Fill Up On Cool Summer Salads
By Lisa Franzen-Castle, UNL Extension Nutrition Specialist

Any way you toss it, a main dish green salad is an easy, nutritious meal especially on a hot summer's night. National Salad Week is in July, and summer is a great time to fill up, and not out, on fruits and veggies in a lightly dressed salad! Check out the following tips on how to make salads spectacular this summer.

Tips for nutritious and delicious summer salads:

• Growing greens. Salad greens are easy to grow in the home garden and an important source of vitamins and minerals. Dark green leaves are good sources of vitamins A and C, iron, folic acid, and calcium. Iceberg lettuce is the most popular, but many other lettuces and salad greens such as spinach, arugula, and romaine can add interest and nutrients to meals. Lettuce and Other Salad
This NebGuide discusses different salad greens, their uses and nutritional value.

- Super salad toppers. There are lots of nutritious ways to top a salad. Enhance eye appeal and nutrition by adding colorful fruits and vegetables. Keep it light by limiting the amount of salad dressing to about 1 tablespoon per 1½ to 2 cups of greens. Make the flavor pop by adding artichoke hearts, dried fruits, nuts, and/or seeds.

- Keep fruit from browning. Keep cut fruits, such as apples, pears, bananas and peaches, from turning brown by coating them with an acidic juice such as lemon, orange, or pineapple juice. Cut fruits as close to serving time as possible. Cover and refrigerate cut fruit until ready to serve. Refrigerate peeled/cut fruits and vegetables so the total amount of time they're at room temperature is less than 2 hours. Check out 9 Bites for Better Tasting Fruits and Vegetables for more tips.

- Fresh herbs. Toss small basil leaves or chopped larger ones in with your greens. Try chopped fresh dill. Add some minced chives or parsley. Start with about a teaspoon of herbs per person and adjust according to taste preference. Herbs boost flavor without increasing calories. To learn more about fresh herbs and healthy eating go to Fresh Herbs: A Picture of Healthy Eating.

- Kabob kickers. Try kicking up your salad by adding kabobs! Including protein-rich foods helps promote a feeling of fullness after meals and may help you eat fewer calories throughout the day. Kabobs with grilled chicken, beef, or pork with a combination of vegetables such as peppers, onions, and zucchini would be the perfect topper for a mixed green salad. The following main dish salad featuring lean beef and colorful red bell peppers packs a nutrient punch without a lot of calories at Kick Up Your Salad By Adding Kabobs.

- Food safety with salads. Summer is a great time for salads and it's important to store leafy greens at refrigerator temperatures and rinse well under cool, running water before using. To reduce the risk of foodborne illness, observe “use by” dates printed on bagged leafy vegetables and salad mixes and use within two days after opening. Learn more about the health benefits and safe handling of salad greens at Health Benefits and Safe Handling of Salad Greens.

Remember to dress, don't drown, your salad in dressing to keep the calories lower and experiment with different combinations and flavors this summer. For more food, nutrition and health information go to Food.unl.edu.

Watch Out for Ticks and Fleas
By Nicole Stoner, UNL Horticulture Extension Educator

Summer is in full swing, and with warm temperatures come many insects to annoy us including fleas and ticks. I have a wonderful miniature
schnauzer that I would hate to see fleas and ticks on, and I don't want him bringing these pests inside my home. Fortunately, there are many things we can do to protect our pets and ourselves.

**Ticks**

Ticks are arachnids and a close relative to spiders since they have 8 legs. The most common tick found in Nebraska is the American dog tick, or the wood tick. In extreme southeastern Nebraska, the Lone Star tick may also be found, which can be a carrier for a disease similar to Lyme disease. Many times we find ticks on our pets or ourselves after being outside, especially if we have been in heavy vegetation where ticks are often found.

Ticks can be controlled in several ways. For your pets, the best control comes from pesticides purchased from your veterinarian. Spot pesticides are applied monthly through the spring, summer, and fall. You can also purchase tick collars or shampoo treatments for your pets, but these methods need to be repeated often and the pet will still need to be inspected for ticks.

To reduce your exposure to ticks, try to avoid tick-infested areas if possible. If you enjoy being outdoors where ticks are found, like I do, you should wear proper clothing and use repellents. Wear light-colored, long-sleeved shirts and long pants to limit exposed skin. Insect repellents are also quite effective, but purchase those containing DEET for the highest efficacy.

To avoid disease transmission from ticks, inspect yourself upon returning home from potentially tick-infested areas. Remove any ticks that became attached to you with fine-tipped tweezers, pulling the head and the rest of the tick out all together to avoid infection. It is not practical to use chemicals in your yard to control ticks. The best thing for controlling ticks in your lawn would be to keep it mowed at the recommended 2-3 inches.

**Fleas**

Fleas are transported into your home by pets and by other stray animals to your yard. Fleas are tiny, dark colored, insects that jump. Many of the tick pesticides are also labeled for fleas. If your pet gets fleas or brings them into your home, it is best to treat your home and the pet at the same time.

For your home, wash bedding, vacuum, and use an insect growth regulator (IGR) in areas where the pet spends time to kill any larvae still found in your home. At the same time apply spot pesticides to your pet. You can also utilize IGR's outdoors in shady locations where the pet spends time for best flea control.

Consult your veterinarian before applying products to your pet. It is important to read and follow label instructions with any pesticide. Products for use on dogs may not be appropriate for cats.
The Miller Moth Returns
By Jeff Bradshaw and Robert Wright, UNL Extension Entomologists

Early this year we mentioned the large population of army cutworm larvae that had been reported in western Nebraska. Those cutworm larvae turn into moths that are commonly known as "miller moths" in the spring.

Spring miller moths have begun their emergence in some parts of Nebraska. The moth's initial arrival can be noted by the presence of birds scattering about in the streets to chase down the succulent treats (the moths are attracted to street lights at night). What isn't such a treat (for us) is that the moths can invade homes, garages, and vehicles. When disturbed, great clouds of moths can suddenly disperse and often defecate as they disperse. While sometimes irritating, they cause little harm and are present in large number for only a few weeks. There is a return flight in the fall; however, there numbers are often much less.

Description
Army cutworm moths or millers usually begin to appear in early to late May. The moths are generally gray or light brown, with a wingspan of 1 1/2 to 2 inches. Each forewing is marked with spots, wavy lines, and other dark and light markings. The moths prefer to feed at night on the nectar of flowering shrubs and trees. This feeding does not harm the plants. As dawn approaches, they congregate and may enter homes, garages, barns, and sheds in search of resting sites. Narrow cracks or crevices are preferred, but any protected area is suitable. If they are disturbed during the day, they will quickly escape and find new hiding places.

At dusk, the moths re-emerge and continue feeding on nectar or migrate to other areas. Some moths, however, may enter homes where they become a nuisance. With the exception of occasionally staining curtains and other surfaces with their droppings, they cause little harm.

Just a Stop on Their Migration
The great hoards of millers noticed in the spring are a result of the migratory nature of these animals. The severity of moth aggregation during the migration will depend on spring cutworm populations and environmental conditions. Moths emerging in Nebraska tend to remain in the area for two to three weeks but may stay for up to six weeks or as long as local plants are flowering. Cool, wet conditions during this time will extend their stay. Hot, dry conditions will encourage them to move westward.
The moths will migrate westward to higher elevations as they follow the progression in the initiation of spring flowering plants. During this time, with the aid of easterly winds, moth concentrations can increase dramatically. When the last trees finish flowering (e.g. locusts and lindens) and average temperatures increase in the high plains, the moths move to the Rocky Mountains.

This migration allows the moths to escape severe summer temperatures and find alpine flowers, their primary food source. When the alpine summer comes to a close in September, the moths once again take flight, returning to the plains. Army cutworm moths are noticed throughout Nebraska from mid-September through October. As they migrate eastward, they mate and lay eggs in barren or sparsely vegetated fields, especially winter wheat, alfalfa and grasslands. The eggs hatch within a few weeks and the larvae begin to feed.

Management of Millers
When millers emerge and begin to move westward in the spring, area residents have little recourse but to patiently await their departure. There are a few tactics, however, that can help lessen moth activity in and around homes:

1. Keep outside lighting to a minimum. These nightflying moths are attracted to lights. A porch light, inadvertently left on, can attract hundreds or even thousands of these pests.

2. Where lighting is necessary, use yellow light bulbs. Yellow light will not attract as many moths because insects do not sense this color very well.

3. Seal cracks and crevices with caulking. Place weather stripping around doors and windows. Repair all screens in windows, doors, attic vents, etc.

4. Consider using a landscape that minimizes flowering plants and dense vegetation near houses.

If millers enter a house or other buildings, they can be swatted, vacuumed, or trapped. An insecticide application will have limited effectiveness as it will only kill those that it contacts. The best solution is to simply keep doors and windows closed, keep porch lights off and patiently wait for these annoying migrants to move on.
Pasture Management Important During "Summer Slump"
By Steve Tonn, UNL Livestock Extension Educator

Cool season grasses, such as smooth brome, are common pasture grasses for many Nebraska acreage owners. They make excellent growth in the spring and fall. However, warm weather and high humidity can affect cool season pasture growth. The plants basically stop growing during the hot summer months. Cool season grasses are particularly vulnerable to lower growth in periods of hot weather as a result of their metabolism, and pasture management techniques can either reduce or exacerbate the effects of hot weather.

Summer slump can be reduced by careful management of cool season species, addition of legumes to an existing cool season grass stand, and by giving extended rest to a small part of the pasture each year.

Rotational grazing, leaving a 3-4 inch stubble height after grazing promotes root growth, reduces soil compaction, reduces soil temperature, encourages water infiltration and retention, which results in more yield of the growing species in a particular pasture over time. But without management, animals will continuously defoliate the most desirable species, weakening and shrinking their root system, making them susceptible to disease, drought stress, and even death. Less desirable species and weeds such as thistles and other unpalatable, or even poisonous species, increase in the pasture because their root systems are fully developed as a result of a lack of grazing.

Short occupancy periods by livestock and longer rest periods for the forages allow for the survival of more desirable plants with a deeper, healthier root system which are able to withstand drought and warm weather stress. Desirable pasture plants benefit if they are grazed for periods of no more than 6 days at a time and then allowed to rest for 30 days or until the forage has regrown to a height of 8-10 inches tall. Actually, the highest utilization rates of pastures and the best regrowth potential in warm weather from cool season grasses occurs when the pastures are stocked heavily with very short durations of grazing, sometimes as little as 12 hours, followed by a long rest period.

Another strategy to improve summer growth and combat "summer slump" is to allow a small portion of a pasture each year to head out, which will strengthen the roots of the desirable species. This should be done only if the pasture is not infested with weeds. If there is a small concentration of weeds, care should be taken to clip or spot spray any weeds present before they go to seed. Multiple weed clippings or spot spraying may be necessary to weaken them.

Adding legumes to an existing cool season grass sod can improve production. Overgrazing the sod to reduce competition prior to seeding is best. Several seeding methods may be used. The most common is
frost seeding in which the legume seeds are broadcast on the top the ground utilizing the cracks in the soil caused by the alternate freezing and thawing. The best time of the year for this is late winter or early spring when the ground may go through a number of freeze thaw cycles.


Which breed is best for you? Chickens suited for the acreage.
By Brett Kreifels, UNL Livestock Extension Assistant

There are a number of chicken breeds to choose from when planning a flock for your acreage. The only question to ask yourself is what do you want the chickens for? Meat? Eggs? Or both? Many breeds adapt very well to the wide expanse of an acreage but are suited for a specific purpose and one breed may be better than another a supplying your needs. This article will break down some breeds at your disposal and how they compare in the department of supplying eggs, meat or both.

Dual-Purpose Breeds
Many heritage-type breeds are known as "dual-purpose" meaning they can be used for both meat and eggs. Many of these breeds were developed either in America or England over many years and were around to feed the Pilgrims as they made their voyage from England or the pioneers and immigrants that traversed the U.S. Many of these breeds bare American-type names such as: Plymouth Rock, Rhode Island Red, New Hampshire, Wyandotte and many others. Many of the English breeds such as Orpingtons, Sussex and Australorps are also considered dual-purpose.

A dual-purpose breed is one that is characterized as having the ability to supply both meat and eggs, is an effective forager, is hardy, has the ability to adapt to different environments and has the ability to hatch and raise their own chicks. Both males and females of dual-purpose breeds are capable of providing adequate amounts of breast meat. These breeds are easily obtained through mail-order hatcheries or farm stores. Pullets begin laying around six months of age and cockerels are ready to be butchered around the same time, sooner if caponized (castrated).
Plymouth Rock: 200+ brown eggs per year, 7-9 lbs

New Hampshire: 200+ brown eggs per year, 6.5-8.5 lbs

Rhode Island Red: 250+ brown eggs per year, 6.5-8.5 lbs

Australorp: 200+ brown eggs per year, 6.5-8.5 lbs

Other dual-purpose breeds include: Jersey Giants, Orpingtons, Javas, Dominiques, Langshan, Sussex, Delawares, and Buckeyes.
Egg Laying Chickens

Over many years and under careful breeding considerations, the dual-purpose breeds were segregated into two distinct categories; those chickens that were developed for eggs and those that were developed for meat.

Those that were developed for egg-laying were designed to have a small body frame that could support rigorous egg production in commercial housing systems yet produce eggs with limited amounts of feed. The main candidate for this type of egg production revolved around the Leghorn; a breed capable of producing 300+ eggs a year but with broodiness, or the desire to hatch chicks, genetically bred out of them. Many of the egg-laying breeds are of the Mediterranean class of chickens including the Leghorn, Minorca, Spanish and Andalusian. All are fine-boned, white ear lobed, low-muscled breeds that are inefficient at producing muscle for eating but are extremely efficient at converting food to eggs.

Pullets start laying eggs around five months of age. Males are considered useless to the egg production process due in part to their inability to lay eggs and a lack of adequate musculature for processing. They are often considered a by-product of the egg laying industry.

While all Mediterranean breeds lay white eggs, selective breeding has created similar sized hens, based on Rhode Island Red lineage that are capable of producing brown eggs similar in efficiency as the white egg laying hens. These hens go by many names such as: Cinnamon Queen, Cherry Eggers, Red Sex-links, etc.

| White Leghorns: 300+ white eggs per year, 3.5-5 lbs | Black Minorca: 250+ white eggs per year, 7.5-9 lbs |
Cinnamon Queens: 250+ brown eggs per year, 5-7 lbs

Other egg laying breeds include: White-faced Black Spanish, Ancona, Lakenvelders, Andalusian, Buttercup, Red or Black Stars (hybrid), Rhode Island Reds, Cherry Eggers (hybrid), California Whites (hybrid) and Americanas.

**Meat Breed Chickens**
Like the egg laying breeds, decades of selected breeding have created meat breeds that have a high percentage of muscle and can deposit that muscle on the skeleton with the least amount of feed. Today’s meat chickens (broilers) are capable of converting roughly 2 lbs of feed into 1 lb of muscle weight. That feed conversion is extremely efficient compared to beef with is 8:1 feed:gain or pork which is 4:1 feed:gain.
The most common breed of meat chicken is the broiler chicken; a hybrid between the Cornish and Plymouth Rock. These are extremely muscled birds capable of reaching a six pound market weight in as little as 7-8 weeks. These Cornish-Rock Broilers are easily acquired through mail-order hatcheries as well as at your local farm store. Acreage owners should elect to house them in enclosed barns for maximum feed efficiency and growth but niche markets have prompted further production of "pastured poultry." Pastured poultry are raised on a mixture of commercial feed and fresh grass. While feed efficiency and muscle development is slightly depressed, a demand for the product remains strong.

Cornish-Rock Broiler, 5-8 lbs live weight, 7-8 week maturity

Other meat breeds include: Cornish, Malay, Shamo, Naked Neck, and Assel.
A primary goal with many small gardens is to make them feel larger... to enlarge, if not the space, at least the perception of space. Many gardeners do this by making better use of vertical space. Trees, shrubs and vines and physical elements like sculpture, fences, plant containers and trellises can extend the ground plane so the eye never stops but simply moves from the ground level upward and outward.
Gradual and varied changes of height—groundcover to flowerbed to shrub to tree—can give an impression of depth and complexity and keep the sense of space fluid and moving. A diversity of plants in varying heights also makes the yard less susceptible to plant-specific problems and attracts a wider variety of birds and other wildlife and pollinators.

Placed properly, trees and shrubs can obscure the view into the garden, making it appear larger and attracting attention into the space but not beyond it. It might seem best not to divide a limited space into smaller areas but the effect can be just the opposite, increasing rather than limiting the sense of space. Curved rather than straight pathways and plantings can make separate areas seem farther apart than they are. And careful attention to scale can make a striking difference. The size of trees, plants, sidewalks and any focus points can help make portions of the garden seem farther away or hide views into corners, making the end-points disappear.

In small lots, air circulation is often restricted by nearby buildings or privacy fences. Using a border of plants in varying heights means air can circulate more freely to avoid hot, stale spaces with limited air movement. They can also provide microclimates with varying degrees of sunlight, another element that is often restricted in small spaces. With a little more sunlight in a few spots, the color options increase as well. For shady areas, using variegated plants like hosta and Jack Frost brunnera in dark corners will draw interest and make them much more visually interesting.

If the garden is squeezed in by other gardens or an interesting view, why not "borrow" them? With the right-sized plants, you can frame views and make them appear part of your own landscape.

In a small yard, it's important to have plants that offer several seasons of interest. Many shrubs or small trees have spring bloom, summer fruit and fall color: redbud, serviceberry, viburnum, currant, wahoo, dogwood, crabapple, chokeberry, etc. Vines can add vertical interest.

Evergreens are available in sizes to fit even the smallest garden and evergreen groundcovers like periwinkle, germander and ivy can help keep it green. If there's enough sunshine, grasses are beautiful most of the year and there are grasslike sedges that can handle dry shade. For perennials, some of the best year-round workhorses for small gardens are: coralbells, Lenten rose, coneflower, black-eyed Susan and sedum.

Nebraska Statewide Arboretum is a nonprofit that works toward sustainable home and community landscapes through initiatives in education, public gardens and the environment. Plant and landscape resources at http://arboretum.unl.edu.

Weather Concerns Affecting the 2014 Fruit Crop
By Vaughn Hammond, UNL Horticulture Extension Educator

The late winter and spring of 2014 resulted in weather condition that was very harmful to many of the fruit producing crops grown in the Midwest and beyond. Grapes, tree fruits, brambles and strawberries all felt the effects of the weather. As with all weather events not all areas were affected the same. Some areas had plant kill while others suffered plant damage and loss of the fruit crop. Following is a break-down of some of those fruit crops and some suggestions on strategies that might be employed to help in the recovery or reduce damage in coming years.
The year 2014 may arguably be the hardest year weather wise the grape industry has seen since the 1980's and 90's when Nebraska experienced a resurgence in interest in grape production. Marginally hardy varieties for Nebraska such as Chambourcin and Vignole experience widespread trunk cracking.

Trunk cracking or splitting is a result sap flow beginning too early in the season due to warmer temperatures and then the temperatures drop below freezing again. The sap freezes and expands in the trunk causing the plant cells to burst and the trunk to split. This is extremely damaging to the plant often resulting in death of most of the above ground portion of the grapevine. This is especially troublesome when the grape is grafted onto a rootstock and the above portion of the vine is killed. Any sprouting that occurs on the rootstock is no longer the desired variety but rather the rootstock variety which may have little value. Those vines that were not grafted—also known as self-rooted will re-sprout true to type. The damaged trunks need to be removed and the new sprouts need to be re-trained onto the trellis system. The new growth will be very vigorous because it is being supported by a mature root system. Limited fruit production can begin in the second year due to the established root system.

Many vineyards experienced frost damage to the newly emerged shoots and flower buds. This damage is often variable throughout the vineyard affecting portions of the vineyard in differing proportions. Most vineyards recovered as a result sprouting of the secondary buds but yields for most varieties will be reduced because of reduced fruitfulness of the secondary buds. Often times when freeze damage occurs, some growth and flower clusters are not damaged resulting in flowers and grape clusters of varying age and development. As the production season progresses, ripening varies throughout the planting requiring multiple passes through the vineyard to harvest the ripe clusters rather than the uniform ripening that normally occurs.
Brambles
Brambles (raspberries and blackberries) bear fruit on floricanes or canes that are 2 years old with a few exceptions. Bramble plantings had widespread damage to the fruit bearing floricanes, killing them back to the ground due to excessively cold temperatures. This damage had a great effect on summer bearing varieties in that fruit production was greatly reduced or eliminated completely. In the case of everbearing varieties, the floricane might have been lost eliminating the early season fruit. These everbearing types will re-sprout primo canes that will produce fruit in the fall rather than the extended harvest typical of everbearing varieties.

Fruit Trees
Tree fruit producers throughout the state reported damage resulting from several differing weather events. Extreme cold temperatures killed fruit buds early in the season before they even emerged on many of the peach and apricot trees reducing yields. Yield loss of 80% and greater has not been uncommon in this year's peach crop. These trees will live to produce next year if conditions permit but note that if yields were greatly reduced this year flowering will be heavy next year potentially resulting in excessive fruit loads. In this situation fruit thinning is essential to the health of the tree and to reduce the alternate bearing scenario that will be established. Alternate bearing means that the tree will bear fruit heavy one year then the next yields will be reduced. Fruit thinning reduces the stress on the tree resulting in more even bearing from year to year.
Many fruit trees that had flower buds that survived to bloom were damaged by the late frosts that much of the state experienced. Frosts that were as much as 7 days later than the average last frost date for their areas. Flowers that were open were commonly killed. The flower buds that were still tight were more protected and may have survived depending on how cold temperatures got. In this situation, the reduced naturally occurring fruit load may not require fruit thinning to bring fruit numbers down to optimum levels. In fact, additional attention to production practices such as insect and disease control may be needed to achieve acceptable yields of quality fruit.

Many areas received widespread hail early in the season resulting in physical damage to fruit trees. Depending on the size of the hail, damage ranged from tattered leaves to broken small branches and in the worst cases split bark on trunks and branches. This type of damage is perfect for fireblight infection to occur in apples and pears. NebGuide G92-1120-A Fire Blight of Apple, Pear and Woody Ornamentals outlines the symptoms, disease cycle, damage and treatment of this disease. A second resource covering fireblight control and other pest related recommendations is Managing Pests in Home Fruit Plantings from Purdue University.

If fireblight infection occurs, sanitation is key in the control and management of the disease. Proper pruning, disinfection and disposal of infected prunings are essential for control.

The strawberry crop throughout the region suffered from the late frost as well. June bearing varieties initiate flower bud development during the short day period of early spring. These plants were in full bloom when temperatures dipped below freezing, damaging open flowers and flower buds alike resulting in severe berry loss in many locations. Everbearing and day neutral varieties suffered less damage because flower bud initiation begins during long day periods of 12 hours of light or more.

Strawberry beds located on upper portions of slopes suffered less damage. Bed placement on upper portions of slopes rather than on lower slopes or low areas allows the heavier cold air to flow away from the bed. As the cold air moves out slightly warmer air moves in often times affording enough positive temperature change to give some protection to the plants and flowers.
Weather conditions throughout the growing season will continue to effect fruit producers across the region. No two years will be the same. Each year will continue to offer new challenges. The producers' best defense is being prepared for the unknown arming themselves with information. Consider where you plant your crop and what ramifications might result from that location. Have the tools readily available to combat what Mother Nature may send our way. This is agriculture---and there is always next year.

**Sudden Tree Death or Dieback**

*By Kelly Feehan, UNL Horticulture Extension Educator*

When a tree dies suddenly it is usually not as sudden as it seems. A tree may appear fine one season and fail to develop leaves the next. Trees may leaf in spring and then all leaves shrivel and die. Some trees die more slowly, branch by
branch. When a tree, or large branches of a tree, appear to die rapidly the tree most likely had an issue or was under prolonged stress for some years. While the problem may not have been apparent, the repeated stress and/or pest problem finally leads to tree death.

When trying to find an answer to sudden tree or branch death, we often say "If we could x-ray the tree, we could probably determine the cause". Since autopsies and x-rays are not performed on trees, the process of elimination and educated guesses are used. Trees that seem to die suddenly usually have a root or trunk problem, are infected with a wilt or canker disease, or are infested by borers. In many cases, wilts, cankers and borers only attack stressed trees so the key is to avoid tree stress.

Common tree stressors include poor planting, incorrect care practices, or actions that negatively affect tree roots or trunks. These are human related, but nature stresses trees too. Drought, flooding, lightening and hail can lead to dieback by setting a tree up for pest invasion.

Human actions that stress trees are removal of surface roots to avoid hitting them while mowing, changing soil grade such as building a planter box and filling it with soil over tree roots, cutting main roots during installation of underground wires or pipes, or construction taking place near trees. Others include poor pruning practices or hitting young trees with mowers or weed trimmers resulting in wounds that lead to internal decay. Under or overwatering of trees and planting too deep can stress a tree for life, setting it up for prolonged stress and pest invasion.

Iron chlorosis (leaf yellowing) that is left untreated, repeated use of herbicides near trees or over tree roots, and over-fertilizing trees with nitrogen can set a tree up for premature death or invasion by wilt disease, canker or borers.

Realize that a tree stress may have occurred years prior to the tree seeming to die suddenly. A good example is drought, flooding, or adding soil over tree roots. During and after these stresses, trees may appear fine; but while stressed the tree becomes infected with verticillium, canker or a decay fungus. These diseases, decay or borers may take a number of years to kill a tree or cause large branches to die. The cause of death may be a disease or borers, but the reason the tree was attacked in the first place was because of a human or nature caused stress.

Avoid stresses on trees that could lead to dieback years later. Select the right tree for the location and plant it at the correct depth being sure to avoid too deep of planting. Maintain a moist soil while avoiding overwatering. For the most part, avoid nitrogen fertilizer. Avoid wounding trees unnecessarily or doing an action that negatively affects roots.
What's Eating My Tree?
By Justin Evertson, Nebraska Forest Service

Pick a tree, any tree, and look at it closely. Insects and other organisms are likely feeding on it, especially if it's a tree native to the region.
Some are munching or sucking on the leaves or twigs. Others, that we can't see, have perhaps burrowed inside the bark to feed on cambial tissues there. Although insect feeding can be harmful for trees, in reality it usually is not. There are few, if any, trees or other plants in the world that are not chewed upon by insects of some kind. That's just the way it is.

Of course insect feeding can cause harm to trees. This typically occurs when natural balances between predator and prey have been disrupted or when foreign insects have been introduced to a new area and there are few natural enemies to control their populations (or conversely when foreign trees have been introduced to new areas). Native trees often do not have the necessary defense mechanisms to prevent excess damage from foreign invaders. Two examples headed our way include the Japanese beetle and the emerald ash borer (EAB). The ash borer is especially alarming in that it has the potential to wipe out most of our ash trees. And we have millions of ash trees across the state.

As bad as those examples sound, the truth is that the vast majority of insects on trees are benign and many are actually beneficial. They come in a wide array of shapes and colors and their life cycles can be quite fascinating. I like knowing, for example, that our native trees provide food and habitat to literally hundreds of species of insects including many colorful butterfly larvae. I like knowing that several types of moth are so similar in color to some tree bark, that we almost never see them. And I like knowing that even though the lace bug may discolor oak leaves by its feeding, the lady beetles and lacewings are busy eating them. And I like knowing that most of the time these insects exist on these trees in a natural balance which has been going on for eons.

Recently a friend and I came across a young hackberry tree that was being defoliated by a plethora of colorful caterpillars of the mourning cloak butterfly (see photo). We knew that even though the caterpillars had eaten many leaves, the tree would rebound and the insects were nearing the point where they would soon quit feeding and pupate. So we left them alone and are looking forward to watching them transform into adults. What a treat! And there are many other colorful and benign moths and butterflies that feed on trees in their larval stages: swallowtails, eastern comma, skippers, cecropia moths and sphinx moths to name a few.

In general, we shouldn't be alarmed when we see insects feeding on our trees. In fact, one of the best things we can do to help strike a more natural balance is to include a wider variety of native plants in our landscapes, knowing that they'll help feed a wide variety of insects and other animals. Research by entomologists and landscape ecologists (Douglas Tallamy and others) has revealed that a greater use of native plants invites a wider variety of native insects, including many predators that help keep leaf-eaters at tolerable levels.

Many species of trees and other common landscape plants are often promoted for planting because they're "clean", meaning they're free from insect feeding. This includes one of the most commonly planted trees today, the ornamental pear. Such plants are free from insect feeding not because they are special, but rather because they're from foreign lands and our native insects have not evolved the ability to eat them. That is not a good thing. Let's turn this notion on its head and start reducing the use of such plants and instead ask for plant species that will be chewed on and that will help support a wide range of beneficial insects. By doing that, we'll help make our landscapes more naturally balanced and more resilient.

I'll admit that I'm not at all happy when I discover bagworms defoliating spruce trees that I help care for. But when I think about the fact that the bagworm is native and that the black-capped chickadee likes eating the bagworm and that I love the wonderful two-toned call of the chickadee heralding spring each year and that the chickadee population was greatly reduced by West Nile virus a few years ago and that if I sprayed a poison to control the bagworms I might very well be poisoning chickadees (and other birds)... then I decide the better solution is to call up a local Boy Scout troop looking for a service opportunity and, with the help of some carefully placed ladders, pick the bagworms off in short order.
I'm proud to say that I've never sprayed insecticides for the care of shade trees. Almost always there's a better, safer, more environmentally appropriate solution. I've dealt with bagworms, webworms, sawflies, borers, caterpillars of all stripes and other insects that have caused damage, but have figured out that most healthy trees can resist quite a bit of feeding. I've also learned that many infestations are cyclical and will go away as predators and other natural processes play out. This is not to say that all insecticide use is bad or that there won't come a day when I use insecticides as a management option. I'm especially worried about what EAB might do to the white ash tree that shades my back deck. But I doubt I'll end up going to great measures with poisons to try and save it. The cascade of unintended consequences just isn't worth it to me. That is my opinion.

As E.O. Wilson is fond of saying, "If we were to wipe out insects alone on this planet, the rest of life and humanity with it would mostly disappear from the land. Within a few months." In this sense, it is very good to know that our trees, especially our native species, are providing habitat to a cornucopia of insects and other creatures. Most trees are good and so are most insects.

*The Nebraska Forest Service* strives to enrich lives by protecting, restoring and utilizing Nebraska's tree and forest resources.

**Help Protect Your Watershed**

**By Sharon Skipton, UNL Extension Water Quality Educator**

Everyone lives in a watershed. The Environmental Protection Agency (EPA) defines a watershed as "the area of land where all of the water that is under it or drains off of it goes into the same place." In other words, it is the entire geographic area that drains into a water body. The EPA recognizes 2,110 watersheds in the continental United States, including the Missouri River Basin. Each major watershed has smaller tributary watersheds. Everyone in Nebraska lives in one of those tributary watersheds.

Clean water is vital for our health, communities, environment, and economy. The nation has made great progress in reducing pollution during the past 40 years, but many challenges remain. Everyone must work together to protect clean water for our families and future generations. You can help by managing the quantity and quality of runoff from your property. See the list below. Each management practice will help protect your watershed.
Management to Reduce Runoff

- Bare soil in gardens and flower beds is covered with mulch.
- Gravel, rock, paving blocks, bricks, wood chips, or mulch are used for walkways, patios, and other areas instead of paving.
- Downspouts on buildings discharge water onto a grassy area or into a rain barrel.
- Acreage is landscaped to slow the flow of runoff and provide areas where water soaks into the ground, such as a rain garden.

Pollutants in Runoff

- No automotive oil or fluids are dumped on the ground and no drips occur.
- Vehicles are taken to a commercial car wash.
- Pesticides and fertilizers are stored in waterproof containers in a garage, shed, or basement protected from runoff.
- Pesticide and fertilizer spills are cleaned up immediately.
- Pesticides and fertilizer are applied according to label directions.
- No pesticide or fertilizer applications are made when heavy rain is forecast within 24 hours.
- Products such as swimming pool chemicals; deicing salt; paint, stain, strippers, and thinners; solvent based cleaners; and wood preservatives are stored in waterproof containers in a garage, shed, or basement protected from runoff.
- Products such as swimming pool chemicals; deicing salt; paint, stain, strippers, and thinners; solvent based cleaners; and wood preservatives are used according to label directions.
No products such as swimming pool chemicals; deicing salt; paint, stain, strippers, and thinners; solvent based cleaners; and wood preservatives are dumped on the ground.

2014 FIRST Robotics Season

This summer, teams across Nebraska will start registering for the 2014 FIRST robotics season. FIRST is an international not-for-profit that consists of four robotics programs that promote science, technology, engineering and math through sports-like competitions.

The largest program in Nebraska is FIRST LEGO League (FLL). This program is for 9-14 year old students and allows youth to design, build and program robots using LEGO MINDSTORMS technology. Students build robots out of LEGOs to complete missions on a themed playing surface, such as last year's Nature's Fury mat. Each mission has different point values and teams must decide how they can get the maximum points in the allotted two and a half minutes they have during competition.

Along with the robot game, teams also create an innovative research project that solves a real world problem that follows the year's theme. Last season, students created solutions to help before, during and after natural disasters that included floods, tornadoes and hurricanes.

The final aspect to FLL, and one of the most important, is core values. This involves being able to work as a team, include all members, and show respect to competitors. All of these components are showcased at FLL competitions, where teams present their research project, robot design and core values to judges and then show-off what missions their robot can complete in the robot game. FLL is a great way for student to get excited about STEM, while participating in sports-like competitions all around the state of Nebraska.

FIRST Tech Challenge (FTC) is quickly growing in Nebraska as the fast paced robotics program for students in grades 7-12. In FTC, teams are responsible for
designing, building and programming their robots to compete in an alliance against other teams. There is a beginning autonomous period, followed by a remote-controlled period in the game. Teams develop strategy for the year's game and build their robot to maximize their points. Alliances are assigned at the competition and teams must work together to use each robot's strength to compete against the other alliances.

Last year's game was BLOCK PARTY, where alliances had to move blocks into hanging baskets, raise a flag, and hang their robot from an elevated bar. With all these variety of tasks to complete, while playing defense against the opposing alliance, teams have to strategize with each other on how they can best win the match. This helps develop problem solving and organizational skills, all while competing in a high-energy competition.

Registration for the 2014 season of FIRST LEGO League and FIRST Tech Challenge is now open! FLL registration information can be found at www.usfirst.org/roboticsprograms/fll and FTC registration information can be found at www.usfirst.org/roboticsprograms/ftc. Registration is open until Mid-September.

For any questions about starting a team or getting involved in FIRST feel free to email Bailey Lindgren, blindgren@usfirst.org, (AmeriCorps VISTA for FIRST) or Kate Pittack, kpittack2@unl.edu, (FLL Partner).
Jr & Sr High School Students Invited to Compete in the 1st Annual Crop Scouting Competition
By Brandy VanDeWalle, UNL Agronomy Extension Educator

The University Of Nebraska - Lincoln Extension is pleased to present the first annual Crop Scouting Competition for Nebraska youth. It will be held at the Agricultural Research and Development Center near Mead, Nebraska on August 6, 2014. The event will include both indoor and outdoor events. Teams of junior high and high school students (those completing 7-12th grades) from across Nebraska are invited to participate.

The purpose of the competition is to provide students an opportunity to learn crop scouting and principles of integrated pest management (IPM) for corn and soybeans in Nebraska, to obtain knowledge and skills that will be helpful in future careers and to demonstrate newer crop scouting technologies.

Schools, clubs or other organizations may enter a team composed of three or four participants. An adult team leader must accompany each team of students. Team leaders could be FFA advisors, crop consultants, extension staff, coop employees, etc.

Top-scoring teams win prizes: $500 for first, $300 for second, $250 for third and $100 for fourth place.

Teams will be expected to know the basics of scouting corn and soybean fields. This includes crop staging; looking for patterns of crop injury; disease, insect and weed seedling identification; etc. Other topics many include but are not limited to, pesticide safety, nutrient disorders, and herbicide injury.

More information about the crop scouting competition and instructions on how to register a team are available online at cropwatch.unl.edu/youth. Click on the link that says, "Crop Scouting Competition".
Teams must be registered by July 15. Registration is $50/team; the fee will be refunded when the team attends the competition. Payment by check is due along with the registration form by July 15. This program is sponsored by DuPont Pioneer and UNL Extension.