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Backyard Tree Fruit: You Can Do It!

Growing quality tree fruit is a real challenge for most backyard growers. Many of us enjoy pruning and other cultural practices. Controlling pests is where most of us lose fruit quality. Current recommendations are viewed as overwhelming by many gardeners. Either they don't have time, expertise or the inclination to maintain a comprehensive pest control program. Additionally, most don't want to use highly toxic chemicals no matter how economical or effective.

A backyard fruit project was undertaken in Lackawanna County to see if backyard tree fruit growers could produce a crop of acceptable quality fruit through a simplified program that does not use highly toxic products. Practices were developed by the Commercial Horticulture Extension Educator and a group of interested Master Gardeners, to accommodate the needs of amateur fruit growers. The backyard of Master Gardener Robert (Bob) Jones was selected for the project as it adequately represents a typical backyard orchard. For example, a large maple tree caused excessive shading of the smaller fruit trees, which is not uncommon in backyard orchards. Bob's young orchard consists of 3 apple trees, 2 pear trees, and 2 cherry trees. Only the apple trees produced fruit in 2007.

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This fact sheet is intended to present one approach to backyard tree fruit production. You may want to adapt the suggested recommendations to meet your needs and expectations. Additionally, the science of fruit production is continually changing. As the technology moves toward safer pest control products, new and better pest control strategies are being developed and adopted. You are encouraged to use the information presented here as a beginning point.

The products we selected to control pests have been proven effective in Penn State's organic fruit production research. Gardener and consumer safety was valued above fruit quality and yield.

We will walk you through the 2007 growing season beginning in late winter and proceeding through harvest. Each practice will be discussed with the intention that if you follow the recommended steps, you can expect similar results. Approximate costs are reported for purchased products. We used only products that were available in backyard grower quantities and were reasonably priced.

One last comment before we start. Growing quality tree fruit is one of the most difficult challenges a gardener can undertake. It is estimated that Pennsylvania has around 52 different insects that will attack either the fruit or the other parts of the tree. There are also many diseases to manage. While the challenges are formidable, the rewards are worth the effort. The satisfaction of picking your own delicious, tree-ripened fruit is one of life's simple pleasures.

Winter

January and February is a good time to purchase the supplies you anticipate needing in the spring and summer. We purchased a soil test kit, sulfur fungicide, Surround insect deterrent, pheromone sticky traps for codling moth (CM) and Oriental fruit moth (OFM), and a two gallon sprayer. An explanation of the purpose of each item follows.

A soil test kit can be purchased from your county's Penn State Cooperative Extension office. The cost is $9.00. The kit contains instructions on how to take and package the sample. Test results and lime and fertilizer recommendations will be sent to you in about 10 days. Call your county Extension office if you need help interpreting the test results or recommendations. The soil test was taken during a warm spell in February. The fall is normally the best time to take a soil test sample. A fall test gives you time to plan and purchase needed inputs before spring. Lime can be applied in the fall.

Sulfur is used as a fungicide that is sprayed on foliage and fruit. It usually comes as a fine yellow powder that is mixed with water and applied with a sprayer. We used it primarily to control apple scab and powdery mildew on apples and brown rot on stone fruit.

Surround is the brand name of a product that is composed of very fine clay. It is also sprayed on the foliage and fruit with a sprayer. It gives the tree a white appearance, which makes it less attractive to insect pests, but does not deter beneficial insects. We were concerned that neighbors might see the white trees and assume an excessive amount of toxic pesticide had been applied. While neighbors were interested in the project, there were no concerns expressed. There were no problems associated with mixing the Surround and sulfur in the spray tank.

Pheromone traps are an insect trap that lures moths into the trap by emitting the mating scent of the female moth. The insect is caught on the sticky surface of the trap. Since it is specific to only one insect,

a separate trap is needed for each insect. We chose to trap the two most common pests, the codling moth and the Oriental fruit moth. The results of our trapping will be discussed later.

A two gallon sprayer was purchased from a local garden supply store. The sprayer has a feature which was considered insignificant at the time of purchase but proved to be a nice safety feature. It has a pressure release valve that the operator can use to release the pressure without loosening the handle. Often when the pressure is released by loosening the handle, a mist of spray material covers the operator's hand. The release valve eliminated that potential exposure.

Late March

Decaying leaves from the previous year were raked up from the orchard floor and removed from the property. This is an important practice because the apple scab disease over-winters on the leaves from the previous year. Penn State research has shown that scab infection can be significantly reduced by simply raking up and removing last year's leaves.

The trees were pruned at this time. Minimal pruning was needed as the trees are still relatively young and are growing on a dwarf rootstock. The pruning primarily consisted of removing competing and crossing limbs. In future years, pruning to keep the trees open will be a priority. This is accomplished by removing entire branches at their point of origin. Excessive pruning cuts toward the tips of branches results in a dense tree that is prone to disease and insect problems. The height of the trees will need to be managed so the trees do not get too tall to care for and harvest. Dwarf trees have many advantages for the backyard grower over standard or semi-dwarf trees. Fruit coming from a dwarf tree is just as good as fruit from a larger tree.

The tree trunks were painted with white exterior latex paint. The bottom 3' to 4' of the trunk was painted. This reduces the risk of frost cracking and makes the trees less attractive to boring insects. The trunks need to be repainted once every five years or so.

Mid April

The soil test results were back. The soil fertility levels were below optimum for everything tested except phosphorus. Phosphorus was in the optimum range. To supply the recommended calcium we spread high calcium lime around each tree from the trunk to just beyond the drip line. The soil test called for 9 lbs per 100 square feet. The high calcium lime contributes in two ways. It supplies calcium for the plant and it raises the soil pH to an optimum level. Once the pH level is in the 6.5 to 7.0 range, high calcium lime should be applied approximately every 3 years.

Composted manure was spread in the same area under each tree to supply the nitrogen and potassium recommendations of the soil test. Approximately 5 pounds per tree was enough manure to meet the soil test recommendations. A rule of thumb is if the new shoots each year are in the 12" to 15" range, then your soil fertility is where it should be.

Mid May

The first spray containing sulfur was applied according to the label. Sulfur can be applied when the trees are blooming because it does not harm bees. This application was applied to apples for apple scab control and to the stone fruit for brown rot control.

Late May – Early June

By the end of May, the trees were at the petal fall stage. Petal fall is when most but not all flowers have been pollinated and the petals fall off. A few flowers will still be blooming. The first spray of Surround was applied. Insects will damage young fruit as soon as it is formed, so the timing of this spray is critical. The Surround was applied according to the label. Because Surround is a deterrent, thorough coverage is necessary to ensure control. Sulfur was applied at the same time. There was no problem mixing the sulfur and Surround in the sprayer and applying them together. The mixture was applied on a 7 to 10 day basis.

The pheromone traps were hung in the apple trees at this time. A tree at either end of the yard was selected to hang the traps in. One CM and one OFM trap was hung in each tree. The traps were hung from a branch toward the top of the tree. The trap lures and trap bottoms which contain the sticky coating were replaced on a monthly basis over the summer. The lure is a small piece of rubber about ¾" long.

June

Sulfur and Surround sprays continue on a 7 to 10 day basis. A 10 day schedule is appropriate in dry weather and a 7 day schedule is appropriate for wet weather. If rain was forecasted for the day the scheduled application was to take place, then we erred on the side of too soon rather than too late.

The apple fruit was thinned to an average of one fruit every 6". Typically it is better to have fruit 8" apart. We used this opportunity to remove damaged fruit and leave the better quality fruit. We left the fruit at 6", anticipating that we might lose some to insects as the season progressed. As it turned out, we did lose some additional fruit and the 6" spacing worked nicely. The fruit thinning took about 5 minutes per tree. When the fruit is thinned, the tree will produce a balanced crop every year.

July

Sulfur and Surround sprays continue on an 8 to 10 day basis. Since we had little rain during July, the pest control products were applied less frequently.

August

The sulfur and Surround applications continued with the last application coming around August 18. Bird damage started around August 20^{th,} as the fruit began to color. Aluminum pie pans were hung by a string in the trees as a bird deterrent. Squirrels started taking their share of the harvest as it colored also. The fruit was harvested August 28.

2007 Results

The fruit size and quality was good. The amount of fruit produced was also good for a young tree. The trees produced a nice crop and also set an abundance of fruit buds for next year. At the end of the season, Bob Jones indicated he was happy with the pest management program and the amount and quality of the fruit produced. He especially liked the safety built into the program.

The Surround residue, which completely covered the fruit, was easily removed with a little rubbing. It came off so easily that the harvester's hands became covered.

The plum curculio is a small dark beetle that damages fruit as soon as it forms. The control treats minimized but did not eliminate the damage. Most of the curculio damaged fruit was removed at thinning time. Most fruit damaged by plum curculio can still be used even though the shape may be distorted.

The pheromone traps gave mixed results. By hanging two traps in a relatively small area we had hoped the lures would saturate the area with pheromone so that moth mating would not occur. The adult moths do not damage the fruit. The immature stage of the insect is a small caterpillar that bores into and feeds on the apple. We were able to catch a large number of moths in the sticky surface of the traps. Overall, the insect damage was minimal. The apples within a foot of the trap were damaged by the larvae. Approximately a dozen apples were damaged. We believe we may have avoided the damage if we had hung the traps in trees adjacent to the fruit trees. The fruit on the rest of the tree was untouched.

The fruit and foliage were almost disease free at harvest. Due to the dry weather, disease pressure was low throughout the entire season. Only one or two of the fruit had any apple scab present. Bob Jones indicated that his fruit in 2006 was heavily infested with apple scab. Good cultural practices, along with the use of sulfur, will result in acceptable disease control year in and year out. Gardeners should expect increased disease when the weather conditions favor its development.

Does it Pay to Grow Your Own fruit?

This project's goal was to produce a good crop of quality fruit in as natural and safe manner as possible given current technology. Quality fruit can be produced at a lower cost than was incurred in this project

but with additional risk to the gardener and the environment. When the cost of all of the purchased products used on the apple trees was compiled, it came to approximately $38.00. The costs were: Surround $8.00, Sulfur $4.00, Fertilizer $2.00, Hi Calcium Lime $1.00, and the pheromone traps and lures $23.00. One should consider that the trees in our project were just coming into production. Yields from these trees will increase significantly as they mature. The cost of production will decrease on a per bushel basis.

A bushel of quality apples was harvested from the 3 young trees. Is a bushel of organically grown apples worth $38.00? Bob Jones thought it was. It figures out to be less than $1.00 per pound if you don't consider your time. You can buy apples at a local farmers' market for less, if that is your goal. The Master Gardeners felt that growing your own fruit pays in other ways.

A Closing Thought

Many gardeners who grow tree fruit value the process as much as the produce. Fruit production is more time consuming than most people think. The Master Gardeners were asked if the project results were worth all the effort. They unanimously agreed it was. Bob Jones asked "How do you put a value on witnessing a tree going from bloom, to producing a small fruit, to ripening a delicious, sweet apple?"