Home, Yard, and Garden Pest Newsletter

Issue 7 • July 22, 2022

In This Issue

Twospotted spider mites

Twospotted spider mite (Tetranychus urticae), Frank Peairs, Colorado State University, Bugwood.org

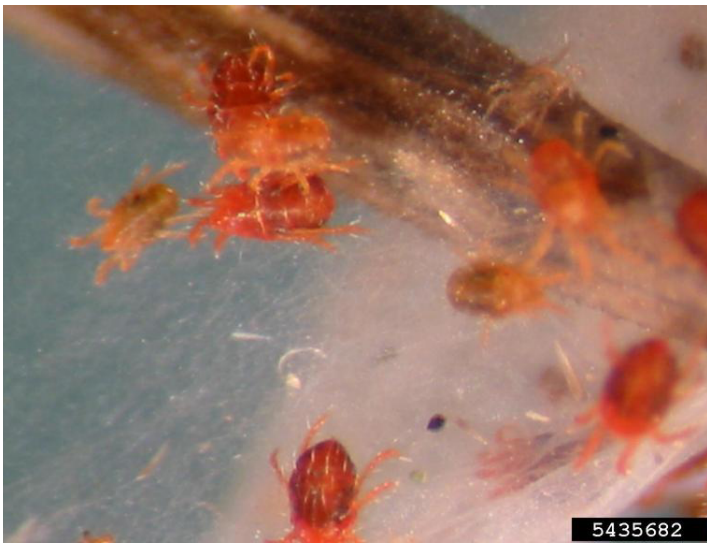
Twospotted spider mites (*Tetranychus urticae*) are herbivorous mites that feed on a broad range of deciduous trees and broadleaf evergreens. In cool or damp weather their populations are controlled naturally by fungi and other pathogens. However, their populations flourish in hot, dry conditions.

Spidermites suck fluids from plants causing yellow speckling on the surface of the leaves called stippling. This can make some leaves look yellow or bronze at a distance. Spider mites also leave fine silk between the leaves and petioles. Heavy infestations can kill plants over time.

When scouting for mites, it's important to identify whether you have predatory or herbivorous mites before applying a treatment. The easiest way to do this is to collect mites onto a sheet of paper and inspect them.

Hold a piece of white paper under a branch and hit the branch with a rake handle. This should knock the mites onto the paper, where they can be seen more easily. Red mites are predatory mites that feed on herbivorous mites. If you find many red mites, don't apply a treatment because it will kill the predators. Green mites are herbivorous mites, feeding on the plant. If you find many green mites and have significant injury, you can apply a treatment to control them. The treatment must be applied when mites are active and present on the plant.

Spruce spider mite (Oligonychus ununguis), USDA Forest Service - Northeastern Area, USDA Forest Service, Bugwood.org



Spider mite (Tetranychus lintearius), Eric Coombs, Oregon Department of Agriculture, Bugwood.org

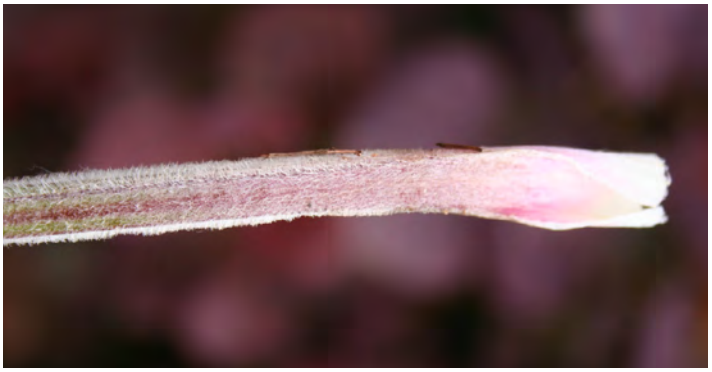
When controlling mites, be sure that mites are indicated on the pesticide label, because products labeled for insects may not work on mites. Some treatment options include: abamectin (Avid, Abamectin), acequinocyl (Shuttle), bifenthrin (Onyx, Talstar), etoxazole (TetraSan), fenazaquin (Magus), hexythiazox (Hexygon), spinosad (Entrust), insecticidal soap and summer oil. Repeat treatments may be required to get spider mite populations under control.

Sarah Hughson

Common Burdock

Common burdock (Arctium minus) is a biennial, broadleaf weed that reproduces by seed. It forms a rosette with a large, fleshy taproot in its first year. In its second year, the stems grow erect reaching 3 to 5 feet in height. They can be reddish in color. The stems are much branched and hairy. The basal leaves are large at 15 by 20 inches. They are hairy and roughly heart-shaped with a hollow petiole. The underside of the leaf is light green and woolly, while the upper side is darker and smoother. The stem leaves are smaller, alternately arranged, and egg-shaped. While considered a biennial, blooming may not occur until the third or fourth year. The flower heads are produced from July to October and look like that of some thistles. Flowers are composed of small red-violet disk flowers, which dry down to 1/2-inch burs. The outer bracts have velcro-like hooks that readily catch on clothing and animal fur. This allows for widespread seed dispersal. This plant only

Young Common Burdock in mulch, Michelle Wiesbrook, University of Illinois.



Common Burdock hairy stem, Michelle Wiesbrook, University of Illinois.

Common Burdock woolly underside of leaf, Michelle Wiesbrook, University of Illinois.

reproduces by seed, and one can produce about 15,000 seeds. Dead stems will persist into the following spring.

Common burdock can be found in full sun or part shade growing along fencerows and roadsides. It is a

weed of landscapes and agricultural crops. Frequent mowing can be used to help control this plant. Digging or even simply slicing through the taproot about 3-4 inches below the soil surface can be effective. Remove seed heads before seed set to prevent further spread. Herbicides such as glyphosate, 2,4-D, dicamba, or clopyralid can also be used. Be sure to carefully read and follow all label directions.

Mature Common Burdock, Michelle Wiesbrook, University of Illinois.

Common Burdock flowers, Michelle Wiesbrook, University of Illinois.

There are a few similar species that may be confused with common burdock. While the flowers may resemble that of some thistles, thistles do not have large leaves. While common cocklebur has similar hooked spines and leaves, the stems are brown-to-purple spotted and the leaves are rough and scratchy. Rhubarb has large basal leaves with reddish stems but the stems are glossy smooth and not hairy like that of common burdock. The hairs on the stems should cue you in that they would NOT be tasty in a pie. Before consuming any plant, be sure to properly identify it first and confirm with a reliable source that it is edible.

Common Cocklebur, Jan Samanek, Phytosanitary Administration, Bugwood.org

Garden Rhubarb, Howard F. Schwartz, Colorado State University, Bugwood.org

Michelle Wiesbrook

Botryosphaeria Twig Canker and Dieback on Oak

The U of I Plant Clinic receives numerous oaks samples each summer. Many of these samples were sent to the clinic by clients concerned about oak wilt. Fortunately, only a small portion of the samples turn out to be infected with the disease. The remaining samples often have other pest or disease problems with symptoms resembling oak wilt.

The U of I Plant Clinic recently diagnosed several oak samples with Botryosphaeria twig canker and dieback. Botryosphaeria canker is a common disease that we see on many ornamental plants and fruit crops. Oak, crabapple, sweetgum, dogwood, elm, and redbud lead the list at our clinic. On oak, the disease is caused by the fungal pathogen *Botryosphaeria quercuum*. Browning leaves at the ends of the branches is usually the first clue to a problem, with the canker itself often going unnoticed. As the canker girdles the stem, leaves begin to wilt, turn yellow, and then brown. Some young twigs may curl downward. Affected trees show a wilting or "flagging" of the terminal growth on the ends of branches, which may lead someone to suspect oak wilt. However, Botryosphaeria twig canker and dieback only affects the ends of branches, whereas oak wilt affects entire branches.

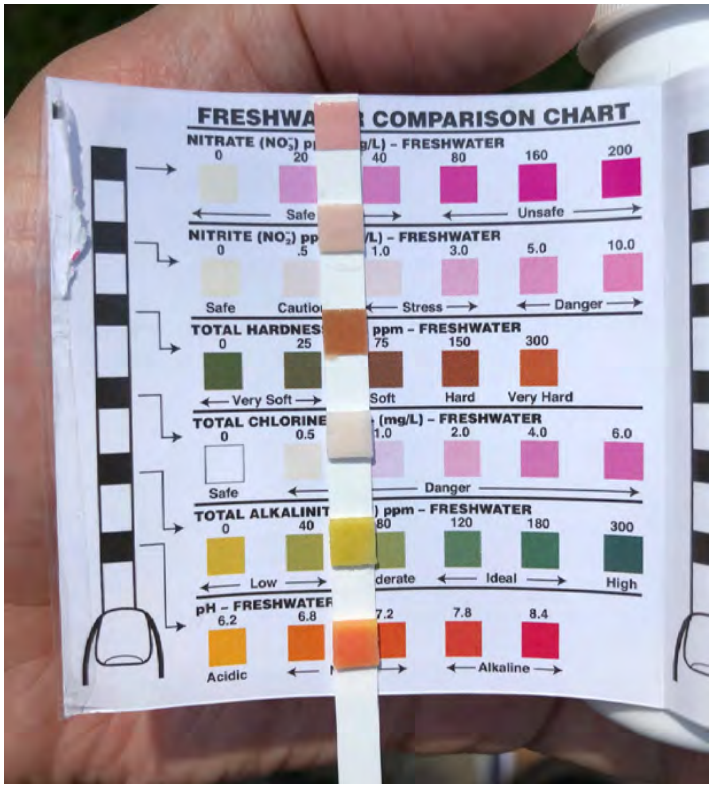
If the stem is not entirely girdled, it may show one-sided death, or some leaves are affected and others are green. Botryosphaeria cankers are usually cracked, dry, and discolored. Fruiting bodies of the fungus appear as pinhead-sized black specks embedded in the bark. Often, these fruiting bodies appear as small bumps covering the canker.

Botryosphaeria and other canker fungi are known as stress pathogens. The first step toward disease management is identifying the source of stress. Try to correct or modify the site, soil, or surrounding plants to make the conditions less conducive to cankers. This might involve diverting drainage away from the plant, pruning surrounding plants to allow better airflow, fertilizing the tree, providing water in drought, etc.

Travis Cleveland

Effect of Water pH on Pesticides

Resistance is often blamed for the failure of an insecticide or miticide to manage a given pest or pests. However, another possible reason for lack of control may have to do with the pH of the spray solution. pH is a measurement of the concentration of hydrogen ions [H+] in a solution. It is a scale indicating the degree of acidic and basic properties of water. The pH scale ranges from 0 to 14. A pH value below 7 is acidic, whereas a pH value above 7 is basic or alkaline. A pH of 7 is considered neutral.



Though not always accurate, test strips can provide quick and inexpensive water quality measurements, Travis Cleveland, University of Illinois.

Many common insecticides and miticides are susceptible to breakdown if the pH of the water is not within an acceptable range. When the pH is greater than 7, a process known as alkaline hydrolysis occurs. Alkaline hydrolysis is a degradation process in which the alkaline water breaks and reduces the effectiveness of the pesticide's active ingredient. This process

releases individual ions (electrically charged atoms), which may then reassemble with other ions. These new combinations may not have any insecticidal or miticidal properties. The rate of alkaline hydrolysis increases as water pH increases.

Insecticides and miticides are more susceptible to alkaline hydrolysis than fungicides and herbicides. Many insecticides and miticides degrade under alkaline conditions. Chemical breakdown of a pesticide is commonly referred in terms of its half-life. A half-life is the period of time it takes for one-half of the amount of pesticide in the water to degrade. Insecticides in the chemical classes organophosphate (acephate, chlorpyrifos, and malathion), carbamate (carbaryl), and pyrethroid (bifenthrin, cyfluthrin, fluvalinate, and lambda-cyhalothrin) are most sensitive to alkaline hydrolysis or "high" pH solutions; however, certain pesticides, such as fenbutatinoxide, are not affected by water pH.

Higher temperatures can increase the rate of insecticide degradation. Alkaline hydrolysis occurs more rapidly when temperatures are high. For example, at a pH of 9 and a water temperature of 77F, acephate (Orthene) loses 50% of its activity in about 5 days.

The following are ways to avoid water pH problems:

1. Follow manufacturer directions regarding the desired water pH. The ideal pH range for most insecticides and miticides is between 5.5 to 6.0.

2. Regularly test water pH because the pH of water can change during the season. The fastest way to determine the pH level of water is to test it with a pH meter or test paper. Paper test strips are the least expensive; however, they can be unreliable and vary by as much as 2 pH points. A pH meter will provide the most reliable and consistent readings. Meters are available commercially for $50 to $400.

3. Apply insecticides and miticides as soon as possible after mixing. It is advisable to use a spray mixture within 6 hours or less to avoid potential pH problems.

4. Don't leave insecticides or miticides sitting in a spray tank for an extended time. If your sprayer will be left to stand for several hours or overnight before the contents are applied, consider adding a buffering agent to prevent alkaline hydrolysis.

5. Adjust water pH with buffers or water-conditioning agents. Buffers or water-conditioning agents are compounds that reduce the damage caused by alkaline hydrolysis and adjust the pH of the spray solution to maintain it within a pH range of 4 to 6. In addition, other materials, such as vinegar (acetic acid), are often used to acidify the water.

Maria Turner

Additional Resources

https://hyg.ipm.illinois.edu/pastpest/200017b.html

https://extension.missouri.edu/publications/ipm1017#:~:text=If%20you%20know%20that%20your,5.5%20to%206.5%20is%20ideal

https://bookstore.ksre.ksu.edu/pubs/MF3272.pdf

Weekly Plant Clinic Sample Summaries

While not a true pest survey, University of Illinois Plant Clinic sample summaries can provide a glimpse of pest problems occurring around the state. Diane Plewa and Chelsea Harbach recently started publishing weekly sample summaries on the pant clinic's website. They're available here: https://extension.illinois.edu/plant-clinic/plant-clinic-weekly-summaries. Each weekly summary categorizes the samples by ornamentals, fruit and vegetables, and field crops. Sample information includes host, diagnosis, pathogen/pest, and the county the sample originated from.

Travis Cleveland

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