Martin-Gatton
College of Agriculture,
Food and Environment

# Winter Sowing

## Annuals, Perennials, and Native Seed

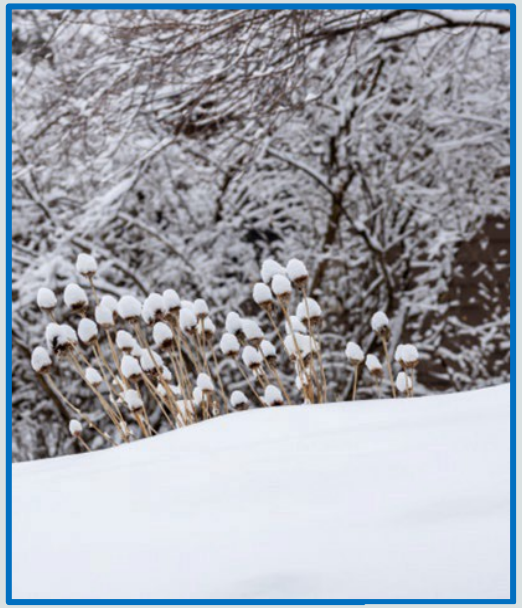
Sharon P. Flynt
Agent for Horticulture
Scott County Cooperative Extension

# Introduction

In many instances as gardeners in a temperate climate, we think of winter as a shut down period of gardening, with the exception of browsing catalogs, and planning next year's spectacular gardens.

We think the earliest we can actually start getting hands in soil is when we start our seeds in doors – the earliest possibly February – to plant outside when conditions are more favorable.

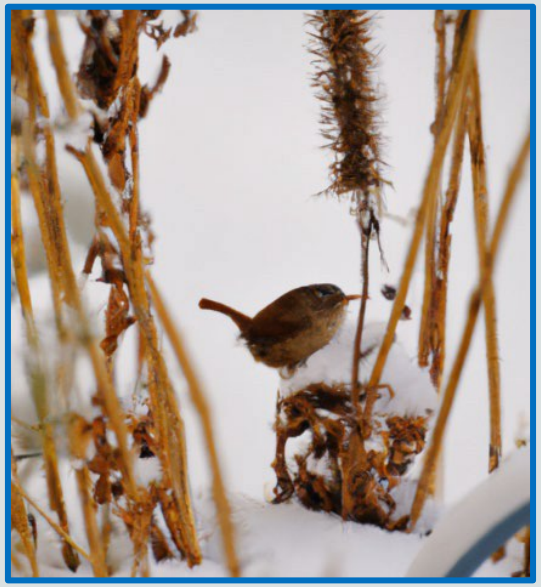
However, many flower, vegetable, ornamental grasses and shrubs prefer to be "started" in the dead of winter.

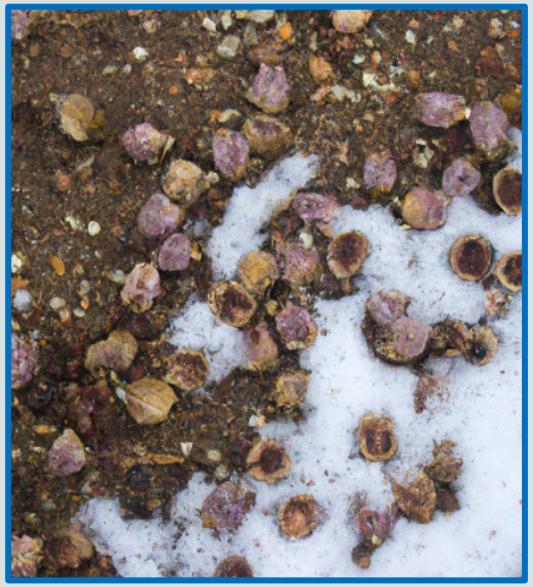


# In nature,. . .a plant's purpose is to reproduce itself to create a next generation.

- Many plants produce seed for that purpose.
- Seeds contain the embryonic plant and every bit of nourishment a plant needs to get started in life
- If left alone, those seeds will drop from the plant onto the ground, and hopefully meet the right conditions to start the next generation of plants

# The how & why of dormant seeds:

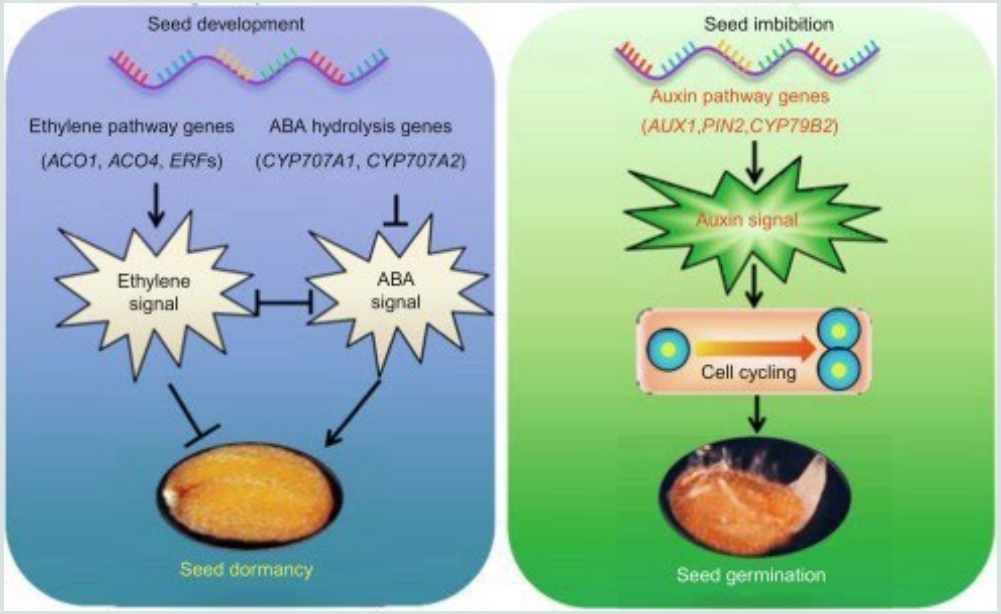


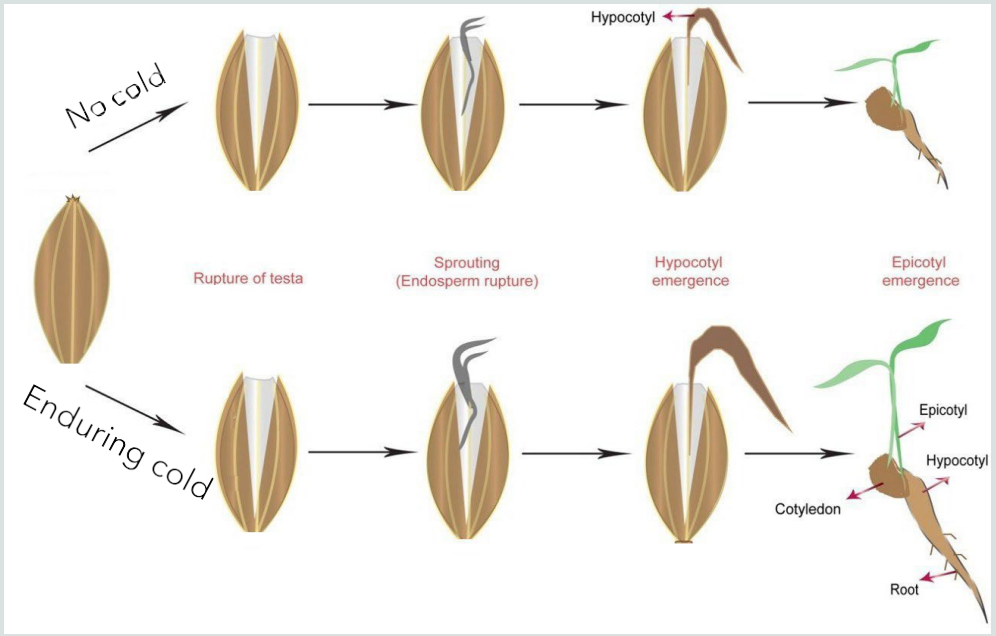


- Many seeds can germinate immediately after falling from the plant in summer or fall
- However, some seeds, especially in temperate climates, do not germinate immediately and are dormant
- This dormancy assures the seeds get through the harsh winter weather to germinate in the spring when growing conditions are better
- In fact, dormant seeds have evolved to need certain environmental and/or chemical changes to ***trigger*** the end of dormancy and germinate

What are those **triggers**?

# Triggers




Some seeds go into a period of embryonic dormancy.

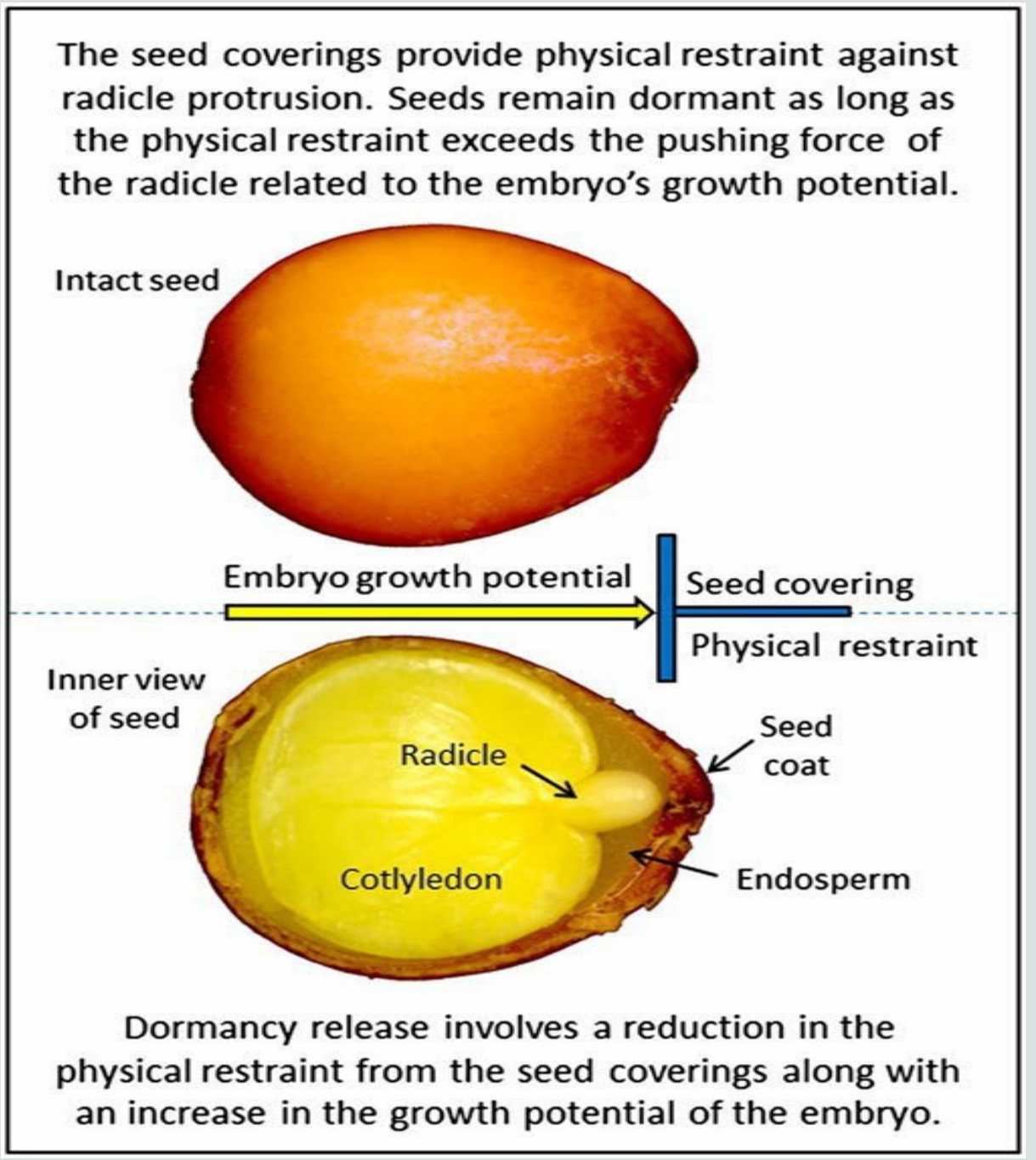
- In embryonic dormancy, embryos will not fully develop until certain chemical and/ or specific seasonal cues have taken place
- Until these cues occur, the seeds may not sprout, or will have a poor germination percentage

# Triggers

- Other seed species have a very hard seed coat
- Exposure to the moist cold helps break down this shell for easier germination in spring

- Until the seed coat is softened by seasonal ups and downs of temperature and precipitation it will not allow the seed to develop

- Sometimes both chemical and environmental constraints apply to seeds



# The best gardening methods mimic Mother Nature

*Anonymous*


# Cold Stratification

**The Process of Bringing Seeds Out of Dormancy Using Cold or Moist Cold is called. . .** Cold Stratification

- Stratification occurs naturally when seeds are sown outdoors through the cold winter.
- Many plants require this cold temperature strategy to break their dormancy cycle with some of the more common species being woody plants and herbaceous perennials such as the Milkweed species, Purple Coneflower, False Indigo, Black-Eyed Susan, Flowering Dogwood, Redbud, and but also annuals such as Poppies, Cosmos, Snapdragon and Spider Flower, and more.
- Many times, seed packets will let us know if there is a cold period requirement for germination, but it is always a good idea to research any germination needs; especially when collecting and saving seeds.

# What is Winter Sowing

- USDA Definition: A propagation method used throughout the winter where temperate climate seeds are sown into vented containers and placed outdoors to foster naturally timed, high percentage germination of climate-tolerant seedlings
- Trudi Davidoff popularized the winter sowing technique in the early 2000's, and she often used milk jugs and other plastic containers for the method

# Why Winter Sow

- Sustainable and environmentally friendly
  - Requires no electricity
  - Uses upcycled/recycled containers
  - Less water used
- Seeds largely manage on their own until ready to transplant in the garden
- **Extremely easy for all skill  levels of gardeners!**

# Why Winter Sow

- Inexpensive
- No worries about space or mess
- Possible to Grow a wide variety of plants not available elsewhere
- Produces strong healthy plants
- Prevents “damping off" and no need to “harden off” seedlings

**“Damping off is a disease of seedlings caused by several different fungi and fungus-like organisms. This disease causes emerging seedlings to collapse, often submerged in a mass of white fungal growth. It is particularly a problem when sowing seed indoors or under glass.”**

**“Plants raised indoors or in a greenhouse need to be” … acclimatized, or hardened off … “to cooler temperatures, lower humidity and increased air movement for about two to three weeks before they are planted outdoors.:**

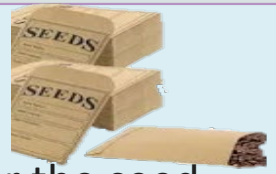
*– Royal Horticulture Society*

# When to Sow
## December-January-February

- All native plants that need cold stratification—lobelia, butterfly weed, milkweed, liatris, coneflower
- Other perennials requiring stratification—lavender, catmint, hellebores
- Native grasses, vines & trees
- Cold weather veggies—spinach, kale Brussel sprouts
- Herbs—thyme, oregano, parsley
- Hardy Annuals—pansies, ornamental kale
- Annuals - poppies

# Getting Prepared to Start

## 1st




- Gather the seed you want to sow
- Choose those that need stratification or pre-chilling
- seeds that tolerate the cold, & are sown in colder weather such as greens
- seeds from plants in your garden that you know self-sow
- Any that you are willingly to experiment with such as tomato

## 2nd

Gather:

- ❑ Duct Tape
- ❑ Serrated Knife
- ❑ Sharp Scissors
- ❑ Empty, rinsed, plastic containers, such as milk or water jugs, juice bottles
- ❑ Can use 2-liter bottles, take out containers with clear plastic lids, roasting or large casserole aluminum pans with clean plastic lid
- ❑ Permanent marker
- ❑ Plant label with type, date planted, etc.
- ❑ Fresh potting soil or any mix with peat moss & perlite

## 3rd

- ✓ Begin with clean rinsed containers
- ✓ using knife or scissors to slice around the circumference of the container about 5-6” from the bottom of jug - leave 1” to 2“ for a hinge to open and close the lid
- ✓ Using a hot glue gun or the heated tip of a screwdriver to melt holes in plastic at top, sides & bottom for drainage, air & moisture venting
- ✓ Some suggest remove the cap if you have a jug or bottle

## 4th

- ➢ Get the soil ready by moistening it with water in a bowl or bucket before you place it in the container
- ➢ Fill the container with approximately 5” of soil, gently patting it down
- ➢ Now is a good to label the container with at least the seed name, date sown

# Seed Sowing Styles

- Lightly scatter seeds on the soil surface & cover gently with more soil

## Please Note:

- You can winter sow from December through February, depending on your climate
- Perennials and hardy annuals can be sown earlier (December), while tender plants should be sown later in the season (February)

- Space seeds so they can be easily divided

*or*

- Scatter seed evenly & slice brownie-style or gently pulled apart when ready to transplant

*or*

- Separated by plastic poster board, etc. & different seeds planted in compartment
- labeling inside container is advisable in each section

# 5th

- Label the container with the plant type and planting date
- Close the container and secure with duct tape
- Leave the cap on the jug until seeds germinate or remove it
- No matter what you do, maker sure you have plenty of air circulation, if the holes punched aren't doing enough, remove the cap for better air flow inside

# 6th

- Place the container in a protected area in your yard, away from pets or children play areas
- Area should receive full sunlight and rain & snow
- Leave them sealed through out and check on them from time to time
- Seedlings will begin germination and development when its cold stratification conditions have been met

# 7th

**Once you put the containers outside, there's nothing else to do until spring. The hardest and most exciting part of winter sowing is just waiting until little green seedlings pop up!**

# 8th

- @Germination, seeds absorb water & expand cracking open the seed coat
- Root emerges first, anchoring the plant & absorbing water
- Shoot merges with one or two seed leaves depending on whether is a monocot or dicot
- As seedling grows through the soil, the cotyledons tightly close around the shoot apical meristem to protect it
- When seedling reaches the light, the cotyledons will open and turn green- **beginning of photosynthesis in the young plant!**

**Factors that can affect seedling development**

- **The size and viability of the seed**
- **Time and depth of sowing**
- **Seed genetic makeup**
- **Condition of the seed bed**
- **Moisture and temperature conditions during germination**


ALLIUM CERNUUM
NODDING ONION
1-1.5'.sun-pt.avg-dry
CHRYSOPSIS MARIANA
MARYLAND GOLDENASTER
1-2',sun-pt.avg-dry
AQUILEGIA CANAD
COLUMBINE
1-1.5',sun-pt.avg


Yellow
Coneflower
Jan 10/22.

# Transplanting

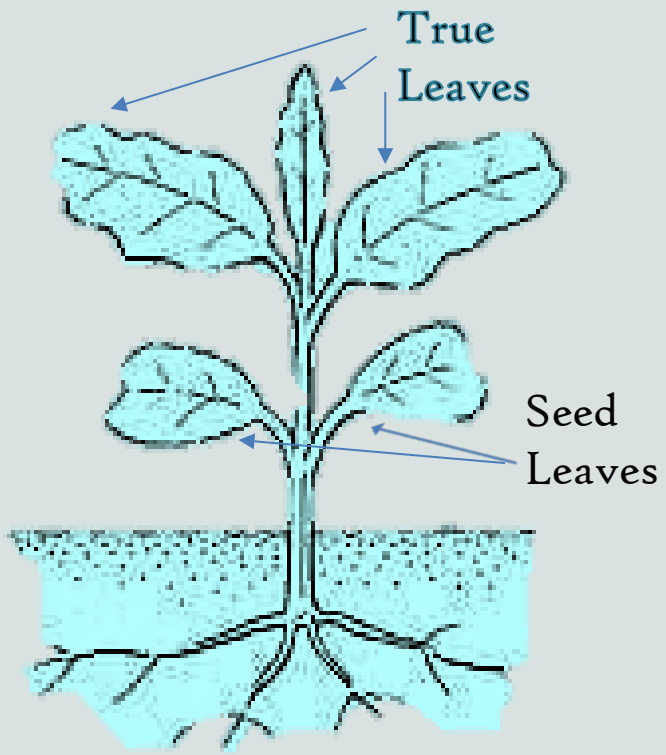

## 7th

- Open the containers during the day after seedlings have 1–2 sets of true leaves
- Move containers to the shade if there's a warm spell
- Cover containers with a sheet, blanket, or row cover if there's a cold spell

- **Once winter-sown seeds begin to reach the top of their containers, it's time to pull back the covers and acclimate them fully to the environment**
- **Transplant seedlings after they have at least two true leaves**

## 8th

- Gently pull the plants apart, as the roots are fragile.
- Water thoroughly



# Seed Categories for Winter Sowing

These are guidelines for zone 6-7, adjust if needed

## A. Early Winter Sowing/November - December

**If seed packet recommends months of cold stratification, include the seeds in this group**

Includes many flowering perennials

-Native plants, trees, shrubs, and vines

-Some vegetables like broccoli and Brussels sprouts can also handle an early start

-Milkweed *Asciepias spp.*

## B. Winter Sowing/January – February

**Seeds needing moderate periods of stratification and / or hardy perennials and annuals.**

- Seed catalogs sometimes list suggestions by sowing time as well
- Pick only seeds suited to your hardiness zone and growing conditions and avoid invasive species

## C. Late Winter-Early Spring/April – May

**These may be some of the seeds you would start indoors, but give a few a try and compare the results**

**This is not an exhaustive list!**
**From Empress of Dirt**

### Flowers

Anemone
Aster
Bee balm (Monarda)
Bell flowers (Campanula)
Blazing star (Liatris)
Clematis (Group A)
Columbine (Group A)
Coneflower (Echinacea)
Corydalis
Dianthus
Delphinium (Group A)
Foxglove (Digitalis)
Goldenrod
Hollyhock
Joe Pye Weed
Milkweed (Group A)
Lupine (Group A)
Rudbeckia
Rose campion
Verbena
Veronica
Yarrow

### Herbs

Chamomile
Dill
Lavender
Mint
Oregano
Parsley
Sage
Sweet Marjoram
Thyme

### Vegetables

Broccoli
Brussels sprouts
Cabbage
Cauliflower
Kale
Leafy greens
Onions
Parsnip
Peas
Spinach

# More than 60 plants from winter sowing from a $3.00 seed packet

**Cardinal flower - *Lobelia cardinalis***

## $390 value
## 60 plants @
## $6.50 a pot

*From University of Maryland Master Gardeners, "All the Dirt on Winter Sowing"*

# Summary
# Winter Sowing

- The simplest way to start transplants that require cold stratification for you garden next year is to plant them in winter and allow nature to take over
- Seeds planted and cared for this way have a head start on plants started indoors during February or March
- They also have a head start on any weed because they will be easy to recognize in your garden and anything else must be a weed
- Also, armed with the knowledge of which seeds need cold stratification you can grow many of the plants that in the past  you may have had trouble

# Questions?

# Direct Sowing

01

Begin your winter sowing around the winter solstice, which is usually the 3rd third week in December. However, if December is as warm as we have had in the past, wait until January

02

Scatter seeds a little thicker than normal in spring. Lightly rake them in or cover with a thin layer of soil, and tamp them down.

03

Don't worry if they are not completely covered as late fall and winter rains and snow cycles will help settle seeds into the soil. Also, some seeds need light to germinate.

04

Be sure to mark where you've sown the seeds so that you don't dig up that spot next spring or mistake seedlings for weeds and weed them out. Let others know where they are.

# Sources


All the Dirt on Winter Sowing; University of Maryland Extension; https://extension.umd.edu/sites/extension.umd.edu/files/2021-12/All%20the%20Dirt%20on%20Winter%20Sowing%20Power%20Point.pdf

Davidoff, Trudi; Wintersown.org

Empress of Dirt; Winter Sowing; https://empressofdirt.net/winter-sowing/#seed-list

Garden Gate Magazine; Sow Seeds Outdoors in Winter; https://www.gardengatemagazine.com/articles/how-to/start-seeds/sow-seeds-outdoors-in-winter/

Gardener, Joe; Winter Sowing; https://joegardener.com/podcast/130-winter-sowing/

Generation Acres Farm; Winter Sowing, A Complete Guide; https://generationacresfarm.com/winter-sowing-a-complete-guide/

Missouri State University Extension; Winter Sowing Seeds https://extension.missouri.edu/publications/ym105

National Gardening Association; Winter Sowing; https://garden.org/ideas/view/chelle/1737/Winter-Sowing-Annuals/

White Earth Tribal and Community College; Winter Sowing for Starting Seeds, https://www.wetcc.edu/wp-content/uploads/pdf/Winter-Sowing-for-Starting-Seeds.pdf

# Winter Sowing or JUGGING

## Farmhouse and Blooms

https://farmhouseandblooms.com/winter-sowing-in-milk-jugs-cold-stratification/

## Rethink Rural

https://rethinkrural.raydientplaces.com/blog/winter-sowing-in-milk-jugs-a-step-by-step-guide

# Thank you

Martin-Gatton
College of Agriculture,
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Sharon P. Flynt
Scott County Cooperative Extension
Horticulture Program
sflynt@uky.edu
https://scott.ca.uky.edu/horticulture