

GARDENING/HORTICULTURE NEWSLETTER

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(*Betula nigra*)

MOSQUITO CONTROL FOR THE HOMEOWNER

The most effective way to control mosquitoes around the home is to locate and eliminate breeding sites. All mosquitoes pass through four life stages: egg, larva, pupa and adult. The first three stages require water to complete development. Mosquito eggs hatch into larvae. Mosquito larvae "wigglers" are most commonly seen just below the surface of the water. Larvae feed on microorganisms found in the water and grow rapidly. The mature larvae transform into pupae or "tumblers", so called, because they are also quite active when disturbed. After a few days the pupae transform into adults. The whole process from egg to adult can take as little as 1 week under favorable conditions. The best option for homeowner control of mosquitoes is to target the larval stage. The larval stage requires water to develop and eliminating standing water and water holding containers will prevent mosquito larvae from becoming biting adults.

Homeowners should take the following steps to prevent mosquitoes from breeding on their property:

- Remove standing water that may accumulate on the property (check lawn ornaments, flower pots, etc.)
- Destroy or dispose of tin cans, plastic containers or any other object that can hold water. Pay special attention to old tires.
- Empty and refresh pet water dishes, watering troughs and birdbaths at least once a week.
- Ensure that garbage cans have tight fitting lids. Drill holes in the bottom of recycling bins so that water cannot accumulate if they are stored outside.
- Clean debris from rain gutters and remove any standing water under or around structures or on flat roofs. Check around faucets and air conditioner units and repair leaks or puddles that remain for several days.
- Keep swimming pools and spas chlorinated. If not in use, cover. Make sure water does not collect on the cover.
- Empty children's wading pools immediately after use.
- Store small boats upside down. Cover large boats. Make sure the drain plug is removed so water can drain out of the boat. Make sure water does not collect on the cover.

- Stock ornamental pools with “Mosquito Fish” (fathead minnows). Contact Baxter County Cooperative Extension office for information on acquiring these fish.
- Irrigate lawns and gardens carefully to prevent standing water.
- Correct or report drainage problems in ditches along public or private roadways.

To minimize the risk of being bitten by adult mosquitoes screens on doors and windows should be in good repair to prevent entry by mosquitoes. When working or playing in mosquito-infested areas, personal protection may be obtained by using an insect repellent containing DEET. When using any insect repellent, always read and follow the label directions. Adult mosquitoes rest on weeds and other vegetation. Homeowners can reduce the number of areas where adult mosquitoes rest by removing brushy areas from around structures and regularly mowing the lawn.

If the homeowner desires to use insecticidal control measures, specific recommendations may be obtained from the Cooperative Extension office.

All small flying insects are not guilty of being mosquitoes and all mosquitoes do not bite. Only the female mosquito will bite and this is because she requires blood as a nutritional source for her eggs. Male mosquitoes do not bite and obtain their nutrition from plant fluids and nectar. With respect to cases of mistaken identity, what appears to be a mosquito may actually be another type of insect. Midges are the most widespread and numerous insects that are commonly mistaken for mosquitoes. Adult midges are frequently seen flying in swarms or “clouds”. Although these midges do not bite, they can be quite annoying. Another insect, the crane fly is often mistaken as a giant mosquito. It is also a non-biting insect that poses no risk to you or your family.

TOP 10 LANDSCAPE ENEMIES

Fungi, bacteria and other Arkansas landscape bug-a-boos often commit their dirty and sometimes fatal deeds in the lawn and garden with the unwitting help of homeowners.

Dr. Steve Vann, plant pathologist for the University of Arkansas Cooperative Extension Service, offers his Top 10 Landscape Enemies in Arkansas and tips on how to stop them.

- Landscape Enemy No. 1, Powdery Mildew – “When it comes to prevalence, powdery mildew is No. 1,” he said. “It occurs on several ornamentals, most commonly on crapemyrtles, then euonymus and roses.” Powdery mildew is considered mostly a cosmetic problem and can be very persistent. Vann recommends growing resistant varieties when available. Where powdery mildew occurs, growers should rake up and destroy leaves in the late fall and winter to minimize the disease for the following season. There are fungicide sprays that can be used, but gardeners need to be willing to make frequent, precise applications. For more information, see extension fact sheet FSA 6113.
- Landscape Enemy No. 2, Fire blight -- This bacterial disease causes branches to die back and it’s spread by pollinating insects. The No. 1 victim in Arkansas is ornamental pear trees. Vann said gardeners can expect to see fire blight damage in May and June. For control, he suggests pruning, “cutting back to the green tissue.” Disinfect pruners before and after each cut in a 1 part bleach to 9 parts water solution or a 7 parts alcohol to 3 parts water solution to prevent spreading disease to another limb. Pruned tissues should be burned or buried. The downside to fire blight is “Once a tree is infected, it will probably remain that way and the extent of the damage will depend on environmental conditions. For more information see fact sheet FSA 7534.
- Landscape Enemy No. 3, Photinia Leaf Spot – This purple-colored spot on red tip photinia is caused by a fungus. It’s so detrimental that “We no longer recommend this plant,” Vann said.

"The fungus is spread easily by splashing water and by wind." If the infection is very severe, plant removal may be necessary. There are chemical controls, but they may require frequent spraying over a long period of time. The fungus can also affect Indian hawthorne, but to a much lesser extent. The fungus usually kills the plant by repeated defoliation. (See fact sheet FSA 6112)

- Landscape Enemy No. 4, Black Spot – This fungus affects roses and works on the leaves. "It's going to be most devastating during the hot, humid times of the year," Vann said. "Resistant varieties are the best way to go for this." Otherwise, the best defense is to keep the rose's leaves dry. Black spot can kill a rose by defoliation. "Vann recommends good sanitation before springtime, removing all dead leaves and pruning out dead canes." (See fact sheet FSA 7530)
- Landscape Enemy No. 5, Branch Canker in Leyland Cypress – Leyland Cypress is a common ornamental tree often used as a privacy screen at home, or as an accent ornamental in commercial landscapes. It has become increasingly popular as a Christmas tree, Vann said. "The cypress is very susceptible to a fungus that causes the branches to die from the tips inward. The infection occurs randomly on a plant and if something is not done about it, it can kill the tree." Drought stressed trees tend to be more susceptible to the disease. For information about branch canker, see fact sheet FSA 7536.
- Landscape Enemy No. 6, Cedar Apple Rust – This fungus disease affects both cedar trees and apple. For the disease to occur, both host plants are required. These plants are usually within reasonable proximity to each other also. "The best control is to remove one of the hosts, and most people go with the cedar," Vann said. "But that can be difficult or impossible in some parts of the state since cedar is quite prevalent. Most references recommend removing within a half mile." Vann recommends growing resistant apple varieties. There are chemical controls, but those must be applied as soon as the new apple leaves begin to emerge. See fact sheet FSA 7538 for more information.

Landscape Enemy No. 7, Dollar Spot of Lawn Grasses –Dollar Spot is a fungus disease usually seen on bermudagrass, but will also attack Zoysia and Centipede. "We see this disease on poorly maintained lawns, ones that aren't irrigated or fertilized properly," Vann said. "In late summer or early fall, homeowners will see small, straw-colored patches 2-3 inches in diameter. They may go unnoticed until you have a lot of them together." Vann said the disease can be spotted in the early morning, while there is still dew on the grass "you can see the fungus growing on the leaves. It looks like spider webs. It's very helpful for diagnosis." See fact sheet FSA 7541 for more information.

- Landscape Enemy No. 8, Zoysia Patch – Another fungal pest is Zoysia Patch and the fungus is a close relative of one that causes brown patch in Bermudagrass. "This fungus may cause large areas of turf to die," Vann said. "It's usually visible either in the fall or in the spring. This may come back every year in the same spot and a lot of times is associated with an overdose of nitrogen fertilizer and poor soil drainage. Excessive thatch buildup can also contribute." The fungus can be controlled by chemical applications and by correcting drainage, fertilization and thatch issues. (See fact sheet FSA 7527 for more information.)
- Landscape Enemy No. 9, Root knot nematode – This organism is a small worm that lives in the soil and does its damage by feeding on roots, rendering them ineffective for nutrient and water uptake. Nematodes can attack a wide variety of plants, causing a variety of symptoms, making it difficult to diagnose. "Homeowners will need a soil test to determine what type of nematode they have and how many," Vann said. "It's all about the numbers." He recommends growing resistant

varieties when possible and promoting plant vigor to deal with these disease organisms. (See fact sheet FSA 7529 for more information.)

- Landscape Enemy No. 10, Hosta Virus X – Hostas are very popular ornamentals in the garden. They are well-adapted to a variety of light and soil conditions. Hosta Virus X, which is caused by a pathogenic plant virus, was discovered in 1996. It produces a wide range of symptoms, depending on the cultivar. Color bleeding from the leaf veins and other types of variegations may be indications of the disease. Vann said that a lab test is required to confirm the virus, which may infect a plant for years before showing symptoms. The virus is spread by mechanical methods, such as plant division or propagation. There is no cure for this disease. Growing and propagating from virus free plant material is the best control for this disease. For more information, see extension fact sheet FSA 7548.

TOP 10 WORST WEEDS

As fast as a speeding rhizome, more powerful than a gardener's patience and able to penetrate concrete and carpet in a concerted push – look, down in the lawn! They're flowers. They're grasses. They're the top 10 worst weeds in Arkansas, as nominated by Dr. John Boyd, weed scientist with the University of Arkansas Cooperative Extension Service.

- No. 1. Purple Nutsedge – “Purple nutsedge is considered to be the world's worst weed,” Boyd said. This plant can reproduce through seeds, rhizomes and tubers and is prolific. In a test plot of some 43,500 plants per acre, in one season, the purple nutsedge had increased to more than 3 million plants per acre with more than 4.4 million tubers per acre. “Purple nutsedge can grow through asphalt, plastic mulch, above-ground swimming pools and the floor of your house,” Boyd says. Certainty (sulfosulfuron) provides suppression and is safe on all warm-season grasses. Sedgehammer (halosulfuron) provides some control when used on all lawn grasses.
- No. 2. Annual Bluegrass – “Very adaptable winter annual found all round the state in about every location imaginable,” he said. “Annual bluegrass is a prolific seed producer and capable of germinating 12 months per year, with most germination occurring from September to November.” Bluegrass can be controlled by applying a pre-emergence herbicide such as prodamine or pendimethalin September 1st. Roundup provides good control in completely dormant Bermudagrass. Revolver (foramsulfuron) may be used for post-emergence control in Bermudagrass and zoysiagrass.
- No. 3. Crabgrass – One crabgrass plant, left unchecked, can produce more than 50,000 seeds in one season,” Boyd said. “Crabgrass matures rapidly going from seedling to flower in about 45 days during midsummer.” The good news is crabgrass isn't difficult to control, but is ubiquitous. To control crabgrass, apply a pre-emergence herbicide in mid March. If the preemergence fails, one or two applications of MSMA at weekly intervals in bermudagrass and zoysiagrass only.
- No. 4 Bermudagrass – Bermudagrass is the No. 1 lawn grass, but let it get into your garden and it's tough to remove. The grass is a perennial and spreads via stolons, rhizomes and seeds. Use sethoxydim, fluazifop or clethodim for control in landscape beds. Sethoxydim may be used in centipedegrass lawns. Fluazifop or fenoxaprop plus triclopyr ester can be used for control in tall fescue or zoysiagrass.
- No 5. Yellow Nutsedge – This nutsedge is identifiable by the yellowish-brown seedhead and needle-like leaf tips. Very common north of I-40, this perennial weed spreads by tubers, rhizomes and seeds. While not as aggressive as its purple cousin, it is more cold-hardy. Certainty provides

suppression and is safe on all warm-season grasses. SedgeHammer provides some control when used on all lawn grasses.

- No. 6. Common Yellow Woodsorrel –The Woodsorrel uses a secret weapon that follows its innocent-looking yellow flowers. The okra-like fruit explode, ejecting seeds as far as 12 feet. Prevention and sanitation are the best methods of control. Don't let woodsorrel go to seed. Herbicides with 2,4-D plus dicamba and MCPP provide fair to good post-emergence control in tolerant turfgrasses. Products with metsulfuron and triclopyr tend to be more effective in tolerant turfgrasses.
- No. 7. Prostrate Spurge – This summer annual is very drought tolerant. "It is that weed growing comfortably in the sidewalk crack when the temperature is 100 degrees Fahrenheit in the shade," Boyd said. There are plenty of control options for spurge. In tolerant turfgrasses, Metsulfuron is one of the best post-emergence treatments. Pendimethalin and prodiamine provide partial pre-emergence control and simazine and atrazine offer pre- and early post-emergence control.
- No. 8. Mulberry Weed –This plant spreads by seed and is a prolific seed producer. "Seeds are mostly dropped near the mother plant, but some seeds are explosively dispersed – they can be thrown up to 4 feet," he said. "Plants can have two or more generations per season. Don't let this baby go to seed." This plant often rides in on nursery stock. Control should include exclusion, sanitation and herbicides such as Gallery (isoxaben) and Barricade (prodiamine).
- No. 9. Violets – Don't let the white or purple flowers fool you, violets are "tough perennials that tolerate most broadleaf herbicides used in lawns," Boyd said. "They spread rapidly, especially in shady areas with thin turfgrass and reproduce from seeds and rhizomes." Control is very difficult. Metsulfuron is the best option in tolerant turfgrasses. "The best course may be to adopt it as a groundcover."
- No. 10. Wild Garlic –Wild garlic plants add pungency to the weekly lawn mowing. This perennial can be identified by their slender, hollow cylindrical stems, as opposed to wild onion, which has solid stems. To control, dig up the plants, if there are only a few. Metsulfuron is the best option in tolerant turfgrasses. Otherwise, herbicides with 2,4 –D provide partial control.

BLIGHTS ON BEANS

There are several bacterial blights found on beans. Halo blight caused by *Pseudomonas syringae pv phaseolicola* is a widespread problem in both green and dry beans. First symptoms appear as greasy looking water-soaked angular spots on leaves. The lesions expand with age and coalesce into large spots 2-3 cm in diameter. Older lesions become dry and cracked. Lesions are usually but not always surrounded by a distinct yellow halo which gives the disease its common name. Interveneal tissue and veins may take on a reddened appearance. Infected seedlings may be stunted and die. Pods develop water-soaked round to oval lesions and elongated lesions running along sutures. Bean bacterial brown spot causes very similar symptoms and is also caused by a *Pseudomonas* species. Common bacterial blight is caused by *Xanthomonas campestris pv phaseoli*. Symptoms are water-soaked angular leaf lesions that coalesce into larger lesions that are gray-brown and usually surrounded by a yellow halo. A copper fungicide such as Kocide is the fungicide of choice although good results are often not achieved. Crop rotation, avoidance of overhead irrigation, the use of clean seed, and cleanup of crop residue are the keys to good control of bacterial blights.

HAWTHORN RUST

Hawthorns are widely used as hedges and specimen tree and shrubs. They are a favorite for plantings designed to attract songbirds as they provide safe nesting sites among their thorny branches. Most have attractive fall colors of yellow and purple and pretty flowers in the spring followed by showy red fruits. It is unfortunate that Hawthorns are susceptible to a rust disease aptly named Hawthorn rust. It is also called Cedar-hawthorn rust and is very similar to Cedar-apple rust, both caused by fungi from the genus *Gymnosporangium*. The life cycle of the rust requires two hosts, a cedar or juniper and a hawthorn. Symptoms on hawthorn start as small yellow spots on leaves, sometimes with a red border. In late summer tube like structures called aecia develop on the underneath of the leaves. The spores from these structures infect cedar trees which produce galls the following season that produce the spores that infect apples, quince, and hawthorns. Severe infections can cause fruit distortion and premature fruit drop. Fruit infection is more common with Cedar-quince rust but does occur with both Cedar-apple and Hawthorn rust.

Fruit tree sprays containing captan applied at bud swell in the spring and continued until new leaves harden provides good protection. There are also some resistant varieties available. Chemical control is usually not used on cedars, but the galls may be cut out and destroyed where practical to reduce inoculum levels.

BLOSSOM END ROT

Blossom End Rot is a physiological disorder of tomatoes, peppers, and cucurbits caused by a calcium imbalance within the plant. Excessively wet or dry soil, too much nitrogen fertilizer, roots damaged by cultivation, very high or low pH, or soils high in salts can prevent the roots from taking up enough calcium. The results is a water-soaked spot at the blossom end of the plant that enlarges, turning dark brown and leathery. Rot may set in at the spot as saprophytic fungi colonize the decaying tissue. Blossom end rot is common when plants grow rapidly in the beginning of the season, then set fruit during dry weather. Fluctuating levels of soil moisture is usually the culprit. As little as 30 minutes of water deficiency at any time can cause blossom end rot. Garden soils should be tested every 3 years for pH and nutrient levels. Vegetables tomatoes, pepper, and squash do best at a pH of 6.5. Good mulching practices helps maintain even soil moisture. A quick fix for blossom end rot is a liquid calcium supplement applied to the foliage and as a soil drench. Most garden supply stores carry such products under names such as "tomato saver" and "end rot".

TOMATOES

The Cooperative Extension disease clinic in Lonoke has been receiving tomato samples with virus. So far they are seeing more Tomato Mosaic Virus (TMV) and Cucumber Mosaic Virus (CMB) this year than Tomato Spotted Wilt Virus (TSWV).

Tomato Mosaic Virus is also known as Tobacco Mosaic Virus. The virus is transmitted mechanically from infected crops or weeds. It can be transmitted via unwashed hands or clothing that has come in contact with infected plants or tobacco products. Smokers are often the means of transmission. It can also be transmitted by chewing insects or tools. Additionally, the virus can persist in the soil on root debris for at least two years. Leaf symptoms are light and dark green mottling to bright yellow mottling. Leaves often have puckered areas, and leaflets may be narrowed giving the plant a ferny appearance. Infected fruit may have green and yellowish-red rings or mottling and dark brown spots. Internal browning of fruit can also occur. Severely infected plants are stunted and affected fruit is not marketable. There are good varieties resistant to this virus.

Cucumber Mosaic Virus infects more than 750 plant species and can be found wherever tomatoes are grown. CMV is usually transmitted by aphids. Infected plants are stunted and bushy with distorted and malformed leaves. Leaves may also show green or yellow mottling. The most classic symptom is extreme shoestringing of leaf blades. This symptom is sometimes confused with herbicide injury. Infected plants sometimes produce no fruit or small fruit.

The disease clinic has also been a few samples with Tomato Spotted Wilt Virus. The most prominent symptoms are leaf bronzing, black spots, and necrosis of growing tips. Plants start wilting from the top down. Immature fruit have light green rings with raised centers; ripe fruit will have distinct orange and red patterns. Unfortunately this virus has a large host range with 176 plant species found to be capable of carrying TSWV. Field crops that are susceptible to TSWV include tobacco, peanut, tomato, pepper, potato, eggplant, lettuce, endive, celery, bean, cowpea, spinach, cucumber, and cauliflower. Most flowering annuals and many herbaceous perennials are also host to the virus. Common weeds such as amaranth, chickweed, lamb's quarters, burdock, morning glory, shepherd's purse, yellow clover, and many others serve as reservoirs for the disease. It is spread from plant to plant by the western flower thrip.

Virus cannot be cured. The best prevention is to plant resistant varieties and practice good sanitation and insect control.

HERITAGE RIVER BIRCH (*Betula nigra*) (By Dr. Gerald Klingaman, Retired Cooperative Extension Horticulture Specialist)

Birches are a wintertime staple of the northern landscape, but the white bark birches just don't do south of the lilac-crape myrtle line. But southern gardeners shouldn't despair; they have Heritage River Birch (*Betula nigra* 'Cully').

River birches are native across a wide part of the eastern woodlands of the United States, primarily favoring mud flats along slow moving streams. Like snowbirds, they have moved south into the heat and humidity, never to mingle with the birches of the north country or mountain tops.

River birches, if grown with a single trunk, can reach 60 to 70 feet in height, but mostly we see them with three trunks, so in this fashion seldom reach more than 50 feet. In outline, they have an upright oval form with a loose, pendant branches and a picturesque habit. Heritage is extremely fast, outgrowing seedling river birches by 50 percent.

Heritage birch has a papery thin, peeling, tan colored bark that exfoliates in large, smooth patches creating an interesting, if not somewhat ratty effect. The bark begins peeling off when trees are only 2 inches in diameter. As the tree ages, the oldest part of the trunk will develop a more corky, gray-brown bark, and the zone of peeling bark moves up to the higher branches.

The slender, pencil-sized brownish catkins of river birch have little ornamental interest. Leaves are 2 to 3 inches long with a medium green color; fall color is none to yellow. River birch tolerates dry conditions well, but the strategy it uses is to drop inner leaves when summertime droughts arrive. By autumn, trees growing in dry sites may have only a third of the leaves they started the season with.

Earl Cully, a nurseryman from Jacksonville, Ill., discovered the original Heritage seedling in a St. Louis suburb in the 1970s. He propagated it, gave it the cultivar name of 'Cully' and applied for a plant patent, which he received in 1979. The name "Heritage" is a trademarked name for the tree. Though the patent has now expired, the trademarked name prevents rival firms from distributing the plant under the name known in commerce.

But, just like a box of laundry detergent, a new and improved Heritage is being marketed. The improved selection, chosen from a specimen at the J.C. Raulston Arboretum in Raleigh, N.C., and thought to be a bud sport, has creamy white bark said to persist on the main trunk longer than the

original Heritage. Sometimes offered as "Improved Heritage," it's displacing the original form. The new selection is propagated by tissue culture.

Heritage birch makes an excellent medium-sized tree for background screening, for massing, shading patios or use to frame large homes. It tends to be shallow rooted and competitive with annuals and perennials planted in its root zone. Heritage will grow as far north as zone 4 and as far south as zone 9. A bit of manual exfoliation may be needed in the fall to tidy up the sometimes bedraggled look of the peeling bark.

Heritage River Birch is resistant to leaf spot disease and completely immune to the bronze birch borer that makes growing the northern, white-barked birches impossible in southern landscapes. It will often be attacked by aphids in early spring; they cause leaf distortion but do no lasting damage.

For more information on any of the above topics, please feel free to contact the University of Arkansas Division of Agriculture Cooperative Extension office at 425-2335.

Sincerely,

Mark D. Keaton,
County Extension Agent-
Staff Chair

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