Prevent Mosquito-Borne Diseases

If you haven’t done so, please go outside immediately and check your property for pools of water large and small. You definitely don’t want to be a source for mosquitoes in your neighborhood.

The recent heavy rains have left pools of water not only in the bottoms of normally dry stream beds, but also in tiny spaces like empty cans and flower pots, abandoned cups and plates, and many other places. Eliminating standing water is essential because it only takes a tiny bit for mosquitoes to do their thing. After a rain, it is important that we get outdoors and get looking.

Mosquitoes are a problem because, beyond being a nuisance, they can also carry several different and potentially serious diseases. So small that they easily flow through the mouthparts of a sucking insect, viruses and some bacteria can easily be spread from an infected person to another as the insect feeds on the body fluids of their victims. Once injected into a new host, the disease agent begins to multiply itself and soon the person or pet comes down with symptoms of the disease. State and county health departments in Arizona are always concerned about mosquito-borne diseases and continually warn us about their effects.

In Arizona, West Nile virus is one of the most recent mosquito-borne diseases to hit the news. There are others. Dog heartworm has been reported in all fifty states. While it is more common in dogs, cats have also been diagnosed with the disease, according to the American Mosquito Control Association website. Various forms of encephalitis can affect both humans and animals. While dengue fever, malaria and yellow fever are not commonly associated with Southern Arizona, they are serious diseases spread in other parts of the world by mosquitoes.

The best protection against mosquito-borne diseases is to reduce or eliminate the mosquitoes that transmit the disease. You can most effectively reduce the number of mosquitoes around your home and in your neighborhood by protecting or eliminating the standing water in which mosquitoes grow and breed. Here are some suggestions of what you might need to do.

- Walk around your property. Search out, drain, and get rid of anything that can hold water, such as tin cans, containers, and used tires. Old tires rank among the most important mosquito-breeding sites in the country.
Drill holes in the bottoms of your recycling containers and outdoor planters. Check uncovered junk piles for standing water and drain them immediately.

Clean any clogged roof gutters. Check storm drains, leaky outdoor faucets, and window wells for persistent water pools.

Empty accumulated water from wheelbarrows, boats, cargo trailers, pet dishes, toys, and ceramic pots. If possible, turn these items over when not in use.

Change the water in the birdbath every few days. Do not allow water to stagnate in ornamental pools, water gardens, animal watering dishes and swimming pools or their covers. Swimming pools should be cleaned and chlorinated when not in use.

If you know of a swimming pool or other decorative pond that is not being properly cared for, speak kindly to the owner and see if he or she will soon be doing the maintenance. If you know of abandoned pools with no one to care for them, contact the Pinal County Division of Environmental Health on Vector Control & Surveillance at (520) 866-6864 for more information.

Survey and decide whether or not you need to alter the landscape of your property to eliminate standing water. Keep in mind that during our warm spring weather, mosquitoes can breed in any puddle of water.

Larvicides, insecticides that kill young mosquitoes, are highly effective in controlling immature mosquitoes and should be considered when standing water cannot be eliminated.

Make sure all of your window and door screens are “bug tight.”

Check your outdoor lights. Incandescent lights attract mosquitoes, whereas fluorescent lights neither attract nor repel mosquitoes. Consider changing to fluorescent bulbs where possible.

Stay indoors at dawn, dusk, and in the early evening when mosquitoes are most active. If you must go outdoors, wear a long-sleeved shirt and pants.

Insect repellents when applied (sparingly) to exposed skin deter mosquitoes from biting. Spray thin clothing with repellent because mosquitoes can bite through loosely woven cloth. The American Academy of Pediatrics recommends that repellents used on children contain no more than 10 percent DEET, the active ingredient in mosquito repellents. Be sure to follow all directions on product labels. Call our Cooperative Extension office for a bulletin that will describe the proper use of repellents.

If you have horses, goats, sheep and other livestock animals, check with your veterinarian for vaccination requirements. Horses, which are particularly susceptible, must be vaccinated for protection against the disease.

Aerate ornamental pools to prevent development of mosquito larvae, or stock them with mosquito fish. Fish are an excellent treatment for ponds and horse troughs. Mosquito fish have a voracious appetite for mosquitoes and their larvae. As I watch the fish in our back yard fishpond, the mosquito fish seem to be saying to mosquitoes and other passing insects, “Please fly close to the surface of the water!” and “Please come lay your eggs in my pond!” They have huge appetites for insects.

In order to protect ourselves from disease, it is important that all of us work together to minimize the risks that come from living in the desert.
Anytime the weather turns warm and humid it is common to see a toadstool or two poke up from our lawns, gardens, and even bare ground.

Our recent rounds of rain have triggered all kinds of interesting phenomenon including the emergence of fungal mushroom structures, sometimes called toadstools. When they appear, questions abound. “What causes their growth?” “Are they poisonous?” “What should be done with them?”

Mushrooms are the reproductive, spore-producing structures of specific types of fungi that live in the ground. These fungi are beneficial because they break down organic matter in the soil and release nutrients that are necessary for plant growth. They are dangerous in that almost all of them are highly poisonous, even fatal if eaten.

Sometimes pets and possibly children get sick from taking a bite out of a mushroom. For that reason, it is a good idea to promptly remove them if there is any question. However, if they are in a place where they are not likely to cause a problem, it is perfectly okay to leave them so that they can complete their important ecological function.

There are many fungi that show up this time of year. In addition to the common mushrooms that we often see in our lawns, we can sometimes find the less familiar puffballs and slime molds. I usually see the puffballs out in the desert or sometimes on bare ground. I found a slime mold growing around the base of an iris plant the other day. None of these cause harm to other plants. They simply decompose dead plant matter in the soil, a really important job.

The mushrooms show up during the summer rainy season because the spores, the “seeds” of the fungus, germinate best when the temperatures are warm, the humidity is high, and the soil slightly moist. The dry, hot month of June would not help the fungus achieve effective reproduction so we do not often see them then. The warm temperatures, the high humidity, and the rainfall all work to initiate the reproductive cycle of these fungi. When conditions are right, up they pop to do their thing.

There are many different types of fungi in the world. Some are one-celled and microscopic. Examples of these would be the fungi that cause root diseases in over-wet soils. Others, like the mushrooms, are larger and quite complex.

A few fungi are plant or animal pathogenic; that is, they cause diseases in living plants and animals. The vast majority, however, are simply silent partners as they go about their business of quietly breaking down dead plant materials into their component parts.

The mushroom that we commonly see in our lawns and gardens is really interesting in that it has a quite unique structure. Basically, it consists of three pieces: a bulb-shaped base down at the surface of the soil, a stalk emerging from the base, and an umbrella-like cap which sits on the top of the stalk. The top of the mature cap is usually whitish tan to yellow brown in color. The nearly white stalk can be between four and eight inches tall.

The cap is where the actual reproductive work is done. Tiny seed-like spores are produced in the gills, the grooves that are on the bottom side of the cap. When the spores are released from these gills, they easily blow away in the wind to be ready to germinate and grow when conditions are right.

Upon germination, the new fungus sends out long, thin threadlike growths called hyphae. These strands are the everyday workhorse part of the fungus and their thing is to decompose wood, fallen leaves, lawn thatch, and other organic matter in the soil. As they break down their food sources, they absorb a portion of the released nutrients from the decomposed plant material.

A single strand of hyphae is usually too small to see without a magnifying glass, but during times of reproduction, the individual hyphae strands begin to grow together in the soil to form masses called mycelium. When the mycelium has

- **TOADSTOOLS AND MUSHROOMS. . . CONTINUED ON PAGE 4**
developed sufficiently, mushrooms are produced. The mushroom-producing fungi can live in the soil for years and produce mushrooms whenever the weather is favorable.

Is there a way to prevent them from growing in our yards? There are no chemicals currently that are effective in controlling or preventing the growth of mushroom-producing fungi. Insecticides, weed killers, and even fungicides are not effective. To stop the mushrooms, we have to eliminate the material upon which they grow. That can be pretty tough to do because you never know where they are going to pop up next.

In Southern Arizona, we generally see mushrooms growing on excessive lawn thatch, the matted dead layer laying on the surface of the soil, or where dead leaves have accumulated over time. The best thing to do in this case is to de-thatch the lawn or remove the dead leaves. Since de-thatching removes the fungi’s food source, the number and frequency of the mushrooms should decline or stop altogether.

The easiest solution, since their emergence is so erratic and hard to predict, is to simply watch for them out in the yard and then remove them before letting the pets or children out into the yard. Some people simply use the toe of their shoe to gently kick them loose and then put them into a trash bag. A better way might be to use a garden digging tool and cut the mushroom loose as close to the ground as possible. This ensures that the base as well as the cap and stalk are removed.

The common mushroom or toadstool growing in our lawns and gardens, along with their many relatives, are all members of the fungi group. While most are poisonous, they rarely cause plant diseases or injury. As they decompose existing soil organic matter they perform a valuable role in the ecology of the desert. If they pose a possible health problem to pets or children, they can be easily removed and discarded into a safe place.
Preventing Bird Damage in the Garden

Birds can devastate young vegetable seedlings or ruin fresh fruit in the blink of an eye but if we know what to do, and take action before they strike, we can often prevent problems.

Many of us are all too familiar with damage caused by birds to ripening apricots, plums, grapes, and other garden fruits. We know it happens and even come to expect it. However, few people realize that birds can also seriously damage vegetable gardens. The fact is that yes, birds can make pests of themselves in vegetable gardens, particularly when young plants are in the seedling stage. Some people would be quick to say that they can be very aggravating pests. For those who know what I am talking about, I sense your frustration.

Birds can damage fruit and vegetables in two basic ways. The most obvious is direct feeding and the other is contamination of food products. Let’s consider some examples.

Horned larks are notorious in the commercial vegetable industry and in home vegetable gardens for nipping at new seedlings emerging from the ground. They usually don’t really eat the plant. Mostly they just bite it, perhaps for a taste of the sap. Sometimes though, they will pull it completely out of the ground. In these cases, it is not uncommon to find the poor, abused seedling lying discarded nearby after this not too gentle treatment. Horned larks are not the only ones that do this of course, but they are notorious for this kind of damage.

Other birds like finches, sparrows, thrashers, and wrens will peck holes in the soft flesh of ripening fruit. Figs, apricots, peaches, and plums are common targets for birds. Woodpeckers and their relatives the sapsuckers, peck holes in the rinds of citrus fruit looking for a juicy taste of fresh fruit. Many birds figure out how to hunt the seeds that you just put in the ground and have lunch at your expense. If you are growing your own grains, watch out for the red-winged blackbird. They and their cronies will absolutely love your harvest.

Birds also cause damage to garden crops through direct contamination of the edible parts of the plant. Bird droppings are usually not a problem when they fall on fruits that will be peeled, but when they end up on difficult to wash fruit like blackberries, strawberries, and clusters of table grapes, they make a real mess and the residues could harbor disease.

The sight of bird feces on fresh fruit is guaranteed to quickly destroy any desire one might have to pluck a ripe fruit and plop it directly in the mouth. Even so, most produce can be cleansed with a careful washing. In fact, it is a good idea to inspect food materials carefully before you place anything in your mouth. Even if you can’t see any contamination, it is always good to wash before you eat. It is better to be safe than sorry, I say.

How do we prevent bird problems in the garden? When thinking about control, many people quickly jump to the idea of chemical poisons and repellents. However, since most gardeners do not have the proper training, certification, and license to use chemicals to control birds, that way is out. Don’t even think about it. Put it out of your mind. Don’t go there.

The same goes for shooting with fire arms, sling shots, or arrows. There are a whole bunch of laws that if violated, could bring embarrassment, financial difficulties, and even imprisonment. Unless you have legal permission, birds cannot be harmed in any way. Just so we are clear, almost every bird you see is protected by state and/or federal regulations. Killing or injuring birds without a license carries a stiff punishment and could get you into big trouble. Don’t do it.

So, what can you do to protect your garden from the ravages of hungry birds? There are a number of things that can be done and most fall within three categories: frightening devices, mechanical barriers, and habitat modification.

Okay, let me emphasize right here that I am not recommending the use of loud sounds in populated areas to frighten away birds. While farmers out in the country might get away with propane cannons, fireworks, and blank shotgun
blasts, no one in the city wants to wake up to a loud bang or pop at the crack of dawn. Not only will the neighbors be upset, but the local law enforcement community also. They take a dim view of such activities, even if it is in the name of good gardening, because there are laws against disturbing the public peace.

On the other hand, a good predator silhouette works very well to frighten birds away. It is quiet and causes no harm to the animals. Some people use hawks or snakes, but I like to use an owl. Strategically placed and moved regularly, birds have a tough time telling the difference between a real owl and a plastic one in the few seconds they have to make a life or death decision. I really like the plastic owl that, with power from a solar collector, is able to move its head. Any movement is good because it gives the birds a more realistic view. I have seen birds literally do a u-turn in mid flight when they suddenly see what they think is a live owl hiding among the foliage of a fig or apricot fig. Predator images seem to work equally well in vegetable gardens.

Mechanical barriers are another good way to keep birds away from sensitive plants. Many people already use bird netting over citrus, apricots, grapes, and plums to protect their fruit. Floating row covers, light spun fabric especially designed for agricultural use, or the netting you use on your fruit trees can be set up to keep birds away from tender vegetable plants until they are large enough that birds lose interest. The floating row cover can be laid directly on top of the plants because they are light enough that they do not damage plants. Netting can be laid on top of a pole framework to keep them off the plants.

The last way to prevent bird damage is to change the natural habitat around your garden. Modifying conditions to make the area less interesting to the birds will help prevent bird populations from becoming excessive. The fewer the birds, the less damage will be sustained.

Of course, birds can travel some distance to a feeding area so habitat modification may have its limits, but anytime we can camouflage or make a feeding site less interesting the better off we will be. Common modification techniques include removing roosting areas like trees and shrubs in the vicinity of the garden area, moving the bird bath and decorative bird houses to another part of the yard, and eliminating nearby resting areas.

Birds cause many types of damage in the garden. While there are some things that we definitely should not do, there are steps that you and I can take to effectively prevent bird damage without harming protected species.
The fall planting season, which begins just as the summer temperatures begin to dip below the century mark, is a great time to plant trees and shrubs.

Fall is a great time to plant trees and shrubs because the high temperatures of summer can cause a young plant to give off more water through the leaves than the young roots can provide. This effect often throws the plant out of balance and can shock the plant, sometimes fatally. Once the summer heat starts to give way to the relatively cool temperatures of October, containerized trees and shrubs can usually be planted into the ground with full expectation that they will take off and do well.

A major benefit of planting trees and shrubs during the fall growing season is the additional time we give them to establish a good root system before the hot, dry temperatures return in June. Yes, many plants typically go dormant in the winter, but they will quickly resume growth the next spring and have plenty of time to become well established before the onset of the rough growing conditions of early summer. If a plant is to survive the difficult climatic challenges of June, it will be because there is a root system with sufficient strength to provide the water and nutrients needed during that stressful time.

If you decide to plant this fall, here are some other suggestions to consider. First and foremost, it is important to find and purchase the best quality tree or shrub that you can because poor, unhealthy plants will be slow to develop the strength they need to survive. A plant with inherent weaknesses or health problems at planting may not survive to reach maturity. Improper planting techniques can add additional problems that may tip the balance against even otherwise healthy plants.

When selecting potted or boxed trees, it is a good idea to ask the same kind of questions that you would ask if you were purchasing a used car or some other expensive item. What is the history of the plant? How long has it been in the container? Does the plant have any obvious defects? Most people do not purchase a car unless they have checked under the hood. The same is true of plants.

Two major weaknesses that are not easy to see are girdling and kinked roots. Girdling roots are roots that loop around the root ball and encircle the trunk of the tree. Sometimes they actually will grow into and bind themselves with each other or the trunk. This is not good. Girdling and binding can cause the trunk to become weak and constricted and the roots to never spread out and properly anchor the plant into the ground. Just as a snake envelopes and squeezes the life from its prey, girdling roots can slowly but surely squeeze the life from growing, otherwise healthy plants.

Kinked roots are roots that make quick turns in one direction or another. Sometimes these roots will double back on themselves and then grow in a direction that is at a wide angle from the original direction of growth. Just like a kinked water hose, roots with these kinds of defects have difficulty in moving fluids from one part of the plant to another. This often results in stunted, weak plants that can quickly die, especially in the early years of growth.

Girdling and kinked roots occur when a plant outgrows its pot. When the roots grow to the edge of the container they either turn to begin the long circle around the edge of the pot, or they double back on themselves. Plants left too long in a container too small for the root system will often have girdled and kinked roots. Because a strong, wide, and deep root system is critical for physical support of the tree, these problems must either be avoided or corrected at the time of planting.

Sometimes kinked or girdling roots are visible on the soil surface in the containers but more often than not, these problems will not be immediately apparent. Check for root problems before purchasing the plant by gently sticking one finger down into the potting soil and feeling for a tight nest of roots close to the trunk. It may also be helpful to visit with the nursery attendant since repeat business is generally related to customer satisfaction. While both procedures can often be hit and miss, it is better to at least have made the effort than to be dissatisfied later. Many trees that die unexpectedly each year have small, tightly packed root systems resulting from girdling or kinking.

Proper planting is also critical to long term plant health. When planting, ensure that the hole is wider than it is deep and that the hole is no deeper than the depth of the soil in the container. If you suspect drainage will be a problem, it is a good idea to fill the hole with water and keep track of the time that it takes to empty. If water is still in the hole after twenty-four hours, you have a drainage problem. Either select a new site or try to improve the drainage by digging a narrow chimney down into the soil to a layer that will accept the excess water. Do this test before bringing the new plant to the site.
Just before planting, and after the container has been removed, check the exposed roots near the edge of the root ball for signs of sudden changes of root direction. This is the time to take corrective action if root girdling is evident. If girdling is suspected, use a light spray of water to remove a small quantity of soil for better visibility. The water is much less likely to damage the tender feeder roots than a hard tool like a shovel or a hand trowel. Removing a small amount of soil will provide a better view of conditions just under the soil surface. This must be done quickly because roots exposed for periods of time to the air may dry out and die.

If you spot a serious problem, consider taking the plant back to its source. If this is not feasible, you can try to reclaim the plant by cutting the root off cleanly just before the point in which it makes its radical turn. Do not try to remove the cut root as it will soon decompose in the soil. A sharp clean cut is very important because a shredded or mashed root is much more likely to die back after pruning. Shredded and mashed roots will also be less likely to send out new roots to replace those which were cut off. Hand shears are an ideal tool but occasionally larger loppers or a saw may be needed.

A wide, shallow hole is preferable to a deep hole because roots need the freedom to move into soil that is not compacted. We want the roots to spread far enough away from the trunk to give good support during our monsoon storms. We also want to make sure that the tree does not sink deeper into the soil during settling. There are plant disease organisms in the soil that could damage the tender bark on the trunks of trees. A wide, shallow planting hole is important.

While transferring the plant from the pot to the hole, do not twist or jerk the root ball because the tiny root hairs on the tips of the feeder roots are quite fragile. These are the structures that take up water and nutrients. If they are damaged, transplant shock often results. Let water drain into the hole while you shovel the soil back into the hole. The water will help distribute the soil evenly and avoid the formation of air pockets which can be deadly to roots.

It is best to use the same soil that came from the hole to backfill the planting hole. We do not recommend adding mulch or compost to the backfill because this changes the dynamics of the soil and may create problems later on. A better idea is to lay it on the surface of the soil around the tree to cool the soil surface and cut down on water loss through evaporation.

Armed with knowledge and a little experience, it is possible to properly select and care for our landscape trees and shrubs. It is this proper care that will ensure a long and successful life in our landscapes.

If you have questions about this newsletter, have any plant related problems, or wish to have a publication sent to you, please call (520) 836-5221 x204 and leave a message, or call (520) 374-6263 to reach one of our volunteer Master Gardeners. When leaving a message, please clearly state your name and your telephone number. If you have a plant problem and are able to email a picture, please send a picture with any information you can provide about the plant, and your contact information to our diagnostic team at macmastergardener@gmail.com and a Master Gardener will contact you. You are also welcome to stop by our office at 820 E. Cottonwood Lane, Bldg. C in Casa Grande.

This newsletter is available to view on our website at:  http://extension.arizona.edu/pinal

Richard D.Gibson
Extension Agent, Agriculture

RDG/te/sh/aw

60 mailed copies 
261 emailed
INTEGRATED PEST MANAGEMENT WORKSHOP

This workshop is part of the State Signature Program Initiative Project: Enabling Schools to Practice and Implement Integrated Pest Management-Expansion of IPM in a child’s world

November 10, 2015 8:30 am—4:30 pm
Pinal County Cooperative Extension Office
820 E. Cottonwood Lane, Bldg. C
Casa Grande, AZ  85122

Agenda questions and to register for the class, contact Shaku Nair, at nairs@email.arizona.edu

How to connect with Rick Gibson online…

Blog: Booming Deserts
ricksgardenspot.blogspot.com

Facebook: https://www.facebook.com/PinalCountyGardenandLandscapeProgram

Twitter: https://twitter.com/RickGibson4