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& Small Stock Journal

Volume 105 • Number 5
SEPTEMBER/OCTOBER 2021

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I AM COUNTRYSIDE

RICHIE OF GROWBUILDRASE — NORTH CAROLINA

H EY Y'ALL. I'M RICHIE of GrowBuildRaise and I live in the beautiful mountains of Western North Carolina. I knew there was more for me out there than chasing a career, and having a big house and a big bank account. I knew right away how I wanted to live, so I left the hustle and bustle of the city world, sold everything, and began working on my dream of homesteading off-the-grid.

I knew nothing about nothing, but I was determined to build a sustainable way of life. I learned to garden, added livestock, and learned the ways of living off the land. Hard work, dumb luck, determination, and meeting so many amazing like-minded people got me to where I am today. It took several years for me to figure out what my true purpose was, but everything happens for a reason and at the right time ... I couldn't be happier living this way of life!

Follow Richie on Instagram:
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Moonshine the Kunekune.



Homemade for life.



Building my future.



My off-grid cabin home I built up from a shed.



Reflection.

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ON THE COVER | "I love this photo. It was quickly getting dark out. I sprinted down our little trail where I knew I could find some maple leaves. I scooped up a bunch and ran back to set up this photo. The things we do for photos."
— Caryn Prouty @fivemilecreekfarm

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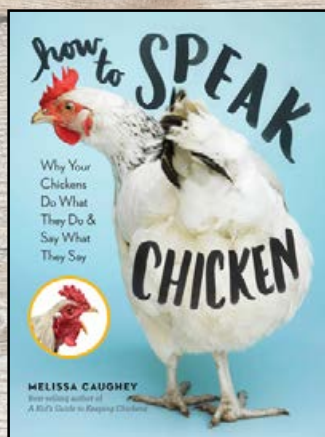
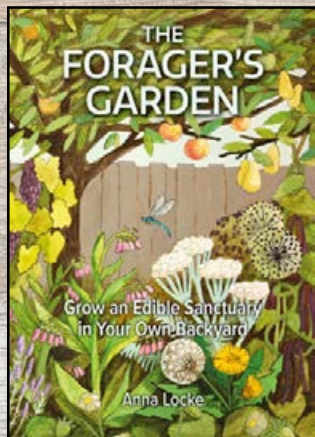
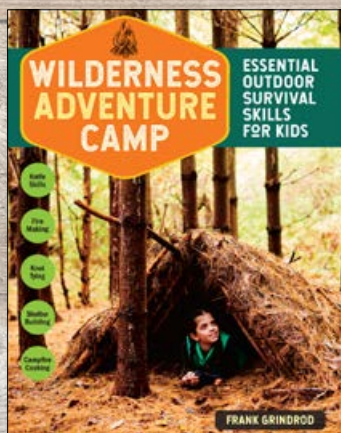


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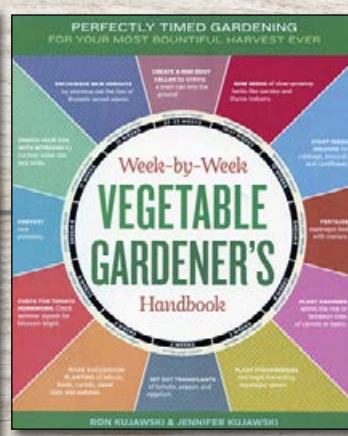
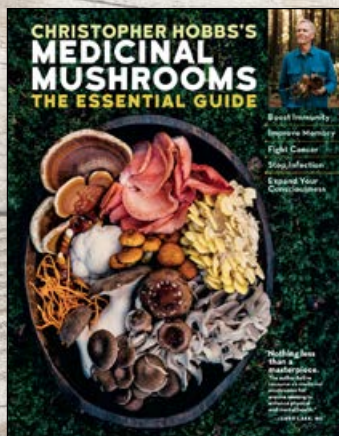
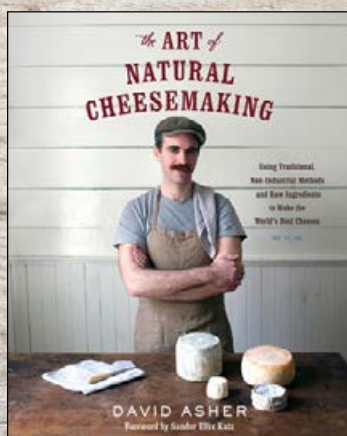
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Our Philosophy

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 practioners.

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.

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FROM THE EDITOR

TIS THE SEASON TO BE CANNING! I will always remember when I was a kid and my mother would spend weeks canning and heating the already warm house. She canned everything from tomatoes (stewed, juice, sauce, salsa) to corn relish, pickles, beans, carrots, peaches, pears, several varieties of jams and jellies ... you name it and she canned it! When we would enjoy her canned goods during the cold winter months, I would think about the summer days that she spent preserving them in the extremely hot kitchen.

As I grew older, she taught me how to can and although I was afraid of the pressure canner that she and my dad bought me as a gift, she showed me just how to use it and now I'm an old pro!

Years ago, I tried something different instead of heating up the house. I thought I would try canning outside using my turkey fryer burner. I used the water bath method and canned all of my tomato juice and stewed tomatoes outside. It worked like a charm! And I didn't have to turn the house into a sauna.

I have not used my pressure canner on the turkey fryer burner yet, but it's on my list of things to try. After doing some research, I've learned that the pressure gets up-to-snuff quite quickly on that type of burner and it works well.

Another preservation method that I enjoy doing is freezing. When I have small batches of tomatoes,

not enough to dig out the canning equipment, I simply wash them, cut them into chunks, and run them through my food processor. I then scoop them into freezer bags and stick them in the freezer. This is a quick and easy preservation method and the tomatoes work great in chili and other tomato-based soups. If a food processor is not available, chunks of tomatoes can be frozen and used in soups as well.

Canning season is such a busy time but it's also a very enjoyable time. Knowing that the garden was a success again and having the produce to eat all winter long is always so rewarding. All of the hard work was worth it!

In this issue, you will find some great food preservation recipes. I hope you try them and if you do, drop me a line and let me know what you thought of them.

Enjoy!



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!

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Country Conversation & Feedback

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In Response to July/August Article “Cedar Apple Rust”

Dear Editor,

I’ve had junipers completely covered with cedar apple rust and they recovered with no harm, nor did it kill the apple trees. Cutting down the cedar tree won’t solve the problem since other infected trees don’t need to be close by. Those trees were probably infected

decades ago.

On their surfaces, leaves have various organisms, some beneficial and some disease-causing. When the beneficial ones that protect them from the disease-causing ones aren’t present, the disease-causing ones take over

when conditions are right.

I never had a problem with cedar apple rust until they started using GMO crops made for the use of Roundup® herbicide that kills the beneficial bacteria, allowing the pathogenic organisms (fungus) to take over, whether in the soil, on plants, or in the digestive

system.

If there is poor soil nutrition of micronutrients, using mined mineral salt to fertilize the apple trees may help to reduce the harm to the apple trees.

But the most important question to ask is, “Is it safe to eat the apples that are contaminated with pesticides?” While the spray drift doesn’t travel far, vapor drift can travel for many miles and pesticides can vaporize for up to three days after their application.

Now they have GMO crops that are resistant to Roundup®, 2,4-Dichlorophenoxyacetic acid, and dicamba; that’s three times as many pesticide poisons to pollute the air you breathe and the food you eat, and now they use fungicides and insecticides, too.

All of these pesticides need to be banned before they kill the rest of us. Don’t believe the false propaganda that they increase crop yields as most organic crops produce just as much or more. What these pesticides do is greatly reduce the cost of controlling weeds and other crop pests. Contact your state legislators and let them know you want these crop poisons banned in your state.

— Robert Peterson, Minnesota

Love the magazine, just added
three more years recently!

— Daniel, Illinois



In Response to July/August 2021 Article "Much Ado About Mulch"

It concerns me that this article states a common misconception about mulching with bark and wood chips. As long as the bark and wood chips are used as surface mulch, they do NOT leach nitrogen from the soil.

As stated near the end of the article, mulch is intended to stay on the surface of the soil, and if

mixed in before it decomposes, it will use up the nitrogen in the soil (the article says "nutrients") trying to decompose. Obviously, bark and wood chips take longer to decompose than most fresh leaves and lawn clippings, but any mulch should stay on the surface. After it decomposes, the worms will take it into the soil, where it will provide nutrients, regardless of whether it is bark/wood chips, or fresh green material.

— Loretta Liefveld

In Response to July/August Question of the Month: What do You Grow, Make, Raise, and Sell on Your Homestead?



Warre hive.



Langstroth hive.

My wife and I are along in years, but we have no desire to leave our homestead. We are beekeepers. Our hobby brings in a few bucks selling honey, complete hive set-ups, nucs (beginner hive), and up until COVID, we taught beginning beekeeping classes.

In addition, I make beekeeping supplies such as complete hives (without bees), bases, tops, and the inner parts. I even built a hexagon Warre hive.

We stay away from chickens and goats ... too much work. I might add that we also look forward to each issue, especially the bee articles.

— Jerry & Sheila Weldon

September/October Question of the Month

Fall is a wonderful time of the year to enjoy the bounty of the season. With all of the different types of squash, potatoes, cabbage, apples, etc., you certainly won't go hungry!

What are your favorite fall recipes that include your harvest?

Share with us at:

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Recycled Garden Fence

With the prices of lumber these days, I find myself staring at and resourcing free materials and thinking of projects to use them in.

One project recently involved a makeover of our garden.

With so many ash trees falling victim of the emerald ash borer, I knew I wanted to use the trees as a border around our garden. Once I had all of the logs in place, I

began to backfill the garden area with good topsoil, chicken manure, straw, and some wood ash. I then used some small diameter cedar posts and some leftover field fence to go around the garden. Only three sides require a fence since the back of the garden is a concrete retaining wall.

The garden has kept that look for a couple of years now with my wife complaining about the fence and the fact that she must walk down and balance herself on the logs to get to various parts of the garden.

As I was driving home from work one afternoon, I noticed a large stack of wood crates at the local equipment dealer. I thought about it for the next couple of days, taking measurements of the crates and the area around the garden. I asked the owner about them and he said the crates were up for grabs so I loaded up as many as I needed and a few spares.

I used the crates like a boardwalk around the garden. I removed one side of the crate with a reciprocating saw and secured them, end to end, with deck screws. The pieces that I had sawn and removed would make up the ends. The crates already had a fence-style design, so no modification was needed for that look.

My wife helped me level the rock in the front of the garden and we began to slide each crate into position and leveled them as we went. Once we had all the major pieces along the front of the garden, I cut and screwed together the pieces that would make up the ends.

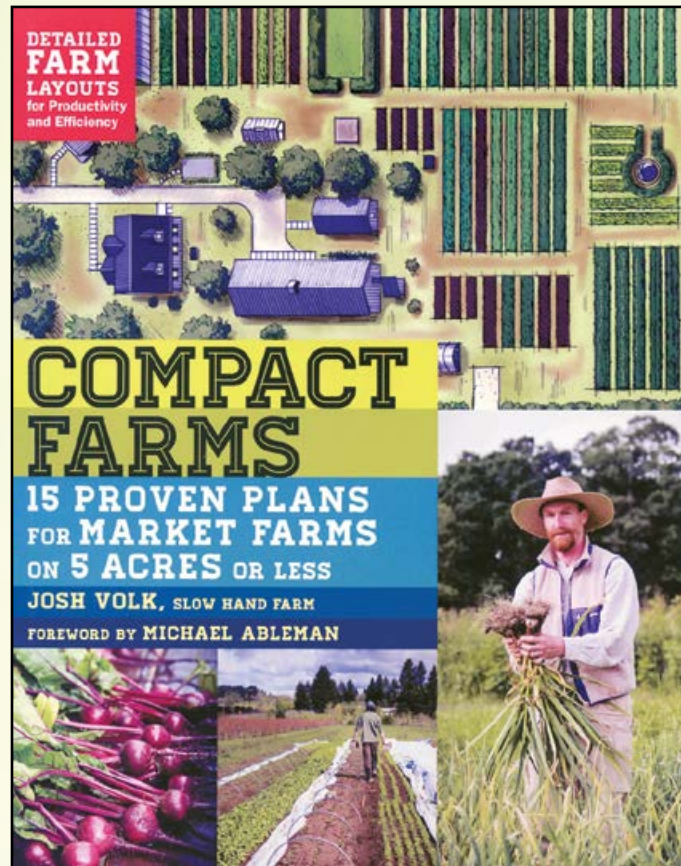
The material the crates were made from is a type of pine so it was easy to saw but could split if you used too big of a screw.

The whole project took two days and didn't cost anything but time and imagination.

— Bryan Downs



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Homesteading

After Retirement

Taking Vacations and Breaks from the Farm

[PART FIVE IN A SIX-PART SERIES]

BY JANET GARMAN



RETIREMENT DREAMS OFTEN INCLUDE plans to travel both near and far. Depending on your previous occupation, travel may not have been possible very often. Maybe you have been looking forward to the freedom to vacation and the ability to afford the trips. Can a homesteading life after retirement include time for travel?

Family, location, dreams are all reasons that make travel desirable. Although many factors will determine the answer, I am going to say yes, it is possible to begin a homestead and still have time to travel. In fact, beginning a homestead with the intent of creating time for travel is the best way to start. Although we may feel that we are living the dream lifestyle, even the best of occupations require

a time of rest and restoration. Not only is having a vacation plan in place good for your soul, but it also is a good backup plan in case of an emergency or illness that requires you to be off the farm for an extended time.

Certain homestead activities lend themselves naturally to a break in the action. I am talking about

natural cycles on the farm. If you are raising cattle for beef, an obvious time for a vacation would be after the steers head to the butcher. This decrease or elimination in herd numbers would eliminate having to find a competent farm sitter to check on the herd. If you also have your own cows for breeding then you will need someone to check

daily for water and forage requirements. I know a long-time beef farmer who not only is still raising beef cattle in his senior years but also spends months in Florida every winter, enjoying the warmth and relaxation.

Layer hens often cease or greatly decrease laying during the late fall and winter. Homestead plans can include reducing the number of egg customers during this time. Flock



reduction can be handled in a couple of ways, too. If you are running an egg business, giving the older, less productive hens away or butchering them for your table will reduce the number of hens needing winter care. It will be easier to find farm care for a smaller flock.

Raising chickens, ducks, and geese for meat also gives you a natural break where you could travel. Plan a time between butchering day and the time a new batch of chicks arrives on the farm. This plan can allow you to take multiple breaks in a year.

Sheep and goats raised for meat can afford the same options as cattle. Fiber flocks are often kept much longer though. Breeding and birthing seasons are busy times. But, the time after breeding and before lambing or kidding might be a good time for a vacation, if you can hire a good farm caretaker.

Finding and Training a Farm Sitter

What do you look for when hiring a farm caretaker or farm sitter? The first question to be answered is: what do you require? Are you looking for someone that has experience with large livestock? Are you looking for someone to close your chicken coop at night and open it in the morning? In both cases, you will want someone reliable and responsible but the person can be very different. A friendly neighbor might be interested in gathering fresh eggs for the time you are away in exchange for twice-daily stops at your coop. Checking water and feed levels may be needed depending on the length of your trip. This is often a great job for a young person that wants to earn some cash. Be sure to include the parents in the plan because they may have to transport the child or teen to your property.

With large livestock, I am more comfortable leaving my animals under the care of someone

with experience. Our sheep are gentle but sheep are still sheep. Unpredictable behavior is a possibility. Escapes are a worry and knowing how to entice a sheep back into the barn is a learned skill. We have had some awesome young people help us over the summer vacations and they are my first call when we are thinking about going on vacation. They already know my routines and have interacted with the animals. A brief update is all that is needed and we are off to see the grandkids or the ocean! While not as readily available as a next-door neighbor, farm caretakers do exist. Be clear in your expectations. Try to whittle down the care required to only what is necessary. If possible, set up feeding and watering methods that lessen the need for direct interaction with the herd. This also lessens the chance of escaping animals taking advantage of a gate left unlatched.

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As an example of this, we have our sheep barn and paddocks set up so that the water and hay mangers can be refilled from outside the fence. While I know

how to anticipate the movements of my flock during feeding time, it can get a little physical when actually in the pen. I sure would hate to hear that my flock knocked

my caretaker to the ground during feeding!

Leave a document that repeats any oral instructions you stated. Include a daily schedule and the exact amounts of feed to be fed. Label containers if you have more than one species. Include all emergency phone numbers including your veterinarian, a relative that can reach you, and both your and your spouse's cell phone numbers. If you are blessed to find more than one local caretaker, leave the other person's number, too. In case of emergency, two heads are better than one.

Technology is also helpful. Not only can we set up internet-enabled barn cameras, but we can also FaceTime with caregivers while we are gone if a concern arises. There are many options available for the homesteader to get started after retirement. Planning is the key to keeping the door to travel wide open while still living the homestead dream. ©

Read the first four installments of this series at:

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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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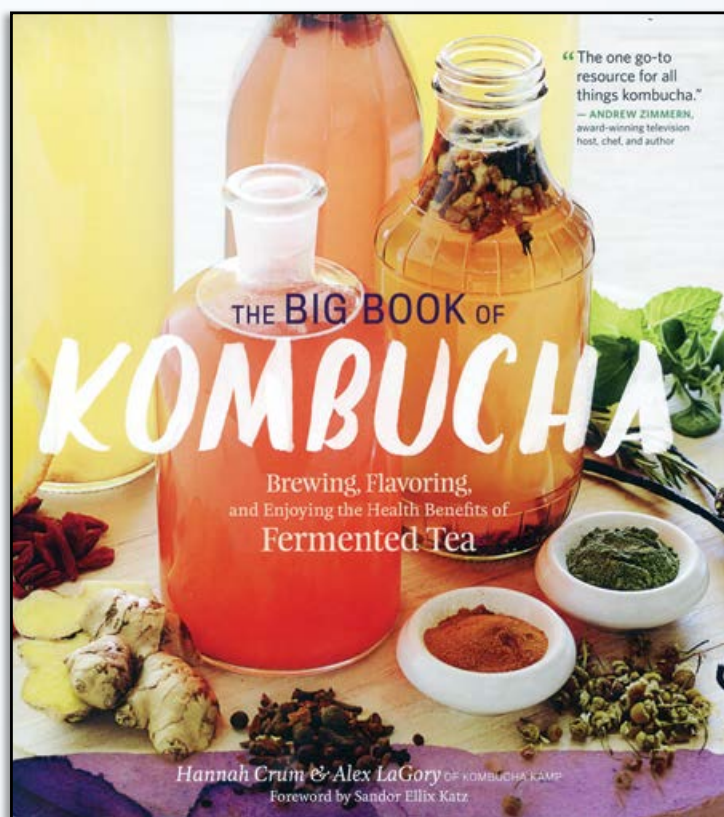
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Building Our Debt-Free Home

BY JENNY UNDERWOOD

IDON'T REMEMBER WHAT PROMPTED the initial idea of building our home debt-free. Perhaps it was when we successfully paid off all our debts in 2007 and felt the immense relief that came with that. Or maybe it was the dread of ever going back into debt that made us leary of a mortgage. But whatever put that thought into our heads, we credit the Lord with the gentle pushing to keep considering this crazy idea of building a home completely debt-free when everyone said it couldn't be done!

We had been married for six years when we became debt-free. Like many couples starting out, we had a vehicle loan, a loan for our mobile home, and a few other debts. Honestly, it seemed pretty normal but we decided after reading some budgeting books that we wanted

out. So we scrimped and saved and put everything extra toward paying off our debts. Considering we made about \$24,000 a year, that was pretty incredible to us. After that milestone, though, we realized we wanted to start a family and our tiny trailer was either going to need a major overhaul or we would need to build a house. That was exciting and scary!

We began to save our money with the initial idea that we could pay for part of the construction. However, that idea kept presenting itself that we COULD build completely debt-free. So, we started in the winter of 2008-2009 with \$13,000 in savings and some faith. We thought that it might take a few years to get in it but were content with that. Instead, we were in our home by September of 2009, roughly nine months after we started it, and it was all paid for!

So how did we do it?

First, we sat down and drew our design up, planning for maximum use of our materials. I have to be frank; it was small but adequate at 900 square feet. We planned to build this portion and move in. Then in a few years, we would build an addition. We started getting bids for our dirt and concrete work. I cannot stress too much that if you can't do something yourself, you should get multiple bids. Our bids on the concrete went from \$1,200 - \$5,000. In the end, we chose the cheapest one, but in hindsight, I advise getting recommendations from people you trust first. Unfortunately, while he did do the job, he didn't clean up the mess he made and we shoveled frozen dirt from outside of the foundation by wheelbarrow after he left. Another word to the wise; don't pay until the



job is completely finished correctly!

One thing we found out quickly was that our labor was the cheapest so we learned to do almost every job there was. My brother-in-law showed my husband how to lay bricks and though we paid him to get us started, we finished the rest ourselves, saving hundreds. Following this, we taught ourselves how to roof, install plumbing, wiring, and finish work which included sheetrock, laying tile, and boxcar siding.

My husband did hire the roughing-in and there again the multiple bids were a blessing. This time they ranged from \$12,000 and four weeks to \$2,000 and one week or less. Since the lower bid came highly recommended, we chose them. If we had been forced to accept the higher bid, we simply couldn't have swung the cost. In fact, after receiving that bid, my husband had decided we'd just have to do the work ourselves. But this lower bid turned out amazing! They did it in a little over a day and even cleaned up their sawdust! It was incredible.

Each time we completed a portion of the home, we sat down and worked over our figures again and I called around to price materials.

We found that the big box stores like Lowe's or Home Depot were cheaper, but when we asked our local hardware/lumber store, they matched the prices or sold them even cheaper because of the volume we were buying. They even delivered for free! That is something I cannot stress too much: ask, ask, ask! All they can say is no, but many times they'll say yes!

We were incredibly tight and thrifty that year. Every spare cent went to our home and when it was all said and done, we had about \$20,000 in it which was almost exactly what I had figured it at. Talk about incredible!

A few things to consider if you want to do this: I stress strongly to get out of debt ahead of time if possible. Live in an old mobile home while you save, then sell it. Think small. You probably don't need as much room as you think and you can always build on later. If money is very tight, build exactly what you can afford. If we had to do it over, we would build a shouse (shop/house). If one person can learn to do it, so can you!

Get good tools but only get what you really need. Many stores will loan or rent things like sheetrock jacks. Since you'll most likely use it

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Think small. You probably don't need as much room as you think and you can always build on later.

one time it's not a great investment, while on the other hand, a cut-off saw and a good cordless or corded drill will be invaluable.

Cheapest isn't always best when it comes to building materials. Get quality but don't just buy name brands. Ask local contractors and lumber store owners what they recommend. If they're honest, they'll give good advice. Ask more than one.

Don't be discouraged when things foul-up, because they will. Besides the frozen dirt incident, we dealt with a major ice storm when we began laying blocks, a broken truss, pickaxing our water and septic lines

through solid clay two feet down, and the wonderful adventure of finish work. There were days when something incredibly frustrating would happen and we would think, "We could have hired this done if we had taken out a loan." But we pressed on and the reward was SO sweet!

This story has a happy ending. We built the original home and lived in it for a year when our first baby came to us! Then in 2013, we found out we were expecting number two and decided we should build on. Amazingly, we were able to build a 640 square foot addition in eight months, debt-free on an income of under \$30,000. We were in our new addition before the new baby arrived by applying the same principles we used in our first part of our home.

Today we live in our modest, but comfortable, 1,540-square-foot home with our now six-person family. We feel incredibly blessed for me to be able to stay at home and homeschool our four children on our one income. Honestly, this probably wouldn't have been possible without the amazing blessing of a debt-free home! 🍀

JENNY UNDERWOOD, is a homeschooling mama to four lively blessings. She makes her home in the rural foothills of the Ozark Mountains with her husband of 20 years. You can find her reading a good book, drinking coffee, and gardening on their little 5th generation homestead.

She blogs at **inconvenientfamily.com**.

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Top: Air conditioner.

Below: CoolBot cooling system.

Left: Our walk-in cooler with stainless steel hooks installed.



Keeping it Cool With a DIY Walk-in Cooler

BY GINA STACK

THE TIME WAS DRAWING NEAR to process lambs. My husband and I had processed our own venison for years. We were ready to venture out and try something new. We still had a few weeks before they were ready but started to prepare for the event.

My husband, being a very good handyman and an electrician by trade, started stating his concerns about keeping the meat cool, as we had more than a few lambs to do. He went down into the basement on and off, measuring, figuring, and muttering about this dilemma. He is very good at putting things together that others wouldn't think of. When his innovative brain begins to spark, he becomes this creative inventor.

In my mind, I imagined him in a long, white lab coat with a clipboard, several pens scattered about,

measuring tape, and a table full of diagrams and calculations written out. And yes, he became absent-minded about little things, like losing his car keys or wallet.

At one point, he asked where our old window air conditioner was as he needed it. It had been used quite a bit in our other two homes but we didn't need it now so it was buried somewhere in the garage. We unearthed it and down into the basement it went, which left me a bit bewildered, but curious. The sound of an electric saw wafted up the steps not long after, which caused me to wonder what in the world he was doing.

As I zipped down the stairs, there was the old air conditioner, being put into the door of the unused

root cellar. As I asked him what he was working on, he explained what his objective was. Usually, when he gets in this mode and explains what he is planning, it is over my head and I just nod and say, "Cool!" But this I understood, as we had dealt with this keeping-the-meat-cool problem during deer season.

I asked how he came up with the solution, and here it is:

"We had a small root cellar built under the front porch. The walls were poured concrete with a concrete top. It had a hollow core wood door. I decided to insert a window air conditioner into the door to cool the room. It cooled some but not enough and I learned that window air conditioners are not designed to go below 60 degrees F. I did some research and found a device called a CoolBot at www.storeitcold.com. It is able to cycle the air conditioner's air so that it acts like a cooler compressor. I ordered one.

"In front of the cellar door and behind the stairway was an indent. I framed it in to make the cooler bigger. I removed the wooden door and put the air conditioner into the framed wall, framed in a new bigger door, and installed the CoolBot. It worked, but I couldn't get the temperature of my new walk-in cooler much below

mid-50 degrees F. I realized that the bare concrete walls are in contact with the earth and so it was drawing the cold away. I framed it in and insulated the floor, walls, ceiling, and door. After that, my cooler could get down to mid-30 degrees F. I also made a divider inside so that if I only had a little bit of meat to cool, I wouldn't have to cool down the whole thing.

"I then wondered how to hang things in it. I found a hook shop online that makes stainless steel hooks that fit over 2x4s. I threw some 2x4s up along the ceiling and ordered some hooks at www.meathookus.com. The little cooler can hold two full-sized steer, eight hogs, and up to 15 lambs. We use it when chicken processing to cool them before freezing, using removable cooler racks. It also works well during deer hunting season."

Here are a couple of things about the CoolBot. It controls your air conditioner by utilizing its power to cool, keeping the temperature in the 30s without the air conditioner freezing up. It uses up to 42% less energy than a traditional walk-in cooler system. It is designed for easy installation by end-users.

It has saved thousands of dollars for over 45,000 customers in 60 countries and has five-star reviews online along with many great customer reviews for the original CoolBot, which is what we installed within a decade ago. There is now also a CoolBot Pro available that is WiFi-enabled so that you can monitor and adjust the temperature remotely or power it off. There are also temperature ranges for alarms, etc. There is a lot more information on the website for this wonderful invention.

When the day came, the lambs were made ready for processing. I followed my husband (minus the imaginary lab coat) down to our new walk-in cooler and he opened the door. There they hung on the shiny new hooks, with the CoolBot hooked up to the old air conditioner, humming away! It was like looking into a mini meat locker at a meat processing plant. It was the "coolest" thing! I was so amazed at my creative, inventor husband, again!

We have used this cooler now countless times and will again and again in the future. I marvel at and thank God for the pioneering and imaginative minds he gave my husband and the people who invented this wonderful implement. 🍷



Root cellar.

GINA STACK, is a freelance writer in southwest Wisconsin. She, along with her husband and son, reside on five acres with 22 laying hens (some as old as 10 years!), a large vegetable garden, perennials, and Lily the pug.

NATURAL QUEEN REARING

STORY AND PHOTOS BY KRISTI COOK



An abundance of capped drone comb within most of your hives is a good indicator that the bees are in prime queen rearing mode.

QUEEN REARING IS OFTEN SEEN as a beekeeping task best left “to the experts.” After all, the idea of scooping up tiny bee larvae and slipping her into a queen cup, also known as grafting, seems daunting at best to many. However, queen rearing need not be scary, as anyone with bees can raise a few queens with minimal equipment, time, and knowledge — with no grafting skills needed. In fact, raising queens the natural way is one of the things bees do best, so why not let them do the queen rearing for you?

To raise queens the natural way, an understanding of what drives them to raise new queens is needed. Honey bees only raise new queens under specific conditions such

as supersedure (failing queen), emergency rearing (sudden queen loss), and reproductive swarming. However, while an extra queen or two may be obtained in the supersedure scenario, the best conditions for raising a handful of queens the natural way requires the colony to experience either a swarming or emergency queen rearing drive.

The most commonly witnessed natural queen-rearing process seen within the bee yard is in relation to swarming and is an optimal opportunity to obtain several queen cells for transferring into queenless colonies. Once a colony reaches such a size that they feel cramped and crowded, a healthy colony will decide it’s time to split. This

cramped condition may be caused by insufficient supering for the nectar flow, thus causing a honey-bound situation within the brood chamber and/or far too many bees within the hive to evenly disperse the queen’s pheromones throughout the colony. The decision to swarm causes workers to build several queen cups, most often along the bottom edge of one or more frames of comb or along the edges of damaged comb, in anticipation of swarming. Once the queen deposits her egg within one of these cups, the cup is then termed a queen cell, indicating the bees have made the final decision to swarm.

Once multiple swarm cells are present, be assured they’ve decided to swarm very soon, often within a week or so as colonies tend to swarm before or just after the first swarm cell is capped. These queen cells will be capped approximately nine days after the egg is laid and will need to be removed before the first queen emergence (16 days after the egg is laid) to prevent the virgin queen from assassinating her sisters still waiting inside their own cells.

This swarming nature and the inevitability of queen assassination are the downsides to using the swarming instinct as the beekeeper’s timing must be right on target. From the day the first egg is placed within a single queen cell to the day of swarming is no more than nine to 10 days and as little as seven days. This means if the beekeeper’s timing is off even by a single day, he/she will be left with swarm cells but will also lose the mother queen to a swarm.

Another downside to improper timing is in the late removal of the cells prior to first emergence, typically within 16 days of the first egg laid. Removing cells too late, as already mentioned, often gives the first virgin to emerge time to kill each and every one of her sisters either before each emerges or just after emergence. Therefore,

proper timing is essential to ensure you walk away with extra queens instead of a bunch of dead virgins and a swarm that flew away to the trees.

However, to ensure control of the timing and prevent the swarming tendency, you can utilize the emergency queen-rearing drive to take the guesswork out of just how old that queen cell really is. So, your goal as a natural queen rearer is to cause a queen loss. To do so, you just have to remove the queen.

First, select a parent colony that is strong, full of bees, and has loads of pollen and nectar — much like a colony getting ready to swarm. The strength of the queen-rearing colony directly affects the strength and vigor of new queens and should not be overlooked. If the selected colony is lacking in nectar/honey and pollen, feed 1:1 even if there's a nectar flow on to ensure they pack the hive full. If small hive beetles aren't a problem, you may consider a pollen patty or two, as well.

Once the colony has sufficient resources, remove the queen, a minimum of one-two frames of brood, preferably in all life stages, one-two frames of honey and pollen, and at least three solid frames of bees with five frames of bees being the most optimum minimum. Move this split to a new location and monitor for strength for a few weeks, adding bees and brood as needed as the split grows in size.

After the queen is removed, the workers left behind quickly notice they have lost their queen and will begin raising new queens in emergency cells placed throughout the frames, often within 24-72 hours. These emergency cells may be somewhat differentiated from supersedure cells in that they are often in the middle of the frames with emergency cells typically discovered in random locations around the outer perimeter of the brood nest. However, with a strong

colony, you may expect anywhere from five to 10 supersedure cells in most colonies with the occasional odd colony that only produces two or three as is seen most often with emergency situations.

Be aware these newly queenless colonies often react like any other colony that has lost their queen — they may become more defensive of their home so wear protective gear when near this colony. It is best to avoid opening the hive until

at least day seven to give the testy bees time to tend to their business without adding more stress by opening the hive. However, it is often difficult to not "check and see" what is going on inside the hive, so take a quick peak only if necessary to ensure queen building is being tended to and then close them up quickly but gently.

By day nine or 10, queen cells will be capped while the queens inside finish development. Most experts



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It takes a lot of bees to raise high-quality queens, so make certain the hive you select to raise a few queen cells is loaded with bees. This hive is the bare minimum for quality queens.



Unlike queen cells that contain a living queen, these queen cups are empty and are simply waiting to have an egg deposited if/when the bees decide they need a new queen.

Be aware these newly queenless colonies often react like any other colony that has lost their queen — they may become more defensive of their home so wear protective gear when near this colony.



This frame contains several swarm cells that were very recently vacated by their virgin queens.

recommend not moving cells until day 13 as developing queens are fragile and easily damaged. When ready to remove cells, use a sharp knife to gently cut the cell from the frame/comb. If cells are on a wax foundation, cut completely through to the other side in a wide circle around the cell. If using a plastic foundation, slip the blade under the wax and slice up to the foundation to avoid injuring the queen. Place cells in a cell protector or press the outside perimeter of wax gently onto the new comb for adherence.

To increase acceptance of these cells in their new homes, make splits 12-24 hours before installing the cells. Double-check the splits to remove any queen cells or cups already built as those bees often reject the newcomer in a preference for their own genetics when they are already in the making. Then sit back and wait for your new queens to emerge, mate, and begin laying.

Raising your own queens need not be complicated. Because with a strong colony, good food sources, and a little bit of planning, any beekeeper can reduce the cost of beekeeping by using the natural queen rearing tendencies of their own bees to produce a fair amount of queens each season. So don't hesitate to give your hand at natural queen rearing a try this bee season. In many areas, it's not too late to try a time or two before the bees begin their fall preparations. ©

KRISTI COOK lives in Arkansas where every year brings something new to her family's journey for a more sustainable lifestyle. She keeps a flock of laying hens, dairy goats, a rapidly growing apiary, a large garden, and more. When she's not busy with the critters and veggies, you can find her sharing sustainable living skills through her workshops, articles.



Brood in Honey; No Queen Excluder — What Now?

David D asks: *How do beekeepers who don't use queen excluders deal with honey frames that may have some brood mixed in when they go to extract?*



Rusty Burlew replies:

Many people don't like the idea of queen excluders until they get to this point. Brood in the honey supers is a difficult problem to solve, and the solutions are not ideal.

If you find a lot of brood, it's probably best to leave it alone and not extract at all. This is the best choice if you want to keep the drawn comb undamaged or you want to keep the brood.

RUSTY BURLEW is a master beekeeper in Washington State with an undergraduate degree in agronomic crops and a master's degree in environmental studies with an emphasis on pollination ecology. Rusty owns HoneyBeeSuite.com, and is the director of the Native Bee Conservancy of Washington State.

If you find some honey-only sections among the brood, and you're not concerned about keeping the drawn comb, you can cut the honey sections out with a knife and use them for comb honey. When you give the frame back to the bees they will usually repair the damage.

If you have only small sections of brood in a frame, you can cut out those sections and discard them, then try to extract the rest. If you cut out too much, however, the comb may release from the frame while it's spinning in the extractor.

Alternatively, you can cut everything out of the frame and put the brood sections in one pile and the honey sections in another pile. Once separated, you can discard the brood and crush and strain the honey with a fork and a strainer. This avoids the problem of having the comb release in the extractor, which can get messy, and it gives you extracted honey rather than comb honey.

The last alternative I can think of is to put an excluder on now and make sure the queen is below it. Then wait for all the brood to emerge and then extract the honey.

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Drone Honey Bee Facts

Discover the Vital Role the Drone Bee Plays in the Beehive

STORY AND PHOTOS BY KRISTI COOK



Drone brood is bullet-shaped and larger than worker brood, often located around the bottom of the brood frames and in any damaged area of brood comb.

DESPITE THEIR REPUTATION as the laziest members in the beehive, it could be argued that drones carry the key to our honey bees' long-term survival. For without them, nearly every aspect of a honey bee colony would cease to exist within a short time, making drones just as vital as the queen herself. Read on for a few drone honey bee facts that may cause you to see drones in a more favorable light.

The Drone's Purpose

Every individual within a hive has a role to play. The queen releases pheromones that keep the colony functioning as a single, cohesive unit and lays eggs to ensure the continued existence of the hive. Worker bees not only collect nectar, pollen, water, and propolis, but defend the hive against intruders, build comb for brood and food resources, tend to the queen, clean the hive, feed the larvae, and much, much more.

Drones, on the other hand, seem to have it easy as their only function appears to be eating and mating with virgin queens from other hives. The drone's very anatomy prevents him from taking part in any other hive responsibilities. Larger than the worker bee and fatter than the slender queen, drones lack the stinger, pollen baskets, and wax-producing glands necessary to perform the worker bee's tasks. Instead, a drone boasts much larger eyes and longer legs than females which enable him to quickly spot a virgin and securely grasp her in mid-flight for copulation — the perfect anatomy for his sole purpose.

Drone Congregation Areas

Drones, on average, live a mere 30-55 days according to most experts. During that brief lifespan, each healthy drone leaves the nest multiple times a day and flies to a drone congregation area (DCA) where hundreds of other drones from surrounding colonies join together in search of virgin queens. When a virgin is spotted, hundreds of drones chase after her, forming a drone comet. But only the fastest, strongest, and most nimble drone reaches the queen and wins the privilege of mating with her — and then dies a rather explosive death as the very act of mating causes his endophallus to be ripped from his body. All of the weaker, less robust drones remain at the end of the drone comet, keeping their DNA out of the gene pool.

And this is where the importance of drones comes into play.

In order for a queen bee to be considered a "well-mated" queen capable of producing a thriving, healthy colony, she must mate with between 10-20 different drones. Left unmated, she can only produce unfertilized eggs which in turn produces only drones. With no worker bees in the mix, no nectar or pollen comes in, no brood can be fed, and the queen goes unattended, so the colony quickly dies unless a new queen is introduced or raised by any remaining workers. If, on the other hand, the queen is insufficiently mated with only a small number of drones, she may lay well initially and produce a thriving hive at the beginning of her reign, but she will quickly fail and be replaced by a newer queen. Either way, poorly mated queens spell hardship at best and complete hive loss at worst. So for a hive to thrive, the queen must be well-mated with multiple drones.



Drones are larger than workers and fatter than queens and have large eyes and long legs, often exhibiting 'fuzzy' rear ends.

To help ensure she is well-mated, the queen herself flies to these DCAs to access multiple, unrelated drones, as queens do not typically mate within their own hive nor within their own apiary despite each colony maintaining a few hundred drones throughout spring and summer. By receiving the sperm from several unrelated drones, the queen takes those new genetics back to her hive — and your apiary — where she spreads that DNA amongst her progeny, thus creating a genetically diverse colony. And a genetically diverse colony has a higher chance of survival than a colony with a more limited gene pool which in turn makes your apiary a stronger apiary that has a better chance at overall survival than an apiary with a limited gene pool. This transfer of genetics, when maintained properly, continues on an annual cycle that further assists in honey bee survival.



Drones and virgin queens go together. This photo shows the bullet shaped capped drone brood, several drones, and a ripe queen cell.

During that brief lifespan, each healthy drone leaves the nest multiple times a day and flies to a drone congregation area (DCA) where hundreds of other drones from surrounding colonies join together in search of virgin queens. When a virgin is spotted, hundreds of drones chase after her, forming a drone comet.

The End of His Days

What about those unsuccessful drones that never catch the prize? For a time, they are allowed to remain within the hive to continue making attempts at spreading the colony's genetics through repeated trips to DCAs, provided there are plenty of food resources available to spare. However, as an area enters a dearth and again when days shorten and fall draws near, drones are unceremoniously removed from the hive by worker bees in an attempt to conserve as many resources as possible for the upcoming winter months.

It is obvious when this yearly ritual takes place, an observant beekeeper will notice reluctant drones being dragged out of the hive by worker bees. At times, it takes only a single worker to remove a drone, while other times it may take three or four if the drone is especially strong and unwilling. These outcasts will then be left to starve and/or die from exposure as guard bees keep watch to prevent these drones from re-entering the hive. But don't be surprised if you open a hive mid-winter and see a small handful of drones hanging out inside as some colonies do allow a few drones to remain throughout winter provided there are ample stores to spare.

While it is true that colony survival is dependent upon many different elements such as sufficient forage, manageable pest loads, and suitable housing, drones are perhaps the most vital element second only to the queen herself. Because without ample drones for mating, queens cannot mate well, resulting in weak, failing colonies with limited gene pools. The perfect recipe for a failing apiary.

So, the question now is how do you anticipate creating a strong gene pool within your own apiary? 🍯



Springing Through Fall and Winter With Cover Crops

Plants to Plant Now to Guarantee a Colorful Spring

BY JENNIFER MAYNARD

SUMMERTIME IS A BUSY SEASON for farmers and homesteaders with crops in the ground. It's time to start thinking about harvesting early-season crops like tomatoes, corn, eggplant, and others, while also looking ahead at what to plant next. Fall favorites need to go into the ground now, with forethought to winter planting, as well.

Unfortunately, too many croppers aren't thinking about fall and winter crops. Instead, they focus on monocropping — growing a single crop during the peak season and tilling the earth during the offseason to prepare for the next cycle of planting. In the case of a silo crop like wheat, the harvest cycle is eight months, leaving the soil tilled and barren for a quarter of the year.

It's time for croppers to think about how to put those offseason months to work planting supplementary crops — for the good of the soil and the sustainability of their primary crops

in the future. It starts with cover cropping.

What is Cover Cropping?

Cover crops are named because of the role they play in preserving soil health. They cover the ground to reduce exposure and the negative impacts that come with it. This means minimizing sun exposure, wind erosion, heavy rainfall, and even early frost damage.

Cover crops are typically annuals that are hardy enough to survive late into the season and that reemerge early in the spring. As a result, they're also low-effort crops that don't need much in the way of tending. Despite this, cover crops and the role they play have huge beneficial prospects for soil and future crops planted in it.

The Benefits of Offseason Cover Cropping

Planting cover crops during the offseason is essential in preserving the nutrient profile of the soil.

The benefits of cover cropping are numerous, including:

- **Reduced soil erosion.** Protection from high winds and heavy rains keeps soil in place and reduces the likelihood that it's blown away.
- **Organic support.** As cover crops die off and are allowed to fall back to the soil, they'll decompose to provide nutrient support to the soil's microbiome.
- **Moisture balance.** In addition to protecting soil from the effects of heavy rainfall, cover cropping also prevents the dehydrating effects of sun exposure.
- **Weed suppression.** Turning to cover crops instead of herbicides is a great way to prevent weed growth naturally in planting beds.
- **Pollinator attraction.** A diverse breadth of different cover crops will attract pollinators in the springtime and throughout the growing season.

In addition to cover cropping, it should also be noted that leaving

fallen leaves in planting beds is another great way to safeguard the soil.

What to Plant in Fall and Winter to Ensure a Colorful Spring

Fall and winter cover crops are abundant, depending on the region you live in. Most of these plants share low-maintenance characteristics, and it's best to consider several varieties to bring diversity to the soil microbiome.

Some good examples include the likes of crimson clover and red clover, as well as white Dutch clover — all of which are nitrogen fixers and great pollinator attractors. Winter rye is a great cover crop for releasing phosphorus and potassium back into the soil, and it features an extensive root system that can improve soil structure throughout the winter. You may even consider planting buckwheat, which dies off with early frosts — however, once dead it provides great organic matter for the soil and can moderate surface temperatures to improve the growth prospects of other cover crops.

The beauty of planting these cover crops in late summer through to early winter is that come spring, many will rebound to bring color to your planting beds. More importantly, they'll rejuvenate the soil and ready it for mass planting of an industrial or feed crop.

Peripheral Benefits of Cover Cropping

The benefits of cover cropping cannot be understated, and they're far more widespread than just



improving the soil itself. For example, cover cropping during the offseason leaves no room for tilling — a practice responsible for the decline of soil structure. Moreover, it encourages biodiverse soil, promoting healthier crops.

Perhaps the biggest benefit of cover cropping is that it reintroduces some of the baseline practices of regenerative farming. Cover cropping can prevent the need for herbicides, soil injections, and other industrialized practices that have depleted soil. Above all, it creates mindful awareness that soil sustainability is a year-round effort — one that goes beyond support for primary crops.

No matter what you're planting come spring, support for future yields starts today, with what you're planting during the offseason. Cover cropping takes minimal effort and offers significant benefits. Start a seasonal cycle of cover cropping this year and reap the positive effects of soil sustainability for years to come. 🌱

JENNIFER MAYNARD has worked in the biotech and pharmaceutical space for more than 20 years. After two decades devoted to her passion for changing people's lives through modern medicine, she felt her knowledge and experience would be better served by focusing on food as medicine and created Nutrition for Longevity, a farm-to-table meal delivery service that brings key players together to support the ancient practice of food as medicine. Her extensive understanding of nutrition, regenerative agriculture, and the healthcare industry puts her in a unique position to talk about the link between life on a truly holistic approach to human health and lifespan.

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cold weather gardening

BY ANITA B. STONE



RESULTS OF A RECENT STUDY commissioned by the National Wildlife Federation, show strong public interest in growing plants, not only to benefit wildlife but also for human consumption. In 2019, 16.8 million Americans purchased plants, and 23.1 million transformed sections of their yards into food crop space. This surge reflected the increasing interest in growing food for the homestead. During these unprecedented COVID-19-related times, people are planting with a purpose.

Many of us put our gardens to bed once winter arrives. However, by using an abundance of strategies and knowing which crops to

plant, we can harvest food even in snow-driven territories where temperatures may drop to zero degrees F — areas where it was often believed that food could not grow. Of course, major challenges have to be addressed and overcome, such as sudden temperature drops, extreme weather conditions including strong winds, ice, heavy snow, and low light levels. In cold climates, there are not as many options regarding choices for planting as are available in warmer regions, but the limitations of cold weather can be overcome if you know and can implement solutions that work in your part of the country. For instance, being knowledgeable about when to plant

is imperative for plant survival. Root systems need to develop before the ground becomes frozen. Although that time varies, for many areas it's during August.

For vegetables to survive in very cold weather, planning for protection from the elements is necessary and requires prior effort. Plant protection can take the form of mulch, cold frames, straw banks, cloches, or fallen leaves, depending on anticipated temperature ranges in your location. A hoop frame of poly pipe, bamboo, or natural tree branches can be erected and covered with a see-through plastic for insulation, depending on how long the plants must stay covered. An extra layer of single-skinned plastic between plants and soil will reduce the rate at which heat is escaping. Consider heat mats, wind-break hedging, and belt planters. Some eco-friendly heating solutions to consider are a hotbed, in which composting manure and carbon materials gently heat plants from below, piped hot water heating with water warmed by a wood-fired boiler, solar power, or fans pumping through a network of pipes under the soil. The soil collects the energy which is then pumped back into the space to keep it warmer. Other protective shelters can be prepared, such as a sunken greenhouse or a greenhouse made with straw bales or adobe on the northern side. Lean-to structures, cold frames, or high tunnel designs can maximize light and heat from the sun. Generally, it's best to maximize southern exposure in winter, but increase shade during the summer.

Another factor to bear in mind is the use of dense material with a high thermal mass for protective shields. High thermal mass substances, such as logs, store heat during the day and release it slowly at night. Brick, earth, clay, and ceramic material provide insulation from deep freezes and protect crops from extreme

temperatures. Without these precautions, lengthy, deep freezes will cause damage unless sheltering protocols are followed because, as the soil freezes and becomes solid, plant cells will burst and crops will die. Additionally, water must be collected and stored for winter crops before temperatures remain below freezing. Spring rain can be directed into rain barrels that can be insulated in much the same way as plants or by being placed in protected sites.

Certain snow-hardy vegetables can withstand cold temperatures much better than others. For starters, planting heirloom seeds or plants gives the best chances of success. These vegetables have been around for many years, have been genetically pre-selected through natural processes, and have proven to yield produce even during the



coldest months of winter.

Greens are fantastic vegetables to grow in winter. It's hard to beat kale. In my garden, in the Piedmont of North Carolina, kale leaves have lasted, unprotected through the entire winter, and have yielded

three timely crops. Russian kale deserves recognition for growing well during the winter months, not to mention their service keeping Russian farmers in the past from starving during that country's harsh winters.

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While many of these vegetables improve their flavor once frost strikes, most can still be damaged by prolonged deep freezes if not properly protected.

Another super tolerant green is spinach, a plant whose leaves may die with the cold, but the plant itself can survive and grow new leaves in early spring. A successful variety to plant is savoy or any kind with wrinkled leaves.

Collards, a staple southern-grown vegetable is surprisingly freeze-tolerant. Try the Georgia Southern Creole variety or Blue Max for cold northern winters. Blue Max offers high yields that can survive temperatures down to zero degrees F.

Most homesteaders grow Swiss chard during the spring and summer months. This chard does not require protection unless the temperature drops below 15 degrees F. If such cold is expected, protect the chard with a covering of mulch and it will live through the winter and give extra pleasure by re-growing in the spring.

Lettuce is an all-time favorite, with several varieties to choose from. It is best to select the young plants, which tend to tolerate cold temperatures rather than the mature ones. Keep lettuce protected with cold frames, hoops, or tunnels. It can survive temperatures down to 10 degrees F and, if covered with mulch layers, can remain viable down to even zero degrees F, depending on the variety.

Another group of vegetables also quite hardy and not bothered by winter cold are leeks, such as Bleu de Solaise. Parsnips, though a bit finicky, actually prefer snow when mature, which makes them taste sweeter. Cabbage grows well during the winter. The most successful cabbages are the wrinkled leaf kinds which fare better than flat-leaved varieties. Cabbage needs to be planted in late summer to be ready to harvest in the winter.

Similar to some vegetables mentioned, turnips gain sugar with the cold but become less spicy. Turnips require protection from extreme temperatures, so a cold frame or heavy mulching that

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covers the roots is advised.

Homesteaders are not limited to cold-weather plants. Many other vegetables can be added to the winter season, such as arugula, onions, rhubarb, rutabaga, Brussels sprouts, and scallions. If you enjoy plants of the onion family, be sure to create layers of protection so these vegetables can survive under the snow.

Though not covered here, many herbs can withstand and survive cold winter climates, but that would be another fascinating story.

What a wonderful way to continue heart-healthy nourishment all year by having grown fresh winter vegetables and being able to harvest them for yourself and your family. Remember, that while many of these vegetables improve their flavor once frost strikes, most can still be damaged by prolonged deep freezes if not properly protected.

Hopefully, some of these ideas will encourage and inspire anyone to raise winter crops, which will later allow you to wander out, brave the cold, and harvest fresh produce without having to drive through the snow and ice to obtain vegetables for your winter table. ©

ANITA B. STONE is an eco-friendly journalist who nourishes her traditional habit of nature and horticulture. Her love of the land and passion for teaching at the local community college and at senior retirement centers fills her time. She is always searching for new methods of improving the environment, growing food to benefit people, domestic animals, and wildlife. She is an author and Master Gardener in North Carolina, teaching others how to farm sensibly, making life easier and fulfilling, and admits she will always stay young-at-heart, just like her grandchildren.

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PLANTING BULBS IN FALL FOR EARLY SPRING FLOWERS

BY KARIN DENEKE

DISCOVERING THE FIRST CROCUS emerging from the barren ground in late winter gives us a clear message that spring is not far behind.

Crocus are one of the earliest bulbs to flower. You can plant them anywhere in your yard, even in your lawn. Once bloomed, the plant will blend in discreetly with your existing vegetation.

The showy yellow daffodils make their entrance not much later, followed by the daisy-like, low-growing anemones, also referred to as windflowers, and the multi-colored tulips. These are just a few

of the spring-flowering bulbs you may want to consider.

Planning where to plant your bulbs into your existing landscaping this fall should be a priority before it is time to put them into the ground. Draw a layout of your yard and figure out where they would make the best statement. And attention should be given to sun exposure. Daffodils and tulips, for instance, excel in full sun.

When you purchase your bulbs, they should include instructions for where and how to plant them. This will help you determine the best-

suited growing location on your property.

I prefer to save my drawing/layout until the following spring to assist me when I search for signs of early emergence. It is exciting to discover the first tiny green shoots peeking out in late winter from underneath a blanket of melting snow.

Your sketch may not help much if there are squirrels in the neighborhood unless you take certain precautions. My property is surrounded by nut-bearing trees such as oaks and shag bark hickories — a habitat for dozens of squirrels. Come fall, these busy little critters prepare for winter by hiding their future provisions in freshly dug holes.

Unfortunately, in their frenzy to fill their ladder, they will also dig up and replant bulbs — bulbs that I had just put into the ground, that they will then hide at a brand-new location.

Don't worry, there is a solution and it is called landscape fabric. Often sold in rolls, it is lightweight and designed to allow air, water, and nutrients to penetrate. It is available in most garden centers. All you need is a pair of scissors to cut it into the needed shapes



to cover the areas where you just planted your bulbs. I use medium-sized stones to weigh the fabric down at the edges. It is a one-time chore because once your bulbs have rooted by early spring and before emergence, they should be squirrel safe.

I recommend before you dig the holes for your bulbs to have a supply of bone meal on hand — a plant food sold at garden centers and or nurseries. I bought a four-pound bag that can also be used for my garden crops, trees, shrubs, and roses, to name a few. Its analysis is 2% nitrogen, 14% phosphate, and 15% calcium. For bulbs, I sprinkle 1 tsp of bone meal into the hole I just dug and work it in the best I can. If the soil is dry, it helps to add water.

You must follow the instructions that come with your purchased bulbs for depth of planting, sun exposure, and spacing. Crocus require a depth of three to four inches and they do well in full sun or partial shade. They can be planted in groups or clusters. Anemones require a depth of three inches. Plant in full sun to partial shade.

Daffodils as well, thrive in full sun or partial shade. Plant them about six inches deep with spacing of four to six inches. These early-blooming beauties may achieve a height of 14-18 inches. Tulips on average reach heights of 14-22 inches and prefer full sun, and can be planted four to six inches deep with two to four-inch spacing.

Don't forget hyacinth in your colorful parade of flowering bulbs. The fragrance alone is worth the effort. These large bulbs can be planted four to eight inches deep with a spacing of four to six inches, in full sun to partial shade, and reach a height of eight to 14 inches.

Since I just mentioned the wonderful fragrance of hyacinths, I must also bring up the sweet scent of the lily-of-the-valley. This mid to late spring flowering bulb can



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tolerate sun to partial shade and will reach a height of only four to six inches. In other words, it grows close to the ground. It spreads by forming tight groups. Plant the bulbs a few inches apart, up to three to four inches deep.

HOW DO BULBS MULTIPLY?

Keep in mind that if you are short on space, bulbs multiply at different rates. Most generate so-called offsets or bulbils. It is advised to remove flower heads after blooming so that the bulb does not waste energy producing seeds, but allow leaves to die fully before removing them. As far as tulips are concerned, their propagation is slow. They produce clusters every third season.

Daffodils are considered a low-maintenance plant and propagate in two ways — by seeds and bulbs. If you are short on space, limit the number of bulbs you plant. Your other option is when your daffodil stands become too crowded, dig the new bulbs in late spring, store them in a cool place, and replant in early fall.

Finding the first signs of flowering bulbs pushing through the soil after a long winter is worth all the effort it took to plant them. And how exciting it is when you spot your first colorful crocus in bloom. 🌱



KARIN DENEKE has a background in soil science and is an advocate of the USDA Soil Survey. She resides at 9,000 feet in the Sangre de Cristo Mountains of Colorado in an energy-efficient, passive solar/hybrid home, constructed with a Douglas fir timber frame, stuccoed exterior straw bale walls, and interior adobe walls separating the individual rooms.

Guide to Saving Seeds

By Marissa Ames

HOMESTEADING
HANDOUTS

Saving seeds for next year builds sustainability while preserving heirloom breeds. Use this guide to learn how (or whether) to save your vegetable seeds.

HEIRLOOM VS. HYBRID

~ “Heirloom” varieties have been passed down for years or generations. Always open-pollinated.

~ “Open-pollinated” is stabilized and, if pollinated from blossoms of the same strain, will produce offspring of that strain.

~ “F1” or “hybrids” are crossed between two strains to yield a stronger and more productive crop. Hybrid seeds have so many genetic variables that saving seeds for another generation (F2) is not recommended as offspring are almost never vigorous or tasty.

GMO?

Genetically modified seeds are not available for home gardeners to purchase from seed companies. You only risk GMO contamination if you garden corn, soybeans, cotton, canola, or alfalfa in close proximity to a commercial farmer that grows these as GMO crops and if pollen drifts on the wind. Genetically modified crops approved by the USDA have not proven to have negative effects on health above what their non-GMO counterparts also carry.

FULL MATURITY

Most fruits have to be well beyond edible before seeds are viable. Zucchini must be overgrown with woody skins and stems; green peppers must have turned their ripe color (usually red), winter squash must be sweet and orange throughout, and cucumbers and eggplant will be yellow and bitter. Allow beans and peas to mature until shells are dry and seeds are hard.

Corn, whether sweet or grinding varieties, needs to remain on the plant until hard, with brown husks. Okra will be too hard and woody to consume. Root vegetables must flower and go to seed, then seeds must be fully mature and dried before harvest.

THE HUMIDITY EQUATION:

$$T(^{\circ}\text{F}) + H\% = < 100$$

If the total sum of temperature (Fahrenheit) plus humidity surpasses 100, then seed viability reduces drastically.

TO DRY OR NOT TO DRY

While most crops, such as squash, simply require scooping out seeds and air-drying in a cool and well ventilated location, others such as tomatoes must first be fermented to remove gelatinous material. After a few days of fermentation, gently wash seeds in a sieve then lay on a paper towel to air-dry.

BIGGEST IS BEST

When harvesting from your garden, resist the temptation to eat or give away your best, most beautiful squash or garlic. Planting seeds from small crops means you will harvest smaller crops next year. Always save the best specimens for replanting.

GRAFTED ON

Did you just eat an amazing apple and want to save seeds? Double-think this. Most fruit trees start from scions: sticks cut from other trees of the same variety and grafted onto good root stock to create a strong plant. Fruit seeds contain so many genetic variables that sprouting one may not yield a strong tree or one that produces tasty fruit. Other grafted trees include stone fruits, citrus, and avocados.

THE PUMPKIN PROBLEM

Only five species of domesticated squash are cultivated globally. If you grow two of the same species in close proximity, without isolating blossoms, seeds could be a crossbreed.

But if you grow two different species in close proximity with no chance of cross-pollination from another garden, your seeds will be true to type.

Cucurbita pepo = acorn squash, all zucchini and most summer squash, coccinelle, delicata, Jack o’Lanterns, marrow, scallop and patty pan, Sugar Pie pumpkins, and most gourds.

Cucurbita moschata = Butternut, calabaza, crookneck, Dickson pumpkin, golden cushaw, Long Island cheese, Musquée de Provence, and tromboncino.

Cucurbita maxima = Banana, buttercup, Candy Roaster, Hubbard, Jarrahdale, kabocha, kuri, Lakota, turban, most “giant pumpkin” varieties.

Cucurbita argyrosperma = Japanese pie pumpkin, cushaw, silverseed gourd.

Cucurbita ficifolia = Malabar gourd (also called black-seed squash, pie melon, Thai marrow).



STORAGE

If storing on a shelf or garage, choose the coolest, driest, darkest location possible. Store in containers with good air flow, such as paper bags or cardboard boxes — never plastic. If storing in a freezer, choose plastic to avoid freezer burn and so condensation doesn’t form and damage seeds when thawed. Vacuum-sealed bags add extra protection.



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How to PASTEURIZE EGGS at Home

BY JEREMY CHARTIER

IF YOU'VE EVER WONDERED how to pasteurize eggs at home, look no further! There's more than one way to go about it, but there's a kitchen tool that'll make your life easier and take the guesswork out of the process. In this article, I'll explain what pasteurizing is, why we do it, and how to do it.



A side-by-side comparison; a fresh egg to the left, a fresh pasteurized egg to the right. There was virtually no notable difference between the two.

The French Connection

In the 1800s, a Frenchman by the name of Louis Pasteur made significant discoveries in the world of vaccines. Besides discovering modified-live vaccines, Pasteur also fathered the theory of pasteurizing.

What is Pasteurizing

Pasteurizing is a process of thermally treating foods to kill pathogens and spoilage bacteria. Unlike cooking, pasteurizing heats food enough to kill or deactivate these bacteria without significantly changing the quality of the product.

The Disclaimer

The USDA and FDA always recommend that you fully cook your eggs, and so do I. The following information is for your information, but be aware that even the FDA says that pasteurizing eggs is not 100% effective. Additionally, the system in the photos is the system I've bought for myself and is not a sponsor of this article.

Why We Pasteurize Eggs

There are two main reasons people want to know how to pasteurize eggs at home. Firstly, if you're feeding children, elderly, or chronically ill individuals, pasteurization is a good safeguard against food-borne illness. Secondly, if you're making food with raw egg, such as mayonnaise, Caesar dressing, or edible cookie dough, then pasteurizing your eggs is wise. If pasteurizing at home sounds like too much work, you can always buy eggs already pasteurized.

Where to Buy Pasteurized Eggs

Pasteurizing eggs in the shell isn't a universal practice in America. Still, you can find pasteurized eggs in many grocery stores. Look for packaging that indicates their eggs as pasteurized in your grocer's refrigerated case.

Pasteurized Egg Products

Egg products (not whole eggs) in America such as packaged egg whites are pasteurized per the Egg Products Inspection Act (EPIA) of 1970 with rare exceptions. If you're buying egg products directly from a farm or packaging plant, be sure to ask if they pasteurize their egg products. Purchasing directly from these sellers may fall under these rare exceptions.

A sous vide system makes pasteurizing eggs at home as easy as point-and-click.

How to Pasteurize Eggs at Home

Pasteurizing eggs at home is simple, and all you need is a water bath. This water bath can be a pot on your stove, but holding an exact temperature can be challenging. To make this easier, I highly suggest a sous vide machine to regulate the water bath temperature.



What is Sous Vide?

Sous vide is a French term meaning "under vacuum." It's a method of cooking that most notably includes a water bath, food in vacuum bags, and a circulator pump with a heater element.

The USDA and FDA always recommend that you fully cook your eggs, and so do I. Even the FDA says that pasteurizing eggs is not 100% effective.

To pasteurize eggs in sous vide, we'll be skipping the vacuum bags and placing the eggs directly into the bath. Alternatively, you can use something such as an egg basket to contain them in the water bath. A sous vide system makes pasteurizing eggs simple, and if you plan on pasteurizing eggs often, it is a must-have tool.

Each sous vide system is slightly different, but most of them are user-friendly and intuitive. On my system, the bottom number is my

set point, and the top number is the actual bath temp.

Temp and Time

Once you have a sous vide system set up, there are two things you need to know: how hot and for how long. At 130 degrees F, spoilage bacteria and pathogens die or deactivate in the egg; however, at 140 degrees F, your eggs will start cooking. The FDA says eggs should be held at a minimum of 130 degrees F for 45 minutes to achieve 99.9% pasteurization.

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Cooking experts and sous vide machine manufacturers advocate for temperatures of 135 degrees F, which is above the minimum temperature to pasteurize but still below the 140 degrees F cook point, giving users a buffer to work within. Most instructions found around the internet stretch the time out to one or two hours, of which the latter seems a bit overkill.

Pasteurize Eggs Sous Vide

Set your sous vide circulator into your water container, be it in a stockpot or a food-grade tub. Add water until you at least reach the minimum depth indicated on your circulator. Set your sous vide machine to the desired temperature and wait for the bath to reach that set point. Once there, gently set your eggs into the bath and set a timer for your desired time.

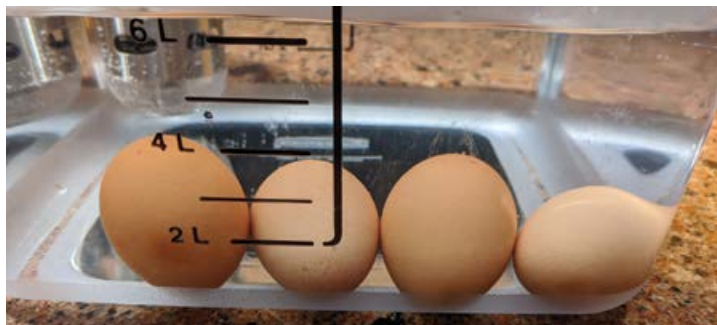


Fragile shells will crack easily while they move in the current produced by the sous vide circulator. Pull these eggs out before they cause a big mess.

Eggs on the Move

Eggs will move with the current made by the circulator and may crack while migrating around the container. Pull out any cracked eggs before they gunk up your circulator and dispose of them. If you have a lot of eggs cracking in the bath, try using a small egg basket to corral them, or consider feeding them to your flock as a calcium supplement. If eggs float, they may not be inedible, but they will prove challenging. Read my article on how to tell if eggs are bad

If you're feeding children, elderly, or chronically ill individuals, pasteurization is a good safeguard against food-borne illness. Secondly, if you're making food with raw egg, such as mayonnaise, Caesar dressing, or edible cookie dough, then pasteurizing your eggs is wise.



for more details on why they float. backyardpoultry.iamcountryside.com/eggs-meat/how-to-tell-if-eggs-are-bad/

Time to Chill

Once the timer is up, pull your eggs and set them in an ice bath to cool for at least 10 minutes, dry them and transfer to the refrigerator. Remember to mark your pasteurized eggs, so you know which eggs you pasteurized.

How to Pasteurize Egg Whites

If you prefer to use pasteurized egg whites, there are two ways you can go about this. One is; pasteurize your shell eggs, then separate them and use the whites immediately. However, if you want to use pasteurized whites later, you can separate your whites and bag them

in a vacuum bag. This bag of whites can then be set in the water bath, pasteurized, and then stored until needed.

Cooking Eggs Sous Vide

Pasteurizing eggs is not the only thing you can use your sous vide system for when working with eggs. You can cook eggs to any number of specified doneness levels, including poached, soft-cooked, and hard-boiled. Since I hadn't tried it myself yet, I did set four eggs in a bath of 194 degrees F for eight minutes, then chilled them in an ice bath for 10 minutes. I got hard-boiled eggs that were cooked perfectly and tasted great. Sadly, I forgot that I was using fresh eggs from my coop, so peeling them was a disaster as usual. 🍳

At 12 years old, **JEREMY CHARTIER** became involved with his local 4-H group, later joined the local FFA chapter, and showed livestock until his college years. After graduating from the Ratcliffe Hicks School of Agriculture at UConn, he joined University of Maine's Poultry Service Provider training program. Today Jeremy sells started pullets to local backyard farmers, is still involved with 4-H as a poultry showmanship judge, and writes about his passion for farming.



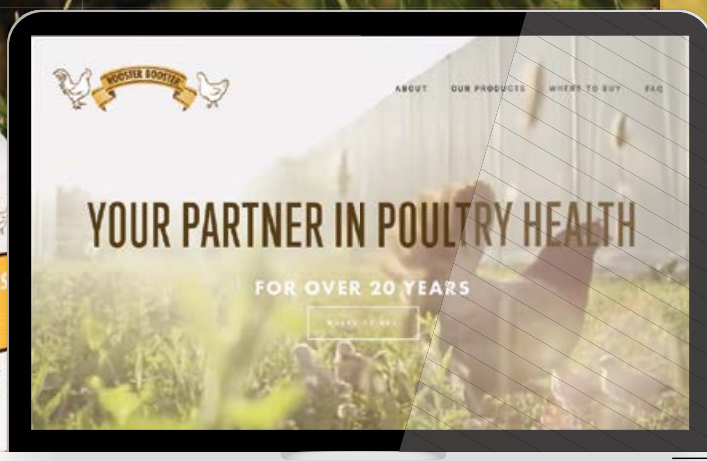
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Pumpkin Seeds for Chickens

Are the seeds nutritious?

BY JANET GARMAN



PUMPKIN SEEDS FOR CHICKENS can serve a purpose as part of a nutritious chicken diet. You might be surprised to read that pumpkin seeds do not contribute what you have been told! Before we get into that information, here is some general knowledge of the dietary requirements of your flock.

Chickens have certain nutritional requirements just like we do. Free-ranging chickens are

good at foraging through your property, snapping up insects, greens, and weeds to meet their needs. Protein, carbohydrates, fats, vitamins, and minerals can be found in nature. Chicken keepers also supplement with a purchased grain-based feed that is specifically formulated for chicken nutritional needs.

When chickens are kept in a coop and attached run set-up, you can bring in supplemental

nutrition in the form of garden trimmings, weeds, worms, produce, and dairy from your refrigerator. Vitamin deficiencies are less common in chickens because they are omnivores. Not only will they react with glee to a pile of garden trimmings or kitchen scraps, but they will also willingly devour a snake or a mouse.

Vitamin Deficiencies in Chickens

Vitamin deficiencies are more likely to present in chickens fed only a lower-quality commercial food. A bag of commercial chicken food degrades over time and loses freshness. Vitamins have a shelf life and lose potency during storage.

Signs of vitamin A deficiency, for example, might include rough dry skin, inflamed eye membranes, unkempt ruffled feathers, sores in the mouth, and a pale comb and wattles. In addition, lower egg production occurs because the hen is lacking proper nutrition.

Weakened Chickens are Prone to Parasite Problems

A weakened chicken is more prone to parasite infestation, both external and internal, such as mites and intestinal worms. We are getting closer to explaining why pumpkin seeds for chickens are a good idea. But hold on because I still think the answer will surprise you.

Continuing to use vitamin A as an example, a chicken suffering from vitamin A deficiency is unhealthy. One of the ways we keep our flocks healthy is by supplementing their diets by adding good nutritious foods. Garlic, apple cider vinegar, oregano, and pumpkin seeds all contain large doses of probiotics, vitamins, and minerals. These superfoods contribute to an overall healthy immune system and digestive tract.

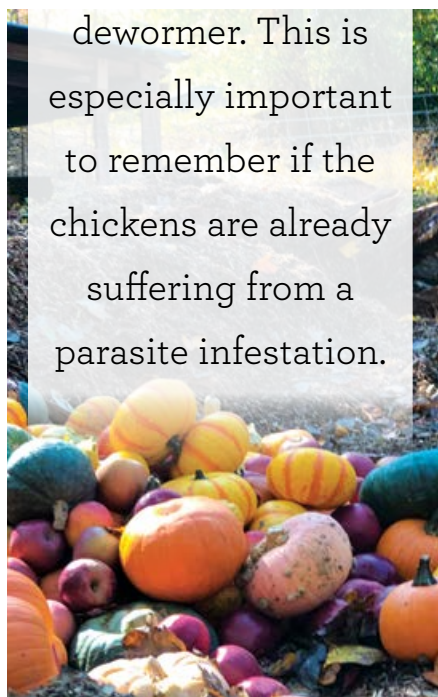
Ready for the News Flash?

While they are awesome foods that contribute to a healthy body and organ systems, they are not capable of performing anthelmintic actions as fed. Feeding pumpkin seeds to chickens is not an effective dewormer. This is especially important to remember if the chickens are already suffering from a parasite infestation. A truly effective dewormer from pumpkin seeds needs to be prepared as a tincture. Preparing a tincture from pumpkin seeds draws out the properties that expel parasites from the intestinal tract.

Pumpkin seeds contribute lots of vitamin A that contributes to a chicken's health. Having a healthy digestive tract makes a chicken more resistant to all sorts of illnesses. Kale, pumpkins and seeds, cantaloupe, broccoli, dandelion

Feeding pumpkin seeds to chickens is not an effective

dewormer. This is especially important to remember if the chickens are already suffering from a parasite infestation.



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A photograph of a brown chicken with dark feathers, standing in a field with green foliage in the background.

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greens, coriander, and peppermint are good choices.

I understand the desire to treat and prevent parasites using natural methods. When you purchase a chemical deworming product from the store, you are facing a lengthy egg withdrawal time. Using a natural product to prevent and treat worms includes no egg withdrawal time. What can you do naturally to reduce the presence of worms in your flock? You can make a tincture to prevent or treat intestinal worm issues.

Black walnut tincture is a simple, safe, and effective deworming liquid for animals and humans. Adding raw pumpkin seeds to the extraction mixture increases the power of the dewormer with vitamin A. This is the best way to use pumpkin seeds as a remedy for intestinal worms.

Preparing a Natural Deworming Tincture for Chickens

The following is an alcohol-based tincture. To reduce the amount of alcohol being given to the flock, make a dual tincture using both black walnut hulls and raw pumpkin seeds. The ration is 2:10 as follows.

- 1 ounce of black walnut hulls
- 1 ounce of raw pumpkin seeds
- 10 ounces of vodka

Place all three ingredients in a quart glass canning jar with a lid. Mix gently and place out of direct sunlight. Gently shake the jar weekly for at least six weeks.

When the tincture is ready, after a few weeks, add a half (½) teaspoon to each gallon of water. Make sure that the dosage is applied to all waterers. Repeat daily for five days. Repeat the dosing again after two weeks. Treat monthly or as needed.

Offer Fresh Pumpkin and Other Fruits and Vegetables

Pumpkins supply large amounts of nutrients to our chickens and livestock. The beta carotene transforms into vitamin A. Pumpkin also provides fiber, calcium, magnesium, potassium, and some of the B complex vitamins. The seeds are high in fat and calories.

Fall is the perfect time to mix up a batch of black walnut and pumpkin seed tincture. Both the black walnuts and raw pumpkin seeds are readily available. Your flock can enjoy the remaining pumpkin and seeds as a nutritional treat. Feed your flock a fresh, high-quality diet along with supplements of fresh veggies, and watch them thrive! Build healthy chickens and have fewer parasite issues too. 🌱

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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ASPERGILLOSIS

By Lacey Hughett



THE FACTS:

What is it? A respiratory disease caused by mold spores.

Causative Agent: Most often the mold species *Aspergillus fumigatus*, but can be caused by other molds as well.

Incubation period: 2-5 days.

Disease duration: Usually acute, but can become chronic.

Morbidity: Noncontagious, though birds in the same living condition will also be at risk.

Mortality: High.

Signs: Difficulty breathing, fever, lack of appetite, weight loss, and listlessness.

Diagnosis: Through clinical presentation and gross lesions mainly, but a histological examination of fungal elements observed in the lungs and air sacs is more definitive.

Treatment: None.

THE SCOOP:

Aspergillosis, also known as mycotic pneumonia, is a fungal disease resulting from the inhalation of mold spores. The spores may come from contaminated bedding, feed, dust, or even air ducts and hatching equipment.

Once inhaled, the mold causes lung inflammation, which leads to mucous production and difficulty breathing. Birds pant rapidly with an open mouth, and body temperature rises. Animals struggling to breathe naturally expend extra energy. Increased metabolic demands, coupled with a lack of appetite, bring about rapid weight loss. Neurological symptoms may present due to

especially high spore exposure.

It more often infects birds in the first few weeks of life, leading to brooder's pneumonia. Chicks have immature immune systems, and their brooders are warm, often humid, and high in ammonia from feces, creating a great environment for the mold to flourish.

While more likely to survive, older birds are also more likely to develop chronic aspergillosis, exhibiting respiratory complications plus blindness and neurological issues.

Postmortem examinations reveal grey or yellow plaque and nodules in the lungs and air sacs, and in severe cases in the trachea. These will be visible to the naked eye and as large as a few centimeters. Plaque may also appear in the intestines and liver. Lungs may seem congested and swollen.

Aspergillosis does not spread between birds. Environmental factors are the largest cause — dirty/wet coops and poor ventilation — followed by wet/moldy food.

Infected meat chicks may appear to recover or be asymptomatic, only for owners to find signs during processing. Birds with aspergillosis are not safe for eating and the meat should be disposed of safely.

There is no clinically effective treatment for aspergillosis. The bird succumbs to the infection or spontaneously recovers. Supportive therapy such as separation, removal from the environment, stress reduction, and encouraging hydration can aid in recovery.

Once they have respiratory symptoms,

however, survival is rare. Pet birds have seen some benefits with added fluids and antifungal drugs, but treatment is costly and prolonged and is generally not a viable option for farmers. Preventing re-exposure to mold increases chances of survival.

To reduce outbreak severity, move all birds to a new, clean living space. Remove old bedding and thoroughly disinfect feeders and waterers with a fungicidal disinfectant safe for animals.

While cleaning a contaminated area, take care not to create clouds of dust. Move all animals from the area and wear a mold respirator or mask. This disease can affect most animals, including humans. If symptoms occur in any human exposed, seek medical attention.

For outbreaks involving chicks, move the brood to a new area and give supportive care to minimize losses. Inappropriately cleaned incubators are a huge source of mold spores. Sanitize incubators between hatches and ensure that eggs are clean and damage-free before incubating.

In coops, rotate water and food dishes frequently to allow the ground to dry out. Develop a cleaning schedule for the coops and equipment. Never feed birds moldy, wet, or otherwise contaminated feed. Dispose of uneaten food. Store chicken feed in a dry area protected from rodents and the elements.

Like many diseases, aspergillosis can be mostly prevented through good practices and biosecurity. ●



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BEDDING PIGS ON PASTURE



BY JODI CRONAUER

IT'S THAT TIME OF YEAR AGAIN. The nights are longer, the days shorter, and the temperatures colder. With weather like this, it is time to talk about bedding for your pigs. Whether your pigs are outside in shelters or have access to a barn or stall area, they need the right bedding to stay warm.

For those of you who have read my article on A-frame shelters in the past, you already know how I feel about A-frames. For those of you that don't know ... I absolutely love A-frame shelters and swear by them. Pigs give off a lot of heat of their own and in A-frames or even

calf hutches, that heat will rise up to the peak and then come right back down on top of the pigs. They can essentially keep themselves warm. In open stall or barn areas,

Straw is the preferred choice of most people because straw, unlike hay, provides additional loft and won't pack down as fast.

there is nothing to trap the heat and it just dissipates into the air above them. Whichever shelter you choose though, the same bedding questions arise, "Which

is the best bedding for my pigs?"

So, what is the right type of bedding? Good question! Many different types of bedding can be used and what is best for one

person, may not work at all for another person. Climate, temperatures, time of year, and even terrain can play a factor in what will work the best for you and your farm. Farms that are located in the southern U.S. will have different temperatures and

factors than those of us that live in the northern U.S. Another thing to consider is what time of year it is. When the temperatures are extremely hot and the pigs want

nothing more than to cool down, then the best bedding is actually dirt or sand. Nice cool dirt is what the pigs are going to be looking for to help them lower their body temperatures. In areas where it is extremely rocky, having some nice soft sand for the pigs to lay in is definitely something that will help them keep cool. Shaded or wooded areas will provide additional areas of cool dirt and many times the pigs will take the opportunity to make new wallows in those areas.

Winter holds a whole different set of factors to consider and here is where most of the differences in bedding will be obvious. Areas where winter nights can routinely get down into the 30s and 40s will find that their pigs will appreciate some type of bedding to aid in keeping warm. In these circumstances, the best bedding option is probably going to be pine shavings or fine wood chips. The shavings will keep the pigs up off of the cool dirt during the nights, but also allow for cooler bedding than straw or hay when the daytime temperatures still get up into the 70s. Knowing your climate and weather patterns will help in determining what the best bedding choices will be.

For those of us that live in the northern half of the U.S., the bedding is going to be much different. When temperatures drop below zero and stay there for days on end, having bedding with a lot of loft and warmth all day long is going to provide the most comfort for your pigs. Straw is the preferred choice of most people because straw, unlike hay, provides additional loft and won't pack down as fast. This will help keep the pigs warmer longer and you won't have to re-bed as often. What type of straw you use is going to be determined primarily by what is grown locally in your area. Whether it is wheat, barley, or oat straw, it will still have more

loft than hay. Some people have a personal preference to one type or another, but we have personally used all of these options at our farm and all of them work very well. Something that we look for specifically when buying straw is how clean it is. For example, if you get straw that has a lot of oats left on it, the pigs are going to dig through the straw looking to eat

the leftover oats. It is extremely frustrating to put new straw into all of our A-frames only to come back a couple of hours later and find that the pigs have pulled the majority of the straw outside of the shelters in their search for snacks! For this reason, we prefer to get bedding straw that is very well cleaned. Having a good relationship with your local farmers is also a great

Raising Pigs on Green Pastures

By Jodi Cronauer

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way to ensure you know the quality of the bedding you are getting. Straw that is filled with mold is not going to be ideal bedding because no one wants to have their pigs get sick from repetitively breathing in mold spores.

The same applies to hay if you are using it as bedding in your shelter area. Many times, you will see “bedding hay” advertised. Hay that got rained on and lost some of its nutritional value, but was properly dried and then baled, is actually good-quality bedding. Again, you will probably have to bed more often with hay than with straw, but it is overall a good source of bedding. Now, hay that was baled wet and is now moldy is not ideal bedding for the same reason as the straw.

Obviously, with all of the different types of bedding we just talked about, making sure the pigs are dry will aid in their overall health and warmth. Re-bed as necessary and if you have a pig shelter/house in a location that gets really wet, you may even have to move the house to a new area and then re-bed. Facing your opening or doorway away from the direction the wind and weather primarily come from will also help keep the bedding dry longer.

Happy, healthy, dry, and warm pigs are the goal. 🌱



Read more about A-Frame Shelters:
www.iamcountryside.com/pigs/how-to-build-a-frame-pig-shelters/



JODI CRONAUER lives in Wisconsin with her husband and her three sons. 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. Jodi is the author of *Raising Pigs on Green Pastures* (Dorrance Publishing, 2021).

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ANATOLIAN SHEPHERDS

GUARDIANS OF THE LIVESTOCK

BY STEPHENIE SLAHOR, PH.D.

NEEED A GOOD GUARDIAN FOR LIVESTOCK? You might consider the Anatolian Shepherd dog. The breed originated in the Anatolia area of the nation of Turkey, hence the name, and is still used in Turkey's and western Asia's rural areas as a defender of livestock. Known in Turkey as "Çoban Köpeği" (which translates to "shepherd's dog,") the breed is not a herding dog but a guardian to tend and defend the livestock.

The Anatolian Shepherd breed is among some of the oldest known domesticated dog bloodlines, going back perhaps to the Bronze Age of 6,000 years ago. The Bible's *Book of Job* mentions dogs among the flocks.

The “classic” Anatolian has a fawn coat that can be either short or rough, a curled tail, a black muzzle mask, and a massive head. (Other body colors can also occur including white, pinto, and brindle.) The breed is strong and vigorous, nearly fearless in personality, and excels in intelligence and memory capacity.

Anatolians have superb vision and hearing and are rugged, yet speedy. They are friendly to non-aggressive species of animals. They can reach a running gait of 35 mph — an ability that helps them guard livestock or chase off predators including bears, wolves, coyotes, jackals, mountain lions, and other large predators.

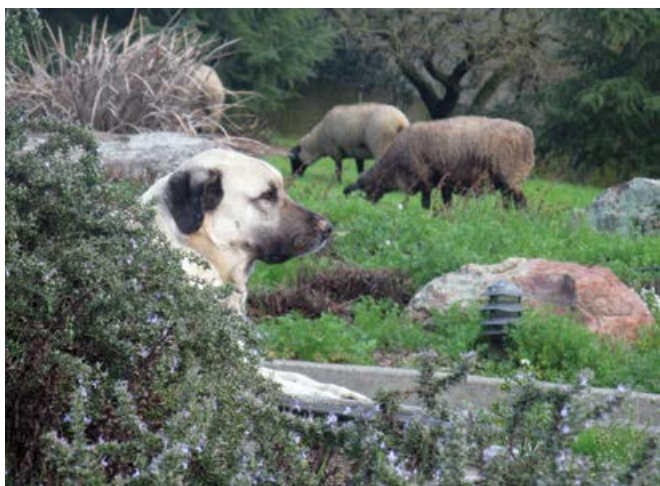
A recent program of the Cheetah Conservation Project in Namibia, Africa is enhancing the odds of the preservation of the cheetah species — Africa’s most endangered big cat. Cheetahs are threatened by loss of habitat, illegal trade, and direct attacks from farmers and herders. To improve co-existence between humans

and the cheetahs, a Livestock Guarding Program has been initiated to protect herds from depredation by cheetahs and other predators. Anatolian Shepherd dogs are placed with Namibian farmers to guard the flocks, and the program has been successful in greatly reducing livestock loss.

Anatolian Shepherds can cope with a wide range of temperatures, from cold winters to hot, arid summers. The breed made its appearance in America in the 1950s but gained notice in the 1970s when the nation’s Endangered Species Act went into effect and ranchers and shepherds needed dogs who could control or run off predators rather than kill the predators. The first active breeding program came in the 1960s when Lt. Robert C. Ballard, USN, was stationed in Turkey where he gained familiarity with the breed. Upon returning to America, Ballard and his family lived in El Cajon, California, and imported “Zorba” and “Peki” who

Want to learn more?

Visit: www.akc.org/dog-breeds/anatolian-shepherd-dog



Top left: An Anatolian Shepherd and the goats take a rest in Turkey. Photo courtesy Cheryl Walker.

Left: Alertness is a hallmark of Anatolian Shepherds. Photo courtesy Diane Martinez, ASDCA.

Above: Anatolian Shepherd dogs have large faces and distinctive facial markings. Photo courtesy Diane Martinez, ASDCA.



produced the first recorded litter of Anatolians in the U.S. In 1970, the Anatolian Shepherd Dog Club of America was founded. Over 5,000 Anatolian Shepherds have been registered in the U.S. since 1970.

Because of the breed's massive body, its mere presence often deters predators. Standing guard at the flock may be all that is needed, but if a threat must be posed, the Anatolian will issue a bark that, at first, sounds low like a throat clearing, but which can escalate to a no-nonsense dire warning bark.

Anatolians mature at about age 18 to 30 months and usually live to about age 11 to 14. Their height is about 27 to 34 inches at the shoulder and they weigh in at about 90 to 150 pounds. Their look is one of ruggedness, endurance, and agility. Yet they are calm unless challenged. Their shape is rather rectangular but in direct proportion to their height. Their eyes are almond-shaped and range from dark brown to light amber in color. Their ears drop to the side. The nose and flews (hanging lips) are solid black or brown. Anatolians have more skin and fur at their slightly arched necks, with the result of a ruff-like look akin to a short mane. When relaxed, they carry their tail low with the end curled upward, but when alert, the tail is carried high with the end of the tail creating a "circle" or "wheel."

Anatolians can be family pets when their strong leader owners raise the dog from puppyhood with proper and consistent socialization. Love and attention are the results of the Anatolians' necessary obedience training. They have a curious and endearing habit of "leaning" into a person that they totally accept. They are very loyal but are not "pets" in the sense most people associate with family dogs. The breed's protective reactions are its hallmark. Being large dogs, they do eat a healthy portion, but conservatively, and favor lamb and rice diets and low protein foods. Standard care of the coat, eyes, ears, and nails is sufficient and, despite the large head and mouth, drooling is not a characteristic.

Want to learn more? Check www.akc.org/dog-breeds/anatolian-shepherd-dog for the American Kennel Club's information and the marketplace of breeders of Anatolians. Also, log on to the Anatolian Shepherd Dog Club of America at www.asdca.org. It, too, lists breeders and rescue groups, show information for upcoming events with Anatolians, and much factual information about the breed. ©

STEPHENIE SLAHOR'S farm and ranch background includes cattle, horses, mules, donkeys, dogs, cats, sheep, goats, rabbits, birds, chickens, geese, turkeys, and tortoises — but not necessarily all at the same time! She would be one of the first to agree that, indeed, "Variety is the spice of life!"

Determining the Best Hay for Goats

BY PATRICE LEWIS

GOAT
NOTES

When goats can't browse, they need hay (3% to 4% of their body weight, per day) for their rumens to function properly. This can be fed free-choice or twice a day.

Categories of hay: legume (alfalfa and clover), grass (timothy, brome, orchard grass, bluegrass), cereal grain straw (oat hay, cut before the seed heads mature), and mixed (legume and grass). Protein content and Acid Detergent Fiber (ADF) should be below 35% for goats. The higher the fiber content, the lower the digestibility. Total Digestible Nutrients (TDN) is the sum of the digestible fiber, protein, lipid, and carbohydrate components of a feedstuff or diet. (TDN is directly related to digestible energy and is often calculated based on ADF.)

SAMPLE ANALYSES

Hay nutrition varies depending on when it was cut and baled. Hay analysis is necessary to determine nutrients in specific bales. Leafy hays generally have higher nutritional value than stemmier hays.

Common hays average the following nutritional analyses:

ALFALFA

Crude protein: 19%
Crude fiber: 26%
TDN: 61%

TIMOTHY

Crude protein: 8%
Crude fiber: 34%
TDN: 57%

MEADOW GRASS

Crude protein: 7%
Crude fiber: 33%
TDN: 50%

FESCUE

Crude protein: 11%
Crude fiber: 30%
TDN: 52%

CLOVER

Crude protein: 15%
Crude fiber: 30%
TDN: 55%

BROME

Crude protein: 10%
Crude fiber: 35%
TDN: 55%

ORCHARD GRASS

Crude protein: 10%
Crude fiber: 34%
TDN: 59%

BLUEGRASS

Crude protein: 6%
Crude fiber: 40%
TDN: 45%

OAT HAY

Crude protein: 10%
Crude fiber: 31%
TDN: 54%

BERMUDA GRASS

Crude protein: 10%
Crude fiber: 29%
TDN: 53%

WHAT GOATS NEED

The bare minimum protein requirement for maintaining mature, healthy animals is 7% crude protein, though 8% is better. A pregnant doe (late gestation) requires 12% crude protein (66% TDN), then between 9% and 11% as she lactates (60-65% TDN). A weanling requires 14% crude protein (70% TDN), a yearling 12% crude protein (65% TDN). Bucks can get by with 8% crude protein (60% TDN).

Gradually increase a pregnant doe's nutritional level about six weeks ahead of kidding. Alfalfa is the only hay with enough protein to meet a lactating doe's needs.

PROBLEMS WITH HAY

By itself, alfalfa is too high in calcium and protein for healthy goats, and is best for sick, pregnant, lactating, or debilitated animals. Because alfalfa is expensive and easy to waste, many specialists recommend concentrated pellet form.

Cereal grain hay is an excellent choice when cut while still green, as opposed to waiting for seed heads to mature. They have a small risk of nitrate poisoning if harvested after a growth spurt following a drought period, so consider getting the hay tested.

Fescue toxicity is caused by ingestion of the toxin ergovaline produced by an endophyte fungus that grows in the plant. This toxicity is characterized by reduced gains, reduced conception rates, intolerance to heat, rough hair coat, fever, rapid breathing, and nervousness. Consider intercropping a forage legume with fescue to dilute intake level.

DON'T FORGET THE MINERALS

Hays and forages provide a partial supply of the necessary minerals, so offer a free-choice loose mineral specifically formulated for goats.

BALANCE IS KEY

A combination of alfalfa and grass hays, and a proper grain mix, provide the necessary protein and roughage to stimulate digestive action. In late pregnancy, make sure a doe has ample hay or forage along with her higher grain levels, to prevent pregnancy toxemia or acidosis.

WHAT ABOUT CONCENTRATES?

Hay can come in concentrate form, i.e. alfalfa pellets, timothy pellets, orchard grass pellets, etc. Pellets are convenient for limited space or to mix with grain. Pellets have about the same protein as hay, but less fiber. Caprines need enough fiber for their rumens, and large amounts of pellets that sit in the rumen without being brought up as cud may cause long-term health issues.



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goat
JOURNAL



Feeding DAIRY CALVES

BY HEATHER SMITH THOMAS

THE MOST IMPORTANT THING FOR ANY NEWBORN CALF is to get colostrum as soon as possible. After that, the calf needs adequate milk or milk replacer until weaning age.

Some dairies feed their calves milk but most of them use milk replacer. If you have a dairy you may choose to feed the calves on milk, or even if you just have a family milk cow that gives extra milk (or a neighbor who has extra milk you can buy), you can raise a calf or two on milk.

Otherwise, your only option is milk replacer. There are many milk replacers on the market, and you want to make sure you use one that is adequate for optimum growth and health of the calf.

In years past, some dairy farmers fed a limited amount of milk,

because they wanted to wean calves early — since milk or milk replacer is expensive. But weaning early is not normal, and calves stay healthier if they can be on milk or milk replacer longer.

The old way was to feed two quarts of milk replacer in the morning and two quarts in the afternoon, using a milk replacer containing 20% protein and 20% fat. This barely meets maintenance requirements in moderate weather. Milk itself will vary by breed but is somewhere between 26 and 28% protein and from 28 to 32% fat. So you are already shortchanging the calf by feeding milk replacer. The reasoning was to keep the calf hungry so it will eat more dry feed sooner.

Two quarts, twice a day, with 20% protein and 20% fat, is not enough

for a calf. Even if it contains higher levels of protein and fat, it's not enough. A Holstein calf at three weeks old will drink at least eight quarts a day if allowed to drink all it wants.

Dr. Pete Erickson, Extension Dairy Specialist, University of New Hampshire says the standard products have 20% protein, 20% fat, and some have 26 to 28% protein, with some as high as 32% protein. When a calf is young, the higher the protein content, the better.

There are many ways to feed milk replacer to calves. "What we generally do in the warmer months is feed milk replacer twice a day. In the winter, it's important to feed three times a day," says Erickson. In cold weather the calves need more groceries, more often, to help generate body heat in addition to

maintenance/growth requirements, and fat has a lot of value for providing calories.

"The other thing we are trying to do is get the rumen developed, so we have to feed the calf some kind of calf starter. The energy level is one of the things that dictates what an animal eats. If you have a very high-calorie diet you don't have to eat as much. But we're trying to get calves to eat more solid feed, and if we add too much fat to their milk replacer, they might consume less solid feed. Fat is not fermented; it doesn't have to go through the rumen to be digested and utilized. Solids, on the other hand, go to the rumen and will be fermented," he explains.

"When something is fermented it produces heat, which helps the calf maintain core temperature on cold days. Thus, we want calves to eat starter and maybe a little hay, to help the rumen develop and start fermenting more feed," he explains.

In hot weather, on the other hand, you don't want calves creating more body heat. When it's hot, cattle eat less. With the heat of fermentation, their heat load increases and they don't feel like eating, so you feed less roughage. "Conversely, in the winter, you feed more roughage to help them maintain core temperature. We get the rumen developed by feeding calf starter, and hopefully increase internal core temperature. It's a balancing act, and proportional to how cold the weather is. If it's really cold and subzero days, we need to get as much energy into the calves as we can."

Calves also need water, and not just in the form of milk or milk replacer. A study in the 1980s looked at feeding calves the same diet but with half the calves having access to free-choice water and the other half didn't. There was an increase in average daily gain in the calves that had free-choice water, an increase in starter intake, etc.

When a calf drinks water it goes to the rumen, while milk replacer or milk goes to the abomasum (true

The challenge for providing free access to water is that it freezes in cold weather. "The recommendation in winter is that when the calf is done drinking milk, you provide some water. We understand that it's going to freeze, but the calf may have a chance to drink some," he says.

"The other challenge is, if you don't provide water to your calves when feeding a high-protein milk replacer or even just a lot of milk replacer, the osmotic balance is upset. These calves can actually die of dehydration even though they are getting a lot of milk replacer. Data published in the *Journal of Dairy Science* says that when we feed a high-protein milk replacer, water intake increases," he says. Animals that consume a lot of protein drink more water.

"If we feed calves a lot of milk or milk replacer, we need to make sure they have water. Some people overlook this because they assume the fluid in the milk or replacer is adequate," he says.

Calves generally need six to nine quarts

of milk or replacer daily, split into three feedings. "I recommend feeding two to three quarts first thing in the morning, and again midday, and at the end of the day. Also, make sure the calves have calf starter. If you feed a texturized calf starter, you don't necessarily have to feed hay with it. If you feed a pelleted starter, you probably should feed some good-quality hay with it, and make sure they eat it. Some dairies chop hay to make sure it is fine and palatable. Don't feed what is often called 'heifer hay' (something not good enough for lactating cows)," says Erickson.



stomach — where it is digested) because of the esophageal groove. Bacteria that reside in the rumen must have a watery environment; you can't shortchange the ruminant on water or digestion is impaired.

"To develop the rumen, we need to provide water. If the calf has starter, some hay, and adequate water, bacteria ferment the feed and produce volatile fatty acid. The rumen develops primarily because of the volatile fatty acid butyrate. All of this is going on, plus heat produced during fermentation, which helps keep the animal warm," says Erickson.

WEANING

There are many ways to wean dairy calves. "There is no 'right' way; it all depends on what you are feeding the calves. Some people do a gradual wean versus an abrupt wean," says Dr. Pete Erickson, Extension Dairy Specialist, University of New Hampshire.

"I make sure the calves are eating enough starter before weaning. I've heard everything from half a pound per day for three consecutive days, to over a pound per day for over three consecutive days. If the calves are eating enough solid feed, you can wean them," says Erickson.

But don't be in a big hurry to wean calves, especially during winter. A beef calf by six weeks of age drinks eight to 10 quarts a day if his mama milks well. Good moms raise good calves. Dairy calves are often weaned at about eight weeks, but in winter you may want to extend that to 10 or 12 weeks, especially in cold weather. By then the calves will probably be eating three to five pounds or more of calf starter per day. Make sure they have enough intake and enough rumen development to start eating well.

"One problem we often see is that the calf buckets are not thoroughly cleaned out. People put starter on top of some remaining starter, and are also not cleaning their water buckets. Plastic buckets generally have lots of little scratches that can harbor microbes. Suddenly you may have a bunch of calves with diarrhea or salmonella. We need to be diligent about cleaning calf pails."

Some people feed milk in a bucket and then put water in, with the milk residue still in the bucket. "The calf is slobbering in the bucket, and there is still some milk or replacer in the water, which makes a perfect environment for microbial growth. So keep those buckets clean. In our university herd, we feed milk in stainless steel pails. These are expensive but much easier to clean," he says. They probably pay for themselves in fewer sick calves and fewer treatment costs.

"We feed milk in stainless steel pails and when the calves finish, we pull out those pails and put water buckets in. All buckets are cleaned daily, including starter buckets — so we are not putting new starter on top of old. In summer, the warmer temperatures encourage mold growth," he says. 🌱

HEATHER SMITH THOMAS

ranches with her husband near Salmon, Idaho, raising cattle and a few horses. She has a B.A. in English and history. She has raised and trained horses for 50 years, and has been writing freelance articles and books nearly that long, publishing 20 books and more than 9,000 articles for horse and livestock publications. Find Heather online at heathersmiththomas.blogspot.com.



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FROM- SCRATCH PUMPKIN PIE

BY HANNAH MCCLURE

IT'S FALL Y'ALL! AND WHAT BETTER TIME FOR PIE THAN FALL ... Especially from-scratch pumpkin pie! When the gardens are becoming spent and the pumpkins are perfect for picking, the crisp air sends me into a baking frenzy. I wasn't a huge fan of pumpkin baked goods. Those frozen store-bought pumpkin pies at every Thanksgiving dinner made me crinkle my nose and wonder what the huge appeal was anyway. That was until I made pumpkin pie 100% from scratch, not from a can. Years ago, after trying my first completely from-scratch pumpkin pie, I forever changed my mind about pumpkin pie. And the process is so simple that you may wonder why frozen pumpkin pie is still a thing.

It should be noted that you can make pie from many varieties of pumpkins. Most commonly found at farm markets and grocery stores is the pie pumpkin. They are smaller and easier to handle and make enough for one to two pies. I highly encourage you to explore the many flavors of other varieties once you get comfortable with baking pumpkin pie completely from scratch. So here is my recipe to help you bake a perfect pumpkin pie completely from scratch. Get your ovens preheated and get baking!

You will need the following to get started:

- One whole pie pumpkin
- Olive oil
- Baking sheet

Preheat your oven to 400 degrees F.

Cut your small pumpkin in half. Remove stem and all seeds/guts. Drizzle olive oil on the inside of the pumpkin and smear to coat the entire piece. Lay the pumpkin facing down on your baking sheet and drizzle the outside skin with olive oil. Smear to coat the entire outside shell. Repeat on the other half.

Bake at 400 degrees F for 20-25 mins.

Remove from oven and gently test with a fork. If the flesh is soft and the shell has risen, your pumpkin is ready. Let rest for about 20-30 minutes. Once cooled, peel the outer skin/shell off. Now you have your pumpkin ready for pie-making!



After about 20-25 minutes, be sure to cover your crust so that it doesn't burn. I do this in reverse ... I cover to start my bake and with about 20-25 minutes left to bake, I remove the cover and finish baking.

PIE CRUST

While your pumpkin is cooling, let's prep the dough for our pie crust. Homemade pie crust is simple to make. This recipe makes enough for four pies. The dough can be frozen for future use.

INGREDIENTS

4 cups unbleached all-purpose flour
1 $\frac{3}{4}$ cup shortening, butter, or lard
1 egg
 $\frac{1}{2}$ cup cold water
1 tablespoon sugar
1 teaspoon salt
1 teaspoon apple cider vinegar

INSTRUCTIONS

In a medium bowl, work together flour and shortening until pea-sized crumbs form.

In a separate bowl, mix egg, cold water, sugar, salt, and vinegar.

Using your clean hands or a wooden spoon, mix together flour mixture and egg/water mixture only to combine. Put in refrigerator to chill until ready to use. Split into four even quarters.

PUMPKIN PIE FILLING

INGREDIENTS

2 cups of cooked pumpkin
1 cup granulated sugar
1 tablespoon ground cinnamon
 $\frac{1}{2}$ teaspoon sea salt
1 teaspoon ground ginger
 $\frac{1}{2}$ teaspoon ground nutmeg
2 large eggs
12 oz can evaporated milk
1 unbaked pie crust (rolled and placed in a pie plate. Use a fork to poke some holes in the bottom of your crust before filling.)

INSTRUCTIONS

In a food processor — or with an immersion blender — mix together pumpkin, sugar, eggs, and evaporated milk until well blended and smooth.

Carefully stir in spices and sea salt.

Preheat oven to 375 degrees F.

Gently pour the pumpkin filling into pie crust. Only fill $\frac{3}{4}$ way to the top. If you have extra, these make perfect mini pies or you can bake alone in a baking dish and use cooked filling in fried pies or homemade Pop-Tarts®. This filling will be very runny before it is baked.

Place pie plate on a rack centered in the oven. Bake pie until the center is nearly set, 55-60 minutes.



After about 20-25 minutes, be sure to cover your crust so that it doesn't burn. I do this in reverse ... I cover to start my bake and with about 20-25 minutes left to bake, I remove the cover and finish baking. Remember that the center can still be wobbly when the pie is done. Allow it to cool before serving. We love ours chilled with whipped cream on top.

There you have it: fresh and from-the-garden homemade pumpkin pie. Be warned, you may never want another store-bought frozen pumpkin pie again. But if you do, that's okay too. I hope y'all enjoy this delicious fall pie. 🍂

HANNAH N. MCCLURE is an old soul homemaker and mother of four from Ohio. Gardening, keeping bees, sewing, raising chickens/seasonal hogs, and baking/cooking from scratch are a few things she enjoys in her homemaking. Always learning and always chasing her littles.

Homemade Apple Fruit Leather

BY ANN ACCETTA-SCOTT



WITH FALL COMES APPLES, and with apples come a plethora of methods for preserving the apple harvest. An easy homemade apple leather recipe is a great beginning point to launch the fall preserving season. Apple leather is perfect for children of all ages. You simply need a good fruit leather dehydrator recipe.

In addition to making this recipe in the dehydrator, it can be made in the oven. Regardless of the tool used, don't miss out on your chance to bring smiles to the faces of those you love. Also, do not hesitate to make this recipe year-round, especially if you have apples tucked away in the root cellar.

Selecting the Best Apple Variety

The best apple variety for fruit leather is based on preference. Sweet apples like Pink Ladies

and Galas require less sweetener. However, some may enjoy a slightly tart fruit leather. For a tart flavor, select apples such as Granny Smith or McIntosh apples. Honeycrisp and Fuji apples are an all-around great choice and make a delicious end product. Or experiment and mix apple varieties for a unique flavor.

Making Fruit Leather Year-Round

Luckily apples are readily available year-round, which allows you to play with flavor combinations. I am sharing the basic recipe; however, give the following combinations a try!

- Cinnamon apples
- Apple pie (cinnamon, cloves, ginger, nutmeg)
- Caramel apple (brown sugar, cinnamon, vanilla extract, a pinch of sea salt)

HOMEMADE APPLE LEATHER RECIPE

INGREDIENTS

- 4 cups of apples, washed and cored; removing the peel is optional.
- ¼ cup of water
- ½ cup of honey or sugar

Honey is natural sweetener and a great option; however, it is not a preservative as sugar is. Granulated sugar also holds the color and texture. With that said, the decision is yours to the type of sweetener to use.

EQUIPMENT

Many of the equipment items listed are basic kitchen tools. However, a fruit leather dehydrator recipe requires the use of a good quality dehydrator. A rear-mounted fan will dry foods much more evenly and quicker than dehydrators with a top or bottom fan. If your dehydrator has a top or bottom fan, rotate the trays often to ensure the apple leather dries evenly.

- Apple slicer/corer
- Dehydrator; a rear mounted fan is best
- Non-reactive stockpot (stainless steel or enameled)
- Food processor or blender
- Parchment paper or silicone non-stick mats
- ½ gallon canning jar for large batches; quart-size jars for smaller batches
- Silicone spatula
- Oxygen absorber, optional for oven-drying
- 2 baking sheets
- 2 silicone baking mats

INSTRUCTIONS

If you don't have a dehydrator, don't fret! This recipe can also be made in the oven. The process for oven drying leather does take a bit more work, but it can be achieved easily.

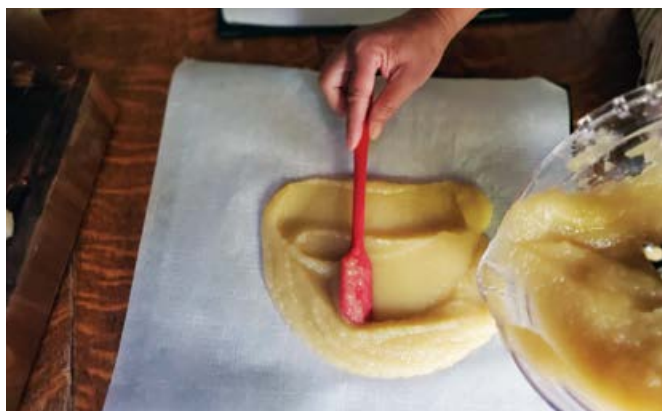


DEHYDRATOR METHOD

1. Mix the water and bottled lemon juice into a non-reactive container such as a glass mixing bowl.
2. Wash apples well, remove stems. Many apple varieties purchased from the supermarket contain a waxy coating; make sure to remove the wax before using.
3. Slice and core the apples using an apple slicer/corer tool. There is no need to peel the skin; however, if you choose to do so, reserve the peels and cores to make raw apple cider vinegar.
4. Place the sliced and cored apples into the lemon water solution to prevent browning.
5. Cut apples into bite-size pieces and add to the stockpot. This makes it quicker for the apples to cook down.
6. Add the other ingredients to the pot and bring to a boil, stirring often. Continue boiling until the apples have fully cooked and are soft to the touch.
7. Transfer the cooked apple mixture to a blender or food processor.
8. Place parchment paper or silicone sheets onto the dehydrator trays. Spread the apple mixture evenly onto the sheets.
9. Verify the drying time based on the manual for your dehydrator. For those using an Excalibur dehydrator, set the temperature to 125 degrees F. The drying process will take six to 12 hours or until the mixture takes on a leathery texture. Thicker layers will take closer to 12 hours to dry.
10. Once completely dried, remove from dehydrator trays. Using scissors, cut the apple leather into strips. Roll the strips and tie them off to secure the rolls.

NOTE:

On the topic of creating a zero-waste product with apple peels and cores, these discarded items can be made into raw apple cider vinegar. Raw ACV is one of the most beneficial items on the homestead. Use this natural probiotic item for yourself, your family, and your livestock.

**OVEN METHOD**

1. Preheat the oven to 170 degrees F.
2. Place parchment paper onto baking trays, set aside.
3. Prepare apple leather as indicated in the dehydrating method.
4. Divide the fruit leather onto the two baking trays.
5. Place into the oven to bake for five hours. Throughout the baking period, rotate trays often to ensure the leather dries evenly. The mixture is complete once it has fused into one piece and is tacky and leathery to the touch.
6. Once completely dried, remove from dehydrator trays. Using scissors, cut the homemade apple leather recipe into strips. Roll the strips and tie them off to secure the rolls.

Storing Homemade Fruit Leather

Proper storage maintains freshness. Once thoroughly dried, fruit leather can be stored in a canning jar with an oxygen absorber and kept in a cool, dark location. This method will allow the fruit leather to keep for up to one month, though it is unlikely it will be around that long.

For a longer storage time, place the fruit leather into a canning jar and store in the refrigerator. This will keep for up to two months. Long-term storage in the freezer allows fruit leather to keep for up to one year. 🌱

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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Pomona's Nectarine Cherry Jam

Ingredients

- 3 cups mashed nectarine
- 1 cup mashed cherries
- ¼ cup lemon juice
- 4 tsp calcium water
- 1 cup sugar
- 3 tsp Pomona's Universal Pectin

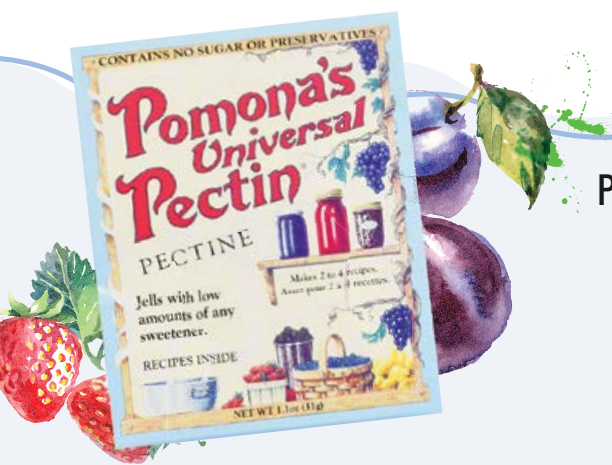


Before You Begin

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 jars, lids, and bands. Place jars in canner, fill canner 2/3 full with water, bring to a boil. Turn off heat, cover, and keep jars in hot canner water until ready to use. Place lids in water in a small sauce pan; cover and heat to a low boil. Turn off heat and keep lids in hot water until ready to use.
- 2 Measure mashed nectarine and cherries into sauce pan.
- 3 Add calcium water and lemon juice and mix well.
- 4 Measure sugar into a bowl. Thoroughly mix pectin powder into sugar. Set aside.
- 5 Bring fruit mixture to a full boil. Add pectin-sweetener mixture, stirring vigorously for 1 to 2 minutes to dissolve the pectin while the jam comes back up to a boil. Once the jam returns to a full boil, remove it from the heat.
- 6 Fill hot jars to ¼" of top. Wipe rims clean. Screw on 2-piece lids. Put filled jars in boiling water to cover. Boil 10 minutes (add 1 minute more for every 1,000 ft. above sea level). Remove from water. Let jars cool. Check seals; lids should be sucked down. Eat within 1 year. Lasts 3 weeks once opened.



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CANNING DRY BEANS

BY JENNY UNDERWOOD

IDON'T KNOW ABOUT YOU, BUT I LOVE HOME-COOKED BEANS. They just taste so much better than the beans from the store. However, they can be an inconvenience when you're in a hurry. The perfect solution? Can dry beans yourself!

Beans are extremely easy to can using a pressure canner. (Note: beans cannot be canned using the water-bath method.) First, buy (or grow) dry beans in bulk. Sort through the beans for bad beans, rocks, and anything else that doesn't belong in there. Then put your beans on to soak. This can be done by soaking the beans in cool water overnight or doing a quick soak. This is where you bring your beans to a hard boil for five minutes then put a lid on, turn them off, and let them sit for an hour. Either way, drain and rinse your beans after the soaking process.

Next, partially cook your beans. I do this in a large countertop roasting pan. It holds four gallons of food, so I can make a lot of beans at once. The basic recipe is $\frac{1}{3}$ beans to $\frac{2}{3}$ water. You can add salt for taste if you like, and can add meat at this time (ham, venison, steak, or burger are all good). Cook until the beans are still quite firm but not hard. Now it's time to fill your jars.

Add the required amount of water to your pressure canner and start to heat it on medium to medium-high heat while you work on the next step.

Make sure you wash your jars and keep them in hot water. I also simmer my lids and rings. Remove only one jar at a time and, using a funnel and measuring cup, fill the jars up to the required headspace. Don't

pack your jars with solid beans though; make sure there is at least $\frac{1}{3}$ liquid in the jars. However, the liquid should go to the required headspace line. If you don't have enough liquid to fill all of your jars, heat salted water to boiling and pour over the beans.

Wipe your rims and place the hot lids and rings on, hand-tightening the rings. Don't overtighten! Place each jar into your canner. Make certain you put the rack in the bottom of the canner or your jars will break!

Now place your lid on and lock in place. Gently raise your heat until steam vents forcefully from the vent port (or petcock) for 10 minutes. Now you can place your weight on and start to raise the pressure. Mine works well on medium-high heat for this. When you're a couple of degrees below your desired pressure, turn your stove down a bit. The last two degrees can be reached rather rapidly and you don't want to go way over. For beans, my canner manual says 11 pounds of pressure for 90 minutes.

When your canner has reached your desired pressure, set your timer. Keep a close watch on the canner. Some stoves require frequent adjustment and each one is different. My glass top electric stove is incredibly easy to maintain at a low setting; however, my old electric stove with raised heating elements was NOT that way. I have also heard from others that gas stoves are very canner-friendly!

After your processing time has finished, turn off the stove and carefully set your canner off the heat. Allow it to naturally come down to zero pressure. Then you may lift off the weight. Wait 10 minutes then untighten your lid and remove it. Be sure to pull the lid off toward you and canted slightly up and away to make sure the steam doesn't burn you. Wait five minutes then use your jar lifter and an oven mitt to remove the boiling jars. Place them on towels in a draft-free, child- and pet-safe place.

Allow them to sit undisturbed for 16-24 hours. Then wipe clean and remove rings. Write on the lids and store. You're done!

Here are some considerations. First of all, if you have an old canner, take it to an extension office for testing. Buy a new seal for it and find an owner's manual if possible.

Secondly, only can in canning jars, not recycled jars. You can use those recycled jars for quick-pickling and refrigerating foods or storing dried foods but NOT for canning. I know, I used to do it too, along with some other unsafe practices, but now that I know better, I don't take chances with food preservation. Besides, you put all of this work into making these foods, so you definitely want to make certain your end product is usable and delicious.

I place a couple of teaspoons of vinegar in my canner to prevent hard water build-up on my jars during processing. It really cuts down on cleanup time.

Only buy quality-made lids. Beware of those bulk lids from overseas. I've seen way too many bad reviews from folks who've bought those and half or more of their lids buckled. Buy American-made lids and jars.



Here are a few delicious ways to use those beans:

CHILI: Simply brown one pound of hamburger then mix in tomatoes with juice, chili seasoning, and a jar of home-canned beans. Simmer for 15 minutes and you're ready for a yummy meal.

TEX-MEX DIP: Drain the canned beans. Add browned hamburger, if desired, then salsa, cheese, and cream cheese. Simmer until melted. Serve with chips or on fajita wraps.

MOUNTAIN MAN BEANS: To two jars of beans with broth, add one pound cooked ground meat or crispy bacon. Then add ¼ cup BBQ sauce, one tablespoon Bragg® Liquid Aminos or Worcestershire sauce, and one teaspoon chili powder. Simmer for 15 minutes and serve with hot cornbread.

TACO SOUP: Add one can of corn, one chopped onion, one pound of cooked hamburger, one jar of salsa or canned tomatoes with juice, and one jar of beans. Simmer for 25 minutes and serve with shredded cheese, sour cream, chips, or cornbread.

VENISON AND BEANS: Place two jars of beans in a slow cooker with a roast of venison. Add onions, seasoning, and salt if desired. Slow cook for six hours or overnight.

I hope this encourages you to give home-canned beans a try. They're amazingly frugal, delicious, and a wonderful addition to an emergency pantry! You'll be surprised at how often you reach for a jar and probably will never return to store-bought canned beans again. 🌱

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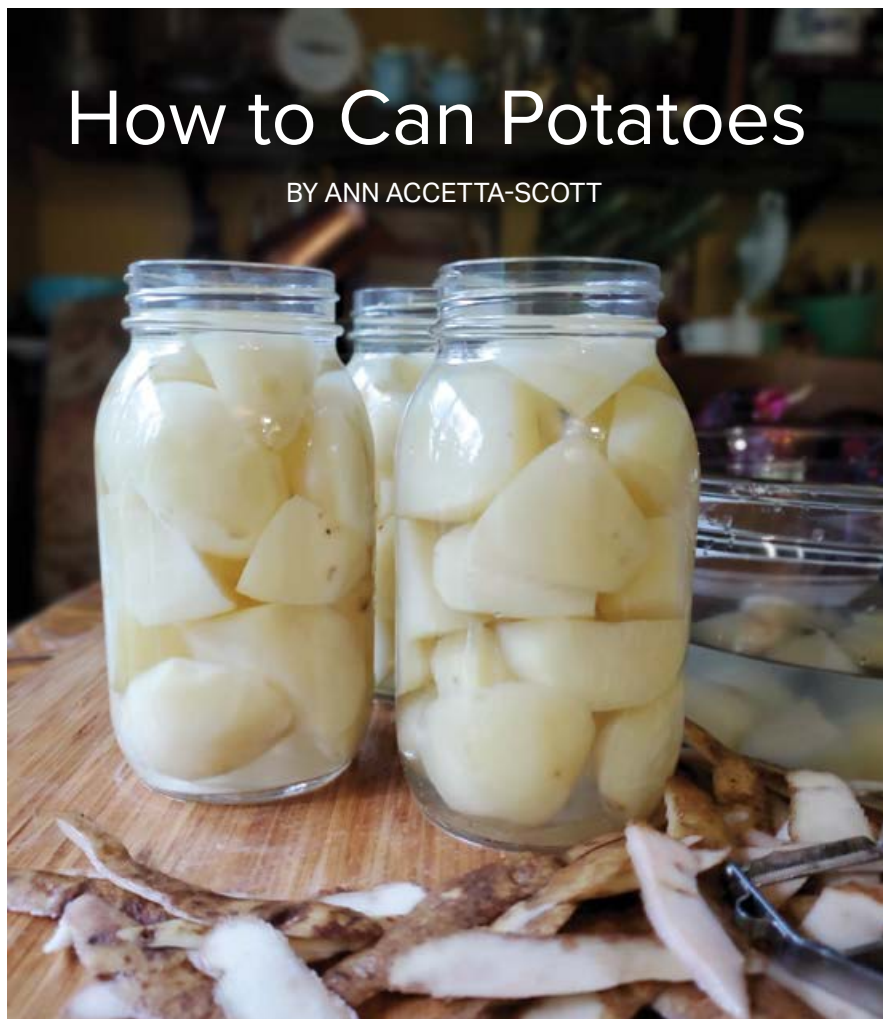
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How to Can Potatoes

BY ANN ACCETTA-SCOTT



what most are used to.

When using pressured-canned vegetables as an ingredient, you just need to heat them, as pressure-canned goods.

If you are ready to give canning potatoes a go, here are the steps for you. Just make sure to store some fresh as well!

How to Can Potatoes

Learning how to can potatoes is extremely easy, but remember one vital tip. All root vegetables must be peeled before canning them. Botulism, *Clostridium botulinum*, thrives in the soil. To ensure the spores do not transfer to your home-canned goods, it is essential to peel potatoes prior to canning them. This includes new or young potatoes. One last tip: potatoes can be canned cubed or whole.

INGREDIENTS

- 20 pounds potatoes; red potato varieties can well
- Ascorbic acid, bottled lemon juice, or citric acid to prevent browning — one teaspoon to one gallon of water
- Boiled water

MANY INDIVIDUALS WONDER why one would bother canning potatoes when they store well in a cold storage space or root cellar. The answer is quite simple: for convenience. Home-canned potatoes are completely cooked once the canning process is done, making them a ready-to-consume food item.

Some days, working the property takes precedence to preparing meals and on these days I grab items from the canning pantry. Is there anything better, or more convenient than grabbing a jar of shepherd's pie filling and home-canned potatoes for shepherd's pie? Now, add an easy no-yeast bread and some greens from the garden and you have the quickest, and easiest, meal

to serve your family.

I can't tell you how many times I have been asked whether canning potatoes is worth space in the pantry. Absolutely. Pressure-canned foods provide not only a method for preserving foods, but also a healthy version of fast food. Do you need 50 jars of potatoes? Not if you were able to store fresh potatoes into the root cellar or cold storage space.

One thing to remember: canning potatoes means they are completely cooked. This means you can serve mashed potatoes to your heart's content, and for my family, that is not a problem! Canned potatoes can also be an ingredient in a dish; however, how they are incorporated as an ingredient is a little different than





INSTRUCTIONS

The hot-pack method is used for canning potatoes. If you are new to canning, make sure to read up on how to use a pressure canner.

1. Wash and peel potatoes, cut into cubes no larger than ½ to 1-inch cubes. Cutting potatoes too small will cause the pieces to break up during the canning process.
2. Place cut potatoes in an ascorbic acid solution of 1 teaspoon per 1 gallon of water to prevent browning.
3. Bring a stockpot of water to a boil. When the water reaches a hard boil, drain the potatoes from the ascorbic acid solution and blanch for two minutes.
4. In a kettle, bring fresh water to a boil.
5. Strain the potatoes and begin filling quart-size canning jars leaving a one-inch headspace. Do not damage the potatoes already in the jar.

6. Salt is optional. Just keep in mind that the longer a seasoned jar of food sits, the more amplified in flavor it becomes. If salt is desired, a generous pinch of salt is all that's needed.

7. Fill jars with hot water from the kettle making sure to leave a 1-inch headspace.

8. To not damage the potatoes in the jars, gently tap the jars onto the counter to remove any potential air bubbles. Add additional water if necessary, making sure to leave a 1-inch headspace.

9. Once the canning process is complete, remove jars from the pressure canner and allow them to rest, waiting for the lids to vacuum seal themselves to the jar.

10. Once the jars have completely cooled, remove the rings and gently wash the jars with warm water and dish soap. Mark the jars with the content and the date that they were canned. This ensures you are using older jars of food first.

Processing Time

Select the correct PSI based on your altitude above sea level.

Jar Size	Processing Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft	above 8,000 ft
Pint	35 minutes	11 PSI	12 PSI	13 PSI	14 PSI	15 PSI
Quart	40 minutes	11 PSI	12 PSI	13 PSI	14 PSI	15 PSI

Storing Canned Potatoes

Now that you have mastered canning potatoes, make sure to store the jars appropriately. Home-canned foods store best between 50 and 70 degrees F, making cold storage or a root cellar ideal. 



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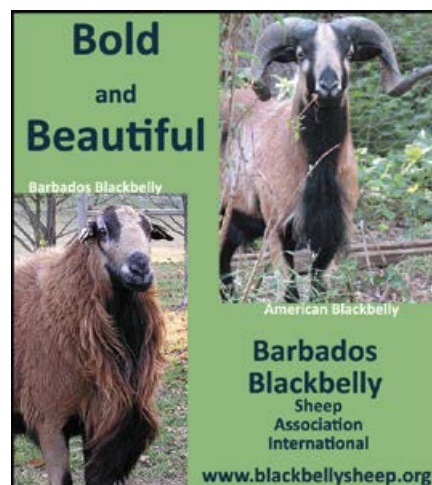
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Step-by-Step Guide to Canning Meat

BY RHONDA CRANK



I WAS HESITANT ABOUT HOME CANNING MEAT even though I had eaten my grandmother's home-canned meat all my life. When we lost a whole freezer of meat due to power outages caused by Hurricane Katrina, I went back to her way of preserving meat.

Home canning meat may seem intimidating, but the process is as simple as canning vegetables and fruits. For us, this is the easiest and best-tasting of the meat preservation methods we've tried.

Let's get started by talking about a few tips on home canning meat.

- Start with quality meat.
- Start with meat chilled to 40 degrees F or less to prevent spoiling. This includes home-butchered meat.
- When doing any food preparation, start with a clean, sanitary workspace.
- Before you can any type of meat, remove as much gristle as possible and any bruised areas. Also, remove any excess fat, but not all of it. Healthy fats are not the enemy,

but excess fat may cause sealing issues with your jars.

- A pressure canner **MUST** be used in home canning meat. Did I say **MUST**? This is due to meat's low acidity. Boiling bath canners are fine for things like jellies and jams, but they're not hot enough for canning meat.
- Decide if you want to use the raw pack method or the hot pack method.
- When canning wild game — venison, turkey, rabbit, etc. — some people brine it overnight in a solution of one tablespoon of salt per quart of water to remove some of the gamey flavor.

Home Canning Meat Using the Raw Pack Method

Step 1 — Be sure the meat you want to can is at least 40 degrees F. This applies to all meat: poultry, red meat, wild game, and pork.

Step 2 — Remove as much gristle as possible and excess fat.

Step 3 — Prepare the meat for canning depending on the type of meat.

Red meats, pork, and wild game (such as deer or elk) should be chopped into 1" cubes or ground into ground meat. Remember to cut meat against the grain to preserve tenderness. It's not recommended to leave the bones in these meats. Instead, put them aside for home-canned broth.

Poultry of any kind should be cut into pieces to fit your jars. You can leave the bones in or take them out. I leave them in for the flavor.

Step 4 — Loosely pack your jars with raw meat being **SURE** to leave a 1 ¼" headspace. **DO NOT** add liquid. Add 1 teaspoon real salt to each quart. This is optional, however, salting food preservation methods have been used for centuries and real salt is necessary for health.

Step 5 — With a clean, damp cloth, wipe the rims of jars to be sure they're clean. Put the lids and rings on the jars and place them in your pressure canner.

- Pints process for 75 minutes
- Quarts process for 90 minutes

Process pints and quarts under 10 pounds of pressure. We'll look at altitude adjustment later on. When the processing time is complete, remove from heat and allow the pressure canner to fully vent before removing the lid. This should take about an hour.

Remove jars from your pressure canner using a jar lifter or a heat-proof mitt. They will be **HOT!** Allow them to completely cool on your counter. The jar lids will pop as they seal. Oh, that wonderful sound! Store in a cool place out of direct sunlight.

Home Canning Meat Using the Hot Pack Method

The difference in the hot pack method is that you brown the meat before canning and you add liquid.

Step 1 and **Step 2** are the same as the raw pack method.

Step 3 — Preparation of the meat depends on the type of meat you're canning.

Red meat, pork, and wild game need to be browned. Put the cubed or ground meat into a large pot turning continuously to thoroughly brown all sides. If the meat is lean, you may have to add a little fat of your choice to the pan. Remember to add just a little, you're not cooking the meat, just browning it.

Alternatively, the meat could be boiled or baked until it is about halfway done, a medium-rare.

Step 4 — Loosely pack jars with browned meat being SURE to leave a 1 ¼" headspace. Add 1 teaspoon real salt per quart (optional).

Step 5 — When using the hot pack method, you MUST add liquid. To do this, add water to the pot you browned the meat in. The amount of water depends on the number of jars you're canning.

Bring the water to a boil to loosen the bits of meat seared to the bottom of the pan. This adds delicious flavor to the meat. Add just enough boiling water to the filled jars being sure you leave a 1" headspace.

Complete the same process from Step 5 forward in the raw pack method.

Altitude Adjustments for Home Canning Meats

Because air is thinner at higher altitudes, pressure levels need to be increased. Using the same pressure in altitudes above 1,000 feet as under 1,000 feet means food will spoil. Your local county extension office can help you.

STANDARD GUIDELINE FOR HOME CANNING MEATS

Altitude	Weighted Gauge	Dial Gauge
0 – 1,000 Ft	10	11
1,001 – 2000 Ft	15	11
2,001 – 4,000 Ft	15	12
4,001-6,000	15	13
6,001 – 8,000	15	14
8,001 – 10,000	15	15



How Long Will Home-Canned Meat Last?

For the best nutrition and quality, home-canned meat is best eaten within three to five years although it is edible for years longer. I know people who eat their canned meat that's over nine years old. You decide what you're comfortable with.

The principle of home canning meat is the same as home canning produce. You preserve what you have an excess of in season so it can be eaten when it's not in season. I write the month and year on the jar to help ensure the older jars are

eaten first.

Home-canned meat can be eaten straight out of the jar, warmed up, or added to your favorite recipe because it's already cooked. Talk about a fast meal!

When you open a jar of any home-canned food, look at the lid and the contents. If you see any cloudiness, mold, or if you notice a foul smell, do not eat it. If in doubt, throw it out!

So now you have all the information you need to get started with canning meat. You'll be so glad you did! 🍴

RHONDA CRANK is a Southern-born farm girl. Going barefoot in the garden, working with her animals, and all things homesteading bring her joy. She and her husband are organic homesteaders using wisdom and skills their grandparents taught them, with a little modern ingenuity mixed in. In 2014, Rhonda created The Farmer's Lamp in response to the many questions they were being asked about their lifestyle. Her passion is sharing their experience and how-to-knowledge through her website, books, videos, and articles. They desire to help others on their own homesteading journey.



GO FISH!

BY RON MESSINA

REMEMBER CATCHING YOUR FIRST FISH? I do. Mine was hooked using a wooden stick baited with a nightcrawler — a backwoods fishing rig if ever there was. But I felt a nibble and flipped a brook trout out of the mountain stream, right over my head into the woods behind me, while my older brother hooted and laughed. At five years old, suddenly I was hooked on fishing!

Over the past year, many turned to the solitude of the outdoors to find refuge from the pandemic and discovered the excitement of hooking a fish. Over 50 million Americans enjoy fishing, and why not? Whether you fish to catch a trophy largemouth

bass, walleye, or trout, to get some tasty fillets for the frying pan, or to simply enjoy the natural beauty of the water, fishing is fun! And autumn is a great time of the year to beat the heat by spending a few hours casting a line into a river, lake, or farm pond.

New to Fishing?

If you've never fished, but would like to try, you don't need to spend a lot on gear to get started. There are many different kinds of fishing rods available, but a basic, no-frills medium-light spinning rod and reel combo sold at any sporting goods store will suffice to catch fish

anywhere, and is a great choice to start with. The reel will likely be spooled with 6lb or 8lb test line, which is plenty strong to catch a wide variety of species.

In addition to the rod, you'll need essentials like hooks in various sizes, sinker weights, and a few bobbers or floats to set up a typical "float rig" using worms or other live bait. Live bait can't be beat for





The Basics to Get Started Fishing

- A medium/light rod and reel combo
- A variety of sizes of hooks, and nightcrawlers or artificial lures for bait
- Sinker weights and a plastic bobber
- Needle-nose pliers with line cutters
- Fishing license; check your local regulations



fishing: earthworms, mealworms, minnows, and crayfish all catch fish. Digging up a few worms is a great project for children. But artificial baits work too: plastic worms, jigs, swim baits, spinners, and top water lures — all work and all have their place.

As with choosing a rod, you could spend hours poring over the selection of artificial baits in a typical big box store — but keep it simple with some plastic worms, Beetle Spins, and maybe a soft swimbait or a floating Rapala lure, and you will be armed to catch anything from small sunfish to huge largemouth bass. While that's the basic equipment you need to fish, there are a few more details to think about to be comfortable and successful when you go.

Planning your fishing trip and being prepared is an important part of the process. For those just starting

out, it's best to find a local pond or stream to "get your feet wet" and hone your skills. Bluegill, crappie, and other sunfish are fun to catch and make great fare for the frying pan.

A little scouting won't hurt, either; check the website of your local state wildlife agency for stocking dates and other public fishing information, and follow any local fishing blogs in the area. Talk to fishermen you know about the hotspots near you — it's always nice to get an inside tip about what the fish are biting on, and to be on the water at the right time.

Haven't fished for a while? Take a moment to examine your gear; are the rods and reels in working order? Do the reels need gears lubed or new line? If your tackle has been stored for a few years, it's better to find out you have a problem before you get to the

water.

A wide-brimmed hat, sunscreen, and insect repellent will go a long way to make the day more comfortable. Pack some snacks, cold drinks, or even a picnic for when the fishing gets slow and you need a break. Fishing is a great family activity, so be sure to bring the youngsters along. If they haven't fished before, coach them and be patient — it could pay off with the thrill of the year, seeing them catch their first fish!

The Catch

What's the key to being successful on the water? First, learn patience. Because you will snag your hook on tree branches; you will deal with "bird's nests" of tangled fishing line; and you will endure long periods of catching nothing but clumps of grass, sticks, and old shoes — this is par for the course.

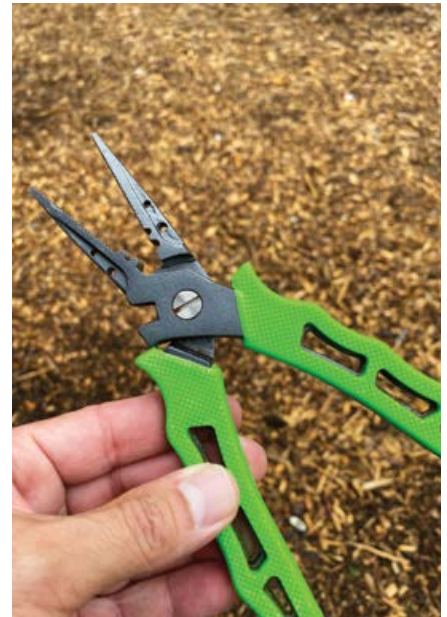
Be patient and keep fishing through it all, and you will be rewarded.

Once you feel that strike — maybe the heavy thump of a bass, or the tug-tug-tug of a bluegill or trout — it's time to "set the hook" by lifting up sharply on the rod. Keep the rod tip up as you reel in, and keep the line tight — the fight is on! What is it? One of the joys of fishing is you never know exactly what species of fish you might catch, and depending on where are, you may land anything from a catfish to a smallmouth bass, or any other numerous freshwater fish species.

A pair of fishing-type needle-nosed pliers is good to have on hand to remove the hook from the fish. If you plan on releasing it, try to keep the fish in the water as much as possible and be sure to wet your hands before touching it, so you don't remove the fish's protective "slime" coating. Don't forget to take a photo with your catch before releasing it! If keeping fish to cook, have a cooler with ice on hand to keep it cool.

The more you fish, the more you will learn how to "read" the water, getting a sense of where fish are located. Fish in rivers often hold behind rocks where they don't have to fight the current along the bottom of the stream. They'll also venture into the swifter current to feed. In a river, the moving water is your friend; let your bait drift naturally with along the current and it will oftentimes deliver it to a feeding fish.

If on a pond or lake, try casting near any structure you can see — including under overhanging tree branches along the shore — and try putting your bait into different depths. If using a swimbait or spinner, vary your retrieve speed — the speed you reel the lure in. Twitch the rod and it will imitate a wounded baitfish, instigating a strike.



Fish in ponds can also be found near rocks, logs, or vegetation. Try casting near these places and you will be more successful.

While you might not bring home a trophy on every fishing trip, it's

guaranteed to be fun. Make a plan to get out one day soon and discover the thrill of catching a fish, and enjoy the peace and quiet you will find while fishing. ©

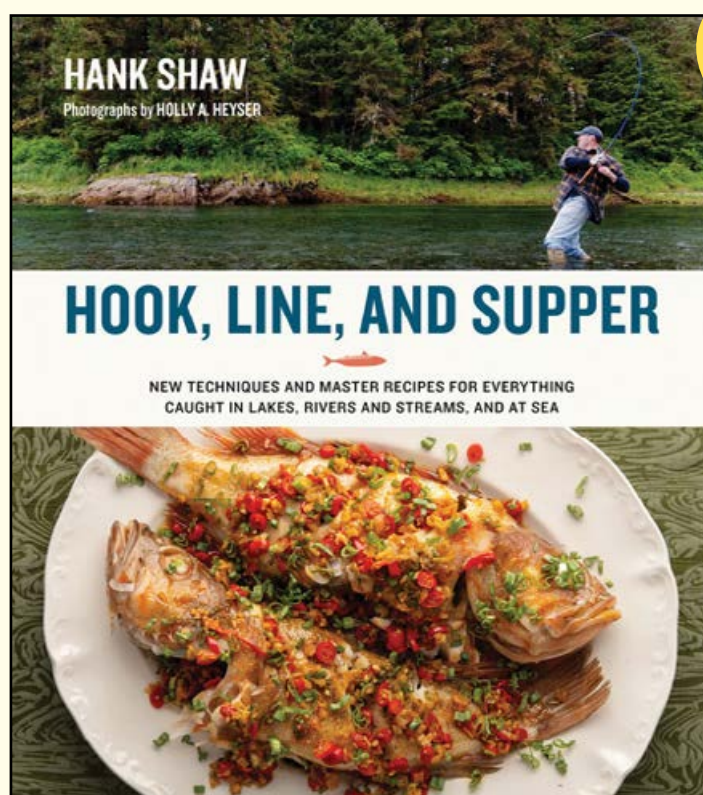
RON MESSINA lives in Virginia and has recently decided to take the plunge into raising chickens. He has written articles for Virginia Wildlife Magazine, Virginia Sportsman, Bird Dog and Retriever News, and many other publications and blogs.

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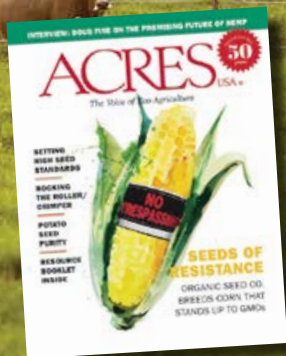
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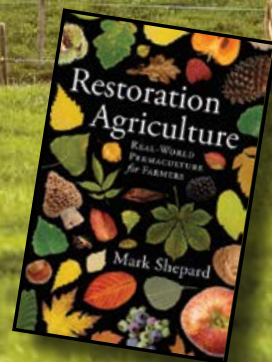
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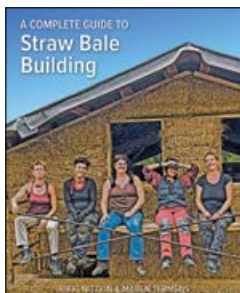
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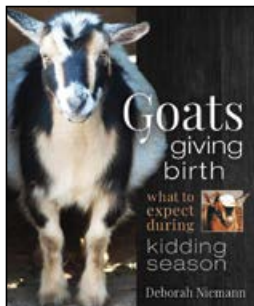
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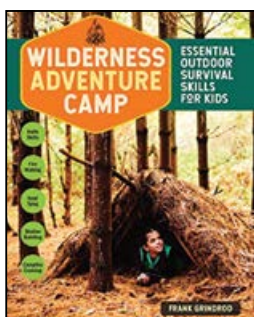
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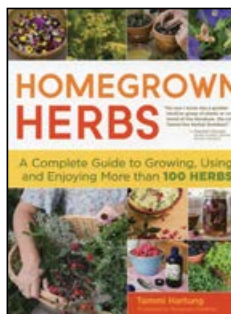


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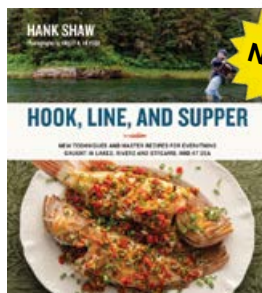
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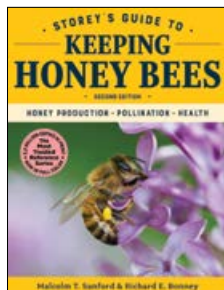
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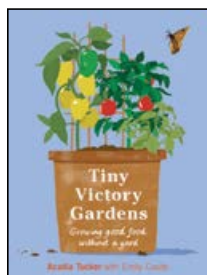
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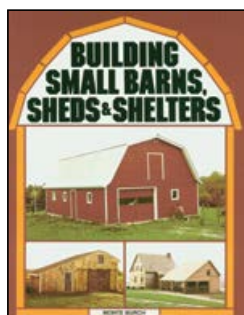
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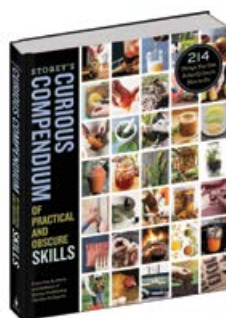
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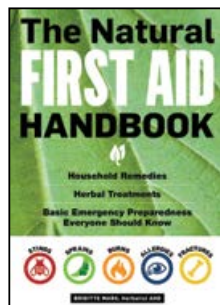
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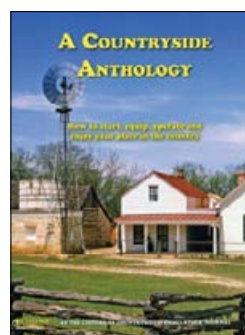
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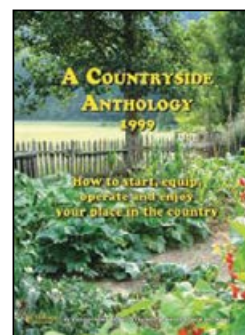
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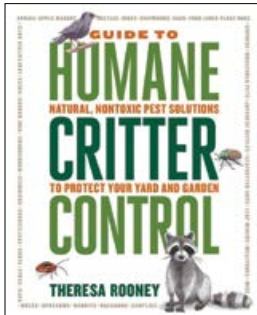
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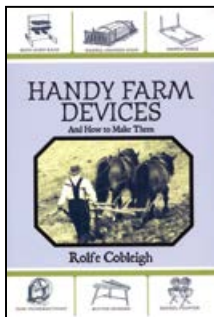
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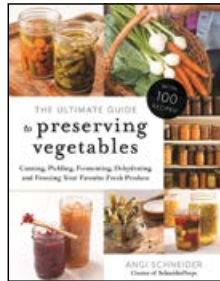
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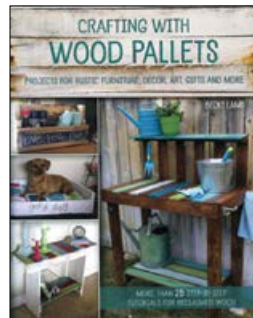
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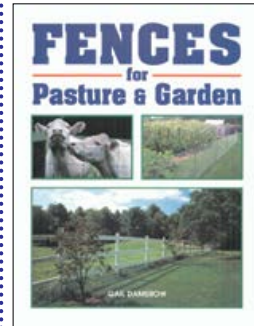
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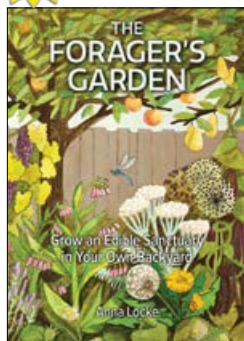
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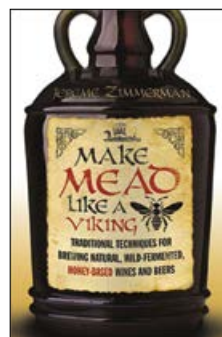
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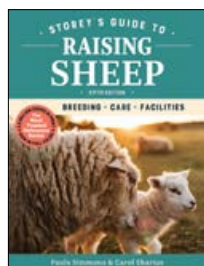
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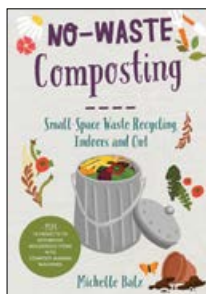
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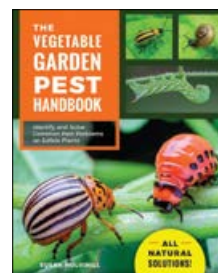
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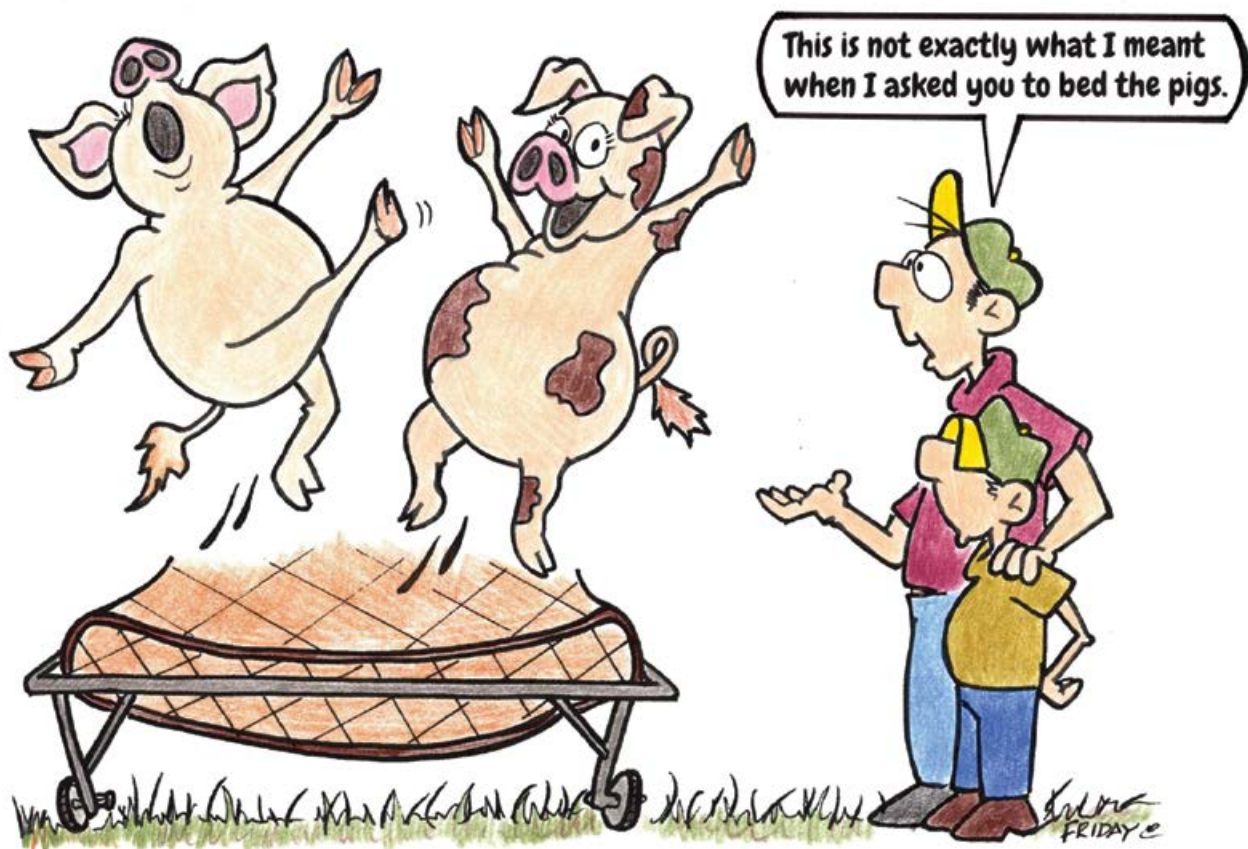
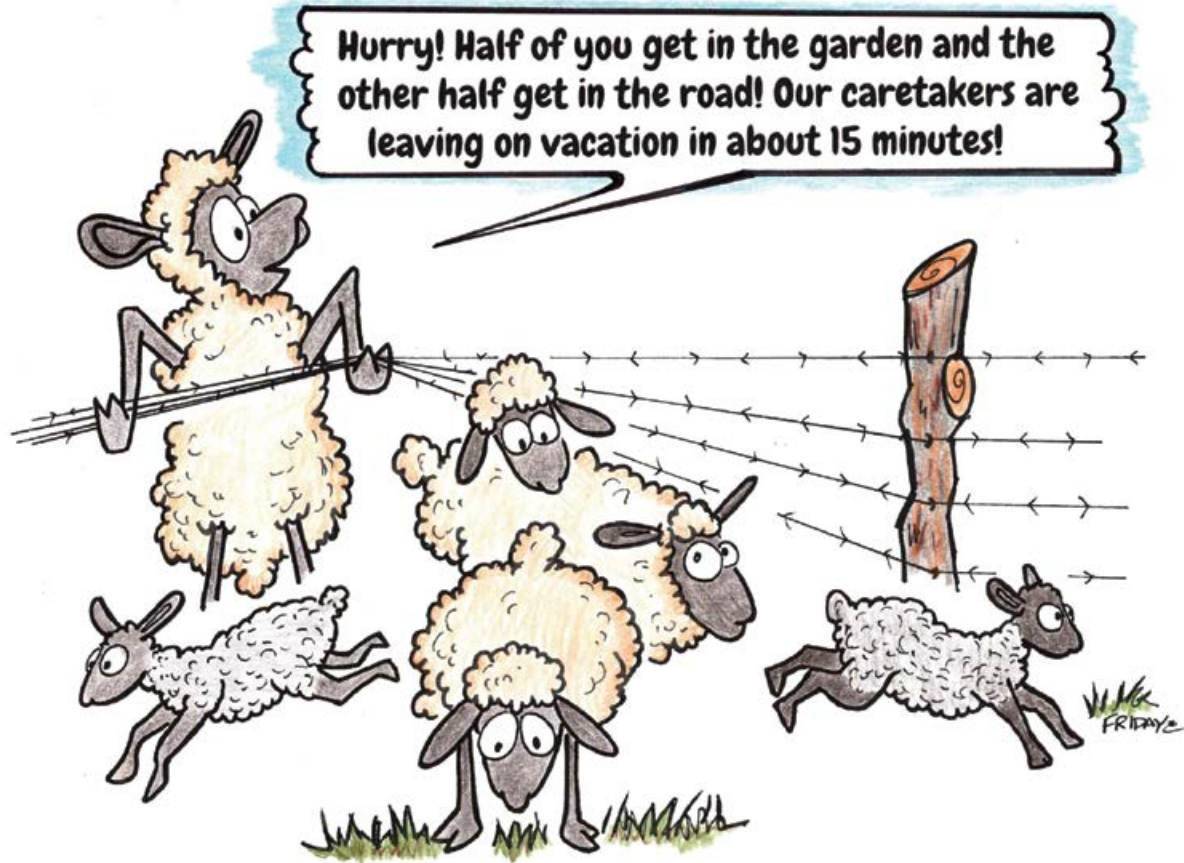
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The winner will be chosen randomly from all of the submissions returned by October 1, 2021. The winner of the May/June Reader Contest was Rodney Eberle, North Dakota. Congratulations to you, Rodney! Enjoy your new camp mug.



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

Print, fill out, and mail to:

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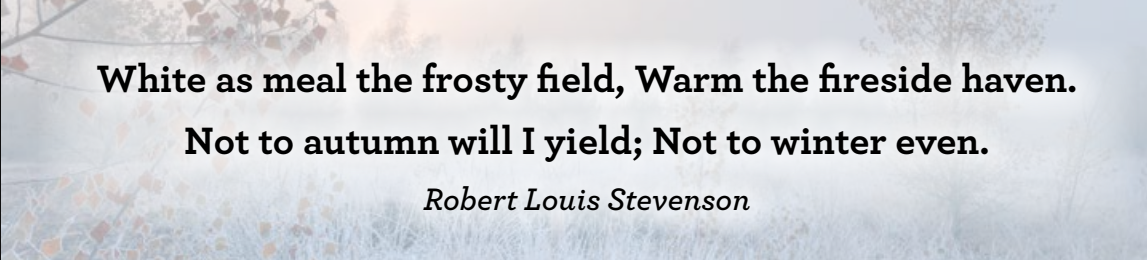
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EARLY AND MIDDLE AUTUMN OF 2021 • GUIDE TO FARMING AND GARDENING

BY W. L. FELKER

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
September			Pumpkin and duck are popular foods for the Asian market. Explore your options for produce as the Harvest Moon Festival approaches. 1	Plan to renew some of your land by putting in an "antiseptic crop" of mustard, radishes, and turnips. 2	Watch for deer favoring oak trees and their acorns. Set up your stands in oak groves near corn and soybean fields. Goldenrod nutlets also attract deer. 3	Help your molting hens. They might benefit from apple cider vinegar or a vitamin supplement. 4
The Jewish New Year celebration begins tomorrow and ends on the 8th. Know your local Jewish market and include it in your survival strategy. 5	Today is new moon day. The waxing moon favors the seeding of winter grains and green manure crops, as well as the winter garden in the South. 6	Plan to market some of your male goats in October, one of the year's strongest wether market months. Ethnic holidays increase your options. 7	Have your turkeys all placed soon. But if your turkeys are listless, have droopy wings, and yellow droppings, they may have fatal blackhead disease. 8	Consider a protein supplement for your horses as September progresses. Lush fall grasses have been related to laminitis. Inspect hooves on a regular basis. 9	Vaccinate your lambs and kids for enterotoxemia before you let them out to clean up the cornfields after harvest. 10	Perform a sugar roll test to determine if you need to rid your bees of mites. 11
If there is a Hindu population close to your homestead, you might explore advertising a male lamb or kid for the October feast of Navaratri. 12	Before pastures rest for the winter, test the soil and add nutrients as needed. Soil tests let you plan ahead for fertilizer requirements. 13	If you want your hens to lay all winter, consider providing 14 hours of light for them. 14	October is the month in which this year's litters of coyotes usually begin their attacks. Be on guard and remove carcasses immediately. 15	Coyotes kill by attacking the throat. They usually work in packs, and leave bite marks on rear ends of the animals. 16	Check beehives on cooler mornings (rather than in the heat of the day) in order to reduce stress on your bees and the likelihood that you will be stung. 17	Autumn is often the peak of wasp and hornet time. Chilly mornings or evenings are best for avoiding stings when dealing with these insects. 18
Pansy and Mum Seasons are here for your roadside stand. Add pots of geraniums, vincas, and salvia, too; they often overwinter well in south windows. 19	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. 20	Place bulbs intended for winter indoor forcing in cool soil. Consider selling their flowers to the early spring market in February. 21	Demand for goat milk typically rises in the fall and prices start to rise, too. Consider preparing goat and sheep milk lotions and soaps for holiday gifts. 22	If you are running out of pasture, plan for next year's fields: late producers like oats or turnips could extend your pasture season considerably. 23	In the final two weeks of September, a deterioration occurs in wildflowers except the late goldenrods and asters, marking a big change for bees. 24	Thanksgiving marketing includes making and selling apple cider and fruit pies. You might also deliver pre-cooked turkeys with trimmings! 25
Winterize your chicken coops before November's chill. Horses grow thicker hair in the fall. Check their shelters for leaks in order to protect their coats. 26	The end of Ramadan is May 2 next spring. Have your lambs and kids ready to sell then. Also prepare for this coming October's halal sales. 27	Make sure your pigs have shelter from cold autumn winds. And keep their straw fresh and dry. 28	Toxic changes in the chemical composition of grasses and alfalfa after frost can poison your flock or herd. 29	Clean, paint, carve, and woodburn last year's dried gourds for Christmas ornaments, bird houses, toys, and Thanksgiving displays. 30		

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
October					Prepare and pot cuttings of last year's Christmas cacti that are close to being rooted, budded, and ready for the holidays. 1	Check horses for horse bot eggs. Take care of pre-winter vaccinations, deworming, and parasite treatments for all of your animals. 2
Feed additional grain and free-choice hay to livestock as the weather cools and pastures become less nutritious. 3	Begin planting a few amaryllis and paperwhite bulbs every week in order to perfect your timing for early and mid-December blooms. 4	Under the dark moon, put in tulip, daffodil, hyacinth, and crocus bulbs. Divide perennials, plant shrubs and trees. Sow next spring's spinach. 5	Today's new moon (with perigee on the 8th) should bring frost to all the states above the Mason-Dixon Line. Cover sensitive flowers and vegetables. 6	In the southern half of the country, plant fall peas and set out cabbage, kale, and collard sets. Seed the lawn. 7	Record the breeding dates of ewes and does in order to monitor weight gains closely and schedule feeding changes during the last month of pregnancy. 8	Plan to serve the Passover Market (Passover is April 15 - 23) with lambs and kids under 60 pounds. 9
Feed a 1:1 mix of white cane sugar and water to bees when the nights grow cold and flowers grow scarce. 10	Root crops are especially valuable for rabbits in autumn when they need extra energy. Mix with leafy greens and vegetables like broccoli, also hay. 11	The elimination of lawn herbicides and pesticides is a first step in making your homestead organic. Organics pay economic and health dividends. 12	Plan to have your lambs and kids ready for the Easter Market next year: April 17 for Roman Easter April 24 for Orthodox Easter. 13	You might expect an increase in demand for halal meat from kids or lambs as Muhammad's birthday approaches. 14	The heaviest time of Halloween market sales begin as rutting time opens for deer along the 40th Parallel. 15	Harvest honey as full moon approaches. Be sure to leave enough for the bees to live on through the winter. 16
Provide autumn and winter shelter for your guinea fowl. They should have a dry roosting location that will protect them from night predators and frost. 17	Provide plenty of free choice hay to livestock in order to reduce the chance they will gorge themselves on fresh autumn regrowth. 18	Learn the difference in selling registered and unregistered animals. Registration could add a substantial percentage to your profits. 19	Today's full moon is likely to bring frost to all of the states above the Mason-Dixon Line. Cover sensitive flowers and vegetables. 20	Plant next year's garlic as the moon wanes. Then feed the trees after all of their leaves are down. Find the Orionid meteors in Orion after midnight. 21	Don't forget that leaves of <i>Prunus</i> species trees are toxic to livestock when wilted. 22	Avoid feeding animals too much grain in their fall diet. The fat around internal organs can cause pregnancy ketosis. 23
Schedule your Christmas tree sales to begin around the Friday after Thanksgiving. Plan on including varieties of wreaths in your displays. 24	Consider breeding tree frogs to sell for pets. And be careful cleaning out your fish ponds in autumn: leave debris in which pond frogs can hibernate. 25	Have water warmers ready for the barn. Pregnant animals may prefer warmer water and usually drink more. Purchase a heater for koi ponds. 26	Consider hydroponic fodder as pasture conditions change throughout the year. Its speed and nutrition could be perfect for your homestead. 27	Testosterone levels in rams and bucks tend to level off and then decline as the days reach their shortest span in November and December. 28	Gradually reduce feed to the fish aquaculture ponds to avoid poor water quality. Test and adjust for chemical balance before water freezes. 29	Mulch crops such as collards, kale, and mustard greens to keep them well-insulated and fresh into the early winter. 30
Daylight Saving Time ends on November 6. Make a gradual feeding transition for your family and livestock to Standard Time. 31	 White as meal the frosty field, Warm the fireside haven. Not to autumn will I yield; Not to winter even. <i>Robert Louis Stevenson</i>					

THE SUN

Fall equinox occurs on September 22 at 2:21 p.m., and the Sun enters the sign of Libra at the same time. October 23 is Cross Quarter Day, the halfway mark between autumn equinox and winter solstice, and the Sun enters Scorpio on that day.

PHASES OF THE MOON

Early and middle autumn are the prime times for gathering nuts. Walk the parks and woods now to identify the trees and their fruit. And be on the lookout for other creatures as you search for nuts: when temperatures cool, frogs and toads begin to look for places to spend the winter, traveling considerable distances at times to find the right location.

THE PLANETS

In September, Venus remains in Virgo, setting near sunset throughout the month. Mars moves retrograde from Leo into Virgo, joining Venus in the far west, barely visible near sundown. Jupiter travels retrograde into Capricorn, and together with Saturn, becomes visible at dusk in the

south and travels across the southern horizon through the night.

In October, Venus travels retrograde into Ophiuchus, becoming more visible as the Evening Star than last month. Mars, however, remains in Virgo, becoming too close to the sun for October viewing. Saturn and Jupiter stay in Capricorn, following Venus into the western horizon after midnight.

THE STARS

Throughout autumn, the Big Dipper is low in the north an hour or so after dark. The Milky Way dominates the night, Cygnus, Lyra, and Aquila, the constellations of the Summer Triangle, forming its brightest stars. In the east, the Great Square follows Delphinus. At dawn, Orion stands in the middle of the southern sky; bright Capella shines high above him. Regulus, the spring planting star, approaches from the east in Leo.

THE SHOOTING STARS

The Orionids, active much of October, peak on the 21st and 22nd at the rate of about two dozen an hour.

METEOROLOGY

SEPTEMBER

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.

New moon on September 6 will bring the first chance of frost in the northern tier of states. Lunar perigee on the 11th brings the second chance, and full moon on September 20 is likely to threaten light frost all the way to the 40th Parallel.

OCTOBER

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.

October's pattern of frost-threatening days will be similar to that of September. New Moon on October 6, within two days of lunar perigee, will bring more than a 50% chance of frost to states all across the northern half of the United States. Full moon on October 20 repeats those chances for a freeze and brings the first chance of an early blizzard to the West and an increased likelihood of a late hurricane in the Caribbean.

LUNAR FEEDING PATTERNS FOR PEOPLE AND BEASTS

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

DATE	ABOVE	BELOW
September 1 – 6	Mornings	Evenings
September 7 – 13	Afternoons	Midnight to Dawn
September 14 - 20	Evenings	Mornings
September 21 – 28	Midnight to Dawn	Afternoons
September 29 – 30	Mornings	Evenings
October 1 – 6	Mornings	Evenings
October 7 – 12	Afternoons	Midnight to Dawn
October 13 - 20	Evenings	Mornings
October 21 – 28	Midnight to Dawn	Afternoons
October 29 – 31	Mornings	Evenings

September 6 | The Hickory, Black Walnut and Pecan Nutting Moon is new at 9:52 p.m.

September 13 | Second Quarter: 3:39 p.m.

September 11 | Lunar Perigee (when the Moon is closest to Earth): 5:00 a.m.

September 20 | Full Moon: 6:55 p.m.

September 28 | Last Quarter: 8:57 p.m.

September 26 | Lunar Apogee (when the Moon is farthest from Earth): 5:00 p.m.

October 6 | The Travelling Toad and Frog Moon is new at 6:05 a.m.

October 8 | Lunar Perigee (when the Moon is closest to Earth): 12:00 p.m.

October 12 | Second Quarter: 10:25 p.m.

October 20 | Full Moon: 9:57 a.m.

October 24 | Lunar Apogee (when the Moon is farthest from Earth): 10:00 a.m.

October 28 | Last Quarter: 3:05 p.m.

A CALENDAR OF FEAST DAYS AND HOLIDAYS FOR FARMERS, GARDENERS, AND HOMESTEADERS

August 9 – September 6, 2021:
Al Hijrah/Muharram: This celebration of Islamic New Year has no religious significance, but, like many New Year celebrations, it is a cultural event. A rise in halal sales could be expected during this period.

September 6, 2021: Labor Day

September 6 - 8, 2021: Rosh Hashanah: Jewish New Year and first High Holiday. Some subjects also celebrate the creation of man on this date.

September 20 - 22, 2021: Harvest Moon Festival: Harvest Moon Festival, Chuseok: Often observed by Korean Americans and others of Asian descent.

October 6 - 14, 2021: Navaratri /Navadurgara: This Hindu feast honors the goddess Durga. Female animals are typically not used for this celebration.

October 19, 2021: Muhammad's Birthday (Mawlid Al-Nabi): Sunni Muslims celebrate Muhammad's birthday today.

October 24, 2021: Muhammad's Birthday (Mawlid Al-Nabi) Shia Muslims celebrate Muhammad's birthday on this date.

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The 2nd, 8th, 23rd, and 54th correct answers will win their entrants five dollars!

Send your answers to:
Poor Will
P.O. Box 431
Yellow Springs, OH 45387

There should be no typos in this puzzle, and no typo prize will be awarded. If you happen to find a typo, however, you may simply skip that word without penalty.

WINNERS & ANSWERS
MARCH/APRIL SCKRAMBLER

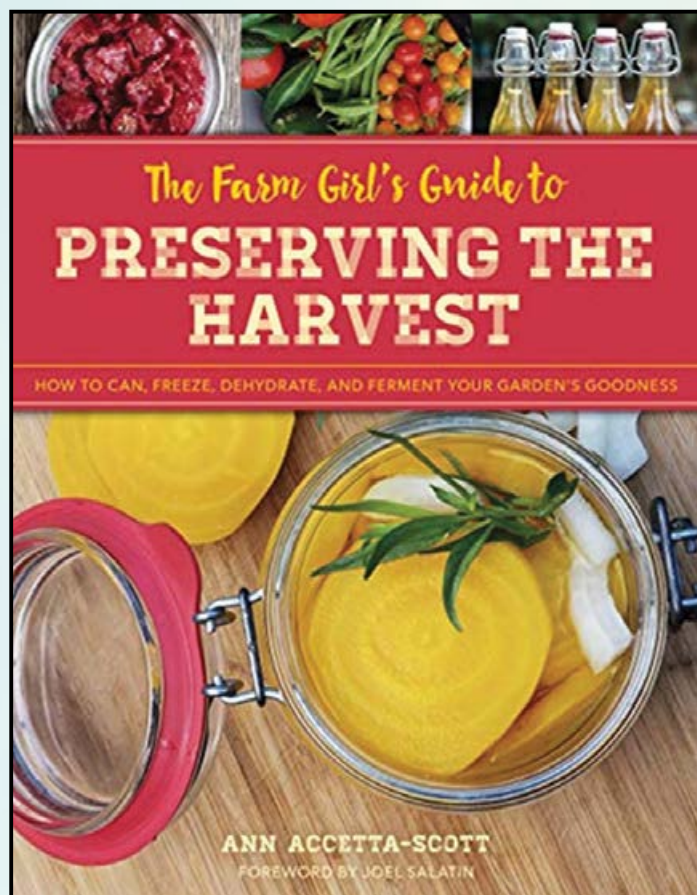
Poor Will promised prizes to the authors of the 5th, 9th, 26th, and 34th correct submission. The 5th correct response was from Mindie Rasmussen of Kalispell, MT. The 9th was from Bruce Henderson of Lillie, LA, and the 26th was from Beverly Howe of Tunbridge, VT. Only 27 entries were received.

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EYR/RYE	AYH/HAY
ORCN/CORN	SLEGMAN/MANGELS
UOMHGRS/SORGHUM	EOURWLFNS EDSSE/SUNFLOWER SEEDS
ETAHW/WHEAT	ETESW OESTATOP/SWEET POTATOES
SNAEBYOS/SOYBEANS	EKAL/KALE
YOIHTMT/TIMOTHY	RICLAG/GARLIC
LEYRAB/BARLEY	LEPAPS/APPLES
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ROVELC/CLOVER	

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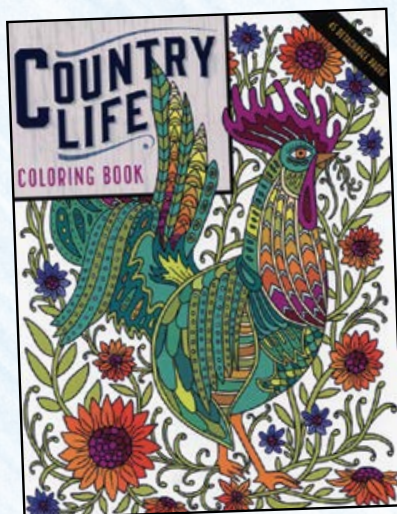
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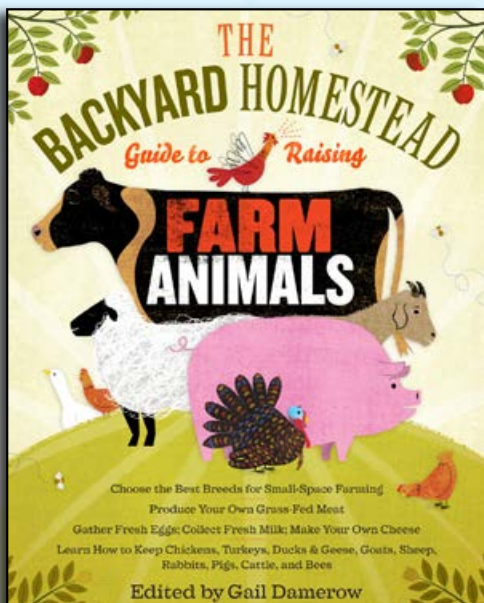
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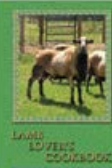
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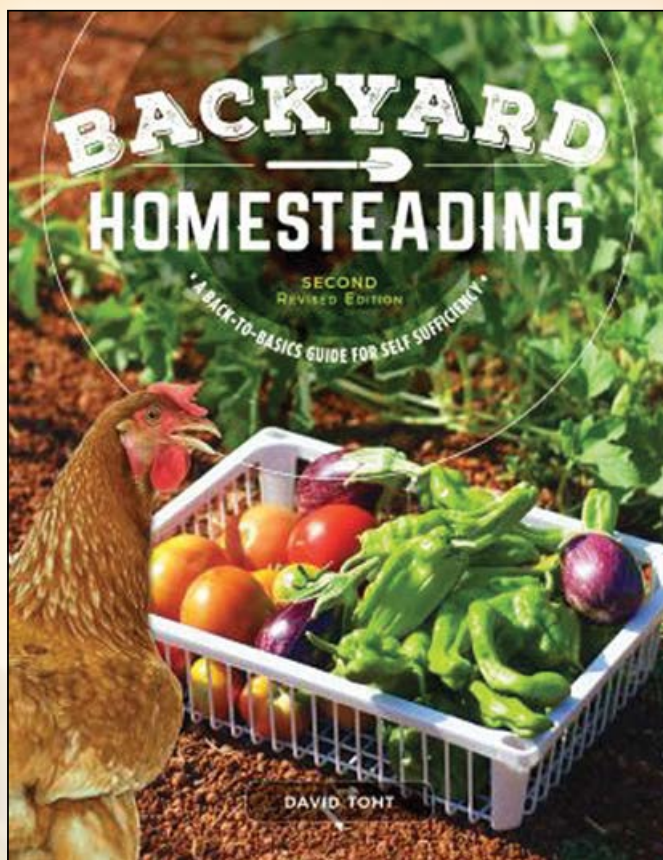
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