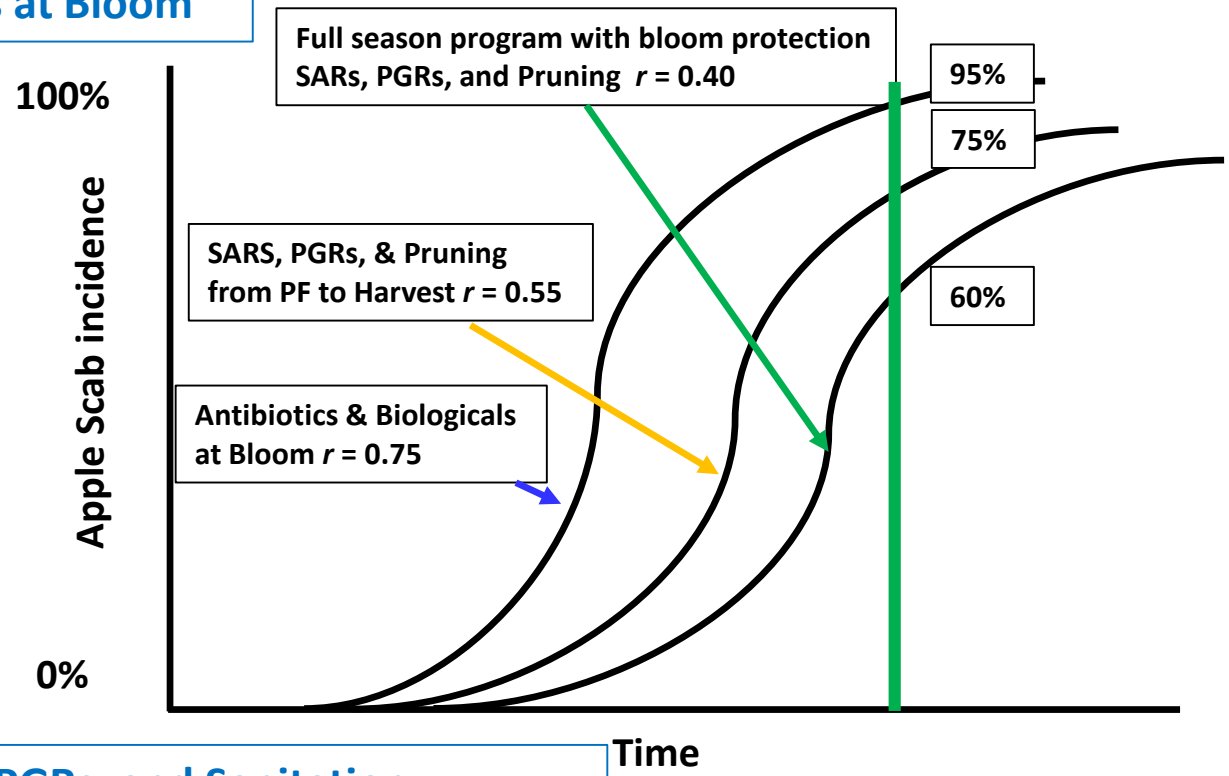
IPM: Fire Blight



Antibiotics & Biologicals at Bloom



SARS, PGRs, and Sanitation (Pruning) from PF to Harvest

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IPM: Fire Blight

- Pre-season
  - Delayed Dormant Fixed Copper application at silver tip (15% MCE) (Warm weather causes cankers to ooze > fire flight inoculum increases greatly)
- Bloom (had or have history of fire blight)
  - Use: consultant, extension alerts, or disease model forecasts for fire blight infection periods (NEWA)

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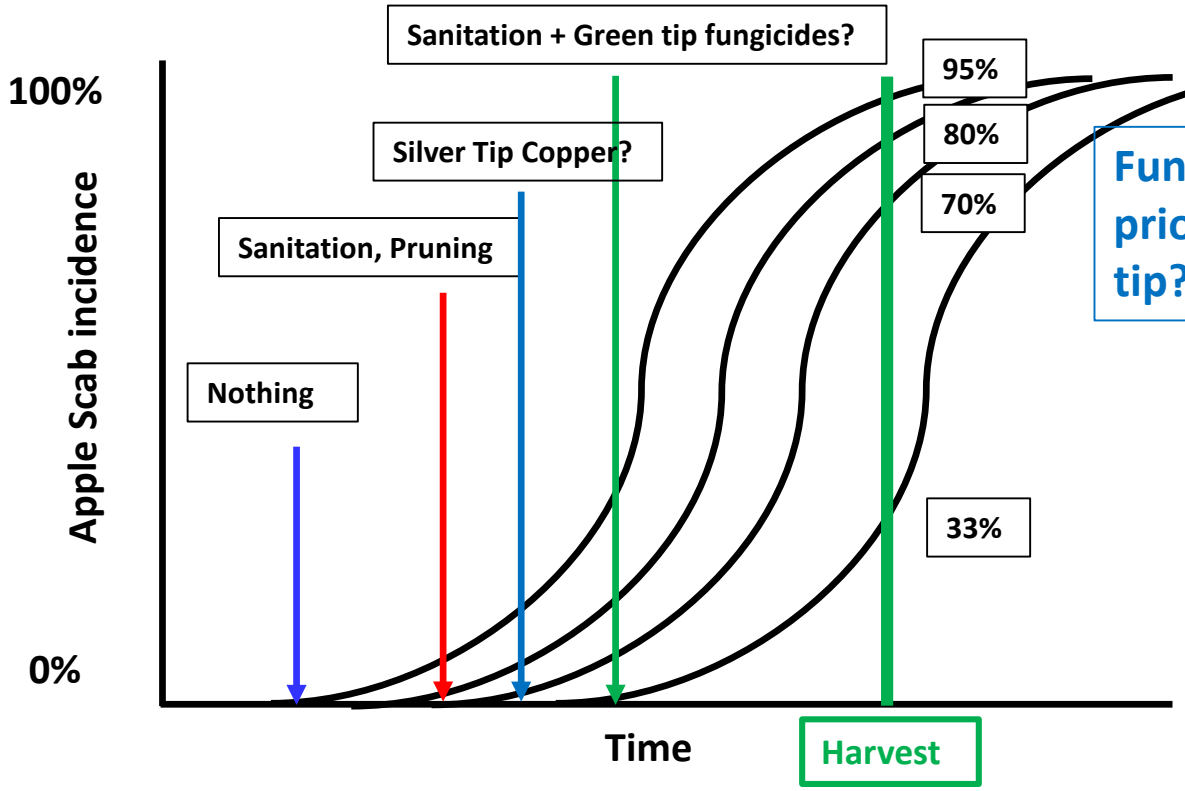
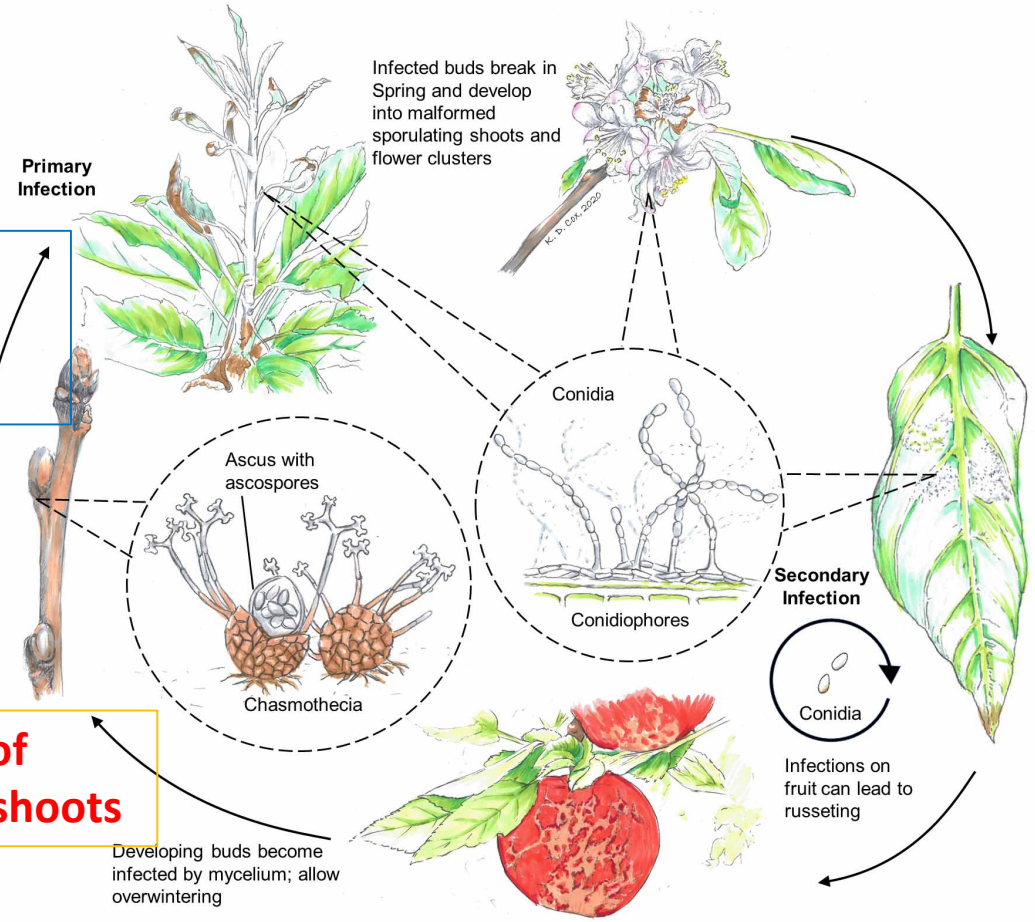
IPM: Powdery Mildew



Fungicides at prior to green tip?



Pruning of primary shoots

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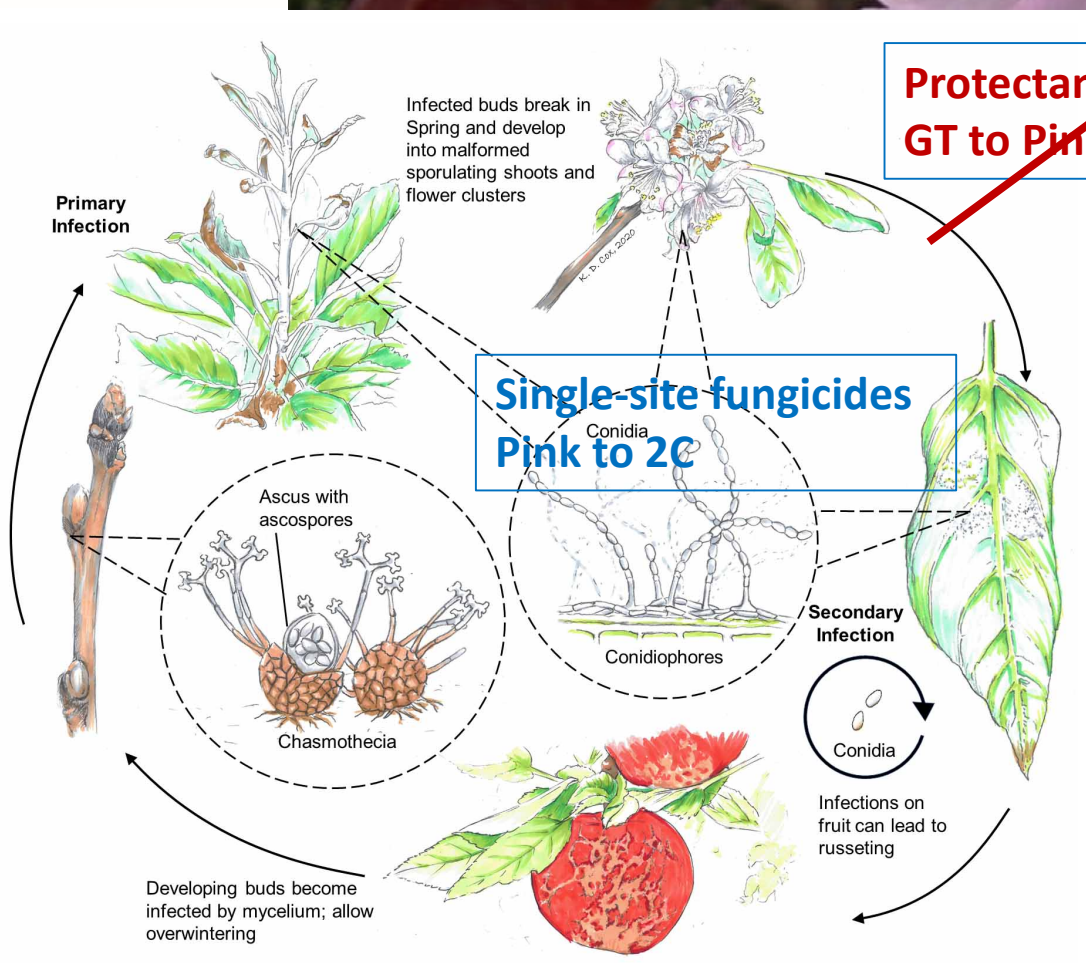
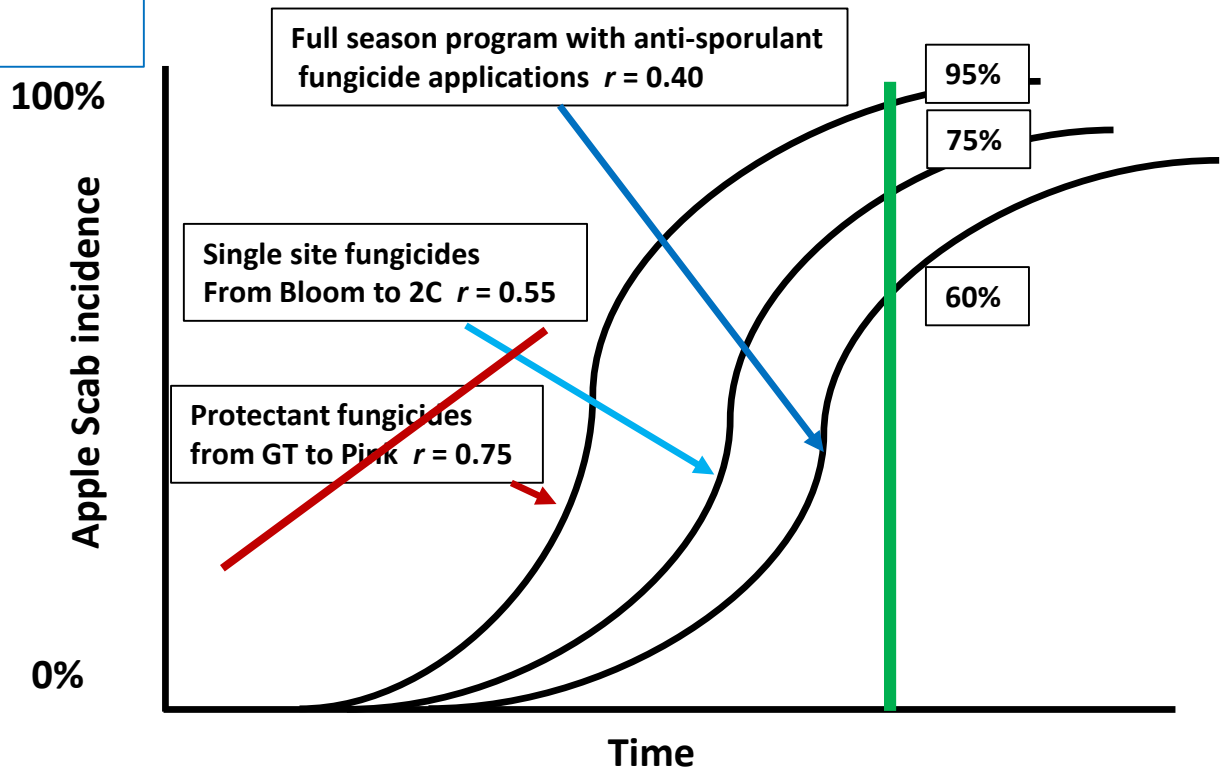
IPM: Powdery Mildew



Protectant fungicides GT to Pink

Single-site fungicides Pink to 2C



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IPM: Powdery Mildew

- **Chemical management**:
  - Secondary powdery mildew: protectant fungicides (sulfur only) Captan & mancozeb not effective
  - Single site fungicides 7-10 days bloom to 2-3rd cover: DMIs, QoIs, SDHIs
  - Models may help, but applications timed for apple scab