



Conserving water in home gardens

By Corinne Frey, vcfrey@yahoo.com

Current dry conditions across large areas of North Dakota and the midwest are reminders of the importance of water conservation. Implementing water saving practices in home gardens may mean the difference in a plant's ability to survive and thrive.

Your first consideration before planting a flower, fruit, or vegetable garden should be soil health. Soil is the foundation for all growth, so testing soil and then amending it with the recommended amount of organic matter such as compost or aged manure, will increase a soil's ability to absorb water and nutrients.

The use of soaker hoses or drip irrigation instead of overhead watering will concentrate water where it is needed. When planting your garden, place plants with similar watering needs together on the same soaker or drip irrigation line. In addition to knowing a plant's water needs, be mindful that young seedlings will require more frequent watering than established plants, and plants that are fruiting will need more water than those that are at the end of their growing season. Lay soaker hoses in warm weather, leaving them in the sun for a while before installing so they are more easy to manipulate. Connect sprinkler systems to timers that come on early in the morning while temperatures are cooler and winds are light. Water deeper and less frequently, so plant roots reach downward where moisture is more plentiful. Check soil before watering; if it is not dry, don't water. Grow cool or short season crops. Buy plants from nurseries to reduce the amount of water needed to get them started in your home gardens. When purchasing seeds or

plants, look for labels that specifically say drought-resistant or drought-tolerant. Native species will be tougher than non-native. Wind and intense afternoon sun cause plants to lose moisture on leaves, so providing wind protection and shade will also help reduce water usage. Place plants in staggered rows rather than straight rows, so they shade each other and keep roots cool. Be water smart. Are you losing water because hoses are leaking? Repair leaks and replace washers in hose fittings at the beginning of the season.

Mulch also reduces water evaporation and competition from weeds. It should be placed over the top of soaker hoses. A wide variety of chemical free mulches may be used – grass clippings, chopped leaves, wood chips, carpet, color free newspaper, or straw (hay is not recommended). The ground should be thoroughly saturated before mulching. Use three to four inches of mulch, making sure it does not contain "weed & feed" products, as these may kill plants. To prevent rot, keep mulch away from the base of plants and tree trunks. Pull weeds that compete for water before they have a chance to flower or spread, and avoid fertilizers when conditions are dry.

The use of rain barrels in multiple locations will help reduce the use of well or city water. If rain is forecasted, placing a small rigid pool or pond liner where water runs off will help limit some waste. Using grey water (water that normally goes to waste in the home – the water going down the drain while regulating a shower or bath, rinse water used on clean dishes, and water from dehumidifiers and air conditioners) will also save water. Do

NDSU | EXTENSION

INSIDE THIS ISSUE 

- Gardening in Drought 1-2
- Turf and Drought..... 2
- Fungus Gnat 3-4
- Good Friday Potatoes 4
- Pollinator Push-Back 5-6
- Elms 6
- Plants and Pets 7
- Rhubarb 8-9



not use any “grey water” that may contain harmful chemicals.

If plants are in containers, water pots from the bottom. Sink your planters into a container of water, letting them soak for up to an hour, or water near the base of the plant to prevent unnecessary runoff. Be careful not to allow plant roots to sit in water for extended periods

of time to prevent root rot. Plant in large, nonporous or plastic containers. If you don't like the looks of the containers, place them inside of unglazed or fancier planters. Don't overcrowd containers, and move them where they will get some afternoon shade. Deadhead flowers before they set seeds, so extra energy and water needs are limited.

With a few simple steps to implement water conservation ideas, your home gardens will be able to survive and thrive during drought or dry spells. For more information about plant varieties hardy to local conditions, and/or gardening tips, contact an NDSU Extension office or a Master Gardener in your area.



Growing Turf in a Drought

By Esther E. McGinnis, esther.mcginis@ndsu.edu

Fig. 1 It takes one inch of water per week to keep the lawn green during drought. Photo courtesy of Belkis Gaeta (CCO Public Domain).

Based upon current weather conditions and upon the predictions of the North Dakota State Climate Office, drought conditions may persist in North Dakota for some time. A common question that we are receiving is what can homeowners do this spring and summer to minimize stress on their lawns.

Drought-proofing the lawn starts in spring. Homeowners should be doing everything they can to encourage turfgrass to grow a deep root system. One method is to delay the spring application of a nitrogen-based fertilizer to the last half of May. When fertilizer is applied too early in the spring, it can have detrimental effects. The nitrogen in the fertilizer will cause the leaf tissue to grow at the expense of the root system. Delaying fertilizer application until late May gives the root system time to grow.

Proper mowing practices can also enhance the ability of turf to cope with stress. Raising the mower deck to a height of 3.0 to 3.25 inches is extremely beneficial. A positive correlation exists between turfgrass height and root depth. In general, lawns mowed at a higher height have deeper roots and are healthier. In addition, taller grass will shade the soil which deters weed seed germination and it also helps keep the soil moist. Additionally, don't collect your lawn clippings. The clippings act as a free mulch to retain moisture.

Minimizing foot traffic on turf is helpful in a drought. Mow only as necessary and find a cool day to mow. Alternatively, consider mowing in the evening. When mowing, don't remove more than 1/3 of the grass blade's length at one time.

Don't apply lawn herbicides during the heat of summer. Herbicides will cause unnecessary stress on turfgrass particularly when

temperatures exceed 85 deg. F. Giving up lawn herbicides in summer is not much of a sacrifice! Summer applications are usually not very effective. Fall is a much better time to apply lawn herbicides because perennial weeds are translocating carbohydrates to the root system in preparation for winter. Perennial weeds will take-up the herbicide in fall and transport it to the crown and root system, thereby killing the entire weed.

If you are irrigating the lawn, it takes approximately one inch of water per week to keep the lawn green. To minimize water evaporation and waste, water in the early morning hours. It is better to water deeply and infrequently rather than watering every day or every other day. If possible, apply one inch of water in one application. If the soil cannot absorb one inch of water all at once, turn off the water and resume later in the day.

Many homeowners allow their lawns to go dormant in the summer. The lawns then turn brown but the crowns are still alive. Dormant lawns still need moisture albeit at lower rates to keep the crowns alive. On average, the crowns need 1/3 to 1/2 inch of water every two weeks. This small amount of water will not green up the turf but the crowns will survive. In the absence of rain or irrigation, grass will start to thin and die after four to six weeks.

We are all hoping and praying that the drought will break soon. However, there is the possibility that the drought will persist into fall. If the lawn is dormant in fall, it is very important to irrigate the lawn in fall to bring it out of dormancy. If the lawn enters winter in a dormant state, there is a good chance that a portion of the lawn will die.

Oh, drat! The fungus gnat

Houseplants provide a friendly habitat, but there are ways to reduce, eliminate them.

By Laura Kourajian, lkourajian@yahoo.com

As a Master Gardener, there's a good possibility you've been asked by a neighbor or a friend about little flies hovering around their houseplants. And even if you haven't, you're likely to get that question at some point.

It's the pesky fungus gnat (Fig. 1) which, like its name implies, feeds on fungi and decaying plant matter. That makes houseplants a mighty nice habitat for them.

Alex Knudson, an entomological diagnostician in the Department of Plant Pathology at NDSU, said while there are multiple families of fungus gnats, the ones we find in North Dakota come from two families – Mycetophilidae and Sciaridae – and around here, the dark-winged fungus gnats from the Sciaridae family are most common.

Fungus gnats live most of their lives in decaying plant matter or the soil underneath leaves and rocks where there's higher moisture content and a food source of fungi and decaying plant matter. Their life cycle is short, about a month or less.

"If you can interrupt the life cycle, you can eliminate them or reduce the population to the point where it's no longer noticeable," he said.

The fungus gnat larvae spend the majority of their time in the top 1-2 inches of potting media or soil, taking one to three weeks to grow until they pupate. They'll stay in the pupal stage for just under a week before emerging from the soil surface as adults, according to Knudson.

They'll emerge, fly around looking for a mate and then the females will look for habitat to lay their eggs, repeating the cycle.

Letting the top 1-2 inches of potting medium dry out before watering will dry out the area where the fungus gnats live, making it harder for adults to emerge and less attractive for adult females to lay eggs.

Watering plants from the bottom, allowing the plant to siphon water as it needs it, can help, but if the plant is growing in old potting soil that has broken down, the plant may have decaying roots that create a food source for fungus gnats. Periodic repotting using fresh, sanitized potting media will make watering from the bottom more effective, he said.

The big, well-known brands of potting media are usually pretty safe, Knudson noted, as those companies work to ensure the medium is sanitized. Compost from an area farmer or the local landfill may include organic matter that hasn't fully broken down or been sanitized. It may also include eggs or larvae from fungus gnats, as well as a food source for them to thrive.

If you're not put off by putting dirt in your oven, an easy DIY for sanitizing potting media or soil is to heat your oven to 200 degrees and bake your potting media or soil for a couple of hours, he said.

You may read online that spreading cinnamon on the surface of the soil, flushing hydrogen peroxide or vinegar through the soil or using other products from your kitchen cabinet can get rid of fungus gnats, and while some may work, there's no real scientific evidence to suggest they will and you need to consider how it may affect your plant or beneficial organisms living in the soil, according to Knudson.

One natural remedy is *Bacillus thuringiensis israelensis* (Bti), a naturally occurring bacteria that live in soil and are nontoxic to people, pets, pollinators and many beneficial organisms. Knudson said Bti is wonderful as a soil drench, but may require multiple applications.

Ditto for spreading diatomaceous earth on the surface of the soil. It will break up the gnats' exoskeleton, causing them to dry out, but its effectiveness will diminish with watering, so may require



Fig. 1 Fungus gnats measure about 1/8th of an inch long and are frequently mistaken for fruit flies. (Photo by Jeffrey Hahn, courtesy University of Minnesota Extension.)

Methods for eliminating and reducing fungus gnats in houseplants.

Majority are most effective when used in conjunction with other methods.

- Periodic repotting with fresh, sanitized potting media.
- Letting the top 1-2 inches of soil dry out between watering.
- Watering from the bottom, letting the plant siphon the water it needs.
- Spreading diatomaceous earth on the surface. Diatomaceous earth is ineffective when wet, so reapply after each watering.
- Using yellow sticky sheets to trap adults.
- Using insecticides, like insect growth regulators or those containing Imidacloprid, that target fungus gnats. Best if used as a soil drench or granular application to target larvae. If using a spray, target adults with insecticides containing permethrin by spraying the surface of the soil when it is starting to dry. Be sure to follow label directions on all insecticides to keep you and your plants safe.
- Use products containing *Bacillus thuringiensis israelensis* (Bti).

additional applications.

Yellow sticky sheets (Fig. 2), available at garden centers, are effective at trapping adult gnats, which are attracted to the color and stick to the sheet. They are most effective when placed close to the soil surface, trapping emerging adults.

Trimming off dead lower leaves and removing dead leaves that gather in the pot reduces the amount of decaying plant matter available as a food source for the gnats.

So, where do fungus gnats come from and how do they get into our plants?

There are a few different avenues, Knudson said. The most common way is to bring home a new plant that is already harboring eggs or larvae. You may not notice them in the greenhouse or store or when your friend gives you an offspring houseplant, Knudson noted, but once they are in your home, they will find habitat and reproduce in your houseplants.

They can also find your houseplants if you put them outside on the patio during the warm weather. "Fungus gnats are ubiquitous outside where there's decaying vegetation, and they'll find your houseplants," he said. When you bring them inside in the fall, you may inadvertently bring a family of fungus gnats in with them.

Are fungus gnats beneficial? Well, they're not detrimental but they're not beneficial either, Knudson said.

"Very rarely do they cause injury to plant," Knudson said. "Most of the time they feed on fungi and decaying plant matter. If you do have a lot of vegetation on the surface of the soil, they will help break that down over time.

"But most of the time, they're just pests," he said.

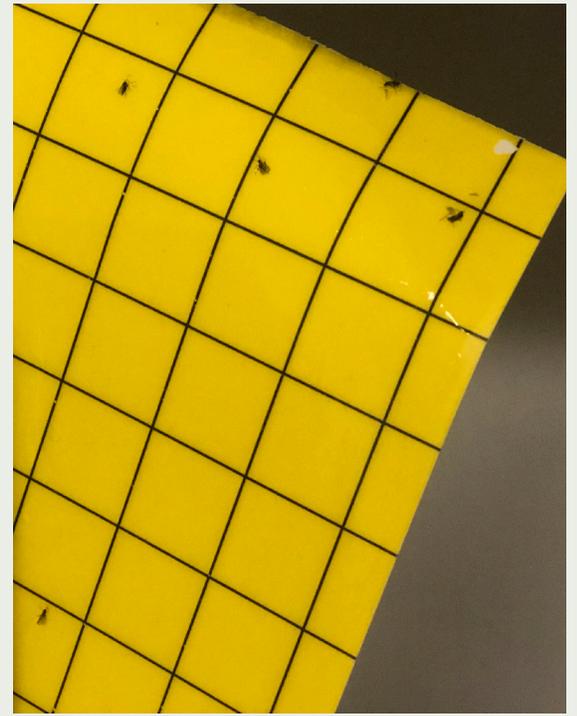


Fig. 2 Yellow sticky sheets, available in garden centers, attract and trap adult gnats. They are most effective when placed near the soil surface. (Photo by Laura Kourajian.)



Good Advice or Myth: Plant Your Potatoes by Good Friday

By Esther E. McGinnis, esther.mcginis@ndsu.edu

We frequently hear the advice to plant your seed potatoes by Good Friday. Is this good advice or an old wives' tale? (I admit that I take a little bit of offense at the term, old wives' tale. Maybe it's because I probably fall into the category of an old wife!)

In looking at the range of Easter dates, there is great fluctuation. Between the years 2000 and 2040, the earliest Easter will fall is March 23 (occurred in 2008) and the latest occurrence is April 25 (will occur in 2038). Planning your potato planting around a fluctuating holiday is not the most scientific of recommendations.

NDSU Extension recommends planting potatoes up to two weeks before the average last freeze date provided that the soil temperature is at least 45 °F. Average last frost dates can fluctuate based on your location. For example, the average last freeze (32 °F) is approximately May 8th in Fargo. In Mohall near the Canadian border, that date is later, May 19th. Can a frost occur after the average last freeze date? Absolutely yes! The average last freeze date is based on a 30-year average.

Fortunately, potatoes do not need to be replanted if exposed to frost. If the aboveground shoots are killed by frost, the underground tuber will produce new shoots within 10 to 14 days. However, this will delay the crop and may reduce the yield. This is why we delay planting until the emerging potato shoots have a good chance of avoiding late spring frosts.



Figure 1. Potato shoots can be harmed by frost.

Photo courtesy of Peppy Sis (CC BY-NC-ND 2.0), <https://www.flickr.com/photos/peppysis/5689072142>

For more information on growing potatoes:

Potatoes: From Garden to Table

<https://www.ag.ndsu.edu/publications/food-nutrition/potatoes-from-garden-to-table/fn630.pdf>

POLLINATOR PUSH-BACK

When fear of bees prevents pollinator-friendly initiatives, and how to help.

By Caitlin Stegmiller, cait.steg@gmail.com

This spring, I proposed the idea of creating a pollinator garden in a local park. The idea was immediately vetoed due to one word: "pollinator." I rebranded the project as a "songbird garden" and it was approved. The actual plantings in the garden would remain fairly similar and benefit both songbirds and pollinators.

Initially, I assumed this issue was unique to my town. But while talking with other Master Gardeners around the state, I have learned that many have dealt with similar pushback around pollinator and bee-friendly initiatives. This general reluctance does not seem to be coming from those individuals with venom allergies. I am very sympathetic to the 3% of adults and 0.5% of children that are allergic to bee, wasp, or hornet stings. For them, a sting could be severe and even life-threatening. Instead, people without allergies seem to be very reluctant to plant pollinator gardens because of the unjust reputation of bees.

This experience got me wondering about how best to work with healthy populations who are hesitant and even fearful about bees. Renaming the garden was an easy fix, but there was still a deeper underlying problem. Why are some people so deeply opposed to bees and how, as Master Gardeners, can we help address these concerns?

A German study published in 2017 reported students aged 10-20 actually had a relatively low perceived danger of bees and a high willingness to protect them (1). According to the study, pollinator-based curriculum has been increasing in schools worldwide, and seems to be having a positive effect on young people's attitudes towards bees. Education is the key to alleviating concerns about bees. While comprehensive bee and pollinator education for people of all ages would be ideal, it is also impractical. The authors proposed the following ideas, "educational programs should ... focus on the following two aspects to reduce the perceived danger of bees for humans: (1) the special character of bees, or rather their breed and their behavior and (2) the ability to differentiate bees from insects with a similar appearance (e.g. wasps)."

Experts often say it is likely most stings are caused by wasps or hornets, and not bees. In general, wasps and hornets are more

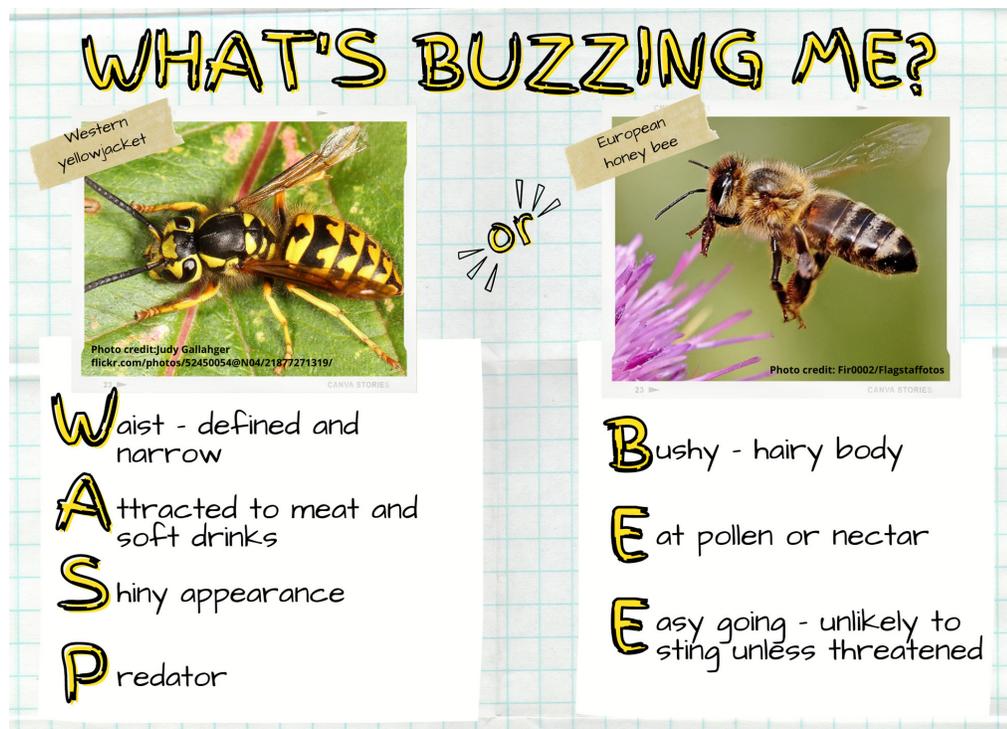


Fig. 1 Simple acronyms may help individuals better understand and remember the difference between bees and wasps. (Infographic created by Caitlin Stegmiller. Photos used: Western yellowjacket, Judy Gallahger flickr.com/photos/52450054@N04/. European honeybee, Fir0002/Flagstaffotos.)

aggressive than bees. But until the general population is able to better identify these insects, bees will continue to be unfairly maligned. This not only continues to give bees a negative image, but also gives the impression that these insects are all interchangeable. In fact, there are vast differences between hornets, wasps and bees, in both appearance and behavior. Teaching even basic identification of these could prove substantially beneficial to improving attitudes towards bees.

In North Dakota, two commonly confused Hymenoptera are European honey bees and Western yellowjacket wasps. Since they are relatively similar in size and color, people often mistake the more aggressive yellowjacket for a honey bee. Figure 1 provides a very simplified mnemonic device to help explain the differences between yellowjacket wasps and honey bees. This is by no means a comprehensive characterization of either insect, but simplified tools like this may help people quickly understand the difference between the two insects. Additionally, the University of Minnesota's Bee Lab has several

fantastic, free resources on bee education, including more in-depth information on the differences between wasps and bees. These materials can be found at www.beelab.umn.edu.

Along with understanding the visible differences between bees and wasps, it is also helpful to understand their characters and behaviors. This is particularly important when discussing stings. The fear of being stung is a common concern when discussing pollinator and bee-friendly gardens. Most adults have likely either experienced a sting or know someone who has. Generally, a sting will be annoying and a bit painful but not life threatening, as only about 3% of adults are allergic to stings. But instead of dismissing concerns about being stung, helping individuals to understand the character of insects and why they sting might have more longstanding and beneficial impacts.

Wasps are predatory animals and are able to sting multiple times without dying. Yellowjackets in particular are attracted to meat and soft drinks, making them common visitors

to picnics and outdoor diners. Whereas bees are pollen and nectar foragers -- their stingers are purely for protection. They can only sting once and will die afterwards. Because of this, bees are much more hesitant to sting and generally only do so if they feel threatened. As humans, we can work to behave in non-threatening manners around bees. When we flail and swat at a bee, we are going to appear like a predator and a normally docile bee may become defensive and sting. If we stay calm and still, bees will likely ignore us (or possibly

investigate until they determine we are not flowers). Staying away from known nests, wearing light colored clothing, and avoiding strong perfumes or colognes are other ways to reduce chances of stings. For a full list of tips to prevent stings visit: www.cdc.gov/niosh/topics/insects/beeswasphornets.html.

There will always be people who are afraid of bees. And while studies show positive correlations between education and acceptance, more research is needed to better understand people's attitudes

towards bees and develop comprehensive outreach programs. In the meantime, as Master Gardeners we can work to keep open, respectful and informative conversations about bees and pollinators.

Works Cited:

(1) Schönfelder ML, Bogner FX (2017) Individual perception of bees: Between perceived danger and willingness to protect. PLoS ONE 12 (6): e0180168. <https://doi.org/10.1371/journal.pone.0180168>



Behold the Mighty Elm!

By Lila Hlebichuk lilahl@yahoo.com

The American elm tree (*Ulmus americana*) became North Dakota's official state tree in 1947. Native to eastern and central North America, the elm tree typically reaches 80 to 120 feet tall or more. Extremely cold hardy to 45° F below zero, tolerant of soil conditions and light shade, this tree with its beautiful craggy bark was chosen to represent the adaptable and hardy people of North Dakota.

The hardy elm was widely planted as a street and lawn tree across America until Dutch Elm Disease (*Ophiostoma ulmi*) arrived in the U.S. in the late 1920s via infected wood imports from Europe. Dutch elm disease moved across the country killing millions of elm trees, but did not reach North Dakota until the 1970s.

The Missouri Botanical Gardens states on their website, "Dutch elm disease, a fatal fungal disease spread by airborne bark beetles, attacks the water-conducting tissue of the tree, resulting in wilting, defoliation and death." While all elm trees can get DED, there are resistant varieties currently available, and development of additional varieties is continuing.

The following is from the NDSU Publication, Elms for North Dakota (F1893, Oct. 2018):

Fully Recommended:

- Prairie Expedition® ('Lewis & Clark') – A cold-hardy American elm that grows up to 4 feet per year. This cultivar has high DED resistance; the original tree was a survivor of the first wave of DED to come through North Dakota. NDSU release.
- 'Princeton' – A fully hardy and highly DED-resistant selection of American elm. 'Princeton' has a very upright form; managers have some concern

about branch angles being too acute. However, this cultivar is easy to train when it is young.

- 'Valley Forge' – This cultivar also is fully hardy and very DED resistant, but the branch attachments may be weaker than desired. Also, some trees' growth has been so vigorous that the central leader became top-heavy and fell over, resulting in a lopsided or unsymmetrical crown.

When planting an elm, keep in mind that judicious pruning is required for the first 10-15 years to produce proper branch structure.

As NDSU Department of Plant Sciences Dr. Todd West stated in his April 2019 presentation, "Don't be afraid of Elms!!!"

More information on varieties of both recommended and not recommended American elms, as well as hybrids, can be found in the NDSU Publication, Elms for North Dakota: <https://www.ag.ndsu.edu/publications/lawns-gardens-trees/elms-for-north-dakota>

Sources:

NDSU Publication, Elms for North Dakota (F1893, Oct. 2018)
<https://www.ag.ndsu.edu/publications/lawns-gardens-trees/elms-for-north-dakota>
Spring Fever Forum, Ash Replacement Trees, Dr. Todd West, April 8, 2019
<https://www.ag.ndsu.edu/springfever/archive-of-2019-presentations>
Missouri Botanic Garden, *Ulmus americana*
<https://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a922>



Fig. 1 2021_ElmLeaves
(photo courtesy of Missouri Botanical Gardens)



Fig. 2 2021_AmericanElmFargo
(photo courtesy of NDSU Publication Elms for North Dakota)



Plants and Pets; the Good, the Bad, and the Tattered

By Lila Hlebichuk, lilahl@yahoo.com

While chewed up plants are neither desirable nor aesthetically pleasing, the damage can be far more serious if your pet decides the wrong plant might make a good snack. Some plants can cause harm to the well-being of a pet from an upset tummy to kidney failure and death. The harmful substance might be found in the leaves, seeds, bulbs, withered leaves on the ground, and even in the vase water of toxic cut flowers. To be safe, toxic plants should not be kept in areas where inquisitive pets have access to take a bite.

Not an exhaustive list, the following contains some of the toxic plants available in our area:

Harmful to cats and dogs:

- Aloe Vera – *Aloe barbadensis miller*
- Autumn crocus - *Colchicum autumnale*
- Bleeding Heart - *Dicentra spectabilis*
- Castor Bean – *Ricinus communis*
- Corn Plant - *Dracaena fragrans*
- Cyclamen – *Cyclamen spp.*
- Daffodils/Tulips/Hyacinths *bulbs of any kind
- Dumbcane – *Dieffenbachia spp.*
- Elephant Ear - *Caladium spp.*
- English Ivy – *Hedera helix*
- Foxglove – *Digitalis purpurea*
- Heliotrope – *Heliotropium arborescens*
- Hemlock - *Conium maculatum*
- Hosta - *Asparagaceae*
- Iris - *Iridaceae*
- Jade Plant – *Crassula argentea*
- Larkspur - *Delphinium spp.*
- Lenten rose - *Helleborus orientalis*
- Lilies – especially Tiger, Day, Asiatic, Easter, Japanese show lilies *Highly toxic for cats
- Lily of the Valley - *Convallaria majalis*
- Marijuana - *Cannabis sativa*
- Mistletoe – *Viscum album*
- Monkshood – *Aconitum spp.*
- Mums - *Chrysanthemum morifolium*
- Oleander – *Nerium oleander*
- Pathos - *Scindapsus and Epipremnum*
- Peace Lily - *Spathiphyllum spp.*
- Rhubarb - *Rheum rhabarbarum*
- Rhododendron – *Rhododendron ferrugineum*
- Sago Palm - *Cycads*
- Schefflera - *Schefflera and Brassia actinophylla*
- Thorn apple/Jimsonweed - *Datura stramonium*

- Virginia Creeper - *Parthenocissus quinquefolia*
- Wisteria – *Wisteria frutescens*
- Yarrow - *Achillea millefolium*
- Yew – *Taxus spp.*

Harmful to Horses:

- Boxelder Tree - *Acer negundo* (the samaras/ seeds are toxic)
- Bracken Fern - *Pteridium aquilinum*
- Castor Bean – *Ricinus communis*
- Hemlock - *Conium maculatum*
- Johnsongrass/Sudan grass – *Sorghum spp.*
- Locoweed - *Astragalus spp.* or *Oxytropis spp.*
- Red Maple - *Acer rubrum* *wilted leaves, silver and sugar maples to a lesser extent
- Tansy Ragwort - *Senecio spp.*
- Water hemlock - *Cicuta spp.*
- Yarrow - *Achillea millefolium*
- Yellow star thistle/Russian knapweed - *Centaury spp.*
- Yew – *Taxus spp.*

While it is best for both pets and plants to keep them out of reach of your pets, the following are a few of the plants considered safe by the ASPCA:

- African Violet – *Saintpaulia ionantha*
- Areca Palm - *Dyopsis lutescens*
- Baby Tears - *Soleirolia soleirolii*
- Bamboo - *Bambusoideae*
- Banana Tree – *Musa*
- Boston Fern – *Nephrolepis*
- Bromeliad - *Bromeliaceae*
- Calathea - *Calathea spp.*
- Gloxinia - *Sinningia speciosa*
- Haworthia – *Haworthia spp.*
- Mosaic Plant - *Fittonia albivenis*
- Peperomia - *Peperomia spp.*
- Polka Dot Plant - *Hypoestes phyllostachya*
- Ponytail Palm - *Beaucarnea recurvata*
- Purple Waffle Plant - *Hemigraphis 'Exotica'*
- Royal Velvet Plant - *Gynura aurantiaca*
- Spider Plant – *Chlorophytum comosum*
- Venus Fly Trap - *Dionaea muscipula*

Sources:

Animal Poison Control Center
ASPCA
Equus
University of Minnesota



Fig 1 Foxglove
(photo courtesy of Missouri Botanical Gardens)



Fig 2 Red Maple
(photo courtesy of Missouri Botanical Gardens)



Fig 3 Daylily
(photo courtesy of Missouri Botanical Gardens)

Rhubarb - Harbinger of Spring!

by Cathy Ruebel, Foxtail2400@gmail.com

A sure sign of spring in the garden is rhubarb (*Rheum rhabarbarum*) starting to poke its way through the winter mulch. How refreshing to a gardener's soul to see the tightly packed leaves start to unfurl, with its tasty promise in the coming weeks (Fig. 1)!

Along with the greening landscape in the early weeks of May is the guarantee of more freezing temperatures. Protect emerging plants by covering with adequate blankets or coverings to protect them from frost damage. But what happens if Mother Nature catches you by surprise (or blows your covers off) and there's definitely frost on the rhubarb? Can you still use it? Is it poisonous? Is the entire plant ruined now (Fig. 2)?

NDSU Extension fields these same questions each year. Rhubarb leaves are toxic to humans, pets and livestock. Only the leaves contain toxic calcium oxalate crystals and oxalic acid; however, if the leaves suffer damage in frost or freezing temperatures, the oxalates will migrate into the petioles (stalks).

Even within the scientific community there are varying responses as to when to use or discard rhubarb that has been subjected to a frost or hard freeze. NDSU Extension takes a conservative approach: If the leaf or petiole is soft or anyway wilted, or even after a few days shows black or dying vegetation, do not use it – remove and discard. You wouldn't want to eat something that looked bad or was mushy, anyway. The plant itself underground will be unaffected, along with subsequent new growth (Fig. 3).



Fig. 3 Rhubarb ready for harvest. "rhubarb!" by j.lee43 is licensed under CC BY-NC 2.0

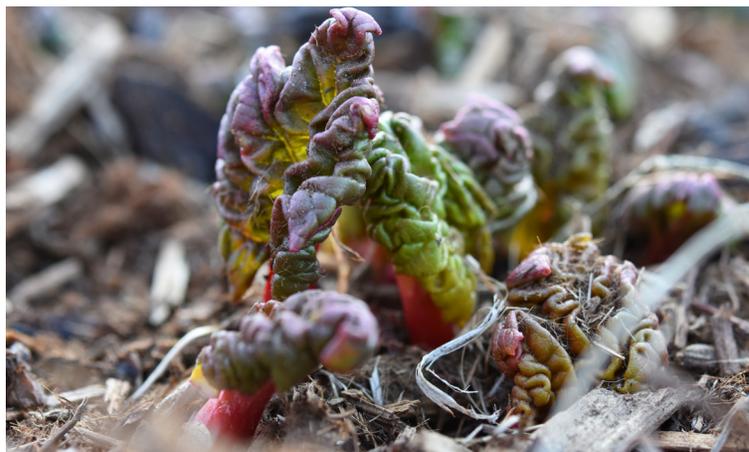


Fig. 1 New rhubarb shoots make their way through the winter mulch in mid- April. Photo by Cathy Ruebel



Fig. 4 Pull petioles by grasping as close to the ground as possible. "Rhubarb" by John and Anni is licensed under CC BY-NC-SA 2.0



Fig. 2 "One of my poor, recently split, rhubarb plants, covered in this morning's frost #Hobart" by stealthpooch is licensed under CC BY-NC-ND 2.0



Fig. 5 "Picking rhubarb - Rhabarberstangen pflücken" by livewombat is licensed under CC BY-NC-SA 2.0

Harvest undamaged petioles by cutting or grabbing them close to the soil level - wiggle the stalk side to side a bit and it should release cleanly from the plant. (Fig. 4) Check the petioles for damage and cut off the entire leaf (Fig. 5). Once the leaf is removed, the stalk can be safely used fresh, or frozen for later use (Fig. 6). It is safe to put the leaves into the compost and to apply the compost to a vegetable garden, as the oxalates are not readily absorbed by plant roots.

Properly prepared and frozen rhubarb can be a great treat for year-round enjoyment (Fig. 7). Thawing of frozen rhubarb will release much of its water content, so plan accordingly with your chosen recipe.

As summer progresses into the hotter months, refraining from harvesting rhubarb will allow the plant to rebuild stored energy for the coming winter. If the plant produces a flowering stalk, remove it by cutting it close to the ground (Fig. 8). At the end of the season, remove and discard any dead leaves and petioles. Add mulch if necessary to protect the crowns through the winter, and from hungry animals in the spring (Fig. 9).

For planting location, soil types and varieties well suited to North Dakota, please see the NDSU Publication Asparagus and Rhubarb (H61, Revised March 2016).



Fig. 6 Cut off the leaves entirely. "Slice the stalks - Stangen schneiden" by livewombat is licensed under CC BY-NC-SA 2.0



Fig. 7 Frozen rhubarb from your freezer can provide summer treats year-round. "frozen rhubarb" by Emily Barney is licensed under CC BY-NC 2.0



Fig. 8 The rhubarb flower stalk is very tough and should be cut off at the ground. "Rhubarb Flower" by Ian Harding is licensed under CC BY-NC-SA 2.0



Fig. 9 At season's end, prepare your rhubarb plants for the winter ahead. "Tucking in the Rhubarb Bed" by JLS Photography - Alaska is licensed under CC BY-NC-ND 2.0

NDSU does not discriminate in its programs and activities on the basis of age, color, gender expression/identity, genetic information, marital status, national origin, participation in lawful off-campus activity, physical or mental disability, pregnancy, public assistance status, race, religion, sex, sexual orientation, spousal relationship to current employee, or veteran status, as applicable. Direct inquiries to:

Vice Provost for Title IX/ADA Coordinator, Old Main 201, NDSU Main Campus, 701-231-7708, ndsu.eoaa@ndsu.edu.

Edited by Caitlin Stegmiller, cait.steg@gmail.com

Layout and design by Rena Mehlhoff, rena.mehlhoff@gmail.com



Have a story idea?

Email Esther McGinnis, esther.mcginnis@ndsu.edu or contact one of our writers directly.