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Living Without Refrigeration

A. Food Storage and Seasonal Eating for the Gardener

Eating Seasonally: Really eating year round from your garden means eating seasonally. This can be a big shift for many people, both in paradigm and in diet. Most of us are so used to seeing the same vegetables in the produce aisle year round, that it doesn't occur to us that to have them there in the winter means they came from somewhere half way around the world where the seasons are opposite ours. To eat seasonally we need to let go of the idea of eating a fresh green salad every day of the year, or a ripe tomato any time we want one. That said, there are many possibilities for delicious and nutritious fresh food year round, it may just look a bit different than we're used to.

Different options for year round eating:

Extending the season with greenhouses and hoop houses: Many crops, especially greens do well in an unheated greenhouse over the winter. Try lettuce, mache, corn salad, kale, parsley, etc. It is important to remember though that most will not actually grow much in the winter, so give them time to grow to a good size before the cold weather sets in.

Harvesting directly out of the garden year round: Certain crops are hardy enough to survive in the ground all year round. Many roots will survive and can be dug so long as the ground isn't frozen- heavy mulching will help with this. Also, many of the brassicas will hold under very cold conditions (Kale, Collards, Brussels Sprouts, Rutabagas). If you have gopher problems, in ground root storage may not be an option.

Storage Crops: Many vegetable crops are ideally suited for long term storage without a whole lot of effort from you. Some are best stored in moderately cool and dry environments, such as in a unheated room of the house or in cooler areas of heated homes. Most of the alliums (garlic, shallots, and bulb onions) and winter squash are in this category. Many roots and a few other crops are ideally suited to the cooler, damper conditions in a root cellar. If you don't have a root cellar, similar conditions can be achieved with pits, buried trash cans or refrigerators, clamps (piles of alternating layers of roots, earth and straw), or unheated outbuildings.

Remember- roots are nature's way of storing plant energy and nutrition through the winter. This makes them an ideal winter food for the savvy gardener. Good storage roots include: beets, burdock, carrots, celeriac, endive, Hamburg parsley, Jerusalem artichokes, parsnips, rutabaga,

salsify, scorzonera, and turnips. Potatoes and leeks, while not technically roots, are also great keepers and fit into this category. Not all roots keep equally well, so eat the poorest keepers first.

Forced Greens: Not all storage roots are meant to be eaten themselves, some, such as endive are meant to be dug up so that they can be brought out of the cellar as needed and encouraged to grow greens. This can also be done with beets, carrots, celeriac, and parsley.

Perennials for early spring eating: Perennials like asparagus come up earlier in the spring than crops from seed and can help you get through the spring hunger gap.

Other preservation techniques:

Fermenting: Fermenting can be a great way to preserve certain foods for a limited time, while also increasing their nutrition and adding probiotics to your diet. Traditional fermented food include pickled vegetables, kraut, kimchi, and more.

Drying: Many juicy crops are well suited to drying. Sun drying is more energy efficient than canning or freezing, destroys less nutrients, and finished produce takes up less room. We dry herbs, tomatoes, peppers, celery, summer squash, beans, and grains. Dried vegetables are wonderful in winter soups and cook up quickly.

Freezing: If you have the means freezing can be a nice way of keeping some vegetables in near fresh conditions. Most veggies should be blanched briefly before freezing, labeled well and packaged in individual use containers for ease of use.

Canning: Canning takes up a lot of time, space and energy, and the prolonged cooking destroys some nutrients. At the same time, it is one of the only methods that preserves food, virtually unchanged, for a number of years. We do a lot of canning and eat canned good almost every day throughout the cool season.

With most foods, you have a choice whether to put a little more time into the processing pre storage or post storage. For example, canning whole tomatoes, or canning ready to use tomato sauce. Do you have more time to make it all at once in the summer, or to make your sauces as needed throughout the cooler months? We find that putting the extra time in at the time of processing helps us get the best use out of our preserved food, but this may not be the case for you.

Thinking Seasonally:

Summer- Heaps of options for garden eating. This is the time to be putting away food for other season as well!

Fall- Many summer crops are dying back, but there are still some hardy ones that remain. Fall plantings of brassicas take the spotlight. Begin transitioning to kale salads, cooked greens, more root vegetables and squashes, dried beans and grains.

Winter- Once the snow flies storage crops and canned, dried and frozen goods become staples. Salads of shredded cabbage and grated carrots, beets, celeriac and kohlrabi. Hearty root bakes and baked squashes. Soups with canned tomatoes, roots, or dried vegetables. Apples from the root cellar.

Spring- Most stored crops (roots, squashes, onions) are starting to sprout and/or rot by spring. Eat what remains, plus canned, dried or frozen stores. Soon, overwintered kale and broccoli will put out leaves. Asparagus will sprout. Many edible garden weeds come on before planted crops. Harvest chickweed, miners lettuce and mallow for fresh salads.

B. Root Cellaring

Why Root Cellar?

- Self reliance
- Economics
- Health
- Lessening Environmental Impact
- Connecting with natural cycles

The Root Cellar: Can be as simple or as fancy as you have time and resources for
In Garden Beds Mulch well for later harvest. Gophers and mice can cause problems!

Pit or Sunken Container (Trash Cans, Refrigerators, Culverts, etc)

Outbuildings (protect against freezing, try digging a pit in a dirt floored outbuilding!)

Unused room or porch that can be kept cold and damp

Above ground, partial buried or side hill

Below ground

Basement, or part of basement

Remember: Ease of use is essential! You can have the most functional root cellar in the world, but if it is a pain to get to when you are ready to make dinner, you won't use it!

The Veggies: Grow your own, or buy from local farms

Good keepers:

Roots: beets, burdock, carrots, celeriac, endive, hamburg parsley, jerusalem artichokes, parsnips, potatoes, rutabaga, salsify, scorzonera, sweet potatoes, turnips

Not roots but also good keepers: winter squash, cabbage, certain tomatoes, tomatillos and ground cherries, apples

Alliums: Leeks, garlic, onions, shallots.

Growing for the Root Cellar: A slightly different approach

Planning: Think about crop rotation and succession planting. Save space for later crops! One estimate is that at least 1/3 of growing space should be saved for storage and late season crops. A

good technique is to plant early crops (ie spinach, baby greens, radishes, early carrots or beets, etc) or cover crop to hold the space/build soil.

Timing: Mid-summer maturation makes for poor keeping, so plant fall/winter crops so that they will be ready for harvest just as the first frosts arrive. (It is harder to get things to germinate in ground during heat of June/July so be prepared) Harvest and pack storage crops away promptly.

Bed spacing: Give later crops more space in beds than you would main season crops. Lower light levels in late season mean plants need more growing room to get the same amount of light. Also, more space means bigger roots. Bigger roots have less surface area and store better in root cellar.

Soil: Some root crops need the soil to be loose and deeply worked to produce well, especially carrots, parsnips and potatoes. Balanced soil nutrition is important for veggies to keep well. Amend soil differently for late season crops: too much nitrogen = watery lush growth that is less cold hardy. Seaweed in liquid or powdered form is good for increased cold hardiness. Be sure to have good drainage for storing roots in ground all winter.

Harvest: Be gentle, use fork to loosen soil and be careful to avoid cutting or bruising. Sort well - only store perfect produce. Do not wash or otherwise damage skin.

Packing: Most must be kept moist (see below), but ventilation also important. Storage mediums: damp sand, soil or sawdust or nothing if humidity is just right. Remember, some veggies (onions, sweet potatoes, potatoes) need to be cured before storage.

Storage Conditions: Cold and damp: beets, burdock, carrots, celeriac, leeks, hampshire parsley, jerusalem artichokes, parsnips, rutabagas, salsify, scorzonera and turnips. Cool and less damp: kohlrabi, potatoes, cabbage, apples, endive. Coolish and dry: onions, garlic Moderate and dry: winter squash, sweet potatoes

*Good air flow is crucial for keeping of winter squash and all alliums except leeks. Squash do well on slotted shelves in a single layer. Alliums are best in baskets or crates or hung in braids or woven citrus bags.

Note: presence of apples will tend to accelerate spoiling.

Maintenance: Check and sort produce occasionally. "One rotten apple spoils the bunch"

Remember: Stored roots and vegetables are still living plants, breathing and using their stored resources to stay alive. They can't go on indefinitely. Plan to use the poorest keepers first and be prepared for things to start sprouting or beginning to rot by spring.

Three critical factors for root cellars: Temperature, Humidity, Ventilation

Temperature: 34-40 degrees ideal for most things. This is why timing of harvest is important. Best for produce to be packed away in cold space ASAP after harvest. Root cellars often aren't cool until late fall. Crucial that temps don't go below freezing. Most veggies that have been solidly frozen rot after thawing. Block off ventilation when temps drop to prevent root cellar freezing!

Humidity: One of the biggest problems with long term storage is desiccation. Produce may not rot but will get soft + shrivelly and lose all appeal if it dries out. Maintain high humidity by keeping open water containers in cellar, splashing down walls with water, or keeping storage medium moist. Also critical that produce not actually be wet or sit in water, Gravel floors for good drainage, drainage holes in crates, etc

Ventilation: Good air flow decreases mold and rot and allows root cellar to cool properly in fall. Maintain ventilation with vents to outside, not stacking crates right against wall or each other,

cross current circulation. Ventilation to outside not always possible when temperatures too warm or too low outside.

Eating from the root cellar: Requires shift in habits and mind set. This takes time.

Some good things to try: Grated salads for fresh veggies in winter, Forcing greens, Grated veggie pancakes, Root roasts, Lots of soups and stews, Grated produce in quick breads, etc. Get creative!

Recommended Reading

Encyclopedia of Country Living, Carla Emery

Forager's Harvest and Nature's Garden, Samuel Thayer

Foraging the Mountain West, Thomas Elpel

Four Season Harvest and Winter Harvest Handbook Elliot Coleman

Full Moon Feast, Jessica Prentice. Chelsea Green Publishing

Growing Vegetables West of the Cascades and Gardening When it Counts Steve Solomon

Pickled, Potted, Canned: How the Art and Science of Food Preservation Saved the World, Sue Shephard. Simon and Schuster Paperbacks

Preserving Food without Freezing or Canning, the Gardeners and Farmers of Terre Vivante.

Root Cellaring, Mike and Nancy Bubel

The Resilient Gardener, Carol Deppe

Wild Fermentation and The Art of Fermentation, Sandor Katz