



Traps for catching apple maggot flies

We also use weather data loggers from Spectrum Technologies to keep accurate records of temperature and leaf wetting periods. The data logger is placed in the canopy of an apple tree. The logger has to be brought into the office and down loaded onto my pc. We use the weather data to calculate degree day units and predict when pests will be hatching and infesting the fruit. We also use computer modeling to let us know when disease pressure is increasing and to plan fungicide application when the pathogens are at their most susceptible phase.



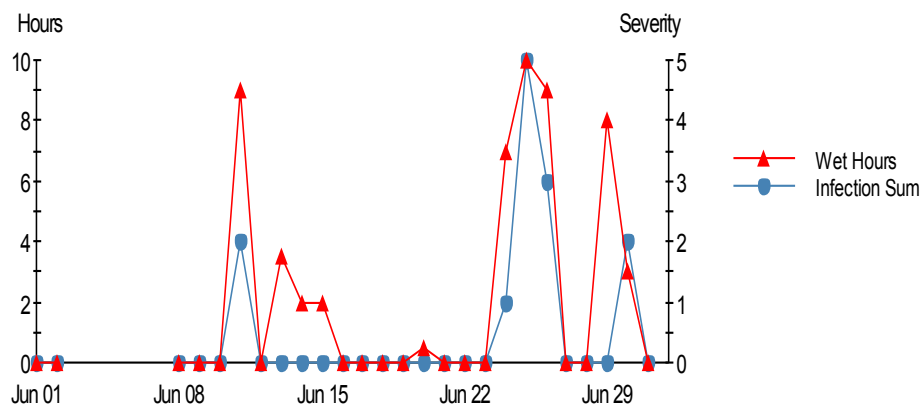
Weather data logger



downloading weather data to pc

The apple scab model will look at the amount of time the leaves were wet and take into account the temperature and then report on the time and severity of an infection period. We then use this data to spray lime sulfur on the organic blocks after there has been an infection. Lime sulfur works well in a post infection program. This helps us minimize the amount of sulfur we have to use.

HochOrga - Apple-Scab



Computer generated report using apple scab disease model

Enhancing the Orchard Environment

We try to create a balanced environment in our farming system. We implement many different practices to increase the numbers of beneficial insects and other organisms that help keep pests at low levels. Songbirds, bats, parasitic insects, raptors and other predators help us stabilize the pest levels. Even when weather conditions allow certain pests to spike, our balanced orchard ecosystem keeps that spike at a much lower level than what often occurs in a conventional orchard. This situation allows us to use the new soft products that cannot knock down high pest populations. We utilize these soft

products to nudge the population down while allowing the indigenous beneficial insects to survive. Of course, the OMRI approved products also work well in this environment.

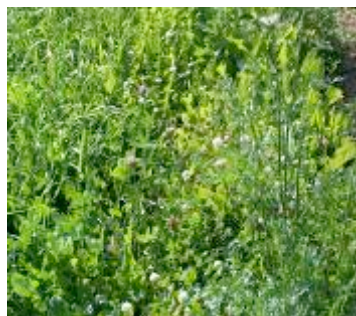


Our orchard floor is treated as a key factor in our fruit production ecosystem. We modified one of our mowers to side discharge the cuttings under the tree. This puts a light mulch over the apple roots and stimulates the earthworms to move under the tree canopy and pull the organic matter into the soil. Our primary fertilizer is composted turkey manure from Sustane. This product is low in nitrogen but is full of micro-organisms that inoculate and strengthen the soil activity.

Proper timing of mowing has a big effect on the orchard environment. A practice that creates a good home for beneficial insects is alternate row mowing. We mow every other row in the orchards during



the growing season. We wait until the mowed rows show signs of flowering before we mow the rows with the long grass. Here in southeastern Minnesota there are many indigenous plants that thrive in the orchard if they are allowed to complete their flowering and reseeding cycle. Vetch, Queen Anne's Lace, Red Clover, White Clover, and residual Alfalfa are just a few of the plants that inhabit our orchard floor. Continual mowing creates a monoculture of grasses. Timed mowing produces a colorful multilayered diversity of plants. These plants provide pollen and nectar for beneficials.



Bird houses provide shelter for nesting songbirds. Wrens, tree swallows, and bluebirds help reduce the levels of flying insects. Numerous homemade birdhouses built from recycled pallet lumber are placed throughout the orchard.



Farm Transition Plan

Overview of Farm

Converting the entire farm to organic production was not a consideration in the past. We have for many years hoped to transition a section of the farm into a certified organic program. We felt that this would allow us to offer both an organic option (that would vary drastically in its packout from year to year) while also relying on a soft conventional program in order to keep a consistent market presence and have fruit available for our wholesale accounts every year. We are now considering converting the entire farm to organic production for two reasons. The primary reason is that we have made the investment in a cider facility and commercial kitchen. We should be able to produce several types of value-added products that will both keep us in the market place in years when the weather does not give us very much fresh packed fruit, and will allow us to utilize the low grade fruit. The second reason for considering converting the entire farm to organic production is the improved pest control products that have come onto the market in the past five years. We have many more options to push down the pest population spikes and give us more consistent production levels than we would have ever imagined in the 1990's.

Organic Production on Disease Resistant Varieties	
Products used 1990's	Products used on 2005
<ul style="list-style-type: none"> • Bt timed with CM traps • Oil • Soap • Surround • Spheres for AM • Beating trees for PC 	<ul style="list-style-type: none"> • Surround • Aza-Direct (neem) PC • Cyd-X for CM • Bt for leaf feeders • Ground Force herbicide • Spheres for AM • Geese,
40% to 60% Pack-out	75% to 90% Pack-out

Orchards

We plan to operate three orchards in 2007. Our main farm 'farm one' has about 30 acres, farm two – 10 acres conventional, and farm three – 8 acres organic. Farms two and three are rented. The majority of the apple blocks on farm one are in various degrees of transition. Two blocks of trees will remain conventional in 2007. Both of these blocks contain many different cultivars. I plan to wait to transition these blocks until I have more experience with rates and timing of the sulfur based disease control system.

Farm two consists of three blocks. All the blocks have disease susceptible varieties. There is a four acre block of semi-dwarf trees and the remaining two blocks are full size trees. I hope to transition farm two eventually. But first I have to purchase a second tractor with a spray cab. There are roughly 15 acres of disease susceptible varieties on farm one. This is all I am able to spray within the needed timeframe in a post-infection program using only one spray rig. I will need two spray rigs to control apple scab using a minimalist soft sulfur program. If I try to maintain too many acres with one spray rig I will be forced to go on a preventative spray schedule which will require more sulfur per acre.

Farm three is near Gays Mills Wisconsin. This is a section of the original Turkey Ridge Orchard. The owners of this block are not affiliated with the Turkey Ridge Cooperative that is currently managing the main farm. The block that I will be renting consists of approximately eight acres of disease resistant apple cultivars. The orchard was maintained using organic standards and has not had any maintenance or inputs since the original Turkey Ridge Orchard was broken up about five years ago. We plan to begin renovative pruning this spring and then apply a minimal spray program through the summer. This fruit will be used primarily for organic cider but we do plan to grade the fruit and get a few hundred cases of certified organic fresh packed apples.

Apples

We harvest, store, grade, pack, and deliver all the fruit produced on Hoch Orchards. Some of our packed apples are delivered to the Coop Partners Warehouse and distributed by CPW. But most of our fruit is delivered to the store door with Hoch Orchard trucks. Our plan for 2007 is to produce a small amount of fresh packed organic apples from 'farm three' (the Gays Mills orchard). Most of the apple trees on 'farm one' are in transition with the first fruit eligible for certification in 2008. 2007 will be a challenging year because we will have conventional, transitional, and certified organic apples in our packing facility.

We hope to harvest between 1000 and 1500 bushels of organic apples from the Gays Mills orchard. The organic apples will be graded and packed into cardboard cases or into cider bins in our facility and recorded with a lot number. Cases will be palletized and stretch wrapped before going into the short-term storage cooler. All the pallets of certified organic cider and apples will be delivered to the Coop Partners Warehouse. The organic apples will be inventoried and distributed by CPW. Pallets of organic fruit or cider will not be broken down and delivered to the store doors by Hoch Orchard trucks. This should eliminate the possibility of mixing cases of organic fruit with other packed fruit, and will reduce the complexity involved in separation of the certified fruit.

Berries

We have about an acre of berries in transition. About half of the plantings are certifiable and the rest are in the last year of transition. We are also planning to plant another acre of berries onto certifiable ground this spring. Most of the 2007 plantings will bear in 2008 but we are planning to experiment with a small plot of annual berries that will produce in the late summer. We do not plan to certify any of the June berries because we would then have both transitional and organic berries at the same harvest time. We plan to wait until 2008 to certify all the old transitional plants and the new plants planted in 2007.

Integrity of Organic Products

Bins

We plan to purchase 50 new 18-bushel harvest bins for 2007. These new bins will be used for only organic or transitional fruit. We plan to label the bins for 'Organic Use' and number them. Old bins will be washed and numbered and labeled 'Organic' before they are used to harvest organic fruit. We do not intend to use bins for both organic and conventional fruit. As more of our crop becomes certified organic we will wash and convert more of the old bins.

Packing line

The apple packing line will be used for both conventional and organic fruit. The line consists of a dry bin dump, 4 foot feedbelt, 4 foot inspection roller, 10 foot washer, 6 foot feedbelt to sizer, spinsizer with three grading tables, three small baggers. All surfaces that contact the fruit will be washed and dried prior to packing apples. A log book for recording apples packed and cleaning of the line will be kept. A check-off cleaning log sheet for each component of the line will be used.

Coolers

Cooler #1

Orchard run (not yet washed or graded) fruit will be stored in the field bins. Cooler #1 (24x30x16H) is set up for quick cooling and long term storage of bulk field bins. Bins are labeled with date harvested, variety, and block. Organic apples will be in clearly marked bins and will be segregated from the other bins. Organic bins will be stacked in designated areas. They may be stacked next to conventional bins but there will be air space between. Conventional bins will not be stacked on top of organic bins.

Cooler #2

Packed organic fruit and organic cider will be packaged in only cardboard cases, palletized, and stretch wrapped before going into the short-term holding cooler. Cooler #2 (15x30x8H) is used to hold packed fruit. Many different varieties of fruit are held in this cooler. An inventory of varieties, different packages, wood and cardboard cases are all kept in this cooler. Varieties are segregated on pallets and store orders are pulled from this inventory. In order to simplify the storage and distribution of organic fruit and cider, we are NOT going to direct deliver organic products to the store doors in 2007. Coop Partners Warehouse will inventory and distribute all of Hoch Orchards Organic products in 2007.

Cooler #3

Cooler #3 (5x10x8H) is primarily used to quick-cool and store berries and other soft fruit. We do not intend to certify the berries and stone fruit in 2007. Cases of cider are sometimes held in this cooler late in the apple season. This cooler is not large enough to hold pallets so none of the organic apples or cider will be held in this cooler in 2007.

Pesticide Residues

We work hard at Hoch Orchard to minimize the possibility of having pesticide residues on our fruit. Persistent products such as organophosphates, carbamates, pre-emergent herbicides, and synthetic forms of nitrogen have been phased out of our crop protection program. Pesticide applications are usually stopped a month or more before harvest. The softest least persistent chemistries make up the majority of the pesticides used on our conventional blocks. Many of the products we use on our conventional blocks are the same organic products that we use in the transitional blocks. We often combine soft synthetics with organic products to give more consistent control and less environmental impact than the organic products alone.

Some conventional orchards rely heavily on the regular application of persistent pesticides and sometimes apply them up to the minimum legal day to harvest interval. They create an environment with residues on bins, packing and harvesting equipment, tractors, wagons, and in all the buildings on the facility; we feel that is not the case at Hoch Orchard. While we will do the best we can to segregate organic product from conventional products during our transition, we feel the risk of any pesticide residues being found on either our conventional or organic products is very low.