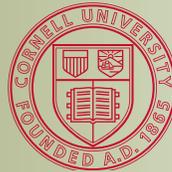


Apple IPM for Beginners



Cornell University
Cooperative Extension

Choosing Sprays

The New York State Department of Environmental Conservation (NYS DEC) controls pesticide usage in NYS in part by registering pesticides as “general use” or “restricted use”. DEC requires training and licensing for those who spray “restricted use” pesticides. Many insecticides and a few fungicides that are legal for use in NYS orchards require this license.

Cornell's Pest Management Guidelines for Commercial Tree Fruit Production lists pest control products for legal use for specific pests on NY tree fruits. This list changes as new products acquire (or lose) DEC approval, so the Guidelines are published every year and can be ordered online at the Cornell Store (store.cornell.edu/c-875-guidelines.aspx). Choose products based on your farm size, the quantity of product available, use rates and number of sprays anticipated, cost, and product shelf-life.

It is important to refer to the *Cornell Tree Fruit Guidelines* for charts rating effectiveness of fungicides on diseases (Table 6.1.1) and insecticides (Table 7.1.1). Each product's toxicity to beneficial insects is also listed. A short list of products, most of which do not currently (at time of printing) require a license, is provided. Find the brand name first, followed by the chemical name of the active ingredient. Refer to the current *Cornell Tree Fruit Guidelines* for up-to-date listings of registered NY pesticides. Note: Professional orchardists are

2014 Cornell Pest Management Guidelines for Commercial Tree Fruit Production



Trapping bees near a manure sink bag (MSB) near harvest, Campbell Hill, NY (Chris Drexler, Orchard)

Photo by: Peter Jantich, Cornell University Student Valley Research Laboratory, Highland, NY



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Online version of this Guideline is available at pmguidelines.org.

Additional information at the Cornell fruit homepage: www.fruit.cornell.edu

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quite precise regarding which pesticides they choose for which insects or diseases. They take into account pesticide resistance management, weather, and other factors. Study the *Cornell Tree Fruit Guidelines*, Chapter 5-7, for more detail.

Remember, **the pesticide label is the law** on how that product may be used. Both the pest and the crop must be listed on the label, and you must follow the listed rates and time of application. Also pay careful attention to the Pre-Harvest Interval. ‘PHI’ is the number of days you must wait between application and harvest. Make sure you wear proper safety equipment and garments as required on the label (PPE = Personal protective equipment).

Safety Glasses or Goggles

Chemical Resistant Coveralls



Respirator

Chemical
Resistant
Rubber
Gloves

Chemical
Resistant
Rubber
Boots

Spraying Weather

Optimal spraying weather is a light 3-8 mph wind, no rain in the forecast for at least 6 hours, and temperatures less than 85°F. No oil should be included in a spray 48 hours before or after freezing temperatures. To ensure sprays stay on target—drying on the leaves rather than drifting to non-target areas—it is best to apply at dawn or dusk when winds tend to be calm.

Protecting pollinators

Insecticides can be toxic to bees if they are exposed to direct treatment or to sprays that have not dried. Read the label section on “Environmental Hazards” before spraying insecticides for proper use if bees are visiting the orchard.

Tank Mixes

Growers may mix fungicides and insecticides in a sprayer “tank mix” if their scouting and weather monitoring show that both are needed. But never delay a spray to make a tank mix work. Also, a few tank mixes are toxic to tree leaves or fruit—always read that label to find any restrictions on products that can be mixed!

Buying Sprays

Some orchard pest control products are available at the local farm store. However, sooner than later you’re going to have to find a supplier for more specialized products. Here are some options:

Orchard pest monitoring supplies:

Great Lakes IPM, 800-235-0285, greatlakesipm.com.

Gemplers, 800-382-8473, gemplers.com/pest-mgmt.

Agricultural chemicals:

Helena (Geneva, NY) www.helenachemical.com.

They may also supply your local farm store, which can broker special orchard products upon request.

CPS (Sodus, NY) cpsagu.com.

Winfield Solutions (Lyons, NY), or Call Customer Service Department at 1 (855) 494-6343 to find the WinField™ retailer nearest you.

Note: Cornell does not endorse any company. These suppliers are listed here for your convenience. This is not a comprehensive list.

Fungicides for Diseases				
	Apple Scab	Powdery mildew	Rust	Sooty blotch/ flyspeck
Copper (various brands)	4 (Green tip before infection)	0	na	na
Captan	4	0	0	3
mancozeb (various brands)	3	0	4	4
Polyram (metiram)	3	0	4	4
Sulfur (various)	2	2	0	1

0=none, 1=slight, 2=fair, 3=good, 4=excellent disease control, * may be resistant

Anti-Bacterials for Blossom Sprays to Prevent Fire Blight
Streptomycin (Agristrep, Firewall, or Harbour) Oxytetracycline (Mycoshield, Fireline)
Copper Products: can be used during bloom to protect blossoms but can cause a rough finish on apple skin.
Biological controls can be used during bloom if low risk of blossom blight. List includes Serenade Optimum, ASO; Double Nickel 55; and Blossom Protect.

** Miticides for Apples			
Miticides	European Red mite	Two-spotted spider mite	Timing
Portal (fenpyroximate)	3	3	threshold
Horticultural oils*	3	1	Dormant
Zeal (etoxazole)	3	3	Pink, or Petal fall
Stylet-oil*	3	1	Petal fall, plus 2 week intervals

0=none, 1=slight, 2=fair, 3=good

*Do not apply Captan 7-10 days before or after oil.

**Do not use the same miticide two seasons in succession.

Basic Insecticides for Apples						
Insecticide	Plum Curculio	European Apple sawfly	Green Aphids/Leaf hoppers	Oblique banded Leafroller	Codling moth/oriental fruit moth	Apple maggot
@Surround (kaolin clay)	2	-	1	-	2	2
@BT (Biobit, Dipel, etc.)	0	-	0	3	2	0
Sevin (carbaryl)	2	-	1/3	2	2	2
*Imidan (phosmet)	3	3	1	1	3	3
Malathion	2	2	2/1	1	2	2
Avaunt (indoxacarb)	3	2	1/3	0	2	2
*Admire Pro (imadocloprid)	-	-	3/3	-	-	-
Assail (acetamiprid)	2	2	3/3	0	3	3
Delegate (spinetoram)	2	-	-/-	3	3	2
@Entrust (spinosad)	0	-	0/0	3	2	2

0=none, 1=slight, 2=fair, 3=good, *Restricted use, @ organic option