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# American dairy farms have been disappearing since '70s

## Milk price rules are a big reason why.

By ELIZABETH ECKELKAMP

University of Tennessee/The Conversation

Milton Orr looked across the rolling hills in northeast Tennessee. "I remember when we had over 1,000 dairy farms in this county. Now we have less than 40," Orr, an agriculture adviser for Greene County, Tennessee, told me with a tinge of sadness.

That was six years ago. Today, only 14 dairy farms remain in Greene County, and there are only 125 dairy farms in all of Tennessee. Across the country, the dairy industry is seeing the same trend: In 1970, over 648,000 U.S. dairy farms milked cattle. By 2022, only 24,470 dairy farms were in operation.

While the number of dairy farms has fallen, the average herd size – the number of cows per farm – has been rising. Today, more than 60% of all milk production occurs on farms with more than 2,500 cows.

This massive consolidation in dairy farming has an impact on rural communities. It also makes it more difficult for consumers to know where their food comes from and how it's produced.

As a dairy specialist at the University of Tennessee, I'm constantly asked: Why are dairies going out of business? Well, like our friends' Facebook relationship status, it's complicated.

### The problem with pricing

The biggest complication is how dairy farmers are paid for the products they produce.

In 1937, the Federal Milk Marketing Orders, or FMMO, were established under the Agricultural Marketing Agreement Act. The purpose of these orders was to set a monthly, uniform minimum price for milk based on its end use and to ensure

that farmers were paid accurately and in a timely manner.

Farmers were paid based on how the milk they harvested was used, and that's still how it works today.

Does it become bottled milk? That's Class 1 price. Yogurt? Class 2 price. Cheddar cheese? Class 3 price. Butter or powdered dry milk? Class 4. Traditionally, Class 1 receives the highest price.

There are 11 FMMOs that divide up the country. The Florida, Southeast and Appalachian FMMOs focus heavily on Class 1, or bottled, milk. The other FMMOs, such as Upper Midwest and Pacific Northwest, have more manufactured products such as cheese and butter.

For the past several decades, farmers have generally received the minimum price. Improvements in milk quality, milk production, transportation, refrigeration and processing all led to greater quantities of milk, greater shelf life and greater access to products across the U.S. Growing supply reduced competition among processing

plants and reduced overall prices.

Along with these improvements in production came increased costs of production, such as cattle feed, farm labor, veterinary care, fuel and equipment costs.

Researchers at the University of Tennessee in 2022 compared the price received for milk across regions against the primary costs of production: feed and labor. The results show why farms are struggling.

From 2005 to 2020, milk sales income per 100 pounds of milk produced ranged from \$11.54 to \$29.80, with an average price of \$18.57. For that same period, the total costs to produce 100 pounds of milk ranged from \$11.27 to \$43.88, with an average cost of \$25.80.

On average, that meant a single cow that produced 24,000 pounds of milk brought in about \$4,457. Yet, it cost \$6,192 to produce that milk, meaning a loss for the dairy farmer.

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# MILK: Young farmers persist but at much lower rates

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More efficient farms are able to reduce their costs of production by improving cow health, reproductive performance and feed-to-milk conversion ratios. Larger farms or groups of farmers — cooperatives such as Dairy Farmers of America — may also be able to take advantage of forward contracting on grain and future milk prices. Investments in precision technologies such as robotic milking systems, rotary parlors and wearable health and reproductive technologies can help reduce labor costs across farms.

Regardless of size, surviving in the dairy industry takes passion, dedication and careful business management.

Some regions have had greater losses than others, which largely ties back to how farmers are paid, meaning the classes of milk, and the rising costs of production in their area. There are some insurance and hedging programs that can help farmers offset high costs of production or unexpected drops in price. If farmers take advantage of them, data shows they can function as a safety net, but they don't fix the underlying problem of costs exceeding income.

## Passing the torch to future farmers

Why do some dairy farmers still persist, despite low milk prices and high costs of production?

For many farmers, the answer is because it is a family business and a part of their heritage. Ninety-seven percent of U.S. dairy farms are family owned and



Courtesy photo

A great way to boost your local dairies is to buy directly from a farmer. Value-added or farmstead dairy operations that make and sell milk and products such as cheese straight to customers have been growing.

operated.

Some have grown large to survive. For many others, transitioning to the next generation is a major hurdle.

The average age of all farmers in the 2022 Census of Agriculture was 58.1. Only 9% were considered "young farmers," age 34 or younger. These trends are also reflected in the dairy world. Yet, only 53% of all producers said they were actively engaged in estate or succession planning, meaning

they had at least identified a successor.

## How to help family dairy farms thrive

In theory, buying more dairy would drive up the market value of those products and influence the price producers receive for their milk. Society has actually done that. Dairy consumption has never been higher. But the way people consume

dairy has changed.

Americans eat a lot, and I mean a lot, of cheese. We also consume a good amount of ice cream, yogurt and butter, but not as much milk as we used to.


Does this mean the U.S. should change the way milk is priced? Maybe.

The FMMO is currently undergoing reform, which may help stem the tide of dairy farmers exiting.


The reform focuses on being more reflective of modern cows' ability to produce greater fat and protein amounts; updating the cost support processors receive for cheese, butter, nonfat dry milk and dried whey; and updating the way Class 1 is valued, among other changes. In theory, these changes would put milk pricing in line with the cost of production across the country.


The U.S. Department of Agriculture is also providing support for four Dairy Business Innovation Initiatives to help dairy farmers find ways to keep their operations going for future generations through grants, research support and technical assistance.

Another way to boost local dairies is to buy directly from a farmer. Value-added or farmstead dairy operations that make and sell milk and products such as cheese straight to customers have been growing. These operations come with financial risks for the farmer, however. Being responsible for milking, processing and marketing your milk takes the already big job of milk production and adds two more jobs on top of it. And customers have to be financially able to pay a higher price for the product and be willing to travel to get it.



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Courtesy photo

Genetically modified plants like this purple tomato are moving from fields into people's homes, as both feed and decoration.

Opposite page: A rose with no thorns is one of the more popular GMO garden options.



# Plants get a new GMO glow, even at home

**JAMES W. SATTERLEE**  
Cold Spring Harbor Laboratory/The Conversation

As any avid gardener will tell you, plants with sharp thorns and prickles can leave you looking like you've had a run-in with an angry cat. Wouldn't it be nice to rid plants of their prickles entirely but keep the tasty fruits and beautiful flowers?

I'm a geneticist who, along with my colleagues, recently discovered the gene that accounts for prickliness across a variety of plants, including roses, eggplants and even some species of grasses. Genetically tailored, smooth-stemmed plants may eventually arrive at a garden center near you.

Plants and other organisms evolve naturally over time. When random chang-

es to their DNA, called mutations, enhance survival, they get passed on to offspring. For thousands of years, plant breeders have taken advantage of these variations to create high-yielding crop varieties.

In 1983, the first genetically modified organisms, or GMOs, appeared in agriculture. Golden rice, engineered to combat vitamin A deficiency, and pest-resistant corn are just a couple of examples of how genetic modification has been used to enhance crop plants.

Two recent developments have changed the landscape further. The advent of gene editing using a technique known as CRISPR has made it possible to modify plant traits more easily and quickly. If the genome of an organism were a book, CRISPR-based gene editing is akin to adding or removing a sentence here

or there.

This tool, combined with the increasing ease with which scientists can sequence an organism's complete collection of DNA — or genome — is rapidly accelerating the ability to predictably engineer an organism's traits.

By identifying a key gene that controls prickles in eggplants, our team was able to use gene editing to mutate the same gene in other prickly species, yielding smooth, prickle-free plants. In addition to eggplants, we got rid of prickles in a desert-adapted wild plant species with edible raisin-like fruits.

We also used a virus to silence the expression of a closely related gene in roses, yielding a rose without thorns.

In natural settings, prickles defend plants against grazing herbivores. But

under cultivation, edited plants would be easier to handle — and after harvest, fruit damage would be reduced. It's worth noting that prickle-free plants still retain other defenses, such as their chemical-laden epidermal hairs called trichomes that deter insect pests.

## Glowing petunias to purple tomatoes

Today, DNA modification technologies are no longer confined to large-scale agribusiness — they are becoming available directly to consumers.

One approach is to mutate certain genes, like we did with our prickle-free plants. For example, scientists have creat-

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# GMO: New rose plants will grow without thorns

Continued from page 4

ed a mild-tasting but nutrient-dense mustard green by inactivating the genes responsible for bitterness. Silencing the genes that delay flowering in tomatoes has resulted in compact plants well suited to urban agriculture.

Another modification approach is to permanently transfer genes from one species to another, using recombinant DNA technology to yield what scientists call a transgenic organism.

At a recent party, I found myself crowded into a darkened bathroom to observe the faint glow of the host's newly acquired firefly petunia, which contains the genes responsible for the ghost ear mushroom's bioluminescent glow.

Scientists have also modified a pothos houseplant with a gene from rabbits, which allows it to host air-filtering microbes that promote the breakdown of harmful volatile organic compounds, or VOCs.

Consumers can also grow the purple tomato, genetically engineered to contain

pigment-producing genes from the snapdragon plant, resulting in antioxidant-rich tomatoes with a dark purple hue.

## Risks and rewards

The introduction of genetically modified plants into the consumer market brings with it both exciting opportunities and potential challenges.

With genetically edited plants in the hands of the public, there could be less oversight over what people do with them. For instance, there is a risk of environmental release, which could have unforeseen ecological consequences.

Additionally, as the market for these plants expands, the quality of products may become more variable, necessitating new or more vigilant consumer protection laws. Companies could also apply patent rules limiting seed reuse, echoing some of the issues seen in the agricultural sector.

The future of plant genetic technology is bright — in some cases, quite literally. Bioluminescent golf courses, house-



plants that emit tailored fragrances or flowers capable of changing their color in response to spray-based treatments are all theoretical possibilities. But as with any

powerful technology, careful regulation and oversight will be crucial to ensuring these innovations benefit consumers while minimizing potential risks.



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# Tips to stay safe using your chainsaw

Before using a chainsaw, you should know how to choose a model suited to your sawing needs, understand and utilize the appropriate chainsaw personal protection equipment, how to carry and refuel the saw safely, and what steps to take to respond to a chainsaw injury if it occurs. These are recommendations made by Dan Neenan, National Education Center for Agricultural Safety in Peosta, Iowa. Being informed about the necessary chainsaw precautions and respecting the equipment's power helps avoid tragic chainsaw accidents, which the Center for Disease Control reports number around 36,000 individuals each year.

"There are multiple chainsaw brands available, and in choosing one, look at its safety features," Neenan says. "Of course, you need to look at the performance side of the saw and the person who will use it. But look for one with features such as marked on/off settings, a chain brake, and a safety throttle."

A chain catcher, spark arrestor, vibration reduction system, trigger and throttle interlock, right-hand guard, muffler, centrifugal clutch, and bumper spikes to help reduce rotational kickback or push-pull reactive forces are all valuable safety features.

Chainsaws typically operate on 2-cycle engines, which differ in numerous ways from 4-cycle engines. Gas for the saw can be mixed or purchased pre-mixed. A chainsaw requires high-quality gasoline with a minimum octane rating of 89 and 2-cycle oil specially designed for chainsaws — a clean container for fuel and measuring tools. The gas should be ethanol-free to prevent damage to the engine. Follow manufacturer guidelines regarding the gas/oil ratio.

"Never add gas to a hot saw," Neenan says. "If you run out of gas while you're working, that's a good time to take a break, give the engine time to cool off, and come back to refuel."

Adding fuel to a hot chainsaw could result in the combustion of gas vapors that come into contact with the saw muffler. Mixing gas is less costly than purchasing a pre-mixed product. However, the



gas mixture has a short shelf life, and if the saw isn't used frequently, it may deteriorate.

Proper PPE includes head protection, eye protection, gloves, chainsaw chaps or pants, and boots. In selecting head protection, it's vital to have hearing protection.

A chainsaw noise is 110 decibels. Acceptable noise levels are below 85 decibels. Operating a chainsaw for an extended time without hearing protection will cause damage.

Safety glasses that wrap around the face will protect your eyes. The glasses must be impact-resistant and should be comfortable to wear. Chainsaw gloves offer excellent protection and are available with a great fit. Features include anti-vibration, water resistance or water-

proof, certified cut protection, and flexible fit.

Chainsaw pants and chaps are designed to keep a chainsaw blade from cutting into the legs. If the blade comes into contact with the operator's leg, the pants/chaps material will wrap around the blade and stop it before it can cause damage. Protective boots will be puncture and water-resistant. Some brands are designed to comply with OSHA (standards).

## Tips for safe cutting:

1. Secure your footing by placing one foot in front of the other for a balanced standing position.
2. Never cut directly over your head or between your legs.

3. Beware of and avoid distractions, keeping your eyes on the saw action.

4. Be prepared for an unexpected kickback.

5. Don't cut with the blade tip because it may lead to kickback.

Keeping a Stop the Bleed kit on site could save a life. Kits are available at sites such as [www.bleedingkits.org](http://www.bleedingkits.org) and include a variety of supplies related to various levels of injury.

"These kits provide an adjustable tourniquet that stops heavy bleeding without damaging healthy tissue at the wound site," Neenan says. "A chainsaw injury could result in a serious bleeding injury. Keep a kit on hand and know how to use it.

They are well worth the investment."

# Farworker advocates urge ban on herbicide

By **ARIANA FIGUEROA**  
States Newsroom

WASHINGTON — Public health advocates and farmworkers called for a federal ban on a toxic herbicide they say led to their Parkinson's disease during a Tuesday briefing for congressional staffers.

The U.S. Environmental Protection Agency will determine next year if the herbicide, paraquat dichloride, should have its license renewed for another 15 years. The herbicide is used for controlling weeds in agriculture settings. It's currently banned in more than 70 countries and has several serious health conditions it's linked to, such as cancer and increases the likelihood of developing Parkinson's disease.

Nora Jackson, a former farmworker of Indiana, said that her cousin, whose job it was to spray paraquat on farms, developed Parkinson's at 55 years old. Signs of Parkinson's usually appear around 60 years old.

"Farmworkers often have to do extreme-

ly risky jobs ... but it doesn't have to be that way," Jackson said. "It is possible to have an agriculture system that does not depend so heavily on paraquat and it does not have to be a pesticide that puts so many people's lives at risk."

The disease has drastically affected his life, Jackson added.

"He now relies heavily on medication and uses a walking stick to be able to walk every day," she said.

The briefing on the health risks of paraquat was hosted by the Michael J. Fox Foundation for Parkinson's Research, Alianza Nacional de Campesinas, which is an alliance for farmworker women, and the Environmental Working Group, a nonprofit that produces research and advocates for public health.

The Michael J. Fox Foundation for Parkinson's Research was established by the actor who starred in blockbusters Back to the Future, Doc Hollywood and Teen Wolf. Fox was diagnosed with early onset Parkinson's at the age of 29.

## Ban necessary

The EPA has until Jan. 17 to make a decision on paraquat's future availability.

Advocates at Tuesday's event called for the agency to deny paraquat's license renewal, saying other regulations to reduce exposure to the herbicide have come up short.

"Keep in mind that people have been using this chemical as directed, and are still developing Parkinson's disease," Scott Faber, Environmental Working Group's senior vice president of government affairs, said. "So putting more restrictions on how it's used, when it's used, what equipment you use, and so on, is not the answer."

Parkinson's disease affects the nervous system and causes unintended shakiness, trouble with balance and stiffness. There is no cure.

The California Legislature is moving to ban the herbicide.

David Jilbert, of Valley City, Ohio, a former farmworker with a background in engineering, was diagnosed with

Parkinson's in 2021.

"As a longtime environmental engineer, I understood the importance of personal protection equipment, and I particularly followed all safety protocols," he said.

He sold his vineyard in 2019 because he wasn't feeling well and his hands were beginning to move slowly.

"My diagnosis changed everything, affecting every aspect of my life, from physical capabilities to emotional well-being, financial stability," he said. "There is no cure for Parkinson's. It is degenerative and it will only get worse, not better."

Charlene Tenbrink of Winters, California, was diagnosed with Parkinson's in 2020. She worked on her family farm from 1993 to 2000 where she would mix, load and spray paraquat.

Tenbrink said she felt let down by the federal government because she was unaware of the health risks that paraquat could pose.

"We've been trying to change this for a long time," she said.

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# Resources for youth mental health in ag

In a 2024 study of agricultural youth (Rudolphi JM, Berg RL. Stress, Mental Health, and Risk-Taking: Associations among a Sample of Agricultural Adolescents. *Int J Environ Res Public Health*. 2024 Jun), it was found that about 70% of the youth surveyed had at least mild symptoms of depression, while 63% had anxiety symptoms.

AgriSafe Total Farmer Health Director, AgriSafe Network, Tara Haskins, says youth who live on a farm, surrounded by and sometimes participating in the work are often impacted by the pressures common to the agricultural industry.

"They may see (agriculture) as a future profession or occupation for themselves," Haskins says. "(At this age), they are very vulnerable to those (stress) factors that create crisis, anxiety, and stress. Many

factors are beyond a farmer's control — weather, markets, gas prices, fertilizer prices, and zoonotic disease that may impact an entire herd. All these things sometimes create a more severe layer of anxiety and stress, which may lead to suicide."

Through AgriSafe, Haskins and her colleagues are offering an online webinar and related resources, "Invest In Your Health: Cultivating a Healthy Mind," designed to give adults who work with youth options for conversing with youth that they believe may be at risk for mental health issues or suicide.

"The American Farm Bureau conducted a 2019 survey to obtain impressions of how important mental health was to adults in rural communities and those working in agriculture," Haskins says.

"Survey results indicated that 91% of those surveyed said mental health was very important to them and their families."

In addition to Haskins' webinar, resources include webinar presentation slides, "Invest in Your Health: Cultivating a Health Mind Guidebook," presentation slides to use for presentations to students/youth, and a video of FFA student Carson Rudd helping to raise awareness for mental health.

"We are not training (anyone) to be a professional counselor or mental health professional," Haskins says. "If you are a sponsor for a group in this age range, an ag teacher or science teacher, or involved in a youth organization like Boys and Girls Club, this information can help start a conversation. It's not going to tell you everything there is to know about mental

illness or mental health. It's a comprehensive, general presentation done in a way to help start conversations with students."

Haskins explains that scientists know the human brain is not fully mature until early adulthood, when an individual reaches their 20s.

"That's particularly true of the part of the brain that sits right behind your forehead, the prefrontal cortex," she says. "That part of our brain helps make good decisions based on information we have. We call it the judge. It alerts us to an activity that may be risky or cause us to be injured."

Haskins noted that one of her former mentors used the mantra, "Keep them alive till they're 25," because it takes about



# Group launches site to connect farmers to consumers

South Dakota Searchlight

A farmer- and rancher-led organization committed to promoting soil health recently launched a new online platform to help local food producers and consumers connect.

The South Dakota Soil Health Coalition's Fresh Connect website provides an interface to bridge the gap between farm-fresh goods and local demand.

Through the platform, producers can create free accounts to list available products on an interactive map, allowing consumers and restaurants to search for fresh local meat and produce by location and product type.

"The detailed farm profile allows us

to showcase our unique growing practices and the quality of our offerings," said Chris Goldade, who owns and operates Flat Rock Farms near Westport. "By using Fresh Connect, we can introduce new, exciting products to our local residents and support a thriving local food economy."

The website is also designed to benefit small-scale and urban farmers, offering access to educational resources and opportunities for improving soil health, drought resilience and farm sustainability.

The South Dakota Fresh Connect website is made possible with financial assistance from the U.S. Department of Agriculture's Natural Resources Conservation Service.



# HEALTH: Aims to instill coping skills at younger age

Continued from page 8

25 years before all the elements of the brain come together in the best way possible to make good decisions.

"We need to keep in mind that during that time when the brain is forming and developing, it's a very vulnerable time for adolescents," she says. "That's why substance injury or exposure to trauma can have profound and long-lasting effects."

This material provides coping skills youth can implement, such as healthy sleep patterns, diets and relationships.

"Many students at this age are exploring friendships and maybe romantic relationships, and some relationships may not

be positive," Haskins says.

The guidebook, used in presentations to youth, addresses mental health stigma, empathy mapping, mindful mapping and cognitive distortion. Scientists know that teens assume that people can read their thoughts and expect they can predict future events — such as making mistakes or being bullied. They also tend to catastrophize and see events or experiences as unbearable. They attribute blame to themselves or project negative feelings onto others.

"We want to talk about the protection of the brain and wearing helmets for ATV safety, which we know youth frequently use on the farm," she says. "Driving

safely from point A to point B. Youth in this age group, ages 12 to 20, are trying to work through questions such as Who am I? What is my identity going to be? What groups or clubs will I join? Will I be an athlete or play in the band? If they're feeling peer pressure, and there's someone they look up to that they can talk to, they can find out how to resolve that situation."

Haskins notes that a better understanding of maturing can help adults respond to issues youth face.

"I'm not saying we should tolerate poor behavior," she says. "But it's certainly expected to see mood swings in this group, anxiety about physical changes, concerns about their appearance.

"These materials aren't specifically about suicide training," Haskins adds. "It is about mental health and how to be available for students. I think it's important to talk about healthy coping mechanisms and planting positive seeds for strong relationships on the farm and out in the community. We want to do everything we can to give that brain its best opportunity to develop fully."

Find the webinar and materials for this presentation at [www.agrisafe.org](http://www.agrisafe.org) under the Learning Lab and Webinar links.

*Funding for this educational article comes from the Central States Center for Agricultural Safety and Health and the University of Nebraska Medical Center.*



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# Easier ways to preserve garden harvest

Associated Press

If you're lucky, you'll find yourself with more homegrown food at the end of the season than you can consume before it spoils. Rather than waste your hard-earned bounty, it's time to think about preserving your harvest — and carefully consider safety.

Many folks successfully cook fruits, vegetables and sauces and “can” or process them for shelf-stable storage, and my hat's off to them. I play it safe (and easy) by freezing and drying herbs and produce rather than canning, which, if not done properly with specialized equipment and specific recipes, can result in food-borne illnesses.

One year, after an excruciatingly hot September day spent outdoors washing, cutting, cooking, straining and processing jars of tomato sauce with my family, they nearly kicked me out. Sure, it was all fun and games for the first hour or two, but as the day progressed, I nearly had a mutiny on my hands. To make matters worse, I used a very deep pot over too-high heat and burned the whole batch. I envy those who have mastered the process.

## Easy ways to preserve tomatoes

These days, I boil whole tomatoes for just a minute or two, remove them from the pot with a slotted spoon and allow them to cool for a few minutes before removing their skins with my fingers. After cutting them into wedges, I pulse them in a food processor, then cook them on the stovetop for 30 minutes and salt to taste. When the sauce has cooled, I pour it into airtight, zipper-top freezer bags, Mason jars or plastic containers, allowing an inch of head-space for expansion.

If I have plans to use the sauce for pasta, I'll add fresh basil and garlic cloves to the container so that it's ready to go when I am. If I'm uncertain of the sauce's fate, I'll freeze it plain and season it as needed.

Another way I keep tomatoes is by freezing them whole, and it couldn't be easier: I rinse each fruit, pat it dry and place as many as will fit into a gallon-size, zipper-top freezer bag. Freezing them whole not only preserves their flavor and



Associated Press

All crops, like these parsley leaves in a bowl of water, should be rinsed thoroughly before preserving, whether they will be canned, frozen or dried.

texture but also makes it convenient to use them in soups, stews or other recipes. When I want to add tomatoes to a dish, I grab one from the bag, peel off its skin, which removes easily, then drop the tomato in the pot and break it up with a spoon as it defrosts.

## Herbs are even easier

Although they can be dried, my preferred method for preserving chives and flat-leaved herbs, like basil, parsley and cilantro, is to freeze them, either as whole leaves or chopped in oil infusions (directions below).

For the best flavor, harvest herbs in the morning, after the sun has risen but before the dew has dried. This is the time of day when their essential oils are most concentrated.

To freeze leaves for individual use, remove them from stems, rinse and pat dry, then spread on clean towels in a single layer until all the residual rinsing moisture has evaporated. Toss occasionally to ensure even drying. This may take a couple of days. Next, place leaves in a

single layer on a cookie sheet and freeze overnight. Place frozen leaves in a zipper-top plastic bag and return to the freezer for future use. This method allows you to remove individual leaves as needed; skipping the evaporation step would result in a frozen block that would be difficult to break.

## Other ways to preserve herbs

To make oil infusions, remove leaves from stems, then rinse and pat dry with a clean towel or paper towel. Cut leaves into quarter-inch pieces using herb snippers (or clean, sharp scissors). Fill the compartments of a 1- or 2-ounce silicone freezer tray, such as the ones made by Souper Cubes, halfway with herb clippings, and fill the remainder of each compartment with the oil of your choice. Freeze overnight, then carefully pop individual cubes from the tray and store them in a zipper-top bag in the freezer.

Herbs can also be dried to keep them at room temperature. This is my preferred method for those with small, textured or needled leaves, such as thyme, sage, orega-

no and rosemary.

Rinse, remove from stems and set out in a single layer on clean towels to dry. Because the goal here is to dehydrate the leaves rather than allow only excess moisture to evaporate from around and between them, the process will take considerably longer. Toss leaves daily. When they become crunchy, add them to clean jars or other sealable containers and store them as you would dry herbs from the store.

## No-work pickles

And if you want to get really easy, try my no-effort refrigerator pickles. Most refrigerator pickles, which are shortcuts in their own right, require boiling a brine made from vinegar, spices, sugar and salt, and pouring it over sliced cucumbers in a jar, then refrigerating.

I skip all that and simply add my own sliced cucumbers to the brine that's already in an empty jar of pickles. They're delicious after 24 hours in the fridge and even better after 48 hours. You can get two batches out of that pickle juice. Why let it go to waste?

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# DIGGING DEEP

THE SECRETS OF SOIL

SOUTH DAKOTA  
*Agricultural Heritage*  
MUSEUM



SOUTH DAKOTA STATE UNIVERSITY

977 11TH STREET  
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PHONE: 605-688-6226  
WWW.AGMUSEUM.COM

Opening Reception

October 9

4:30 P.M. - 7:00 P.M.



5:30 P.M.

Eli Halvorson presents "The Hutton Project:  
How 100 years of Cultivation has Changed Soil in South Dakota".

October 9-11

**Museum Store Yarn Sale**

Local and Regional yarn

**20% off**

October 19

**Fall Family Festival**

**10 AM - 1 PM**

Stop by the SD Agricultural Heritage Museum and SD Art Museum for our third annual FREE Fall Family Festival! Both museums will have activities and kids of all ages are welcome to put on their costumes a few weeks early to trick-or-treat for candy at both sites. Find the most up to date information at [AgMuseum.com](http://AgMuseum.com)!

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November 21-23

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\*SD Agricultural Heritage Museum

December 3

**South Dakota Day of Giving**

Support the Agricultural Heritage Museum for the 2024 South Dakota Day of Giving. For more information on South Dakota Day of Giving, visit [www.southdakotagives.org](http://www.southdakotagives.org).

December 14

**Holiday Market at the Museum**  
**9 AM - 1 PM**

Join the museum and the Brookings Farmers Market for our fifth annual Holiday Market at the Museum! Browse booths filled with your favorite farmers market vendors and stop by the museum store to cross some holiday shopping off your list!