



Apple Academy



Connie Kratzke
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Tips for Growing Apples in Minnesota: How to Deal with Apple Issues

Everybody loves apples, including bugs and fungi. There is more than one way to deal with every apple pest. Both organic and chemical solutions are effective. Individual tolerances and preferences will dictate which methods of control to use.

The best way to keep trees healthy is through sanitation and observation. Leaf and fruit litter should be raked up on a regular basis. Anything naughty that is hanging out in tree debris will find its way back to the mother plants to wreak havoc. Weeds attract other shady characters, so they should be kept in check as well. Try to clean up on dry, still days. All most fungi need is a little bit of moisture to travel. Examine fallen leaves and fruits for blemishes that might indicate the presence of unwelcome guests. Pay attention to the volume of abnormal litter you find to assess the severity of the situation. Inspect the trees to see if the same type of evidence exists on live foliage. Look at all portions of the plants to see if there are other clues on flowers, branches, etc. Spend a little quality time with your trees once a week to prevent little problems from growing into big problems. Extra care should be taken to thoroughly rake beneath each tree in late autumn before it snows. Many insects and diseases will hibernate on fallen foliage and return rested and rejuvenated in the spring. When they wake up they will be famished and frisky and before you know it your trees will be hosts to an army of vandals.

The most insidious and prolific of all Minnesotan apple pests are *apple maggots*. As the name would indicate, they are far from cute and cuddly. Maggot larvae tunnel into the ground after apples drop in the fall, where they transform into pupas. They spend the winter in their snowsuits and sleep in until July. Early risers will be 'up and at um' right at the beginning of the month, while their lazier buddies might sleep in until September. Therefore, no apple is safe for about two months. Due to their sloth, they often wait for rain to soften up the ground before they make their appearances. Adults are benign looking, fly-like beasts, with white bands on their wings and a white spot on their backs. Once they show up they make themselves at home. They hang out all over the apple trees and their neighbors in the landscape. Lady flies don't waste any time, laying their eggs about a week after they wake up. They have a pointy, stinger-like organ which they use to deposit their eggs into the apples. While they only insert one egg into each opening, they may make several openings in each apple. The mommy maggots' little built-in drills puncture and bruise the apples. Then, a week or so later, eggs hatch and baby maggots begin to binge. They munch away for about a month at the all-you-can-eat buffet they call home. Larvae literally eat their way through the apples leaving bumpy brown tunnels in the flesh of each inhabited fruit. By the time the fruits drop, the worms are feeling fat and sassy and ready to rest. They crawl out of the apples into the ground and the cycle repeats itself.



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Luckily, there are several ***ways to contend with apple maggots***. Sticky traps can be engineered or purchased. These traps may be made of wood, plastic or rubber. They should be a few inches in diameter and red in color. Traps must have hangers, so that they can be hung in each tree like decoys. Cover the traps in a sticky substance that will not harden. “Tanglefoot” is a special glue for trapping insects that can be purchased at many garden centers and hardware stores. Use a pheromone lure to make the traps even more effective. Hang one trap for every 100 apples. Several are generally required for each tree. For best results, position a trap on the south side of the southern-most tree towards the end of June. As soon as you see five flies on that trap, get the rest of your arsenal in place. After the maggots are gone, you can clean the spheres off with vegetable oil and reuse them in subsequent years. Another environmentally friendly way to prevent maggot damage is to bag each apple. Loosely tie or staple a sandwich baggy around each fruit by July first. Cut the corners off the bags to let air in and keep moisture out. This method works best if the fruit is thinned when it is small; otherwise it gets a bit laborious. However, it is chemical free and relatively inexpensive. On the opposite end of the spectrum, there are effective insecticides for maggot eradication. What is legal for consumer use changes regularly. Just be sure to select a product labeled for fruit tree use. In order for such products to work, they must be applied in at least three separate applications. These treatments need to be made within seven to ten days of each other. Additional sprays at the same intervals will provide better control. Be sure to follow ALL of the label instructions. The duration from the last time you spray until the first time you eat will be different with different chemicals.

Apple Scab is a fungal problem that occurs during cool, damp periods; most commonly in spring and fall. Initially, spores are released from black blemishes on the previous season’s foliage. These spores are spread via wind and precipitation to healthy, new growth on surrounding trees. Leaves become spotty, turn yellow; then drop. Fallen leaves that are not cleaned up will re-infect area apple trees whenever the conditions are right. Fruit, blossoms and petioles may all be affected. Fungal damage on the fruit resembles its namesake. Scabby brown patches on the skins of the apples may cause cracking and other problems that render the fruit inedible. Diligent sanitary practices are the best control for this disease. Rake beneath trees on a regular basis when conditions are dry. Keep them thinned to promote good air circulation and water them during droughts to eliminate unnecessary stress. Choose cultivars like ‘Honeycrisp’ that are resistant to Apple Scab and delicious too!

Cedar Apple Rust is another fungal issue that can make life interesting. Usually rust is not a big problem, but if it becomes one, you will know! In serious cases, even the fruit will be affected. This fungus relies on the presence of apples (or crabapples) AND junipers to do its thing. One plant infects the other. All junipers are red cedars. The terms are synonymous. Arborvitaes are white cedars and are not usually affected by this fungus. Native red cedars and rocky mountain junipers tend to make the best alternate hosts. Inspect the junipers on your property in spring. In early spring, you may see unusual, brown growths that look a bit like small potatoes. If you look again later you will see alien life



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forms! Orange, gelatinous, sea urchin-like...things will catch your attention. If you think I am exaggerating, do an image search of cedar apple rust on the internet. These tentacled life forms release their spores just as apple leaves unfurl. Spores can travel up to three miles through the breeze! Therefore, those who live near native stands of red cedars could have a problem on their hands. Yellow spots will appear on the leaves of affected crabs and apples right away in the spring. These spots will grow larger and turn rusty orange. Generally, the centers of these spots will be darker in color, like little bulls eyes. The fungus will penetrate the leaves, leaving discolored ulcerations on their undersides. From these lesions emerge tiny versions of the monstrosities on the junipers. This usually happens in late summer. Spores from the “mini-mes” re-infect the junipers. Damage shows up the following spring, in the form of greenish-brown galls. These growths enlarge substantially over the summer months. In early spring the following year, the pods spawn, releasing their next generation of terrorists onto unsuspecting apples.

There are a couple of ***ways to contend with cedar apple rust***. First, get out there in the spring, and inspect surrounding junipers. Dead galls from the previous season usually cling on for a while. Look for baby galls, mommy galls and deceased galls. Remove live galls by pruning them out during dry weather. Be sure to destroy all infected plant materials. For those who choose to use fungicides, it is important to make the first application when the apple blossom buds first reveal their colors (right before they open). Subsequent applications need to be made at petal-fall, a week after petal fall and again a week or two after that. This is a general guideline. ALWAYS read and follow all of the instructions that come with whatever chemical you use. Once evidence of rust is observed on apple foliage, it is too late to do anything about it that year. Many sources will recommend removing existing junipers if you wish to grow apples. However, I have native red cedars, other junipers shrubs and several apple trees and have never had any issues with rust. The best plan is to select disease resistant apples, then site and maintain them well. Choose locations with plenty of sunlight. Prune out water sprouts and inward growers to improve air circulation within the trees. Always water at the base of each tree and avoid wetting the foliage. Pears, quince, hawthorns and serviceberries are also susceptible to rust.

Fire blight can affect apples, pears and many other members of the rose family. This bacterial infection is spread by Mother Nature. The birds and the bees literally infect the flowers on the trees. Bacterially fortified sap oozes out of natural openings on affected trees during warm spring days. This sweet-smelling secretion attracts droves of well-intended pollinators. As they move from tree to tree, the bacteria are transmitted to healthy plants. Wind and rain may also convey the infection. Since bees are often the vectors, flowers are usually the first victims. They will droop slightly then shrivel up. The infection will progress backward into leaves and twigs on the same branch. The leaves will darken and droop, but will remain attached for quite some time. Fruit will be affected similarly. Twigs will blacken and contort into a shepherd’s crook-like shape. This symptom is the best indicator of fire blight.



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Once the infection spreads from twigs to branches, cankers begin to form. Sometimes the tree is able to seal the perimeters and contain the infection, other times entire portions of the plants are killed. As long as the sores are present, the bacteria will be too. They thrive during warm weather when the air is thick. Any injury the plant receives could become the next canker. Hail is notorious for simultaneously injuring and infecting trees. I have also witnessed woodpecker-related fire blight transmission. Even pruning at the wrong time can spread the affliction.

Happy trees seldom fall victim to fire blight. Ecstatic trees, however, are often the first victims. Avoid pruning, watering or fertilizing your trees too heavily. Too much of these good things will stimulate excessive succulent growth. New, juicy, foliage is the favorite food of many pests. Make sure to water slowly and gently at the base of each tree. Slopping and splashing around trees is like swapping straws with sick kids. Water on the foliage is never beneficial. Always prune trees when they are dormant so that they will heal before the bad guys come around. Remove damaged branches and plants in late winter whenever possible. Cut at least eight inches below each wound. Sanitize cutting utensils after every incision. Use a 1:9 bleach solution, Lysol or rubbing alcohol to clean tools. Occasionally, problems will be severe enough to mandate action during the growing season. When this occurs, it is necessary to cut about a foot beyond the infection sites. Only do this in life and death situations. Dispose of sickly sticks promptly and completely. Certain fungicides and bactericides have been proven effective when used to control the spread of fire blight. In situations where there are lots of susceptible plants and a history of infections, chemicals may be necessary. As always, applying the right product at the right time in the right manner is necessary for success and safety.

Lastly, I will mention ***powdery mildew.*** A variety of fungi cause the same symptomatology. Different species are affected by different strains. Infested plants will appear to have a white or gray powder on their foliage. All visible portions of susceptible plants are vulnerable. Damaged leaves will yellow, then shrivel and fall. While powdery mildew is not fatal, it is ornamentally displeasing. Whenever plants lose foliage they lose vigor. Repeated infections can cause weakness and stunting. The best way to combat powdery mildew is through good, cultural practices. Site apple trees where they will receive plenty of sunlight. Prune and space them adequately to encourage air movement. Water trees deeply at their bases during dry periods. Avoid working on or around them when they or the weather are damp. Put a tarp down before commencing clean-up to collect all the little bits of trouble. Destroy the damaged material you remove.

Am I beginning to sound redundant? Good! If you forget everything else, remember that happy plants are healthy plants. Choose disease resistant cultivars. Ask your neighbors what pest problems they have had to help set resistance priorities. Site and maintain trees properly. Pay attention to their feelings. Like women, trees will send out subtle hints of displeasure before they freak out at you. Keep your trees and their homes neat and tidy. Follow these steps and you'll be well on your way to success.



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