



Fall Vegetable Gardening

Charles County Maryland Master Gardeners

UNIVERSITY OF
MARYLAND
EXTENSION



GROW IT • EAT IT

A MASTER GARDENER PROGRAM



AND JUSTICE FOR ALL

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MASTER
GARDENER 

Welcome

The mission of the University of Maryland Extension Master Gardener Grow It Eat It (GIEI) Program is to promote backyard and community food production.

Master Gardeners teach classes and workshops, develop demonstration gardens, and educate Marylanders on how to produce their own affordable and healthy food using sustainable gardening practices in their homes, communities, and school gardens



Tentative Agenda

- 10:00 - 10:05 am - Introductions - Maryland's HGIC
- 10:05-10:15- Finishing the Summer garden
- 10:15- 10:30 - Option 1 - Prep the Bed for Spring
- 10:30 - 11:00 - Option 2 - Plant Fall vegetables - Timing, Calendar, And Extending the season
- Break - 11:00 - 11:10
- 11:10 - 11:30 - Extending the Season, continued
- 11: 30 - 11:40 - Other Fall Garden Tasks
- 11:40 - 11:50 - Composting
- 11:50 - Questions





**Charles County Master Gardeners
GROW IT EAT IT Education**

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What are HGIC and Ask Extension?

The University of Maryland Extension [Home and Garden Information Center \(HGIC\)](#) includes:

- Gardening & IPM pages
- [Maryland Grows blog](#) (also [Extensión en Español - Blogs de Extensión de la Universidad de Maryland \(umd.edu\)](#))
- HGIC YouTube channel [UMDHGIC - YouTube](#)
- HGIC Quarterly Newsletter - Subscribe!
- Social Media pages
- Monthly Tips [Monthly Gardening Tips | University of Maryland Extension \(umd.edu\)](#)
- Ask Extension- answers to garden and pest questions



Autumn in the Vegetable Garden – What's Next?

- Finish up the summer garden
- Decide what to do with the garden space:
 - Leave unplanted and prep for Spring
 - Plant cool weather crops
- Other Fall vegetable Garden Tasks



Finish Summer harvesting

Harvest any remaining warm season vegetables; These include tomatoes, peppers, cucumber, squash, melon

Harvest any tender herbs (e.g. Basil) and use, dry, or freeze them.



Photo - Canva, SD State University

Full size green tomatoes, can finish ripening indoors. Placing them in a bag with an apple or banana (which release ethylene gas) will speed ripening

NOTE Carrots can be over-wintered in the garden by covering the bed with a deep straw or leaf mulch. Pull carrots through the winter as needed

Remove Summer vegetable debris

Remove diseased or insect-infested plant material that may shelter overwintering states of these pests. This will reduce the potential for disease problems in next year's garden.



Early Blight



Squash bug



This debris should be bagged and put out in the trash and NOT put in the compost pile. Only really hot compost piles (actively managed) will kill off potential problems.

Can Summer Vegetable debris stay?

Plants that are not diseased or harboring pests can provide valuable organic matter for next year

Pull Plants and run a mower over them so they are chopped into smaller pieces and spread over the ground on the garden. They will decompose over the winter, returning nutrients to the soil.

These plants can also be composted, and the finished compost used next season.

NOTE: Be sure the plants you compost are free of diseases and pests. In our warm, humid climate, blight, mildews, and viruses are very common by the end of the summer. If in doubt, bag it and put in the trash.

What about "leaving the leaves" and plant debris for wildlife ?

This recommendation is for

- fallen (not diseased) tree leaves,
- flower stalks (especially native flowers)
- native grasses,

all of which can provide seeds, shelter, and insect larva for hungry birds and some beneficial insects.



Photo - OK State University



But debris from **VEGETABLE** Gardens requires more careful inspection and consideration.



Saving seeds from your Summer Garden

- Save seeds from healthy, fully ripe fruit from OPEN POLLINATED Cultivars
- Seeds saved from hybrid cultivars will not "come true" (resemble parent plant) when planted out the following season.
- Seeds saved from non-hybrid (open-pollinated) cultivars of plants that normally cross-pollinate (cucurbit, corn) MAY produce off-types when planted the following year.
- Tomatoes, peppers, beans and peas are good choices for seed saving. They have self-pollinating flowers and seeds that require little or no special treatment before storage.

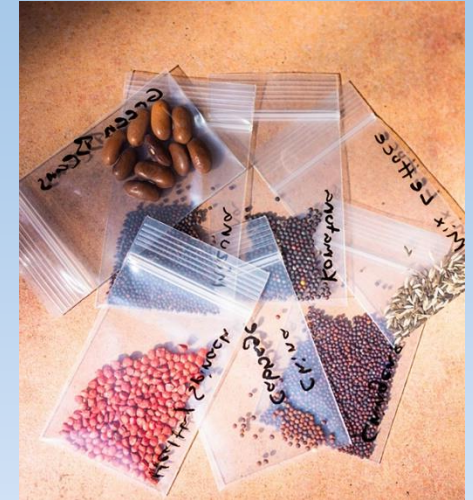


Photo - Canva, SD State University

Information on saving seeds can be found in the resources slide at the end of this presentation

What to Do with the Summer Garden Now?

Two Options:

- 1) Don't Plant vegetables and prepare the bed for Spring
- 2) Plant Fall/Winter Vegetables

Preparing the Garden Bed for Spring

Get a Soil Test and apply recommended amendments

Fall is a great time for Soil Testing

- Soil is usually less wet than in the spring, so collecting samples is easier
- Recommended amendments have time over winter to be absorbed into the soil
- Soil testing labs are usually less busy than in the Spring



Preparing the Garden Bed for Spring

Use Sheet Mulching to reduce weeds and enrich the soil



- Place overlapping sections of newspaper or unwaxed corrugated cardboard over the entire area.
- Cover with 8 inches of one or more of the following: compost, aged manure, shredded leaves, or grass clippings (avoid weeds with seedheads and herbicide-treated turf).
- In spring, you'll be able to plant directly into the soil without the need for rototilling.

This method uses up large amounts of locally-available organic material, does not require turning, and boosts the earthworm population.



Preparing the Garden Bed for Spring

Grow a cover crop ("green manure") in the garden bed

- Cover Crops lessen soil erosion, add organic material when turned under in the spring, improve soil quality, and add valuable nutrients.
- These crops are typically planted no later than October 10th so they make some growth before the first hard frost.
- The crops are turned into the soil before going to seed, usually sometime in late April or early May.
- To sow a cover crop while vegetable crops are still producing, remove mulch from around plants, smooth the area and plant. Your cover crop will get a good start but will not interfere with vegetable plant growth
- Some cover crops are sown in the spring or summer to cover and improve bare soil.

Preparing the Garden Bed for Spring

Common Cover crops for Gardeners

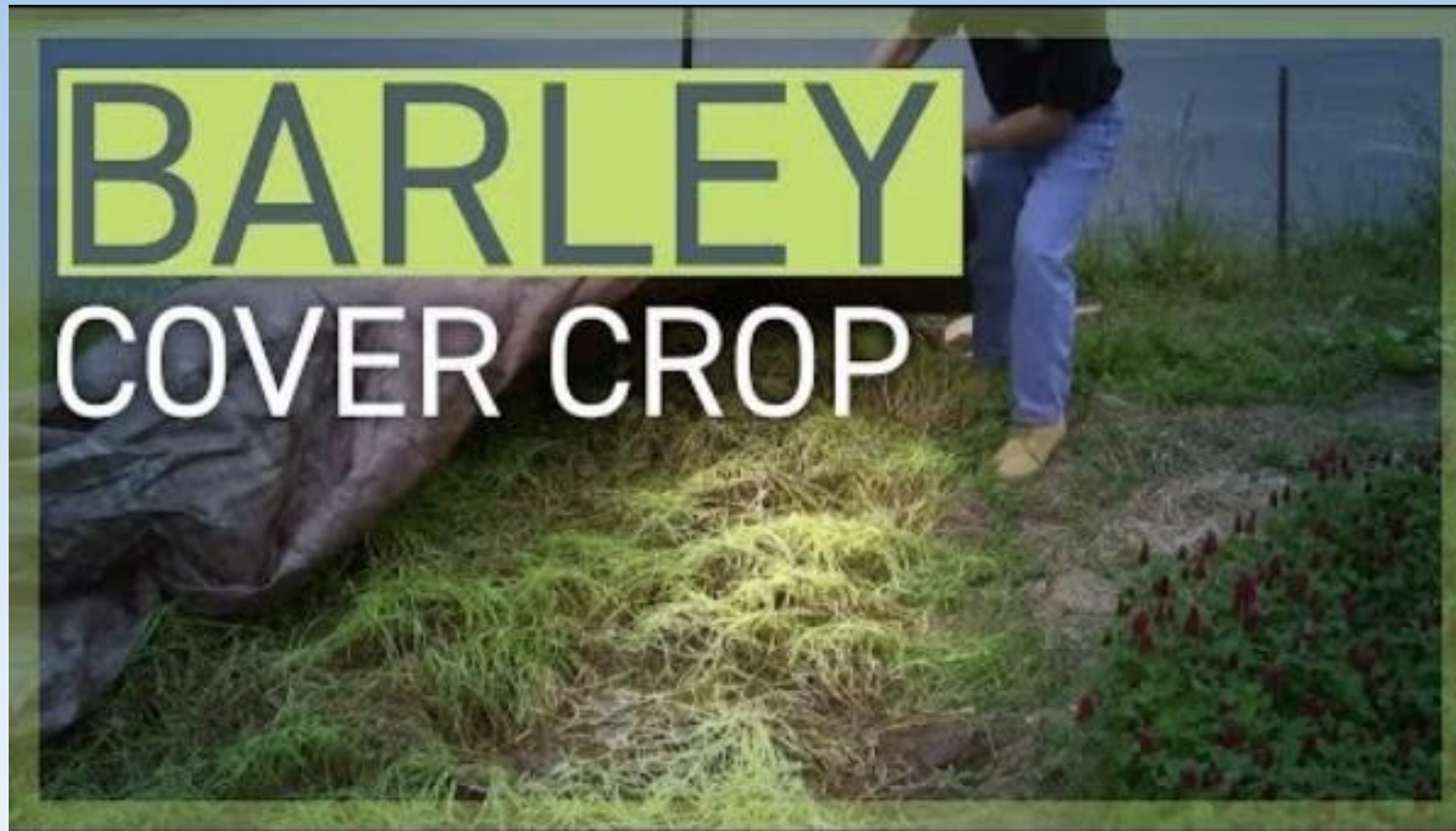
Barley	4	3 - spring or late summer/fall	spring	Not as hardy as rye. Tolerates drought
Buckwheat	4	3 - spring or summer	anytime	Grows quickly. Will reseed itself. Not hardy.
Crimson clover*** (L)	2	1 - spring or late summer/fall	fall or spring	Beautiful spring blooms.
Forage radish* (a type of daikon radish)	2	1 - late summer/fall	spring	Large white roots break up clay soil. All parts are edible. Monitor for harlequin bug.
Spring oats*	4	3 - spring or late summer/fall	summer spring	Not cold hardy, tolerates low pH.
Winter rye	4	3 - late summer/fall	spring	Very hardy. Produces a massive root system. Cover crop that can be planted the latest in the fall.
Hairy vetch (L)	4	3 - late summer/fall	spring	Slow to establish. Very hardy. Till under at bloom, can become a weed.
Winter wheat	4	3 - late summer/fall	spring	Easier to manage and terminate in spring than rye or barley.

*Will winter-kill in most years, leaving a "mat" of dead vegetation which can be planted through in spring or turned under.

**Sow late summer/fall crops from August 15- October 1, depending on location, species, and weather forecast.

*** Legumes, like crimson clover and hairy vetch, together with special soil bacteria, transform nitrogen from the air into a plant-available form

Cover Crops - Barley



https://youtu.be/s6dIv6oykIo?si=hEkDeoxf3Ysl_1B9

Cover Crops - Crimson Clover



<https://youtu.be/IMsktDMxkKk?si=7sK0-LTN8t7LDkmJ>

Plant Fall Vegetable Crops in the Garden

Get the Timing Right -

Find the frost and freeze dates for your area. UME recommends these two resources:

Purdue University's Freeze Date Tool:

mrcc.purdue.edu/freeze/freezedatetool

The National Gardening Association's Frost Dates by Zip Code:

<https://garden.org/apps/frost-dates/>

The charts on this page show the **probabilities** of receiving a certain temperature on a certain day. Some examples that might help:

1. You have a small 20% chance of getting 32° by October 23.
2. There is a 50% chance of being hit by a 32° frost starting around November 3
3. You have a 80% chance of seeing 32° by November 14
4. Said another way, you have a 1 in 5 chance at making it to that day without a 32° night.

In the Fall

Temperature	10%	20%	30%	40%	50%	60%	70%	80%	90%
First 16°	Dec 5	Dec 14	Dec 20	Dec 25	Dec 30	Jan 3	Jan 9	Jan 15	Jan 23
First 20°	Nov 24	Dec 2	Dec 7	Dec 12	Dec 16	Dec 21	Dec 25	Dec 31	Jan 7
First 24°	Nov 9	Nov 16	Nov 22	Nov 27	Dec 1	Dec 6	Dec 11	Dec 17	Dec 24
First 28°	Oct 29	Nov 4	Nov 9	Nov 13	Nov 17	Nov 21	Nov 25	Nov 29	Dec 6
First 32°	Oct 17	Oct 23	Oct 27	Oct 31	Nov 3	Nov 7	Nov 10	Nov 14	Nov 20
First 36°	Oct 5	Oct 11	Oct 15	Oct 18	Oct 21	Oct 24	Oct 28	Nov 1	Nov 6

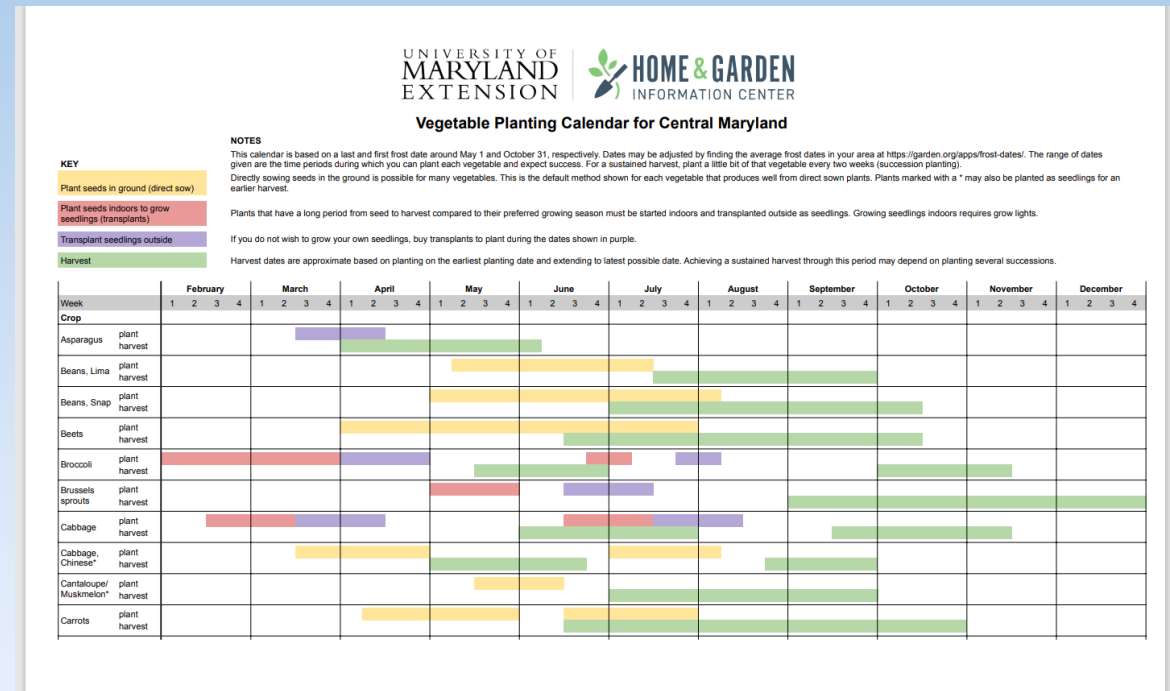
NOTE - Some Vegetable Crops will endure a Frost but not a Freeze

Fall Frost Date Information for La Plata MD per Nat'l Gardening Association app

Plant Fall Vegetable Crops in the Garden

Use the UME Planting Calendar for guidance, but remember

- The likelihood of frost will vary between landscapes in the same town or even neighborhood
- The surest way to know when the first frost is expected is to closely monitor weather reports.

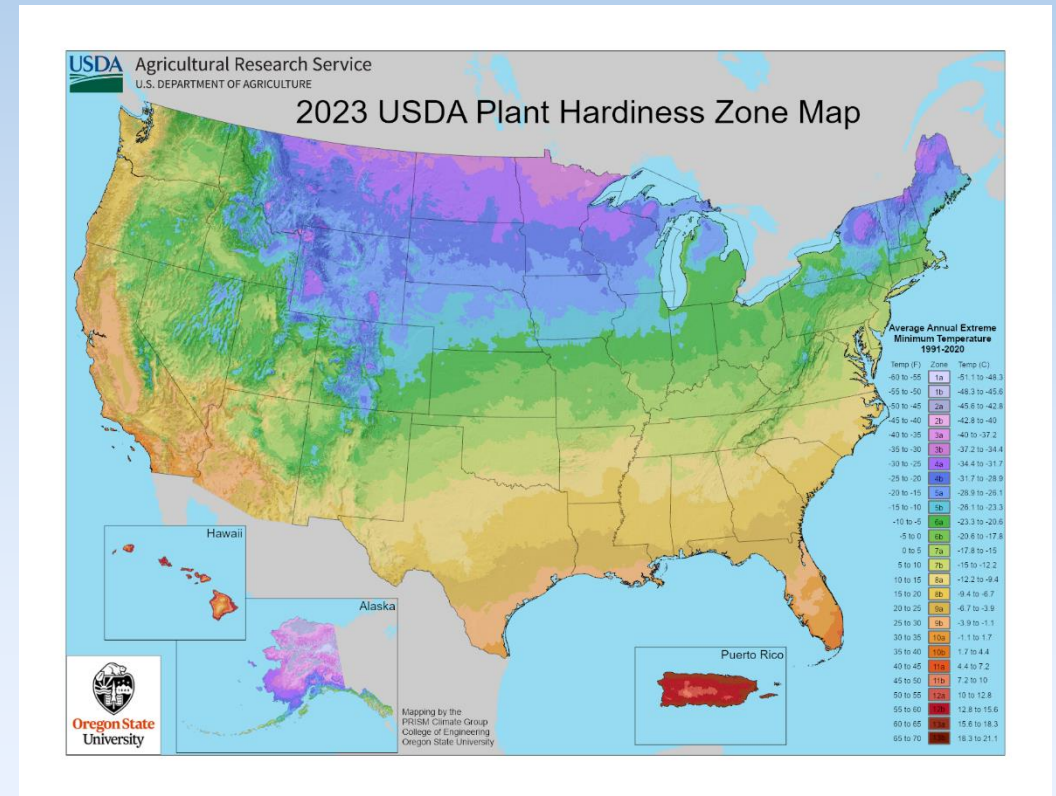


Plant Fall Vegetable Crops in the Garden

What Is a Hardiness Zone?

The USDA Plant Hardiness Zone Map map is based on the average annual extreme minimum winter temperature, displayed as 10-degree F zones and 5-degree F half zones.

The map is periodically revised based on data. The last revision was in 2023



Plant Fall Vegetable Crops in the Garden

What Is OUR Hardiness Zone?

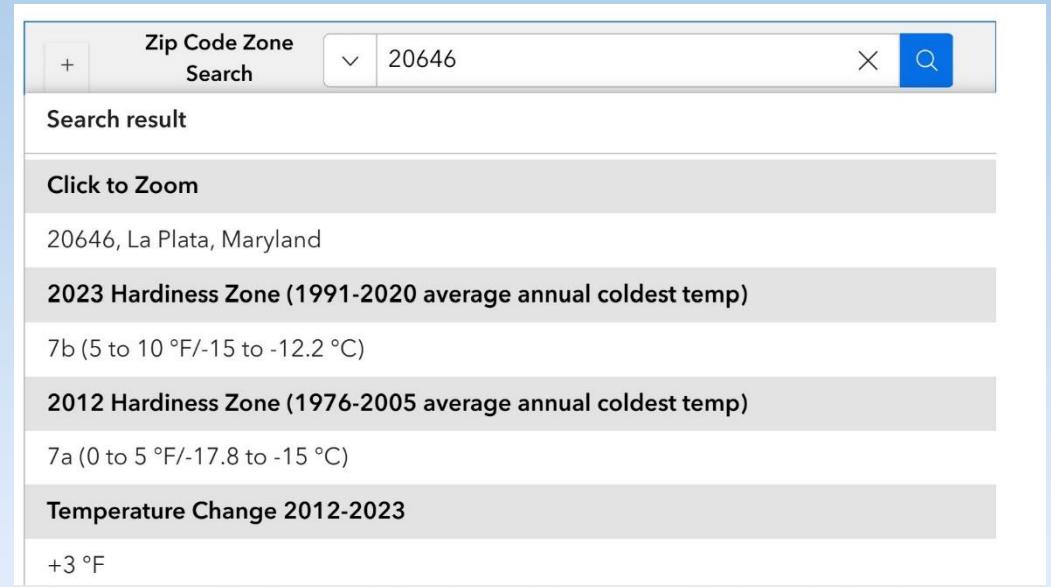
You can determine your USDA hardiness Zone by going to the website

<https://planthardiness.ars.usda.gov/>

and entering your Zip Code

Most of Charles County is in 7b, moving a half zone from the previous 7a in 2012

Southernmost Charles County (Issue, Cobb Island) is now in Zone 8a



The screenshot shows a search interface for the USDA Hardiness Zone website. At the top, there is a search bar with a plus sign on the left, a dropdown menu labeled "Zip Code Zone Search" with a downward arrow, and the input field containing "20646". To the right of the input field are a close button (X) and a search button (magnifying glass). Below the search bar, the text "Search result" is displayed. A "Click to Zoom" button is visible. The search results are as follows:

20646, La Plata, Maryland
2023 Hardiness Zone (1991-2020 average annual coldest temp)
7b (5 to 10 °F/-15 to -12.2 °C)
2012 Hardiness Zone (1976-2005 average annual coldest temp)
7a (0 to 5 °F/-17.8 to -15 °C)
Temperature Change 2012-2023
+3 °F

Extending the Growing Season with Plant Protection

**A continuum of season
extenders from simplest
to most complex:**

- Cloches
- Low tunnels and row covers
- Cold frames and hot beds
- High tunnels
- Greenhouses



Extending the Growing Season with Plant Protection

Cloches

Cloches include many types of portable structures that shelter plants

They trap solar radiation and keep moisture from evaporating.

Cloches are generally lightweight, portable, and reusable.



Photo - NC State University Extension

The best design allows it to be closed at night to prevent frost damage and opened or completely removed during the day for air circulation

Cloches should be anchored or heavy enough that they do not blow away.

Extending the Growing Season with Plant Protection Row Covers

Row Covers

- Enhance plant growth in spring and fall by increasing the temperature and humidity.
- Extend the growing season by providing 2- 8 ° F. of frost protection.
- Exclude large and small animals, especially insect pests (making it an excellent organic pest management tool).



Row covers are white, light-weight fabrics made from spun-bonded polyester or polypropylene. Air, light and water can penetrate.



Extending the Season with Plant Protection

Row Covers - weights and light transmission

Row covers have different weights
- the weight impacts both cold
protection and light transmission



Left: Heavy-weight
Right: Light-weight row cover

- Light-weight- (0.45 oz./sq. yard) have 90%-95% light transmittance, give 2 °F. of frost protection, and can be left on some crops (e.g., beets, snap beans, salad greens) from seeding to harvest.
- Medium weight- (0.5-1.0 oz./sq. yd.) have 70%-85% light transmittance and give 4-6 ° F. of frost protection. For Spring , Fall, and overwintering crops.
- Heavy-weight- (1.5-2.2 oz./sq. yd.) allow 30-50% light transmittance and give up to 8 ° F. of frost protection. For overwintering crops.

Extending the Growing Season with Plant Protection

How to Use Row Covers

The row cover can lie directly on the crop- hence the name “floating row cover.” The growing plants push the cover upwards if you give it enough slack.

Alternatively, you can erect simple frames using wood, PVC pipe, #9 wire, or other available materials to support the row cover above your plants. This is recommended when using medium-weight and heavyweight row covers.

You can buy or make plastic snap clamps and clips to secure row covers to a PVC pipe frame.



Picture shows lightweight row cover on crop and heavyweight cover on hoops

Extending the Growing Season with Plant Protection

Row covers can be used over container plants



Arugula before planting
Nov 17



Arugula planted and
covered with row cover Nov
17



Arugula March 3rd

QUESTIONS And BREAK

Extending the Growing Season with Plant Protection Cold Frames and Hot Beds

A cold frame is a rudimentary plant forcing structure used to protect plants. It has no artificial heat added. The temperature inside the structure generally is not more than 5 to 10 degrees above the outside temperature. A mat or blanket may be placed over the frame on cold nights to conserve heat,

Basically, a hotbed is a heated cold frame.



Photo - Univ of MO Extension

Extending the Growing Season with Plant Protection

High Tunnels

- High tunnels are generally constructed of a metal frame covered with a single layer of 6-mil greenhouse-grade plastic
- They are considered nonpermanent structures.
- They have high ceilings which allow gardeners to comfortably enter
- High tunnels do not have permanent heating or automated ventilation systems..
- High tunnels differ from greenhouses in that plants typically are grown directly in the ground instead of in pots.



Photo - Univ of NB Lincoln Extension

Ventilation is accomplished by manually or mechanically rolling up the plastic sides of the tunnel to allow crosswinds to move through the high tunnel.

Extending the Growing Season with Plant Protection

Greenhouses

– Greenhouses used by homeowners to grow bedding plants, vegetable transplants and house plants are called **Hobby Greenhouses**.

– There are two basic types of greenhouses: attached and freestanding



Photo - Univ of NB Lincoln Extension

A Hobby Greenhouse

Many websites have information on building home greenhouses, including the University of GA Cooperative Extension:

<https://extension.uga.edu/publications/detail.html?number=B910#title1>

and

University of NB Lincoln
[g2246-coldframesNebGuide.pdf](https://www.unl.edu/g2246-coldframesNebGuide.pdf)
([unl.edu](https://www.unl.edu))

Plant Fall Vegetable Crops in the Garden

When deciding what to plant in the Fall, consider -

Days to Maturity - DTM - how long until harvest - fast-maturing varieties can produce before the coldest weather arrives.

Add 2 weeks to allow for slower plant growth as the day length shortens and the angle of the sun decreases.

Hardiness of the crop - what low temperature will the crop tolerate? Frost? Freeze? This can vary by cultivar/variety. Read the seed packet and description.

Remember, you can change the temperature in the garden with season extenders like row covers and low tunnels.



Days to Maturity can vary significantly by cultivar. For example, lettuce has a days to maturity of 40 - 80, depending on the type.

Plant Fall Vegetable Crops in the Garden

What cool season crops to plant?



Cool-season vegetables include broccoli, cauliflower, Brussels sprouts, lettuce, carrots, and assorted greens (Kale, Collards, Arugula, spinach, etc).

Brussels Sprouts, Cabbage, Broccoli, Cauliflower and crops with long Days to Maturity should be planted as transplants



Lettuce, carrots, and greens—including mustard greens, turnips, collards, kale and chard—can be direct-seeded into the garden soil in early Fall

Plant Fall Vegetable Crops in the Garden

How big an area are you planting?

Vegetable	Method of planting	Spacing between rows (in.)	Spacing within each row (in.)	Seed planting depth (in.)	Days from planting to harvest
Beets	Seeds	12-18	3-4	0.5-0.75	60-70
Broccoli	Transplants	18-30	16-20		70-80
Brussels sprouts	Transplants	10-30	16-20		90-100
Cabbage	Transplants	18-24	16-20		75-90
Chinese cabbage	Seeds or transplants	12-16	10-18	0.5	75-90
Carrots	Seeds	12-18	1-2	0.25	70-80
Cauliflower	Transplants	18-24	16-20		70-80
Collards	Seeds or transplants	30-36	18-24	0.5	75-85
Garlic	Bulbs	12	4	2	Early June

Kale	Transplants	24-36	18	0.25	50-65
Kohlrabi	Transplants	18-24	4-6		50-70
Leaf lettuces	Seeds or transplants	12-18	2-3	0.25	60-70
Leeks	Seeds or transplants	12-24	2-4	0.5	Late spring
Mustard	Seeds	12-18	2-3	0.5	40-50
Onions	Seed, sets, or transplants	12-18	4	0.25	Late spring
Radishes	Seeds	8-12	0.75-1	0.5	20-40
Rutabaga	Seeds	24-36	3-4	0.5	80-90
Spinach	Seeds	8-12	1-2	0.5	50-60
Swiss chard	Seeds	24-30	2-3	0.5	50-60

From University Of Ga Extension

When choosing fall crops, be sure to consider both the size of the area you are planting and the number of vegetables you want to produce.

Plant Fall Vegetable Crops in the Garden

Too Late to start seeds for your desired crop?

For crops with long Days to Maturity (DTM), if seeds are not started early enough to allow sufficient growth before setting outside, consider purchasing seedlings from local nurseries and box stores.

Many stores sell seedlings ready to plant well into October.



Plant Fall Vegetable Crops in the Garden

A great Winter crop in MD - Garlic

Plant individual cloves mid-late October so they have time to grow roots and a few leaves before cold weather sets in

Purchase certified, disease-free garlic bulbs for planting from reputable seed sources

Harvest when plant tops begin to die back in late June to early July.



Plant Fall Vegetable Crops in the Garden

Garlic



<https://youtu.be/MC6VWguUVNM?si=SBAQX5-YUH23KP5c>

Other Fall Tasks for Vegetable Gardeners

Clean, Sharpen, and store tools



Photo - Univ of MN Extension

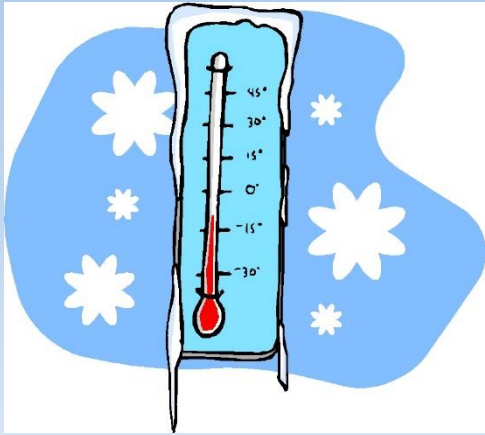
Prevent the spread of disease between plants by thoroughly cleaning and disinfecting your tools, equipment and garden implements.

Clean items well before disinfecting; Dirt and debris left on tools will interfere with the disinfection process and reduce its effectiveness

Caution about disinfectants: *Chemicals used to disinfect can have harmful fumes and burn skin. Read the label, use as directed, and wear personal protective equipment like goggles and gloves when the label recommends doing so.*

Winterize garden watering systems

Before any predicted Freeze:



- Drain water from hoses and irrigation tubes and tape and disconnect hoses from faucets.
- Remove any rigid plastic irrigation fittings, drain, and store

Flexible hoses and drip tapes, emptied of water, can be left outside, but will last longer if stored in a shed or garage

If you need to water the garden in winter during a warm dry spell, be sure to drain and store the hose again before the next freeze.



Other Fall Tasks for Vegetable Gardeners

Clean and store containers used for plants

Containers can carry diseases in soil and debris.

Be sure to clean the entire pot, inside and out.

Remember – pathogens are microscopic and, while your tools and containers may look perfectly clean, these microorganisms may still be present.



Photo - Univ of MN Extension

Other Fall Tasks for Vegetable Gardeners

Make Notes about the past season



Reviewing what happened in the summer garden while it is fresh in your mind will give you better information for next year.

What did you plant that did well?

What vegetables and herbs did you plant that you didn't like?

What pests and diseases did you experience, what time of year, and in what crops?

What equipment, chemicals, or tools did you wish you had? The end of the gardening year is a good time to buy these things on sale at stores and online.

Other Fall Tasks for Vegetable Gardeners

Start a Compost pile

Composting is turning food and yard waste into a nutrient-rich product to improve soil and plant health.



Why Compost?

Composting reduces the amount of waste going to landfills and incinerators.

Compost is a free soil amendment that saves gardeners money.

Compost improves soil structure, aeration, and water-holding capacity and contains a wide range of plant nutrients.

Compost can reduce some soil-borne diseases in your garden.

Compost "feeds" the soil food web for healthier plants.

Composting - What You Need



A place for compost piles/bins outside on well drained soil.

Totes, bags, recycled containers or garbage pails to collect scraps in house and carry scraps from house to bin.

Compost bin. Basic compost structures can be as simple or complex as desired. They range from a simple heap or pile, a wood pallet or snow fence structure, wire structure, or a purchased composter, available online or at garden centers and big box stores.



Compostable Materials - See the "Compostable Materials" slide.

More Information - See the "Compost Information" slide.



Compostable Materials



Compostables are divided into three main categories: greens, browns and water.

Greens include food scraps such as apple cores, leafy greens, onion skins, corn cobs and husks, egg shells, banana peels, chopped potatoes, squash, pumpkins, coffee grounds and any other refuse from fruits and vegetables, including weeds (except perennial weeds) that are plucked from the garden.

Browns include trees, branchy plants, leaves, shredded paper, newspaper, sawdust, nut shells, coffee filters, straw, small sticks and twigs, wood chips and empty cardboard tubes. For faster composting, the smaller the pieces, the better.



Compostable Materials



A compost pile is a living ecosystem and needs the right balance of ingredients and adequate water to function. The goal is for the compost pile to be damp, like a wrung-out sponge. A compost pile should have good drainage.

Your compost pile should have both browns and greens. A mixture of materials containing 30 parts of browns to 1-part greens is considered ideal¹. The brown materials provide carbon for your compost, the green materials provide nitrogen, and the water provides moisture to help break down the organic matter.

<https://extension.umd.edu/resource/how-make-compost-home/>

Composting

What NOT to Compost

- Meat or fish bones and scraps
- Fats, grease, lard or oils
- Dairy products (for example, butter, milk, sour cream, yogurt) and eggs
- Pet and Human wastes (for example, dog or cat feces, soiled cat litter)
- Yard trimmings treated with chemical pesticides
- Diseased or insect-ridden plants
- Weeds with mature seed heads attached
- Charcoal briquettes

Compost Information

- The University of Maryland has a lot of composting information. [How to Make Compost at Home | University of Maryland Extension \(umd.edu\)](#)

- Charles County offers composting workshops. The workshops often quickly fill up.

<https://extension.umd.edu/locations/charles-county/master-gardener/composting/>

- Oregon State has a great site describing different types of composting that gives you a lot of what you need on two printable pages.

<https://extension.oregonstate.edu/gardening/soil-compost/do-rot-thing-choosing-using-composting-system>

- Cornell University has a very detailed web site (12 pages) concerning composting.

<https://ecommons.cornell.edu/server/api/core/bitstreams/85e69d31-7e38-43c5-bd5a-35f225f6f92a/content>

Your Questions

Resources

-  [Charles County Master Gardener's Grow It Eat It webpage.](#)
-  [Home and Garden Information Center | University of Maryland Extension \(umd.edu\)](#)
-  [Ask Extension | University of Maryland Extension \(umd.edu\)](#)
-  [Extensión en Español - Blogs de Extensión de la Universidad de Maryland \(umd.edu\)](#)
-  [Saving vegetable seeds | UMN Extension](#)
-  [Seed Saving Veggies Resources.pdf \(umd.edu\)](#)
-  [UMDHGIC - YouTube](#)
-  [Cover Crops For Gardens | University of Maryland Extension \(umd.edu\)](#)
-  [Fall Vegetable Gardening | UGA Cooperative Extension](#)
-  [Season Extenders and Growing Fall Vegetables \(psu.edu\)](#)
-  [Row Covers | University of Maryland Extension \(umd.edu\)](#)
-  [Hobby Greenhouses | UGA Cooperative Extension](#)
-  [Clean and disinfect gardening tools and containers | UMN Extension](#)
-  [How to Make Compost at Home | University of Maryland Extension \(umd.edu\)](#)

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