



ORGANIC APPLE GROWING

PART 3. INSECTICIDES

by Dennis Mackey

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Until fairly recently, organic apple growing in the Midwest had been a difficult situation. Something in the area of thirty insect species can cause serious economic damage to apples. For our main purposes here, we'll consider the major pests.

Generally the timing of spray applications for apples is broken down into **segments of the growing season**:

1 Dormant – many apple growers will use an oil spray for smothering mites, mite and aphid eggs and scale insects. While dormant and summer oil are acceptable to OGBA and other certifying agencies for growing apples, they are a restricted-use product. Some other growing segments are:

- ♦ Silver Tip
- ♦ Green Tip
- ♦ Pink
- ♦ Tight Cluster
- ♦ Bloom
- ♦ Petal Fall
- ♦ plus, a series of cover sprays throughout the growing season.

These various stages can move very quickly from one stage to the next, depending upon temperature. Some of the most notable of

these are:

- ♦ Scale
- ♦ Aphids
- ♦ Spotted tentiform leaf miner
- ♦ Leaf rollers
- ♦ Cutworms
- ♦ Tarnished plant bug
- ♦ Plum curculio
- ♦ Codling moth
- ♦ Mites

During the time many of these pests are emerging, I'm also using **sulfur** to control scab. Sulfur used at the twenty or more pounds per acre rate and with the frequency that a preventive scab control program requires will control almost all of these pests, or at least keep them at acceptable economic thresholds. Be sure that if you use a **dormant oil spray**, you apply it before you start seeing green tissue. It's not that the oil will damage the tissue, but the combination of oil and sulfur used for scab control at this time can be a dangerous combination. You may want to reread the last newsletter, where I talked about using sulfur as a fungicide.

Dr. George Ware, the former head of the Department of Entomology at the University of Arizona, states in his book *Fundamentals of Pesticides*, "Sulfur is very likely the oldest known

PERSONALLY, I DON'T SPRAY ANY PRODUCT ONCE THE TEMPERATURE REACHES 85 DEGREES.

effective insecticide. Sulfur is most useful in integrated pest management programs where target pest specificity is important. Usually sulfur is pest-specific, leaving predators and parasites." If, when scouting your orchard during these early stages of growth, you see too many worms (leaf rollers, cutworms, and green fruitworms,) you may want to use Bt, or **Bacillus thuringiensis**, spray. Dipel is the trade name of one broad-spectrum type of Bt.

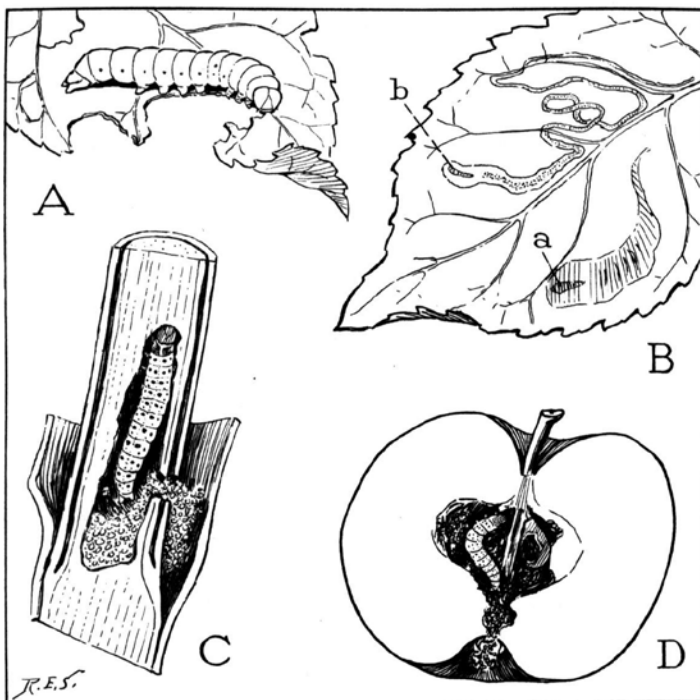
Another caution should be noted in regard to using sulfur. At temperatures of 90 degrees F or

more, sulfur can be **phytotoxic**, that is, it can burn the plant. Personally, I don't spray any product once the temperature reaches 85 degrees. A few of the major pests that sulfur does not seem to affect are plum curculio, codling moth and apple maggot. My main tactic for codling moth (the pest that makes the big worm hole) is **pheromone disruption**. I use a brand called Isomate-C, at the rate of 400 twist ties per acre. These twist ties saturate the orchard with the scent that female moths use to attract males. This prevents the males from locating and mating with female moths. I've found this product works well, but you need to use the full rate per acre. Since you're creating a blanket effect over the whole orchard, pheromone disruption is not recommended for just a few trees in the backyard.

For apple maggot, I've been using what is called a **trap-out method**. Using an imitation apple covered with tangle foot, I hang these red balls around the outside rows of the orchard starting in late June.

Many organic apple growers have been using Rotenone, Ryania or Sabadilla alone or in mixture to control insects. I have never used these products in growing apples and I don't recommend them. They are probably more toxic and less safe to use than some of the artificial insecticides that a commercial grower would use.

Some newer materials that I do recommend for apple insect control are two neem oil products know by the trade names **Neemex** and **Trilogy**. They are used in a mixture with **Garlic Barrier**. The neem products are listed as Restricted in the OGBA input lists, but so are rotenone, ryania



Various habitats of plant-feeding caterpillars

A, a caterpillar feeding in the open on a leaf. **B**, leaf miners in an apple leaf, the trumpet miner at *a*, the serpentine miner at *b*. **C**, the corn borer feeding within a corn stalk. **D**, the apple worm, or larva of the codling moth, feeding at the core of an apple.

I WOULD URGE LEAF GROWERS TO HAVE LEAF ANALYSIS AND SOIL SAMPLE TESTS DONE...THE CHANCES OF MAXIMIZING THE HEALTH OF THE TREE AND GROWING THE BEST CROP YOU CAN WILL BE MUCH BETTER.

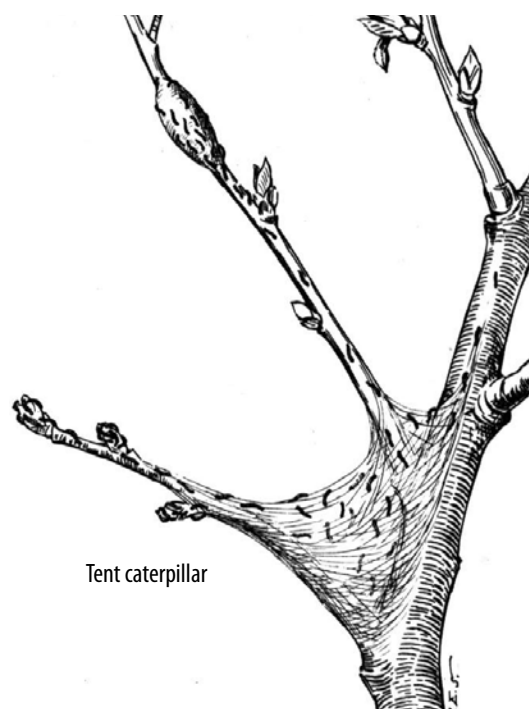
and sabadilla. The neem products are not nearly as toxic to the environment. The combination of the neem products and garlic seems to give good control of plum curculio and apple maggot. At this point I'm not sure because I've only used the mixture for one season. For the next newsletter, I'll talk more about apple tree nutrition. In talking about this subject, I would urge leaf growers to have leaf analysis and soil sample tests done this season. The chances of maximizing the health of the tree and growing the best crop you can will be much better with the information provided by these tests.

UPDATE – January 2007

Since I wrote this article in the mid-1990s, many new organic insecticides have been made available. These include:

- ♦ **Entrust** – A new class of pesticide that works against a wide range of insects. It is expensive, but works well.
- ♦ **Pyganic** – Provides rapid knock-down and kill of more than forty insect pests.
- ♦ **Oxidate** – For use as a fungicide. It is hydrogen dioxide and can be used for the prevention and control of plant pathogens.
- ♦ **Dipel** – Not a new product, but it works well against any type of green worm that attacks crops.

Timing of sprays is everything in fruit growing. You need to learn when various insects will hatch out. Commercial growers use “**degree days**” to plot when various insects will hatch.



Tent caterpillar



Aphid