

Lessons Learned in Organic Apple Production: Log Cabin Orchard

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Log Cabin Orchard, owned by Gord and Debby Hawkes, is a small (14 ha), diversified, organic U-pick fruit farm located near Osgoode, just south of Ottawa in eastern Ontario. The Hawkes purchased the farm in 1996, with the goal of full-time organic apple and small fruit production.

Several years of apple crop failure, and the challenges of producing organic apples for the fresh fruit market, however, have steered Gord and Debby away from the goal of producing "dessert quality" apples towards a more diversified operation. The farm now includes a larger proportion of disease resistant apple varieties, heritage and cider apple varieties, as well as increased plantings of small fruit crops. A longer term goal includes on-site processing to provide value-added products such as apple-based organic cider or juice. During the process of organic transition, the Hawkes have acquired some important insights into and a wealth of practical knowledge about organic apple production and organic apple pest control. Some of these "lessons learned" are outlined below.

Rocky Road Towards a Balanced Ecosystem

In the first year, the Hawkes managed the orchard using conventional methods but with a strong determination to learn how to grow apples organically. "We were either going to do it organically or not do it at all". During the period of organic transition, the apple crops were good. "The first year (1997), we had an incredible bumper crop. The third year was also a great year. The rain came after the scab pressure was over, so there was virtually no scab on the fruit, and the insect pressure was down. We had a fabulous crop".

In the next three years, however, cold, wet weather in the spring, and overwhelming scab and insect pest pressure, resulted in low yields of poor quality fruit or total crop failure. Gord offers the following explanation for the delay in insect pest buildup in the early transition years. "This was a conventional orchard for 12 years prior to our taking management, and the initially low pest pressure was probably a carryover effect of the chemicals. I think that what we're seeing is actually just part of the natural process of establishing the new orchard ecosystem. It takes the "good bugs" a lot longer to rebound than it does the pest species, and that's why we've had such a rough few years lately. It's going to take a period of time to establish a new balanced ecosystem".

The "What, When, Where and How" of Using Organically Approved Pest Controls

The list of pests and potential pests of apple trees is mind boggling. And yet, as Gord relates, the mere presence of a pest does not always indicate a problem, or a need to apply controls. "The biggest thing for us has been understanding what to use, when and where to use it, and in some cases, when it's better to do nothing at all". In many cases, the most effective controls are the simplest ones. "European sawfly can be a significant early season pest, but is also our natural thinner. And thinning blossoms is a big challenge in organic fruit production. White cards coated with tangle foot, provide adequate sawfly control, and at the same time, provide good tarnished plant bug control".

Visual colour traps coated with tanglefoot have also provided effective control for apple maggot, a later season pest with a low economic threshold. "For maggot control, we swear by the red balls (for the mature females, laying eggs) and yellow cards (for the immature females). We know where the "hot spots" for maggot are, so we know just where to hang the balls. So far, we have had no economic damage from apple maggot..."

Other pests have been more difficult to control. "Curc (the plum curculio) has exploded everywhere, even in conventional orchards. Its now getting close to the primary pest, because it causes a lot of early season fruit drop and damage to fruit. We've been trying to get Surround® (an organically approved kaolin clay-based pesticide) registered for the past three years, and we finally got it registered for use on apples last year. We'll definitely be using Surround® this year- we'll try to get it on trees as early as possible, and use as many applications as necessary to minimize curc damage. Surround® should also control sawfly, codling moth, and apple maggot, if you want to spray that late in the season".

There have also been drawbacks to some of the organic approved pesticides-namely, cost, efficacy, and in some cases, non-selectivity towards non-target organisms. "Oblique-banded leafroller has really shot up in recent years. Bt (*Bacillus thuringiensis*) does control it quite effectively, however, it's a question of timing. In the early years, we used Trounce® (a pyrethrum product). Problem with pyrethrums is they're broad spectrum botanicals. There was no question the Trounce worked, but it also wiped out a lot of the predators along with the pests... Trounce was also very expensive- \$120 for 10 litres. Bt is also expensive - \$200 for 10 L".

Gord notes that, in eastern Canada, resistant varieties are the most important defence against apple scab. Sulfur products have been the mainstay for scab control in the scab susceptible varieties. The main problem with these, however, is their limited residual activity - sulfur sprays must be applied every 3-5 days, depending on weather, during the period of primary scab infections. This year, Gord plans to use Bordeaux mixture (copper sulfate plus lime), which has greater residual activity towards scab and also provides control of the bacterial disease fireblight.

Need for Coordinated R&D Effort

Despite the challenges in organic apple production, Gord remains optimistic. "I know organic apple production is "doable", not only in interior BC, but also in Ontario, Nova Scotia, and other parts of Canada". He stresses the need for a coordinated research and development (R&D) effort, to enable a more integrated (rather than fragmented, pest-by-pest) management approach, and to provide organic growers with access to the tools and information that they need. "The Europeans are making great strides in organic fruit production, so are the Americans. Here in Canada, we are so far behind. There's an opportunity here, and if we all work together - growers, researchers, governments, certifying organizations, industry - we can do it. We just need to get all the players together, so we can move ahead in the right direction".

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