

Managing Backyard Apples Organically

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Note: This presentation is only 50 minutes and cannot cover all aspects of growing apples. Rather it focuses on what is different in organic management.

Key Planning Considerations

- Planning makes it is easier to grow organically
- Plan to prevent pest problems, which are:
 - Weeds
 - Insects
 - Diseases
- Where to plant
- What to plant
 - Varieties
 - Rootstocks
- Improve soil health
- Orchard layout
- Use an integrated or systems approach!
 - Interconnect:
 - Managing the orchard 'floor'
 - Soil fertility and tree health
 - Insect and disease management
- Thinning the apple crop early by hand
- Keep good records. Learn from each year.

Planning: Where to Plant

- Be uphill on a slope
 - Better cold air drainage
 - Better water drainage
 - Avoid bottomland
- Soil types – Avoid heavy clay
- Away from timberland, brush, and walnut trees
- Install windbreaks if very windy

Planning: Selecting Apple Varieties

- Disease resistant varieties
 - Plant some if not all with resistances to some key diseases
 - Not all have same levels of resistance to each disease
- Example: Liberty – grower friendly, tart apple, bears annually and with resistance to fire blight, apple scap, and cedar apple rust

- You want diversity of varieties, bloom time, and harvest time
- Honeycrisp is tough to grow! Not recommended.

Planning: Rootstock and Tree Density

- Hardiness of rootstocks
 - Cold tolerance
 - Susceptibility to diseases, insects
 - Collar rot – in wet soils
 - Fire blight resistant
 - Woolly apple aphid resistance is nice
- Size of rootstocks
 - Standard
 - Semi-Dwarfing, Dwarfing
 - More effectively manage
 - Better spray penetration
 - Rain dries faster
 - More trees/unit area
 - Dwarf rootstocks need support and irrigation

Planning: Prepare Your Site

- Start 3 years out if possible to build soil and reduce weeds
- Take soil samples
- Amend soil pH if needed
- **Build up soil health and organic matter**
 - Use diverse sources
 - Compost
 - Cover crops
 - To smother weeds
 - Till into the soil
 - Plant successive crops
 - Reduce weed competition
 - If nothing else, till area in fall before planting

Planning: Orchard Layout

- Square is best vs rectangle or one long row
 - Reduces amount of perimeter*
 - Favors pest trapping and monitoring*
- Group varieties according to ripening
- Plant early blooming cultivars down slope

Manage: Orchard Floor

- Reduce weed competition – esp. first few years
- Improve soil health (tilth, organic matter)
- Provide beneficial insect habitat
- Provide pollinator habitat
- Management can affect the rise of apple scab spores from last year's leaf litter

- Voles, mice – tall vegetation provides them habitat
- E.g. White Dutch Clover
 - Nitrogen fixing so it adds to soil fertility
 - Provides pollen sources for bees
 - Low growing, less cover for rodents

Manage: Soil Health, Tree Health

- Add nutrients when you spray
 - Fish
 - Kelp
 - Neem oil – for both health and insect pests

Managing Pests

- Pests = weeds, insects, diseases
- Learn the biology of each! Know your pest!
- Observe! Watch! Learn from year to year.

Manage: Insects Pests

- **Major** insect pests
 - Plum curculio
 - You are managing a beetle
 - Codling moth
 - You are managing a moth and worm
 - Apple maggot
 - You are managing a fly
- **Minor** insect pests
 - Leaf rollers – Pinch rolled leaves.
 - Leaf miners should not be a major backyard pest if few chems used
- Degree-day modeling
 - Calculated based on daily high T° and low T° . See WI Pest Bulletin at end.
- Lifecycle models - developed for each insect pest. Strike at a weak point in the cycle.
- Monitoring traps - let you know if and when specific pests are present.
- Monitoring moisture is also used for Apple Maggot (see below).

Managing Plum Curculio (PC)

- 2 times of attack
 - After petal fall, when over 70° at night
 - Late summer
- Limb-jarring drops them out tree and onto ground cloth
- Band of Tangletrap on trunk but early on before they up the tree
- Pick up 'June' apple drops
- Surround WP™ on apple & completely covering it
- Start at petal fall and for 3 to 6 weeks, depending on weather
- Reapply after rain. Must coat the apple completely
- OR try Push-Pull strategy for multiple trees

- Surround WP™ on inner trees to drive PC to outer trees
- Pyganic on trap trees at night
 - According to degree days and scouting
- Livestock – to eat June-drop apples
 - Diverse poultry types
 - Young pigs - flash grazed

Managing Codling Moth (CM)

- The proverbial *worm in the apple*
- Two flights/summer
- Degree-day modeling is used.
- Granulosis Virus to control young larvae, Bt (Dipel) – less effective
- Corrugated cardboard bands on the trunk late summer so CM overwinter in them
 - Remove late fall or early spring and burn
- Surround WP™ used for PC may have some effect on CM

Managing Apple Maggot (AM)

- A pest in late July, August, September. Emerge from soil after a rain.
- Cause some skinny brown tunnels in apple.
- Can be trapped out
- Coat Red Delicious apples with Tangletrap and hang on each tree, esp. on perimeter

Managing Leaf Rollers

- A pest of young trees in particular.
- Can roll the leaf of the growing tip and eat away the tip stifling growth.
- Apply Bt at pink flower stage for young larva; again in later sprays if many
- Hard to reach with sprays due to protective leaf-rolling and the larva must eat the Bt
- Beneficial insects can help reduce numbers.

Managing Mites

- Mites should not be an issue!
 - Due to predatory mites
 - Unless too much Sulfur is applied

Managing Diseases

- Use degree-day modeling
 - Just follow the models in Wisconsin Pest Bulletin of DATCP
- Watch for rain & monitor leaf wetness
- Lifecycle models have been developed for each disease
- Prune well to allow air to circulate so trees dry quickly

Major Diseases

- Apple Scab
- Fire Blight
- Cedar Apple Rust
- Powdery Mildew

- Rots

Managing Apple Scab

- Scab spores come from last year's leaf litter
- Mow leaves each fall & early spring so leaves decompose and spores don't grow
- Two cycles – get first and you are home free
- Apply Sulfur – prior to rain
- Lime-sulfur - for back action just after rain
- Include liquid fertilizers in sprays

Managing Fire Blight

- You may never see it. Bacterium resides in wild hosts.
- Blossom blight: Hits blossoms >mid-60s and wet, if bacterium is present
- Bacterium spreads by rain, wind and pollinators
- Shoot blight: Affects young, rapidly growing shoots
- Cut out cankers in winter
- Spring: Spray fixed Copper by half-inch green (e.g., copper hydroxide)
- Summer: Prune out strikes
 - Sterilize pruners between each cut; e.g., Lysol, 10% bleach, alcohol
 - Remove and burn shoot strikes , branches & infected tree trunks

Keep Records!!

Resources

- *The Apple Grower: A Guide for the Organic Orchardist*, by Michael Phillips (2nd edition)
- *A Grower's Guide to Organic Apples*, Cornell University, IPM Publication 223
- State department of agriculture – to track degree-days, pest life cycles
 - WI Pest Bulletin, DATCP, Krista Hamilton
 - Similar in other states?