Growing Good Fruit

Paul Rasch
Making Your Life a Bit Easier

- Plant Disease Resistant Cultivars
- Use Geneva Rootstock
- Match Scion/Rootstock with soil & tree density
- Fence Deer Out
- Strong Trellis
- Tile if wet
- Plant the right quality trees
- Plant straight rows
Major Insect Pests

• Tarnished Plant Bug
• Rosy Apple Aphid
• Plum Curculio
• Codling Moth
• Oriental Fruit Moth
• Japanese Beetles
• Marmorated Stink Bug
• Next one ?????
Major Diseases

- Apple Scab
- Fire Blight
- Cedar Apple Rust
- Sooty Blotch/Fly Speck
- White/Black/Bitter Rot
Gearing Up

• Sprayer should be capable of blowing through the trees on each side, fully leafed out
• Tower sprayers help spread spray materials more evenly in tops of trees
  – Especially important for disease control and thinning
• Correct nozzling and good calibration are essential
  – We use 50gpm as a standard for water delivery
  – Calibrate annually
• 4WD tractor is a godsend in gnarly weather
• Invest in a good cab
Tree Row Volume

- A lot of beginning growers get this wrong
- Adjusting the amount of spray material to match the size of the tree canopy
- Generally expressed in gallons/acre dilute equivalent
- Formulas for TRV are readily available
  - Tree height X Canopy diameter X Row length per acre X 0.0007 gallons
- Tied in with gallons water used/acre

Calculated Percent of Standard

- H = Tree Height
- W = Tree Width
- D = Distance Between Rows
IPM 2.0

• Integrated Pest Management using the latest technology and materials to reduce environmental impact
• Use of traps for monitoring pests
• Use of NEWA or on-farm environmental monitors
  – Network for Environment and Weather Applications
• Combining organic and non-organic practices and materials
  – e.g. mating disruption, viruses, targeted conventional materials
Managing Resistance

• Commercial orchards have lost the use of many useful spray materials
  – Sterol Inhibitors, Strobilurins
  – Streptomycin

• Avoiding resistance
  – Spray to kill
  – Enough material, good coverage, proper timing
  – Combining materials with differing modes of action
<table>
<thead>
<tr>
<th>Stage</th>
<th>Dwarf Orchard</th>
<th>Semi Dwarf Orchard</th>
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<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Rate %</td>
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<tr>
<td>Silver Tip</td>
<td>Fire Blight, Scab</td>
<td>20 25% Champ</td>
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<td></td>
<td>Scab</td>
<td>20 100% Spray Oil</td>
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<tr>
<td>Tight Cluster</td>
<td>Scab</td>
<td>12 25% EBDC</td>
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<tr>
<td>Pink</td>
<td>Rosy Aphids</td>
<td>16 25% Assail</td>
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<td>Tarnished Plant Bug</td>
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<td>OBLR</td>
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<td>Foliar Nutrients</td>
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<td>Solubor</td>
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<td>Urea</td>
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<td></td>
<td>Zinc sulfate</td>
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<td>Petal Fall</td>
<td>FB</td>
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<td></td>
<td>Scab</td>
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<td></td>
<td>Scab</td>
<td>12 25% Captain</td>
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<td>PC, Leaf Hoppers</td>
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<td>First Cover</td>
<td>Scab</td>
<td>12 25% Rally</td>
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<td></td>
<td>Scab</td>
<td>12 25% Captain</td>
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<td></td>
<td>Bitter Pit HC</td>
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<td>CM Mating Disrupt</td>
<td>20 100% Isomate C</td>
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<td>Second Cover</td>
<td>Scab</td>
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<td>Leafhopper, et al</td>
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<td>Jap Beetle</td>
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Protecting the Good Guys

• Knowing what’s out there
  – Good, Bad and Ugly
• Good spray timing
• Targeted Spraying
• Forbs in alleyways to encourage beneficials
• Accepting some damage
• Mating Disruption (>10 acres)
Thinning Apples, Thinning Hair

• Only way to have a chance at producing consistent crops
• Requires a decent understanding of what’s happening in your orchard each season
  – Stored carbohydrate use vs. new carb production
  – 10mm fruitlet size is generally most vulnerable
  – Affected by weather – especially 4 days following thinning application
  • Cloudy & warm = most absorption, highest stress
  • Sunny & cold = lowest absorption, lowest stress
• Basic formula for us is NAA & Carbaryl
• Rates & number of applications variety dependent
  – Hard to Thin: Goldens (and GD progeny), Honeyscrisp, Gala, Liberty
  – Easy to Thin: Jonagold, Ginger Gold, Ida Red
  – Somewhat Self Thinning: Crimson Crisp
• Start early if 2 applications expected: 4-6mm on Galas, Goldens
Fire Blight Control

• Keep Fire Blight out of your orchard as long as possible
• Act aggressively when FB appears
  – Prune out FB during growing season only if containable amounts
  – No value to sterilize pruners – stay well below visible infection
  – Remove whole trees if severe
  – Dormant prune aggressively
  – Can easily do more harm than good with warm season pruning
  – Use of Apogee to control vigor
• Plant FB resistant cultivars and use FB resistant rootstocks
  – Geneva Rootstocks & Bud 9
• Use copper early, Strep as needed during bloom
  – Benefits of Strep post-bloom doubtful
Groundcover Management

• We currently use herbicide strips under trees and low-growing grass/legume mix in alleyways
  – Perennial rye + red fescue mix, with clover volunteer
  – Fall application + 1 summer application
  – Moving away from Glyphosate, especially in summer

• Struggling to see a way to rid ourselves of herbicides under trees
  – Dwarf trees don’t compete well in years 1-3
  – Vole damage makes mowing problematic years 3+
  – Damage to soil structure with 3-4 tillings/season

• No success with wood chip trial
Resources

• Michigan Fruit Management Guide
  – Spray recommendations by stage
  – TRV explained
  – Sprayer Calibration
• Michigan Hort Notes – season updates
  – https://www.canr.msu.edu
• Online Materials from Cornell: IPM, tree systems, hard cider info, more
  – https://fruit.cornell.edu/
• NEWA