



Late May is the height of the planting and gardening season. So what do you do when you come home from the garden center, yet again, with a trunkload of plants but

you've run out of bed space? Time for a new landscape bed!

I know, I know, that is not the way to design a landscape. We should plan ahead, have everything down on paper, and then purchase plants to meet our needs. Yet who really does that?! Besides, the fun part of gardening is improvisation and change. It may be time to get rid of one more patch of lawn and start a new garden bed.

The first step is to determine a location for your new bed. You must decide what purpose this bed will serve. Will it provide screen at the edge of the property or serve to block the view of a service portion of the yard such as the compost pile or from the living portion such as the patio or terrace? Is the bed going to be used to create a sense of enclosure or help define an outdoor room? Will the bed simply provide more space for the flowers you love to view outdoors and cut for arrangements?

Once you decide where to place a new landscape bed, determine a pleasing shape. I like to use a garden hose to define the new bed shape. Use a supple hose that has been sitting out in the sun for a while. Then lay the hose in the shape you think would be pleasing. It is easy to modify the shape slightly by tapping the hose with the side of your foot as you walk along.

To really get the sense of the shape of the new bed, you can cut the grass in the lawn except the newly defined bed. The tall grass remaining will help you see the shape you have created even before you add the new plants. If you don't like the shape, you can easily move the hose and try again.

When you are happy with the bed shape, it is time to get rid of the existing vegetation, which is probably a combination of lawn grass and broad-leaved weeds.

If you plan ahead, you can kill off that existing vegetation by spraying the area with a burndown herbicide or by spreading black plastic over the new bed area and waiting for Mother Nature to "cook" the vegetation underneath. However, if your new plants are already sitting on your (continued on page 2)



THINGS TO DO THIS MONTH...

- Divide spring-flowering bulbs.
- Pinch annuals and hardy mums for bushier plants.
- Remove old flower heads from bedding plants to prolong bloom.
- Continue to water new plantings with a thorough soaking.
- Mulch to conserve water and control weeds.
- Protect tree trunks from lawn mowers and weed eaters with a circle of 1-2 inch deep mulch.
- Prune new growth on evergreens to keep size down.
- Take softwood cuttings of shrubs to start new plants.
- Move houseplants outdoors to a partially shaded area.
- Pinch back blackberries to 6 inches to promote branching.
- Plant a second crop of vegetables.
- Prune tomatoes.
- Mow and fertilize strawberries after fruiting.
- Feed roses every month until early August with 1/4 cup 10-10-10 per plant.
- Continue to spray or dust roses with a fungicide and insecticide every 10 days.
- Cut faded roses as the petals fall (or before) to 1/4 inch above a 5-leaflet leaf.
- Set sundials on June 15. Place the sundial so the shadow falls on 12 o'clock at exactly noon.



NO TIME TO SNOOZE (continued from page 1)

driveway and you don't have the week to 10 days it will take to kill off the existing turf (which is the way I usually operate), go to plan B.

Get your trusty sod lifter or flat spade, and start lifting turf. Cut as close as you can to the roots of the existing turf so you leave as much topsoil in place as possible. Be sure to remove all the vegetation and put it in your compost pile.

While it is tempting to turn the layers over hoping the weeds will be smothered with soil and mulch, believe me, it is easier to get rid of that stuff now rather than pull weeds in your new bed all season.

If the ground is compacted, take the opportunity to loosen the soil with a rototiller or a shovel, depending on the size of the bed. Mix in composted yard waste (or any available organic matter) to improve the soil structure. Once the plants are in, it is much more difficult, if not impossible, to modify the soil.

Lay out the plants in their planned location before planting any individual plant. Now step back and view the new bed from the various angles you will encounter as you sit on your patio, look out the kitchen window, or walk through the garden. Sometimes plants look properly spaced close up, but seem to be in a straight line or poorly distributed when viewed from a distance. If you are happy with all the plant locations, you are ready to plant. Be sure to dig large holes so the new plants can grow roots into the surrounding soil quickly and easily.

Once everything is planted, it is time for a layer of mulch. Use compost, hardwood bark, pine needles, shredded leaves or any other organic material you have at your disposal. Different types of mulch are appropriate for different settings and plant types. In a woodland garden, shredded leaves make the best mulch. In a flowerbed with lots of small plants, a very fine-textured mulch will compliment the plants, while a shrub bed might look best with hardwood bark mulch.

If you are planting lots of groundcover or very small plants, it may be easier to mulch the bed first and plant into the mulch. If you do, however, be sure to dig through the mulch and get the plant roots into soil. Few plants grow well when planted in the mulch. Also, don't let soil accumulate on the surface of the mulch or you will have weeds sprouting on top of your newly mulched bed.

Depending on the size of your new landscape bed, it may be many hours (or days) from the time you drive into the driveway loaded with new plants until the time you are sipping a cool drink on your patio, viewing your lovely newly landscaped bed. But the process is part of the fun of gardening!

—Susan Barton

A WOODY MADE FOR THE SHADE

Sambucus nigra 'Madonna'

Finding shade-tolerant plants that add interest and excitement to the garden can be a challenge. *Sambucus nigra* 'Madonna' not only brightens up those dark, shady spots, it offers the interest of flowers and fruit as well. The unique variegated foliage of green splashed with yellow margins gives an overall impression of a lively gold or chartreuse color, which turns a shadowy area into a radiant oasis in the border.

Come June, the large clusters of white flowers, which are borne in terminal panicles sporting a flat top, continue to illuminate shady areas. In September, small black berry-like fruit follows the flowers and attracts birds. Yet, while the pinnately compound leaves offer a textural effect, when crushed, they give off an unpleasant odor.

Sambucus nigra 'Madonna', common name, Elderberry, is a deciduous multi-stemmed shrub that grows in sun as well as shade and requires no special soil conditions. Either acid or alkaline soil will work. Preferring moist conditions, this variety can tolerate dry soils and will even withstand windy sea-side conditions.

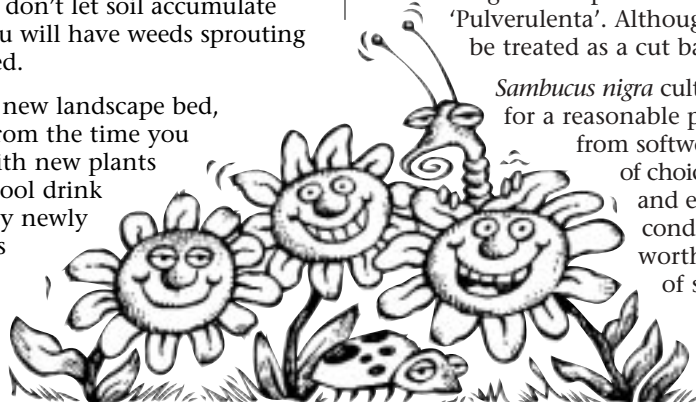
Lovely when used in a mixed border with other shrubs, trees, perennials and annuals, *Sambucus nigra* 'Madonna' also could serve as a specimen plant. As a specimen plant in a smaller landscape, it can be pruned back yearly in late winter or early spring to keep it a reasonable size. A large grouping makes a dramatic statement in the landscape. Because its maximum height of between 8 to 10 feet, Elderberry can be used as a hedge or screening.

The straight species, *Sambucus nigra*, is native to Europe, northern Africa and western Asia. Cultivated since ancient times, it is common in Great Britain and continental Europe, often growing along roadsides, in ditches or in open fields.

The cultivar 'Madonna', along with a few others, is what makes this plant worth considering. *Sambucus nigra* 'Laciniata' has green leaflets that are finely dissected, reminding the viewer of *Acer palmatum* var. *dissectum* 'Filligree Lace'. This plant would give a wonderful textural effect to the garden. *Sambucus nigra* 'Guincho Purple' with its purple leaves and pink flowers is an unusual addition. Another cultivar containing leaves splashed and speckled with white is *S. nigra* 'Pulverulenta'. Although rather unstable, it could easily be treated as a cut back shrub in winter.

Sambucus nigra cultivars are easily found in the trade for a reasonable price, or they can be propagated from softwood cuttings. With the number of choices, shade- and sun-tolerance and ease of growth in a range of soil conditions, the Elderberry is a shrub worth considering for a multitude of situations.

—Marcia Stephenson
UD Undergraduate





WHAT DOES CCA-TREATED WOOD MEAN TO THE CONSUMER?

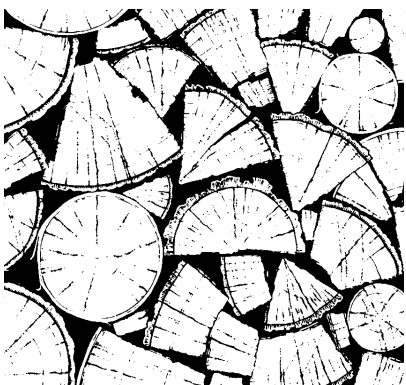
A variety of pressure-treated wood for outdoor projects, such as decks, picnic tables, landscaping timbers, gazebos, residential fencing, patios, walkways and play-structures, contains arsenic, or chromated copper arsenate (CCA). There is some fear that arsenic in the wood may leach into the soil and water supply. In February this year the Environmental Protection Agency announced the wood industry's decision to remove arsenic-treated lumber from the market by December 2003. Wood treated with CCA prior to this date, however, can still be used in residential settings, and already-built structures containing CCA-treated wood are not affected by this action.

While the EPA has not concluded the public is at risk from CCA-treated wood, arsenic is a known human carcinogen, so the agency believes that any reduction in exposure to arsenic is a good thing. A number of preservatives have been registered by EPA, and wood treated with these preservatives are expected to be available in the marketplace. In addition, untreated wood, such as cedar and redwood, and nonwood alternatives, including plastics, metal and composite materials are available. Your local hardware store or lumberyard can provide more information about these options.

The EPA does not recommend that consumers replace or remove existing structures made with CCA-treated wood or the soil surrounding those structures. Concerned citizens may want to take extra precautions. The EPA suggests the following:

- Never burn treated wood in open fires, stoves or fireplaces or residential boilers.
- Always wash hands thoroughly after contact with any wood, especially prior to eating and drinking.
- Apply a coating product to pressure-treated wood on a regular basis. Some studies suggest that this can reduce the amount of CCA that leaches from treated wood.
- When conducting new construction or repairs, consider the range of alternatives to CCA-treated wood. These include both non-arsenic-chemical wood preservatives, as well as other woods and non-wood products. Consult your local home improvement store for more information.

How can you tell if your deck or garden timbers have been constructed with CCA-treated wood? If not coated,



freshly treated wood has a greenish tint that fades over time. Generally, if your deck is not constructed of redwood or cedar, most likely it is CCA-treated wood. If you know who built the deck, call and ask what was used.

—Susan Whitney
UD Extension Specialist
for Pesticides

GOLD MEDAL AWARD WINNERS



AND THE WINNERS ARE... PHS PLANTS OF THE YEAR

The Pennsylvania Horticultural Society has been awarding the Gold Medal Plant Award to little known and underused woody plants since 1988. Here is a description of one of the 2002 award winners.

Physocarpus opulifolius 'Diablo' Eastern Ninebark

Physocarpus 'Diablo' is a recent European-bred introduction of the old-fashioned favorite, Eastern ninebark. Unlike its plain, green-foliaged relation, it is adorned with intense dark purple foliage and light pink buds that open to creamy white. From May to June, these flowers make a stunning contrast to the dark foliage, particularly if used in mass plantings in the garden. 'Diablo' makes an excellent border shrub at a height and width of 5 to 10 feet and is suitable for use as a hedge or low screen.

This deciduous, multi-stemmed shrub prefers full sun and tolerates poor soil conditions. It can be pruned in early spring to the desired height and shape. In excessive summer heat, or half sun/half shade conditions, the leaves will fade to green with hints of purple undertones. *Physocarpus* 'Diablo' is vigorous and hardy to Zone 2. Beautiful and tough—what more could you ask for in a woody plant?

The preceding description was written by Joe Gray, general manager of Hines Nurseries, located in Vacaville and Winters, CA. He is also a member of the Gold Medal Committee.

2002 ALL-AMERICA SELECTIONS

All-America Selections (AAS), a nonprofit organization in Downers Grove, Ill., that rates the performance of plants grown from seed, announced its 2002 award winners. This year, 13 plants were selected in the categories of annuals and vegetables. *Pelargonium zonale* 'Black Magic Rose' and *Catharanthus roseus* 'Jaio Scarlet Eye', winners of the AAS Bedding Plant Award, offer the distinction of color. "Black Magic Rose" is the first hybrid geranium that has a dark chocolate leaf center and green leaf edge. 'Jaio Scarlet Eye' flaunts a rose-scarlet flower with a small white eye.

Two of the six AAS Flower Awards went to *Cleome spinosa* 'Sparkler Blush' and *Capsicum annuum* 'Chilly Chili'. 'Sparkler Blush' has the unique ability to grow 3 feet tall and wide without falling over. 'Chilly Chili' is the first nonpungent ornamental pepper with exceptional garden performance.

Five vegetables received the AAS award. The winners were *Ocimum basilicum* 'Magical Michael', *Cucumis sativus* 'Diva', *Cucurbita pepo* 'Orange Smoothie', *C. pepo* 'Sorcerer', and *C. pepo* 'Cornell's Bush Delicata'.

—Susan Barton



BE WATER-WISE — XERISCAPE YOUR YARD

Starting the growing season with lower-than-average water reserves has area gardeners concerned about water supply, potential increases in water costs and impending water restrictions. In recent years gardeners have searched for ways to reduce water consumption and incorporate plants in their gardens that are drought-tolerant, because we know what many homeowners do not—more than 50 percent of the water used in a day by the average household goes for landscaping.

To reduce water consumption, you can plan your landscape so that water requirements of the plants are met mostly by natural precipitation. *Xeriscape*, the term applied to describe this gardening approach, was coined in 1981 by a task force of members from the Denver Water Department, Colorado State University and the Associated Landscape Contractors of Colorado. The task force was created to bring attention to the issues associated with drought at the time. Of primary concern was the challenge of reducing water consumption while still maintaining an aesthetically pleasing landscape.

Every region of the country has some potential for drought, sometimes lasting for more than one growing season. Water restrictions throughout the country limit watering either to time of day or specific days of the week. Plants used for Xeriscape gardening in any geographic area are those adapted to that region's natural amount of yearly rainfall. Rainfall distribution is what determines the plant pallet used. In Delaware, we have some areas of the landscape that stay very wet when we get frequent rains. Plant those areas with plants that tolerate moist soils. Other parts of the landscape stay dry and require drought-tolerant plantings.

The term Xeriscape comes from the Greek word xeros, meaning dry, and landscape. While the term may imply no water for the landscape the seven principles of Xeriscape landscaping embrace the principles of water conservation through creative landscaping.

The seven principles are:

1. Planning and Design

Take the time to plan either a new or renovated landscape and incorporate water zones to allow for water usage where it will contribute most to the beauty of the landscape.

2. Soil Analysis and Improvements

Know the requirements for the soil and amend appropriately. This will give plants the correct environment for health. Amend the soil with organic compost to help soil retain moisture.

3. Practical Turf Areas

Reduce or limit lawn areas when possible. Tall fescue is one of the best grasses for our area because it has a deep root

system. Or simply forget about watering the lawn during the summer. There is no need to water lawns in Delaware. When the weather is dry, the lawn goes dormant and turns brown. It will green up again when rains return.

4. Appropriate Plant Selection

Use drought-tolerant plants specified for a given region with specific microclimate needs. In south- and west-facing areas of the garden, use the most drought-tolerant plants. Plants requiring moisture should be placed facing north and east. Don't mix plants together with different water requirements.

5. Efficient Irrigation

Use soaker hoses or drip irrigation, which puts water where it is needed, in the root area, to encourage deep root growth without over watering unnecessary areas.

6. Mulching

Mulch—it helps retain soil moisture and reduces runoff.

7. Appropriate Maintenance

Fertilize only when needed rather than pushing new growth that will require more water. Maintain irrigation systems properly to avoid wasted water. Where possible, capture rain water and runoff to reuse in the landscape.

By incorporating some or all of the seven principals proposed by the Xeriscape concept, a reduction in water usage can be realized anywhere from 20 to 80 percent. In some cases, it is possible to completely eliminate the need for additional water beyond natural precipitation, which is ideal.

—Marcia Stephenson
UD undergraduate



Contributing Writers:

Susan Barton, UD Extension Specialist, Horticulture
Dewey Caron, UD Extension Entomologist
Jo Mercer, UD Extension Educator, Horticulture
Maggie Moor-Orth, Extension Ag Agent, Delaware State University
Bob Mulrooney, UD Extension Plant Pathologist
Sue Snider, UD Extension Specialist, Food and Nutrition
Jay Windsor, UD Extension Ag Agent



NOTHING DOES IT BETTER — FAVORITE GARDEN TOOLS

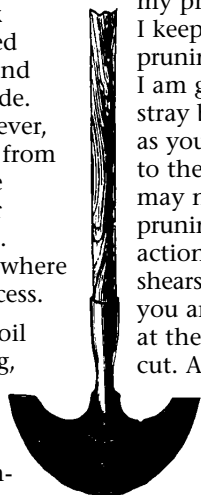
If you ask gardeners about their favorite gardening tool, you will get an array of responses. I decided it would be fun to interview professional gardeners to find out about their favorites. Rarely did I get the same answer. Like the chef who has a favorite cooking utensil, individual gardeners are zealously loyal to tools they perceive make the job easier and more enjoyable.

One favorite gardening tool is the shovel. Not just any shovel. A shovel that is the correct size for not only the job at hand, but to the person who is shoveling. A larger shovel may get the job done faster; however, the person doing the work may injure himself or herself if the tool is too large and heavy. The shovel is definitely a fundamental tool for gardening.

The construction of the shovel is critical. The handle can be made of wood, fiberglass or steel. The strongest handle is made of steel, yet it has the least amount of flexibility. Fiberglass handles offer the flexibility of wood but are also strong and weather resistant. The best wood handles are made from ash and are naturally flexible and strong.

Blade construction is also important. For the lightest jobs the open back works well. For heavier jobs, closed back welded is a step up. It has a welded piece of steel added for strength and to keep soil from building up inside. The best blade construction, however, is solid shank. This type is forged from a single bar of steel, making it the strongest blade available. Another feature to consider is turned steps. These are at the top of the blade, where one's foot aids in the digging process.

Another favorite tool was the soil knife. This tool is great for digging, cutting and sawing. It easily gets under weed roots, making them much easier to pull. When planting in a tight area in close proximity to other plants, the soil knife works better than a full sized shovel, allowing one to dig without disturbing neighboring roots. The stainless steel blade is 1-3/4" wide and 6" long and tapered with one side for slicing; the other is serrated for cutting roots.



The handle, constructed from a one-piece molded composite, is comfortable to hold.

A gardening aid that really isn't a tool but makes gardening more enjoyable it kneepads. These are extremely effective for kneeling jobs from planting bedding plants to weeding. Anyone who has worked on hands and knees without cushioning knows how painful it can be.

There are a variety of kneepads to choose from. I found a few that offer a degree of comfort for a range in cost. The contoured flexible pads that attach around the knees with Velcro® offer a flat kneeling surface. A heavier duty version, made from molded natural rubber and attach with buckles, gives a thicker cushion and more protection. The most comfortable ones as far as I am concerned have a heavy plastic cup outside and are lined with a thick rubber cushion.

—Marcia Stephenson

Additions from Susan Barton, Extension Specialist for Horticulture

My two favorite garden tools are my pruning shears and my sod lifter. I keep a pair of good quality Felco® pruning shears in my back pocket when I am gardening. It is easy to clip off a stray branch or dead wood on a shrub as you notice. If you have to go back to the tool shed for your shears you may never get around to it! Always use pruning shears that cut with a scissors action rather than the anvil type shears. Anvil shears crush the branch you are cutting and leave dead cells at the tips. Scissor shears give a clean cut. Always cut as close to a new bud or branch as possible. I also use my pruning shears to cut fresh flowers to bring indoors when I am finished gardening.

I couldn't live without my sod lifter, either. I am always making new beds or changing the bed line a little to allow new planting. I start by cutting a new bed line and then use the sod lifter to cleanly lift the existing

turf (and weeds) without removing much soil underneath. A sod lifter has a round edged flat blade that is bent at the perfect angle to get under the sod while the user pushes from behind. I have lent my sod lifter to many a friend, who, depending on the size of the new bed they made, returned it with many thanks or countless curses!

Additions from Susan Baldwin, Garden Check Editor

As the owner of a postage stamp-sized backyard behind a townhome, I look for tools that work well in tight spaces because I have sardined my yard with perennials (it's a bad habit that stems from my inability to say no when faced with a wonderful new variety, but that's another story). I couldn't do without my Cape Cod weeder and my adjustable rake.

The weeder is invaluable for my purposes. Used for generations by hardy New England gardeners, the small curved scythe-like blade at the end of a hardwood handle cuts through weed roots and loosens crusted soil with flick of the wrist. The pointed tip is great for working in tight spaces.

My other must-have tool is an adjustable rake. Not only does this rake telescope from 37 inches in length to 68 inches for raking large areas. The best part is that the tines can be transformed from a 22-inch wide fan to one 8 inches wide, making it a snap to cultivate and weed between plants in my tight flower beds.

Do you have a favorite tool?

Share your favorite tool story by writing to the address in this issue or emailing gardencheck@udel.edu. Include your name.



PEST ALERT! EARLY JUNE

• **Plant sucking insects** — aphids, whiteflies, leafhoppers, plant bugs, mealybugs, lace bugs: look for problems in warm dry areas. Investigate off-color, chlorotic-looking plants; spot-treat if population is localized to conserve beneficials (see accompanying article).

• **Azalea bark scale** (azalea, rhododendrons in mid-June); **calico scale** (shrubs, trees early June); **hemlock scale** (mid-June); **Japanese scale** (pyracantha early/mid-June); **pine needle scale** (early June); **San Jose scale** (mid-June); **wax scale** (early June); **white peach scale** (flowering fruit, shrubs late May/early June); **cottony maple, fletcher, pine tortoise, terrapin soft scales** (mid-June): apply controls only when crawlers are present.

• **Borer adults: bronze birch borer, dogwood borer, ash/lilac borer, leopard moth, peach-tree borer, rhododendron borer**; look for frass and weeping exit/injury holes, monitor for adults with pheromone traps, control while adult females are laying eggs.

• **Bagworm**: eggs hatch early June and young caterpillars are of “dunce cap” appearance on top of needles; Bt. effective only when caterpillars are tiny.

• **Caterpillars: gypsy moth caterpillars, fall webworm and mimosa webworm** (tent caterpillars will have pupated by now). Use B.t. on early instars.

• **Pine webworm**: watch for mining on terminal needles early June; later stages build silk and frass nest on terminal twigs but are difficult to control.

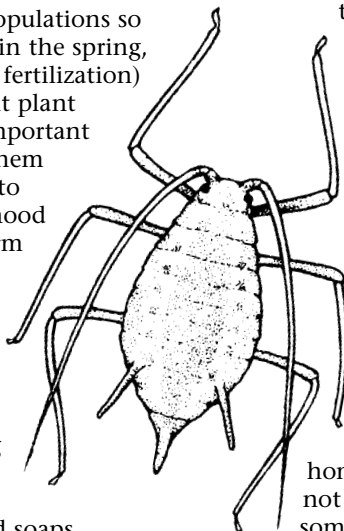
—Dewey Caron

REDUCING APHID POPULATIONS

Oh, those nasty aphids! There are certainly worse pests, but nothing like aphids to wear a gardener down. Not only do they reproduce rapidly (populations seemingly explode overnight), the worst part is the vast quantities of honeydew they excrete.

Aphids are capable of building up high populations so fast because, when conditions are favorable in the spring, they give parthenogenic (reproduction with fertilization) birth of living young. All that new, succulent plant growth is ideal for their development. It's important to monitor aphid populations and control them quickly to avoid damage. It's also necessary to limit aphid populations to reduce the likelihood of honeydew and sooty mold (fungi that form a black film on foliage), which diminishes aesthetic value of plants.

Several species of aphids are resistant to one or more insecticides; therefore, resistance management (selective pesticide treatments only if necessary, treating only the most sensitive life stages and alternating pesticide classes) is important. IPM tactics include avoiding over fertilizing, proper pruning and the use of horticultural oils and soaps.



Practical aphid management in the spring includes the monitoring of the aphid population as well as the populations of predaceous insects feeding on the aphids. The beneficials include numerous lady beetles (adults and larvae), lacewings and predaceous wasps. The wasps are fast flyers so look for swollen, discolored, mummified aphids, often with holes in them where the new adult wasp emerged. If you see many beneficials and few aphids (a 3:1 or 4:1 ratio), do not treat. Continue monitoring to allow the beneficials a chance to feed on the pest. If the aphid population appears to be many times more numerous than the beneficials (an 8:1 or more ratio), spot-treat the aphids with horticultural oil or insecticidal soap or a biorational like pyrethrum, neem or rotenone. These will knock back the aphids but not the beneficials so they can help reduce aphid populations for better control.

The longer you can wait before controlling aphids with pesticides the better long-season control you will have. If you knock off the beneficials early, then your only recourse will be continued pesticide applications.

—Dewey Caron

KEEPING THE “GOOD GUYS” AT HOME

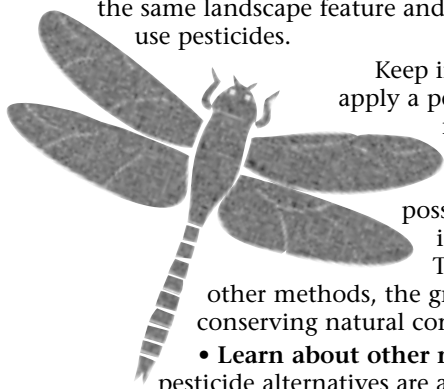
Under natural conditions a balance exists between plant feeding and beneficial insects. Attracting and keeping useful beneficials in the home landscape, while minimizing the pests, isn't always easy but is a desirable and a satisfying aspect of landscape management. Here are some ways to improve the balance of beneficial organisms that will work for you to help combat the pests.

• **Reduce pesticide use.** Insecticides often do not discriminate between pests and beneficial insects. Even fungicides and herbicides, which do not have insecticidal properties, can contain inert ingredients that can harm natural enemies. Research has shown that home grounds subjected to fewer pesticide applications have more natural enemies than grounds that are sprayed regularly. When pesticides are necessary, spot-treat with materials that have short residual times and use compounds that are specific and/or have low toxicity, such as soaps and oils, or Bt.

• **Plant smart.** Good pest control starts with the design of a landscape that is friendly to natural enemies. Such environments include a diverse selection of plant materials. To reduce the need for pesticides, select and use plants that tend to have fewer pest problems. Also more closely approximate nature layer vegetation, reduce the monoculture (usually grass) and seek variety. Site and care for plants according to directions to help ensure that plants not be unduly stressed. Remember that natives generally will show more insect feeding but they also can tolerate more damage and are less likely to have severe pest outbreaks.

• **Identify pest problems — decide what level of plant injury you are willing to accept.** In the home landscape we often use an aesthetic-injury level, not an economic one; for example, we control on how something looks. If you cannot tolerate Japanese beetles

feeding on a prize ornamental cherry, for example, you might have to use a pesticide on that tree or alternately accept a higher level of damage. If you can tolerate some injury, you may be able to rely on birds and hand-picking to reduce pest numbers. Perhaps alternative plant materials will accomplish the same landscape feature and reduce your need to use pesticides.



Keep in mind that once you apply a pesticide, it is likely that natural enemies in the area will also be killed, thus eliminating the possibility of their assisting in biological control.

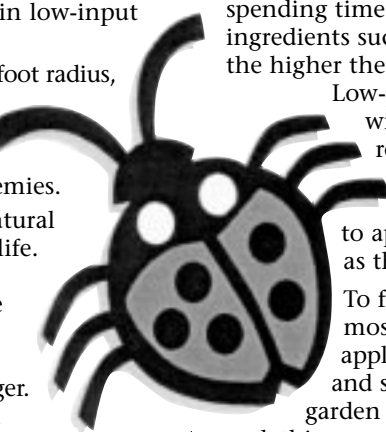
The longer you can use other methods, the greater the chances of conserving natural controls.

• **Learn about other methods.** Numerous pesticide alternatives are available to the home gardener. A forceful washing with a garden hose can knock aphids and mites off many plants. Gravel borders can help keep slugs out of the garden or ants out the house. Aphids and mites do best on heavily fertilized plants, so withhold fertilizer when these pests are present. Excess spring fertilizer can encourage turf weeds and promote disease in low-input turf species such as fescue.

Place mulch around trees and shrubs (a 2 to 3 foot radius, 2 to 3 inches deep) to delay water stress, prevent lawnmower injury (an entry point for insects and diseases), suppress weeds and provide shelter for ground-dwelling natural enemies.

• **Provide food, water and shelter.** Many natural enemies do not feed on insects for their entire life. They may need alternative food when their preferred hosts are not present. Flowers provide a source of pollen and nectar throughout the summer helping insure food is available to the beneficials so they may tend to stay around longer. Small and flat flowers, such as daisies or Queen Anne's Lace, are ideal for small insects. Hoverflies and parasitic wasps will feed on these. Other natural enemies, such as ground beetles, prefer dark, moist environments, and will benefit from mulch in the shrub border. A water source such as a birdbath or pond helps beneficials. A stone wall or stone pile with crevices helps provide shelter and structure. Layered vegetation is also helpful.

• **Learn about natural enemy biology.** Many beneficial insects are active at night. Some mimic harmful insects and often go unnoticed and unappreciated. A number of familiar garden inhabitants such as spiders and earwigs often are not recognized as important predators so we discourage their presence. Once you learn to recognize the natural enemies in your garden, you will be able to gauge the success of your efforts. Learn to recognize and encourage helpers like spiders, dragonflies, ground beetles, hover flies, lacewings and, of course, praying mantids and ladybugs in your yard and garden.



—Dewey Caron

MOSQUITO SEASON (continued from page 8)

or *Bacillus thuringiensis var israeliensis* (Mosquito Dunks®, Bactimos®, & Vectobac®) are specific mosquito control compounds that are relatively harmless to other aquatic organisms.

- Check for standing water around outside faucets, air-conditioner units, drainage areas, gutter down spouts, etc. and repair leaks or puddles that remain for several days. Eliminate seepage from cisterns, cesspools, septic tanks, and animal watering troughs.
- Fill or drain puddles, ditches, and swampy areas in your yard. Remove, drain or fill tree holes and stumps.
- Irrigate lawns and gardens carefully to avoid standing water over several days. Mosquitoes can be kept out of homes by securely screening windows, doors and porches. The occasional mosquito found indoors can be eliminated with a fly swatter or aerosol-type insecticide labeled for flying insects.
- Remove tall weeds and grass in yards to reduce places for adult mosquitoes to rest during the day.

Repellents will help prevent bites to family members spending time outdoors. Use mosquito repellents containing ingredients such as diethyl toluamide (DEET). In general, the higher the percentage of DEET, the longer the protection.

Low-percentage formulations are available for use with young children. Non-DEET containing repellents (e.g. Avon Skin-So-Soft®, citronella) may provide some relief, but to a lesser degree and for a shorter duration. It is often desirable to apply insect repellent on outer clothing as well as the skin.

To further reduce intolerable populations of adult mosquitoes around structures, insecticides can be applied to the lower limbs of shade trees, shrubs, and shaded areas adjacent to foundations. Lawn and garden formulations containing carbaryl, chlorpyrifos, malathion, or synthetic pyrethroids (e.g. permethrin, cyfluthrin, cypermethrin, deltamethrin) are effective but of short duration.

Many consumer products claim to attract, repel, or kill outdoor infestations of mosquitoes. Most of these devices do not work, or are only marginally effective. 'Bug Zappers' using ultraviolet light as an attractant are generally ineffective in reducing outdoor mosquito populations and their biting activity. Somewhat better results have been obtained with citronella candles. For maximum protection, use multiple candles positioned close, e.g. within a few feet. Ultrasonic devices, mosquito-repellent plants and other "gimmicks", routinely advertised in the mass media, are generally ineffective. If a mosquito control device sounds too good to be true, it probably is.

—Dewey Caron

RETURN SERVICE REQUESTED

Garden Check is published 10 times annually,
March – October.

Annual Subscription rate: \$17.50, payable to
University of Delaware.

**Direct subscription requests, questions, and
comments to:** Garden Check

Agricultural Communications
105 Townsend Hall
University of Delaware
Newark, DE 19717-1303
Phone: 302-831-1355
Fax: 302-831-6758
E-mail: gardencheck@udel.edu

Trade names given herein are supplied with
the understanding that discrimination is not
intended and no endorsement is implied by
Delaware Cooperative Extension. To protect
your safety and to obtain the best results when
using any pesticide, always read the label and
follow directions carefully.

Call the Garden Line for help with home
lawn, garden, and pest questions:
New Castle Co. (302) 831-8862
Kent Co. (302) 730-4000
Sussex Co. (302) 856-7303

Find *Garden Check* back issues on the Internet:
[http://ag.udel.edu/departments/communications/
Publications/gardencheck/index.htm](http://ag.udel.edu/departments/communications/Publications/gardencheck/index.htm)



Susan Barton, Extension Specialist
Ornamental Horticulture

TAKING THE BITE OUT OF SUMMER: PLAN AHEAD FOR MOSQUITO SEASON

Delaware has lots of biting mosquitoes. All of our major biting species need quiet, non-flowing water for development. Our most notorious, and many think most painful, biter is the salt-marsh mosquito, which develops in brackish water. Adult hatches are greater two weeks following high tides. We also have fresh water mosquitoes—one group develops in low-lying areas with standing or flowing water while the other group develop from standing water such as found in tin cans, old tires and roof gutters.

The best way to control mosquitoes is to find and eliminate their breeding sites. Eliminating large areas of standing water, such as swamps or ditches, requires community-wide efforts. There is little the individual homeowner can do except to screen enclosures if they want to enjoy the outdoors. Here are steps homeowners can take to prevent mosquitoes from breeding on their property.

- Dispose of old tires, buckets, plastic sheeting, or other containers that collect and hold water. Do not allow water to accumulate at the base of flower pots, bird baths or in pet dishes for more than a few days. Clean debris from roof gutters and remove any standing water on patios, drainage areas or flat roofs/water accumulating structures in your yard.
 - Change water in bird baths and wading pools at least once a week. Consider stocking ornamental ponds with predacious minnows, known as mosquito fish, or apply a "biorational" insecticide which prevents mosquitoes from developing in the water. Products containing methoprene (Altsid®)
- (continued on page 7)

