



Winter Vegetable Gardening

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Let's Have a Positive Educational Experience

Please hold your questions until the Q&A sections at the end of each segment.

What this class doesn't cover:

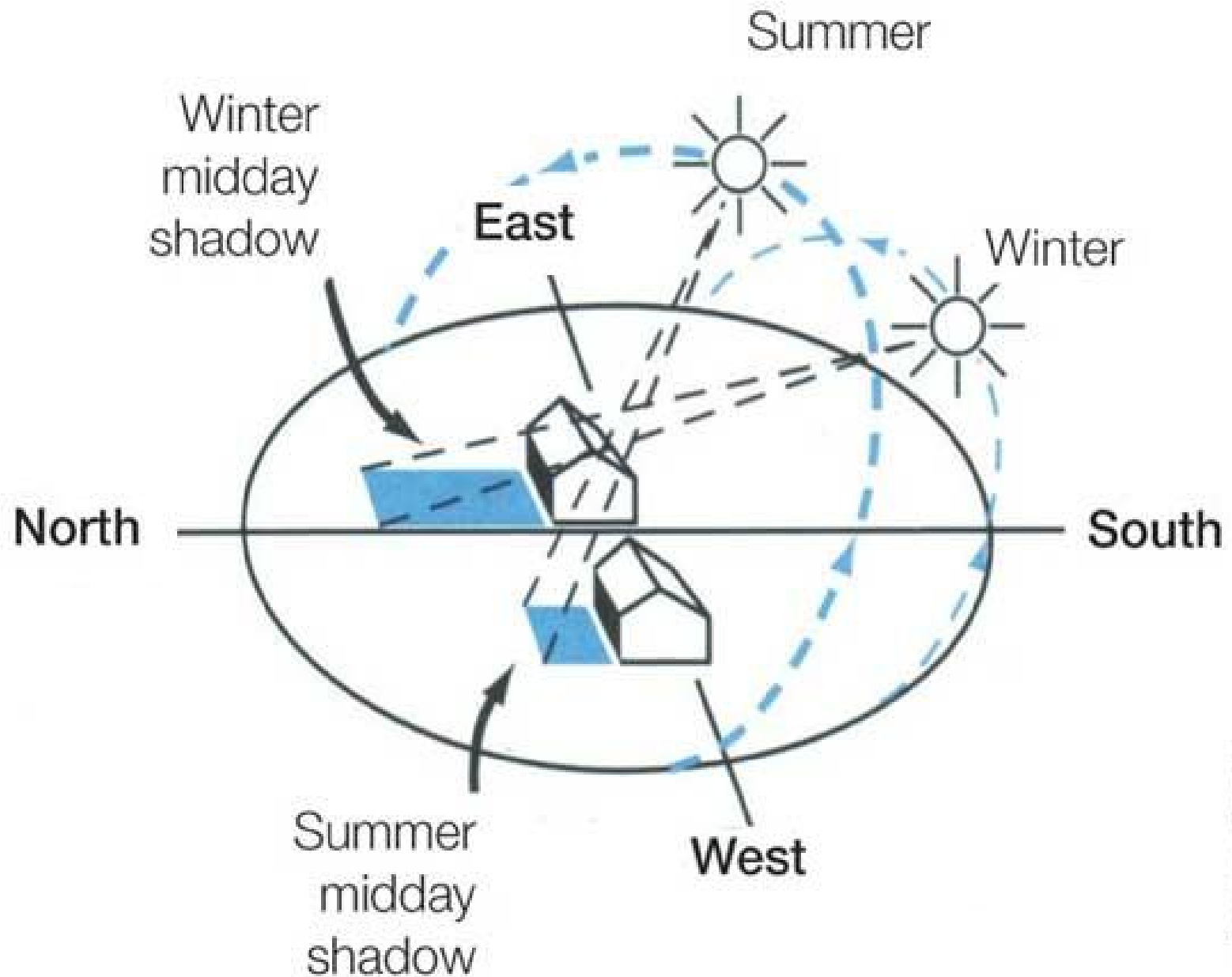
- Summer vegetables
- Every possible method of organic gardening
- Culinary uses of veg

BUT WE LEARN LOTS ABOUT
WINTER VEGETABLE GARDENING

Overview of Winter Vegetable Gardening

- Less pests than summer!
- More shading than summer
- Some plants need to be in ground by mid October.
- Germination rates lower in cold weather
- Frost protection

Shading in Summer vs. Winter



Difference Between Summer and Winter Vegetables

- Not all vegetables can be grown year round.
- A lot of summer vegetables cannot withstand the colder temps of winter.
- Many vegetables prefer cooler temps, so can't be grown well in the heat of the summer.
- The thicker the leaf, the more likely it can withstand cold and frost.
- Winter vegetables vary in their ability to withstand temps below freezing.
- Manipulate those with frost blankets.

Let's Discuss the Types of Vegetables you Can Grow in the Winter

- We'll go through them very quickly one by one, noting spacing and staking requirements
- No need to write down individual notes as I will send you copy of this Powerpoint later
- Sign Links List that is being passed around to ensure you get the slideshow and other resource information
- If you don't receive it, it is very likely in your spam folder. Check that first before emailing me to ask for another copy.
- After looking through slides of what you can grow, we will go out to the garden and discuss in more detail. Let's take questions outside too.

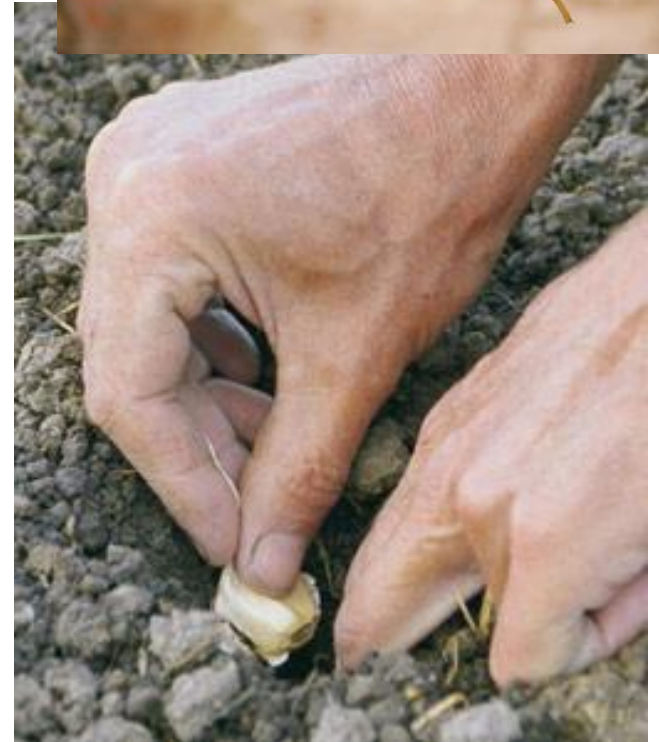
Alliums

- Garlic, onions, leeks, shallots, chives
- Heavy nitrogen feeders
 - Fertilize with organic nitrogen fertilizer 2 - 3 times during growing season
- Purple or white edible flowers



Garlic

- Seed is the clove
- Plant in Fall 4" apart, 2" deep
- "Spring garlic"/"green garlic"
- Garlic heads in Summer
- Hang dry and store
- PotatoGarden.com
 - Many varieties
 - Available now



Leeks, Onions, Shallots: Sets

- Can be sown directly in garden bed, started in seed trays, or purchased as small plants called "sets"
- Plant 4" apart, 1" deep
- Use flat-head shovel to make shallow trenches
- DixondaleFarms.com - available November



Brassicas - the Divas of the Winter Garden

Slower growing brassicas:

- Broccoli
- Cauliflower
- Cabbage
- Brussels' Sprouts

Faster growing brassicas:

- Broccoli Raab
- Kohlrabi
- Pac choi, bok choi, tatsoi
- Kale
- Collard greens



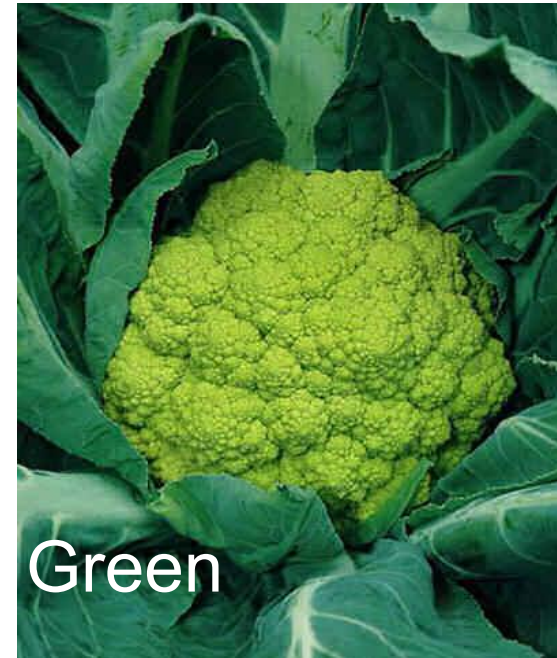
Broccoli

- 1 foot spacing (at a minimum)
- Prick out individually
- Harvest side shoots after cutting main head
- Delicious edible flowers



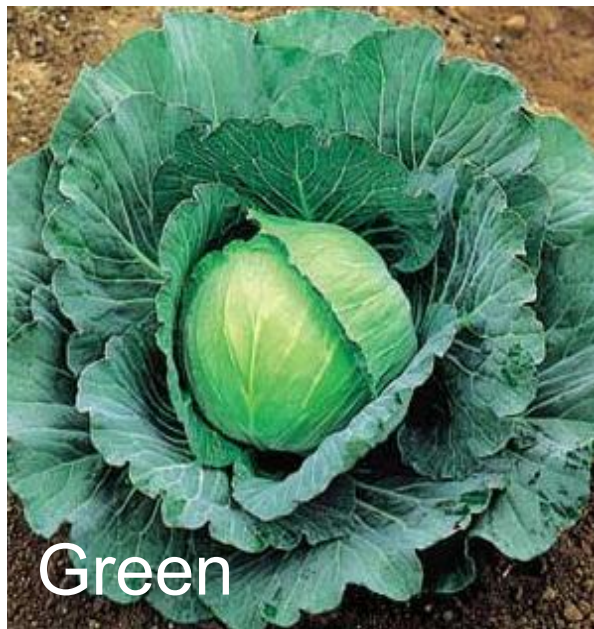
Cauliflower

- Each plant produces 1 head only
- 1 foot spacing (min)
- Prick out individually
- Stake with bamboo



Cabbage

- Savoy, Napa, Green, Red
- Each plant produces 1 head
- Space 18" apart
- Prick out individually



Cabbages from Asia

- Prick out individually
- 8" spacing
- Harvest individual leaves or heads

Red or Green Pac Choi



Tatsoi



Brussels' Sprouts

- Longest of brassicas to mature
- Need to be planted asap
- Purple and green varieties
- Prick out individually
- Cut off tops in November
- Harvest sprouts from bottom up, leaving smaller ones to get bigger



Kohlrabi

- White or Purple
- Crisp and juicy
- Flavor similar to broccoli stem
- All parts edible
- Prick out individually
- Plant 6" apart
- Harvest when bulb gets to be tennis ball sized



Broccoli Raab

- Prick out individually, 6" - 8" spacing
- Produces small broccoli-looking shoots
- Can direct-sow, then thin to 6" - 8" apart
- Harvest leaves and buds when shoots appear - both edible
- Flowers quickly in warm spells
- Edible flowers



Collards

- Bountiful crop
- Slow cook for best flavor
- 18" spacing
- Similar to cabbage, but never heads up



Red Russian Kale

- Very productive
- Long-lasting crop
- Can be sown directly and thinned to 4" apart for large leaves, or 1" apart for small leaves
- If transplanted, plant 4" apart



Toscano Kale



- Aka Black Kale, Dinosaur Kale
- Treat same as Red Russian Kale

Rainbow Chard

- Aka Swiss Chard, Silverbeet
- Prick out in bunches of 2 - 3
- 6" spacing for transplants
- Can be directly sown and thinned to 6"
- Aphids love it!



Mizuna & Mustards

- Delicate mustard flavor
- Prick out into bunches of 3 - 4
- 6" spacing
- Edible yellow flower
- Can be directly sown, thin to 2" for smaller leaves



Ruby Streaks Mustard

- Treat same as mizuna



Lettuces

- Prick out individually for heads or in bunches of 2 - 3 if harvesting just leaves
- 6" spacing
- Can be directly sown - use thinnings too
- Can be cut down to ground and will re-grow

Buttercrunch



Red Romaine



Arugula

- Transplant in bunches of 2 - 3
- Plant bunches 4" - 6" apart
- Edible flowers
- Can be directly sown
- Pest resistant



Wild Arugula

- Yellow flower instead of white
- Thinner leaves



Chrysanthemum Greens

- Carrot-y taste
- Prick out in bunches of 2 - 3
- 3 feet all
- 6" spacing
- Edible flower



Cress

- Peppery taste (aka “Pepper Cress”)
- Easy to grow
- Pest resistant
- Great for salads
- Edible flower
- Direct sow or prick out in bunches of 2-3
- Space 4” apart



Radicchio & Chicory

- These are basically the same plant
- Endive is a type of radicchio
- Edible flower
- Considered “bitter” green
- Cut individual head or whole leaves
- Spacing at least 12”
- Don’t direct sow
- Start in flats and prick out individually



Spinach



Wrinkled leaf' (Savoy)



(Smooth)

Spinach care is like Lettuce care

- Direct sow or prick out into bunches of 2-3
- If direct sow, thin to 4 to 6" apart, depending on size of mature leaf you want
- Pick individual leaves or whole head
- Will continue growing for a long time if just cutting individual outer leaves
- Don't cut off all leaves. Need some left behind for photosynthesis

Fava Bean

- Edible leaves, flowers, and beans
- 5 feet tall
- 6" - 10" spacing
- Needs staking - tall tomato cages
- Pinch tips to promote branching



Snow Pea

- Edible pod
- 4 - 6 feet tall
- Stake with small tomato cages or net trellis
- Edible flower
- Can direct sow or start in flats and transplant out to garden directly from 6-packs



Shelling Pea

- Inedible pod
- Peas inside are harvested
- Edible flowers
- 4 - 6" spacing
- Can be directly sown



Sugar Snap Pea

- Eat the whole pod, like Snow Pea, but they are fatter
- String them before eating
- Can be eaten raw or blanched 5 seconds in boiling water to bring out green color
- 30" tall vines, can be staked or not
- 4-6" spacing



Root Vegetables

- Cannot be transplanted
- Taproot of plant is what is eaten
- Seeds must be sown directly in ground
- Cannot use root once it flowers
 - Stress: spacing, pests, heat
- Specific root crops:
 - Carrot
 - Beet
 - Turnip
 - Parsnip
 - Rutabaga
 - Radish



Break

You're mantra from now
on:

It's all about the SOIL

Start from the Ground Up



SOIL TEST REPORT

Deborah K. Joines

Deborah K. Joines
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Soil, Plant and Pest Center
5201 Marchant Drive
Nashville, TN 37211-5112
(615) 832-5850
soilplantpestcenter@utk.edu

Producer
ic Road

n, USA

Water pH indicates the acidity of your soil. Most plants grow best at a Water pH between 6.1 and 6.5. If Water pH is too low, a lime recommendation will be given if your crop (or plant) desires a higher pH.

07

Lab Number: 4959056

Mehlich 1 SOIL TEST RESULTS and RATINGS* (Pounds Per Acre)

Sample	Water pH	Buffer Value	P Phosphorus	K Potassium	Ca Calcium	Mg Magnesium	Zn Zinc	Cu Copper
B1	5.8	7.7	28 M	190 H	1257 S	64 + S		

Organic Matter %

Soluble Salts PPM**

Actual laboratory test results from your soil sample reported in pounds per acre. Ratings to the right of each result are L (low), M (medium), H (high), and VH (very high). Secondary nutrients are rated S (sufficient) or D (deficient). Fertilizer recommendations are developed from this information.

Buffer Value is reported when the Water pH is too low or a lime recommendation is indicated. This value is a tool to help provide a lime recommendation suitable for your soil.

RECOMMENDATIONS

Sample Number

Fertilizer/Lime Application Rate and Timing

B1 Hybrid Bermudagrass Hay - Maintenance

N / P₂O₅ / K₂O

Nitrogen/Phosphate/Potash: 120-400 / 40-80 / 40-80 pounds per acre

Limestone: 2 tons per acre

Fertilizer recommendations for the crop code you requested. These amounts are actual pounds of Nitrogen (N), Phosphate (P205) and Potash (K20) per acre.

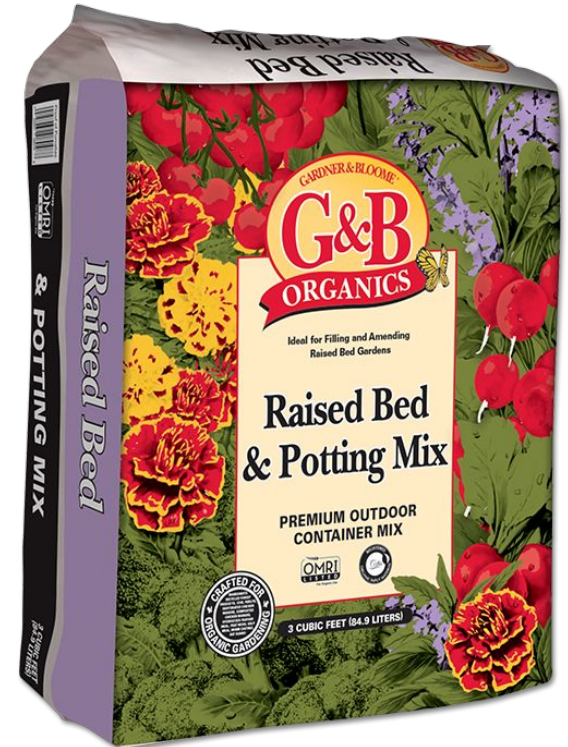
The rate of nitrogen topdressing depends on the need for forage. Apply 60 to 100 pounds of the nitrogen May 1 and again after each cutting when conditions favor regrowth. Four cuttings are often possible. If the higher rates of nitrogen are used, use the higher rates of Limestone is recommended broadcast all lime and fertilizer on the soil surface. If more than 4 tons of lime per acre or more than 4 tons of lime per acre and re-test after one

Importance of N-P-K: Macronutrients

- Nitrogen (N): Green growth
- Phosphorus (P): Root growth and flower/fruit production
- Potassium (K): Overall plant health



Purchased Top Soil



Organic Amendments

- Feed your soil like you feed your body
- Cannot "Miracle Gro" soil into good health
- Vegetables are fast-growing plants
- Need more fertilizer than perennials because you are harvesting (taking away nutrients)
- Always amend beds before planting
- Soil test will reveal deficiencies and make amendment recommendations



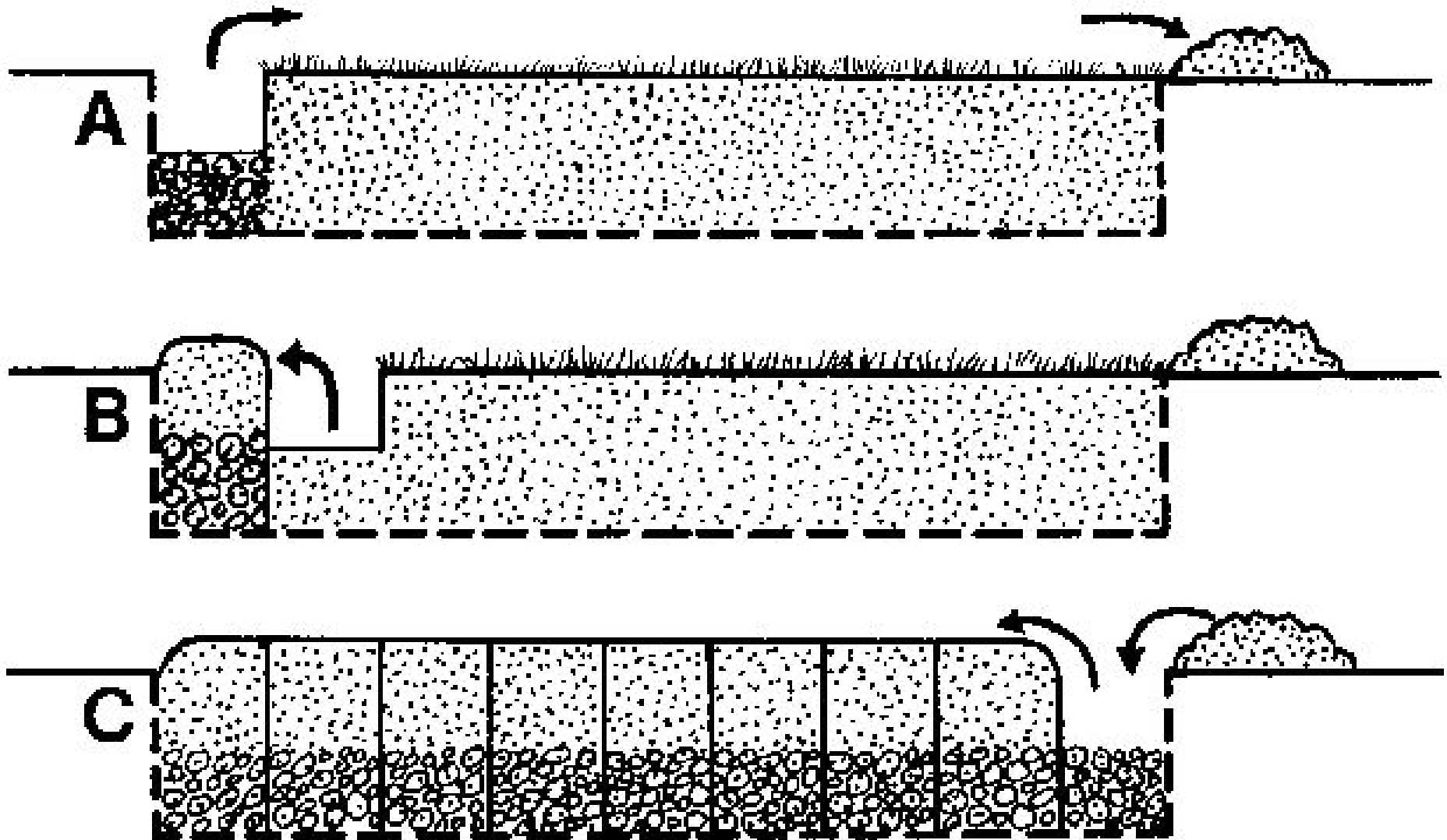
Bed Amending Recipe

For a 50 square foot bed:

- 1 barrow homemade compost or
1 bag G&B Harvest Supreme
- 2 quarts G&B fertilizer 4-6-3
- 1 quart pure Worm Castings
- 1 pound Mustard Meal



Double-Digging Technique



Video on Double-Digging
Will be attached to your Links List



Bed Amending Step by Step

- Sprinkle all amendments evenly on top.
- Turn over soil as deep as you can using a spade fork.
- Rake smooth.



Sowing Requirements of Common Winter Veg

MUST DIRECT SOW	EITHER (direct or in flats)	MUST SOW IN FLATS & POT UP BEFORE TRANSPLANTING
Carrot	Lettuce	Broccoli
Beet	Arugula	Cauliflower
Turnip	Kale	Cabbage
Radish	Spinach	Bok choy
Parsnip	Chard	Brussels' sprouts
Rutabaga	Onions/Leeks	Kohlrabi
Garlic	Leafy greens	
	Peas/Fava Beans	
	Broc Raab/HonTsai	

Direct Sowing Root Vegetables

- Sow seeds 1 per square inch
- Cover with 1/4 inch of soil
- Don't let surface dry out
- Use floating row cover to protect from varmints & drying out too fast
- Use thinnings as flavorful, unusual garnish



Sowing Carrots

- Carrot seeds take a long time to germinate
 - 2 to 3 weeks, depending on weather
- Seeds can only be covered with a thin layer of soil
 - Soil must be kept constantly moist
- Use a floating row cover!
- Many varieties and colors
 - White
 - Yellow
 - Orange
 - Red
 - Purple
 - Purple/Orange
 - "Thumbelina" (short, round)



Buying seedlings from nursery vs. Starting from seed at home

- Slower growing brassicas (broccoli, cabbage, etc) must be started from seed in mid-summer, potted up and transplanted out by late summer or early fall (by Oct 15)
- Faster growing brassicas can be started a bit later (by Sept 30) and planted out by Nov 1.
- Once you learn to start from seed, a lot more interesting vegetables can be grown. Nurseries only carry "normal" cultivars.

Transplanting Overview

- Use recommended spacing:
 - Larger brassicas: 12" - 18"
 - Smaller brassicas: 6" - 8"
 - Greens: 4" to 6"
- "Offset" planting
- Plant deeper in ground than they were in pot
- Don't compact soil
- Water really well first time



Staking Your Tall Brassicas

- Broccoli and Brussels Sprouts will get "leggy"
- They should be staked properly or they might get knocked over during heavy rains
- Thin bamboo stakes and Polyethylene twine
- Place twine in between leaves
- Don't tie too tightly to bamboo



Irrigation

- Drip irrigation is more efficient than hand watering, soaker hoses, or sprinklers
- Easy to install from your spigot
- Best to water early in morning
- Don't rely on a timer - check each bed daily if it hasn't been raining. If dry 2" below, then water.



Don't Forget to Water in the Winter!

- We forget to water in winter, because temps are cooler
- If no rain, then we need to water
- If you are going into a cold snap, water is super important to protect plants from frost
- Note that wind dries out plants too. So in windier weather, don't forget to water

Gopher Trapping - Not Wire!



BREAK?

Aphids

- Green, Black, Red, Grey
- Watch for curling leaves
- Organic pesticide: Pyrethrins; Safer Soap
- Organic preventative: Garlic spray
- Beneficial bugs: Lacewing, Ladybug
- Give infested leaves to your chickens



Cabbage White Butterfly

- Very attracted to all brassicas
- Green worm when young
- White butterfly when mature
- Hand pick
- Spinosad is organic spray
- Trichogramma wasp as predator insect
- Cover beds with shade cloth or FRC in late summer/early fall if very bad



Slugs, Snails, Earwigs, Pillbugs

- Sluggo
- Wet rolled newspaper as earwig trap
- Diatomaceous Earth in thick layer
- Hand pick late at night with flashlight



Leaf Miner

- Remove bad leaves
- Rub out egg sacs
- Spinosad
- Trichogramma Wasp



Frost Protection

- Have frost blankets on hand BEFORE forecast of frost
- Pay attention to weather forecast each night
- Best practice: take min-max temp reading and record them to figure out last frost date in spring and first frost date in fall
- Cover beds with blanket in evening if frost forecast
- Uncover in morning (don't leave on during day)
- Most of these cool-weather lovers can take a few degrees below 32



Special Spinach and Lettuce Care for Frost

- Most affected by frost of all winter veggies
- When frost forecast, cover with FRC (Floating Row Cover) and then heavier frost blanket at night
- Cut individual leaves or cut down to a nubbin and it will regrow
- If directly sown, thin to 4" to 6" apart or they won't last through the season



Supplemental Fertilizing

- Plants will need additional fertilizer, particularly if yellowing
- Best fertilizer: Worm Casting Tea
- Recipe: Big handful of castings in a 5 gallon bucket of water
- Let sit for two days
- Strain through cheesecloth or FRC or strainer and apply to plants with a watering can or garden sprayer
- Do twice a month during growing season
- WCT has many benefits
- Can also use G&B Organic Fertilizer



Bolting

- Plants flowering before their crop has given sufficient yield due to stress from:
 - Unfavorable weather conditions (too hot)
 - Pests
 - Diseases
 - Spacing too tight
- Prevention:
 - Proactive pest and disease control
 - Proper spacing
 - Shade cloths during random heat spells
 - Spritz w/ water on hot afternoons



Now let's sow our flats.

Please pay careful attention to
the instructions

Flat Sowing Instructions

- Select up to 16 different types of seeds.
- Sow 3 cells of each seed.
- Don't poke seeds into soil or make a divot
- Only use as many seeds as what is written on seed canister/packet
- Space seeds apart evenly
- Half labels, pencil only, push label in so it contacts bottom of flat
- Don't make labels until seed is in hand for that variety
- Pass in circle, clockwise
- Seeds will go around several times
- Only have 1 container open at a time
- Put lids back on tight after selecting

Flat Germination

- Will send instructions as attachment to links list
- Go home and water flat three times
- Cover with plastic. Don't leave in direct sunlight
- Check each day for germination
- First seed that germinates, remove plastic and start to put out into sunlight each day
- Ok to leave out at night unless it's raining
- Should begin to pot up or plant out within 3 weeks

Upcoming Workshops

Backyard Chicken Keeping - October 9

Wreaths from the Garden - October 22

Garden Mosaics - November 12

Beginning Cheese Making - Nov 13 or Dec 17

Succulent Wreaths - November 19

