

The magazine of modern homesteading

COUNTRYSIDE

& Small Stock Journal

Volume 104 • Number 5
SEPTEMBER/OCTOBER 2020

PREPAREDNESS ON THE HOMESTEAD

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I AM COUNTRYSIDE

FEATURING SCARLETT SALAMONE

MORE THAN 10 YEARS AGO, you would have found me all dressed up, reading stories, and singing silly songs with five-year-olds in my inner-city classroom. My heart filled as I raised my own children, invested in my students along with their families and the surrounding community. I was looking to make a change for those getting overlooked and knew I was headed in the right direction. It was at the peak of my teaching career, just transitioning to administration for special education, when my body gave out. Numerous appointments led to a diagnosis of lupus, which opened the door to: gastroparesis, Hashimotos, fibromyalgia, and a collection of unpleasant accompaniments, which ultimately closed the door to my teaching and administration career.

As one can imagine, I went through every range of emotion a being could feel. What I thought to be my purpose in this world, beyond being a mama, was gone. I floundered around until one day I got the heart nudge to bring goats to our property. We already had chickens, so why not? After researching, I discovered the benefits of goat milk, more specifically raw consumption, and how it could perhaps change the tide in my body when modern medications were leaving me comatose.

Goats were brought to the farm and I eagerly awaited our first milk season which came just in time to keep me from having a feeding tube placed. And with a goat on my shoulder, our farm journey began. Since then, we've added heritage and dairy



sheep, along with Jersey cows and Muscovy ducks, creating a diverse group of group of livestock, rotationally grazed and holistically raised.

We believe that food heals and I'm a chronically ill testimony to this. I know this healing only comes through meat, eggs, and dairy raised in the sunshine, sucking fresh air as they were created to do.

Our passion is to invite people to experience the farm, see how their food is raised, see how the dairy girls are treated who contribute milk to their body products, answer questions, share simple ways to ditch all the yuck in products that have taken over our households, and get back to simple, clean living. We are working toward offering more on farm events/kid camps to help people, especially underserved children, get back to the land, connect with animals, learn, and of course spread a bit of love in the process because all are welcome at our table.



Follow Scarlett Salamone at Instagram: [@lovelandacresfarm](https://www.instagram.com/lovelandacresfarm)

- 1 | Mama Crazy Eyes and her ducklings.
- 2 | Sweet Clementine at sunset.

Previous Page | For the love of goats, y'all.



Chicks hatched from our Chickens & Littles program.



- 1 | Jersey bull calves are raised for veal and beef.
- 2 | We have a diverse offering of products.
- 3 | Meat peeps are raised each fall and butchered on farm by me.
- 4 | Always chasing rainbows.
- 5 | The chickens are always a kid favorite.
- 6 | Elated for all that comes from our dairy sheep.
- 7 | The farmgirl bringing in goat kids.

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EDITORIAL

Ann Tom, Editor

editor@countrySIDEMAG.COM

Steph Merkle, Content Director

smerkle@countrySIDEMAG.COM

Samantha Ingersoll, Marissa Ames

Editorial Assistants

Traci Laurie

Publication Designer

ADVERTISING

Alicia Soper, Advertising Director

asoper@countrySIDEMAG.COM

(715) 829-7330

Kelly Weiler

kweiler@countrySIDEMAG.COM

(715) 965-1234

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CountrySide

P.O. Box 566, Medford, WI 54451

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Our Philosophy

At *CountrySide*, our purpose is to inspire self-reliant living on any level.

We acknowledge that the path to self-sufficiency is as unique as the person who accepts the journey.

We strive to strengthen the homesteading movement by sharing the diverse voices and knowledge of today's practitioners.

We teach our readers how to grow and raise their own food; build, fix, and craft with their own two hands; and walk as gently on this planet as possible.

Contact Us

PHONE: (970) 392-4419

ADDRESS: P.O. Box 566, Medford, WI 54451

ADVERTISING OFFICE: advertising@countrySIDEMAG.COM

EDITORIAL OFFICE: editor@countrySIDEMAG.COM

CUSTOMER SERVICE/BOOK ORDERS:
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FROM THE EDITOR

I HOPE EVERYONE HAS HAD A SAFE, productive, and enjoyable summer. As we shift gears soon into autumn, there is a lot of work to be done with harvesting crops and getting things tucked away for winter.

With September being National Preparedness Month, I've included some articles in this issue to help with your preparation.

Paisley Hansen, Marissa Ames, and Maat van Uiterter share several tips you may or may not have thought of when preparing your homestead and livestock for an emergency.

Being self-reliant goes hand-in-hand with being prepared. With recent food shortages and price hikes on meat, Ron Messina discusses hunting for your meat and how to get started in doing so.

If you had a successful season growing cabbage, Rebecca Sanderson is going to save the day by sharing her knowledge and a recipe for fermenting sauerkraut.

Are you interested in making your own soap? Melanie Teegarden has a great recipe for a lotion bar that will leave your skin feeling soft for hours. It's a simple project to enjoy with kids and makes a great gift!

As the garden starts to wind down, don't let those precious pea seeds go to waste! You'll wish you had them next spring. TJ King explains why pea seeds

are a gift to save and shares her technique for saving them. And if you find you have too many, you can always share with friends, family, and neighbors.

Got pigs? Are you looking for an easy-to-build shelter for them? Jodi Cronauer has an A-frame shelter plan that will help keep them cool in the summer and warm and dry in the winter. They are big enough to house several at a time ... the piglets too!

There's so much more for you to relish in this issue of *Countryside*.

Looking into next year, Janet Garman will be writing a series called "Farming After Retirement." Although she's got several topics she will cover, she's open to any areas of retirement farming that you may be concerned with or want to learn about. You may send your ideas on retirement farming or any other ideas, stories, pictures, etc. to me at the address below.



Ann Tom
Editor, *Countryside*

HAVE AN IDEA OR STORY TO SHARE, A QUESTION TO ASK, PERHAPS AN ANSWER TO A QUESTION? WE WANT TO HEAR FROM YOU!

Countryside Editor Letter
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Medford, WI 54451
Or email: editor@countrysidemag.com



Country Conversation & Feedback

Contact us at: P.O. Box 566, Medford, WI 54451; editor@countysidemag.com

In Response to *Countryside*: July/August 2020 Issue

There are many wonderful ideas in this issue. “A Guide to the Best Survival Foods” mentioned white rice keeping qualities. At age 69, I discovered parboiled rice. Brown rice is steamed under pressure, then dried and milled. The nutrition is driven into the white. I don't remember the exact values, but whereas white rice has a glycemic index of 88 or so, parboiled rice has about 28. Feel free to research parboiled rice on your own.

Also, please try out your to-be-stored foods. Nothing is quite as dismaying as discovering you detest a certain food that you've stocked in humongous quantities. (Like the AT thru hikers discovering that two days of oatmeal was quite enough — when they had laid in four months' worth.) Consider a rotation of instant cereals; one day have oatmeal, then Wheatena, Cream of Rice, grits, Cream of Wheat, then dry hominy soaked overnight and cooked. Then two days of Pop Tarts — everyone will feel better before facing the cereal rotation again.

Also, I have read many times of the value of cinnamon. It can boost your mood and anecdotally can lower blood pressure or assist with blood sugar control.

Ghee is useful in many instances. Basically, clarified butter, it supposedly doesn't need refrigeration after opening.

“The Best Meat Preservation Methods” mentions keeping animals alive until meat is needed. Besides the obvious rabbits and chicken, cavy and quail are small, need less food, and are ready to produce eggs and offspring at much younger ages.

If you want to investigate a new homestead rabbit

breed, there's the Brazilian rabbits. The males are very benign and love cuddling in heaps with other rabbits. Their ears are thickly furred to protect from mosquitoes and ticks. Now all this is just what I have read, so please research on your own.

Fish can also be grown in containers as small as 18-gallon tubs. Tilapia or catfish grow quickly. I think I read of someone positioning a light close to the surface of the water to attract insects — high protein for just the cost of lighting. Maybe solar powered?

Growing a victory garden is excellent. The best way to learn is by doing. I also encourage you to consider perennials. Plant once, harvest for years. Everyone knows rhubarb and asparagus, but there are many others such as skirret, salsify, ramps, and walking onions. Research what will grow in your climate — your microclimate.

I'm officially in hardiness zone 9B and one of my acquaintances is 8A, about seven miles away. She said she couldn't grow citrus, but kumquats are hardy to about 25 degrees F. Some of my sweet potato vines are more than 10 years old.

I have been reading *Countryside* for decades. I was part of the original *Countryside* forum on Lusenet back in the 1990s. I'm so very happy to see young people on board with the *Countryside* philosophy. Learning, doing, and reaching out to others. It leaves me with hope for the future. Signed, me — Grandmother Bear.

The only thing more terrifying than a mother bear in defense of her cubs is an old grandmother bear in defense of her grandcubs.

— Mitzi Agnew Giles, Florida

In Response to “A Guide to the Best Survival Foods” (July/Aug 2020)

As a professional home economist, I found your information to be very correct and very well-written. Thank you for helping others.

A couple of things I have found is that commercial cereals keep well in the freezer and foods that are vacuumed sealed and wrapped in freezer paper keep the best and longest in the freezer. If some items are freezer burned, cut the burned part off to save the food item. Use it in a dish that has other flavors that are strong and will mask slight freezer burn. Nutritional value should still be there.

— Linda Williamson

Countryside: Then and Now

My name is Marjorie Williams. I recently subscribed after seeing an ad on Facebook. I loved the magazine back in the 80s and early 90s. At that time, my husband and I raised cattle, a few hogs, rabbits, chickens, and I had a couple of milk goats. Jerry Belanger was editor at that time, also had several how-to books on small stock, etc. We had an auction and moved to Oklahoma, sold my collection, and have regretted it ever since. We eventually moved back to Missouri; my hubby developed cancer and finally lost the battle. I have been a widow for 11 years now and finding *Countryside* is like an old friend. It has changed quite a bit but is still very interesting.

— Thanks, Marj
P.S. Also had a big garden!

Haunted Hotel

About five years ago, when we were still living in Coffeyville, Kansas, my daughter and I got up early one Sunday morning, packed a lunch, and drove to Lucine, Oklahoma. After more than 80 years, the town had really changed. The grade school building was still there, but it now had metal siding and a metal roof.

A sign over the front door said, “Community Building.” A set of children’s swings was on the playground next to the building. The railroad still passed through the town, but the depot was gone.

As children, we used to go to the depot to listen to the tapping of the telegraph messages. Sometimes a train would stop at the depot. One time, the engineer lifted us into the engine cab and we saw how they shoveled coal into the hot furnace to heat the water to steam that ran the engine.

Lucine, at that time, had one main street and most of the businesses were on the north side of the street. On the west end was the post office, and across the street, an old hotel. The town folks said it was haunted but we needed a place to live so my dad rented it.

One day, we children were playing house in one of the bedrooms upstairs. Our mother told us she was going to the drugstore, about two blocks up the street. She had us come downstairs and lock the screen door when she went out. We then went back upstairs to play.

After a few minutes, we heard someone walking up the stairs. My little brother was ready to crawl out a window and climb down a tree. We two girls climbed under the covers on the bed. After about six heavy, creaking steps, they stopped. We waited ... and waited ... no more steps.

We crept to the landing and looked down. Nobody was there! We ran to the screen door and it was still locked. We unlocked it and ran all the way to the drugstore and told our mother.

When Dad came home from work, we moved to another house. The town people were right! That place WAS haunted!

— Pauline McKenzie, Florida



Solar Power

I was at the flea market looking for a candleholder and I found what I was looking for. It was 75 cents and I couldn't pass it up. I then went to the Dollar Tree and bought solar lights. I pulled the bottom off, twisted the top part off, and taped the solar part off. I then spray painted the base (color of your liking), and when dried, I put it back together. With my glue gun, I glued the base into the candleholder. It looks so pretty setting on my picnic table at night, glowing brightly.

— Diana Johnson, Lima, Ohio



Black Jack Acres

This is the story of our little 10-acre farm, Black Jack Acres in Sapulpa, Oklahoma.

I'm a disabled veteran who can't work due to my disability so I spend a lot of time on my front porch. About three years ago, I noticed that Young Red (rooster) was starting to finally to get the girls to notice him. I did my part and made him look good by providing food that he took credit for. Even though he was just figuring out the ladies, he ended up with seven or eight hens that he claimed from his archrival, Larry the Welsummer.

For the past couple of years, Red and his girls have been roosting on the side of our cabin on the fence. They split their laying time this year between the back porch chimney and the front porch cat bed.

As you can imagine, after a couple of years of roosting next to the front porch, the manure piled up. So, one day we decided to build them their own coop. We have stored some lumber for years and I figured I would build the coop out of all reclaimed materials. During the build, our daughter decided that she had to have it as her playhouse. After a bit of convincing, she agreed to let the chickens have it.

The girls have been busy this spring, and we get seven to eight eggs just from these side yard birds. We moved them into their new coop at night and they stayed. They even decided to try out the nesting boxes.

The back porch chickens are protected by a lawn chair to keep our fat German Shepherd, Big, and his cousin, Bruce (both dumped out here) from eating the eggs.

Our birds are free-range but we do feed them egg crumby and chops (cracked corn). It seems to work for our birds. They are very active and travel pretty far looking for the goodies nature has to offer. This is made possible by yet another part of the farm, our guardian dogs, Vader and Tallon. They are part Pyrenees and Sarplaninac LGD. We got this brother and sister when they were about a year old. Our last Great Pyrenees had just passed from old age, so my wife found these and they are so good at their job. The knuckleheads like to chase cars when they're bored, though. They will even see a hawk and alert everyone and then follow the hawk as it flies over top. It's a cool sight to see.

We have a beeper named Mooie Two Two. We had Mooie One who had a broken hip when born and did not make it. Mooie Two Two is supposed to be our beef supply, but I have a feeling that is not going to happen. Now he lives with a group of goats that consists of a Nubian, a handful of mini LaManchas, and a mini Nubian. The main guardian for this pack is Peanut the llama. I also have Bantams, American Guinea hogs, my Shepard, Suzy, and my Poodle Floyd.

— Russell Jones

“A superhero publication. I have enjoyed for decades! Thank you so very much! Your dedication and knowledge has brought wisdom to this world. Wonderful!”

— Soje Merritt

In Response to “Question of the Month” (July/Aug 2020)

While the pandemic of COVID-19 had us home for the last two months, my family and I stayed in. My oldest son was off of work for the two months and my other son’s job was essential. He needed a mask for work, so, me loving to sew, I started making them and gave them to family and friends who needed them. I also made the ear saver extender, even knitted some. We all enjoyed the time together working around the house, watching movies, riding our dirt bikes/four-wheeler back in the woods on our trails. Now that it has lifted, my oldest son went back to work. We still stay in and only venture out once in awhile with our masks. But our family time hasn't changed.

— Diana Johnson, Ohio

SEPTEMBER/OCTOBER QUESTION OF THE MONTH

When the cooler temps creep in, nothing warms the belly like a hot bowl of soup or chili.

What are your favorite soup or chili recipes?

We'd love to see them and share with the rest of the *Countryside* community.

Send your recipes to:

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Fermenting Sauerkraut

A RECIPE THAT USES THE PLANT'S NATURAL BACTERIAL CULTURES

PHOTOS AND ARTICLE BY REBECCA SANDERSON

SAUERKRAUT TRANSLATES LITERALLY to “sour cabbage.” Fermenting sauerkraut has been happening for hundreds of years. While we typically think of Germany as the kraut-eating capitol, France actually surpasses Germany in the average consumption of sauerkraut, but don’t tell anybody that I told you that.

Fermenting your own sauerkraut is actually very easy, especially if you happen to be growing cabbages in your garden. I’ll walk you through it step-by-step, but first I want to explain why this type of fermentation works. For traditional sauerkraut, you do not want to add any type of vinegar or alcohol. All you need is some unrefined salt that is high in mineral content. When fermenting sauerkraut, we use lacto-fermentation. Lacto-fermentation utilizes the *Lactobacillus* cultures that naturally occur on the vegetables growing in your garden. These cultures are strongest and healthiest when the vegetables are freshly picked, so produce grown in either your garden or from a farmers market may produce a better or at least quicker ferment than grocery store produce.

When we ferment sauerkraut using lacto-fermentation, we encourage the *Lactobacillus* cultures to grow prolifically. As long as the right culture

is growing and thriving, they will choke out any undesirable bacteria. We help encourage this by using natural, unrefined salt. Unrefined sea salt works well because it is high in minerals. Himalayan pink salt would also be a good choice. Table salt and kosher salt are too refined and often contain anti-caking additives that can hurt the *Lactobacillus* culture. The lactic acid that the bacteria produce is what preserves the food and gives the uniquely sour flavor.

When choosing your cabbage, the most important factors are freshness and that the cabbage is not going to seed. Pull off the outer leaves, reserving a large, clean leaf set aside for later. Rinse the cabbage with just water until clean then pat dry. You will then core and slice the cabbage very thinly. Having a very sharp knife will save your hand from some aches during this process. I preferred to cut the cabbage into eighths or even sixteenths before beginning the thin slices, but my cabbages were also close to five pounds each. It is important that you do not become lazy in the width of slices. Thin slices encourage the natural juices of the cabbage to emerge, which is very important. Feel free to pile the cabbage in a bowl as you slice. Once the cabbage is all sliced, you will want to know the

Lacto-fermentation utilizes the *Lactobacillus* cultures that naturally occur on the vegetables growing in your garden.

weight minus the bowl. Tare your scale with the empty bowl before adding your sliced cabbage.

Once your cabbage is sliced in a large bowl, you may add the unrefined salt. Add $\frac{1}{2}$ tablespoon of salt per pound of cabbage. If your salt is very coarse, you may want to crush it a bit. I crushed mine in a small glass dish using the end of my rolling pin and it made such a difference in how long and hard the next step took. After you sprinkle the salt onto your cabbage, you will massage it in. You want there to be salty brine (created by the combination of the salt and the juices coming out of the cabbage) to be coating every slice. Knead it like bread. Get a little bit rough. Brine should begin to pool in the bottom of your bowl. If not, crush the cabbage a little more. Now, taste some cabbage. It should taste pleasantly salty, but not overly salty. If it is not pleasantly salty, add some more salt, up to one tablespoon at a time, depending on how large your batch is. Thoroughly massage this salt in and taste again. If there is not a significant pool of brine, cover the bowl with a towel and let it sit for 45 minutes.

If the rest time did not give more brine, massage and knead the cabbage some more, possibly adding just a touch more salt as you do so. At this point, you may begin placing your cabbage in a fermentation vessel. While crocks



Above: Fresh cabbages after being harvested from the garden. Taking off outer leaves.



Left: Weighing and adding $\frac{1}{2}$ tablespoon of salt per pound of cabbage.



Below: Massaging the salt into the cabbage creates a brine that coats the slices.



Left: Tamping cabbage down in a jar.

Above: Finished kraut going into smaller jars.

are ideal, not everyone has easy access to one of the proper size. Glass jars work well as long as you can easily get your hand in the jar. No metal. I used a large gallon-size pickle jar. As you scoop the cabbage into the jar or crock, be sure to tamp it down firmly between scoops. The end of a flat-ended rolling pin is perfect, but potato mashers and wooden spoons work well also. Once all the cabbage is in your jar or crock, tamp it a bit extra to be sure that every last piece is below the level of the brine. If the brine is not to the top of your cabbage, you can let it rest and check it later, tamp it extra vigorously to release more juices, or even dump it all out to heavily massage all over again. If your brine is sufficiently to the top of your cabbage, you can now grab that large outer leaf that you set aside earlier. Set the leaf over your cabbage, folding if needed to make it fit in the jar. Now you need a weight on top to keep all the cabbage AND the leaf under the brine. I used a resealable bag filled with water. If using a crock, it may have its own follower or weight, or you could use a plate that fits the crock. You can even use a clean rock. Just be sure that it fits over the leaf well enough to keep it all submerged. If any cabbage (including the follower leaf) comes above the brine, it will mold and could turn the whole batch.

Now place your jar or crock out of the light where you won't forget it. This will ferment best at normal room temperature. Do not place a tightened lid on at this time because the fermenting process will

release gases that would build up pressure. Check daily to make sure everything is still submerged. Begin tasting after five days. Mine took two weeks, but smaller batches will ferment more quickly. The longer you allow it to ferment, the stronger your kraut will taste. When it reaches your desired level of sour, divide the sauerkraut into smaller jars for storage, pouring the brine over the top. You may now place a tightened lid on and keep your fermented sauerkraut in the fridge for up to one year, although I am sure you will finish it off long before then! 🍷

RESOURCES

Shockey, K. K., & Shockey, C. (2014). Fermented Vegetables. North Adams, MA: Storey Publishing. Available at iamcountryside.com/shop

REBECCA SANDERSON grew up in a very small town in Idaho with a backyard full of chickens, goats, sometimes sheep and ducks, and other random animals in addition to the cats and dogs. She is now married with two little girls and loves the homesteading life! Her husband is very supportive (tolerant) of her continued experiments in making many items from scratch and he even helps sometimes.

Pomona's Peach Melba Jam

Recipe by Allison Caroll Duffy

Ingredients

- 2 pounds ripe peaches
- 3 tablespoons lemon juice
- ½ pound raspberries (about 1 pint)
- 1¼ cup sugar
- 1 vanilla bean
- 3 teaspoons Pomona's Universal Pectin
- 3½ teaspoons calcium water

Before You Begin

Prepare calcium water — To do this, combine ½ teaspoon calcium powder (in the small packet in your box of Pomona's pectin) with ½ cup water in a small, clear jar with a lid. Shake well. Calcium water should be stored in the refrigerator for future use.

Directions

- 1 Wash and rinse jars, lids, and screw bands. Set screw bands aside until ready to use. Place jars in boiling water bath canner with a rack, fill at least 2/3 of the way full with water, and bring to a boil. Boil jars for 10 minutes to sterilize (add 1 additional minute of sterilizing time for every 1000ft above sea level), then turn down heat and let jars stand in hot water until ready to use. Place lids in water in a small pan, bring to a low simmer, and hold there until ready to use.
- 2 Remove and discard peach peels and pits. Then, in a large bowl, mash the peaches thoroughly.
- 3 Pick over raspberries to remove any dirt or debris. If raspberries look clean, rinsing is optional. Place raspberries in a bowl and mash thoroughly.
- 4 Combine the mashed peaches and the mashed raspberries and mix well. Measure out 4 cups of the mashed fruit mixture (If you have extra, simply use it for something else). Pour the measured amount of fruit into a large saucepan.
- 5 Using a paring knife, slice the vanilla bean in half lengthwise and scrape out the seeds. Add the vanilla bean seeds, as well as the bean pod itself, to the mashed fruit. Add lemon juice and calcium water to the fruit, then stir to combine.
- 6 In a separate bowl, combine the sugar and the pectin powder. Mix thoroughly and set aside.
- 7 Put the sauce pan on the stove and bring the fruit mixture up to a rolling boil over high heat. Add the sugar-pectin mixture, then stir vigorously for 1 to 2 minutes, still over the highest heat, to dissolve pectin. Return the jam to a boil, then remove from heat. Using tongs, remove the vanilla bean pod and discard.
- 8 Remove hot jars from canner and fill jars with jam, leaving ¼" of headspace. Remove trapped air bubbles, wipe rims with a damp cloth, and put on lids and screw bands, tightening bands only to "fingertip tight" (until resistance is met, and then just the tiniest bit more).
- 9 Place jars in the hot water, on the rack inside the canner. (Make sure jars are upright, not touching each other or the sides of the canner, and covered with at least 1-2" of water). Place the lid on the canner, return the canner to a rolling boil, and boil for 10 minutes. (Add 1 minute additional processing time for every 1000ft above sea level.)
- 10 Turn off heat and allow canner and jars to sit for 5 minutes. Then, remove jars from canner.
- 11 Allow jars to cool undisturbed for 12-24 hours. Then, confirm that jars have sealed. Remove screw bands from sealed jars, rinse off outside of jars if necessary, label jars, and store for later use.



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Our Artesian Well:

A DEEP SUBJECT

BY MARK M. HALL

LONG AGO, MY WIFE AND I visited our little homestead for the first time on a warm September afternoon. The charming, old farmhouse was situated on four beautiful acres that lay at the bottom of a small, shallow valley. A tiny creek meandered lazily past fruit trees and countless lush flowerbeds. Not far beyond, an old tire swing hung from the low branch of a huge sycamore tree. A wide stream, behind it, swallowed the tiny creek and rushed away, tracing the foot of the tall wooded hills.

As our tires crunched along on the narrow gravel driveway, my wife spotted something odd behind the house. “What is that fire hydrant-looking thing over there?” she asked, pointing at something to our left. Intrigued, I stopped the car and followed her gaze in the direction of a nearby apple tree. Beneath it was a peculiar object standing about two feet out of the ground.

“I’m not sure what it is,” I admitted as I reached for the door handle. We stepped outside of the car and spoke with our realtor, who was waiting to show us around. Filled with curiosity, my wife asked him if he knew what the odd thing might be.

“This is an artesian well head,” he said. “It is their water supply, but I don’t know anything more about it.” We had heard of artesian wells, but neither of us knew how they differ from any other wells. As we approached it, we noticed the sound of running water. We carefully lifted a few apple tree limbs that were weighed down to the ground with their burden of fruit and ducked underneath.

Fascinated, we crouched low and made a close inspection of the strange contraption. It consisted of a large pipe capped at about one foot above the ground. From the side protruded an arm with a spigot at the end. We were puzzled to hear a constant flow of water rushing back into the ground through a two-inch pipe connected just before the spigot. What seemed even more odd to us was the top of the thing, which sported something that looked like an upside down perforated metal ice cream cone.

Both of us liked the property and left that day with a desire to learn about artesian wells. We were delighted to find a great deal of information on the subject. Especially helpful resources were the United States Geological Survey (USGS) and the National Groundwater Association (NGWA) websites.

As opposed to traditional wells, artesian wells have no need for a pump to bring groundwater near or above the land surface. They are drilled into a water-bearing rock layer, called an artesian aquifer, that is trapped by two impermeable layers. The water is prevented from escaping, so there is a constant

buildup of pressure. Consequently, when a well is drilled into this environment, pressure forces water up the well casing all on its own.

The benefits of artesian wells are many. First of all, though we do have a pump to simply draw the water from the surface to the house, there is naturally a reduction in energy consumption. The energy otherwise expended in drawing water hundreds of feet up out of the ground is saved, since the natural artesian pressure does all of the work.

An artesian well is also an excellent source of much needed water during emergencies. When storms rumble through the area and knock out the electricity, the water goes with it. (With pumped wells, not necessarily with municipal water.) There is no water in the house for drinking, washing hands, doing laundry, or even flushing toilets. However, those problems are easily mitigated with an artesian well by going outside and filling buckets at the wellhead spigot. Some homeowners use a hand-operated cast iron pitcher pump at the artesian well site for the same purpose.

Additionally, unlike a traditional well, the artesian should never run dry. Artesian aquifers, being

sloped, are constantly fed from a higher elevation than that of the well head. Therefore, constant water pressure is maintained. In fact, at all times, our well provides so much water that we dispel much of it to the creek through the drainage pipe. A few years ago, when the pipe became clogged, a check valve pushed the water out through the holes of that perforated metal piece at the top. Running down the outside of the well head, the water flowed continually onto the ground and throughout the yard until the pipe was replaced.

Our artesian well provides plenty of water for many other uses, certainly, such as watering the garden, the hanging pots, and all 23 flower beds. We can also wash the minivans, bathe the dog, fill the kiddie pool, water the chickens,

and perform countless other jobs with an attached garden hose.

A good well is vitally important to homesteaders, especially those with crops and livestock. So, if you are searching for a home and you come across a property with an artesian well, it would be wise to give it a second look. It may "well" be the perfect place to lay down roots. 🌱

MARK M. HALL lives with his wife, their three daughters, and numerous pets on a four-acre slice of paradise in rural Ohio. Mark is a veteran small-scale chicken farmer and an avid observer of nature. As a freelance writer, he endeavors to share his life experiences in a manner that is both informative and entertaining.

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Tips To Help Homeowners Prepare For A Natural Disaster

BY PAISLEY HANSEN

A NATURAL DISASTER can strike at any moment. Not all disasters give homeowners enough warning to prepare for the event. This is why it is important for homeowners to prepare their homes for any disaster. The more prepared you are, the better able you will be to care for your family and your home until things get back to normal. Below are some tips homeowners can use to prepare for a natural disaster.

CREATE A BASIC STORM KIT

The most important tip to prepare for natural disasters is to create a basic storm kit. This kit should contain enough items to help sustain you and your family for at least 48 hours with no electricity or basic services. It should include blankets, batteries, garbage bags, a water supply, and a couple of days worth of food. Solar-powered lanterns are a great option to include in your storm kit because they do not require any batteries.

GAS FOR GENERATORS

A typical 5,500-watt generator can run for at least eight hours using five gallons of gas. If you know a natural disaster is imminent, be sure you have enough gas to last for an extended power outage. It is also critical to run your generator shorter time periods until you know when you might be getting electricity back.

REVIEW EVACUATION PLANS

Homeowners should create evacuation plans. Plan at least two locations to go to for safety during an emergency situation. Try to designate one safe location out of town with a friend or family member. Be sure they have a list of your emergency contacts saved for you.

LOCATE GAS, WATER, AND ELECTRICITY SHUT OFF VALVES

When you first move into a new home, one of the first things you should do is locate where

the shut-off valves are for your gas, water, and electricity. When a natural disaster is in the forecast, refreshing your memory where each of these is located should be a priority. For your gas, it should be turned off immediately, unless it's an earthquake.

PREPARE DOORS, WINDOWS, AND GARAGE DOORS

This tip is especially useful for those who live in areas prone to hurricanes. Plan in advance for windy conditions from hurricanes using shutters. Before the storm hits, brace all doors and be sure your garage door has been secured shut. Also, remove any loose furniture from outside and place it in your garage before you secure the door.

UNPLUG YOUR ELECTRICAL APPLIANCES WHEN POWER IS LOST

If the electricity to your home is cut off during a natural disaster, unplug your electrical appliances

until the power has been restored. In some cases, when power is restored it can cause a power surge that can damage appliances that are still plugged in. You can possibly save yourself thousands of dollars by simply unplugging your appliances beforehand.

DON'T FORGET ABOUT YOUR LIVESTOCK

Before a natural disaster, it is important to create a plan for your livestock as well.

A quality livestock plan might include how to wrangle your livestock to secure their safety, as well as constructing a sturdy shelter to help protect them. A good plan for your animals can provide the necessary defense against the elements.

GATHER INSURANCE INFORMATION

If your home sustains damage, you will want to have your insurance documents handy. If a natural disaster has been forecasted, gather all of your important papers and insurance documents and put them in your storm kit. You will need to find them in order to submit proof of claim and receive assistance.

HAVE A PET PLAN

For homeowners who have pets, they're part of the family as well. It is important to have a plan for your pets during a natural disaster as well. Be sure you locate emergency shelters that accept pets before the storm hits. Consider having your pets microchipped

to locate them easier if they get lost during a natural disaster.

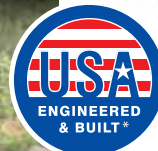
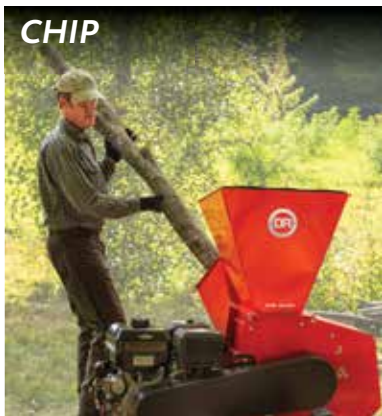
CONCLUSION

In conclusion, knowing beforehand what to do when a natural disaster hits is pivotal. It can ultimately save lives, and also give you additional reassurance that your home will be okay. Now is the time to implement these plans and prepare your home. In the event of a natural disaster, you will surely be glad that you made these extra precautions to protect yourself and those you care about. 🌿

PAISLEY HANSEN is a freelance writer who is passionate about health and safety. When she is not busy taking care of her kids, she can be found in her garden, decorating her home, or going on a run.

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15 Essential First Aid Kit Items

Use This Checklist to Ensure Your First Aid Box is Ready

BY MARISSA AMES



THOUGH WE KNOW WE SHOULD carry a first aid kit, contents can vary box by box. Should you purchase ones sold on department store endcaps or build your own? Whether buying pre-made or assembling your own first aid kit, contents should be verified and chosen with care.

First of all, what's the difference between a trauma pack, EDC bag, and a first aid kit? Items can be similar in each, but the three have different purposes.

Trauma packs care for immediate, life-threatening injuries such as lacerations. Police and EMT crews carry full-sized trauma packs, but they are also available to the public in waterproof, pocket-sized bags. They contain nitrile gloves, sterile dressings and tape, antiseptic wipes, and triangular bandages. Some contain duct tape and clotting agents. Most also have instructions for managing traumatic injuries. Pocket trauma packs can be valuable additions to your first aid kit or within your glove compartment.

EDC, or Every Day Carry, bags contain lightweight items necessary to get you out of an immediate emergency, medical or otherwise. Though fully packed EDC bags house small first aid kits, items also include medications, emergency phone numbers, and a multi-tool. EDC bags can also hold a phone charger, flashlight, pen and paper, a way to start fires, and survival bandanas that can be used as

triangular bandages. Though they won't get you through TEOTWAWKI (the end of the world as we know it) they are designed to get you to a safe place.

First aid kit items may cover everything included within trauma packs and EDC bags but also care for a wider range of medical emergencies. They have cold packs for sprains and burns, splints for broken limbs, tweezers for removing splinters, breathing barriers for administering CPR, and finger bandages for the most minor injuries. First aid kits for allergic families may also have Epi-pens or allergy medicine.

If you have a kit for yourself, how about one for your animals? A good first aid kit for livestock mirrors those for humans. Disposable gloves and sterile dressings care for human wounds as well as bumblefoot or infected hooves. First aid kits for animals may also include evaporated milk for orphaned lambs or penicillin administered specifically to livestock.

CHECKLIST: DO YOU HAVE THESE FIRST AID KIT ITEMS?

Do you trust that plastic case made by the baby shampoo people? How do you know if your first aid kit is adequate?

Both the Department of Homeland Security and the Red Cross have published online guides for checking and filling first aid kits. The Red Cross website also lists

how much you need of each item for a four-person family. Compare ready-made kits, or prepare your own, based on this list.

▶ **ADHESIVE BANDAGES** Little cuts may become infected if they're not properly covered. Plastic bandages are more water resistant while the cloth ones tend to stay on better. Include different sizes, from fingertip bandages to larger strips.

▶ **ANTISEPTIC WIPES** Moist towelettes from barbecue restaurants come in handy but they don't kill as many germs as alcohol wipes. Larger kits may include bottles of isopropyl alcohol and sterile paper towels.

▶ **BLANKET** Some websites suggest you carry rolled-up blankets in large plastic bags. Others admit large items are cumbersome and may be left behind. Space blankets, foil sheets which reflect heat, fold into tiny squares and take up almost no space. But they can save the life of a person in shock.

▶ **BREATHING BARRIER** Performing CPR may be an unquestioned action when it's a family member. But does that stranger have a disease which may endanger your health? Breathing barriers allow you to perform rescue breaths without coming in contact with saliva or other bodily fluids. One-way valves ensure you breathe out but vomit doesn't come back through.

▶ **COLD COMPRESS** Look for the instant kind, which activates when an inner bag ruptures and chemicals mix with water. Cold compresses treat insect bites and stings, cool thermal burns, and reduce swelling from sprains.

▶ **INSTRUCTIONS AND INFORMATION** How up-to-date is your CPR certification? What about everyone else in your family? Can they use first aid kit items if the person with medical experience becomes incapacitated? Free instruction booklets are available online.

▶ **MEDICATIONS** Of course, include your own prescriptions. But an aspirin packet can save the life of someone with a heart condition. The Red Cross recommends including aspirin but the Department of Homeland Security also recommends anti-diarrhea medication, laxatives, antacid, and non-aspirin pain relievers like ibuprofen.

▶ **OINTMENT** Antibiotic ointment kills germs and avoids infection. Hydrocortisone reduces irritation from allergies, rashes, or toxins. Burn ointment protects wounds and helps skin heal but doesn't hold in the heat the way lotion or oil can.

▶ **ORAL THERMOMETER** When a child's fever spikes on a camping trip, it's important to know when to head back home. Carry non-glass and non-mercury thermometers, as both mercury and broken glass have their own hazards.

▶ **SCISSORS** Whether you're trimming gauze pads to fit small lacerations or cutting clothing away from serious injuries, small pairs of scissors can help save lives. EMTs carry angled scissors which give better accessibility.

▶ **STERILE DRESSINGS** These include compress dressings, gauze pads and roller bandages. Include several sizes, such as 3x3 and 4x4, and both thick and thin rolls of gauze.

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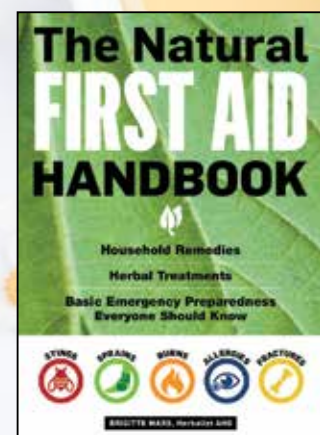
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Photo by Shelley DeDauw.

- ▶ **STERILE GLOVES** Most sites recommend non-latex gloves, such as nitrile, because of latex allergies. Gloves protect you from bloodborne pathogens while you help someone else.
- ▶ **TAPE** Most first aid kit items include adhesive tape, though stickiness can fail in dirty or wet environments. New kinds of stretchy, self-adhering athletic tape (the kind wrapped around your elbow after you give blood) sticks to itself and grips limbs and is reusable if you don't wind it just right.

▶ **TRIANGULAR BANDAGE** They suspend broken limbs or act as tourniquets for serious lacerations, but triangular bandages can have many more uses. Clean away dirt, use as a sunshade, wrap a sprained ankle, or even signal for help with this simple piece of cloth.

▶ **TWEEZERS** Splinter removal seems like a minor issue. But tweezers can also remove ticks, bee stingers, or pieces of glass. They can grab tiny items such as the end of suture thread.

OTHER ITEMS

▶ **SPECIAL NEEDS** Depending on who is in your care, you may

include glucose-monitoring and blood pressure monitoring equipment. Include inhalers for someone with asthma, prescribed nitroglycerine for cardiac patients. Glucose tablets are important for diabetics and epinephrine can save a person from anaphylaxis. Consider family or friends with specific psychiatric or emotional needs; ask them which pharmaceutical or natural treatments they use to maintain health. Always check expiration dates on medications and rotate periodically.

▶ **TOOLS** Though covering non-medical needs falls under EDC or bug out bags, adding a few tools can help in a crisis. They also add weight, so use discretion and try to predict where you may be using your kit. Consider flashlights, batteries, signal mirrors, radios, and extra gloves.

HOW BIG SHOULD FIRST AID KITS BE?

The list of first aid kit items is lengthy. Sizes vary and should depend on your activities. Stationary kits within homes can contain heavy blankets while those designed for hiking should

fit within a backpack without adding much weight. First aid kits within vehicles may focus on emergencies more likely to happen on the road, such as automobile accidents or engine failure in the middle of winter.

It's wise to pack several kits. Keep one in the home, one in the vehicle, and one readily available in case you need to grab it and run. Pocket trauma packs are easy to carry in cargo pants while commercially sold first aid kits often have handles and lightweight, waterproof cases.

Be sure each person in your group or family is aware of the first aid kit's contents, location, and how to use it. Replenish items after they are used. 🌿

Editor of *Goat Journal* and *Backyard Poultry* magazines, **Marissa Ames** runs a small homestead in Fallon, Nevada, where she focuses on saving and propagating rare breeds of goats and garden vegetables. She and her husband, Russ, travel to Africa where they serve as agricultural advisors for the nonprofit I Am Zambia. She spends her free time eating lunch. facebook.com/AmesFamilyFarm/ instagram.com/amesfamfarm



CREATING A FIRST AID KIT FOR LIVESTOCK

BY MAAT VAN UITERT

WHEN IT COMES TO A first aid kit, you'll find that many common items can be used on different species of livestock. Having some basic items always available in your kit means you're better prepared for problems that might arise, whether it's a dairy goat that's been bitten by a dog and has deep wounds, or a chicken struggling with bumblefoot.

You want to have some basic tools, such as disposable gloves, needles (ask your vet for their recommendations about sizes), syringes (you might be able to get these for free at your local pharmacy or vet clinic), non-adhesive pads and adhesive bandages.

Digital rectal thermometers are one commonly forgotten emergency essential that are crucial to understanding the health of your livestock. Quite a few times, I've had horses or goats displaying symptoms that could be attributed to many causes; their temperature might tell me whether I'm dealing with an infection or a hurt limb.

Another important item for your kit is bandage scissors, which have a flat edge on one tip to protect flesh when cutting a bandage off. Using regular scissors to remove a bandage

can be tricky with livestock since they can jerk a limb suddenly and possibly injure themselves again.

Also, be sure to ask your vet for recommendations for antibiotics and other medications to keep on hand (this will differ from species to species), as well as dosage amounts.

For wounds, burns, and abrasions, I prefer using honey. Particularly with chickens, I've found honey to be one of the best natural topical antibacterial remedies out there, and it's usually my go-to for any cut, wound, or burn.

Diapers are one item on the list that I should explain. Diapers are great to use if a large animal, such as a horse, has an open wound that is bleeding profusely. Diapers can often catch blood or pus more effectively than regular non-stick pads, simply because of the volume of fluid coming out of the animal.

Infections in horses, for example, can weep for weeks; non-stick pads are not as effective as newborn diapers for catching the leaking fluid. I smear antibiotic ointment on the diaper, then keep it close to the wound by binding it with a removable bandage topped by standing wraps.

Another item I should explain is goat milk. You should only

include this if you breed your livestock. In a pinch, goat milk will work very well as a substitute for mother's milk for many livestock species. Kids, kits (baby rabbits), foals, piglets, and lambs have a hard time digesting cow milk. If you have goat milk on hand and you have an orphan, you'll have a way to feed it until you can locate some colostrum or a substitute livestock-specific milk source.

Similarly, keeping colostrum on hand makes life easier if you suddenly need to bottle feed a weak piglet or orphaned lamb. You can buy a general livestock colostrum or a livestock-specific colostrum. I've had an easy time getting goat colostrum, but a harder time finding anything specific for piglets, so keeping both in your emergency kit is a good idea.

While this first aid kit and their uses certainly is not comprehensive, it should get you started off on the right foot. 🌱

MAAT VAN UITERT is a poultry, livestock, and homesteading expert and author who helps everyday people achieve independence by teaching fans how to raise chickens, learn traditional skills, and become more self-sufficient. She is the founder of the home and garden website, Pampered Chicken Mama.

GENERAL LIVESTOCK FIRST AID KIT

- Triple antibiotic ointment
- Comfrey salve (for sprains, strains, and rashes)
- Sterile gloves
- Syringes
- Needles
- Activated charcoal (for poisonings)
- Adhesive bandages
- Non-stick pads
- Diapers (for large animals)
- Epsom salt
- Heating pad
- Extra dishes/waterers (to use in a sick bay)
- Scissors
- Bandage scissors
- Scalpels
- Cotton swabs
- Honey (for open wounds and burns)
- Betadine (wound cleaning)
- Alcohol (for cleaning wounds, cleaning equipment)
- List of drug dosage amounts, based on species and weight
- Thermometer
- Clean towels
- Blue Kote (for chickens)
- Milk of Magnesia (for goats)
- Newborn diapers (for large livestock to catch blood)
- SMZs (ask your vet for a prescription)
- Penicillin (ask your vet when to use it and dosage amounts)
- Bagged colostrum (general or livestock-specific)
- Goat milk

HUNTING FOR FOOD

BY RON MESSINA

Photo by Fredrik Öhlander.

RECENT FOOD SHORTAGES at grocery stores around the country got me to thinking. In this age of pandemics, when the food supply we've taken for granted is suddenly disrupted, having the ability to stock your freezer with wild game during hunting season is a comforting thought. Although there are many excellent reasons to go hunting, at the basic level, hunting has always been about acquiring your own natural food.

Years ago, there were plenty of hunters but fewer deer to hunt. Today, it's just the opposite: there's about half the number of hunters in the woods as there were 50 years ago, and, in many areas of the county, greater numbers of wild game to hunt — most notably the white-tailed deer, a very adaptable animal.

Deer are a common sight in suburban neighborhoods, farms, forests, and unfortunately, along roadways, where deer/vehicle collisions all too frequently occur. Deer populations are managed primarily through regulated hunting. An average mature whitetail can provide about 50lbs of lean, healthy venison. That's a lot of healthy, organic meat!

Lately there's interest "all things local" when it

comes to food. Hunters embracing this "locavore" lifestyle value their venison steaks, tenderloin, and burger more than the prospect of a buck's trophy antlers. And they enjoy the unique challenge of bringing food from field to the table.

Hunting is the perfect activity for those interested

in the ethic of a light ecological footprint. Free-range animals don't require any of the resources commercial food operations do; wild animals don't need feed, fertilizer, or antibiotics to grow, or the fuel required to ship them to your local grocery store. They literally live in your backyard.

Deer are so plentiful in the counties surrounding Washington, D.C., that hunters stalk them in a special urban archery season — sometimes literally in their backyards — alongside the playground equipment.

For those who are interested,

it's a great time to learn to hunt: state wildlife agencies that regulate hunting are actively recruiting new hunters. Many of the "baby-boom" generation of hunters are now getting too old to continue hunting, so an influx of new hunters is needed to replace them. Wildlife agencies need hunters to help to manage

Hunting is the perfect activity for those interested in the ethic of a light ecological footprint.

IN ORDER TO HUNT:

- ✓ Find a Hunting Mentor
- ✓ Complete a Hunter Education Safety Course
- ✓ Carry the Appropriate License or Permit
- ✓ Know the Hunting Regulations for Your Area
- ✓ Have the Right Equipment for the Hunt

game populations, and they need the revenue from hunting license sales to fund their operations.

As a result, "Learn-to-Hunt" programs are springing up all over the country. These programs let students "test drive" the hunting experience. The Virginia Department of Wildlife Resources' Hunting Recruitment Coordinator, Eddie Herndon, says the hunting instruction classes in his state fill up fast.

"My agency hosts multiple mentored hunts throughout the year that match new hunters with an experienced hunter in an assigned area. These programs work because they allow new hunters to learn from the field, a blind, or a tree stand rather than on their own through online resources or classroom instruction."

Taking a wild animal requires knowledge of safe gun handling and skills like shooting, tracking,

and the ability to process an animal after the kill. Hunting ethics require fair chase, and adherence to seasons, bag limits, and laws. Once learned, these details become second nature; but taken all at once, it could be daunting for a beginner.

That's why finding a good hunting mentor is essential in learning to hunt. If you don't know any hunters, contact your local wildlife agency's hunter education coordinator — chances are there's a mentorship program available, as well as a hunter safety education class.

In the past, hunting sometimes had a certain stigma attached to it. Kristen Black, Manager of Communications

for the Council to Advance Hunting, says she actually "grew up anti-hunting" because, "I was uninformed about the need for and benefit of population control. And, the messaging I saw on media platforms was all negative — blood and gore, disrespect for the animal, and words like 'sport' and 'trophy' being associated and prioritized over 'conservation' and 'healthy food.'"

But hunting has evolved. Black says the field has mostly recognized and corrected these problematic tendencies, and encourages all hunters to welcome those who would like to learn. More women have become interested in hunting over the last 10 years. Women hunters comprise the fastest growing hunting demographic, making up about a quarter of the registrants in hunter education classes in Virginia.

"New hunters simply want an

opportunity to learn what they can do to help the environment and put some healthy and ethical food on the table while doing it. A mentor is someone who advises on equipment, teaches how to look for sign, and encourages the participant to try in whatever capacity they can," Black added.

Amy Barr of Virginia decided to learn to hunt at age 40. It was something she'd always wanted to try, and she liked the idea of taking responsibility for acquiring her own natural food. She kept chickens and goats, and foraged for wild edibles; hunting wild game seemed to be the logical next step in her progression. Now a seasoned duck, turkey, and deer hunter, she says hunting allows her to serve the healthiest of meats to her family.

"I go to the grocery store, pay for stuff, bring it home and cook it — that doesn't hold a candle to tracking, finding, and harvesting wild game and putting it on the table. And my kids announce, "This is the deer mom shot!" There's a huge sense of pride."

For those like Barr, hunting has a lot to offer — it's a great way to connect with the natural world, a good source of exercise, and an honest way to come by your protein. The quality of the free-range meat is unsurpassed, and the overall experience of immersing yourself into your environment, whether you are successful or not — will keep you coming back. Give it a try, and hunt your own wild game this year! 🌿

RON MESSINA lives in Virginia and has recently decided to take the plunge into raising chickens. He has written articles for Virginia Wildlife Magazine, Virginia Sportsman, Bird Dog and Retriever News, and many other publications and blogs.



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Photo by Shelby Cohron.

Communication with Pheromones

How Honey Bee
Pheromones Work
in the Colony

BY BRIDGET MENDEL

PHEROMONES ARE A chemical communication system between an animal and others of its species. In fact, the phrase “communication system” may be too passive a description — at least in the insect world, where pheromones secreted by one individual can elicit behavioral or physiological response by others of their kind.

Honey bees are eusocial, meaning they live in highly complex social colonies, with multiple casts and tens of thousands of individuals of overlapping generations. A complex ambient of pheromones is what coheres these thousands of individuals into one thing (a superorganism), allowing the colony as a whole to maintain homeostasis. While pheromones

are usually species-specific, those of us belonging to other species can listen in and begin to decode the tangle of chemical signals for our own purposes.

Varroa mites, for example, listen in on the brood pheromones of honey bees. Brood ester pheromone (BEP) is a chemical compound that older larvae produce to regulate (among other things) when workers cap brood cells. Female mites wait for the “cap me” signal produced by fifth instar larvae before they sneak into open brood cells. Soon afterward, nurse bees cap over those cells with wax, providing the foundress mite the ideal atmosphere for reproducing. Taking advantage of chemical cues, the foundress synchronizes her egg-laying

schedule with the bee’s growth, so that her offspring can complete their development before the host bee emerges from the cell. Gross!

Beekeepers, too, can listen in on the language of honey bee pheromones. With our vaguely proficient noses, we can only detect one or two of a colony’s chemical signals. But even those that we cannot smell are worth studying, because understanding pheromones in the hive can help us become better beekeepers.

Some pheromones are called “primer” pheromones. They affect the bees at a physiological level, and they are long-term. For example, a queen secretes a pheromone from her mouthparts called queen mandibular pheromone (QMP). QMP gives a

colony a sense of being “queen right,” and stimulates workers to groom and feed the queen, build new wax, forage, and care for brood; this pheromone is also partially responsible for suppressing the maturation of worker bee ovaries. QMP is picked up by the queen’s retinue (the ever-changing guard of workers tasked with grooming the queen) and spread through the colony as workers walk across the combs, feed each other (trophallaxis), and touch antennae. Without a strong QMP signal, the workers will build queen cells in an attempt to replace what they perceive to be a failing queen. Or, if there is no brood present, their ovaries may be activated and they may start laying unfertilized (male) eggs — a last-ditch effort to perpetuate their genetics.

Brood pheromones are similarly important to the colony’s functioning and sense of “rightness.” The open brood pheromones (namely e-beta-ocimene in young larvae and fatty acid esters present on the cuticle of older brood) affect worker bee behavior.

Through pheromones, those little larvae compel workers to forage for them and feed them. Like queen pheromone, the brood esters help to suppress workers’ ovaries. Understanding the role of brood pheromones can help us understand why our bees do weird things like supersede a young, presumably well-mated queen in a recently hived package colony: even after she begins laying, there’s a length of time when open brood and its manipulative scent isn’t present. The bees may interpret the lack of brood pheromone as “not right” and seek to replace their queen.

While primer pheromones help to maintain the checks and balances of long-term colony functioning, “releaser” pheromones generate short-term, behavioral responses. You are probably familiar with some releaser pheromones already. Alarm pheromone is a releaser and smells like ripe bananas. Bees produce alarm pheromone when they sting, or when they open the sting chamber at the tip of their abdomens. Even if you can’t smell bananas, you can identify the posture of an alarmed bee: her abdomen is pointing straight up and her stinger is visible.

Beekeepers use smoke to inspect their colonies

in part to mask the scent of alarm pheromone: to disrupt the bees’ message that it’s time to defend. A beekeeper who is fully covered in protective gear may not feel stings or smell alarm pheromone on their clothing, and so with each movement they increase the defensiveness of the colony they are working. Alarm pheromone reminds us that we need to slow down and move more carefully as we work a colony.

Have you smelled lemony Nasonov pheromone before? It is the pheromone bees use to orient each other to “home.” Older workers will help new foragers orient to their hive location by secreting Nasonov at the entrance of the colony, fanning their wings madly to make their point. The posture of Nasonoving bees at first might look similar to alarm-producing bees. In both cases, their abdomens are raised, but Nasonov is produced from the seventh abdominal tergite, which is best described as near the end of the abdomen on the “top side” of the bee. When that gland is open (it looks white), the abdomen’s point appears to have a slight downward crook.

I think Nasonov is the pheromone beekeepers take advantage of most. Whenever bees are producing it, they are docile. Working a defensive colony, a beekeeper might shake a frame of bees in front of the hive entrance to induce them to start Nasonoving, helping their sisters home, and in the process masking alarm pheromone. Some beekeepers add a Nasonov-mimic, lemongrass, to attract swarms into empty equipment, or to entice bees to take down syrup given as food supplement in the fall. 🍋

A complex ambient of pheromones is what coheres these thousands of individuals into one thing (a superorganism).

BRIDGET MENDEL is the Program Manager at the University of Minnesota’s Bee Squad. She takes care of bees, teaches classes for beekeepers and the public, and manages interdisciplinary, pollinator-focused programs. She also writes grants and communications for Bee Squad’s programs and research projects. Outside of Bee Squad, she teaches creative writing to college students. Her own work has appeared in *DUSIE*, *NOÖ Journal*, *The Beekeeper’s Quarterly*, and *Nous-zot Press*. Bridget is the recipient of a Minnesota Emerging Writers Grant, and holds a BA from Northwestern University and an MFA in Creative Nonfiction from the University of Minnesota.



Fascinating Queen Bee Facts for Today's Beekeeper

Q&A

About the All-Important Queen Honey Bee

BY JOSH VAISMAN

QUEEN BEES ARE FASCINATING and sophisticated creatures. Before raising your own colonies, there are some queen bee facts you must know in order to be a successful backyard beekeeper.

DO QUEEN HONEY BEES STING?

As anyone who has accidentally stepped on an unsuspecting bee can attest, all the worker bees in a bee colony have a stinger. As a beekeeper myself, let me tell you: if you've never experienced a bee sting, those little ladies can pack quite the punch! The queen honey bee also has a stinger (more on that below).

Do you know why worker bees have a stinger? I'll tell you! It's to defend the hive. You may ask, "Then, why did I get stung when I stepped on a bee miles from her hive?" Well, if you had a knife sticking out of your behind while a giant unceremoniously stepped on you, wouldn't you use it too?

Here's another interesting queen bee fact you may not know. When a worker bee stings you, she has essentially signed her own death certificate. Worker bee stingers are barbed. When they attach to soft flesh, the bee lacks the strength to remove them so, when she pulls away or flies off, the stinger detaches from her along with her insides. As you can imagine, this fact predisposes the honey bee to discretion in choosing when to sting. But I digress.

Considering the queen honey bee is never charged with defending the hive you might wonder, "Why does she have a stinger and does she ever use it?"

When the colony decides to make a new queen, they will raise several virgin queens. The first to emerge is overcome with a desire to be the queen to "rule them all" and so she seeks out the other not-yet-emerged cells and, using her stinger, kills the growing queen inside.

On very rare occasions, almost always during some sort of handling (such as placing a newly purchased queen in a colony), the queen will sting the beekeeper.

EVERYTHING YOU NEED TO BE A SUCCESSFUL BEEKEEPER

The good news here is twofold; first, it is extremely rare (I've never been stung by a queen) and, second, the queen is the only bee without barbs on her stinger so a sting from her does not necessarily result in her death.

DO QUEEN BEES LEAVE THE HIVE?

Why yes, queen bees do leave the hive, on occasion! While the actual act of leaving the hive is quite rare for the queen, there are four common times it will happen.

1) Mating Flights: When a new queen emerges from her supercedure cell or emergency cell, she is a virgin capable only of laying infertile eggs destined to become male drones. She must mate with several drones from other colonies to become fertile. To do this, she takes mating flights.

These mating flights typically begin three to five days after she emerges from her cell and can persist over a period of up to a week depending on weather and her success rate. Once completed, she will return to the hive and begin her life-long job of laying as many eggs as possible. For many queens, this is the only time in their lives they leave the hive.

2) Swarming: If we think of a colony as a single, large organism, swarming is how the colony reproduces. When a swarm occurs, the current queen will leave the hive along with approximately half of the workers and go find a new home to build a new hive. Left behind will be many workers and many swarm cells, one of which will become the hive's new queen.

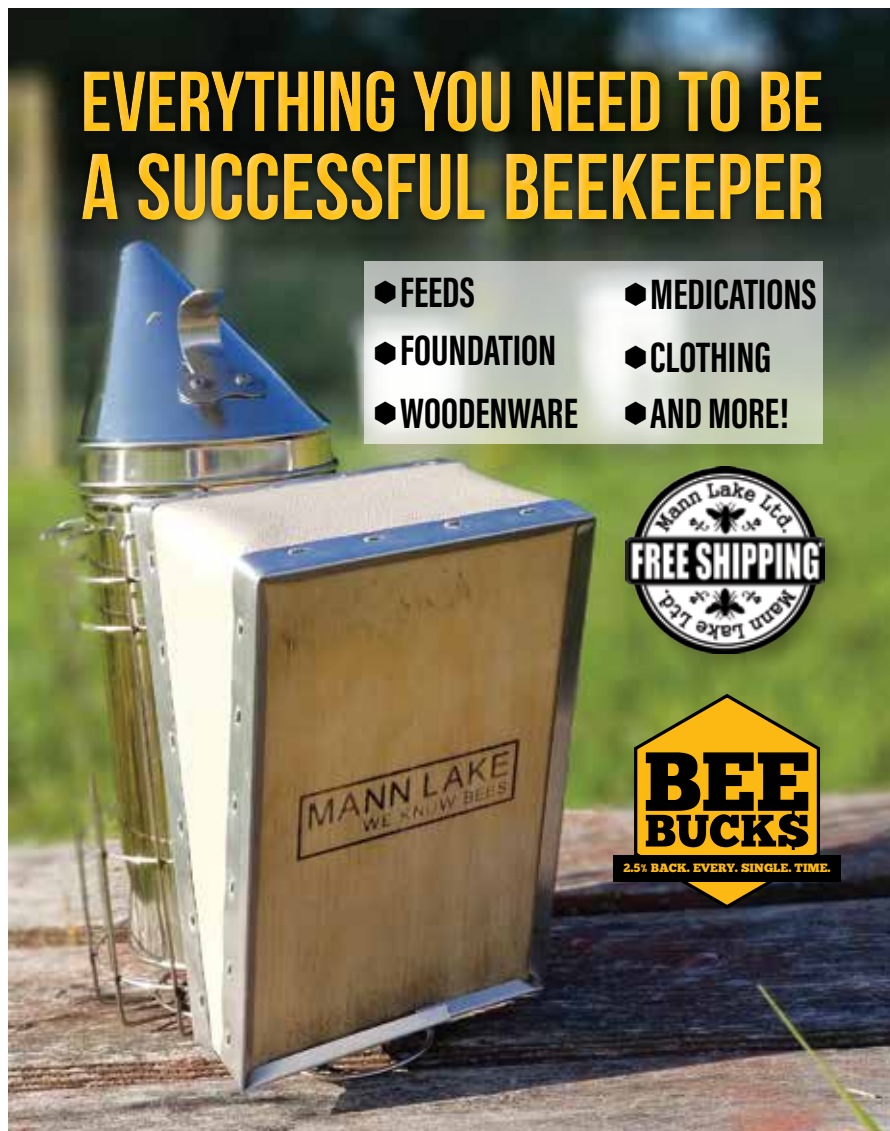
3) Death/Illness: Sometimes a sick or injured queen will leave the hive on her own or, in some cases, be ejected by several of the workers. Whatever the reason, when a fertile queen is outside the hive on her own, her demise is soon to follow.

4) Absconding: Absconding is the term used for a mass exodus of all bees, including the queen, from a hive. This happens from time to time for one of a variety of reasons typically related to the bees determining the hive is no longer suitable or healthy

for their needs. The varroa mite, left unchecked, can cause a form of absconding called parasitic mite syndrome. In parasitic mite syndrome, the bees have basically had enough with the unsanitary and unsafe conditions the mites have created in their hive — and, rather than stick around and die from a losing cause, they all leave, presumably to look for greener pastures.

As far as I can tell from the scientific literature I've encountered, no one knows what actually happens to bees after they abscond. With parasitic mite syndrome, this tends to happen toward the end of summer/beginning of fall. In Colorado, where I live, you can imagine how challenging it might be for a colony to re-establish a healthy hive in the dearth of that time of year.

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WHAT DOES A QUEEN BEE EAT?

Much like you and I, all bees, including the queen bee, need water, carbohydrates, and protein to survive. In a honey bee farm, bees obtain these critical resources in the form of water, nectar, and pollen. Nectar, the bees' source of carbohydrate, is collected from blooming flowers. It is stored for transport in a specialized stomach where enzymes begin to act upon it. The bees return the nectar to the hive, regurgitate it, and store it in cells where they begin the process of dehydrating it into honey. Honey, as it turns out, is an incredible source of carbs for the long dearth of winter as it cannot spoil (nectar can!).

Pollen is the bees' source of protein. This is why they collect pollen from the flowers they visit. As an aside, bees will collect EITHER pollen OR nectar on a particular foraging trip, not both. Additionally, they will collect their resource exclusively from the same type of plant. When we consider they are slightly inefficient in their efforts — that is, they tend to drop just a little pollen as they work — it makes sense why this is beneficial in pollinating the plants they visit.

So, to answer the original question, the queen eats nectar, honey, and pollen to survive. However, she is so incredibly busy with the work of laying upward of 2,000 eggs each and every day, she doesn't have time to eat! So, workers in her retinue tend to her dietary needs and feed her as she works.

CAN A QUEEN BEE FLY?

Yes, a queen bee can fly. She has strong wings just like the workers and drones and, as we know from the queen bee fact on page 35, regarding if and when she leaves the hive, she needs them.

As a beekeeper, we want to take care to not disturb the queen so much during our hive inspections as to cause her to fly off. Under such circumstances, she may struggle to find her way home.

HOW LONG DO QUEEN BEES LIVE?

Prior to the advent of pesticides and migration of the varroa mite to almost all parts of the world, queen honey bees might live as long as five years. When we consider a worker bee in the throes of summer hive-care and foraging efforts might be fortunate to live seven weeks, we see how incredible a five-year lifespan truly is.

Now as the bees struggle against a preponderance of pesticides in their environment, parasitic mites in their hives, and a general lack of healthy flowers around them, it's no surprise the lifespan of the queen bee has suffered. Some studies are showing the current lifespan of queen bees is as short as one to two years and many commercial beekeepers, recognizing a live queen bee may not necessarily be a healthy queen bee, are regularly changing out their queens every six to 12 months. The plight of the honey bee is real and all beekeepers feel it. 🌱

JOSH VAISMAN is an avid beekeeper and instructor in Northern Colorado. An active member of the Northern Colorado Beekeepers Association, Josh has been involved in the education of new beekeepers on behalf of the association and privately. Josh started into beekeeping as a hobby, and offers valuable experience to those wanting to start beekeeping. When not tending to his hives, Josh is a Positive Change Ninja with Flourish Veterinary Consulting, a company he co-founded to apply the science of well-being to the veterinary workplace. He lives in Firestone, Colorado with his wife, Greta.



Feeding Bees in the Winter

Question: Should I leave supers on for the winter?

In areas with long winters, honey bees rely on their stores of honey to survive. In Colorado, where I live, this begins sometime in October as all the nectar-providing flowers wilt and disappear. Sometimes we don't see new nectar sources appear until March or April when the dandelions begin to bloom. That means, in a challenging year, my bees might go five months or more without natural resources. Whatever honey they have in the hive is what they have to live off. The general rule of thumb in Colorado is, by the end of October, a hive should weigh around 100 pounds.

To help with this scenario some beekeepers, including myself, leave a honey super on the hive over winter. I collect the "excess" honey crop in mid-August but not down to the deeps. If my bees made four supers of honey, I only take three. So, when you see my hives this time of year, you see two deep boxes AND a medium box. In my experience, this allows my bees to keep a larger cluster going into winter and have more food to live off thus helping their winter survival. The downside is, I'm leaving between 25-35 pounds of honey on the hives every year. With four hives, that's a lot of honey I could have collected for myself.

Some people leave ALL their honey on the hive over winter. So, if the bees make four supers, all of them stay on over winter. I believe this is excessive and unnecessary. Honey left out over winter will likely crystalize, making it difficult to extract the following spring. Furthermore, the cluster of bees needs to move throughout the winter to access food supplies, and spreading the food out over a large area like that might actually make it challenging for the bees to get to during particularly long stretches of cold. And, in all likelihood, that much extra honey is far beyond their needs.

Richard from Minnesota writes:

I was wondering if there was a guideline for ensuring that there would be adequate resources by putting manmade feed for them in the setup and, if so, how much?

Hey Richard — Thanks for the comments and questions! I think you're wondering about supplementally feeding your bees over winter in lieu of leaving a honey super on the hive. If that's the case, yes, it's absolutely an option! Given you live in Minnesota, though, you are a bit limited in what you can offer your bees for supplemental feed. For example, you do not want to give them liquid feed during the winter due to the risk of freezing. You can use fondant or sugar boards as an option. I'm no expert in either of these since we don't use them so you could look around online or, better yet, speak to an experienced beekeeper in your area who uses one of these methods. As for amounts, a medium honey super typically has between 25-35 pounds of honey in it, so if you're going to go another route keep that in mind. I'm not suggesting you need to give them 25 pounds of fondant or sugar boards. That would be nearly

impossible. What I am suggesting is that you monitor their supplemental feed throughout the winter and use the warmer days to replenish their feed. I hope that helps!

The general rule of thumb in Colorado is, by the end of October, a hive should weigh around 100 pounds.

Ask the Bee Expert!

Visit backyardbeekeeping.iamcountryside.com and get answers to your beekeeping challenges through our live interactive chat. You can also email us at editor@countrysidemag.com or mail your inquiries to **P.O. Box 566, Medford, WI 54451**.

SKIIPLEY FARM

Making Money on a Small Orchard

BY HEATHER SMITH THOMAS



DURING THE PAST 10 YEARS, Gil Schieber created an orchard/fruit farm on seven and a half acres near Snohomish, Washington, 30 miles north of Seattle. He chose the name of his farm from the adjacent road. “The old Skiepley farm across that road doesn’t exist anymore so I thought I’d name my land after that road, and create an orchard. I’ve been in the nursery business all my life, collecting a wide variety of drought-resistant plants,” he says.

He is originally from Pennsylvania, where he obtained a horticulture degree, then bicycled to Washington State in 1980. He was lead gardener at the historic Good Shepherd Center (built in 1906), a Catholic school for wayward girls. The old building is now run by Historic Seattle, and the surrounding acreage, including the original garden and orchard, is jointly run with Seattle Parks and Recreation.

“I worked there for 25 years; it was 12 acres surrounded by old orchard trees. They still have about 30 heirloom varieties of apples and that got me started. I also worked at the 110-year-old Piper Orchard at Carkeek Park and I’m involved in other pioneer orchards in the area,” he says. He collected older varieties of trees for his own orchard.

He now has more than 250 varieties. “My main interest is to inspire more people to grow things. I’ve been doing that all my life — installing gardens and edible landscapes,” says Schieber.

In 2008, he bought an acreage and moved out of

Seattle. “I selected the land by looking at the soil around the mole hills. This is a heavy clay loam. In 2011, I collected varieties from all over — and grafted 3,500 trees the first year,” he says. He continued to graft more each year. He sells young trees through eBay and to other farmers in the area, growing many varieties of rootstocks to see what grows well in this area — grafting all of these apples on as many different rootstocks as possible, to see how they perform.

He opened a pick-your-own program seven years ago, starting with strawberries then added unusual fruits like elderberries, Aronia, persimmon, fig, kiwi, cherries, raspberries, blackberries, and blueberries. People come early in the season to pick raspberries in the greenhouse, blackberries and jostaberries (a black currant-gooseberry cross). Last year, he sent 80 pounds of jostaberries to a company in the Midwest that ships them frozen to customers.

Schieber also has 20 varieties of grapes — mostly seedless table grapes. He has $\frac{1}{3}$ acre in grapes, and one acre of apples. The pick-your-own block of apples has about 80 varieties. Weekends are busy; he does about 200 transactions on any given weekend day during the fruit season.

During that time of year he has one person helping. “With just seven acres, it’s relatively easy to take care of, just shooing the deer away or keeping rabbits at bay; this farm provides habitat for many species of wildlife.



The deer sleep under the kiwi vines, the rabbits use the brush piles, and the voles use the mole runs," he says.

He went back to Pennsylvania for a while to help at his cousin's orchard. "It's a larger pick-your-own operation where he sells about \$50,000 worth of fruit on a weekend day, and about 20,000 pounds of apples that same day. I've helped him during the past couple of years in September-October. His farm is 16 acres of pick-your-own, while I have one acre of apples and five acres of other crops. My apples provide 70% of my income, the grapes about 20 to 30% with a little from the blueberries, blackberries, pears, plums, and other fruit," Schieber says.

His orchard has now started to pay its way and pay for the land. Most of the trees have matured enough to reach their peak for fruit-bearing.

He is active on the board of the Tilth Alliance, a non-profit group that works with Washington farmers, gardeners, and consumers to build a sustainable, healthy, equitable food future. "I think land use policy is important, and creating ways for people to take on or pass the torch to someone else. I would like to do another one of these small orchards. It only took me about three or four years to design and plant this one," he says.

"More of these are needed. It would be great to have a small orchard every two miles in urban settings. Right now I have to turn people away because I only have parking for 60 cars. Pick-your-own

farms have become popular, and they are needed. School groups come, and I like the educational component. I've been doing 30 years with Seattle Tilth (now Tilth Alliance) to keep education as a part of it, and to inspire people. We need more farmers to get more food growing," says Schieber.

The other possibility he's considered for his farm is to turn it into a non-profit entity. "It is truly one-of-a-kind. I set out in the beginning as a one-man operation, with help from friends to plant it. I was okay at first with using chemicals like Roundup, because otherwise I would have needed 20 people to properly sheet mulch and get the ground ready for planting. I discontinued using herbicides about eight years ago and I do have a lot of weeds — intentionally. My orchard/farm is unconventional; I need the weeds to provide habitat for garter snakes — for vole and rabbit control. The weeds also provide aeration to the clay loam, helping the plants, especially biennials. I have alder trees (nitrogen-fixing) here and there; it's sort of a hybrid permaculture farm," he explains.

"Kids like it, the animals like it (deer, owls, coyotes, voles, rabbits, etc.). The farm earns about \$60,000 per year and the nursery about \$5,000. Eventually I anticipate the nursery to earn about \$20,000 and the farm one day to bring in about \$100,000 to \$150,000. It is certainly self-supporting, and is just about balancing the mortgage now."

Initially, it cost about \$150,000 for equipment and



set-up costs, and the land itself was expensive — purchased at the top of the market in 2008. “At that time, I cashed out all I had in stocks. I’m still running on credit cards, but it’s moving the right direction.”

He started using insect netting to protect the fruit. The rolls of netting are 17 by 300 feet, and it takes about \$5,000 worth of netting to cover an acre. “I have also been using clay as my main insect deterrent. The grapes don’t have as many insect problems except for bees. Completely cutting out the insects (with the netting) is not a good idea, so the clay is better. Everyone who goes out to pick gets a five-minute education about the clay residue; it is completely edible, though it turns the trees white,” Schieber says.

Customers are sent out to the orchard with a very detailed map of the rows so they know where everything is, what is ripe and what’s almost ripe, and what kind of apples they are — whether baking apples or eating apples. The trees are only six feet high, so fruit is within reach, is easy to pick, and there’s no need for ladders.

Originally he grafted all of his trees on Budagovsky 9 rootstock, which is a full dwarf. Eventually

these trees can grow 10 feet tall, but bearing fruit (and tying down the branches) keeps them small. “I have one row that is only three feet high and the trees are 10 years old. These are festooned and tied down, just two feet apart. Most importantly, the festooned row is curved and the trees don’t fall over, so there is no trellis expense! I have designed my next orchard like this,” he says.

He is working with a five-acre piece and self-supporting trellis system. Rather than spend \$5,000 to \$10,000 on trellising and steel, he came up with this way of festooning the trees — planting them not in rows but in spirals, curves, or serpentine, tying them to each other for support. Those little trees will stand on their own without artificial support.

“I am going to create eight to 100-foot diameter spirals and some serpentine. We have crowds of people in the season of pumpkins and corn mazes, so this will be an apple maze, concentrating on October fruit. I’m trying to figure out a 250-tree spiral that will be arranged so people can spread out and pick fruit in that spiral. It’s a challenge; it’s certainly easier to manage apples that are all just one

variety, with the potential to use thinning agents. Most operations use hand thinning,” he says.

“My orchard is definitely not efficient. I see all the woes and problems, but it can still be profitable. I’m mainly doing this to inspire people, but it needs to be sustainable.”

He enjoys experimenting with various types of fruit. “Almost no one is growing fruit on this side of the mountains so it’s hard to find advice. The extension service is helpful but not as much as they used to be. I am 61 and grew up in Pennsylvania at a time when an extension agent would come out to the family garden and answer questions or help solve whatever issues you had. There’s a real need for more of this today; we need something like ‘walk-to-farm.org’ and small farms/orchards within a mile of 150 homes. We need small urban farms and land policies that help preserve small pieces of land for farming. Here, where I am, this upland soil will grow good crops, and there is plenty of opportunity to have small farms within reach of the village,” he explains.

He wants to find ways to encourage more people to do this.



An Easy Peasy Start to Seed Saving

BY TJ KING

Photo by Ksenia Makagonova.

KEEPING YOUR FAVORITES YEAR AFTER YEAR

WHEN I STARTED GROWING A GARDEN years ago, I did a terrible job harvesting shelling peas (*Pisum sativum*). Each season, I missed peas on every vine. When I finally found them, I tossed those old, starchy peas to my backyard hens. While they loved the treat, I eventually realized the peas were a gift to be saved. They were my first foray into the addictive world of seed saving.

WHY SAVE SEEDS?

Long ago, everyone saved their own seeds. Now that seeds can be ordered online or through catalogs, the global nature of the industry means you won't always find seeds suited to your climate. Saving your own seeds encourages varieties that thrive in your particular environment. For example, in my area (central Maryland), even early summer can be blistering hot and swelteringly humid; by saving seeds that resist powdery mildew and continue to produce once the heat settles in, I am selecting those characteristics that help peas flourish locally. Additionally, seed companies or the local garden supply store might not always have your family's favorite in stock because

their inventory is based on what sells best to a broad customer base. Saving seeds protects your family's food from the fluctuations of supply and demand.

WHY PEAS?

Peas are a great way to start saving your own seeds. If you're like me, you're bound to miss a few pods anyway. There are often a few left on the plant when you need to pull them up once they have run their course (or you have a succession crop to plant). Pea plants are mostly self-pollinating, which means that each flower will fertilize itself without the assistance of wind or insects, two primary means of pollination. However, if you are growing different varieties of peas and want to guarantee the varieties stay separate, the plants should be grown at least 25 feet apart because bees and other pollinators may visit the flowers too. (Although crossing varieties intentionally is another fun part of seed saving!) Once you get the hang of collecting and storing seeds, you can be more deliberate about choosing which plants and which pods to save for future crops.

HOW TO SAVE PEAS

There are two strategies for saving peas. The easiest is to identify several vigorous specimens on each healthy plant. Another option is to designate an entire plant (or several plants) to save the seeds from. I personally prefer the first approach, because if you save an entire plant's worth of peas, you won't have the opportunity to sample them for flavor; you only evaluate based on the external characteristics of the plant. Which are important too, but that's not the part you eat!

If you have a garden helper, consider marking the peas being saved with string or flagging tape. That way they don't accidentally pick them. (I learned this lesson the hard way!) It's also a good idea to trellis the peas — even if the variety doesn't require it — to keep the peas off the ground. This reduces the chance of mold or disease damaging your seed crop.

If possible, leave the peas on the plant, still in the ground, to dry naturally. This may look ugly, but this is the easiest way to make sure they dry thoroughly. Check regularly to see if the pods may be splitting open or if birds are stealing any. If you must pull the plants before the pods finish drying, tie the plants in a bundle and hang them upside down to continue drying on the stalk. Hang the stalks somewhere with good air circulation, preferably with a roof. Rain can cause the pods to mold or seeds to start germinating, and either option will ruin your seed-saving efforts. In my area, afternoon popup thunderstorms occur frequently in the summer, so it's always dicey leaving the plants outside!

The pea seeds are dry enough when the pods have papery thin shells that rattle hollowly when tapped. If you must collect the



Discard seeds that are moldy, undersized, discolored, or have a damaged seed coat.

Dry pea pods are ugly outside, but beautiful inside.



Overlooked, overripe peas can be saved for seeds.

Allow the pulled pea stalks to dry as thoroughly as possible.



seeds before the pods are dry — torrential rainstorm forecasted, or going out of town, for example — shell the peas and bring them inside to keep them safe. They are more difficult to shell at this stage, but if you squeeze the end furthest from the stem, this usually pops them open without using fingernails which might damage the seed coat. Pull the halves of the shell apart. Spread the peas out so they do not touch to complete the drying process. Any remaining moisture trapped between crowded peas can cause mold.

Even with the best harvesting technique and timing, not all pea seeds will be worth saving for future crops. Keep only the largest, blemish-free specimens. Discard any seeds that are moldy, undersized, discolored, or have a split seed coat, as these won't germinate well (or at all!). If any seeds already started germinating (for instance if they got wet while still in the pods) these can be grown as pea shoots. You can find instructions for pea shoots online, or from books like *The Speedy Vegetable Garden*.

Let the seeds dry completely before placing in clear jars. They are less likely to mold this way, although you should still periodically inspect them. Consider including a desiccant in the jar to reduce humidity. Remember to label your containers! Not just with the variety, but the year as well. Pea seeds remain viable up to four years in ideal storage conditions (cool, dark, and dry), so knowing the seeds' age can be helpful — if they stop germinating as effectively, for instance.

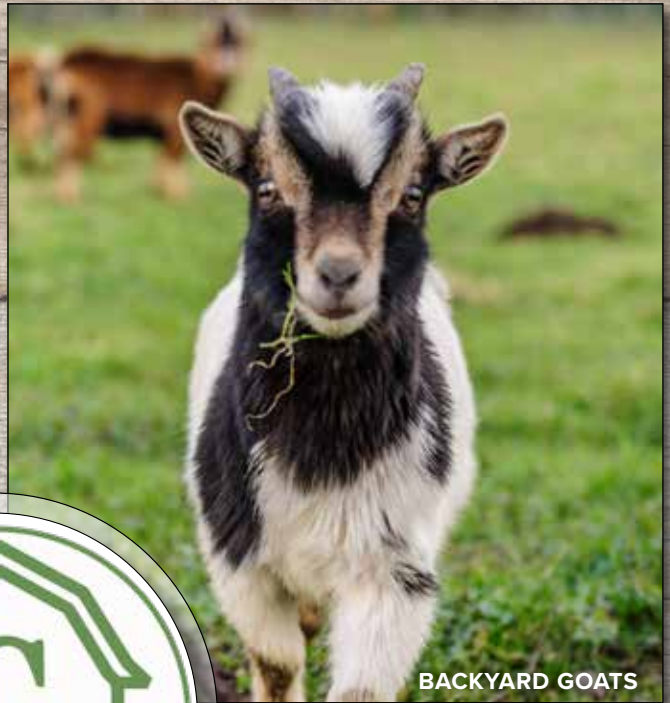
Warning! If you love sugar snap peas, you might try saving seeds from them. However, you must research your seed source first. Most commercial varieties of sugar snap peas are actually hybrids between snow peas and shelling peas. Once I ended up with monstrous snow-pea-like flat pods with grotesquely huge seeds — the opposite features of a sugar snap pea! Luckily my kids loved these novelties. Look for sugar snap pea varieties marked “heirloom” or “open-pollinated” to increase the likelihood that future generations will breed true to the originals.

TOO MANY SEEDS?

Maybe you collected more seeds than you need. Congratulations! Remember, you don't know how the next crop will fare — perhaps none of the plants will survive long enough to produce peas if the weather is uncooperative, or birds and insects especially hungry. So save your extras. You can also share with family, friends, and neighbors. And maybe you will inspire them to start saving their own seeds as well! 🌱

TJ KING is a writer, wife, mother, and recovering cube farm dweller from central Maryland. Her blog, lean6life.com, documents her adventures in discovering a lower-energy yet more rewarding life through local and seasonal eating, permaculture, foraging, cooking, health, and self-improvement.

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HOW TO MAKE A CHICKEN SWING

BY JANET GARMAN

YOUR FLOCK HAS A LARGE RUN, a substantial and well-built coop, and plenty to eat. When you watch your chickens as they forage and interact, it appears they are always busy. Chickens are inquisitive and love to investigate a new structure in the coop area.

Giving your chickens new activities helps alleviate boredom in the coop and run. When chickens are bored, they tend to get cranky with each other, pecking and even attempting to escape the run. Pecking order issues can be reduced when adding activities for the flock. If your hens are picking on some of the flock, they may be bored. Adding a chicken swing might be just what the flock needs. If they like it, consider adding more than one swing to the chicken run.

When you make a chicken swing, it gives the hens another place to go when avoiding the overly amorous rooster. I have noticed that some of my hens hide on the roost in the coop to avoid the rooster. Swings added to the run keep the chickens outside and reduce coop waste cleanup.

BUILD YOUR FLOCK A CHICKEN SWING

The first step when you make a chicken swing is to choose the base for the swing. I love to use things found in nature, so I am demonstrating with a slab of wood. This is the side cut from a log that is made

into boards. Commonly used as firewood, the slabs have one rounded side that may retain some bark and a smoother, cut side underneath. I wondered if the rough bark side would be more comfortable for the chicken to grasp. Other items you could use for the base include a strong branch cut from a tree or foraged from downed limbs, or a scrap piece of lumber. Choose a base that is between 18 and 24 inches wide.

Sturdy rope will also be used to hang the swing. If you have other farm animals, baling twine might be an abundant recycled resource on your property. I am always looking for ways to reuse all that baling twine. If not, purchase a sturdy rope from the building supply or hardware store.

The tools required are simple and readily available. A power drill with a large drill bit is used to make holes for the rope. You might need a saw if you need to cut the base of the swing to a certain size.

Four lengths of ¼-inch rope. I used five-foot length. This will vary depending on how high the support is for the swing.

Drill bit two sizes bigger than the rope diameter, for the power drill.

Board, sturdy log, or slab of wood as shown. I used an 18-inch length.

Two snap hooks (optional) for hanging the swing. This makes it easier to clip to an overhead support



SUPPLIES

A power drill with a large drill bit.

Four lengths of ¼-inch rope. I used five-foot length.

Drill bit two sizes bigger than the rope diameter, for the power drill.

Board, sturdy log, or slab of wood as shown.

Two snap hooks (optional).

using two large eye hooks. You can also simply tie the rope to the overhead support.

STEP-BY-STEP BUILDING INSTRUCTIONS FOR A CHICKEN SWING

Place the swing base on a solid surface or work bench. Using the drill, make two holes in each end of the base. Refer to the photos. Using two holes instead of one, when using a wide base, lends more stability to the swing. Too much movement when the chicken gets on the swing may cause the chicken to be fearful of the swing.

Cut four pieces of rope. Measure how long the rope needs to be to reach the support for hanging. Add extra length for the knots. I used five-foot lengths of rope for this swing. Push the rope ends through the holes in the swing base. On the underneath side, tie a knot to keep the rope from coming back through the hole. Repeat for the other three holes.

After the knots are tied as you like, it's time to hang the



LEFT: Drill two holes instead of one, when using a wide base, lends more stability to the swing.

BOTTOM LEFT: Tie knots underneath to keep the rope in place.

BOTTOM RIGHT: The hanging swing.





TOP: Hanging the swing securely, no more than three feet off the ground.

BOTTOM: Gently encourage your chickens by using treats and a soothing voice.

swing. Keep the base of the swing no higher than three feet off the ground. Jumping from higher distances can be hard on the chickens' feet and legs. Repeated jumping from high distances onto hard and rough surfaces can cause internal abscesses called bumblefoot.

DO THE CHICKENS LIKE THE SWING?


After you make a chicken swing for the coop, you will hope that your chickens will enjoy it. Chickens are naturally curious. While you were building the chicken swing, a few chickens most likely came by to check out the project. They make good project supervisors. What if, after all the work, the chickens refuse to use the chicken swing?

Here are a few ideas to try, if your flock is wary of the new boredom buster you provided.

Pick up one of your friendly chickens and show her the swing. Talk soothingly and maybe have a chicken treat ready to sweeten the deal.

Place a few pieces of chicken treats on the swing. Let the more curious and brave chickens find these. Repeat this step as often as you like. The swing needs to be associated with good things.

Place a few chicken treats on the swing. Now place one of your friendly, docile hens on the swing. Hopefully, she will find a treat and decide to stay a while. But if not, continue with occasional treats and attempts. One day you will walk by and see a hen sitting on the swing, enjoying the afternoon sun.

For more do-it-yourself projects, check out my latest chicken care book, *50 Do-It-Yourself Projects for Keeping Chickens* (Skyhorse Publishing 2018). It is available at iamcountryside.com/shop. 

JANET GARMAN is a farmer, writer, instructor, and fiber artist living in central Maryland on the family's farm. She loves all subjects related to small farms and homesteading. Raising chickens, ducks, sheep, and fiber goats led her to write her most recent books, *50 Do-It-Yourself Projects for Keeping Chickens*, (Skyhorse Publishing 2018), *The Good Living Guide to Raising Sheep and Other Fiber Animals*, (Skyhorse Publishing 2019), and *50 Do-It-Yourself Projects for Keeping Goats* (Skyhorse Publishing 2020).

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How Long Do Chickens Lay Eggs?



Photo by Mott Rodeheaver.

8 BREEDS THAT GO THE EXTRA MILE!

BY DOUG OTTINGER

HOW LONG DO CHICKENS LAY EGGS?

At some point, even the best egg-laying chicken breeds stop laying. A new pullet has 15,000 (or more) microscopic eggs in her ovaries at the time of hatching but will not actually lay that many as an adult. Some research indicates that the average hen will produce about 600 eggs in her lifetime. Though lots of research has been done on this, there is still much we don't know about why hens gradually stop laying, even when all nutritional and environmental factors should be in their favor.

Backyard poultry keepers may hear two commonly used terms in the egg-production industry: "rate of lay" and "longevity of lay." Simply put, "rate of lay" means how many eggs a chicken will produce in a period of time, usually the first year of actual laying. It is often expressed as a percentage. A commercial White Leghorn laying 335 eggs in her first laying year is at a rate of 92% (335 eggs divided by 365 days). A Brahma laying 180 eggs in her first year is producing at a rate of only 49%. The term "longevity of lay" refers to how long a bird or flock will produce. Commercial flocks are usually done laying by the end of their second laying year, and sometimes sooner. Chickens kept in home flocks with low stress, good care, and lots of love, often lay eggs for at least three to four years.

Most chickens begin to lay at about 20 weeks of age. Many commercial strains have been bred to start laying as early as 18 weeks. A few larger breeds, such as Brahmas, Cochins, and Jersey Giants may not start producing until 26 or even 28 weeks of age.

Some people use a 600-egg lifetime-average, as a rule of thumb, for planning how long a bird will lay: If a breed is known to lay 150 eggs in a year, they figure it will lay for four years. If it lays 300 eggs in a year, they estimate the production life to be two years. In reality, most birds' second-year production will drop to 60-70% of what it was in the first year, then to about 40% in the third year, and as low as 10-20% in the fourth and subsequent years.

One of the biggest reasons that hens, including the best egg-laying breeds, stop laying is that they get older and reach the end of their production life. This can be subjective, as some birds quit production after two or three years, and others may still faithfully pump out a few eggs every week, even at six or seven years of age.

After eight to 10 months of laying, most hens go into a molt for a few weeks. They lose old feathers and start growing new ones, usually in late summer or fall. During this time protein is put into the developing feathers, and egg production diminishes greatly or

Most birds' second-year production will drop to 60-70% of what it was in the first year, then to about 40% in the third year, and as low as 10-20% in the fourth and subsequent years.



Barred Rocks are well-loved for production of beautiful brown eggs. Photo by Christina Sauls and Happy Feet Hatchery.

ceases entirely. Once feathers regrow, egg production resumes.

Light hours are very important. Hens lay best with 15 to 16 hours of light per day. In commercial egg farms, artificial lighting is used when there are not enough daylight hours. However, young Australorp pullets sometimes start laying in wintertime, with only 10 to 11 hours of light, so even this factor can be variable.

For optimal egg production, hens need adequate protein levels, as well as calcium and trace minerals. Commercial laying feeds normally contain about 16% protein. If you feed a lot of table scraps, the hens may eat more of the scraps and less commercial feed. There is nothing wrong with nutritious table scraps, but if protein levels drop, so will egg production. If you want more eggs, decrease the table scraps and increase the laying feed. Production should pick up in about five days.



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Dominiques. One of the oldest breeds in America, still known for hardiness and longevity of laying.



Photo by Christina Sauls and Happy Feet Hatchery.

Also, make sure they have enough calcium. Even though laying feed contains about 2% calcium, it may not contain enough for older hens, who do not process calcium as well as younger hens. If hens produce soft-shelled eggs that break, they will start eating them. They will also begin eating the ones that don't break. Additional calcium can be very important.

To keep hens productive and laying, a lot of cool, clean water is also important. Hens prefer cool water instead of tepid or warm water. Dry housing is also important. If you live in an area where housing and birds become wet from a lot of rain, production will often drop during the damp periods and birds may succumb to illness more readily.

Now that we have looked at how long chickens lay eggs and why chickens stop laying, let's look at breeds that can "go the extra mile!"

I polled a large number of veteran chicken keepers as to what they believed were the best egg-laying chicken breeds. For a breed to even be considered, one stipulation was that the breed had to lay at least three or four eggs per week and had to keep laying fairly consistently for at least three or four years. Most breeds chosen were brown-egg-layers.

Rhode Island Reds: An old-time farm-favorite, this was still the favorite of most veteran chicken keepers who responded. Given high marks for laying lots of large to extra-large, brown-shelled eggs throughout the first three or four years of production, many people stated their hens were still laying strong at five and six years of age. Some also reported good production from hens seven and eight years old.

Barred Rocks: The popular black-and-white-striped Barred Rock received high praise. This

brown-egg-laying breed got marks for overall production in the first few years of laying. Many owners also bragged about their girls laying for five or six consecutive years.

Australorps: If you are looking for high production, even into the fifth and sixth years, and calm dispositions with friendliness and personality to boot, you cannot go wrong with Australorps. These little black hens received praise from many longtime chicken owners. Known to be magnificent producers of light brown eggs, they are a breed that is easily handled. They can become pets that perch on your shoulder and will make their way into the house to see you, if you leave the door open.

Dominiques: Very close in appearance to a Barred Rock (same roots), these calm little black-and-white striped hens are known as one of the oldest breeds in America. Not quite as productive as many Barred Rock strains, they are still excellent layers of light-brown, medium-to-large eggs. They received excellent ratings for not only longevity of lay (five to seven years), but also hardiness and resistance to disease.

Buckeyes: Similar in appearance to a Rhode Island Red, but a totally separate breed, Buckeyes garnered many accolades. Excellent rates of lay, longevity of lay, hardiness, and disease resistance were just some of the praises sung about this breed.

ISA Browns: While the ISA Brown is a fairly modern laying hybrid developed for commercial brown-egg production, these little hens received excellent reviews and praise from small flock owners. Originally developed in France at the Institute de Selection Animale in the late 1970s, they are a production strain, of closely guarded genetic secrets, available to both commercial egg producers and home-based small flock

owners. Also known as Hubbard Browns, they received praise for high rates of lay, longevity of lay, and sweet, curious personalities. The only downside reported was a potentially weak immune system.

Turkens or Naked Necks:

Responding owners of these unusual-looking birds praised their dispositions, hardiness, consistent brown-egg-laying abilities, and longevity of lay. Add in their uniqueness and the questions they will generate, and they appear to be a winner for almost any flock. (As an additional note of interest, Turkens in Australia have been bred to produce blue and green eggs.)

Easter Eggers: Not a true “breed” (and not to be confused with purebred Ameraucanas), “Easter Eggers” received overwhelming praise from veteran poultry owners (especially “Green Easter Eggers”). Usually mixed-breed birds, sold by the hatcheries, that will lay blue, green, olive, or sometimes brown eggs. Many respondents said their Easter Eggers still produced faithfully at five and six years of age. As there is no set industry standard for producing these birds, it is hard to say whether you will have the same happy results. However, with all the praise they garnered, all I can say is, “Why not give them a try?”

DOUG OTTINGER raises chickens, ducks, and geese on his small hobby farm. Doug’s educational background is in agriculture, with an emphasis in poultry and avian genetics. Doug recently lost his wife and companion of 40 years, following her long battle with Multiple Sclerosis, and he is continuing writing and working from his small hobby farm in far-Northwest Minnesota.

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Poultry Wound Care

By Rebecca Sanderson

Be prepared before your chicken gets injured by having both the supplies and knowledge for chicken wound care.



Before Treatment

Wrap your bird gently in an old, clean towel to prevent them from hurting themselves (or you). If your bird is not in serious condition, treating at night may calm them. Take them away from the flock. If the wound bleeds heavily, apply wound powder and light pressure for 10 minutes.

Clean the Wound

Pour or squirt a saline solution into the wound to clean out dirt and debris. Purchase in first aid sections or mix four cups of (cooled) boiled water and two teaspoons of salt (non-iodized, with no anti-caking agents). Use tweezers to grab larger pieces of debris. The foaming action of hydrogen peroxide can lift debris out but is damaging to soft tissues and should only be used as a last resort. Gently dab the wound dry with a gauze pad.

Treat the Wound

To prevent infection, keep a few types of antibacterial products handy. A simple spray such as Blu-Kote disinfects small wounds and colors the area purple to prevent pecking. For larger wounds, povidone-iodine is a broad-spectrum antimicrobial available over the counter. Gently pour iodine on the wound and allow to air dry. You may follow with antibiotic ointment for dry wounds or antimicrobial powder for oozing wounds.

Dress the Wound

For minor feather picking or superficial scratches, Blu-Kote is usually enough covering to aid in healing. If not, clip or pluck away feathers that may get in the wound. If no longer bleeding and where the bird will not peck it, you may leave it open. Otherwise, cover with a gauze pad and tape it around the wound or make a body wrap around the bird to hold the dressing in place.

After Treatment

Keep your bird isolated until it heals. Your healing bird needs rest, warmth, quiet, and no more stress, to avoid shock. Be sure they have adequate food and water.

Treating Infection

Infection is easier to spot if you check under the dressing daily or opt not to use a dressing. An infected wound will be red, may ooze pus or fluid, and the scab may get larger as time passes. If a wound isn't healing within two weeks, assume it is infected. Remove the scab, softening it first by repeatedly applying a thick ointment such as zinc oxide or Ichthammol. This may take a day or even two. Clean out the infection using saline solution and retreat the wound just as before.

Special Considerations

If the wound is from an animal bite, you may need a stronger antibiotic such as Terramycin. Also, if the chicken's wound doesn't stay closed with a simple dressing or is multiple layers deep, it may need stitches. This is best done by a veterinarian or other professional.

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A-Frame Shelters

BY JODI CRONAUER



WHETHER FARROWING OUTDOORS or just providing shelter to your adult pigs, some of the important things to consider are shape, space, dryness, and function. When farrowing outside the most important concern is a warm, dry place to deliver the new little piglets. All piglets need shelter from the heat of summer and warmth and dryness from the inclement weather. This is why we love our A-frame buildings. They provide good coverage with an amazing amount of warmth in the winter, whereas in the summer these same A-frame houses provide shade as well as a cool dry ground to lie on. We build our A-frame shelters out of two full sheets of $\frac{3}{4}$ -inch green-treated plywood for each side as well as a triangle section cut out for the back section. The frame is made out of eight 2x4s. We do not put any floors into our A-frame shelters.

The measurements we use are: one 8-foot 2x4 across the top peak, two 2x4s cut at 65 inches (one for the front and one for the back bottom sections), four 2x4s cut at 48-inches (two for the front and two for the back sections running from the bottom to the top and completing a triangle shape). I cut these pieces at a 45-degree angle on

both sides to allow them to fit snug to both the bottom section as well as the top peak section.

There are four more pieces to cut now with two being cut at 89.5-inches. These sections will be positioned on either side of the shelter running between the front and back triangle sections you just built. When I put these boards in place, I like to follow the angle of the 48-inch boards so that the plywood will lay flat when it is put on. The last two boards are support boards and will run from top to bottom at the middle of the 89.5-inch board and the top peak board. The top of these boards is cut at a 45-degree angle again to allow for it to lay flat onto the top peak board, but the bottom is left square to sit onto the angle of the 89.5-inch board. To get the exact measurement of these two boards I recommend measuring the space once all of the other boards are in place.

After the frame is built, it is easiest if you have a helper so that the full sheets of plywood can get attached correctly. If you overlap the top of the right side over the left (or vice versa) and screw it down tight, it makes the top angle nearly waterproof.

To get the exact shape of the back-plywood sections, I like to just stand my last sheet up next to the back and trace the outline.

Different measurements can very easily be used, but we have found that the measurements we have provided allow for an A-frame that is tall enough to accommodate the majority of our full-grown adult Idaho Pasture pigs, and wide enough to allow ample room for a sow and piglets. The shape of the A-frame is such that as the sow starts to lie down, her back will hit the side and she will lie down at that point. Because of her height, her back will hit higher up on the side of the ceiling section and when she lies down, she will still have ample space behind her for the piglets. The A-frame shape allows a great spot for the piglets to get away from their mom when she lies down. If you make the A-frame too narrow, it won't allow adequate space along the edges. When we farrow in the A-frame shelters, we fill it full of straw. It is best if you can get the straw into the A-frame a few days prior to your sow delivering. This will allow her to have time to move things around, reposition the straw the way she wants, and make a nice nest. It also gives her time to lie on it and flatten it down slightly. If the straw is too fluffy, then the newborn piglets may get hidden under it and they can potentially get laid on because the sow doesn't see them. Because there is no floor in the A-frames, the piglets will naturally get iron as they play and nose along the ground.

During the cold winter months, the A-frames have straw in them to provide warmth. We recommend re-bedding as needed. We have found that we normally re-bed every couple of weeks in the winter. We have found that the straw provides the best bedding because it has more loft than hay, and therefore, provides a better overall warmth. Each winter, when I go out to feed in the mornings, I am



The frame is made out of eight 2x4s.



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During the cold winter months, the A-frames have straw in them to provide warmth.

amazed at how warm the pigs are when they are coming out of their shelters. We have many days during the winter where the weather gets or stays below zero degrees F. I love to see the pigs come out of their beds and watch the steam billowing out behind them. I have been very tempted to sneak in and warm up when the wind is hollowing and the snow is coming down like crazy. Considering that “my girls” have spent quite a bit of time cuddled up to me throughout the years, I don’t think anyone would mind in the least. Now, during the warm summer months, the pigs will pull all of the straw out of the A-frames so they can lie on the nice cool dirt that is located in the shade of the A-frame. When the sow has piglets, she will not pull all of the straw out of the entire A-frame, but will position the straw in the back of the A-frame for the piglets, and have a cooler dirt area in the front of the shelter. Because the A-frames are eight feet long, it allows ample room for the sow to have a dirt floor in the front with a nice, comfy straw bed in that back section.

We normally plan our litters

to arrive in the warmer months of spring through late fall, but on occasion, we have had litters arrive in the cold months of winter. When we first started out, we had a couple of litters born in stall areas with run-in doors to their pastures. We would use heat lamps and the piglets did great. But we had problems keeping the sows healthy. Our sows would get cold and a couple of times, the sows got frostbite on their ears. Our KuneKune sow, Angel, got severe frostbite one winter and we declared that there had to be a better way. That was the last time we used a heat lamp. A couple of years later, another sow ended up delivering in January on one of the coldest nights of the year. We kept this sow in her A-frame shelter with a bunch of straw and no heat lamp. We checked on her periodically throughout the night and kept straw built up in front of her opening to prevent any piglets from sneaking out. She delivered nine healthy piglets and one stillborn. One died the next evening when the temperature dropped to below -28 degrees F. The night she delivered it

was -20 F and it stayed at -20 F for two solid weeks. That sow, Marie, lost two piglets out of 10 in some of the worst weather possible with no heat lamps. There is no better proof of how warm the A-frame shelters are than the birth of piglets in such inclement weather. Because pigs give off a lot of their own BTU’s, The heat rises naturally and hits the peak of the A-frame. That same heat then drops right back down on top of the pigs, thereby keeping them warm with their own heat. When in a stall or barn area there is nothing to trap the heat and as the heat rises, it simply dissipates into the area above them.

Our adult boars mature to about 350–450 pounds and our adult sows mature to about 250–350 pounds. These pigs have no problem fitting into the shelters. We have two A-frame shelters in each pasture for the winter and even with extra space, they choose to sleep together as much as possible. It is very common to see a full-grown boar and four or five of his sows all in the same house. If you have ever seen a group of sleeping pigs, you will note that they love to pile on



top of each other. It doesn't matter if they are all in their shelters or out in the middle of the pasture. They will still make a pile on top of or as close to each other as possible.

Keep in mind that if your pigs are larger than the pigs I deal with normally, you may have to adjust the measurements to accommodate their size.

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JODI CRONAUER lives in Wisconsin with her husband, Dave, and her three sons, Hunter, Timber, and Ryder. They raise Idaho Pasture pigs, Kunekune pigs, and American bison as well as Gypsy Vanner horses. They saw the need for animals raised properly in pastures outdoors as well as the need for them to be raised without chemicals and hormones. They strive to provide both at their farm and pride themselves in producing quality animals in every way. The meat from their pigs and bison is rich in essential nutrients because they eat grass as their primary diet.

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THE HIDDEN DEPTH of Sheep Intelligence

Social Bonds Bind Sheep Together

BY TAMSIN COOPER

HOW DO YOU PICTURE SHEEP? Passive clones that follow the crowd meekly? The problem for sheep is that most humans do see them this way and forget they have individual needs and preferences. Sheep have gained a reputation for being somewhat stupid. However, cognitive scientists have uncovered considerable social and survival skills that govern their desire to stick together. With this knowledge, we can see their tendency to follow from another perspective — not mindlessly tagging along, but the product of social preferences in a world where the group gives mutual support.

SENSES AND LEARNING

Cognition tests reveal that there is nothing dull about the ovine mind. Sheep can learn tasks quickly, sometimes after two trials. Preferably visual learners, they have keen eyesight around a 270–320 degree arc. They discriminate different colors within the blue – green – yellow spectrum and can learn to choose containers marked by a certain color. They can even switch this learning to a different color or container shape, although they learn more easily with colors. They also understand that covering feed does not mean that it is no longer there.

Sheep have a good sense of smell and taste for selecting plants. They recognize different species and can categorize them according to similarity. They

learn which are beneficial and which to avoid. Scent is used to recognize young and companions, and to communicate with them through glands on the head, abdomen, and feet. A characteristic lip curl, called flehmen, enables sheep to examine complex odors. Rams use flehmen to test ewes for estrus.

Sheep combine senses and learning with innate intelligence to produce subtle behavior that helps them survive. For example, vulnerable sheep are less likely to exploit the lushest patches of vegetation where ticks are present, whereas healthier individuals will risk the ticks to gain the richer food. Good memory helps sheep to remember where they have found food before. Sheep remembered where food was hidden in a maze when tested 22 weeks later. They also learn from each other. Lambs put in with bottle-fed lambs learn to use the artificial teat faster.

SOCIAL BONDS

Sheep display the most exceptional learning and discrimination when it comes to other sheep. Ewes and lambs form strong bonds and quickly recognize one another through scent, then sight and sound. In a natural setting, ewes wean lambs after six months and some bonds last longer. In any case, sheep form preferences for certain individuals, initially those most familiar, but often changing over time to, for example, those of similar age. They are calmer and quieter when

allowed to remain with their chosen companions. They prefer to stay with their social group than leave them for desirable feed.

Isolated sheep become very distressed, often calling, pacing, and nosing or chewing fixtures. Lambs and mothers separated under four months after birth both show distress for several days. Lambs show poor response to behavioral and immunity tests after early separation.

After one week from birth, lambs form playgroups and show joyful behavior such as gamboling and frolicking. Males headbutt and mount each other as they learn about forming a hierarchy. Friendship is important for social cohesion, especially among ewes, as a protective strategy at range. Females have little or no pecking order, while hierarchy is common among males, for whom horns are important as a sign of rank.

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members, individual sheep show different personalities, based on tests of boldness, gregariousness, activity, anxiousness, and maternal style. Personality differences and bonds between individuals affect the way the flock moves and splits. The most gregarious individuals stick together at the front of a moving flock. Less gregarious sheep may venture away in search of fresh forage.

SOCIAL SKILLS

Such social selectivity requires good discrimination skills, and sheep are found to distinguish individual differences and have good memories for faces, especially those of other sheep. Lambs take time to learn their mother's facial features — a month or two — but ewes appear very sensitive to lamb and companions' faces. They can remember 50 sheep faces for over two years. They prefer photographs of sheep to other species, especially those of familiar individuals, followed by those of the same breed. When in estrus, ewes prefer ram faces, but otherwise, ewes'. Photos of familiar sheep can calm a lone sheep, but not photos of goats. Sheep who learned photographs of three-month-old lambs could identify the same individuals at one month old. Many could also identify an adult sheep from her

profile after learning from a frontal image (however, not the reverse).

These identification skills transfer to humans to some extent. Eight sheep learned to identify photos of four celebrities. Most of the time, they could then identify them in photos taken from different angles. Most picked out the photo of a familiar keeper among the images.

EMOTIONAL SENSITIVITY

Sheep need to be wary of other animals, as they are a prey species. Certain events alert them, rather than cause real fear. For example, when observed by people, they move more often, urinate more, and keep an eye on their observers. To survive, they need to recognize the signs of fear in flock members, such as high vigilance, defecation, freezing, fleeing, or escaping. To this end, sheep are sensitive to the emotion displayed by other sheep through body language or facial expression.

Ears are good indicators of emotions. They are more mobile in negative situations, such as isolation or unpalatable feed. Sheep raise their ears more when vigilant or displeased, and hold them back in intimidating or unpleasant situations. Ears are placed at different angles when rapid and surprising events occur. When relaxed and content, the ears hang loosely.

Sheep can be unnerved by unpredictable, unfamiliar events, and gain confidence when they have a measure of control. They suffer disappointment or frustration when fed less than expected. We are wise to notice the display of emotion in sheep when managing them, as chronically stressed sheep can suffer poor health and welfare. Chronic fear makes lambs more nervous of people and new objects, less willing to explore. With sensitivity to their social and emotional needs, we can help our sheep to remain healthy and productive. 🌱

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TAM SIN COOPER is a smallholder and goat keeper in France. She follows the latest research on behavior, welfare and sustainability, and mentors on animal welfare courses. Find her at goatwriter.com.

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IMPROVING SOIL HEALTH Through Multi-Species Diversity

BY KENDRA PAULTON

I CAN STILL HEAR MY JUNIOR HIGH SCHOOL science teacher saying, “It’s not dirt, it is soil!” Our class would laugh at our poor teacher, as we enjoyed egging him on in this pet peeve. Oh yes, Mr. Schneider made sure we knew the difference between dirt and soil. While the first refers to any filthy substance that causes a mess, the other is the nutrient-dense stuff of the earth from which springs forth life and vegetation. Truly, there is an entire ecosystem beneath the grass level.

As a cattle rancher myself, I care deeply about the ecosystem and the intricate way all living organisms work together in life, death, and regeneration. Without healthy grass, it is tough to raise healthy cattle. Without healthy soil, it is tough — no, impossible — to grow healthy grass. Healthy soil is dependent on water penetration, organic matter, surface residue, species diversity above and below the ground level, living plants, and limited disturbance of the soil.

I think the first time I fully understood the magnitude of this truth was in 2018 when my husband and I, plus our four small children in tow, signed up to go to The Grass-fed Exchange Conference that was being held in a nearby city.

My husband, Travis, had been studying soil health for a few years in order to improve the hay ground on our ranch. He liked to joke, “We aren’t very good farmers ... but we can raise cows!” However, in recent years, as he has been growing in his knowledge of species diversity, soil biomass and ecosystem, I think he is going to have to change that statement to something more fitting such as, “We are ranchers, therefore we raise cows and good grass!”

At the Grass-fed Exchange, we met a host of remarkable people from our local area and as far away as Great Britain and Australia. All of us have a common goal of stewarding this land and the plants and animals for the benefit of the whole, and for the production of healthy, regenerative food for America and the world. We learned about organic matter, good bacteria, microorganisms, root rhizomes, soil assessment, diverse cover crops, rotational grazing ... the list could go on and on!

One of the things that most intrigued me was the importance of rotational grazing and multi-species, or co-grazing, the land.

Modern farming has, in general, compartmentalized agriculture into neat, tidy squares of production. In this

monoculture type of planting, we see a single species sowed in a large field, rarely intermixed with other types of forages or crops. Mostly, this is from necessity of demand of crop-specific sales and machinery.

The problem with this type of farming is that monocultures deplete soil of certain nutrients those plants need to grow, with no way of natural replenishment. And so, farmers turn to chemical fertilizers to "enhance" their soils. Chemical fertilizers, however only burn the soil over time — giving an instant reactive result, with no lasting healing effects but actually only a depletion of natural nutrients.

Monoculture is typically seen with livestock operations, as well. We are cattle ranchers, hog farmers, chicken producers, or sheepherders. Rarely do we intermix species within our operations. Some of these are from practicality; hogs require different fencing than cattle. It just makes life simpler to run only one type of animal on a large scale. Some of this comes from good old tradition. We have always been cattle ranchers. Sheep have no place on our land!

But when we start to consider that each of these species plays unique roles in a complementary ecosystem, we can see that diversification in forages and animal species has widespread benefits for animals, landscape, and the producer.

Livestock manure, whether spread by a machine or by the animals, adds valuable organic matter to the soil. Animals can be grazed on cropland after harvest or allowing them to graze a cover crop.

We do this on our ranch. My husband plants a mixture of 19 species of grasses, legumes, flowers, and root crops each fall. Though the wildlife enjoy

these cover crops while they are growing, the goal is to let them go to seed and then be trampled by livestock (adding biomass to the land) and for consumption during the winter months. The tap roots and fibrous roots also create aeration in the soil, allowing for greater moisture penetration as root systems are expanded.

While we can allow our cows to trample a pasture near to death in the cold, winter, non-growing seasons, as soon as those first shoots of fresh green spring grass pop up, the cattle are moved to new ground to allow tender grasses to thrive. Cattle are never allowed to over graze a pasture. By leaving residue, we promote the grass to continue growing and going to seed, which enhances the pasture for the following year.

Multi-species grazing refers to the utilization of more than one species of herbivores grazing the same forage area. Multi-species, or co-grazing, only works well and to its fullest advantage when the species grazing together seek out a different forage from one another, and only when proper stocking ratios are maintained.

Pastures must be managed to leave adequate residue (two to four inches minimum) of stubble, so that soils are protected and plants do not die out. This is called "resting" a pasture.

By utilizing a co-grazing or rotational multi species grazing system, a wider range of forage is consumed. This stimulates grass growth while also providing the farmer/rancher

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Tom and Susan Barnes of Custer County, South Dakota have lived this multi species, rotational grazing, method out in real life on their 140-acre Pleasant Valley Farm. Barnes raises a herd of Kiko/Spanish/Savanna goats that he rotates through the 17 small pastures on his place.

“Goats are really good for the land,” Barnes said.

Barnes said that in the 15 years he has been raising goats on his property, the dominant plant species has increased from five main species, to 50. The intentional way they have stocked and managed their pasture land has even earned them a South Dakota Soil Conservation award.

Co-grazing is not only limited to ruminants. Allowing chickens to free range in the pasture where your cattle just moved out of allows

with additional income from the increased diversity of market animals to sell at the end of the season.

A somewhat commonly known example is that of cattle and sheep (or goats). Often, you will hear people refer to goats as “weed eaters,” suggesting a person to purchase a goat to control undesirable foliage. And it is true!

The addition of goats to cattle pastures has been shown to benefit the cattle by reducing browse plants and broad-leaved weeds. (Linda Coffey NCAT Agriculture Specialist.)

Cattle do not like to graze near manure deposits, whereas sheep don’t mind. Grazing the two side by side, with proper stocking and pressure, improves carrying capacity and pasture productivity.

Sheep (and goats) are able to digest plants that would be harmful to cattle, and vice versa. One study conducted by Charley Prosser, North Dakota State University, evaluated the effects on co-grazing cattle and goats alongside each other in order to decrease leafy spurge, a plant toxic to cattle but edible by goats.

Prosser concluded that, “When the plant community is diverse, such as most native rangelands, multi-species grazing can improve plant diversity.”

the manure deposits to be scratched and scattered. The chickens eat the parasites that would otherwise thrive in the decaying manure — offering other livestock parasite protection. The scattering of the manure naturally fertilizes and adds to the soil biomass that will increase growth of all types of forages.

As our family seeks to improve our ranch land for future generations, it is exciting to think about the possibilities for growth when we consider species diversity. We purchased our first goats in 2019; my kids have a small flock of laying hens; and soon I hope to add the animal with a plow for a snout (read: a pig!) to my motley crew of animals.

By being better stewards of the land God has given us, we can promote soil health, grass health, animal health, and nutrient-dense food for our family and our community. 🌱

KENDRA PAULTON is a freelance writer, photographer, and Certified StoryWay Guide in the Black Hills of South Dakota, specializing in family legacy books. She resides on a fourth-generation cattle ranch with her husband, four children, and pack of German Shepherds. Visit her website dakotacanyonranch.com to connect.

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Ways to Minimize Heat Stress in Cattle

BY HEATHER SMITH THOMAS

HOT WEATHER, ESPECIALLY IF IT'S humid, can be hard on cattle, and they may be at risk for heat stroke. Cattle have fewer sweat glands than horses or humans, and can't cool themselves efficiently by sweating. Instead, they resort to breathing faster (for more air exchange in the lungs), or panting with mouth open if they are very hot.

Overheated animals will be panting and drooling — getting rid of some body heat with the saliva, and may sling saliva over themselves to get some cooling effect from evaporation. Hot cattle may stand in water if there's a pond, ditch, or stream in their pasture, or stand next to a water trough.

On a sunny day, black cattle get hotter than red or light-colored cattle; the dark color absorbs more heat. Breeds with thick hair coat will also get hotter than a breed with a sleek, thin hair coat. The larger and fatter the cattle, the harder for them to disperse body heat, and the more adversely affected they are by hot weather. A fat cow or bull will overheat quicker than a small calf or a thin yearling, but baby calves may be at risk for dehydration if they get too hot and don't feel like nursing, or are sick with scours. Diarrhea and hot weather can be a deadly combination.

Zebu breeds like Brahman and their crosses have more sweat glands and more heat tolerance (even if they are black) than British and European breeds. Dr. Stephen Blezinger, a cattle nutritionist in Sulphur Springs, Texas says the most common way that cattlemen avoid heat stress in his part of the country (aside from making sure cattle have

adequate shade and water) is to add Brahman genetics to their beef herds. Zebu cattle originated in warmer climates and are well-adapted to heat.

"On a hot day, in a pasture where there are black Angus cattle and Brangus cattle, both breeds are black (a color that generally does not handle heat very well) but the Brangus will be grazing and the Angus are generally in the shade. Brangus are $\frac{3}{8}$ Brahman and can handle heat better," he says. Other composite breeds in the U.S. that mixed Brahman genetics with British and European breeds include the Beefmaster, Santa Gertrudis, Charbray, Simbrah, Braford, and Bramousin.

British and European breeds don't do as well in a hot climate. Zebu cattle have different hair and more sweat glands, and stay cooler. "One of the European breeds that tends to handle heat better than most is Braunvieh, but I'm not sure why," Blezinger says.

Besides selecting cattle that can handle hot weather (if you live in a hot part of the country), it's always

Salt is crucial in hot weather because it is lost through sweating.



important to have adequate shade and water. "If you compromise on these, you lose performance (less weight gain in calves, less milk production in cows) simply because the cattle won't eat as much when they are hot and miserable," he says.

It's also important to continually provide salt, usually in a salt/mineral mix. Salt is crucial in hot weather because it is lost through sweating. Salt content of most mineral supplements is generally adequate. Cattle also need proper levels and sources of trace minerals in their mineral supplement. Blezinger says some studies show that when beef animals are stressed they excrete more zinc and copper, which must be replenished. Trace minerals are important to a strong immune system and good health in general.

"Another thing some cattlemen are feeding, though it needs more research, is enzyme products — a microbial culture such as *Aspergillus oryzae* (fungi), *Bacillus subtilis* (bacteria) or *Saccharomyces cerevisiae* (yeast). Enzyme activity facilitates better fiber digestion. We need cattle to be able to digest fiber very efficiently in summer and not produce as much heat during digestion," he says. The normal heat production from fermentation and digestion is useful in cold weather for generating body heat, but is detrimental in summer — creating more heat that the body must get rid of.

The most helpful thing you can do in hot weather is provide shade and plenty of fresh, clean, water that is cooler than 80 degrees F. If your water tank is out in the sun, or supplied by an over-ground hose or pipe that sits in the sun, water may get so hot that cattle won't drink — and become dehydrated and at risk for heat stroke. You need shade not only for the animals but also



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their water. If water is cool, they'll drink and this will help cool them. Cattle need at least two gallons per 100 pounds of body weight, daily, and even more if weather is hot and they are losing fluid through sweating and drooling.

If there's only one water source and they crowd around it trying to drink, or stand near or in it to cool themselves, they reduce any benefits of a breeze. The dominant animals may stand near the water and not allow timid ones to get a drink. You

may need several water sources to keep cattle spaced out better.

Shade trees are helpful, especially if there's some air flow through the trees. If there's no natural shade you can create a roof on tall posts. A metal roof should be insulated. Otherwise radiant heating will make it hotter underneath, like an oven. A roof should be at least 10 feet high, to allow air movement beneath it.

It's also important to control biting flies. If cattle have to expend energy trying to get rid of flies

CHECK RESPIRATION RATES

The easiest-to-check indication of heat stress and elevated body temperature is respiration rate.

Below 40 breaths per minute indicates healthy, safe temperature. A respiration rate of 80 or higher is a sign of heat stress and cattle won't eat.

With high respiration rate, it's difficult to eat and they may not want to move. If it gets up to 120 it's more serious. By the time it gets up to 160 breaths per minute their tongues are sticking out, drooling, and they have a real problem.

You don't have to count for a full minute to check respiration rate; **count for 15 seconds and multiply by four, or for 30 seconds and double it.**



Don't tag, vaccinate, dehorn, or wean on a hot day, and don't haul or drive them very far during the heat of the day.

(tail-swatting, kicking the belly, slinging their heads over their back) this creates more body heat. They also tend to bunch up when fighting flies — with less air flow around their bodies.

If you are moving cattle on a hot day and they start panting with mouths open and drooling, halt and let them rest. Don't tag, vaccinate, dehorn, or wean on a hot day, and don't haul or drive them very far during the heat of the day. Do it very early in the morning when it's coolest.

Cattle are less at risk for heat stress in an arid climate, especially if it gets cooler at night. Low humidity enables them to lose heat through sweating and evaporation. If air temperature doesn't drop below

70 degrees F at night, cattle start getting too hot. Heat is cumulative; if they can't dissipate heat into cooler night air, body temperature slowly rises during a multi-day heat wave. If the heat lasts longer than three days, cattle may die.

If air temperature drops below 70 degrees F at night, they have a window for heat loss and can often recover. If it stays hot at night, you need to find ways to cool cattle with sprinklers, shade, or fans. If cattle are outdoors, hope for clear nights with no clouds, to get some heat loss. The sky is a heat sink, on clear nights. But if it's cloudy the heat sink is blocked and cattle can't get rid of the heat.

Watch weather forecasts and temperature-humidity indexes.

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Combination of air temperature and humidity is what affects animals' ability to dissipate body heat. Check the index to determine what the combination is — and whether it puts cattle into alert stage, danger stage, or emergency stage. Even if temperature is only in the upper 70s F, if there is high humidity (70% or above), you may be in the alert stage. Once you get into the danger or emergency stage, you must do something quickly to save them, such as sprinkle them with cool water. At 75% humidity, air temperature above 80 degrees F can cause heat stress in cattle. If humidity is less than 35% they can handle 90 degree F temperature without problems, and in a very dry climate they can tolerate 100 degrees F.



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Canning Pumpkin

BY ANN ACCETTA-SCOTT

“How do you preserve pumpkin and other winter squash?” That’s a pretty common question among home food preservers. Though many winter squashes store well long-term, sugar pumpkins do not. And if you’re an “all things pumpkin” kind of person, then you will appreciate the fact that sugar pumpkins can be canned.

Sugar pumpkins are more often used for baking; however, the shelf life for this variety consists of one to three months. Larger pumpkins, ones that are often carved into jack-o-lanterns, have a shelf life consisting of three to four months. In order to keep both varieties in their freshest form, they will need to be stored in a root cellar or cold storage space between 50 to 55 degrees F with a relative humidity level of 60 to 70%.

This is ideal for some, but not for all. For those of us who enjoy cooking or baking with pumpkin throughout the year, we need more. This is what makes canning pumpkin for the pantry a necessity.

The steps for preserving pumpkin are pretty easy; however, there are some key safety tips that you’ll need to know.

CAN PUMPKIN BE HOT WATER BATH CANNED?

Various pumpkin varieties and winter squashes are extremely low in acidity, making them very difficult to hot water bath can. As a matter of fact, the National Center for Home Food Preservation states, “Pumpkin can be used in pickled recipes such as salsas, chutneys, and relishes; however, your recipes for these must be treated as fresh prepared foods and kept refrigerated. We do not have tested recipes and procedures to recommend for safely canning these types of products by either the boiling water or pressure canning method.”

PURÉED PUMPKIN

There is one way to properly can pumpkin. Unfortunately, canning puréed pumpkin is not the way. Instead, this convenient food item can be dehydrated, frozen, or freeze-dried in order to store it long-term.

Many wonder why puréed foods cannot be canned and the answer is relatively simple. Puréed foods like pumpkin purée, pumpkin butter, and purée soups are extremely dense. And unfortunately, home pressure canners and other canning tools are inadequate when it comes to preserving puréed foods.

The heat generated within a pressure canner cannot thoroughly penetrate through the puréed food within the jar. Keep in mind, home pressure canners reach 240 degrees F, whereas industrial pressure canners easily exceed 240 degrees F. Industrial canning facilities process puréed foods that are found on the grocery store shelf.

Since puréed pumpkin and some winter squash cannot be canned, then how can pumpkin be made shelf stable? Before we get there, let’s talk about what types of winter squash can be pressure canned.

Pumpkin and winter squash such as acorn, butternut, buttercup, Hubbard, and turban are great choices for pressure canning. Make sure to select mature squash with hard rinds and mature pulp for canning. Also, be sure squash is in good condition with no cracks or nicks and has not begun to soften and degrade.

Unfortunately, spaghetti squash cannot be canned due to its soft, stringy texture. During the canning process, it assumes a puréed consistency.



Pumpkin and winter squash such as acorn, butternut, buttercup, Hubbard, and turban are great choices for pressure canning.



HOW TO CAN PUMPKIN

In a large stock pot, bring water to a boil.

Add water to the pressure canner and turn heat to medium high.

Place lids into warm water to soften the plastisol. I like to use a mini slow cooker for this job.

Wash the winter squash with room temperature water and remove seeds. Grab your vegetable peeler and peel the rind.

Cut the peeled winter squash into one-inch slices, making sure to discard any bruised or soft flesh.

Once they are sliced, cut the flesh into one-inch cubes.

Boil the one-inch cubed pumpkin for two minutes, in the stock pot.

Using a slotted spoon, add boiled pumpkin cubes to mason jars, leaving a one-inch headspace from the top of the jar. As you're filling the canning jars, take care to not mash the cubed pumpkin.

Fill jars with freshly boiled water to fill in any empty areas, leaving a one-inch headspace from the top of the jar.

With a clean dish towel, wipe the rims of the mason jars.

Remove all air bubbles from within the jar using an air bubble remover. Add warmed lids and rings to the jar and finger tighten the rings.

Process jars according the altitude in which you reside. The charts below will help you determine the correct PSI and processing time. Make sure to select the processing time for the type of pressure canner you own.

Once the processing time is completed, make sure to allow the pressure canner to naturally depressurize. Remove the jars from the canner and allow to cool.

After a 24-hour period, press on the lids to ensure they have sealed properly. If the lids flex up and down, the jars have not vacuumed-sealed. Store unsealed jars in the refrigerator and use them within two weeks.

Prior to storing the processed pumpkin, remove the rings and wash each jar with warm, soapy water. On the lids, label each jar with its contents and the date it was processed. This will help with pantry management, making sure the oldest goods are used first. 🌱



RECOMMENDED PROCESS TIME FOR PUMPKIN AND WINTER SQUASH

| DIAL-GAUGE PRESSURE CANNER | | | | | | |
|----------------------------|----------|--------------|---------------------------------------------|-------------|-------------|-------------|
| Style of Pack | Jar Size | Process Time | Canner pressure (PSI) at altitudes (ft.) of | | | |
| | | | 0-2,000 | 2,001-4,000 | 4,001-6,000 | 6,001-8,000 |
| Hot | Pints | 55 min. | 11 lb. | 12 lb. | 13 lb. | 14 lb. |
| | Quarts | 90 min. | 11 lb. | 12 lb. | 13 lb. | 14 lb. |

Altitude of 8,000 to 10,000 ft. process at 15 lb.

| WEIGHTED-GAUGE PRESSURE CANNER | | | | |
|--------------------------------|----------|--------------|---------------------------------------------|---------|
| Style of Pack | Jar Size | Process Time | Canner pressure (PSI) at altitudes (ft.) of | |
| | | | 0-1,000 | 1,000 + |
| Hot | Pints | 55 min. | 10 lb. | 15 lb. |
| | Quarts | 90 min. | 10 lb. | 15 lb. |

*The charts within this article were provided by The National Center for Home Food Preservation.

ANN ACCETTA-SCOTT homesteads on two acres in Washington State, raising poultry, goats, and rabbits. She is an educator and encourager of all who are seeking to live a more sustainable lifestyle. Ann is also the face behind the website A Farm Girl in the Making and author of *The Farm Girl's Guide to Preserving the Harvest*.

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Apple Cinnamon Treat

BY BECKY PEDERSON

INGREDIENTS

1 ½ cups chopped apples (McIntosh work great)
2 cups flour
1 teaspoon baking powder
1 teaspoon baking soda
1 teaspoon salt
½ cup solid shortening
1 cup sugar
2 eggs
1 teaspoon vanilla

TOPPING

¼ cup white sugar
1 ½ teaspoon cinnamon

Cream together salt, shortening, and sugar.

Add eggs and vanilla and continue to cream.

Add flour, baking powder, baking soda, and lastly, the chopped apples.

Pour into a well-greased 9x13 inch cake pan.

Mix the topping ingredients together and sprinkle over the batter. Insert a knife in several locations to get the mixture into the batter.

Bake at 350 degrees F for 1 hour.

BECKY PEDERSON lived in Wisconsin and was an old-fashioned type of person who had always cooked and baked all of her goods from scratch. She was an avid flower and vegetable gardener who also enjoyed canning, sewing, crocheting, deer hunting, playing her saxophone (amongst many other instruments), and spending time with her family. Becky lost her battle with cancer in February 2020.





An Easy Lotion Bar Recipe

BY MELANIE TEEGARDEN

A LUXURIOUS SOLID lotion bar recipe, chock full of luxury butters and skin-loving beeswax — that is the objective. A DIY lotion bar may seem surprising, but there is nothing better to keep inside of your knitting bag for small finger snags and scratchy places. Give it a quick rub on a rough elbow, or seal in the moisture from a recent bath or shower. This lotion bar recipe is formulated to allow for a broad range of experimentation with different oils and butters. There are even vegetarian and vegan versions. This DIY lotion bar recipe is also a great project to do with kids, who can easily create a gift welcomed by a wide range of recipients.

This beeswax lotion bar is easily adapted for tallow or even soy wax. The proportions are the key to success here. If you want a lotion bar that is slightly harder, increase the beeswax, tallow, or soy wax. If you want a slightly softer bar, increase the liquid oils a little at a time until you reach the consistency you prefer. This beeswax lotion bar recipe is non-sticky and absorbs quickly, leaving skin with a softened feel and a thin barrier against moisture loss that lasts for hours.

LOTION BAR RECIPE

Makes four, 4 oz. lotion bars

INGREDIENTS

5.25 oz. beeswax (raw or refined), OR refined tallow OR soy wax flakes
 5.25 oz. cocoa butter (raw or refined), shea butter, OR any other solid butter
 5.25 oz. jojoba oil, OR any other liquid oil
 .25 oz. cosmetic-grade fragrance
 OR essential oils, optional.

DIRECTIONS

Combine beeswax, tallow or soy wax with liquid oil in a microwave-safe container.

Microwave on HIGH in 30-second increments until beeswax is completely melted and transparent. Add the solid butters to the melted mixture and stir until butters are completely melted and transparent.

If the mixture cools off too much and begins to become opaque or to harden, just put it back in the microwave for a short time until re-melted.

Add essential or fragrance oils, if using. Pour into 4 oz. molds and place in freezer for 20-30 minutes, until completely hardened. This quick cooling prevents the lotion bar from crystallizing or developing a grainy texture.

Once hardened, remove from the molds and allow to reach room temperature. Package and share!



USES

To use, simply rub the bar between your hands and then rub the lotion onto the affected area. Alternately, rub the lotion bar directly onto the affected area. Massage in with hands for best results.

The beeswax, tallow, or soy wax in this recipe acts as a hardening agent. These substances are also very emollient and form a breathable barrier on the skin that protects against water loss. If using raw beeswax, you will also have the added bonus of a honey-like scent to your lotion bars. If you prefer not to have this scent, choose processed beeswax instead of natural. Processed beeswax will also provide a whiter finished lotion bar. Tallow and soy wax are both pure white and will create a white lotion bar as well.

The butters in the lotion bar recipe add to the solid qualities of the lotion bar and are also rich in essential fatty acids that condition the skin. If you use raw cocoa butter, you will have the added benefit of a natural chocolate scent and a golden color. Use processed cocoa butter if you prefer unscented and white. Certain other butters, like coffee butter and lavender butter, can also be used both for their conditioning qualities and the fragrance they lend to the finished lotion bar.

Ideally, a middle viscosity oil is best — enough to properly lubricate the skin, but light enough to avoid being sticky. The jojoba oil called

for in the recipe is technically a wax, but it has the viscosity of a light oil. Jojoba oil moisturizes and conditions the skin without forming a thick or greasy film.

Whether you use the recipe as-is or make substitutions based on your cupboard, these solid lotion bars are sure to be a hit with many. They are an excellent project to share with the children for quick gifts, as well. As noted above, the trick is to melt all of the ingredients until they are completely translucent to ensure there are no stearic acid crystals in the finished lotion bar. Once everything is fully melted, it is important to cool things down as quickly as possible. In this case, I recommend putting the lotion bars straight into the freezer for 20-30 minutes. Not only will the cold lotion bars easily pop out of their molds, but the quick cooling will prevent the formation of crystals in the lotion bar which can give it a gritty texture. Have fun making solid lotion bars, and let us know your experiences! 🌱

MELANIE TEEGARDEN has been proprietor of Althaea Soaps & Herbs for 14 years. She has run an international website selling bath and body products to individuals and spas since 2006. In addition to her home-based business, Melanie also teaches soapmaking classes in her community of Johnson City, Tennessee, and is the resident expert for Home Soapmaking at iamcountryside.com.



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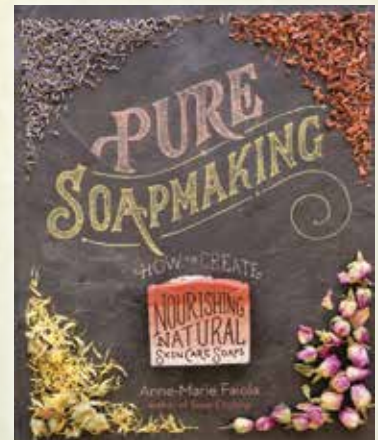
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Boost Your Immune System with These Healthy Hacks

BY JENNIFER VANBENSCHOTEN

STAYING HEALTHY IN THE changing seasons always feels like a challenge. Shorter days with less sunlight, cold temperatures, and high levels of stress can wreak havoc on our bodies' ability to fight infection, even when it comes to the simplest cold. All these things can leave us feeling strung out and weak and susceptible to sore throats, runny noses, cough, congestion, and worse. Want to have the healthiest winter ever? Keeping a positive attitude and taking care of yourself throughout the winter months can make a huge difference in the number of sick days you have this winter! Here are seven of my tried and true immune system hacks to keep you running strong this season:

Get enough sleep. This might be the most difficult of all the immune system hacks, but taking care to make sure you get to bed and get to sleep on time can make a huge difference in how your body's immune system functions. During the winter months, our bodies naturally want to sleep longer, and those cold, dark mornings can definitely feel like a challenge when you're trying to get up on time. Most of us need seven to nine hours of good sleep a night, so this is also the perfect time to set up a soothing bedtime routine.

Eat your root veggies. Eating what's available in the season can help our bodies adjust and adapt to the conditions

of winter. Here in the northeast, winters can be especially harsh and unforgiving, but with all of the tasty root veggies available, it doesn't seem so bad! Root vegetables like beets, potatoes, sweet potatoes, celeriac, turnips, and carrots contain a whole array of minerals and compounds that can help us stay healthy. Between high doses of vitamin C, B, and A, and high concentrations of antioxidants, eating a healthy serving of these veggies with each meal can help reduce inflammation in the body that can lead to an exhausted immune system.

My favorite way to eat root veggies is simple: mashed or roasted. Try your mashed sweet potatoes with a pat of butter and a squirt of lime. Or whip up a pan of roasted carrots, beets, and celeriac with a splash of flavored vinegar and a healthy seasoning of cumin.

Take your herbs. There are a huge number of herbs out there that can help you boost your immune system, and tons of ways to take them. Herbal hot teas made with whole plants are one way to get your daily dose of immune boosting herbs like ginger, turmeric, and rosemary. Warm oil massage with herbally infused oils is another way to bypass weak digestion and introduce helpful herbal remedies into the body.

Taking a small daily dose of your favorite homemade fire cider or elderberry syrup are tasty ways to get some immune-boosting herbs into your body. And even just adding extra herbs to your cooking can help you feel your best this winter. Warming herbs like coriander, fennel, and cumin can make your food taste incredible while also boosting your digestion over the winter when digestion is naturally low.

If you do find yourself coming down with a virus or cold, herbs can also shorten the duration of your symptoms. The trick is to start taking them as soon as you feel any symptoms coming on — don't wait! Half the reason people think that herbal remedies don't work is because they wait way too long before they start taking them. The sooner you can start with your fire cider, elderberry, or whatever your favorite herbal remedies are, the better.

Wash your hands. It might seem sort of self-explanatory, but washing your hands with just hot water and regular soap can go a long way to making sure you don't inadvertently introduce viruses and bacteria into your body. Personally, I avoid hand sanitizers in favor of good old-fashioned soap and hot water, but in a pinch, they'll do.

Get some exercise. Exercise is hard for some of us during the winter. (It's hard for some of us during the rest of the year, too.) But your body will thank you — just 15 minutes of brisk walking every day can help your body's immune system function better by reducing stress and increasing blood circulation. And if you can get outside to walk? Even better.

Walk in the sun. My acupuncturist reminded me the other day that pretty much everybody in the northeast United States is deficient in vitamin D, which is critical for a strong immune system. While you can take over the counter vitamin D supplements, walking in the sun for just 20-30 minutes every day will let your body make enough vitamin D. Invest in a good, warm coat and some insulated boots and get outside! Even on days when it's overcast, your body can still benefit from the rays of the

sun that filter through the clouds, although you may have to stay outside for a little bit longer.

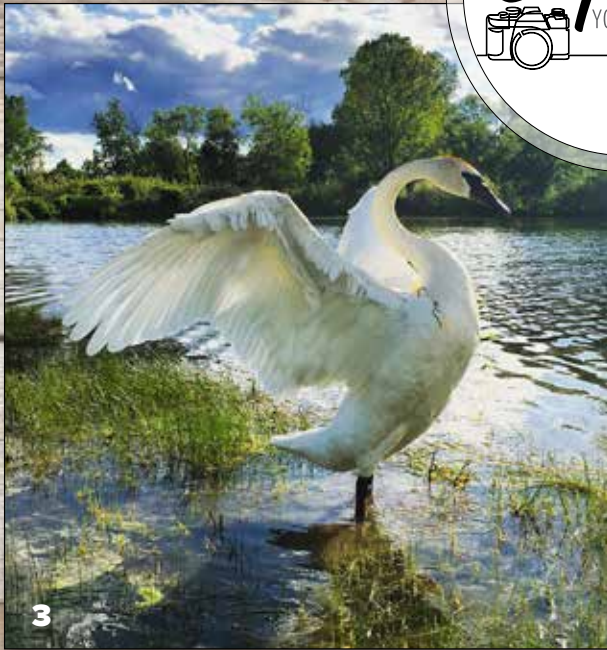
Being outside in the fresh air also boosts your immune system by increasing blood circulation and cleaning out our respiratory systems. When you're stuck in a closed-up house all winter with stale air circulating through vents and ducts and chimneys, being outside gives your body a chance to literally breathe easier.

Take measures to reduce stress. Stress plays a huge role in so many chronic and acute illnesses that it pays to take some time to reduce stress levels during the winter. Exercise is one of my favorite ways to reduce stress with the added benefit of increasing circulation and boosting mood along with my immune system! Wintertime activities like ice skating, snowshoeing, and skiing can help you reduce your stress levels while giving you the benefits of mild to moderate cardiac exercise. Yoga and meditation are also activities that can be done indoors all winter long and both have been proven to dramatically lower stress levels.

Staying healthy this winter doesn't have to be complicated. Putting a few of these immune system hacks to work for you and your family can keep you going strong until the weather warms up again! 🌱

In the heart of the Adirondack mountains, **JENNIFER VANBENSCHOTEN** raises chickens for eggs, keeps bees for honey, and grows her own food. Jennifer enjoys scratch cooking, writing creative nonfiction and poetry, teaching yoga, and creating handmade beaded jewelry.

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I Love a Parade

BY MARSHALL NYCH

OCTOBER WAS JUST A WEEK OLD. The crisp, cool autumn air filled my lungs with hope and my eyes with splendor. Archery season promised to be a good one. Unbeknownst to me, fall's fingers were crossed.

Friday night, I planned a relaxing evening hunt with my bow, favorite tree stand, and the many delicious deer on our family farm. My devious little sisters, Gigi and Krissy, had diabolically plotted a different scheme. They insisted either Dad or big brother take them to the Homecoming Parade.

"All our friends will be there," whined Gigi.

"There will be candy," promised Krissy.

Ironically, my sisters were becoming less popular with me by the second. Nor did they care.

Looking up to Dad and me with her patent puppy dog eyes, Gigi pleaded, "One of you has just got to take us!"

I looked to Dad, head of the household, who used sound judgment and a lifetime of experience to arrive at the right decision. Dad immediately grabbed his hunting gear and headed for the door.

"Have fun with the girls Marshall," Dad snickered.

Speaking of Snickers, the only comfort I managed to muster was the possibility of scoring some sugary loot. I grabbed three large feedbags from Grandpa's barn and two annoying sisters from the living room and drove to beautiful downtown. Boasting one traffic light, it's hard to miss the down part of town.

Gigi, Krissy, and I arrived along Main Street at about the time I should have been arriving to my favorite oak tree. I'm still figuring out why officials decided to call it Main Street. The road hosts dilapidated, cracked sidewalks connecting the school to a Dairy Mart, a Dairy Queen, and the Bear, our local bar.

As the parade commenced, I had deer on my mind. I vigilantly glassed backyards and scanned porches in search of the elusive whitetail. Various organizations shuffled by the sidewalk. I quickly made an observation. Most people in the parade were old. The entire VFW float and brigade of Zem Zem cars were comprised entirely of old men. I wouldn't have considered this coincidence such a bad thing if old men actually knew how to throw candy.

Our feedbags sagged, abysmally empty as the Homecoming Court convoy drove along Main Street. Most towns perch future queens upon Corvettes and other fine sports cars. I have shared

the rural peculiarities of our town. Our teenage royalty rode shotgun in rusty trucks or atop dusty tractors. The closest one young lady got to a Corvette was pronunciation, she was nestled in a restored Coronet. I was a little disappointed. None of the sweethearts threw me any Sweet Tarts.

Gigi, Krissy, and I knew the goodies were around the corner. The local volunteer fire department dutifully drove their fire engine through the parade and had amassed an indisputable reputation for giving the most grub.

There hadn't been too many fires to fight, so the firefighters, having nothing better to do, pulled out all stops for this year's parade. The entire crew volunteered to dress like circus clowns as they made their parade appearance. The uniformed firefighters hid behind white makeup, red noses, and fuzzy wigs. This made me question both the quality and sanity of our security.

Just before the big red fire truck and its high fructose corn syrup goodness made its way to our location, the sirens sounded with an eerie authenticity. Suddenly, the clowns didn't seem so friendly. Worse yet, the crew quit throwing handfuls of Smarties and Snickers.

Outside of town, Old Man Burns' barn had caught fire while he was smoking a cheap cigar in the hay loft. The fire truck was summoned immediately. This tidbit was not revealed to the rest of town, including residents less than four feet tall who feverishly wanted candy.

The firefighters jumped in the truck and hit the gas. The screaming engine (from the clowns, not the truck) swerved between the marching band and the Zem Zems, trying to escape the very parade that awarded 15 minutes of fame on an annual basis.

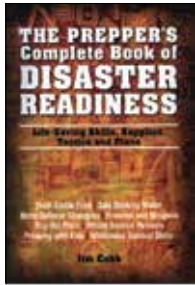
Little kiddos were racing onto the road thinking the fire truck would reward their hearty efforts as it had in parades past. However, the iconic truck nearly flattened them into pavement pancakes. Cursing clowns tossed candy high into the trees, luring the children far from the roadway. This ploy worked for all of the kids and some of the adults.

The fire department finally exited the parade and arrived at the flaming barn. According to the newspaper, crews did a fine job extinguishing the blaze. I would have given up another night of hunting and my empty sack of candy to see the look on Old Man Burns' face when a truck full of clowns pulled into his farm. 🍪

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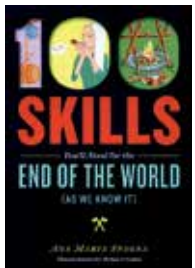
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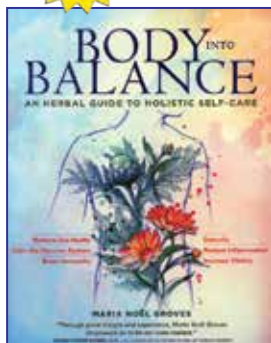
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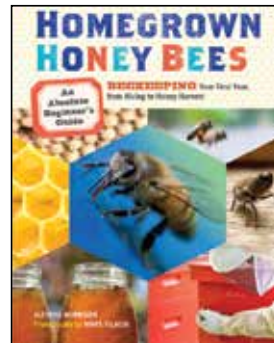


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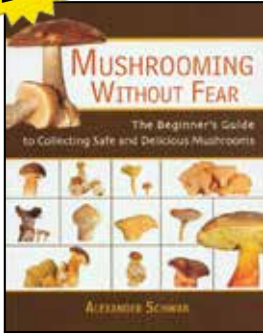
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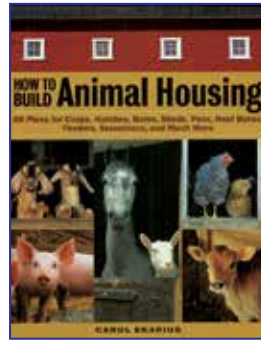
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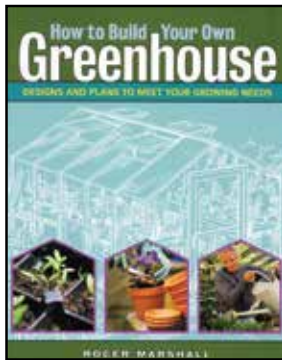
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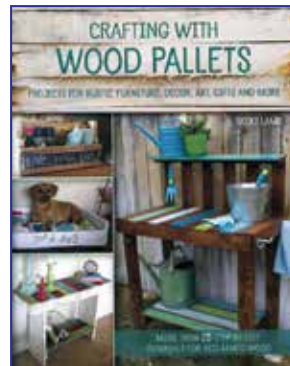
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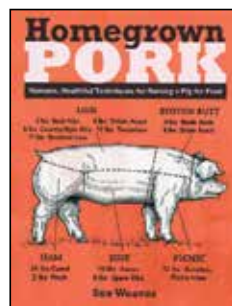
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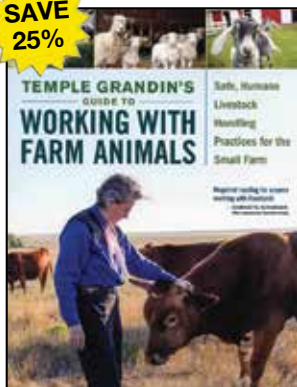
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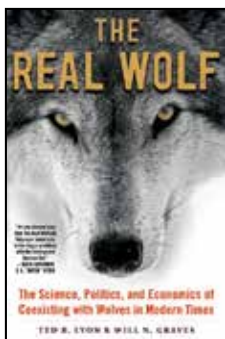
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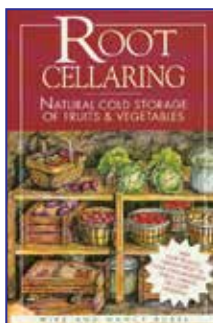
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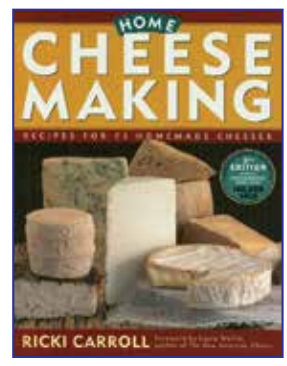
By GIANACLIS CALDWELL



With probiotic-rich foods increasingly recognized as essential to gut health, yogurt and kefir are gaining popularity as a source of protein and beneficial bacteria. Cheesemaker and small-scale dairy producer Gianacis Caldwell opens the door for fermentation enthusiasts and dairy devotees to make and use yogurt and kefir in the home kitchen. She explores the many culture choices and techniques for working with cow, goat, sheep, water buffalo, and even some plant milks. 224 pages. **\$19.95**

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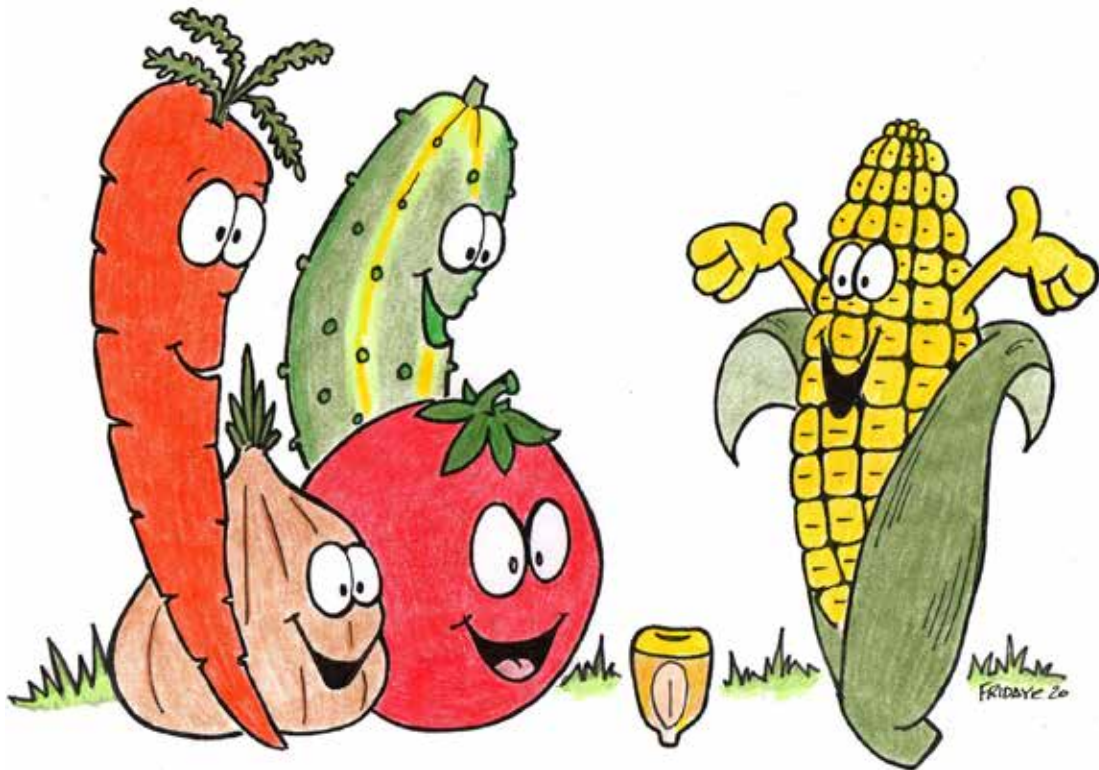
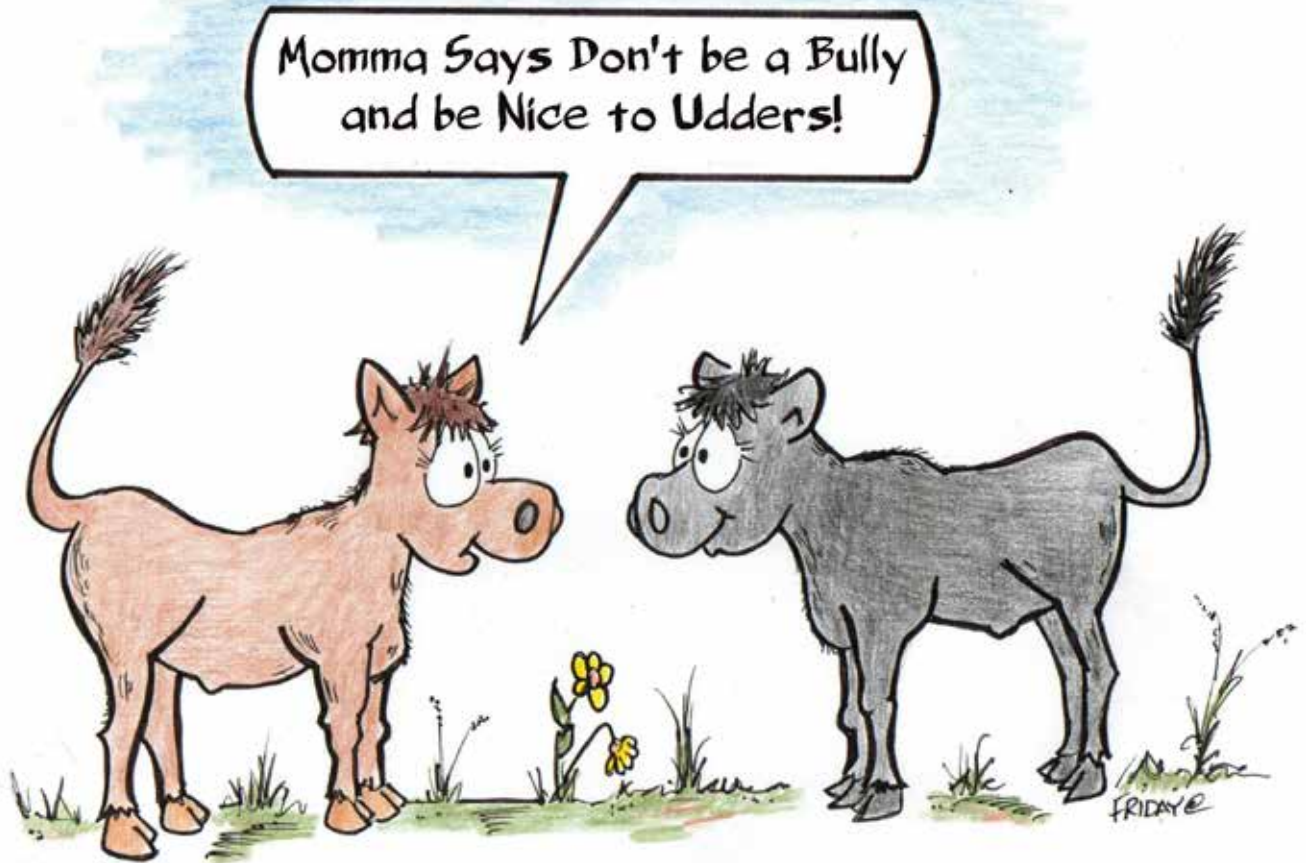
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The winner will be chosen randomly from all the correct submissions returned by October 1, 2020.



Win a *Countryside* Beanie! To submit, either:

Print, fill out, and mail to:
 Countryside Reader Contest
 P.O. Box 566, Medford, WI 54451

**Print, fill out, then take a
 picture and email to:**
 editor@countrysidemag.com

**Be sure to include your contact information so we can
 inform you if you won the *Countryside* beanie.**

The winner of the July/August Reader Contest was Jeff Miritello,
 New York. Congratulations to you, Jeff! Enjoy your beanie.

Poor Will's COUNTRYSIDE almanack

EARLY AND MIDDLE AUTUMN OF 2020

BY W. L. FELKER

| SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| | | Chickens still molting? Try a vitamin or apple cider supplement. Complete tobacco topping to keep it from flowering. | Full moon tonight is likely to increase chances of a light frost throughout the northern half of the nation. Be ready to cover tender plants. | It is nutting season in woodlots throughout the U.S. Look for black walnuts, hickory nuts, pecans, and even acorns. | Make your autumn marketing plan soon. Include ethnic feasts within driving distance of your homestead. Advertise now. | Study food preservation techniques as harvest approaches. Freezing is often the simplest way to deal with over-production of fruit and vegetables. |
| | | 1 | 2 | 3 | 4 | 5 |
| Purchase bedding straw for autumn stalls and pens. Don't be caught short when the winds get cold. | Plan to market your male goats next month. October is one of the year's strongest wether market months. | Plan your cut-flower sales for 2021, reviewing which plants kept and sold best. | If your billy goat is getting too restless, you may have to take measures to keep him in line. Check fences and shelters. | Order seeds for November and December bedding plant seeding. Check for burned out bulbs. Consider purchasing heating coils. | Cut flowers, pumpkins, gourds, and Indian corn create a Halloween and Thanksgiving mood to enhance your space at the farmers market. | Consider an online outlet for your homestead products. Sell everything from crafts to meat through an inexpensive website. |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| Test the soil and make corrective lime and fertilizer applications for autumn plantings. Set out pansies and pots of mums at your roadside stand. | Study the Muslim requirements for halal meat during the feast of Al Hijira. Sell spring lambs and kids to this market. | Walk the woods for puffball mushrooms that look like soccer balls emerging from the wet mulch. | Have adequate ventilation at the floor level and near the ceiling in the chicken house. A smaller area for perching means warmer hens. | Today's new moon, combined with tomorrow's perigee will bring the threat of frost in the North, hurricanes in the South. | The Jewish New Year celebration begins today and ends on the 20th. Know your local Jewish market and include it in your survival strategy. | Schedule autumn vaccinations for your livestock, especially shots that will help prevent respiratory diseases. |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| Place pumpkins in your mum and pansy display throughout the fall. | Explore the Asian market for your produce as the Harvest Moon Festival approaches. Pumpkin and duck are popular foods. | Plan to take advantage of the demand for goat milk that rises in the fall — when prices start to rise, too. | If there is a Hindu population close to your homestead, you might explore advertising a lamb or kid for the feast of Navaratri. | Plant winter grains for summer harvest. Consider seeding spinach for spring greens. Set out raspberry bushes. | Thanksgiving marketing includes more than turkeys. Check your gourds for rot. Plan to make apple cider and fruit pies. | Collect small-flowered asters to dry for holiday bouquets. Collect seed heads of decorative grasses, too. |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| The end of Ramadan is May 11 next spring. Plan to have your lambs and kids of about 60 pounds ready to sell. | Harvest grapes under the waxing moon. In general, the full moon brings the most moisture to fruit and vegetables. | Toxic changes in the chemical composition of grasses and alfalfa after frost can poison your flock or herd. | Tomorrow's full moon is likely to bring frost to all the states above the Mason-Dixon Line. Cover sensitive flowers and vegetables. |  | | |
| 27 | 28 | 29 | 30 | | | |

Look to the Great Harvest When all Things will bear Fruit and Will be ready for the Gathering.

Paracelsus

| SUNDAY | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY | SATURDAY |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | | | | <p>Save fallen leaves for mulching crops such as collards, kale, and mustard greens well into the early winter.</p> <p style="text-align: right;">1</p> | <p>Check horses for horse bot eggs. Take care of pre-winter vaccinations, worming, and parasite treatments for all of your animals.</p> <p style="text-align: right;">2</p> | <p>Increase feeding livestock grain and free choice hay as the weather cools and pastures become less nutritious.</p> <p style="text-align: right;">3</p> |
| <p>Collect autumn berries, such as bittersweet, for winter bouquets at late farmers markets.</p> <p style="text-align: right;">4</p> | <p>Dig in tulip, daffodil, hyacinth, and crocus bulbs as the moon wanes.</p> <p style="text-align: right;">5</p> | <p>Consider selling the flowers of forced bulbs to the Early Spring market in February.</p> <p style="text-align: right;">6</p> | <p>Complete autumn culling now before feed supplements become necessary. Plant next year's garlic after full moon.</p> <p style="text-align: right;">7</p> | <p>Wrap new trees with burlap to help them ward off winter winds. Complete fall field and garden tillage before the November rains.</p> <p style="text-align: right;">8</p> | <p>Plan to serve the Passover Market (Passover is March 27 – April 4) with lambs and kids under 60 pounds.</p> <p style="text-align: right;">9</p> | <p>Feed sugar or corn syrup to bees when the nights grow cold and flowers grow scarce.</p> <p style="text-align: right;">10</p> |
| <p>Dig root crops such as turnips, carrots, beets, and potatoes before the ground freezes.</p> <p style="text-align: right;">11</p> | <p>As the weather cools, keep warm water on hand for your brood ewes and does. They will be drinking more now.</p> <p style="text-align: right;">12</p> | <p>Plan to have your lambs and kids ready for the Easter Market next year: April 4 for Roman Easter, May 2 for Orthodox Easter.</p> <p style="text-align: right;">13</p> | <p>You might expect an increase in demand for Halal meat from kids or lambs as Muhammad's birthday approaches.</p> <p style="text-align: right;">14</p> | <p>The heaviest time of Halloween market sales begins as rutting time opens for deer along the 40th Parallel.</p> <p style="text-align: right;">15</p> | <p>Today's new moon and perigee together are likely to bring frost to all of the northern states.</p> <p style="text-align: right;">16</p> | <p>As soil temperatures approach 50 degrees, pasture growth slows. Be ready to take up the slack with supplemental feed.</p> <p style="text-align: right;">17</p> |
| <p>Dig gladiolus, dahlia, caladiums, dahlias, and tuberous begonia bulbs before frost.</p> <p style="text-align: right;">18</p> | <p>As pastures go dormant in the cooler weather, move your animals to supplements and hay, gradually.</p> <p style="text-align: right;">19</p> | <p>If your land is overrun by thistles, consider getting a donkey. Donkeys love to eat thistles. You might even rent him out.</p> <p style="text-align: right;">20</p> | <p>Be sure to exercise your pregnant ewes and does, and avoid exposing them to stressful situations or to sudden changes in feed or activity.</p> <p style="text-align: right;">21</p> | <p>Sell cuttings of last year's Christmas cacti that are budded and ready for the Christmas holidays.</p> <p style="text-align: right;">22</p> | <p>Keep your pets free of fleas throughout the fall and winter. They can spread fleas to livestock ... and your family.</p> <p style="text-align: right;">23</p> | <p>Schedule your Christmas tree sales to begin around the Friday after Thanksgiving.</p> <p style="text-align: right;">24</p> |
| <p>Plant amaryllis and paperwhite bulbs for mid-December blooms at indoor holiday markets.</p> <p style="text-align: right;">25</p> | <p>Have water warmers ready for the barn. Pregnant animals may prefer it and usually drink more. Purchase a heater for koi ponds.</p> <p style="text-align: right;">26</p> | <p>October is the month when this year's litters of coyotes usually begin their attacks. Be on guard.</p> <p style="text-align: right;">27</p> | <p>As the weather gets chilly, be sure you have plenty of straw for your pigs to stay warm in.</p> <p style="text-align: right;">28</p> | <p>Harvest honey as full moon approaches. Be sure to leave enough for the bees to live on through the winter.</p> <p style="text-align: right;">29</p> | <p>Tomorrow's full moon (a Blue Moon) will almost certainly bring frost to the upper half of the nation.</p> <p style="text-align: right;">30</p> | <p>Daylight Saving Time ends on November 1. Make a gradual feeding transition for your family and livestock to Standard Time.</p> <p style="text-align: right;">31</p> |

THE PLANETS

Venus travels retrograde into Cancer and Leo as fall deepens, continuing to rise a few hours before dawn and shining in the east as the Morning Star. Jupiter and Saturn are the Evening Stars very low in Sagittarius after dark. Mars is in Pisces, coming out of the east after sundown. It reaches opposition on October 13, its bright position closest to Earth throughout the night, setting in the west as Venus dominates the east before first light.

THE STARS

At midnight, the Milky Way runs from east to west across the sky. The stars of the Summer Triangle are setting in far west, and Orion is climbing up from the eastern horizon. Hercules, which was overhead at 12:00 a.m. in the first week of June, is now setting in the northwest, and Castor and Pollux, the twins of Gemini are peeking over the tree line in the northeast. By sunrise, Orion has shifted to the center of the heavens. January's Leo and its brightest star, Regulus, have come up in the east, and the Great Square is following Hercules into the Pacific.

THE SHOOTING STARS

The Orionid meteors appear in Orion in the night of October 21 and 22 at the rate of 15 to 30 per hour. The dark, first quarter moon should not obscure these meteors with its light.

METEOROLOGY

Weather history suggests that the cold waves of Early Fall usually cross the Mississippi River on or about the following dates:

September 2, 8, 12, 15, 20, 24, and 29. Tornadoes, hail, floods, or prolonged periods of soggy pasture are most likely to occur in connection with tropical storms, near full moon on September 2 and new moon on September 17 (combined with lunar perigee on September 18) strengthen the cold fronts that arrive near those dates.

Weather history suggests that the cold waves of Middle Fall are likely to cross the Mississippi River on or about October 2, 7, 13, 17, 23, and 30. Full moons on October 1 and 31 are likely to intensify the weather systems due at the beginning and the end of the month. New moon on the 16th (combined with perigee on the same date) is likely to bring frost to the upper United States as well as the increased likelihood of hurricane formation in the Atlantic.

THE SUN

The sun reaches equinox and enters the sign of Libra on September 22 at 8:31 a.m. October 24 is Cross-quarter Day, the halfway mark between autumn equinox and winter solstice. The sun enters the Late Autumn constellation of Scorpio at the same time.

LUNAR FEEDING PATTERNS FOR PEOPLE AND BEASTS

When the moon is **above** the continental United States, creatures are typically most active. The second-most-active times occur when the moon is **below** the earth.

| DATE | ABOVE | BELOW |
|-------------------|------------------|------------------|
| September 1 | Evenings | Mornings |
| September 2 – 9 | Midnight to Dawn | Afternoons |
| September 10 – 16 | Mornings | Evenings |
| September 17 – 22 | Afternoons | Midnight to Dawn |
| September 23 – 30 | Evenings | Mornings |
| October 1 – 8 | Midnight to Dawn | Afternoons |
| October 9 – 15 | Mornings | Evenings |
| October 16 – 22 | Afternoons | Midnight to Dawn |
| October 23 – 30 | Evenings | Mornings |
| October 31 | Midnight to Dawn | Afternoons |

PHASES OF THE MOON

Throughout Early and Middle Fall, the moons follow the agricultural year. The Sheep and Goat Breeding Moon shines on the major breeding period for these animals. The Winter Grain Planting Moon favors the seeding of winter wheat and rye, and the Corn and Soybean Harvest Moon brings the major farm cycle to a close.

September 2 | The Sheep and Goat Breeding Moon is full at 12:23 a.m.

September 6 | The moon reaches apogee (position farthest from Earth) at 1:32 a.m.

September 10 | The moon enters its fourth quarter at 4:26 a.m.

September 17 | The Winter Grain Planting Moon is new at 6:01 a.m.

September 18 | The moon is at perigee (position closest to Earth) at 8:45 a.m.

September 23 | The moon enters its second quarter at 8:56 p.m.

October 1 | The moon is full at 4:06 a.m.

October 3 | The moon reaches apogee (position farthest from Earth) at 12:24 p.m.

October 9 | The moon enters its fourth quarter at 7:40 p.m.

October 16 | The Corn and Soybean Harvest Moon is new at 2:32 p.m. It reaches perigee (its position closest to Earth) at 6:48 p.m.

October 23 | The moon enters its second quarter at 8:24 a.m.

October 30 | The moon reaches apogee (position farthest from Earth) at 1:47 p.m.

October 31 | The moon is full at 9:50 a.m. This is the second full moon of the month, making it a Blue Moon.

THE SCKRAMBLER

SEPTEMBER/OCTOBER

SURVIVAL GUIDE

It's time to get serious about self-sufficiency. Include some of the following in your plans.

| | |
|--------------------|-------------------|
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| KAME IENDSFR | DEAR OKOSB |
| EB DINK | SHIF AND TUNH |
| EULAV ILYFAM | DNIF A RAPTNER |
| HERGAT PPLIESUS | RNEAL DWIL STNAPL |
| LRNEA ERULTCUMAPER | TWNEORK |
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| OFOD | DRENCHIL |
| VEAH A TEP | XIF ROUY OWN |
| MROF A STENCESUBSI | SENICHMA |
| PROUG | UDYST TSRIF DAI |

A prize of \$5.00 will be awarded to 3rd, 11th, 27th and 68th persons who send their correct responses to

Poor Will
P.O. Box 431

Yellow Springs, OH 45387

before the answers appear in *Countryside*.

JULY/AUGUST WINNERS & ANSWERS

Poor Will promised prizes of \$5.00 to the 10th, 25th and 56th readers who solved the puzzle. The 10th was Michael Laviolette of Woodville, TX. The 25th was Karen Moyer of Wilton, IA. Only 38 entries were received.

| | |
|-----------------------------|-----------------------------------|
| MEARDS/DREAMS | NEESS FO RUMOH/ SENSE OF HUMOR |
| SLANP/PLANS | WOHWONK/ KNOWHOW |
| PEOH/HOPE | SSSNNBBTUORE/ STUBBORNNESS |
| NEYOM/MONEY | MISMOIPT/OPTIMISM |
| MIET/TIME | DOGO AEHLTH/ GOOD HEALTH |
| NALD/LAND | STUG/GUTS |
| YTIVITAECR/ CREATIVITY | IFAHT/FAITH |
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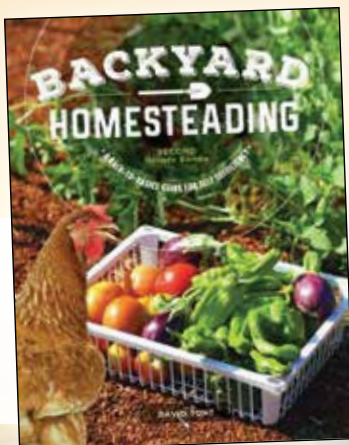
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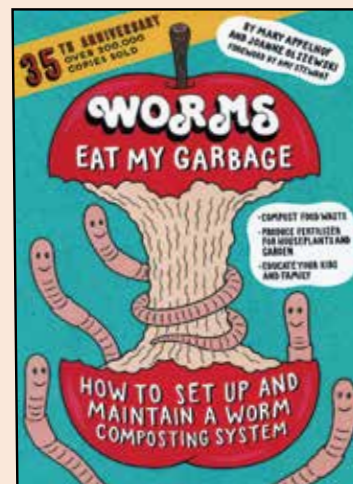
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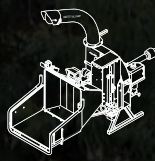
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