

Food Safety after Flooding

BY CHRIS ENROTH

After flooding rains, you may find your beloved produce under water, and questions begin to surface: Are my vegetables safe to eat? How do I find out if my soil is okay? How can I prevent this from happening again? The following recommendations help you know how to respond to a flooded vegetable garden.

WHAT TYPE OF FLOOD?

According to Cornell University, there are two types of flooding. The first occurs when soils are saturated, yet heavy rains continue, forcing water to pool on the surface. While this type of flooding can drown gardens and diminish harvest, the likelihood for contamination of produce is low. The second type of flooding is runoff or overflow from streams, rivers, lakes, roadways, and agricultural fields, runoff that is likely to be contaminated with human pathogens or industrial pollutants, or both. Though this type of flooding is less common, it is what raises concerns regarding food safety, and it is the type referred to in the guidelines here.

CAN I USE FLOODED PRODUCE?

Do not use any fruits and vegetables that were ready for harvest at the time of flooding. And if you have any doubt, throw it out!

Some crops have a higher susceptibility to contamination than others:

• **Leafy greens** – lettuce, cabbage, kale, collards, spinach, Swiss chard, & others

The surface of a leaf can vary with ridges, valleys, and curls. Bacteria or contaminated soil particles can get lodged on the leaf surface and be nearly impossible to remove with cleaning. Discard any leafy greens that are exposed to floodwaters.

• **Root crops** – beets, carrots, radishes, turnips, onions, and potatoes

Underground crops have a degree of protection from floodwater due to the buffering abilities of the soil. However, any underground vegetables that will be harvested within a month after flooding, such as radishes or new potatoes, are more susceptible to bacterial contamination. Be sure that any root vegetables harvested within a month after flooding are washed and rinsed with clean tap water and then peeled and cooked thoroughly.

• **Melons**

According to University of Wisconsin Extension, melons and other fruits eaten raw should not be consumed from a flooded garden. Even melons that have been surface-sanitized have been linked to foodborne illnesses.

Late-season crops such as tomatoes, peppers, and cucumber that flower and set fruit after floodwaters have receded are safe to consume when they ripen later in the season. Ensure that these plants are supported and that fruits do not come in contact with the soil for at least 90 days after flooding.

Never can, preserve, sell, or give away produce from a flood-damaged garden.

DO I NEED TO REMEDIATE MY SOIL?

Floodwater can alter soil physical properties and nutrient levels. Conducting a soil test after a flood is key to knowing what (if anything) has changed. University of Illinois Extension does not offer soil testing, but we have a list of commercial facilities that do. If you want to test for human pathogens

or soil contaminants, contact your local Extension office for assistance.

Flooding compacts bare garden soil and can create a hard surface layer of sediment that “seals” the soil from air and water. Tillage to break that seal and bring air and water back to the soil is beneficial. Plus, soils are full of microorganisms that will compete with and eliminate potential human pathogens.

If you decide to leave your garden fallow for a season after a flood, don't let weeds take over. Consider planting a cover crop to build soil and reduce weed pressure. Legume cover crops, such as cowpeas, are great options due to their ability to fix atmospheric nitrogen to the soil.

HOW DO I PREVENT FUTURE DAMAGE?

Flood damage is by definition the result of human activity (that is, of humans building in an area that floods). The same principle applies to siting a garden – the simplest solution to avoiding a flooded garden is to move it to higher ground. If moving your garden is not an option, raised beds can lift your crops out of the flood zone. Raised beds are also a great option if soil tests reveal contamination.



Pooling surface water compacts soil beneath. Working in wet soil compounds the issue, preventing gardeners from tending to their plants in a timely manner.



The overflow of a nearby septic treatment pool has flooded these tomatoes and rendered them unsafe; the tomatoes must be discarded.



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Caring for Your Lily When Easter Is Past

BY MARTHA SMITH

For many people, the Easter season is a time of joy, for both the religious significance and the promises of spring. What better symbol than the Easter Lily, with its beautiful, clear, bell-like white flowers and wonderful fragrance.

In the United States, over 8 million Easter Lilies (*Lilium longiflorum*) are grown. “Nellie White” is the most common cultivar. Other popular choices are ‘Ace,’ ‘Croft,’ and ‘Estate.’

Easter Lilies do best in indirect, bright light or curtain-filtered sunlight when in flower. Cool nighttime temperatures (40 to 50°F) help extend the bloom period. Daytime temperatures no higher than 68°F are ideal. Keep the soil moist but don't fertilize the plant in flower.

Inside the flowers are pollen-bearing golden anthers (the male part of the flower). Most people prefer to remove these. Why? The theory is that the blossoms last longer if the flower doesn't become pollinated. Also, the pollen stains clothing easily if someone brushes up against a flower, and it stains the white flowers as well. The anthers are easily removed as soon as the flower opens, which is usually before the pollen is freed. Just reach in and gently twist and pull, or clip with a pair of scissors.

AFTER THE HOLIDAY

Postholiday care is also easy for the Easter Lily. Remove the flowers after they fade, and clip any browning leaves. Place the plant in a sunny area and water as the foliage matures. Its real bloom time is mid- to late summer. As soon as danger of frost is past, plant the lily in a sunny, well-drained spot. Place any bulbs a few inches deeper than they were in the pot, and fertilize with an

all-purpose garden fertilizer. The old top will wither and die, but soon afterward new shoots should emerge, and the plant may reward you with a second blooming in July or August. This foliage will also wither and die, and the bulb will overwinter – hopefully to emerge and rebloom next summer.

Lilium longiflorum is not always hardy throughout Illinois. Winter protection is recommended, but you may lose an Easter Lily in a very cold winter. Forcing flowers indoors for Easter bloom is tricky, even for professional growers, because the date of the holiday changes from year to year. A technique known as leaf counting (used in combination with proper lighting, chilling, and moisture) is often the most reliable for scheduling Easter Lilies.

To force your Easter Lily indoors, don't let it reflower in July or August; disbud the plant then instead. Dig up the plant before the chance of fall frost, and plant the bulb in a pot about the same size as the original. Place it on top of an inch of soil in the pot, then add potting soil only to the top of the bulb. Water thoroughly, then keep the bulb as near as possible to 45 to 50°F through January 1. During this time, water only to prevent drying out.

After January 1, put the pot in a sunny window and water and fertilize as with any houseplant. After the stem has grown to 3 or 4 inches high, add soil to fill the pot. If staking is necessary, be careful to avoid sliding the stake through the bulb. After the first buds turn white, keep the plant out of direct sunlight.

An important note: All parts of the Easter lily are poisonous, especially to cats – causing kidney failure and even death – so place lilies in an area your cat can't access. If a cat eats any amount of Easter Lily, contact a veterinarian immediately.

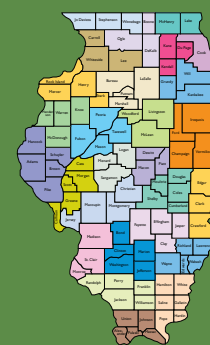
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Gardening with Natives

BY KIM ELLSON

Spring is truly a magical time – longer days, warming temperatures, and plants bursting into life. This year, why not try growing some native plants in your garden?

Year after year we tend to reach for those cultivated favorites we have come to know and love. These ornamentals offer vibrant color, but they do little to support your area's wildlife.

Does supporting wildlife mean letting your yard run wild? Don't think you have to convert your entire property into a “natural” area. Small changes are equally important. Replace a few ornamentals with native plants.

We have come to value groomed lawns and tightly clipped shrubs, which eliminate refuge or food for native bees, butterflies, insects, and birds. But you can have a neat lawn leading up to a bed with native plants, keeping the look tidy and showing your neighbors that you planned those native plants all along.

WHY PLANT NATIVES?

Native plants have several advantages over their non-native counterparts. One, they are adapted to the conditions and thus will require less care. This does not mean you'll never have to tend to them, but once these plants are established they will not need mollicoddling.

Two, extensive root systems mean native plants don't require constant watering in the heat of summer. Soil amendments or fertilizers are also unnecessary; simply ensure plants are selected for the conditions present.

Three, native plants generally need not be repurchased every year; the perennials will regrow and the annuals will reseed, returning year after year. Keep in mind that perennials, unlike annuals, do not bloom continuously throughout the season, so select plants carefully to ensure a steady show of blossoms.



Honey bee collecting pollen on native aster. Photo by John Severns.

SHOOTING FOR SUCCESS

Another key to successful native gardening is selecting suitable plants. Some native plants, although beneficial, are quite aggressive in character and will ultimately take over your garden bed – or even worse, your whole yard!

Native plants can be purchased as seeds, plugs, or potted plants, depending on availability. Seeds cost the least but require much more time to become established and a lot more maintenance in the form of weeding. Planting plugs or larger plants will help you avoid disappointment.

What is the best place to purchase native plants? Quality garden centers frequently offer an assortment of native plants, and local plant sales sponsored by various organizations may focus specifically on natives. If you're looking for a specific species, search online for specialty nurseries.

Be aware when purchasing native plants to stick with original species and avoid cultivars. Cultivars are identifiable by non-Latin words following the Latin name, such as *Solidago rugosa* 'Fireworks'.

Once you've invested in establishing native plants in your garden, you can sit back and enjoy the butterflies, hummingbirds, and other creatures who will visit your landscape.

Garden Reuse and Recycling in Spring

BY CANDICE MILLER

In terms of garden trends, recycling and reusing are as popular as ever. A variety of items you may already have at home can save you money in the garden this year, as well as improve the sustainability of your gardening.

SEED STARTING

Jump-start your garden by starting seeds indoors, in a bright southern- or western-facing window or under supplemental lighting. Many containers you may already have on hand (plastic milk jugs, egg cartons, toilet paper rolls, newspaper, milk cartons, and other reusable and even biodegradable containers) can easily be filled with soilless media for starting seeds. Any container that is clean and free of contaminants can be used.

WEED CONTROL

Consider recycling your newspapers and cardboard boxes as biodegradable weed barriers. Just place a few layers of newspaper or a section of cardboard over an area of bare soil and cover with your favorite mulch material, like bark mulch, grass clippings, or leaves. The newspaper or cardboard will naturally degrade over time; you can simply add a new layer or more mulch as needed.

ALTERNATIVE RAISED BEDS

Raised garden beds are a good solution when your soil is not ideal or you'd like to create a growing area that is easier to access. Many raised beds are made of purchased wood, but you may have suitable construction material, like a wood pallet, on hand. Simply staple landscape fabric to the sides and open bottom of the pallet and fill with soil. The result is an excellent shallow bed for growing lettuce, with minimal weeding needed.

If you are growing food in a raised bed, always consider the safety of the construction material. Some pallets are chemically treated and thus inappropriate for growing food. Other candidates for raised beds might be bricks left over from other garden projects and cinder blocks, whose holes you can fill with soil and plant into.

Take a look at your garden with a new eye this spring. You may be able to reuse and recycle materials on hand to save yourself money and reduce your gardening footprint.



Newspaper used as a barrier beneath mulch to reduce weeds.



Lettuce growing in a wooden-pallet raised bed.

Stretch Your Garden Dollar with Perennial Vegetables

BY KELLY ALLSUP

Did you know, according to the National Gardening Association, that \$650 of produce can be grown from just a \$70 investment? (The cost is mostly for seeds and transplants of annual food crops like beans, tomatoes, peppers, and squash that can't be planted until after the frost-free date.)

Some gardeners collect vegetable seeds from earlier years, but most wait for seed catalogs to come in the mail or buy plants at garden centers. But if you want to harvest produce year after year with only an initial investment and some care, look into growing perennial vegetables, such as ramps, asparagus, water celery, ostrich fern, and rhubarb.

Ramps (*Allium cepa aggregatum*), which are perennial bulbs from the onion family, are relatively easy to grow and establish. Leaves, harvested in spring, are considered a delicacy. Smaller bulbs, with a flavor between garlic and onion,

can be harvested once the leaves dry down. Bulbs can be divided every year in spring and replanted or eaten. Ramps benefit from organic matter added to the planting hole; they require well drained but moist soil, and weeding is essential.

Asparagus (*Asparagus officinalis*), the most popular perennial vegetable for the Illinois climate, has a remarkable flavor when freshly picked. Mature plants can yield for 10 to 15 years, and harvest (not done until after the first year) can last for more than a month. Most growers start by planting crowns in the spring 6 to 8 inches deep and 14 inches apart, filling in with soil as the shoots grow. To grow well, asparagus requires a pH of 7, additions of organic matter, consistent weeding, and well-drained soil (with supplemental watering in case of drought).

Water celery (*Oenanthe javanica*) makes a great edible groundcover in sun or shade and is fairly easy to grow. The raw leaves, reminiscent of celery and parsley,

Capture the Ornamental Potential in a Rain Garden

BY ANDREW HOLSINGER

A rain garden is a tool for handling excessive rainwater, which can be retained and filtered before entering rivers, lakes, or streams. If you are considering a rain garden for your property, be aware of the various guidelines to be evaluated.

Rain gardens fluctuate in their moisture levels throughout the season. Some plants are more tolerant of wetness than others, so both dry and wet conditions need to be accounted for in your planning. The lowest portion of the garden will be most consistently wet, so choose plants accordingly. As you move up the garden's slope, use plants that are adapted to drier conditions.

You will need to care for even low-maintenance plants until they are established to prevent weed competition and to promote the resilience of the garden. Depending on your soil type, you may need an amendment. Sandy soils allow for quicker infiltration and are suitable for smaller gardens. Clay soils, on the other hand, have a slower infiltration rate and make a larger rain garden possible.



Rain gardens, like this one near St. Peters, Missouri, can add great curb appeal and function near roads and parking lots.

You can incorporate the ornamental interest of many different flowers in a rain garden. Cardinal flower and sneezeweed both offer vibrant color. Cardinal flowers provide an excellent source of nectar for hummingbirds. Sneezeweed is visited by some long-tongued insects that flourish on its nectar, although some bees and beetles enjoy its large pollen.

In siting your rain garden, keep it at least 10 feet away from the house, and avoid any slope greater than 12 percent. Do not place a rain garden over a septic system or near a ponding area. To prevent the growth of mosquitos, the rain garden must be able to drain within 48 hours.

Native plants work well for rain gardens, but they are not always easy to find locally. Look now for sales of native plants being scheduled in your area.

Native plants you may find of interest for your rain garden are listed here. The common name is followed by the scientific name for each plant.

FORBS (prairie ecotype)

Blue Vervain (*Verbena hastata*)
Golden Alexanders (*Zizia aurea*)
Joe Pye Weed (*Eupatorium maculatum*)
New England Aster (*Aster novae-angliae*)
Prairie Blazing Star (*Liatris pycnostachya*)
Queen of the Prairie (*Filipendula rubra*)
Sneezeweed (*Helenium autumnale*)
Stiff Goldenrod (*Solidago rigida*)
Turtlehead (*Chelone glabra*)
Wild Bergamot (*Monarda fistulosa*)

FORBS (savanna ecotype)

Blue Flag Iris (*Iris virginica shrevei*)
Cardinal Flower (*Lobelia cardinalis*)

Great Blue Lobelia (*Lobelia siphilitica*)
Spidenwort (*Tradescantia ohioensis*)
Sweet Black-Eyed Susan (*Rudbeckia subtomentosa*)

FORBS (woodland ecotype)

False Solomon's Seal (*Smilacina racemosa*)

SHRUBS (prairie ecotype)

Black Chokeberry (*Aronia melanocarpa*)
Buttonbush (*Cephalanthus occidentalis*)
Red Chokeberry (*Aronia arbutifolia*)

FERNS (woodland ecotype)

Regal Fern (*Osmunda regalis*)
Sensitive Fern (*Onoclea sensibilis*)

have a milder taste when cooked. Water celery will thrive in moist soils near water or under a downspout. It spreads to form dense colonies given ideal conditions and has been used to filter water. Most gardeners start with transplants or seed.

Ostrich ferns (*Matteuccia struthiopteris*), also known as fiddleheads, are harvested for their tender curling shoots in early spring and are ornamental for the remainder of the year. Pick fiddleheads when they are still tightly curled and only a few inches tall. They can be eaten in a variety of ways but must be cooked for at least 10 minutes to make them palatable and bring out the fresh crisp and nutty flavor. Ostrich ferns grow best in shady locations with moist soils and can spread like a groundcover.

Rhubarb (*Rheum x cultorum*) has long been mixed with fruits like strawberries and baked into pies, but its sour component can complement meats and stews. Rhubarb, best grown in full sun, has very large leaves with colorful stalks that thrive in the cool weather of early spring. Rhubarb stalks can be eaten raw or cooked, but the rest of the plant is poisonous, so be sure to remove roots and leaves. The flower stalks should also be removed but can be eaten, tasting like sour cauliflower. A side dressing of well-rotted manure or fertilizer should be added in the summer and fall. When growing rhubarb, cover the crowns with

soil (no more than 2 inches). Once the plants are up and growing, add a 3- to 4-inch layer of straw, compost, or mulching material to help control weeds and conserve soil moisture.

Consider setting aside some of your budget this year for a perennial vegetable or two. Visit www.isws.illinois.edu/atmos/statecli/frost/frost.htm to find out Illinois frost-free dates.

Ramps, also known as wild leeks, are ready to harvest when their leaves emerge in early spring.

Welcome Beneficial Guests to an Insect Hotel

BY KELLY ALLSUP

Did you know that with minimal investment, you can open a hotel? Insect hotels offer places for beneficial insects and pollinators to survive winter's chill and to nest in spring and summer. You can make use of an insect hotel in any flower bed, vegetable garden, or fruit orchard.

Most insect hotels are built out of recycled materials like pallets, bricks, drain tiles, and old logs. You can mimic the forest floor with leaves, straw, mulch, cones, and sticks. Your hotel can be as simple or elaborate as your creativity leads. Most are placed in shadier locations under trees, with a bee habitat located in the sunniest spot. Bamboo sticks and stems of sunflowers, Joe pye weed, or *Sambucus* can be used to shelter the solitary native bees. Some builders add protective bird netting, shutters, or roofs to prevent the hotels from becoming bird buffets.

Understanding how insects overwinter and the guests you will attract will help you engineer your hotel. Some insects, like Monarchs and Painted Ladies, flee to the south. Others endure the Illinois winter by going into a suspended state of development called diapause, employing proteins that act as an antifreeze to enable survival.

WHO MIGHT YOU ATTRACT?

Hoverflies overwinter as pupae in leaf debris, pine cones, and straw. Green lacewings prefer to pupate in rolled-up corrugated paper. Both species are pollinators as adults, but their larvae are ferocious hunters of aphids. You need good sources of nectar and pollen for the adults to be attracted to the garden.



Youth at a 4-H Learn and Fun Day in Livingston County built small insect hotels from pine cones, moss, and leaves in a wooden box covered with bird netting.

Lady bugs survive as adults under branches and in logs. Most adults sold in garden centers are harvested from the wild. However, upon release they rarely stay in the area you intended. Instead, you can entice them to stay in the garden by offering habitat and food. Lady bugs lay their eggs near aphid colonies.

Butterflies and moths overwinter in varying stages. Swallowtail butterflies and cecropia moths overwinter in the chrysalis (pupal) stage. Purplish coppers overwinter as eggs in debris, and Baltimore checkerspot caterpillars spend their winter in leaf litter. Few moths overwinter as caterpillars, but woolly bears can be suspended in snow and ice and wake up when temperatures warm. Be aware that cleaning up under and around butterfly plants in the fall can eliminate overwintering populations.

Spiders overwinter as adults; they may stay active even in really cold temperatures but seek out shelter to stay warm. They usually hibernate as immatures under loose bark or as egg cases.

Parasitic wasps can burrow into trees, so including wood blocks with holes may lure them to your insect hotel. Although most adults feed on nectar and pollen from flowers, they lay their eggs in the bodies of garden pests. Most notable is the parasitic wasp that lays its eggs in the tomato hornworm, where white pupae can be seen in great numbers.

All of a **Bumble bee** colony dies out except for newly produced queens, which will burrow into a tree stump. An upturned flower pot filled with straw or garden debris can easily become the queen's winter home.

Mason bees overwinter in nesting cavities and spend at least 10 months going from egg to adult. These nesting cavities can be made out of bamboo sticks, hollow-stemmed plants like sunflowers, or holes drilled in wood. The holes should be 5/16" round and at least 6 inches deep. Mason bees live 4 to 6 weeks and finish laying eggs and pollinating by late spring. Inside the holes, the eggs are hatching, and the little larvae are consuming pollen. Generally, females are laid first and males last, as the males hatch first. In some insect hotels these nesting cavities are placed in old drainage tiles to keep them dry.

Carpenter bees hibernate in hollow cavities as young adult females and males.

Insect hotels can be all sizes, from a small box filled with materials to an elaborate structure ready for many residents. The point is to be creative, using recycled materials found in the garage or the barn. Won't you open up your garden to travelers this spring?



Photo by Elizabeth Wahl.

Here is how the six floors of this insect hotel are furnished (bottom to top):
1st floor - bricks and rocks provide winter sanctuary for spiders
2nd and 3rd floors - pine cones, bark, and straw mimic the forest floor for overwintering pupae and adults
4th floor - holes drilled into wood pieces harbor overwintering leaf cutter, mason, and carpenter bees
5th floor - upside-down flower pots are filled with debris for overwintering queen bumble bees
6th floor - lady bugs spend the winter in PVC pipes filled with debris.