

The  
Collapse  
Proof  
Food  
Stockpile

# Food Storage and Preservation Basics

The first step to surviving a long-term disaster is having an ample food supply. This supply is there for when the stores are not. It's there for when a crop fails. It's there for a personal economic crisis when you might otherwise go hungry. This important investment has to be protected from the elements and stored properly, otherwise you risk opening a package and finding it stale or full of bugs, just when you need to rely on it the most.

## Long-Term Food Storage

Of course there are certain staples that you will want to be able to store for the long term as well. Learn pertinent food storage skills to guarantee your dry goods remain viable for years to come.

These days, we know much more about proper techniques for food packaging for long-term storage. When beginning your quest for creating a food storage pantry, there are some considerations to plan for:

- The amount of people in the household
- Different food varieties and shelf-stable foods to reduce food fatigue
- The serving amount in the food
- Vitamin content in the food
- Labels detailing contents of food and expiration date or "best if used by" on the food containers
- Special health conditions for family members

Keep all of these in mind when planning for food storage.

With the right storage tools, a person can store many different types of foods—indefinitely. Learning how to store food is cost-effective, simple to understand, and is a life saver if an emergency arises.

## Multi-barrier Method

Using a barrier system that utilizes food grade, 5- to 6-gallon plastic pails, oxygen absorbers, and Mylar bags will create multiple barriers to keep natural elements such as sunlight, moisture, insects, and air out of the



container when sealed. This is the best way to protect and store food for long term.

The tools needed for this method are:

- **5- to 6-gallon food grade containers** – These containers will not transfer any non-food chemicals into the food, nor are there any chemicals within the container that are hazardous to humans. Typically a food grade container has a #2, #4, or #5 by the recycle symbol or the acronym "HDPE" stamp on the bottom (HDPE stands for "high density polyethylene"). Before any food is to be stored, clean the containers with soapy water, rinse, and dry thoroughly. Five-gallon plastic containers are the most popular amongst those who store bulk quantities of food.
- **Lids for container** – Standard lids typically come with the 5-gallon containers, but some preppers have found using a lid opener is inefficient with food storage. Once the lid is opened, the contents are exposed to natural elements and you cannot fully close the lid again. To circumvent this, consider investing in lids with gaskets and gamma lids. These are great choices as they do not require a lid opener. Although the gamma lids are a few dollars more, once opened, they can be screwed on and off making the food more accessible.
- **5-milliliter Mylar liners** – Research has shown that over time, small amounts of oxygen can seep through the walls of plastic containers. This causes oxidation of the foods that lead to an "off taste" and color. Mylar bags assist in preventing this because they have a middle layer of aluminum and two different plastic layers on the inside and outside of the bag.

An added benefit to this storage method is the bags can be reused, if properly cared for, and last up to 20 years! They can also be used in a shorter term food supply by simply pouring the food contents into Mylar bags, adding an oxygen absorber, and properly sealing the bag closed. This will keep a short-term food supply fresh over a given period of time. Typically an 18x28-inch or 20x30-inch are used for 5-gallon plastic containers.

- **Oxygen absorbers** – Using oxygen absorbers greatly prolongs the shelf life of stored food. Because it absorbs the oxygen from the container, it inhibits the growth of aerobic pathogens and molds. Oxygen absorbers begin working the moment they are exposed to oxygen. Therefore, it is best to work as efficiently as possible. Oxygen absorbers come in different sizes, so pay attention to the size needed for the container. Typically, 2,000 cc's of oxygen absorbers should be added in one 5-gallon bucket. Use [this chart](#) to anticipate how many oxygen absorbers you will need. Oxygen absorbers are not edible, not toxic, and does not affect the smell and taste of the product.
- **Desiccant packets** – Desiccant packets moderate the moisture level when placed in a food container. *They do not absorb the moisture.* They are best used in areas prone to high humidity levels. Please note that desiccant is not edible. If the packet somehow breaks open and spills onto the stored food, the entire contents of the container must be thrown away. There are certain food items that desiccant should not be added to. Specifically, flour, sugar, and salt. These items need a certain amount of moisture to stay activated, and if desiccant is added to it, they will turn into a hard brick.
- **Manual food sealer** – Manual sealers, such as the Hot Jam Clamp, are by far the best ways to seal for long-term storage. They are ideal for sealing cellophane, Mylar, Kraft Paper, and other thick materials. Some perks to this storage tool is that it is durable, portable, heat fast, and provides an effective seal.

### The Sealing Process

1. Thoroughly wash the plastic container with soapy water and rinse and dry thoroughly.
2. Place the Mylar bag into the 5-gallon container. *The Mylar bag should be fitted for the size container that you are using.*
3. Add your oxygen absorbers or desiccant to the bottom of the bag. Also, remember you will be adding an absorber at the top of the Mylar bag as well.
4. Begin pouring contents into the Mylar bag. When the bag is half full, shake it to make sure the food gets into all the crevices of the bag.
5. Continue adding food to the Mylar bag until the bag is 3/4 full.

6. Add your last oxygen absorber to the top of the food.
7. Next, begin folding the Mylar down in order to release any trapped air.
8. Once the air is out, use a heat clamp to begin sealing the Mylar bag. A person can use a heat clamp or they can seal their Mylar bags with a simple at home iron put on the highest setting. If the home iron method is used, make sure you have a hard surface such as a cutting board or book to iron on and slowly go over the Mylar bag. Note: this method must be done *gently and slowly* or the Mylar will be damaged. Seal straight across the Mylar bag in a straight line. Leave the last 2-3 inches unsealed in order to push the last remaining air out of the bag.
9. Once the trapped air has been pushed out, seal the last 2-3 inches. To test the seal of the bag, apply a seal to two layers of your bag. If the seal can be pulled apart, your seal is not secure.
10. Push the sealed Mylar bag into the container. Optional: Add another oxygen absorber on top of the sealed Mylar bag for good measure. Place the lid on the container and make sure the lid is on completely.
11. Label the container with the contents of food and date of packing.
12. Store in a dark storage area where temperatures, moisture levels, and sunlight do not fluctuate.

This method is by far the most time consuming, however, it is also the most popular method because it provides plenty of protection to your food investment. If you want to ensure your food is protected for 20+ years, then this is the method for you.

## **Vacuum Sealing**

Vacuum sealing is a revolutionary way to create a food pantry. We know that food cannot stay fresh forever, but with the right tools, we can most certainly prolong it. This sealing method was introduced as a new way to extend your existing food sources. There are two types of vacuum food sealers: counter top models and handheld ones. Counter top sealers claim they are more durable and offer stronger suction and sealing strength, but they're more expensive than handheld food sealers, and they take up more space.

Vacuum sealing is a type of packaging called Reduced Oxygen Packaging, also known as ROP. This type of packaging process greatly slows down

deterioration of food sources by reducing atmospheric oxygen. It creates an anaerobic environment that limits the growth of aerobic bacteria or fungi and prevents the evaporation of volatile components. This storage method extends storage times of refrigerated foods, dried foods, and frozen foods by creating a hermetic seal similar to the seal that occurs during the canning process.

### **The Sealing Process for Vacuum Sealers**

1. Select (or make as above) an appropriately sized, food-grade, plastic pouch, suitable for cooking.
2. Place the food you wish to vacuum/seal into the pouch. Note: We strongly recommend against using this machine for vacuum/sealing liquids. Liquids will be sucked into the vacuum surface and/or air portal and could clog or damage the machine. If you must vacuum/seal liquids, first freeze the liquids in a small freezer-safe container or zip-closure bag, then add the frozen block to the food pouches. Chill oils or syrups to thicken them before adding them to the pouch.
3. Do not overfill the pouch! Leave a sufficient length of unfilled pouch to allow easy positioning of both sides of the open pouch end within the rippled, vacuum surface area once the cover is closed and locked.
4. Be sure that the end of the pouch within the machine is clean, free of debris, liquids, or oils as these could prevent proper sealing.
5. Straighten the open end of the pouch, making sure there are no creases or wrinkles in the pouch material that could hamper proper sealing. Position the open end of the pouch within the vacuum surface below the air portal.
6. Close the cover and lock it by pressing down firmly on either side of the cover until you feel/hear a click from each side. Press the Vacuum/Seal button. An indicator lamp should illuminate and the pouch should collapse around the contents as the vacuum pump evacuates the air. If the pouch does not readily begin to collapse, the machine may automatically stop after 30 seconds or you can press Stop, unlock the machine, open the cover, and reposition the pouch opening, lock, and press the Vacuum/Seal button again. If the operation fails a second time, see Troubleshooting Guide in the manual or repackage the food in a new pouch (repeating steps 1 through 7) and discard the old pouch.

7. Once the vacuuming operation is complete, the machine will automatically seal the open end. If it does not, you can manually seal the end by using the Seal Only button.
8. Once all operations are complete, the indicator lamp(s) will go out.
9. Press the Cover Lock buttons on either side of the machine to release the cover.
10. Remove the sealed food pouch.
11. To open a sealed pouch, cut the pouch straight across with scissors just inside the seal.

Vacuum sealing is often used in combination with other packaging and food processing techniques. Please keep in mind that vacuum sealing is not a substitution for the heat processing of home canned foods, nor is it a substitution for the refrigerator or freezer storage of foods that would otherwise require it.

This economical food storage technique can be used for short-term or long-term food storage. Food can be purchased in bulk and divided into individualized or smaller servings. Sealed foods last 3-5 times longer compared to conventional storage methods. As a result, foods maintain their texture and appearance longer. Here are some additional reasons why vacuum sealing is an effective and cost saving form of storage:

- Non-food items are protected from oxygen, corrosion, and moisture-damage. For example you can vacuum seal unused oxygen absorbers, matches, socks for bug-out bag, medication, emergency forms, etc.
- Vacuum sealing conserves space for food storage.
- Moist foods won't dry out because there's no air to absorb the moisture from the food.
- Dry, solid foods, such as brown sugar, won't become hard because they don't come in contact with air and, therefore, can't absorb moisture from the air.
- Foods that are high in fats and oils won't become rancid because there's no oxygen coming in contact with the fats, which causes the rancid taste and smell.
- Insect infestation is eliminated due to a low-oxygen environment.
- Meat and fish will marinate in minutes, because as air is being removed from the canister, the pores of the meat or fish open up and allow the marinade to penetrate.

- Seal dehydrated foods and dried herbs for longer term storage.

As effective as this food storage method is, it is not without its downside. The most serious mark against this storage method is that if you are storing perishable items, there are dangerous bacteria associated with vacuum sealing perishable goods.

Another downside to vacuum sealing is the bags are not completely impervious to air, so after a couple years, they begin to leak. When leaks occur, the opened seals allow oxygen, insects, and other enemies of your food to enter. However, if you plan to use the barrier method when storing your food, then you are taking added precautions to prevent this from occurring.

Further, if you are storing bulky food items, or foods that have sharp corners, during the oxygen removing process, these sharp corners can puncture the bags. Therefore, special care must be used when packaging certain foods.

Like all food storage methods, stay organized by labeling the food contents and the date it was packed. Some preppers who are prepackaging store-bought foods, such as Bisquick, will cut out the directions on the box and add it to the vacuum sealed pouch. To stay organized, many preppers use large plastic bins to store their sealed foods in. This keeps your preps orderly and easily accessible.

Although some believe this to be unnecessary, adding oxygen absorbers in the vacuum-sealed bag along with the food before sealing will increase the long-term storage time. The reason why many do this is when you vacuum seal, there can still be some air caught between grains of softer foods that you can't pull as strong of a vacuum on. Adding oxygen absorbers to long-term dry goods and dehydrated foods remedies the trapped air in between food items and guards against natural elements.

Like all food storage methods, eat what you store and store what you eat. You want to have the foods on hand that your family normally eats.

When freezing packages of liquid foods, many have run into the problem of liquid getting sucked back into the vacuum contraption. You can avoid this in one of two ways:



- One is to fill the vacuum bags and freeze them without sealing. Seal once the contents are solid and they won't leak into the guts of the sealer.
- Another way is to refrigerate the dish until its thickened—some sauces will almost gel when cold—then you can fill bags and vacuum pack. And finally, you can freeze in temporary containers and then slip the blocks of food out and repackage and seal. I've tried all of these things at various times.

## **Dry Ice**

Many preppers use dry ice along with Mylar bags and 5-gallon plastic containers. Dry ice is frozen carbon dioxide. A block of dry ice has a surface temperature of -109.3 degrees Fahrenheit (-78.5 degrees C). Dry ice also has the very nice feature of sublimation. As it breaks down, it turns directly into carbon dioxide gas rather than a liquid. As a result, the carbon dioxide helps remove the oxygen within the plastic container ensuring it is an ideal environment to keep insects out.

Dry ice can be purchased at many grocery stores and super grocery stores. This storage method can be done two different ways:

Basic on-top method:

- On top of almost-full 5-gallon container, place 1/4 lb. dry ice on non-conductive (insulating) material, such as Kraft paper.
- Press lid down gently so some air can escape.
- After 20-30 minutes, check to see if dry ice has completely evaporated.
- If not, wait another 5 minutes, then check again.
- When dry ice has completely evaporated, remove material and seal container.

Basic on-bottom method:

- On bottom of 5-gallon storage container, place 1/4 lb. of dry ice under non-conductive (insulating) material, such as Kraft paper.
- Press lid down gently so some air can escape.
- After 20-30 minutes, check to see if dry ice has completely evaporated.

- If not, wait another 5 minutes, then check again.
- When dry ice has completely evaporated, remove material and seal container.

## **Investing in Freeze-dried Foods**

When most people think about freeze-dried food they envision some kind of bland, pale, sodium-blasted sludge on their plates, posing as “dinner.”

The beauty of freeze-dried food is the nutrition and variety it can add to your pantry. Foods that would normally be off limits in a disaster situation can be neatly lined up on your pantry shelves, only awaiting the addition of hot water to add a burst of vitamins, minerals, and flavor to your pantry meals. The best part of this type of food storage is all that is required is to add boiling water and voila—a complete meal. Due to the preservation process, freeze-dried foods have a shelf life of 20 years making this a solid investment for long-term food storage.

One area in which most pantries seem to be lacking is meat. Investing in freeze-dried meats will allow you to make all of your normal recipes with only some slight adaptations. The comfort of a familiar favorite meal can go a long way towards bringing some normalcy to a difficult situation.

Try some of the following varieties:

- Chicken breast
- Turkey breast
- Ham
- Ground beef
- Beef strips
- Sausage crumbles

Freeze-dried foods can offer you vegetables that you can't get in cans, also. For example, many recipes call for bell pepper, which might be hard to get in the middle of a winter blackout. However, with a well-stocked section of freeze-dried foods, a scoop of peppers will be at your fingertips. Some useful additions:

- Onions
- Green bell peppers

- Broccoli
- Mushrooms
- Spinach
- Zucchini
- Diced carrots
- Celery
- Cauliflower

Another place your pantry could be lacking is in the area of eggs and dairy. Obviously these things are tough to can and must be refrigerated or frozen. However, you can stock up on #10 cans of the following and still be able to add some cheesy goodness to casseroles or enjoy a hot breakfast omelet, no matter what the situation. How great would it be to still be able to make your kids a Friday night pizza in the midst of a down-grid situation?

- Shredded cheddar
- Shredded mozzarella
- Powdered cheese
- Milk powder
- Buttermilk powder
- Powdered whole eggs
- Powdered egg whites
- Powdered egg yolk
- Powdered butter
- Powdered shortening

There are some downsides to this convenient long-term food storage method. It can be costly due to the preservation process these foods go through. This is why many preppers use a combination of storage methods to create a well-rounded food pantry. Purchasing these freeze-dried items a little at a time is an easier investment to swallow.

Another downside to this food type is freeze-dried foods were not designed to be a long-term source of nutrition. Due to the high sodium content of these preserved foods, it has a tendency to back up the intestines. Therefore, if you choose this type of long-term food source, invest in stool softeners because they will back your digestion system up.

## Food Preservation for Self-Sufficiency

With the situation looking more grim by the day, it is very clear that stockpiling is not enough. No matter how many cans of green beans you have stored away, one day they will run out. We have become so dependent on the "buy it as you need it" lifestyle that despite our food storage, there are still gaps that must be filled.

And the only way to fill in these gaps is by going a step beyond prepping and moving towards self-sufficiency.

Self-sufficiency is defined as the ability to provide for oneself without the help of others. No amount of stockpiling gives you true self-sufficiency. It is a combination of skills, supplies, attitudes, and habits that mean the difference between a person with a great pantry and a person planning to be a true survivor.

Self-sufficiency is for...

- The day the grocery stores close their doors or become so expensive that people cannot afford to shop
- The day that the FEMA camp gates open in only one direction
- The day that the banks go on an indefinite holiday, after draining depositor savings accounts and pension funds
- The day that electricity and heat on demand become so expensive that only the wealthy can afford them
- The day that medical care no longer exists for the average person, or is directed by government death panels
- The day that a natural disaster or false flag locks down the country and completely, irrevocably changes our way of life
- The day that so many preservatives and questionable ingredients are listed on the side of the food boxes that we begin to wonder if we are actually eating real food or a chemistry project

The list could go on and on. These things are hurtling towards us and we must be ready. Self-sufficiency, unlike prepping, doesn't cost a lot of money. It's all about acquiring basic skills and tools. It is about putting your plan into practice before you have no other option but to do so.

What would you do if you could never go to a store again?

Your ability to preserve the food that is available to you could quite literally mean the difference between survival and death. Not all of us are lucky enough to live in a place where we can grow food outdoors all year long. For the rest of us, food preparation, is a lifeline in the winter.

A few basic supplies and tools are needed. Just like food production, it's important to practice food preservation and work out the kinks now, while you still have moderately affordable groceries as a backup. As well, this allows you to rely on healthy, non-GMO foods instead of the inexpensive, highly processed garbage at the stores.

Learn the following skills:

- Canning
- Dehydrating/drying
- Fermentation
- Root cellaring

Once you possess the ability to preserve your own food, you can begin to live the same type of agrarian-based lifestyle that our ancestors lived, basing your menus on the seasons and harvests, while storing away the surplus for the long winter ahead.

## **Canning**

Canning is the perfect solution for preppers. Your food storage does not require power from the grid to remain safe, you don't have to use your precious water to make the food edible, and you can have instant nutritious meals that need only to be heated.

You need a water bath canner and a pressure canner. A pressure canner is an expensive investment, but once you have one (and you conquer the fear of blowing yourself up with it!) you can preserve nearly anything. By creating meals right in the jars, you can provide your family with instant tasty nutrition. You are really only limited by your imagination and your ingredients. Some foods take to canning better than others, generally because of texture issues.

Garden produce, fruits, jams, meats, and complete meals in jars will soon be gracing your shelves. There are really only a few steps to canning.



**Ensure that you process foods according to the instructions because otherwise you risk a potentially deadly bout of botulism. In particular—if a food is supposed to be pressure-canned, no length of water bath canning time is sufficient to make it safe. It MUST be pressure canned.**

Low-acid foods have to be preserved at a higher temperature than high-acid foods. The low-acid environment welcomes the growth of bacteria like botulism, a form of food poisoning that can cause permanent nerve damage or even death.

Pressure canning exceeds the temperature of water bath canning, getting your product into the safety zone. The temperature must reach 240 degrees Fahrenheit, which can only be achieved through steam under pressure.

All vegetables (except for tomatoes which are botanically a fruit), meats, seafood, and poultry must be preserved in a pressure canner.

### **Sanitizing the Jars**

Your preserved food is only as safe and sanitary as the vessels you put it into. An important step that must not be overlooked is sanitizing and preparing the jars, lids and rings. There are several methods for this.

### **The Dishwasher Method**

If you have a dishwasher, this is easy. Just run it on the sanitizing cycle right before you begin canning. The dishwasher will keep the jars hot until you are ready to fill them. The heat from the dishwasher will also make the rubber on the jar flat more pliable and ready to seal.

### **The Water Bath Canner Method**

Assuming that your jars are clean and all you need to do is sterilize them, you can use your water bath canner for this. (This is the method I use, since I no longer have a dishwasher.) Place the jars in the canner, on the rack. Pour in enough water that it goes over the openings of the jars and fills them. Bring the canner to a boil and allow it to boil for 10 minutes. Then use your jar lifter and remove the jars, placing them upside down on a

towel or drying rack to drain. You can reuse the hot water for canning once the jars are filled and lidded.

### **The Oven Method**

You can also use your oven to sterilize your jars. Preheat your oven to 225 degrees Fahrenheit. Place your jars in a roasting pan and slide them into the oven for at least 20 minutes. At that point, you can turn off the heat, but leave the jars in there until they are ready to be packed. **Warning:** (this is kind of a “duh” but I’ll say it anyway!) The jars will be hotter than heck when you take them out of the oven. Take care not to burn yourself when filling them and placing them in the canner! Sometimes I use this method. When I do, I leave the jars in the roasting pan while I fill them and then use my jar lifter to move them from the roasting pan to the canner.

### **Sanitizing the Lids**

In a small saucepan, bring to a simmer enough water to cover your flats and rings. Do not bring the flats to a rolling boil, as this could damage the sealing compound. Keep the lids in the hot water and remove them with sterilized tongs or a lid lifter (a cool little magnetic wand) when you are ready to put them on the jars.

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*Sometimes all of the canning rules sound overwhelming! Please don't let them scare you. I'm providing you with the best practices so that you have all the information you need.*

*Keep in mind that you are not performing open-heart surgery. Nearly all canning recipes have to be processed for more than 10 minutes, which, in conjunction with the pre-sterilization you have performed, should help you to keep your food safe and healthy.*

### **Altitude Adjustments**

It's all science, like so much of canning is.

At sea level, and up to 1000 feet above sea level, water boils at 212 degrees Fahrenheit.

However, once you get above the 1000 foot mark, the changes in atmospheric pressure means that your boiling point is actually LOWER than 212F.

<b>Altitude</b>	<b>Temperature at which Water Boils</b>
10,000	194°F
8,000	197°F
6,000	201°F
4,000	204°F
2,000	208°F

For water bath canning, food safety requirements mean that the goodies inside your jars should reach 212F, and if it doesn't you have to add to your processing time in order to make your preserved food safe.

For water bath canning, add 2 minutes of processing time for each 1000 feet above 1000 feet that you are. To use the following chart, take the basic processing time and add to it based on your local elevation.

<b>Altitude Adjustments for Water Bath Canning</b>	
<b>Elevation</b>	<b>+ time</b>
1000-2999	5 minutes
3000-5999	10 minutes
6000-7999	15 minutes
8000-10,000	20 minutes

Pressure canning requires that your food reach 240 degrees Fahrenheit. Additional pressure is needed in this case, as opposed to additional time. The standard rule is to add 1 pound of pressure for each 1000 feet above sea level you are. However, you will rarely ever adjust more than 5 pounds, regardless of your elevation.

For safety reasons, pressure canners should never be used above 17 pounds of pressure.

<b>Adjustments for Pressure Canning</b>	
<b>Altitude</b>	<b>Additional Pressure</b>

1001-2000		+ 1
2001-4000		+ 3
4001-6000		+5
6001-8000		+5
8000-10,000		+5

## Water Bath Canning 101

Water bath canning is a great way to start for beginners. There is no scary equipment, the start-up cost is minimal, and there is less margin for error.

Water bath canning is a safe method for preserving high-acid foods.

**Some examples of foods that can be canned in a water bath are:**

- Jams and jellies
- Fruit
- Applesauce
- Pickles
- Tomato products

**For water bath canning you must have the following tools:**

- Big canning pot
- Rack (if you don't have a rack you can use a folded towel in the bottom of the pot)
- Jar lifter
- Jar funnel

These items are the minimum tools you need for canning properly and safely. There are all sorts of other gadgets out there, like items that help you measure headspace and lid lifters with a little magnet on the end, but if you have the above items, you are ready to can!

Then, of course, you need:

- Jars
- Flats (also called snap lids)
- Rings

## Step by Step

**Sanitize your jars, lids and rings.** (See the section above for details.)

**Prepare your canner.** Place your rack in the bottom of your canner and fill your canner with water, leaving about 3-5 inches at the top to allow for room for your filled jars. If you don't have a rack, you can line the bottom with a folded towel. Bring your water to a boil.

**Fill your jars.** Line up your jars on a heat-proof surface near the stove. You can place a towel on the counter to protect it from the hot, filled jars. Using the funnel, ladle the prepared product into the jars, leaving the headspace recommended in your recipe.

**Put on your lids.** With a dry clean dishtowel, carefully wipe the lip of the filled jars, removing any residue. Place the flats on each jar, then finger tighten the rings—you don't have to really torque on them—the job of the rings is to hold the flats in place until they seal.

**Place your jars in the canner.** With your handy-dandy jar lifter, place the closed jars carefully into the canner. Put them in gently because, as you know, boiling water **hurts** when it splashes on you. Be careful not to let the jars touch because they could break when they bump together in the boiling water. Make sure the lids are all completely submerged under the water. They don't have to be under by inches—just covered.

**Process the jars.** Put the lid back on and return the canner back to a rolling boil. Don't start clocking your processing time until the water is at a full boil. Then just leave the jars in the water bath for the amount of time required in your recipe. If you want to sound productive you can refer to this as "processing your jars."

**Remove the jars from the canner.** Using your jar lifter, carefully remove the jars from the boiling water. Tip the jars to the side to allow the hot water to drip off the top. Then place the jar on your towel or heat-proof surface.

**Now, leave them alone!** Allow 12-24 hours for the jars to cool and seal. You will hear a musical "pop, plink, ping" noise as the jars seal in the cool air. That is the lid getting sucked down and forming a seal to the lip of the jar.



When you are ready to store the jars, you can remove the rings. This keeps your rings from rusting because of moisture trapped between the metal ring and the jar. Test the seal by pushing down with your finger. If it pops back and forth it is not sealed. Put it in the refrigerator and use the unsealed product in the next few weeks. Store your sealed jars in a cool, dark place.

## Pressure Canning 101

### For pressure canning you need:

- Pressure canner with valves, seals, and gauges
- Rack (if you don't have a rack you can use a folded towel in the bottom of the pot)
- Jar lifter
- Jar funnel

As with water bath canning, you can get all the gadgets if you want to, but these are the essentials.

### Step by Step

One thing you will notice about pressure canning is that nearly all of the steps are identical to the method for water bath canning. Differences (in italics) are really only related to the equipment. So, once you have learned to use your pressure canner correctly, you will find it every bit as easy as water bath canning.

**Sanitize your jars, lids and rings.** (See the section above for details.)

***Prepare your canner.*** Place your rack or folded towel in the bottom of your canner add about 3 inches of water to the canner. Most p-canners have a line to which you fill the water. In pressure canning it is not necessary for the water to cover the lids. (Always check the instructions on your individual canner. If there is a discrepancy, go with the instructions that came with your product.) At this point, you can turn the burner on low to begin warming the water, but don't bring it to a boil yet.

**Fill your jars.** Line up your jars on the counter near the stove. If the surface is not heat-proof, place a towel on the counter first because the

filled jars will be very hot. Using the funnel, ladle the prepared product into the jars, leaving the headspace recommended in your recipe.

**Put on your lids.** With a dry clean dishtowel, carefully wipe the lip of the filled jars, making sure to get any residue of food off. Place the flats on each jar, then finger tighten the rings. You don't have to really torque on them.

**Place your jars in the canner.** *Place the closed jars into the canner. Be careful not to let the jars touch because not only could they could break when they bump together in the boiling water, but in p-canning the steam must be able to completely circulate around the jars.*

**Build steam in the canner.** *Before putting the lid on the canner, check the vent pipe every single time to be sure it is clear. Place the lid firmly on the canner, latching it as per the specifics of your canner and increase the heat to bring the water to a boil. At this point steam should be coming out the vent pipe. Reduce the heat until a moderate amount of steam is coming steadily out the pipe for 10 minutes. The purpose of this is to release the air and build up the steam inside the canner. If you don't give it the whole 10 minutes, your canner will not build pressure. As patience is not my strong point, I learned this from experience.*

**Close the vent.** *After exhausting the steam for 10 minutes, depending on your canner, either close the petcock or place the weighted regulator on the vent pipe. When I place the regulator on, I always put a dishtowel around my hand because that steam is HOT. It sometimes makes a loud high-pitched noise when you are putting the regulator on. Don't be alarmed by the various rattling, whistling, and bubbling noises. P-canning is loud business.*

**Pressurize the canner.** *Turn up the heat on the burner and wait until the gauge has reached the desired pressure. (Pressure will differ based on altitudes and recipes). This usually takes 3-5 minutes. Note: if you lose pressure during processing you must re-start the processing time. Adjust the heat to maintain the pressure—this takes practice. Monitor your canner throughout the processing time to be sure the pressure is maintained. I have found that approximately #4 on the dial on my electric stove keeps my pressure between 10-12 pounds quite steadily.*

**Release the pressure.** *When your processing time is over it is time to release the pressure. It couldn't be easier. Turn off the burner. Take the canner off the burner and put it on a heat-proof surface. Walk away. Allow the canner to return to room temperature and release pressure naturally. Don't try to do anything to cool it down faster. That is how people get hurt p-canning. Pressure is completely reduced when the air vent/cover lock and overpressure plug have dropped and no steam escapes when the pressure regulator is tilted. The gauge, if your canner has one, should be completely at zero. This can take 45 minutes to an hour and cannot be rushed!*

**Open the vent.** *When pressure is gone, open the petcock or remove the weighted regulator. If the regulator doesn't want to come off, there is likely still some pressure in the canner. Don't force it. Walk away for another 15 minutes. Once the vent is open, leave the canner for another 2-5 minutes.*

**Remove the jars from the canner.** *Use potholders to protect your hands while you unlatch the lid of your p-canner. Very carefully remove the lid to the canner, facing it away from you so that you are not burned by the steam that will rush out. Using your jar lifter, carefully remove the jars from the canner, one by one. Then place the jar on your towel or heat-proof surface.*

**Allow 12-24 hours for the jars to cool and seal.** Let the jars stand in a draft-free place without being moved or bumped, usually overnight. Jars that are sealed properly will bubble away on the counter for quite some time after they are removed from the p-canner. You will hear a musical "pop" as the jars seal in the cool air. That is the lid getting sucked down and forming a seal on the jar.

When you are ready to store the jars, you can remove the rings and then test the seal by pushing down with your finger. If it pops back and forth it is not sealed. Put it in the refrigerator and use the unsealed product right away. Store your sealed jars in a cool, dark place.

## Off-Grid Canning Techniques

Canning is a valuable skill because it's completely low-tech. If you have a way to boil water, you have a way to preserve food.

Learning to use the two different types of canning methods, water bath canning and pressure canning, and familiarizing yourself with those techniques, means that you will have a different comfort level when attempting them over an open fire in the back yard, for instance.

### Think Outside the Canning Pot

Consider some different ways that you might be able to bring a large pot of water to a boil. If you are lucky enough to have a woodstove with a flat surface in your home, you will easily be able to can your harvest. However, in the middle of summer, when harvests are coming in, a blazing fire inside your home is likely to make the environment nearly unbearable.

Another option is to construct an outdoor fireplace. The grill or cooking surface must be sturdy enough to hold a heavy pot full of water and at least half a dozen jars full of food or a disaster of broken glass and ruined food could occur.

Some options for outdoor canning are:

- A brick or concrete fireplace with a fireproof cooking surface
- A fire pit with a grill over the top
- A Mexican style "beehive" oven

Whatever method of outdoor canning you use, make sure you have plenty of wood to burn in order to keep the heat high enough to maintain the pressure in a pressure canner or to maintain a hard boil in a water bath canner. Your method should allow you to tend the fire without moving your canning pot. You should also have plenty of heavy towels and heat protection for adding and removing your jars from the canner. Extreme caution should be used when cooking over an open fire.

Stock up on your basic supplies (lids, rings, jars, pectin, vinegar, salt, and sugar). Tattler is the only company that makes reusable lids. The rest of the

snap lids on the market must not be reused. The Tattler lids are pricey but they do pay for themselves after a few seasons.

Learning to can now, in a more ideal environment, means that you will be able to adapt your methods better in the event that the grid goes down. Personally, my first two attempts at jam-making resulted in... well, let's call it syrup, or perhaps ice cream topping. I was able to figure out how to improve my process and stock up on a type of pectin that works better for me. However, if my first attempt at jam-making had occurred after a long-term disaster, the supplies I had on hand would be all I had available with which to work.

The key to survival is versatility. Being able to adapt your current canning methods to techniques that do not require the grid will allow you to thrive by preserving your harvests and your game in the same way our ancestors did.

## **Dehydrating**

The overall goal of our emergency food pantries is to have a wide array of nutritious foods stored away in order to carry us through an emergency, whether it is from Mother Nature or if we have hit a financial rough patch in our lives. That said, the cost of emergency preparedness foods can be a little overwhelming when you first start out.

For centuries, dehydrating food has been used as a means of survival. Many consider this to be the most affordable preservation method, and the best way to preserve the flavors of foods. Dehydrating vegetables and fruits for long-term storage is a great way to get needed nutrition into diets with minimal investment.

Food dehydrators prices range from a very modest investment to a few hundred dollars. If you do not feel that a dehydrator is worth a monetary investment at this time, you can use your oven at a low setting. There are also dehydrators and mesh lined hanging nets that can be used outdoors to harness the sun's power. Solar dehydrators are a good investment for those planning to go off-grid.

If you have a surplus of fruit or vegetables, dehydrating them is a great way to preserve their nutrition. For instance, a family favorite over here is fruit



roll ups. Dehydrated vegetable soup mixes are a great easy-to-store "just add water" meal to have on hand or to add to your 72-hour bags.

## **Pros**

Of course, the greatest aspect of this food storage method is anyone can do it. You set it and forget it! Dehydrating food can be a way to circumvent the costliness of large quantities of already-preserved food, while complimenting your existing preparedness pantry at the same time. Not to mention, due to the drying process, dehydrated foods condense in their size thus creating a more efficient use of storage space.

Dehydrated foods are the *original* just-add-water meal! Think of the possibilities. Don't limit yourself to only dehydrating your surplus vegetables and fruits. You can dehydrate meals, soups, meats, and cooked grains. They can then be combined together to create a delicious, nutritious, life-saving meal. Moreover, pre-cooking and then dehydrating your beans, grains, and pastas and then rehydrating them will drastically cut down on fuel usage during emergencies. You can dehydrate pasta meals and have them on hand for quick meals or to add to backpacks. All you need to rehydrate the meal is to add boiling water and cover with a lid for 20-30 minutes to expedite the process.

Home dehydration has one more bonus: unlike the purchased dehydrated foods, it's not loaded with sodium unless you choose to add it. This is great if anyone in your group suffers from high blood pressure or a heart condition. It is recommended to add salt *after* the re-hydration process has been completed.

(See the chart below to learn about rehydrating your dehydrated food.)

## **Cons**

Keep in mind that the drawback to this food preservation method is that you will need a large amount of water in order to rehydrate the dried food. Depending on the situation, that could be a problem in an emergency. When rehydrated, some foods will not take on their original shape and form. The long drying times could also pose as a challenge if you plan on dehydrating large quantities of food.

## Dehydrating Foods at Home

The dehydration process removes moisture from the food so that bacteria, yeast, and mold cannot grow.

The added benefit is the dehydration process minimally effects the nutritional content of food. In fact, when using an in-home dehydration unit, 3%-5% of the nutritional content is lost compared to the canning method which losses 60%-80% of the nutritional content. Additionally, vitamins A and C, carbohydrates, fiber, potassium, magnesium, selenium, and sodium are not altered or lost in the drying process.

The end result is nutrient-packed food that can be stored long-term.

There are multiple ways that you can use a dehydrator. You can dry vegetables and fruits, make jerky, make fruit or vegetable leather, dry herbs and spices, dry noodles, and even make crafts such as dough ornaments.

Dehydrating vegetables and fruits to use for long-term storage is a great way of including needed nutrition into diets with minimal investment.

When dehydrating food, use fresh produce or meat. Typically, when overly ripe fruits and vegetables are dehydrated, the texture is not as crisp. For example, if one were to dehydrate over-ripe bananas, the end result would be a chewy banana chip as opposed to a crispy banana chip. A great way to use ripe fruits or vegetables is to puree the produce and make fruit or vegetable leather to use later.

Some vegetables need to be blanched before you dehydrate them. Use the following chart as a guideline.

<b>Vegetable</b>	<b>Blanching method</b>	<b>Blanch time</b>	<b>Drying time</b>
Asparagus, cut	Steam or water	4–5 minutes	8–10 hours
Beans, green (cut)	Steam or water	2 minutes	12 hours
Broccoli, small	Steam or	3–3½	10 hours

flowerets	water	minutes	
Brussels sprouts, halved	Steam or water	4–6 minutes	12+ hours
Cabbage	Steam or water	2 minutes	8–10 hours
Carrots and parsnips, sliced	Steam or water	4 minutes	12+ hours
Cauliflower, small flowerets	Steam or water	4 minutes	12+ hours
Celery, sliced	Steam or water	2 minutes	12+ hours
Corn, on cob (cut kernels after blanching)	Steam or water	2 minutes	12+ hours
Eggplant, sliced	Steam or water	3 minutes	12+ hours
Peas, shelled	Steam or water	3 minutes	12+ hours
Potatoes	Steam or water	7 minutes	12+ hours
Spinach and collard greens, trimmed	Steam or water	2 minutes	12+ hours
Summer squash, sliced	Steam or water	2 minutes	12+ hours
Winter squash, cut in chunks	Steam or water	2 minutes	12+ hours



## Storing Dehydrated Foods

Once food has been dehydrated, it should be stored in an area not exposed to a lot of light, such as a pantry. It is recommended that any food that contains vitamin A not be exposed to light. According to James Talmage Stevens' book, Making the Best of Basics, Stevens recommends these general storage suggestions:

- Freezer-weight, zip-lock bags are excellent for packaging dried foods. Force excess air from bags as they are sealed.
- Procure heavy-duty, food-grade, storage-quality, sealable plastic bags from local commercial packaging wholesalers.
- Store dried food products in a cool, dry location out of direct sunlight. Use a Kraft paper bag inside a larger plastic bag to shield dried foods from sunlight. Paper used outside the plastic bags provides a nesting place for bugs or spiders.
- Store only one kind of food in each individual package to avoid mixing flavors and possible cross-contamination should molds or spoilage occur.
- Another method for storing dried products is to place dried food in a food-quality, plastic bag, then put in tin an airtight glass or metal container.
- Discard moldy food. Don't take chances on botulism or a debilitating sickness over a few pennies or dollars. Don't feed mold foods to pets, either!
- The problem of a few bugs in dried foods may be solved by spreading the infested dried food on a cookie pan, placing in a 300 degree oven for 25-30 minutes. Bugs and eggs die, and the food is edible again. (Protein content is higher too).

### “Best Used By” Guidelines for Dehydrated Foods

Spices - 1-2 years

Vegetables/fruits - Up to 12 months

Meats - Best at 1-2 months, but can be stored for 6 months.

## Rehydrating Your Dehydrated Food

Rehydrating your dehydrated foods requires nothing more than the food to be introduced to a liquid.

Get creative with the liquid that you use. Many preppers have found that rehydrating foods in liquids other than water gives the food a richer taste. For instance, soaking fruit in fruit juice makes rehydrated fruit taste sweeter or soaking textured vegetable protein (TVP) in meat stock helps give it a richer flavor.

This chart has instructions for rehydrating your dehydrated food sources:

<b>Product</b>	<b>Water to add to 1 cup dried food</b>	<b>Minimum soaking time (hours)</b>
<b>Fruits*</b>		
Apples, sliced	1 1/2	1/2
Pears, sliced	1 3/4	1 1/4
Peaches, sliced	2	1 1/4
<b>Vegetables**</b>		
Asparagus	2 1/4	1 1/2
Beans, lima	2 1/2	1 1/2
Beans, green snap	2 1/2	1
Beets	2 3/4	1 1/2
Carrots	2 1/4	1
Cabbage	3	1
Corn	2 1/4	1/2
Okra	3	1/2
Onions	2	3/4
Peas	2 1/2	1/2
Pumpkin	3	1
Squash	1 3/4	1
Spinach	1	1/2
Sweet Potatoes	1 1/2	1/2
Turnip greens and other greens	1	3/4
<b>Grains**</b>		
Rice – white, brown or wild	1	1
Pasta	1	1
<b>Meats**</b>		
Poultry	1	30

Ground beef crumbles, deli meat	1	30
Beans	1	1-2
Textured vegetable protein	1	30

## Fermenting

Fermented foods are a staple in many cultures, and the process of fermentation is one of the oldest preservation methods. The earliest evidence of fermentation was wine making, which dates back to 8,000 years ago in the Caucasus area of Georgia. At one point in time, this preservation method was the only way that food could be stored for the long term.

Fermenting food is not only easy—but it is the perfect off-grid preservation method because it does not require any power at all to preserve your food. If you have salt (preferably sea salt), then you can ferment food.

Before the days of electricity and canning, this was the way that food was stored for the long term. This is also one of the simplest methods of home preservation. There is no need for hot water bath canning. There is no energy usage (aside from your own work) required, something that may one day be very important.

Aside from the simplicity of fermentation, a variety of vegetables can be preserved with salt, water, and spices. So get creative! Sauerkraut is not the only fermented food you can make. Kimchi is a Korean dish made from fermented vegetables. Use any combination of the following vegetables to create beautiful, showy jars of easily preserved goodness.

- Beets
- Bell peppers
- Broccoli
- Cabbage
- Carrots
- Cauliflower
- Cucumbers
- Garlic
- Green beans
- Green onions
- Kale

- Onions
- Radishes
- Sprouts
- Turnip
- Horseradish root

Don't stop at only fermenting foods, you can also make fermented drinks like kombucha and kefir. Breads like sourdough are also made from a fermented starter. Try this sourdough starter that is made using pineapple juice.

### **Sourdough Starter**

Step 1. Mix 3 ½ tbs. whole wheat flour with ¼ cup unsweetened pineapple juice. Cover and set aside for 48 hours at room temperature. Stir vigorously 2-3x/day. ("Unsweetened" in this case simply means no extra sugar added).

Step 2. Add to the above 2 tbs. whole wheat flour and 2 tbs. pineapple juice. Cover and set aside for a day or two. Stir vigorously 2-3x/day. You should see some activity of fermentation within 48 hours. If you don't, you may want to toss this and start over (or go buy some!)

Step 3. Add to the above 5 ¼ tbs. whole wheat flour and 3 tbs. purified water. Cover and set aside for 24 hours.

Step 4. Add ½ cup whole wheat flour and 1/4 to 1/3 cup purified water. You should have a very healthy sourdough starter by now.

([source](#))

### **Health Benefits of Fermentation**

There are many other health benefits from fermenting your food. The following are ways that fermented foods make your body systems work more efficiently.

**Fermented foods have many health properties.** Fermentation creates lactic acid, nature's preservative. This promotes the growth of healthy bacteria in the human intestines. It also helps to break down proteins. The



levels of the popular probiotic bacteria (lactobacillus) are also increased in fermented foods.

**Aids in digestion.** Fermenting our foods is easier on our digestive tract because they are partially broken down. In fact, many of the gases that some foods tend to create are eliminated with fermented food. For instance, some people are lactose intolerant, but are able to digest fermented dairy products like yogurt. This will help to alleviate common digestive ailments such as lactose intolerance, constipation, irritable bowel syndrome (IBS), yeast infections, and some allergies.

**Replenishes essential enzymes.** Fermented foods also help to replenish the enzymes which help us properly digest, absorb, and make full use of your food. According to the Food Renegade blog, “As you age, your body’s supply of enzymes decreases as well which has caused many scientists to hypothesize that if you could guard against enzyme depletion, you could live a longer, healthier life.”

**Fermenting food increases the vitamin content.** Because of the folic acid present in fermented foods, this would be beneficial to expectant mothers. Vitamin B, riboflavin, and biotin are also present.

**Fermented foods assist in nutrient absorption.** You can ingest huge amounts of nutrients, but unless you actually absorb them, they’re useless to you. When you improve digestion, you improve absorption. Introducing fermented foods to your system is an easy way to achieve this.

Fermenting foods is a versatile and inexpensive way to add tremendous amounts of nutrition to your diet. Start today to receive all of the benefits it possesses.

## **Root Cellaring**

In our agrarian past, we didn't have a grocery store in every town receiving shipments of fresh fruits and vegetables from all corners of the world on a daily basis. Food preservation was a necessity to survive the long winter in most locations. Over the centuries, many have gotten their winter produce fix from a simple non-tech solution: the root cellar.

Fall is the perfect time to begin because for the next few months, those hard-shelled root vegetables, as well as items like apples and potatoes, will be abundant and cheap.

The first root cellars in recorded history were in Australia. 40,000 years ago it is indicated that they were burying their yam harvests in order to keep them fresh. Since then, underground food storage caches have been found all over the world, as people took advantage of the cool moist atmosphere a few feet down.

### **The Ideal Root Cellar**

Root cellars are often in the basement of one's home or in a separate concrete or stone cellar just outside the home. Michigan State University offers these tips on conditions for the ideal root cellar:

The produce is still alive. Stored carbohydrates of energy is consumed in the presence of oxygen and produces heat and carbon dioxide. To maintain the proper “living” conditions, at least three variables need to be considered: temperature, humidity and ventilation.

#### **Temperature**

Most cold tolerant or cool season crops will store best between 33 and 35F or just above freezing and up to 40F. Warm season crops sensitive to chilling injury (tomatoes, cucumbers, etc.) are typically stored at temperatures above 50F unless processing, cooking, or eating will occur shortly after removal from storage. The temperature needs to be actively monitored and managed and will vary with the quantity of produce in the space.

#### **Humidity**

Most root and leafy crops will store best at high humidity (+80%) or moisture levels. Root crops like carrots need to be stored in some moist medium to maintain quality. Some crops like onion, garlic, and winter squash store better at low humidity level (less than 60%). Moisture may need to be added by wetting the floor or walls with water depending on the construction methods.

## Ventilation

Reasons for ventilation include: 1) removal of heat of respiration, 2) replenishing the oxygen supply, 3) removing volatile compounds from the produce that may effect flavor or sprouting like ethylene. The greater the density or amount of produce in the space, the more ventilation is needed. Ventilation or air tubes need to be planned prior to construction and place during construction.

Common storage categories are 1) cold dry, 2) cold moist, 3) cool dry, 4) cool moist.

([source](#))

The University of Alaska Fairbanks Cooperative Extension Service in cooperation with the United States Department of Agriculture offers the following chart with storage information for specific produce:

<b>Vegetables</b>	<b>Temp F.</b>	<b>% Humidity</b>	<b>Storage Time</b>	<b>Comments</b>
Beets	32°	90–95	3 months	Leave 1-inch stem
Brussels sprouts	32°	90–95	4 weeks	Wrap to avoid drying
Cabbage	38°	90–95	4 months	Late maturing varieties **
Carrots	32°	90–95	5 months	Top leaving ¼-inch stem *
Cauliflower	32°	85–90	3 weeks	Wrap in leaves *
Celery	32°	90–95	4 months	Dig with roots ***
Chinese cabbage	32°	90–95	2 months	Dig with roots ***

Cucumbers	50°	85–90	3 weeks	Waxed or moist packing *
Kohlrabi	38°	90–95	3 months	Trim leaves *
Onions	32°	55–60	8 months	Dry for two weeks
Parsnip	32°	90–95	6 months	Top leaving ¼-inch stem *
Potatoes	38°	85–90	8 months	Pack in boxes unwashed.
Squash	60°	55–60	3 months	Winter types, leave 2-inch stem
Tomatoes	60°	55–60	8 weeks	Single layer in covered boxes
Turnips	38°	90–95	3 months	Waxed or moist packing *
Small fruits	32°	85–90	7 days	

\* Pack in moistened sawdust or sand.

\*\* Wrap in clean newspaper.

\*\*\* Replant in moist sand.

(Source: <http://www.uaf.edu/files/ces/publications-db/catalog/anr/HGA-00331.pdf>)

### **Organization of Your Root Cellar**

You can't just place everything together and hope for your food to all remain fresh. Some items cannot be stored together because they release a gas called ethylene. Ethylene gas is a ripening agent, which hastens the decomposition of other produce.

For example, apples, pears, and tomatoes produce high amounts of ethylene and should be placed higher than other foods, and near vents if possible. They should not be placed near potatoes and carrots, as the ethylene will cause those to spoil rapidly.

Some produce will easily absorb odors from items with strong smells. Strong smelling foods like cabbages or turnips can be wrapped in newspaper to help contain the smell. Onions store well when hung in mesh bags.

Some produce is stored more successfully if cured at a temperature of 80-90 degrees F for 10 days before being placed into storage:

- Winter squash
- Onions
- Potatoes
- Garlic

Two small investments for your root cellar should be a thermometer to measure temperature and a hygrometer to measure humidity. This way you can ensure your conditions are right to keep your food fresh for the longest possible time.

### **Resources**

The following resources provide specific information on how to create and maintain your own root cellar:

[The Old Farmer's Almanac](#)

[Mother Earth News](#)

[Michigan State University](#)

[Root Cellaring by Mike and Nancy Bubel](#)

[Modern Homesteaders](#)

## **Conclusion**

We are fortunate in this day and time that there are so many choices for food storage techniques. Whether you want to ensure that your family has a short-term food supply to rotate into your kitchen pantry or made the decision to invest in long-term storage, there is a technique that's perfect for you.

Start now, while supplies are readily available, to collect the tools and supplies needed, and practice while back-up is as close as the nearest grocery store. You may one day have to rely on your skills and supplies for your very survival.

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