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A word about Minnehaha Master Gardeners: We are volunteers trained through the South Dakota State University Extension Master Gardener Program. The mission of MMG is to enhance and supplement community educational efforts of the SDSU Extension Master Gardener Program and to provide research-based education and information on horticulture and environmental stewardship. For more information on becoming a Master Gardener, visit SDSU Extension Master Gardener volunteer program

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What's inside

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Blood Meal vs Bone Meal in the Garden

Carla Goetsch, Master Gardener

Blood Meal

Blood meal is widely available at garden centers and can be used as a pest deterrent, but it is more commonly used as a fertilizer. The “blood” in blood meal is obtained from meat-packing plants, and it is dried into a powder. The scent may help deter deer, squirrels, and rabbits. However, it may attract dogs, cats, and mosquitoes.

The main purpose of it is to add an organic nitrogen source to the garden that will also acidify the soil. The pH of Minnehaha County already has an average of 6.9. Most garden vegetables grow best at a pH of 6.2 to 6.5. It is recommended to have your garden soil tested for pH before adding a large amount of blood meal, as it can alter the pH.

The best use for blood meal is to add nitrogen to the soil. The N-P-K is 13-0-0. Nitrogen is good to add foliage to garden plants, but if this causes an imbalance with the phosphorus and potassium, you may end up with a tomato plant that has put all its energy into leaf growth but little into tomato fruit production, leading to poor yields. Again, soil testing can give you the N-P-K levels in your soil to determine if you need blood meal.

Bone Meal

Bone meal is made from grinding the bones from meat-packing plants into a powder. It is used to add an organic source of phosphorus and calcium. The N-P-K of bone meal ranges from 3-15-0 to 3-22-0, so it is mostly phosphorus. Bone meal works best at a neutral pH (around 7, like the average in Minnehaha County), but again, soil testing of your garden would be recommended.

Bone meal may help with tomatoes and peppers since phosphorus promotes strong roots, healthy stems, and flower production. The calcium provides extra insurance to add calcium to the soil. However, most blossom-end rot results from insufficient water to deliver calcium to the tomato or pepper, rather than from insufficient calcium in the soil.

NPK (typical)	12-0-0	3-15-0
Primary nutrient	Nitrogen (N)	Phosphorus (P) + Calcium
Release speed	2-6 weeks	1-4 months
Soil pH effect	Slightly acidifying	Slightly alkalizing
Works at soil pH	Most soils	Below 7.0 only
Application rate	5-10 lbs / 100 sq ft	10 lbs / 100 sq ft
Best for	Heavy-feeding crops, leafy veg, lawns	Bulbs, flowering plants, fruiting veg at transplant
Burn risk	Moderate (ammonia)	Low
Typical retail cost	$18-25 / 3 lbs	$15-22 / 3 lbs

Turning Good Intentions into Success...

Houseplant Series, Part 5: The Sun Lovers: Masters of Water Storage

Pam Conklin, Master Gardener

Some plants prepare for drought long before it arrives.

Aloe, Jade Plant, and Echeveria evolved in environments where rainfall is unpredictable, sunlight is abundant, and water is a precious resource. Instead of relying on a steady supply of moisture, these plants developed ways to store water and survive dry periods.

Their solution is visible in their structure. Thick, fleshy leaves act as living reservoirs, storing water when it is available and slowly releasing it during drought. This adaptation allows them to thrive where many other plants would struggle.

In nature, these plants solve the problem of scarce water by saving for a dry day.

Aloe (*Aloe vera*) stores water in broad succulent leaves protected by a waxy coating that reduces moisture loss.

Jade Plant (*Crassula ovata*) develops thick stems and plump leaves that serve as reservoirs during extended dry periods.

Echeveria (*Echeveria spp.*) forms compact rosettes that channel water toward its roots while minimizing exposure to the intense sun.

Because these plants evolved in bright environments, they require more light indoors than many traditional houseplants. Without sufficient light, growth becomes weak and stretched as plants search for the sun.

Continued on page 4

Houseplant Series, Part 5:
The Sun Lovers: Masters of Water Storage
Continued from page 3

Care at a Glance

- Light: Bright light to several hours of direct sun
- Water: Allow soil to dry completely between waterings
- Soil: Fast-draining cactus or succulent mix
- Temperature: Average indoor temperatures; avoid freezing conditions
- Humidity & Airflow: Prefer dry air and good air circulation

Extension Insight

Succulents such as Aloe, Jade Plant, and Echeveria evolved in regions where water may be unavailable for weeks or months at a time. According to South Dakota State University, these plants survive drought by storing water in specialized tissues within their leaves, stems, and roots. Because of this adaptation, overwatering is often more harmful than underwatering.

https://extension.sdstate.edu/aloe-vera-houseplant-how

https://extension.sdstate.edu/jade-plant-houseplant-how

Common Problems

The most common mistake is overwatering. Soft, translucent leaves, blackened stems, or a mushy crown often indicate excess moisture and root rot. Insufficient light can cause elongated, pale growth and loss of compact form.

Think Like the Desert

Place these plants in your sunniest window, preferably one with several hours of direct sunlight. Water thoroughly, then allow the soil to dry before watering again. Resist the urge to “help” with frequent watering—these plants are designed to wait.

Their sculptural forms, interesting textures, and low-maintenance nature make them excellent choices for bright windowsills, desks, and shelves. When matched with the right conditions, they prove that sometimes thriving means learning how to do less.

Next month:
We’ll explore fast-growing plants that capitalize on bright light and consistent moisture, including Spider Plant, Rubber Plant, and Areca Palm—species that invest their energy in growth rather than conservation.

Midwestern prairie exhibit. Photo by Candy Van Dam

A Tour of the Missouri Botanical Garden

Candy Van Dam, Master Gardener

Some people think the Gateway Arch is the premier tourist attraction in St. Louis. Not so. I'd put the Missouri Botanical Garden at the top of my list.

The Missouri Botanical Garden, located in the heart of St. Louis, is one of the oldest botanical institutions in the United States and a leading center for botanical research and conservation. Founded in 1859 by English-born businessman Henry Shaw, the garden has grown into a beloved cultural and scientific landmark, often referred to affectionately as "Shaw's Garden" by locals.

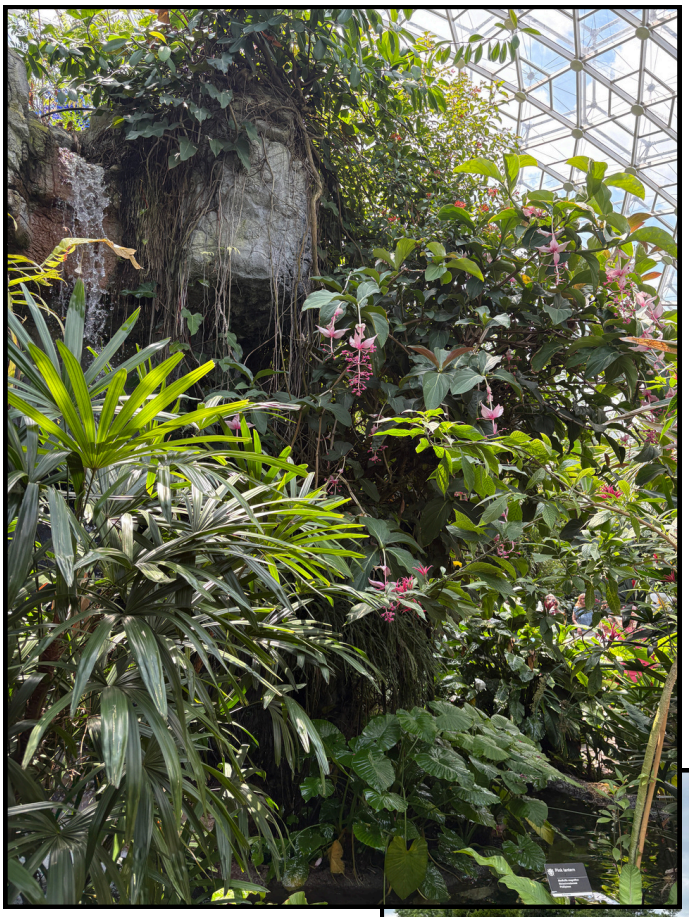
Spanning 79 acres, the garden features a remarkable diversity of landscapes and plant collections. Highlights include the Climatron, a geodesic-dome greenhouse that recreates a lowland tropical rainforest and was among the first of its kind when it was built in 1960. Visitors can also explore the serene Japanese Garden, one of the largest of its kind in North America, complete with koi ponds, arched bridges, and carefully manicured landscapes designed to evoke tranquility. Other notable areas include the English Woodland Garden, the Chinese Garden, and an extensive rose garden.

Beyond its aesthetic appeal, the Missouri Botanical Garden plays a significant role in global plant science. Its research division conducts biodiversity studies and conservation work in dozens of countries, and its herbarium houses millions of preserved plant specimens, making it one of the world's most important botanical research collections.

The garden also serves as a hub for education and community engagement, offering classes, seasonal events, and family-friendly programming. Popular annual events include the Japanese Festival, held Labor Day weekend, and the Garden Glow, a nighttime lights display during the holiday season.

Recognized as a National Historic Landmark, the Missouri Botanical Garden blends horticultural beauty with scientific mission, attracting visitors and researchers alike.

Continued on page 6



Missouri Botanical Garden
Continued from page 5

Photos, top left, clockwise: Tropical plants in Climatron, Shoenberg Arid House, English Woodland Garden, Japanese Garden water lilies.
Photos by
Candy Van Dam

ABCs of Gardening: N-R

Bonnie Lynch, Master Gardener

The following article is a reprinted series from 2008-2009.

N is for Node – The point on a stem where a leaf, bud, or branch is attached. Node cuttings are when you take a cutting of a stem right below a node. This is a better method of getting success than taking a cut just anywhere on the stem.

O is for Organic Matter – Any substance that was alive or part of a living thing.

P is for Propagation — Propagation includes various methods for establishing new plants, from starting seeds to growing identical clones from cuttings, layering, or division. A cutting uses a piece of plant, such as a leaf, stem, root, or bud, from a parent plant and that is inserted into a growing medium so it will form roots. Layering is a technique where a long, flexible stem of a woody plant is secured to the ground with soil, wire, etc., to encourage root development at the point of contact, while it remains attached to the parent plant, forming a new plant. Division is the splitting up of roots that have grown together (by digging, cutting, or pulling apart). Each divided section will have its own root system and one or more buds.

Q is for Quackgrass – One of the more difficult weeds to manage, quackgrass is a perennial that reproduces by seed and by underground rootstalks. To control, apply spot treatments with a glyphosate herbicide such as Roundup. It is essential for controlling quackgrass to kill the vegetative buds on the rootstocks.

R is for Runner – A slender creeping or trailing stem which produces small plantlets along its length wherever a leaf or bud comes in contact with soil. The new plant may be severed from the parent after it has developed sufficient roots. A strawberry plant is an example of a plant that develops runners.

Harvesting Flower Seeds

Candy Van Dam, Master Gardener

Now is the time to think about next year's blooms.

Most annual and perennial varieties go to seed in late summer. Collecting flower seeds during this time ensures dry pods, healthy seeds, and safe, long-term storage. Harvesting flower seeds is one of the easiest ways to save money and preserve your favorite blooms year after year.

Here's how to do it well.

Timing

The timing of the harvest is key to success: collect too early and the seeds are not mature; collect too late, and the seeds have fallen to the ground. For most flowers, this means letting the petals fall away completely, and the seed pod, husk, or head turn brown and papery. Collect seeds when the flower head is completely dry (brown and shriveled). A browning stem and flower head base also indicate seeds are ready for harvest.

Plant Selection

When selecting seeds to save, choose plants that are healthy and disease-free. If seed-saving is new to you, try saving zinnias, marigolds, sunflowers, cosmos, nasturtium, bachelor's buttons, and calendula. If harvesting hybrid flowers (crosses of two different varieties bred for color, size, or other favorable characteristics), the flowers grown from the collected seed will not be true to type (variation in color or size is common).

Continued on page 9

Harvesting Flower Seeds
Continued from page 8

Proper Harvesting
Harvest mature seedheads from the plant with sharp snips or pruners. To keep the plant tidy while encouraging it to continue flowering, cut seedhead stems off just above the next set of leaves. Seed heads can be stored in a paper bag for a few weeks to continue drying.
Once fully dry, separate seeds from chaff, pods, or fluff by rubbing them gently between your hands or through a fine screen.

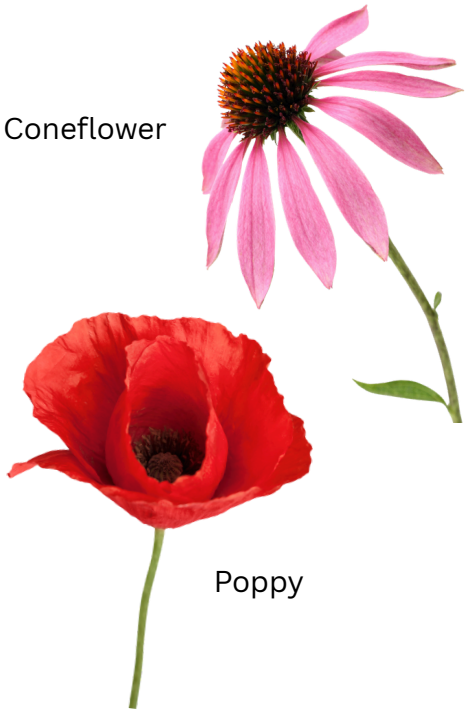
Cleaning & Storing
Place the harvested seeds in a labeled, paper envelope (never plastic, which traps moisture) or sealed glass jar to prevent moisture from gathering. Store them in a cool, dry place, away from direct light.

Here are a few flowers that can be harvested in late summer:
Marigolds (*Tagetes*) - Pull the dry flower heads apart until you find the black arrow-shaped tucked right at the base of the petals. Allow them to dry fully before you store them.

Zinnias (*Zinnia elegans*)- Wait for the petals to mature first and for the cone to turn dry and brown. After that, harvest as many seeds as you want. Each dried petal usually has a seed attached at the base.

Cosmos (*Cosmos bipinnatus*) - When cosmos flower heads fade and die, you'll find dry seeds sticking out of them even from a distance.

Coneflowers (*Echinacea purpurea*) - The brown center holds the seeds. To collect them, let the center heads completely dry first and pick the seeds with gloves because they can be a little sharp and prickly.



Poppies (*Papaver Spp.*) - Poppies are ready to harvest when you can hear the seed pods rattle. To collect the seeds, cut the pods and shake them upside down to collect all the seeds in a bag or container.

Black-Eyed Susans (*Rudbeckia hirta*) - Like coneflowers, Black-Eyed Susans have all their seeds concentrated in the central cone. Make sure the cone is fully dry, brown, and crisp, then rub it with your hands and collect the tiny seeds into a bag or container. (Note: If the cone is even a little soft, the seeds are likely not ready to collect.)

Next spring, your seeds should be ready to sow, carrying next year's garden forward at no extra cost.

https://extension.illinois.edu/blogs/flowers-fruits-and-frass/2023-09-01-cherish-favorite-flowers-and-challenge-your-green-thumb

A Likely Case of Poison Hemlock Poisoning

Debi Ulrey-Crosby, Master Gardener

According to Plato's Phaedo, poison hemlock (*Conium maculatum*) was the plant used to kill the philosopher Socrates. The hemlock was prepared and administered by an executioner. Socrates drank the elixir and was instructed to walk around until his legs felt heavy and then lie down until the poison reached his heart.

While cleaning out an area of my garden that tends to get ignored, I noticed a tall, rather delicate-looking plant that I know I didn't plant. It seemed to appear out of nowhere. I certainly don't remember seeing it last week, but there it is: nearly 7 ft. tall. A quick photo ID check and I realized this plant absolutely MUST go; and now! This plant turned out to be poison hemlock.

Hemlock was originally brought to the United States in the 1800s as an ornamental garden plant (not a great decision). It's native to Europe and North Africa and has been introduced to Asia, North America, and Australia.

This is not a plant you want growing in your garden. Poison hemlock is a biennial herbaceous plant that forms a long, fleshy white taproot, a basal rosette the first year, and clusters of flat, white umbel flowers in its second year. The hollow branching stem is typically spotted or streaked with red or purple toward the base and can grow up to 8 feet when flowering.

All parts of hemlock are poisonous and toxic to humans and all animals. It contains the toxin coniine, which paralyzes the nervous system. The classic progression starts with muscle weakness in the feet and legs, moves up the body, and eventually paralyzes the respiratory muscles, causing death while the victim remains conscious.

The related water hemlocks (*Cicuta species*) are similar in appearance and also dangerous. The plants can be distinguished by their venation: the leaflet veins of the poison hemlock terminate at the tips of the teeth, while those of water hemlocks end at the notches between the teeth. Both types of hemlocks produce large amounts of seeds.

The types of flowers of both hemlocks are common in the carrot family and are often mistaken for Queen Anne's Lace (*Daucus*

Continued on page 11

Poison hemlock	Wild carrot (Queen Anne's lace)
• Biennial	• Biennial
• Finely-divided, lacy leaves	• Finely-divided, lacy leaves
• Green stems and leaves lack hairs	• Fine hairs on leaves
• Hollow stems	• Solid green stems
• Exudes unpleasant odor when crushed	• Root smells like carrot
• 6-10 feet tall at maturity	• 1-2 feet tall at maturity
• Flowers June through August	• Flowers July through September
• White, delicate, "umbrella-like" flowers	• White, delicate, "umbrella-like" flowers

carota), a member of the wild carrot family. Be sure you know the difference between the wild carrot (Queen Anne's Lace) and poison hemlock.

If you find any poison hemlock in your yard or pasture, you should dig up plants, including the tap roots. Wear gloves, long sleeves, pants, socks, and shoes to protect your skin from the sap. Do not burn plants to prevent accidental inhalation. If mowing or weed whacking, you should also wear protective eyewear and a dust mask to prevent exposing your eyes and lungs to small particles.

1.Britannica
https://www.britannica.com/plant/poison-hemlock

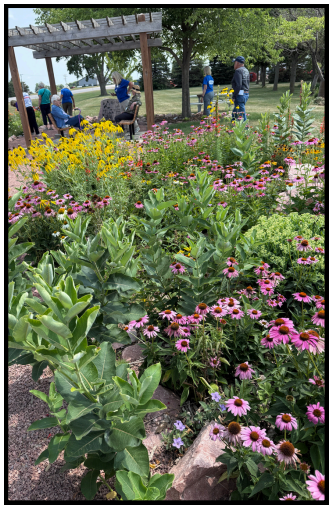
2. National Library of Medicine
https://pubmed.ncbi.nlm.nih.gov/38348840/ national Library of Medicine/

3. Poison Hemlock Identification & Control
https://www.canr.msu.edu/news/poison-hemlock-identification-and-control

4. University of Minnesota
https://extension.umn.edu/identify-invasive-species/poison-hemlock

A Day of Beautiful Gardens Close to Home

Cindy Jungman, Minnehaha Master Gardener



You don't have to travel far to find beautiful gardens!

On Wednesday, July 22, 24 Minnehaha Master Gardeners, along with 16 friends and family, enjoyed a delightful bus tour of inspiring gardens and landscapes, all located within a short drive of Sioux Falls. The day offered plenty of gardening ideas, beautiful scenery, and fellowship with fellow garden enthusiasts.

Tour Stops

🌿 **Sioux Falls**

·Terrace Park Japanese Gardens

🌿 **Valley Springs**

·Private garden showcasing flowers, vegetables, and native plantings

🌿 **Garretson Area**

·Private native prairie

·Native Plant Display Garden at the entrance to Devils Gulch Park

·Split Rock Park (lunch stop)

·Bucher Prairie Park

🌿 **Baltic Area**

·The Morton Center at the Hefty Seed site

·Baltic School & Community Gardens

🌿 **Dell Rapids**

·Red Rock Garden

·Rock Garden at Schwebach Realty

·Mother's Healing Garden

From peaceful Japanese gardens and colorful private landscapes to native prairies, community gardens, and unique rock gardens, the tour showcased the diversity and beauty of local gardening. It was a wonderful day of learning, inspiration, and friendship.