

SPRING 2022

# The Gitigaaning Almanac:

A GARDEN AND SOIL  
CONSERVATION GUIDE

## GARDENING TIPS & TRICKS

Gitigaan information  
compiled just for you!

## SEASONAL ADVICE AND IDEAS

Keep track of your growing  
and harvest season!!







## A Word from the Authors

This document was prepared and created through the combined effort of Fond du Lac Band employees, community members, and AmeriCorps VISTAs (Volunteers in Service to America). The words in this document reflect our hands-on experience in the Northern Minnesota region, as well as knowledge from experts and teachers alike. We hope you can use this document as a starting off point for a rich, life-long learning journey with your gitigaan; one that ultimately helps care for both you and the earth.

**For questions about the programs and facilities highlighted in this guide, please contact:**

- Erika Reséndiz - Bimaaji'idiwin Producer Training Program | Erika.ResendizAlonso@FDLTCC.EDU | 218-878-7141
- Kaitlyn Walsh - Gitigaan Program | KaitlynWalsh@FDLREZ.COM | 218-348-5281
- Noah Kruger - Gitigaaning | NoahKruger@FDLREZ.COM | 715-817-6917
- Elizabeth Dean - Na'enimonigamig | Naenimonigamig@FDLREZ.COM | (218) 590-6263

**The cover page of this document captures busy bees with their pollen baskets on a Gitigaaning sunflower.**

# Table of Contents

## Introductions

---

- 1 Acknowledgements
- 2 Introduction
- 3 Learn More

## Soil 11

---

- 12 Soil Vocabulary
- 13 Types of Soil
- 15 Soil pH & Testing
- 17 Building Soil
- 20 Compost
- 27 Cover Crops
- 28 Crop Rotation

## Garden Planning 36

---

- 38 Garden Planning Tips & Tricks
- 39 Pollinator Gardens
- 40 Nutrient Runoff Dangers
- 41 Beginner Garden Plot
- 63 2020 Seed & Plant List

## Plants 101 4

---

- 6 Plant Types
- 7 Plant Hardiness Zones
- 9 Plant Container Cleaning

## Growing Methods 29

---

- 30 Extending the Growing Season
- 31 Geodesic Greenhouses
- 32 Raised Beds
- 33 High Tunnels
- 34 Orchards

## Seeds 49

---

- 50 Types of Seeds
- 51 Seed Saving
- 52 Seed Saving Tips & Tricks

# Table of Contents

## Continued

---

### **Planting** **53**

---

- 54** Germination
- 55** Indoor Seed Starting
- 71** Direct Seeding

### **After Planting Care** **64**

---

- 65** Mulching
- 66** Watering Tips & Tricks

### **Weed & Pest Control** **67**

---

- 68** Weeds
- 70** Pests
- 71** Invasives

### **Harvest** **73**

---

- 74** Harvest Tips & Tricks
- 76** Food Storage Methods

### **Calenders**

---

- 83** 2022 Lunar Calendar
- 85** 2022 Monthly Calendars

### **Resources**

---

- 109** Sources



## Acknowledgments

We are deeply grateful for the support and contributions given towards the compilation of this booklet. This is a living document tailored to the Fond du Lac Band of Lake Superior Chippewa's community and region and will be continually updated with each year, harvest, and growth experience.

We would also like to thank the United States Department of Agriculture's Natural Resources Conservation Service, the Administration for Native Americans, and the Fond du Lac Tribal Council. This publication was made possible with their generous support.



# Boozhoo from the Food Sovereignty Initiative

The Fond du Lac Band's Food Sovereignty Initiative works to increase access to culturally-appropriate and traditional foods, reclaim local and sustainable food systems, and combat hunger in order to encourage environmental conservation and sustainable economic development in the community. FSI discusses and collaborates on a variety of local food efforts, which include gardening, harvesting, food processing and preservation, cooking and nutrition education, higher education opportunities, grant writing, program development, and food policy work. The group consists of members from Resource Management, Human Services, Education, Planning, Operations,

Tribal Council, Legal, Fond du Lac Tribal and Community College Environmental Institute and Community Experts/Mentors.

Some of the main programs represented are 13 Moons, The Gitigaan Program, Bimaaji'idiwin Producer Training Program, Farm to School, Ojibwe School Youth Gardening Program, Supplemental Nutrition Assistance Program, and the Statewide Health Improvement Partnership.

“

**You can't say  
you're sovereign if  
you can't feed  
yourself.**

”

Elizabeth Hoover, *Indigenous Food Sovereignty in the United States*



**Scan this QR code with your smartphone camera or visit [tinyurl.com/kamer2p6](https://tinyurl.com/kamer2p6) for access to the Food Sovereignty Initiative's weekly newsletter!**

The Fond du Lac Band's Food Sovereignty Initiative's mission is to ensure community access to culturally-appropriate, sustainable, and healthy foods. This newsletter is a regularly distributed source of information about FSI's meetings and offers access to community workshops, job postings, and program happenings!



...and more!



The Fond du Lac Band's Gitigaan Program consists of 12 weeks of gardening education, provides 140 Fond du Lac households with over 40 varieties of seeds and plants yearly, has tilling services available, provides an extensive gardening support network, and ends the season with a fall feast celebration!

**Scan this QR code with your smartphone camera or visit [tinyurl.com/264knwms](https://tinyurl.com/264knwms) to visit the Gitigaan Program's Facebook page and learn about class opportunities, seed giveaways, and more!**





# PLANTS

# 101

## THE BASICS ABOUT PLANTS

“

**In some Native languages, the term for plants translates to 'those who take care of us'.**

”

ROBIN WALL KIMMERER,  
BRAIDING SWEET GRASS

Laying the groundwork for learning about plant life!

## Meet Your New Friends

Caring for plants can be one of the most rewarding things to do in life—both physically and mentally! Aside from the fresh foods you harvest and can incorporate into your diet, gardening also gives you a chance to de-stress and get physical exercise. Get ready to say "aloe" to a whole new world!



A striking  
Gitigaaning  
marigold

# Plant Types

## Annuals

Plants that fall in this category grow, bloom, seed, and completely die in the span of one growing season. In order to continue growing your favorite annual, seeds must be saved and replanted each and every year.

Examples of annuals include: corn, melons, peas, squash, and sunflowers, as well as many types of common ornamental flowers.



## Perennials

Perennials are longer-lasting plants that live for 2+ years, letting growers enjoy their blooms and produce for several seasons. Perennials encourage soil health by maintaining living roots year after year, as the root system is what allows perennials to grow back after each winter. Examples of perennials include: chives, asparagus, and walking onions, as well as some traditional medicinal plants like echinacea, sage, and sweetgrass.

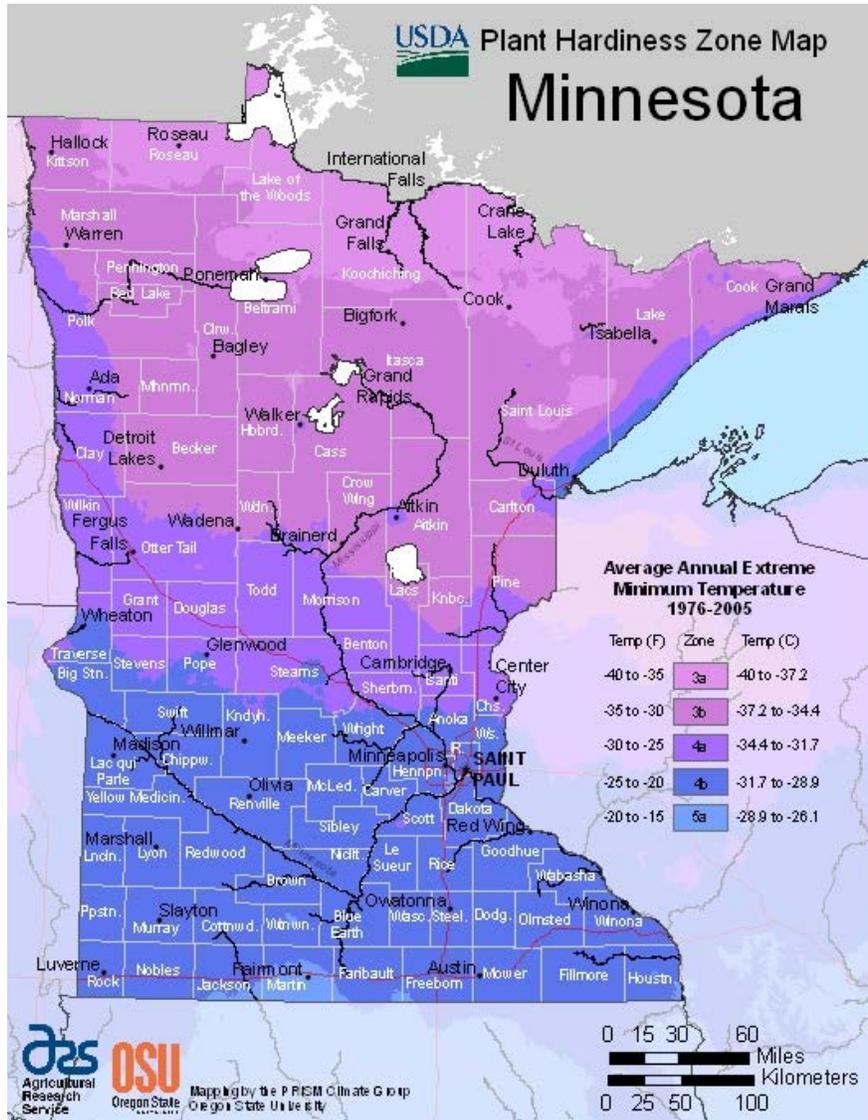
## Biennials

Biennials are plants which take 2 years to complete their life cycle. The first year of a biennial's life is used to establish their roots, stems, and leaves; the second year sees flowering and seeding as the plant completes its cycle. Examples of biennials include foxgloves, dill, and celery.



# Plant Hardiness Zones

## WHY THEY MATTER



According to the USDA Plant Hardiness Zone Map, the Fond du Lac Reservation is located in a 3b zone<sup>1</sup>. This means that the area's average annual extreme cold temperature can be as low as -35°F!

Neighboring areas can expect slightly warmer lows: Duluth and other Lake Superior shoreline towns may only see temperatures as low as -25°F!

Familiarizing oneself with the local climate's plant hardiness zone is important knowledge for any gardener or producer. Hardiness zones are important because they are an established, simple guideline for knowing whether or not a specific plant can survive in a particular climate.

# Plant Hardiness Zones

CONTINUED

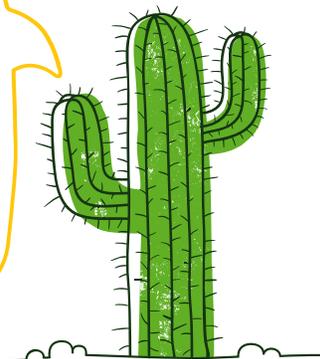
## What can I plant in my zone?

For northeastern Minnesota, the average annual minimum temperatures are so extreme that many common perennials and trees may struggle outdoors.

For example, a cactus plant rated for zone 11b (50 °F) means that cactus cannot survive any temperatures colder than 50 °F before dying. Therefore, an 11b cactus would be a very poor perennial planting choice for Fond du Lac's 3b zone!

**A rule of thumb is that you can plant anything rated lower than your zone, but nothing rated above it!**

**THESE  
TEMPS ARE  
"SNOW"  
LAUGHING  
MATTER!**



## Planting Smart

However, don't despair just yet if you have your eyes on growing orchids, succulents, or fruit trees! There are ways to grow less-hardy plant species even if you live in a very cold zone!

Pictured above is Bimiginogaan, Gitigaaning's geodesic growing dome. Learn more about season extension by flipping to p. 30.

# Starting Fresh

## How to Properly Clean Tools and Containers

Like people, plants can also get sick! Pathogens like bacteria, fungi, and viruses can cause disease and may even kill your plants. Often, you can avoid disease by properly washing your garden tools and containers.



Mildew on a delicata squash

### When should I clean my tools and containers?

- In the fall before you put them away for winter.
- In the spring before you use them if they were not cleaned in the fall.
- After working with an infected plant.
- After you use your tools at another garden site and before you use them at home.

### How to clean tools & containers:

- Scrape off all soil and plant debris with a stiff brush, high power water hose, and/or putty knife.
- Once the big chunks are off, fill a bucket with hot water and soak your tools. Add **biodegradable** soap for extra cleaning power!
- Be sure to rinse and dry your tools to prevent rust.
- If you have any plants with fungal or bacterial problems, disinfect your tools with bleach-free disinfectant wipes to lessen the chance of spreading the disease.
- If you are cleaning tools and containers out in the field, make sure to dispose of waste water properly. **NEVER** dump bleach or non-biodegradable soap water near/on growing areas; instead, properly dispose of it by flushing it down the drain!





## HEALTHY SOIL FOR HEALTHY GROWING

“

**Soil is a living and  
dynamic system that  
is fragile and  
perishable.**

”

RALPH SNODSMITH

Soil is the foundation upon which our gardens grow,  
so a gardener's first goal is to create healthy soil.



# Soil Vocabulary

## ORGANIC MATTER:

Any plant or animal material, dead or alive, present in the soil, either naturally or added by the gardener.



## COMPOST:

Organic matter biodegraded purposefully by a gardener. Think: rotated compost bins filled with food scraps and lawn clippings.



## HUMMUS:

Organic matter decomposed naturally by the soil food web (microbes, insects, worms, and fungi living in healthy soil). Think: natural decay of falling leaves on the soil's top layer.

## MULCH:

Any material, organic or nonorganic, spread on the ground to mitigate environmental impacts on the soil and plants.



## AMENDMENTS:

Natural ingredients added to a soil to improve its structure, fertility, and water-holding ability or to adjust soil acidity.



# Types of Soil

---

Understanding soil type is important as it affects water and nutrient retention!



## Sand

Light and easy to dig through, sandy soils warm up quickly in spring. Their coarse, gritty textures allow water to drain through quickly, causing dryness and washing away important nutrients. Lost nutrients can be replaced and the soil made more water-retentive by adding organic matter.

## Loam

Loam retains moisture and nutrients well, making it the ideal soil for all types of growing. It is darker than sandy soil (due to its humus content) and is crumbly rather than gritty. A handful rubbed between the fingers will feel smooth. When moist it should not clump or lump together.



## Clay

Clay soil retains nutrients well, but is slow to warm up in the spring. Heavy to work with, clay will often stick to tools and boots. Pressed between your fingers, it will lump and clump. This density is what causes clay to drain slowly, causing puddles after a heavy rainfall.

## Hardpan

Hardpan is an impenetrable layer of soil found naturally in some arid regions, as well as new construction sites where the topsoil has been stripped away or compacted by heavy equipment. Hardpan may call for additional drainage, and may need a professional to break up and amend the soil.



# What Kind of Soil do I Have?

## An At-Home Soil Texture Test

---

1. Pick up a handful of soil and lightly wet it.
2. Squeeze the soil in your hand.
3. Open your hand.

### DOES THE SOIL HOLD TOGETHER?

**YES****NO**

If the soil falls apart,  
you have SANDY soil.

**Poke the  
soil.  
Does it  
crumble?**

**YES****NO**

You have a form of  
LOAM soil.

If it holds firm, it  
is CLAY soil.

# Soil pH

Soil pH measures the acidity or alkalinity of your soil and determines the nutrients available. A neutral soil has a pH of 7; anything above this is alkaline, while anything below is acidic. Most plants prefer a pH range of 6 to 7. However, all plants are different and some may require grow better in more alkaline soil. Research plant needs for optimal growing conditions.

Most fruits and vegetables grow best in a slightly acidic soil with a pH of 6.5, while some, like squash and tomatoes prefer an even lower pH of 5 to 5.5.

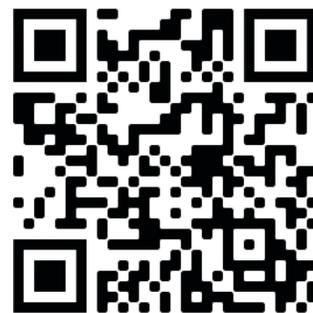
## Soil Testing

Soil testing is an important first step to starting a garden as it provides insight specific to your land and allows you to interpret what your soil needs to flourish!

- It is important to be intentional about what goes into your soil, as excess nutrients can cause negative environmental impacts.
- For accurate comparisons, you should sample at the same time each year and collect multiple samples throughout your growing space.
- Soil tests measure the organic matter, pH, and levels of phosphorus and potassium in your soil.
- It is best to sample in the early spring or late fall.

## How to Take a Soil Sample:

1. Collect a 'slice' that represents the entire 0-6 inches of topsoil.
2. Collect multiple samples from field or growing area.
3. Visit the University of Minnesota's Soil Testing Laboratory by visiting [tinyurl.com/2p8hvnkr](https://tinyurl.com/2p8hvnkr) or scanning the QR code below and following the submission instructions!



# MY SOIL TESTS :

Spring 2022 Soil Test Date:

---

Fall 2022 Soil Test Date:

---

Results Received Date:

---

Results Received Date:

---

**Results:** (pH, mineral levels, etc.)

---

---

---

---

---

---

---

---

**Results:** (pH, mineral levels, etc.)

---

---

---

---

---

---

---

---

**Soil Health Plan:** (incorporating soil test results into my growing season)

---

---

---

---

---

---

---

---

---

---

**Soil Health Plan:** (incorporating soil test results into my growing season)

---

---

---

---

---

---

---

---

---

---



## Building Soil

As plants grow, they take nutrients from the soil. These nutrients must be replaced, otherwise your plants will grow poorly and the soil will eventually be depleted. Whenever possible, soil should be revitalized and its stocks of nutrients replenished by incorporating soil amendments.



Feeling the soil  
of Gitigaaning

# 5 Principles of Soil Health

Follow these rules to keep your soil healthy and happy!

1

KEEP SOIL COVERED

2

MINIMIZE SOIL  
DISTURBANCE

3

INCREASE CROP  
DIVERSITY

4

KEEP LIVING ROOTS  
IN SOIL

5

INTEGRATE  
LIVESTOCK



# Building Soil

## Organic Matter & Soil Amendments

**Organic matter, humus or compost**, are usually the first recommendations for resolving soil problems as they add valuable nutrients, improve soil structure, increase water retention and improve fertility of the land.

Amendments are additives that change and improve the availability of plant nutrients and structure of the soil. Often, soil amendments are mixed into the soil well before planting, in order to thoroughly affect the pH, soil texture, and field fertility. This can include compost, lime, blood meal, bone meal, worm castings and more. Each amendment provides different nutrients and will depend on what your plants need!

### Our Favorite Soil Amendments

The soil in all of the Gitigaan plots have been tested for pH levels and organic content. Each plot has different needs, therefore they require different amendments.

Some amendments we have used at Gitigaaning are:

- Potash - Potassium salts that raise the pH of the soil.
- SulPoMag - A fertilizer containing Sulfur, Potassium, and Magnesium that will not alter the pH of the soil.
- Lime - Made of ground limestone, it adds Calcium Carbonate and Magnesium Carbonate to the soil, raising the pH.
- Manure- We add composted manure from Litchke Farms.



#### Garden Myth



It is not recommended to "clean out" your garden each fall by raking or blowing away leaves. In nature, the organic material that falls to the ground decomposes in situ, improving soil health and acting as a natural soil amendment itself!



## Why Compost?

Home composting speeds up the natural process of decomposition, converting yard trimmings and food scraps into a rich, life-giving mixture that your plants will love! Full of nutrition and living organisms, compost will help improve soil structure and reduce your need for fertilizers and even water!



An egg shell  
creating an early  
spring green space!

# What Can I Compost?

Like any recipe, your compost pile needs the right mix of ingredients. The key materials are nitrogen-rich “greens”, carbon-rich “browns”, water, and air.

## YES!

Shredded Newspaper  
(Black and White Only)

Nitrogen Rich Fruit  
and Vegetable  
Scraps

Greens  
Straw

Biodegradable  
Tea Bags

Sawdust

Twigs

Dried Grasses  
Coffee Grounds

Weeds And Leaves

Eggshells

Faded Flowers

Leftover Plants At The End  
Of The Gardening Season

## NO!

Pet Feces

Meat, Bones, Grease, Foods with  
Oils, Whole Eggs, and Dairy  
Products as these can attract  
rodents and other animals

Badly Diseased  
Plants

Weeds Containing Seeds

Insect-Infested  
Plants

\*Despite being organic, these  
options should not be  
composted because the  
compost pile may not heat up  
enough for proper  
decontamination!

The smaller the organic matter, the faster they will break down. Use a shredder or power mower to chop up leaves and small twigs before adding them to your pile.

Garden  
Tip



# Home Composting: Equipment

---



## COMPOST BIN

Although you can compost in a simple pile, containers or bins will help your compost retain heat and moisture, and stay neat and tidy. It's easy to begin with a single bin system. As materials are added and mixed together, the finished compost settles at the bottom of the bin.



## FOOD SCRAPS & ORGANIC MATERIAL

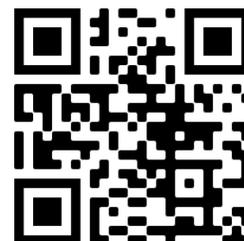
The beauty of home composting is that you can create rich soil from food waste you would typically throw out! See the opposite page for what you can and can't throw in your compost bin.

## DIY Compost Bins:

Bins can be built from pallets, scrap lumber, chicken wire, or concrete blocks. There are plenty of styles and structures you can choose from, depending on how much space and compostable materials you have.

If you DIY, it is important to create a structure that is about 3 to 5 feet in each direction. If your structure is too small, you will not create enough heat, but if it is too large, you will not allow enough circulation of air and water. In addition, you should incorporate openings that allow you to add water and remove finished compost.

See some great DIY compost bin examples by the UMN Extension by visiting [tinyurl.com/22dc4d9r](https://tinyurl.com/22dc4d9r) or scanning the QR code with your smartphone!



# Home Composting: Process

---



## Pick Your Location

Put your compost pile close to where you will use it, with access to water and good drainage. You will want to avoid windy areas that could dry out your compost, but should allow for partial sunlight to help heat the pile.

## Build Your Compost Layers

1. Start with an 8-10 inch layer of 'browns'; dry leaves, dry wood chips, or shredded newspaper. These coarse carbons aid in air circulation.
2. Alternate greens and browns, adding nitrogen and carbon materials. Make layers about 4 to 6 inches thick.
3. Water your pile to the point of being moist, but not soggy.
4. Repeat these green and brown layers until the pile reaches a height of approximately five feet, watering each time you add new layers.



Your pile will also get water from rain, as well as the moisture in the greens. If the pile gets too wet, you can turn it more frequently to dry it, or add more dry brown materials to soak up the excess moisture.

### Garden Tip



# Home Composting: Process

---



## Water It

Like all living things, your compost pile needs water and air to thrive. Water helps microbes grow and move through your pile, while turning it allows air to move along decomposition and minimize odors. Wet the pile as needed and make sure to keep it moist but not soggy.

## Turn It

Once you've built your pile, bacteria, fungi, and insects will get to work breaking down your organic materials. As things decompose, your pile will get hot on the inside and may even begin to steam! However, once the center cools, you will want to turn the pile. In about a week, your compost will be ready for turning. Use a shovel to mix up the layers of green and brown, moving materials toward the center of the pile. Do this once or twice a month, breaking up any clumps you find.



## Maintain Your Compost Pile

Continue to turn your pile regularly in order to keep your pile's microorganisms happy. Also, remember to water your compost pile regularly to keep it moist. When finished, your compost pile will be about half its original height, consist of dark, crumbly material, and will have a pleasant, earthy smell!

### Garden Tip



A pile that is not mixed often will take longer to "cook"! Turn your compost pile regularly to speed up the process of decomposition.

# Home Composting: Best Practices

---

Mixing finished compost into your garden helps improve your soil. Adding compost to light, sandy soil will help retain moisture and nutrients. Adding it to heavy soil like clay, will make the ground more porous, improving drainage. However, it is important to keep in mind that adding too much compost can cause problems for the health of your plants and the environment.

Here are some important things to note about compost application:

- Test your soil regularly to make sure you are not over-applying certain nutrients.
- Due to the high level of phosphorus and calcium, avoid adding too much animal-based composts (manure, for example).
- **Do not rely on compost as your primary or only soil building strategy.** Cover crops are another great option to add nutrients to your soil.
- Make sure that any compost you apply to your garden has fully completed the composting process.
- The compost should resemble airy loam soil, with no chunks of un-decomposed pieces.
- Compost that is over 100° Fahrenheit is likely not finished. A finished compost pile will be around 70° Fahrenheit!



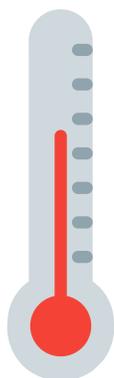
# Home Composting: Common Problems & Solutions

## PROBLEM: THE PILE DOESN'T HEAT UP

If the pile is new, you may need to add more "greens" to it.

Lack of heat could also mean your pile needs watering.

If your pile is old, and you've already turned it a few times, congratulations! Your compost may be finished. Check the texture of your compost; if it is dark, crumbly, and has a pleasant, earthy smell, it's ready!



## PROBLEM: THERE'S AN ODOR OF AMMONIA

Your pile may be too wet! Turn the pile to let in air and allow circulation.

Another option is to add "browns" to your compost pile, as ammonia odors often indicate there are too many "greens" present.

## PROBLEM: THE PILE IS ATTRACTING SCAVENGERS LIKE RACCOONS AND MICE

Do not add food wastes with oils, meats, or dairy. The odors from these can attract pests.

Keep other food wastes covered and in the middle of the pile. Covering the bin might help.



## Cover Crops

Cover crops are “green manures”, as they provide organic matter and nutrients when turned into the soil. A helpful garden technique, cover cropping improves soil structure, chokes out weeds, and helps prevent soil erosion. A few prime cover crop examples are hairy vetch, clovers, some legumes, rye, and oats. Notice that many of these cover crops are also pollinators and some are even edible!



A field of rye  
cover crop



# Crop Rotation

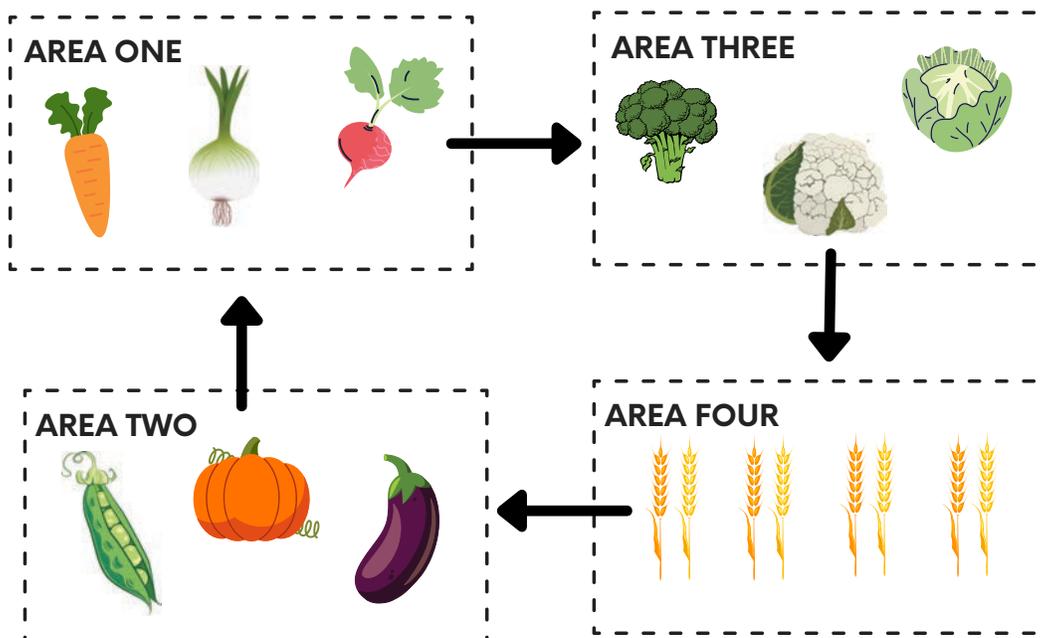
Crop rotation is the practice of changing planting areas from year to year, based on plant groups. Good crop rotation practices reduce disease and balance nutrients.

## Divide Plants Into Groups

- Root Crops: onions, turnips, carrots, garlic, beets, radishes, parsnips, rutabagas
- Legumes & Fruit Crops: cucumbers, tomatoes, squash, eggplant, peppers, melons, beans, peas
- Cole & Leaf Crops: lettuce, greens, herbs, cabbage, spinach, brussel sprouts, cauliflower, kale, kohlrabi, broccoli
- Cover Crops: examples include vetch, clover, beans and peas; grasses such as annual ryegrass, oats, rapeseed, winter wheat and winter rye; and buckwheat.

## Rotate Yearly

Imagine your garden separated into four areas. Each successive year, you would move each plant group one spot clockwise. For example, you would plant your root crops in Area One your first year, then the next year you'd move them to Area Two, and the third year they would go to Area 3. The fourth year they would return to where they started. Rotating crops is a great way to reduce disease and balance nutrients in your soil!



# GROWING METHODS

## ACCESSIBLE GROWING FOR EVERYONE

“

Changes in latitude  
mean changes in  
attitude!

”

JIMMY BUFFET

Learn how to grow your favorite plants and veggies no matter how cold it gets.



# Extending the Growing Season

## Minnesota-Approved Methods

Minnesota's relatively short growing season and cold weather can be intimidating to beginning and advanced gardeners alike. However, there are a variety of techniques and methods that can be easily implemented into any garden space to ensure an extended, thriving growing season!

Luckily, the Fond du Lac Reservation has real-life examples of all the extended growing methods highlighted in this booklet. If you have any questions that are not answered in the following pages, please reach out to our Food Sovereignty Initiative team for help!



**A watermelon enjoying the benefits of a season-extending high tunnel!**

## Geodesic Greenhouses

Geodesic domes—and their more rectangular cousins, greenhouses—are some of the most **permanent growing solutions** for Minnesota’s temperamental climate.

Bimiginogaan, Fond du Lac’s own geodesic dome, is located at Gitigaaning, the Place of the Gardens. Built in 2020, Bimiginogaan has a cooling pond, reflective wall insulation, and fans to regulate temperatures year round. These add-ons allow Bimiginogaan to stay an average of 20–30° warmer than outdoors.

In 2021, Bimiginogaan grew over 335 pounds of produce, with much of this bounty shared with the Fond du Lac Ojibwe School and Elderly Nutrition Program.

Bimiginogaan also serves as a seasonal extension space for seedlings to escape frost and cold temperatures. However, Bimiginogaan has yet to experience a full winter season and our farm team is still learning and experimenting with different techniques!



### Pros & Cons

Made from rigid, triangle-shaped plastics, geodesic growing domes are structurally designed to handle inclement weather conditions such as strong winds and snow, all while maintaining a warm and stable indoor temperature. The dome shape allows for even sunlight penetration throughout the day, while optional additions such as cooling ponds, reflective wall insulation, and irrigation systems further ensure stable temperatures throughout the seasons. In addition, grow domes can house raised beds as well, which allow gardeners to combine growing techniques and further maximize their harvests.

While geodesic greenhouse have a variety of positive benefits, they also suffer some drawbacks, such as **expensive construction costs** and high, humid temperatures during peak summer. In addition, our Bimiginogaan experience seems to show that once temperatures dip below freezing, December–February growing is not feasible without an external heating source. Ultimately, the decision to build a geodesic dome must be made with the needs and capacity of each individual gardener in mind.



## Raised Beds

In areas with poor soil or limited outdoor space, raised beds are an excellent option that can seriously improve the growing experience for producers and gardeners.

### Pros & Cons

The beauty of raised beds comes from their ability to be **customized**. With a few basic tools and building skills, raised beds can be custom-made to fit the exact height, shape, and width required by any unique space. They can even be set on casters for the ultimate moveable growing container for tricky spots that may not receive a lot of sunlight.

#### The benefits of raised beds include:

1. **Soil Quality Control** - The Northeast Minnesota region struggles with poor, rocky, sandy soil. Raised beds allow gardeners to choose what kind of soil they want in each individual bed, effectively mixing-and-matching ideal growing environments! To learn more about soil types, take a look at p. 13 for a detailed explanation.

2. **Ergonomics** - Another perk of raised beds is just that—they're raised! Their above-ground construction means users don't have to constantly bend over to work. Depending on their finished height, raised beds are also more accessible to those who use garden seats and pads, wheelchairs, or walking aids. Just remember that the **wider** a bed is constructed, the **more leaning** one must do in order to tend to the inner area.

#### 3. **Weed and Pest Protection** -

During the construction process, raised beds can be outfitted with a variety of defenses against pernicious weeds and voracious pests. Lining the bottom of a bed with chicken wire or steel mesh and cardboard is often enough to stop even the hungriest of animals and hardiest of weeds!<sup>2</sup>

Despite their benefits, raised beds come with the associated construction costs of high-quality wood, tools, and materials, as well as requiring basic building knowledge. Keep in mind some woods may be cheaper, but not last as long, and green treated woods will leach harmful chemicals into the soil.

For more information, reach out to the Gitigaan Program's to learn how to create your own raised bed!



Bimaaji'idiwin Gitigaan High Tunnel

## High Tunnels

High tunnels, also known as hoop houses, are a cheaper, more **temporary alternative** to domes and green houses. The Fond du Lac Band has high tunnel examples in all three districts (Cloquet, Sawyer, and Brookston). Cloquet's high tunnel focuses on seed saving with the Grandmothers House Immersion Language Program, while the Sawyer high tunnel focuses on utilizing raised beds for elders!

### Pros & Cons

Built from poles and thick, retractable plastic sheeting, high tunnels are easy to install, especially since they don't require a foundation. The flexible walls work to protect crops from frost and pests when let down, while allowing air circulation on hot days if rolled up. Additionally, this wall style is ideal for seed saving as it can protect sensitive plants from cross-pollination.

Due to their slightly more temporary nature and size, high tunnels may often

have seeds sown directly into the ground. The height of a standard high tunnel also allows growers to bring in heavy machinery that would not typically fit in a greenhouse, such as tillers, tractors, or mowers, thereby circumventing the need for raised beds or container growing.<sup>3</sup> However, the same easy installation process that may attract users also has its drawbacks, particularly with the durability of materials and overall structure. In the same vein, the lack of temperature controls can lead to **overheating issues** if a high tunnel is not consistently monitored.

Despite these issues, high tunnels or smaller-scale hoop houses, can significantly increase food and plant production—all while requiring minimal installation time and upkeep.

A thriving high tunnel example can be found at the Bimaaji'idiwin Garden behind the Ojibwe School! Inside you can find abundant swamp milkweed, squash, onions, and more!

# Orchards

Crisp apples, juicy pears, scrumptious plums, delicious cherries—these are just a few of the tasty fruits that come to mind when we think about orchards. Being able to head out to the backyard to pick fresh fruit right off the branch is a tantalizing dream for many a home gardener; with the prices of fresh fruit, it's no wonder why! Whether you're thinking about starting an orchard or simply looking to incorporate your favorite fruit tree in your garden, careful consideration and planning must be taken in order to ensure you get the best results for all your time and effort.

## Pros & Cons

Orchards and individual fruit and nut trees can be a high risk, high reward adventure. Established, healthy trees can provide literal tons upon tons of produce over their lifespans, giving growers decades of fresh fruit and nuts. Mature trees also provide **shade and privacy** for homes, as well as creating an aesthetically pleasing landscape that **encourages pollinator and bird habitats**.

However, with these amazing long-term benefits, comes the very real risk of long-term mistakes! Without serious, careful planning, improperly planted fruit trees may never be able to fruit, despite receiving all the care and attention in the world. This can be due to micro-

climate conditions, strong winds, poorly draining soils, or a variety of other things. In addition, some fruit trees need at least two specimens in order to pollinate, otherwise they will never bear fruit!

Before purchasing a fruit tree, you **must make sure the tree variety is suited to your hardiness zone**. In Northeastern Minnesota, special consideration must be paid to ensure new fruit trees are well suited to freezing temperatures, and are able to withstand late spring frosts. Otherwise, you may end up with trees that never fruit due to frosty weather killing spring blossoms!<sup>4</sup>

Yet, there are a variety of tree species that actually require cold weather to fruit! These trees need **chill hours**, which refers to a certain length of time where temperatures must range between 32 to 45 degrees F. Trees that require a high amount of chill hours include apples, pears, plums, cherries, black walnut, hazelnuts, and pecans. These tree species tend to be a good fit for our chilly Northern Minnesota climate.<sup>5</sup>

While it may be pie in the sky to dream of lemon and orange orchards here in the Northland, there is still hope. If you really need a tropical touch in your garden, consider container planting dwarf varieties of your tree of choice and moving it indoors when cold weather arrives. No matter your situation—and with the right planning—you can find a tree that suits you!



## Our Orchards

The Fond du Lac Band has orchards in all three of its districts, each one filled with apple, plum, and cherry trees. The varieties growing in our orchards include Zestar!®, Haralson, and Frostbite Apples; Mount Royal and Pembina Plums; and North Star and Evans Bali Cherry trees, among many others!

### Planting Your Own Fruit Tree:

- Plant the roots in loose soil, at about 2 feet deep.
- The best time to plant in the northern Minnesota region is the spring.
- Mounding soil around the tree base will cause water to run off and away from the roots. A better way to water your tree is to create a shallow ring around the base, two to three feet wide in diameter, to help hold the water in place.
- Avoid using mulch around young or newly planted trees. Their root systems are not yet developed, and the mulch will hold moisture up high, causing the roots to grow shallow. It may also lead to mildew, damaging the tree's root system.
- Trim any small spouting branches that grow up from the ground or low on the tree trunk. The tree wastes energy and resources on these limbs, and can cause it to resemble a bush rather than a tree.
- For newly planted trees, it is important that they receive an average of 5 gallons of water each week, and more for sandy or loose soils that have a hard time holding moisture.



# GARDEN PLANNING

SEED STARTING,  
DIRECT SOWING,  
AND MORE

“

**There are no  
gardening mistakes,  
only experiments.**

”

JANET KILBURN PHILLIPS

We've prepared our soil and designed our garden;  
now it's time to get our hands dirty with the planting process!

## How to Plant Your Best Garden

Everyone can garden! Whether it's an acre plot or a windowsill herb garden, you can supplement your meals with garden-fresh produce with just a little hard work and effort. If you've never had truly fresh produce, you will be amazed by the sweet, juicy flavors and vibrant textures. There's absolutely nothing quite like fresh veggies, especially if you grow them yourself—which you can!



Cabbages at the  
Bimaaji'idiwin  
Gitigaaning  
Demonstration  
Garden

# GARDEN PLANNING TIPS & TRICKS

1.

## CHECK YOUR SEEDS

Always do a germination test before seed starting. This ensures a better success rate for your plants!<sup>6</sup>

2.

## CHOOSING A PLOT SIZE: START SMALL!

Remember: It's better to be proud and happy of a small garden than be frustrated and overwhelmed by a big one!

3.

## PLANT MORE THAN YOU NEED

It's always a good idea to sow more seeds than you need in case of disease, non-viability, or any number of things nature can throw at you. Soften any losses by planting more than you need and pruning at a later time. Bonus: extra seedlings can be given as gifts or composted back in to maintain soil health!

4.

## PLAN WHAT YOU PLANT

Start by choosing easy plants that are also productive. For example, Minnesota has a shorter growing season than other regions, so planting a field full of melons can lead to a smaller harvest, since they prefer a long, warm growing season!

# Pollinator Gardens

## Benefits of Native Pollinators & Plants

Pollinators like birds, bees, butterflies, and many insects are very important for our ecosystems, as they carry pollen from one plant to another leading to fertilization and the production of fruits and seeds. Despite their extreme importance, the high use of pesticides has caused many pollinators to become threatened or endangered.

### How You Can Help:



Choose to grow plants native to your region. For Fond du Lac, these include various sunflowers, salvia, black-eyed susan, monarda (bee-balm) daisy, coneflowers, sneezeweed, zinnias, and more!



Choose nectar and pollen-rich flowers in a range of shapes, sizes and colors. This will help attract a variety of species and encourage garden health resiliency. Remember : Diversity is the key to life!



Do **NOT** use pesticides or insecticides, including mosquito spray, on your property. Even in small amounts, these chemicals can be lethal to any pollinators that visit your garden.



The 2021 Bimaaji'idiwin  
Producer Training  
Program's Gitigaaning Plot

# Selecting Your Garden Plot

## The Dangers of Nutrient Runoff

Gardens and compost piles should not be located too close to creeks, streams or lakes. Soil amendments that help garden plants grow can cause an overgrowth of algae when the nutrients are washed into a water body by rain. Excessive algae growth uses much of the oxygen in the water, causing fish to die and disrupting the food chain for people and other organisms.

Using soaker hoses will help avoid runoff during regular watering. Planting a rain garden or buffer strip between the fertilizer source and the water body can give storm water a chance to soak into the ground. A berm to slow down storm water flow or a swale to redirect it can also be effective.

---

## Rain Gardens

### Learn More

For more information on rain gardens, and to learn how to create your own, please visit [tinyurl.com/58y5amz7](https://tinyurl.com/58y5amz7) or scan the QR code with your smartphone's camera.



# Beginner Garden Plot

The Gitigaan Program has designed a beginner garden layout that makes it easy for gardeners of any age or experience level to produce a beautiful, edible garden! Created with the Gitigaan Program's Annual Seed Giveaway in mind (see p. 43 for the coordinating 2022 Gitigaan Seed and Plant List), this 20' x 30' plot design allows home gardeners to maximize their green spaces for a harvest season full of veggies, squashes, fruits, and edible pollinators!



**Garden Tip**



The 2021 Gitigaan Program experimented with a possible cover crop: purslane. This edible weed helped reduce water evaporation, keeping crops hydrated for longer, and helped control other, more aggressive weeds!



Bimaaji'idiwin Program's Demonstration Beginner Garden Plot - June 2021

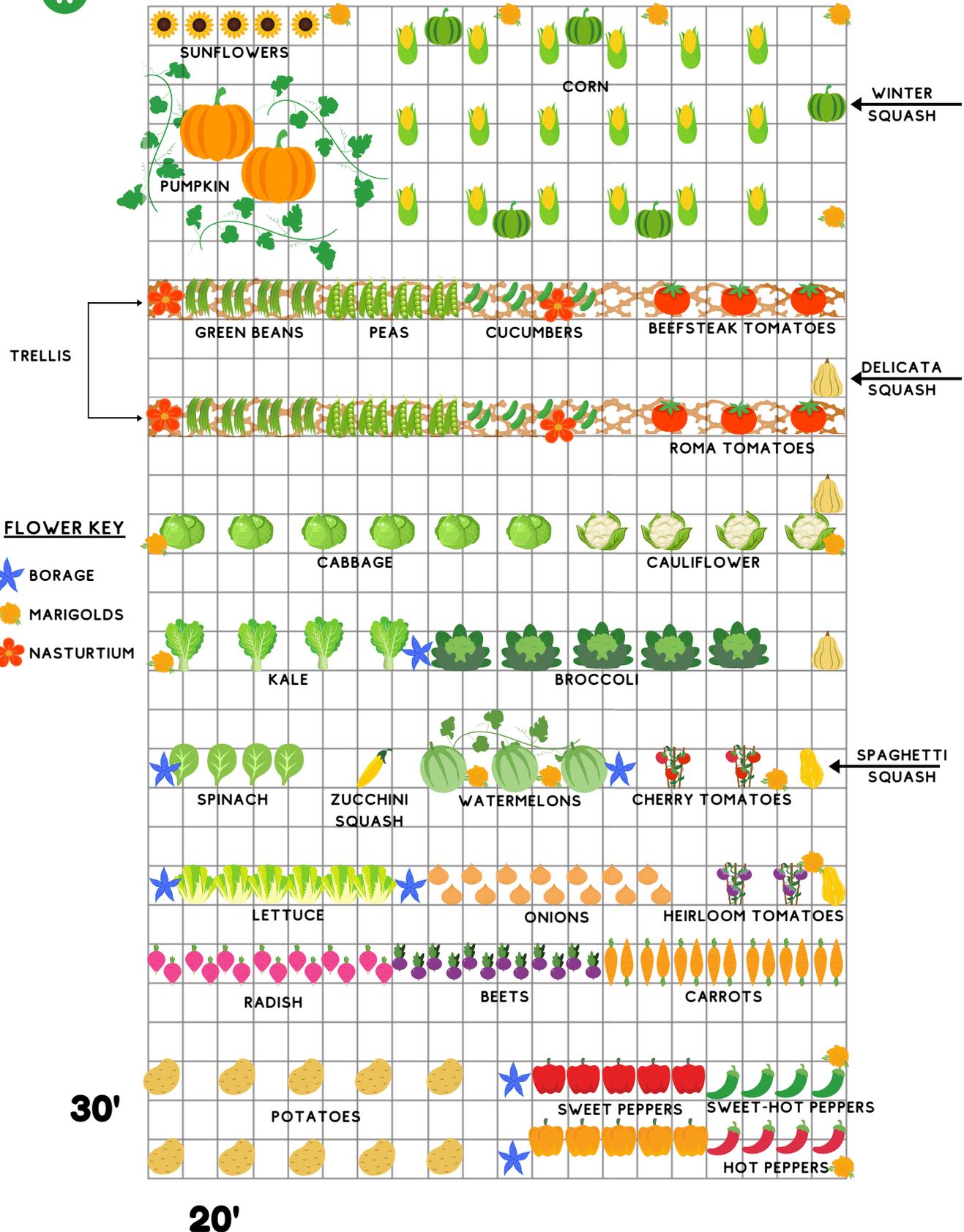


Bimaaji'idiwin Program's Demonstration Beginner Garden Plot - August 2021



# GARDENING MAP

Gitigaan Program Seed Giveaway 2022



# 2022 FDL Gitigaan Seed and Plant List

---

The FDL Gitigaan Seed Giveaway contains mostly organic seeds from Seed Savers Exchange, High Mowing Organic Seeds, and Johnny's Select seeds.



**Sweet Corn - Golden Bantam** - Sow seeds outdoors 4" apart @ 1" deep after danger of frost has passed. For good pollination and full ears, plant in blocks of 3-6 rows instead of one long row. Thin seedlings to 8" apart. Corn is a heavy feeder and does best in well-drained, fertile soil with plenty of water. Days to Maturity - 70-85 days.



**Spinach - Bloomsdale** - Sow seeds outdoors 1" apart, 1/2" depth. Thin seedlings to 6-8" apart. Spinach grows best in cool weather and should be planted in early spring or late summer to produce a fall crop. For best yields, harvest continually and make successive plantings every 10 days. Days to Maturity - 39-60 days.



**Melon - Sweet Granite Melon** - Melons love heat. Sow seeds 1" deep, outdoors in full sun and in 12" diameter hills (6-8 Seeds per hill) after danger of frost has passed and soil has warmed. Space hills 6' apart in all directions. Germination occurs in 4-10 days. Can also be started indoors 2-3 weeks before last frost. Great to be grown in High Tunnel. Days to Maturity - 81-90 days.



**Melon - Petite Yellow Watermelon** - Melons love heat. Sow seeds 1/2" deep, outdoors in full sun, and in 12" diameter hills (6-8 Seeds per Hill) after danger of frost has passed and soil has warmed. Space hills 8' apart in all directions. Seeds will germinate in 4-10 days. Can also be started indoors 4 weeks before transplanting out. Days to Maturity - 65-80 days.



**Radish - Early Scarlet Globe** - Sow seeds 1" apart, 1/2" deep, rows 12" apart outdoors as soon as soil can be worked in spring. Thin 2"-3" apart. Plant in full sun. Successive plantings can be made every 3-4 weeks throughout summer and fall to provide a continual harvest. Days to Maturity - 20-28 days.



## 2022 FDL Gitigaan Seed and Plant List

---



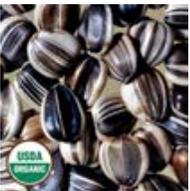
**Radish - Watermelon Radish** - Sow seeds 1" apart, ½" deep, rows 12" apart outdoors as soon as soil can be worked in spring. Thin 2"-3" apart. Plant in full sun. Successive plantings can be made every 3-4 weeks throughout summer and fall to provide a continual harvest. Days to Maturity - 50-60 days.



**Summer Squash - Yellow Crookneck** - Sow seeds outdoors 12-24" apart, ½-1" deep, and rows spaced 5-6' apart after danger of frost has passed or start transplants 3-4 weeks before planting date. Days to Maturity - 50 days; harvest at 6" diameter and every other day for best productivity.



**Sunflower - Autumn Beauty** - Sow seeds outdoors 6" apart, ½" deep after last frost. Sunflowers prefer full sun to light shade and well-drained rich soil. Provide support for tall plants. Plants grow 5-8' tall. Days to Maturity - 60 days.



**Sunflower - Titan Sun** - Sow seeds 6" apart, ½" deep, rows spaced 24-36". outdoors after last frost. Sunflowers prefer full sun to light shade and well-drained rich soil. Provide support for tall plants. Plants can grow 12' tall with large 18-24" heads. Days to Maturity - 75 days.



**Carrot - Dragon** - Directly sow seeds ¾ -1" apart, ¼-½" deep, rows spaced 16-24" apart from early spring through mid-summer. Thin to ¾-2" depending on desired size. Days to Maturity - 70 days.



**Carrot - Deep Purple** - Directly sow seeds ¾ -1" apart, ¼-½" deep, rows spaced 16-24" apart from early spring to mid-summer. Thin to ¾-2" depending on desired size. Days to Maturity - 73 days.



**Carrot - Yellowstone** - Directly sow seeds ¾ -1" apart, ¼-½" deep, rows spaced 16-24" apart from early spring to mid-summer. Thin to ¾-2" depending on desired size. Days to Maturity - 70 days.

## 2022 FDL Gitigaan Seed and Plant List

---



**Carrot – Narvik** – Directly sow seeds  $\frac{1}{4}$ - $\frac{1}{2}$ " depth, rows spaced 18-24" apart as soon as soil can be worked in the spring through mid-summer. Thin to 1-2" depending on desired size. Days to Maturity – 70 days.



**Kale – Red Russian Kale** – Directly sow seeds 2-4" (baby) or 12-18" (full-size) apart,  $\frac{1}{4}$ - $\frac{1}{2}$ " deep, rows spaced 18-30" for full-size. Harvest leaves when desired. Cold weather tolerant. Days to Maturity – 21 (baby) -50 (full-size) days.



**Lettuce – New Red Fire** – Directly sow seeds  $\frac{1}{8}$ " depth, in rows spaced 12-18" for full size in the spring as soon as soil can be worked. Harvest leaves when desired size and sow lettuce every 3 weeks for continual harvest. Days to Maturity – 55 days.



**Lettuce (Loose Leaf) – DMR Salad Blend** – Sprinkle in bands and cover lightly with about  $\frac{1}{8}$ " Soil. Days to Maturity – 28 days. Plant every 2 weeks for continuous harvest. Harvest by cutting near the bottom, lettuce will grow back for second harvest.



**Beet – Early Wonder Tall Top Beet** – Sow seeds 2-4" apart,  $\frac{1}{2}$ -  $\frac{3}{4}$ " depth, rows spaced 12-24" outdoors as soon as soil can be worked in spring. Thin 2-4" apart, depending on desired size. Days to Maturity – 45 days.



**Flower – Jewel Mix (Nasturtium)** – Sow seeds 8-12" apart,  $\frac{1}{2}$ -1" deep outdoors two weeks before last frost. Thin to 8-12" apart. Plants prefer average moist soil. Water during dry spells, but do not fertilize, as this will promote more foliage than flowers. Flowers are edible and have a peppery taste, can use on salads or added to jams. Days to Maturity – 55 - 65 days.



**Runner Bean – Painted Lady Improved** – Sow seeds outdoors 2" apart, 1" deep, rows spaced 24-36" after danger of frost has passed and soil and air temperatures have warmed. Harvest frequently for increased yields. Flowers are edible. Days to Maturity – 68 days.

## 2022 FDL Gitigaan Seed and Plant List

---



**Bush Bean – Provider** – Sow seeds outdoors 2" apart, 1" deep, rows spaced 20-36" after danger of frost has passed and soil and air temperatures have warmed. Harvest frequently for increased yields. Days to Maturity – 50 days.



**Bush Bean – Goldilocks** – Sow seeds outdoors 2" apart, 1-2" deep, rows spaced 20-36" after danger of frost has passed and soil and air temperatures have warmed. Plant every 2-3 weeks for a continual harvest through mid-summer. Harvest early and frequently for increased yields. Days to Maturity – 52 Days.



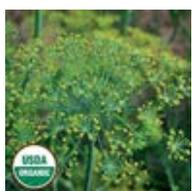
**Snap Pea – Sugar Snap** – Peas thrive in cool weather. Sow seeds 2-3" apart, ½-1" deep, outdoors as soon as soil can be worked in spring. Seeds will germinate in 7-14 days. Double rows of peas can be planted on each side of a trellis. Days to Maturity – 58 days.



**Cucumbers – Cool Customer** – When growing plants on a trellis, sow 2 seeds/ft., 1/2" deep, in rows 6' apart. Thin to 12" apart. Train plants to climb the trellis with an initial guidance. Once fruit bearing begins, pick daily. Can also be started indoors 3-4 weeks before transplanting. Cucumbers benefit from steady moisture. Days to Maturity – 55 days.



**Cucumbers – Marketmore 76** – Direct sow when soil is warm, at least 70°F. Cucumber seeds will not germinate at a soil temperature below 50°F. Sow 2 seeds per foot, 1/2" deep, in rows 6' apart. Thin to 12" apart. Days to Maturity – 58 days.



**Flower – Bouquet Dill** – Direct seed in full sun at 1/8" deep and thin 8-12" apart. Sow seeds outdoors early in the spring when the ground has warmed. Prefers rich, well-drained soil and a sheltered location out of the wind. Will readily volunteer each year from dropped seeds. Days to Maturity – 45-55 days leaf, 70-90 days seed.



**Flower – Hopi Red Dye Amaranth** – Start Indoors: 6-8 weeks before last frost, transplant 12-18" apart after danger of frost has passed. Requires sun and partial shade.

## 2022 FDL Gitigaan Seed and Plant List



**Flower – Borage** – Direct seed (recommended): Sow seeds as soon as the soil has warmed in the spring. Plant 1/4- 1/2" deep, 3 seeds per foot in rows that are 24" apart. Thin to 12" spacing for individual plants. Edible flower with mild cucumber flavor.



**Flower – Marigold** – Bimaaji'idiwin Garden 2021: (Tagetes spp.) Marigolds are native to Central America. Sow indoors 4-6 weeks before the last frost date or direct sow after last frost. Sow seeds 1/4 inch deep. Ideal germination temperature is 70-75 F. Seeds germinate in 7-14 days. Marigolds prefer full sun, but they will tolerate some shade. Well-draining soil is best. Space plants 8-10 inches apart.

## Growing Information for Plants

### Salsa Garden



#### Mini Bell, Green Bell, Sweet and Hot Pepper Mix

Plant 12-18" apart in rows 12-36" apart. Pick when mature for continuous harvest. Companion Plants: Basil, Spinach, Onion and Tomatoes. Avoid: Beans.



#### Red and Yellow Onions

Plant 6" apart, Harvest when necks become soft and fall over. Companion Plants: Beet, Brassicas, Carrot, Lettuce, Pepper, Tomato. Avoid: Beans, Peas.



#### Cherry Variety, "Beefsteak", Roma, Heirloom Tomatoes

Plant 24-36" apart, 3-8" deep (covering first two leaves). Harvest fruit when ripe. Companion Plants: Asparagus, Carrot, Cucumber, Onion, Pepper, Parsley. Avoid: Corn and Potatoes



#### Fresh Herb

Fresh Herb – Herb Variety, great for adding to your favorite dishes!

## Full Diet Garden (Includes Salsa Garden)



### Brassica Family (Broccoli, Cauliflower, Cabbage)

Plant 12-24" apart in rows 18-36" apart.

Companion Plants: Beets, Cucumber, Lettuce, Potato, Onion.

Avoid: Tomatoes.

Harvest center stalk of broccoli while still green and before flowers start to bud. Side shoots will begin to grow for additional harvest.

Harvest center stalk of cauliflower while still crisp and white.

Harvest cabbage when heads are small and "young" for best storage. Large heads are great for making sauerkraut!



### Zucchini

Space plants 18-24" apart in rows 6' apart. Harvest 2-3 times per week when plants begin to produce. Ideal size is 6-8 inches.

Great roasted, in spaghetti sauce, or in bread.

Companion Plants: Corn, Beans, Nasturtium.



### Buttercup, Spaghetti, Pumpkin, Delicata

Plant 6' apart providing plenty of room for vines to grow.

Harvest before hard frost

Companion Plants: Corn, Melon.



### Potatoes

Trim to have 3-4 "eyes" per piece, set for 3-4 days to let exposed potato crust over creating a barrier for disease/rot. Plant 2-3" deep, 12" apart. When plants are 6-8" tall, hill by pushing soil 4" up and around the stem. Repeat hilling process until plants are 12" tall. Harvest in the fall after foliage has died back.

Companion: Beans, Brassica, Corn, Peas.

Avoid: Tomatoes.



## VARIETIES, SEED SAVING, AND MORE

“

**Seed sovereignty IS  
food sovereignty.**

”

-SHILOH MAPLES

Choosing and caring for your seeds is a crucial step many gardeners may forget about, but is extremely important for garden diversity and health!

# Types of Seeds

## HEIRLOOM SEEDS

Heirloom seeds can also be known as farmer or indigenous seeds. They are created through cross-pollination of plants over the course of 6-10 plant generations. These plants and resulting seeds are typically very well adapted to their local environment.<sup>7</sup>

An example of the heirloom seed process is perfectly



illustrated in the relationship between teosinte and corn. On the left is teosinte, which was domesticated over 6,000 years ago in what is now Central America. Over millennia, the heirloom seed process created the Oaxacan Green Dent Corn we see on the right today!<sup>8</sup>

## HYBRID SEEDS

A "sped-up" version of heirloom seeds! With hybrids, traits are not guaranteed to pass onto the next generation of plants.<sup>7</sup>



## GMO SEEDS

Genetically Modified Organisms, or GMOs for short, are seeds created by extracting, isolating, and splicing plant DNA for specific functions and advantages. This process is expensive and often tied to corporations.





An FDL community member seed saving a sunflower.

# SEED SAVING

## WHAT IS IT?

The goal of seed saving is to retain preferred characteristics of any given plant variety over the span of generations. This is how humans brought corn from its warm birthplace in Central America to the cold, snowy regions of North America—through the careful, painstaking process of growing out and saving seeds over the span of generations. Seed saving allows us to select hardy seeds that can survive different growing conditions; with this careful selection process, our food systems become more resilient and in tune with the surrounding environment.



## Indigenous Seed Keepers Network

### GET INVOLVED

For more information on indigenous seed keeping, please visit the Indigenous Seed Keepers Network by scanning the QR code with your smartphone or visiting [www.iskn.org](http://www.iskn.org)



# SEED SAVING TIPS & TRICKS

---

1.

## START EASY

For beginner seed savers, it may be helpful to start with easy-to-save seeds such as squash, peppers, peas, and beans. Their large seed sizes will make it easier to clean and identify them.

---

2.

## GROW THE RIGHT PLANTS

You must choose open-pollinated seeds in order to continue the seed saving process of plant traits you desire. Hybrid seeds, for instance, are unstable from generation to generation, and can result in plants very different from the parent plant!

---

3.

## PLANT WITH INTENTION

When saving certain seeds, be aware of cross pollination. Planting several types of squash close together, for example, will almost always result in cross-pollination, meaning the resulting squash will likely be hybrids!

---

4.

## STORE SEEDS PROPERLY

Make sure to properly store your seeds after processing in order to ensure their viability. Seeds need dark, clean, and dry environments at cool temperatures for best germination results. Otherwise, your seeds can begin to mold or sprout in storage!



## SEED STARTING, DIRECT SOWING, AND MORE

“

**Don't judge each day  
by the harvest you  
reap but by the seeds  
that you plant.**

”

ROBERT LOUIS STEVENSON

We've prepared our soil and designed our garden;  
now it's time to get our hands dirty with the planting process!

# Germination: Starting Plants From Seed

Seed starting is a great way to start growing earlier in the season. In doing so, you can save money and have much more flexibility in what you grow, despite the short, Northern Minnesota growing seasons!

Which veggies are best for direct-sowing (outside)?	What veggies are best started inside?
Arugula, beets, carrots, corn, cucumbers, beans, kale, kohlrabi, lettuce, okra, onions, parsnips, peas, potatoes, pumpkins, radishes, rutabagas, spinach, squash, chard, turnips, watermelons.	Broccoli, brussel sprouts, cabbage, lettuce, tomatoes, cauliflower, celery, eggplant, peppers, tomatoes.

## IMPORTANT THINGS TO KNOW:

- In order to have a continual harvest during the growing season, use **succession planting** techniques! For example, planting lettuce every 4 weeks can ensure a steady harvest all season.
- Some plants will continue to produce as long as you keep picking their fruits. In fact, harvesting may even promote more growth! Zucchini and peppers are a good example of plants that will continue to bloom and grow if you harvest all season long.

# INDOOR SEED STARTING TIPS & TRICKS

1.

## START SMALL

Not all seeds need to be started indoors. Plants with delicate seedlings, or that take longer to mature, are ideal indoor candidates. A few examples are celery, eggplant, peppers, and tomatoes.

2.

## PICK A LOCATION

Select a location that is protected from pets, cold drafts and excess heat. You'll also want to consider the 'mess' that can come with having plants inside, such as spilled potting mixture or leaking water. The air temperature will need to be 60 degrees or higher, if adequately warmed from the bottom. A basement can be a great location to start your seeds as many seeds need darkness to germinate!

3.

## NOT ALL SEEDS WILL GERMINATE

Don't let this discourage you! Make sure there is good air circulation, plenty of watering (but not too much), and be sure to use sterile soilless mix and clean tools to prevent diseases. Always remember to plant more than you need!

# Indoor Seed Starting: Schedule <sup>9</sup>

---



## EARLY FEBRUARY

Keep indoors for 14-15 weeks: leeks, onions



## MID-FEBRUARY

Keep indoors for 12-13 weeks: celery



## EARLY MARCH

Keep indoors for 10-11 weeks: broccoli, brussel sprouts, cabbage, cauliflower, head lettuce



## MID-MARCH

Keep indoors for 9 weeks: eggplant, okra, peppers



## EARLY APRIL

Keep indoors for 5-6 weeks: tomatoes, basil, kale, nasturtium



## EARLY/MID-MAY

Harden off all plants



Gitigaaning

# Indoor Seed Starting: Equipment

---

## CONTAINERS



Start seeds in small, individual containers. Make sure there are drainage holes at the bottom. If using last year's containers, be sure to sterilize and disinfect to avoid passing on diseases from previous plants. See p. 9 for detailed cleaning instructions.

## CLEAR PLASTIC DOMES OR WRAP



Plastic domes fit over trays of plants, allowing light in and retaining moisture and heat. The domes should be removed when the seedlings are tall enough to touch them. You can also use plastic wrap as an alternative.

## POTTING MIX



A good soil mixture contains two parts loam, one part sand and one part organic matter (i.e. compost). You can make your own or purchase seed-starting mix at a garden store. Whatever you decide, it is best to have lightweight, well draining, and weed seed-free soil.



## SPRAY BOTTLE

Used for watering your seedlings.



## SCISSORS

Used for cutting off excess sprouts.

# Indoor Seed Starting: Process<sup>9</sup>



## 1. Prepare Your Trays & Containers

Add a seed-starting mix. Wet the mix before working to settle the soil and avoid dust. Continue adding more potting mix and water until the tray cells are nearly full.

### Garden Tip



Remember: It's better to plant more than you need rather than not enough!

## 2. Sow Fresh Seeds

Individually place seeds into each container according to package directions. A good rule of thumb is to plant a seed four times as deep as its width!

If using older seeds, or seeds with lower germination rates, plant two or more seeds per cell. Once the seedlings develop leaves, trim all but the healthiest to soil level with scissors. Don't pull unwanted seedlings apart as this could damage the roots of the plant you want to keep.



## 3. Mark Your Containers

Make sure to label all containers and trays with the name of the plant and date it was sown. It may also be helpful to use plant marker sticks if you have mixed-and-matched seeds within trays.

## Indoor Seed Starting: Process

---



### 4. Water

Use your spray bottle to keep the potting mixture moist, not soggy. Seedlings **MUST NOT** dry out any time after germination. Once sprouts appear, stop using the spray bottle and start adding water to the base of the tray so moisture can travel up through the roots. Plants drink from their roots, so do not water the leaves. Drain excess water.

### 5. Monitor

When the seedlings are an inch or two tall, remove the cover. They are more likely to survive with good air circulation. Once you begin getting sprouts, it is time you place the seedlings in full sunlight or directly under fluorescent lights.



### 6. Pot-Up

If you are using tray cells, your seedlings will need to be transferred to a larger container to continue growing. Lift seedlings from the bottom using a spoon or plant tag for support and transplant so that roots are buried completely and the stem stands upright on its own.

Pot-up in stages: cell pack, to two-inch pot, to four-inch pot, etc. This ensures the seedling is strong enough to absorb the amount of moisture held by the potting mix.

**Garden  
Tip**



Never hold a seedling by the stem, as this can kill or damage it!



## Indoor Seed Starting: Process (continued)

---

### 7. Hardening Off

Indoor seedlings have not been exposed to full sun, wind, or changing temperatures, so it is important to prepare seedlings for the outdoors by "hardening off":

- Two weeks prior to planting outdoors, move seedlings outside. Cool, cloudy days, or a shady spot during warm afternoons, are the safest options for hardening off. Keep seedlings protected from the wind. **DO NOT** put them in direct sunlight on the first foray, as this will fry them.
- Bring seedlings back inside before temperatures start to drop at night.
- Each day, leave the plants outside a little longer, exposing them to a little more direct sunlight each time.
- Do this for about two weeks. After the two weeks, barring frost, you can keep the seedlings outside until they are ready to be transplanted into the garden.

### 8. Transplant

Once seedlings have been hardened off, they can be transplanted into the garden! Transplant on a cloudy day or late afternoon when the sun has passed its peak.



#### Garden Tip



Even with careful attention, seedlings can still suffer from transplant shock that can last up to several weeks! Continue watering and caring for your plants during this period, and remember: moist, but not soggy!

# Direct Seeding: Equipment

---



## GROUNDBREAKER SPADE/SHOVEL

A pointed metal blade on a long handle is the perfect tool to break new ground when preparing your garden bed.

---



## GARDEN SPADE

With a long handle and relatively flat blade, a garden spade is a practical tool that is best for digging holes or scooping soil.

---



## GARDEN FORK

A garden fork has four flat, stiff tines, useful for turning compost or loosening soil for planting.

---



## BOW RAKE

The stiff, curved tines of a bow rake help spread and level soil, as well as mixing in amendments.

---



## SOFT RAKE

A fan of flexible tines, soft rakes are great for loosening or sweeping soil and mulch.

---



## HOE

Hoes are a three or four-clawed mini-rake with many uses, including breaking up soil.

# Direct Seeding: Process

---

## 1. Prepare the Garden Bed

Start the season off right by doing a soil test prior to purchasing seeds or attempting to transplant! Then you can clean your plot, turn the soil, and begin adding any amendments needed based on your soil test results. See p. 15 for more information.

### Garden Tip



For edibles, select a sunny site, as most produce needs all-day sun to grow!



## 2. Loosen the Soil

Break up clumps and clear away debris like sticks and stones. Turn the soil by digging down 12-18 inches with a garden fork or rototiller to eliminate soil compaction. This gives your plants loose, air-filled soil that can help them grow stronger and faster!

## 3. Amend Your Soil

After breaking up clumps, removing stones and debris, and adding soil amendments, your garden bed may look pretty messy! Rake the surface smooth using your preferred tool in order to create a clean, blank canvas for your seeds!



## 4. Rake

After breaking up clumps, removing stones and debris, and adding soil amendments, your garden bed may look pretty messy! Rake the surface smooth and level using your preferred tool in order to create a clean, blank canvas for your seeds!

## Direct Seeding: Process

---



### 4. Plant Seeds

Following seed packet instructions, plant your seeds in rows or hills to the recommended spacing and depth. Remember: it's always better to plant more than you need!

### 5. Label Your Plants

Mark your planting spots with a stake and label. Markings will let you remember where you need to water, monitor, and avoid stepping during your seedlings' early life stages.

Rocks also make great label markers! With the local rocky soil, you're sure to find interesting rocks to use.

Garden  
Tip



### 6. Water Your Seeds

During these initial stages of growth, it is extremely important you do not wash away or drown the seedlings as they emerge. Water the seeds with a gentle shower about every day so they don't get thirsty! Flip to p. 66 for more watering tips!

Garden  
Tip



Some seeds do better when planted directly outside. Perennial seedlings, especially native ones, are more resilient when exposed to the natural fluctuations of weather.

# AFTER PLANTING CARE

## MULCHING & WATERING

“

“Water is the driving  
force of all nature.”

”

LEONARDO DA VINCI

After planting comes the crucial period of establishing strong and healthy root systems. During this time, it's important to care for your plants through watering, mulching, and weeding.

# Mulching

Mulching is the final planting step in which you apply a layer of organic material to the topsoil.

There are many types of mulches, but the Gitigaan Program recommend using manoomin (wild rice) hulls due to their incredible water retaining qualities and natural weed-seed-free attributes.

Other options are leaf litter, pine needles (great for acid-loving plants), straw, compost, and chipped wood. Grass clippings are generally not recommended due to the possibility of residual chemicals commonly used on turf grass.

Mulching is simple; spread 2-3 inches of material around your plants. Make sure to leave a little space between the mulch and stems/trunks to mitigate the possibility of insects and disease.



## Benefits

1. **Suppresses weed growth** by eliminating or limiting the amount of sunlight that can get through to soil.
2. **Conserves soil moisture** by protecting soil from direct sun and wind exposure.
3. **Regulates soil temperature** by warming soil in the spring, and stabilizing temperatures between day and night.
4. **Slowly and steadily releases nutrients** as the mulch decomposes over time, improving soil structure, water retention and fertility.
5. **Reduces soil erosion** by adding a protective layer to plants.

# WATERING TIPS & TRICKS

**1.**

## WATER SMART

Water the soil, not the plants! Plants absorb water through their roots, so it is important to water near the base of the plant. Watering leaves or flowers wastes water and even increases the risk of disease. Water early in the morning as this lets plants absorb moisture before the heat of the day and discourages mold growth that may develop if plants are left damp overnight!

**2.**

## USE YOUR SENSES

If it is dry, hot, or windy, you will need to water more frequently—perhaps even daily! On cloudy or cool days, as well as weeks with rain, you can water every few days. If your plants look limp or weak, or the soil is cracking and crumbling, it means you need to water more frequently.

**3.**

## SLOW AND STEADY WINS THE RACE

Frequent watering is better than short, heavy watering. Be sure you are applying moisture slowly enough that it does not puddle and run off the soil. Always try to spray rather than soak, and keep soil moist but not soggy. Just like humans, soil can drown if over-watered and die due to lack of oxygen!

**4.**

## DON'T FORGET YOUR SOIL

Proper soil management is an important aspect of water conservation. At the beginning, and throughout the season, amend your soil to increase water retention and porosity. Try using compost, integrate mulching, and see p. 17 for more details!

# WEED AND PEST CONTROL

HOW TO KEEP PLANTS SAFE

“

Nothing ever comes to one, that is worth having, except as a result of hard work.

”

BOOKER T. WASHINGTON





## In the Weeds

Managing weeds is an important task when gardening. Weeds take nutrients and water from the soil and can crowd and steal sunlight from your plants. If they get out of control, they can harbor pests and impede airflow, creating the perfect environment for various plant diseases.

Spread by many sources, weeds can be swept in by the wind, travel through the ground, fall from bird droppings, or even come in on the soles of your shoes. There is no escaping them, only managing!



# WEEDING TIPS & TRICKS

1.

## MAKE TIME

Take time to weed every time you are in your garden, or at least once a week. Weeds will keep coming, but weekly weeding will limit the quantity of water and nutrients they steal from the soil and keep them from crowding your plants.

2.

## PREVENTION IS KEY

Catch weeds before they flower and seed to prevent the spread of future weeds. Once seeds are released, you will only have more weeds to look forward to next growing season!

3.

## HAVE THE RIGHT TOOLS

Wear gloves to protect your hands and use some sort of hoe to help scrape newly emerging weeds without the need of bending down.

4.

## NO SUCH THING AS TOO MUCH MULCH

Mulching will help you battle weed seeds by blocking out sunlight and keeping them from germinating. In addition, any weeds that do come up will be sparser and easier to pick out!

5.

## MEDICINAL USES

Weeds like dandelions and lambsquarter should be pulled, but they don't have to be discarded! In fact, some common weeds are edible, in addition to being traditional medicines!

## Fear No Weevil

Garden pests come in a variety of shapes and sizes. From deer to the tiniest of caterpillars, they all love to eat, and a carefully tended garden can seem like an all-you-can eat buffet! Constant and proper pest control will protect your produce, increase your harvest, and keep unwanted visitors away from your home and garden.



A potato beetle looking to make Gitigaaning home; these little beetles are voracious eaters of potatoes, tomatoes, eggplants, and more!

## WHAT TO LOOK FOR:

### Insects

A lot of the creepy crawlies we see in gardens serve very important ecosystem roles. However, some beetles, aphids, caterpillars, and slugs may cause more harm than good! Cabbage moths, like the one on the right, may look like pollinators but can cause serious damage to crops.

### Animals

While animals are easier to identify, they can still cause a lot of damage in very little time. Keep an eye out for gophers, rabbits, deer, birds, cats, dogs. Animal droppings, including from house pets like dogs and cats, can contaminate produce, so be sure to keep pets out of the garden!

## REMEMBER:

There are **GOOD** bugs and there are **BAD** bugs! A great resource for learning more is the book **Good Bug, Bad Bug** by Jessica Walliser.



Photos courtesy of University of Minnesota Extension

## PESTS BUGGING YOU?

The best way to keep pests under control is by recognizing an issue before it becomes a problem!

Keep an eye on your garden. Check under leaves; if you notice holes or bite marks, identify the problem and research a solution. Put up fencing that is a minimum of 8-feet tall to deter deer, and use plant netting to protect from bunnies, moths, and other pests. Pick potato beetles as soon as you spot them. At Gitigaaning, we use humane traps baited with cat food to catch ground squirrels, before setting them free away from farmland.

The Gitigaan Program is full of resources and can provide advice and support with pest problems. In addition, **FDL's Invasive Species Coordinator, Kelsey Taylor**, can help with any questions you may have regarding invasive species in your garden. Contact her by calling (218) 878-7147 or emailing [KelseyTaylor@FDLREZ.COM](mailto:KelseyTaylor@FDLREZ.COM).

Read on to learn more about invasives in the Fond du Lac region!

# The Bad and the Bug-ly

Invasive species are non-native plants, animals, and other organisms that invade an ecosystem and harm it due to a lack of natural predators. Below are some common Minnesota invasives that need to be eradicated! <sup>10</sup>



## Common Tansy

This European native is toxic to humans and livestock. It also out-competes native plants, especially tree saplings.



## Garlic Mustard

This edible biennial herb overtakes and out-competes native plants, leaving them no room to grow.



## Wild Parsnip

This invasive is very prevalent in the FDL region. Wild parsnip sap is toxic and can cause phytochemical skin burns!



## Emerald Ash Borer

During its larval phase, EABs tunnel underneath the bark of ash trees, weakening and ultimately killing them. Ashes are native to North America and are severely threatened by EABs.



## Jumping Worms

Don't be fooled by their copycat appearance; unlike their European cousin, Asian jumping worms are not beneficial to soil health! These voracious wigglers eat any top soil and leaf litter they find, drastically reducing soil fertility.



## Lymantria dispar

Formerly known as the gypsy moth, this invasive causes most harm during its caterpillar phase, when it uncontrollably munches on over 300 species of native MN trees and plants!

# HARVEST

RECIPES, STORAGE IDEAS,  
AND MORE

“

The food we have  
often taken for  
granted is the food  
that takes the best  
care of us.

”

PATRICIA M. PEREA, THE PUEBLO FOOD  
EXPERIENCE COOKBOOK

Learn about a variety of storage techniques to extend produce shelf-life  
and ways to incorporate traditional foods and practices in daily life.

# HARVEST TIPS & TRICKS

You've done all the hard work and now harvest time has arrived! Read on to see what's the best way to get the freshest produce from the farm to your fork.

---

1.

## KEEP YOUR COOL

High humidity and cold temperatures are recommended for almost all types of harvested produce. Warm temperatures can spoil some fruits and vegetables and quickly wilt lettuce and greens.

---

2.

## KEEP ON GROWING

In order to get multiple rounds of harvest from plants such as carrots, broccoli, radishes, and lettuce, it is important to consistently and regularly pick produce and/or re-sow seeds throughout the season.

---

3.

## WEAR THE RIGHT EQUIPMENT

Some plants can leave residue and irritants on your skin after handling, such as hot peppers. Avoid burning fingers by wearing gloves during pepper harvesting, processing, and seed saving.

---

4.

## STORAGE

Keep in mind that ethylene gas from some fruits and vegetables (a naturally occurring gas that is created as produce ripens) can cause damage to other produce items if stored together! Apples, pears, strawberries, tomatoes, potatoes, peaches and plums should be stored as far away from broccoli, brussel sprouts, carrots, cauliflower, cucumbers, onions, and herbs as possible.<sup>11</sup>

## Harvest Do's and Dont's

Follow these tips to ensure the freshest produce straight from the farm to your fork!

### DO's

Prepare and sanitize your harvest tools and containers ahead of time.

Always keep harvested produce as cool as possible.

Do pick produce at the right size for perfect taste and texture.

Continually harvest produce to avoid plants going to seed!

### DONT's

Never use dirty harvest containers due to risk of contamination!

Never harvest produce that has signs of animal activity or droppings nearby!

Don't pick under-ripe or over-ripe produce.

Don't damage flowers or vines during the harvest process.

## Harvest Tips & Tricks

Continued



The above photo shows freshly harvested pumpkins inside the root cellar of Na'enimonigamig, FDL's community kitchen and cannery. Na'enimonigamig is fully equipped with harvest baskets, cleaning stations, and storage space for community members.





Dehydrated vegetables



Miami Squash



Kimchi

# Food Storage

## How to Extend Your Harvest

Some prolific plants like zucchini squash and tomatoes can make it difficult to keep up with production, no matter how many new recipes you try. Likewise, it can be difficult to come across inexpensive greens, fruits, and veggies during the colder, winter months.

Luckily, there are a variety of ways to prolong your produce's edible lifespan and make sure you always have some homegrown greens and veggies for a wonderful nutrient- and flavor-boost year-round.

The following are some of the easiest and most popular food storage methods:

- 1 FREEZING
- 2 CANNING
- 3 SMOKING
- 4 DEHYDRATING

# Freezing

Frozen produce is an excellent alternative to fresh produce and is a great way to preserve bumper crops of your favorite fruits and veggies! While it may be tempting to simply toss excess, in-season produce into the deep-freeze, there are some very important steps that must be taken first in order to ensure the best flavor and nutrition retention. These steps are called **blanching**.

## TOOLS & INGREDIENTS

- 1 lb. vegetables
- 1 gallon boiling water
- 1 gallon ice water
- 1 wire basket
- ∞ Airtight, Freezer Containers





## DIRECTIONS

1. Clean and cut your vegetables to your preferred shapes or sizes.
2. Bring a gallon of water to boil for each pound of vegetables you will be blanching.
3. Place your vegetables in the wire basket and fully immerse in the boiling water.
4. Wait 1 minute for the water to return to a boil.
5. Begin blanching time.\*
6. Remove from heat and immediately dip basket into freezing water.



**\*Blanching times depend on the vegetable and size.**

**Please refer to the National Center for Home Food preservation for more detailed blanching times by scanning the QR code to the left with your smartphone's camera or visit [tinyurl.com/aw9e4k87](https://tinyurl.com/aw9e4k87).**

# Canning

Canning is a classic storage method that drastically extends shelf life for many foods—from meat and seafood, to veggies and fruits. While canning may seem like an intimidating process, it is an excellent food storage method to have in your skill arsenal, especially when freezer space is at a premium. The canning process preserves food by removing oxygen and creating a vacuum sealed environment in cans.

When properly carried out, this process inhibits the growth of bacteria and mold, thereby preserving foods!

## TOOLS & INGREDIENTS

- ∞ Good quality, fresh foods
- ∞ Mason Jars
- ∞ Ascorbic Acid
- 1 Pressure Canner



# DIRECTIONS

1. Inspect your food and produce. There should be NO mold, decay, or disease. Brown spots and small lesions should be trimmed off.
2. Wash your jars and lids with hot water and soap.
3. Work quickly to avoid unnecessarily exposing prepared foods to air.
4. For some foods, air exposure and the canning process can dull colors and brown fruit. In order to avoid this, keep cut foods such as apples, peaches, pears, mushrooms, potatoes, and apricots in a solution of 3 grams ascorbic acid to 1 gallon cold water.
5. Beware of botulism! Safety precautions must be taken in order to safely prepare and consume canned goods.

**The canning process depends on a variety of factors such as food pH, altitude, and canning equipment used.**

It is **STRONGLY** recommended you take a look at the USDA's [Complete Guide to Home Canning](#). This guide provides all the information you need to safely can your food items.

To access the guide, please scan the QR Code to the right with your smart phone's camera or visit [tinyurl.com/y7uaf7up](https://tinyurl.com/y7uaf7up).



Canned chicken stock from one of the FDL community's small businesses!

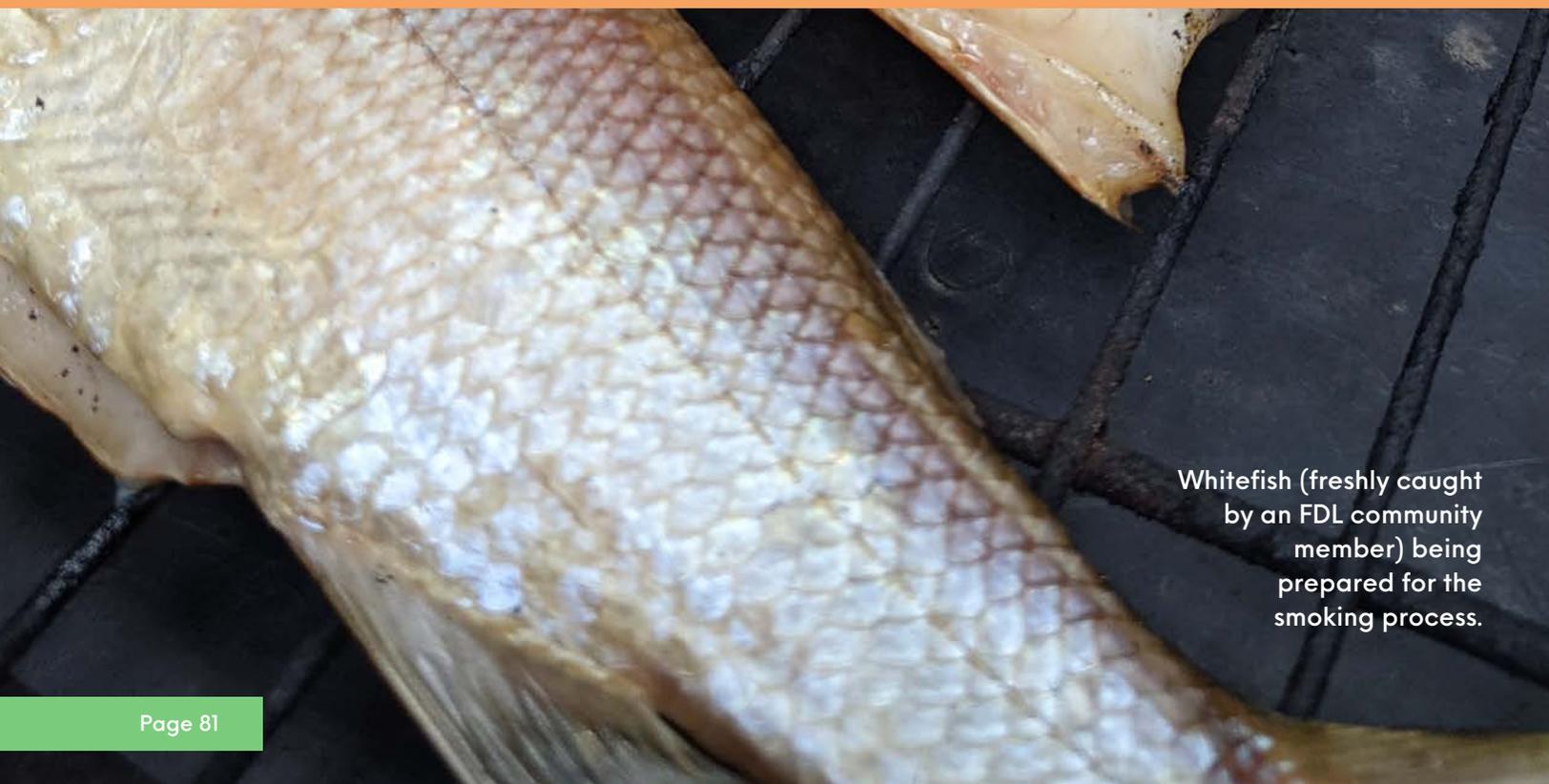




## Smoking & Dehydrating

You can cure and preserve many foods, including meat and fish, by removing or drastically reducing the water content found in the food item. Traditionally, dehydration required a natural heat source, either from the sun or from a fire, which reduced moisture levels to a point that inhibited the growth of mold and bacteria. By placing foods on wooden racks during hot, dry days, fruits and meats could be efficiently preserved for storage

and later use.<sup>12</sup> In the same vein, smoking allowed people to easily control temperatures, which meant foods could be dehydrated faster and more efficiently. Today, there are dehydrator machines available for people who may not have access to a traditional outdoor smoking or drying area. These dehydrators come in a variety of sizes for home use and Na'enimonigamig also has a dehydrator available for community use!



Whitefish (freshly caught by an FDL community member) being prepared for the smoking process.

Dehydrated  
zucchini



Whitefish



## TOOLS & INGREDIENTS

- 1 Electrical Dehydrator
- ∞ Fresh Foods
- 1 Sharp Knife

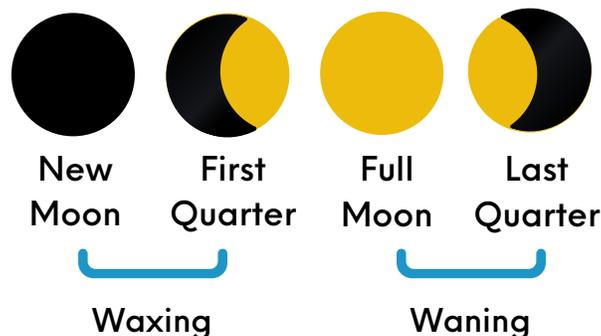
## DIRECTIONS

1. Slice foods thinly in order to ensure even, efficient dehydration.
2. Make sure to remove any spots or blemishes before dehydrating.
3. Place on trays and follow your machine's instruction manual.

# 2022 Lunar Calendar

Coordinating your planting schedule to the lunar cycle can integrate traditional practices with your gitigaan. The gravitational pull between the moon and earth means that interesting patterns like the daily tides can be observed in large bodies of water throughout the course of each lunar cycle. For home gardeners, planting with the moon cycle in mind is believed to positively affect plant growth and can add an extra layer of meaningful garden practices.

Before we continue, below is a quick visual of what the four primary moon phases look like. **Waxing** means the moon is "growing", while **waning** means the moon is "shrinking".



For plant growers, the moon's phases can be used to guide planting schedules. Here are some common rules of thumb when working with the lunar cycle <sup>13</sup>:

- Annuals and above-ground veggies, like beans, marigolds, corn, squash, and borage, should be planted anytime between the waxing of the New and Full Moon.
- Perennials and root vegetables, like echinacea, most herbs, potatoes, beets, and radishes, should be planted anytime between the waning of the Full Moon to the New Moon.



# 2022 Lunar Calendar

January	2nd	9th	17th	25th	31st
February	8th	16th	23rd		
March	2nd	10th	18th	25th	
April	1st	9th	16th	23rd	30th
May	8th	15th	22nd	30th	
June	7th	14th	20th	28th	
July	6th	13th	20th	28th	
August	5th	11th	18th	27th	
September	3rd	10th	17th	25th	
October	2nd	9th	17th	25th	
November	1st	8th	16th	23rd	30th
December	7th	16th	16th	23rd	29th

**Key:**

-  New Moon
-  First Quarter
-  Full Moon
-  Last Quarter

# WANII'IGE-GIIZIS

JANUARY

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## MONTHLY GOALS:

- Start planning for 2022
- Begin seed order list

---

---

---



# NAMEBINI-GIIZIS

FEBRUARY

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

## MONTHLY GOALS:

- Continue planning for 2022
- Continue seed order list

---

---

---



# ONAABANI-GIIZIS

MARCH

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## MONTHLY GOALS:

- Continue planning for 2022
- Continue seed order list

---

---

---



# ZIINZIBAAKWAD-GIIZIS

APRIL

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

## MONTHLY GOALS:

- Prepare your planting space
  - Start some seeds indoors
  - Direct seed others
  - Clean tools/pots if not cleaned in fall
- 
-





# WAABIGONI-GIIZIS

MAY

SUN	MON	TUE	WED	THU	FRI	SAT
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## MONTHLY GOALS:

- Prepare your planting space
- Continue indoor seed starting
- Start transplanting and outdoor planting

- Watch for possible frost

---

---



# ODE'IMINI-GIIZIS

JUNE

SUN	MON	TUE	WED	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

## MONTHLY GOALS:

- Keep up with watering
- Keep up with weeding
- Continue planting

---

---

---



# MIINI-GIIZIS

JULY

SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

### MONTHLY GOALS:

---

---

---

---

---

---



# MANOOMINI-GIIZIS

AUGUST

SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## MONTHLY GOALS:

---

---

---

---

---

---





# WAATEBAGAA-GIIZIS

SEPTEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

## MONTHLY GOALS:

---

---

---

---

---

---



# BINAAKWII-GIIZIS

OCTOBER

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## MONTHLY GOALS:

---

---

---

---

---

---



# GASHKADINI-GIIZIS

NOVEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

## MONTHLY GOALS:

---

---

---

---

---

---



# AABITA-BIBOONI-GIIZIS

DECEMBER

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## MONTHLY GOALS:

---

---

---

---

---

---





# Sources

Visit the sources below for more in-depth information about the topics covered in this guide. The numbers shown here correspond to the superscripts found throughout the document.

- 
- 1 **Minnesota Department of Natural Resources: Plant Hardiness Zones**  
[www.dnr.state.mn.us/climate/summaries\\_and\\_publications/garden\\_temps.html](http://www.dnr.state.mn.us/climate/summaries_and_publications/garden_temps.html)
  - 2 **Homestead and Chill: Raised Beds**  
[www.homesteadandchill.com/raised-garden-beds-pros-cons/](http://www.homesteadandchill.com/raised-garden-beds-pros-cons/)
  - 3 **Natural Resources Conservation Service: High Tunnels**  
[www.nrcs.usda.gov/wps/portal/nrcs/detail/national/organic/?cid=nrcseprd1364702](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/organic/?cid=nrcseprd1364702)
  - 4 **Minnesota Department of Natural Resources: Choosing the Right Tree**  
[www.dnr.state.mn.us/treecare/righttree-shrub.html](http://www.dnr.state.mn.us/treecare/righttree-shrub.html)
  - 5 **Chestnut Hill Nursery: Chilling Hours**  
[chestnuthilltreefarm.com/learning-center/chilling-hours/](http://chestnuthilltreefarm.com/learning-center/chilling-hours/)
  - 6 **High Mowing Organic Seeds: Home Germination Test**  
[www.highmowingseeds.com/blog/how-to-do-a-quick-germination-test-at-home/](http://www.highmowingseeds.com/blog/how-to-do-a-quick-germination-test-at-home/)
  - 7 **Seed Savers Exchange: Seed Types**  
[www.blog.seedsavers.org/blog/open-pollinated-heirloom-and-hybrid-seeds](http://www.blog.seedsavers.org/blog/open-pollinated-heirloom-and-hybrid-seeds)
  - 8 **Native Seeds/SEARCH: Teosinte**  
[www.nativeseeds.org/pages/teosinte](http://www.nativeseeds.org/pages/teosinte)
  - 9 **University of Minnesota Extension: Indoor Seed Starting**  
[www.extension.umn.edu/planting-and-growing-guides/starting-seeds-indoors#when-to-plant-seeds-1178964](http://www.extension.umn.edu/planting-and-growing-guides/starting-seeds-indoors#when-to-plant-seeds-1178964)

# Sources

---

- 10 **University of Minnesota Extension: Invasive Species**  
[www.extension.umn.edu/invasive-species/identify-invasive-species#insects-and-worms-2369612](http://www.extension.umn.edu/invasive-species/identify-invasive-species#insects-and-worms-2369612)
- 11 **The Kitchn: Ethylene**  
[www.thekitchn.com/food-science-ethylene-gas-130275](http://www.thekitchn.com/food-science-ethylene-gas-130275)
- 12 **North Dakota State University: Traditional Jerky Making**  
[www.ag.ndsu.edu/publications/food-nutrition/jerky-making-producing-a-traditional-food-with-modern-processes](http://www.ag.ndsu.edu/publications/food-nutrition/jerky-making-producing-a-traditional-food-with-modern-processes)
- 13 **Almanac: Gardening by the Moon**  
[www.almanac.com/content/planting-by-the-moon](http://www.almanac.com/content/planting-by-the-moon)

**The New Gardener's Handbook: Everything You Need to Know to Grow a Beautiful & Bountiful Garden** by Daryl Beyers

**The Backyard Homesteader: How to Save Water, Keep Bees, Eat From Your Garden, and Live a More Sustainable Life** by Alison Candlin