

Keys To Growing Spring & Fall Vegetables

- **Sun:** Greens (lettuces, spinach, chard) may take partial sun (4-5 hours); Root vegetables (radishes, carrots) like 5-6 hours
- **Soil:** Plant in loose, well-drained soil. Keep well-weeded. Thin root vegetables to allow room for root growth.
- **Mulch:** Add 2-3" around plants once established to keep down weeds, protect from low/high temps and keep in moisture.
- **When to Plant:** Direct sow or transplant from early March to late April and again from August into September.
- **Water:** Water deeply – typically 1" of water weekly. Avoid spraying foliage.
- **Flowers:** Leave spring greens or root vegetables that bolt (flower and go to seed); they'll attract pollinators and pest predators to your summer crop.

5

5

1. Lettuce Asteraceae Family



Photo © MGNV

• Growing Tips:

- Direct sow in spring when soil temps are at least 40°F.
- May bolt or go to seed if soil gets too hot.
- Harvest leaf lettuce leaves individually or by heads.

• Types: Leaf, Romaine, Butterhead

• Good Bets:

- **Leaf:** Black Seeded Simpson, Red Sails, Shirane Sky
- **Romaine:** Red Romaine, Little Gem
- **Butterhead:** Dynamite, Buttercrunch

6

6



Photo © Susan Wilhelm



Photo © Judy Salveson



Photo © Doria Lee

7

7

2. Spinach Chenopodiaceae Family



Photo © Judy Salveson

• Growing Tips:

- Plant in Spring when soil temperature is at least 45°F.
- Successful in NoVA planted in fall & overwintered.
- Will bolt or go to seed in warmer temperatures.

• Types:

- Smooth Leaf (harvest as baby leaves for salad)
- Savoyed Leaf (harvest large wrinkled leaves at full size)

• Good Bets:

- **Savoyed:** Bloomsdale, Kolibri
- **Smooth:** Space

8

8

3. Root: Radish Brassica Family



Photos © Dona Lee

- **Growing Tips:**
 - Direct sow in rows and thin to 1-2".
 - Protect growing radish from the sun by gently mounding soil around bulbs.
 - Harvest spring radishes when small and tender; harvest fall radishes according to package instructions.
- **Types:** Spring (quick growing) and Fall (longer growing)
- **Good Bets:**
 - **Spring:** Cherry Belle, French Breakfast, Champion
 - **Fall:** Daikon, Watermelon

9

3. Root: Carrots Umbelliferae Family



Photo © Kathy McGarrill



Photo © Judy Salvason

- **Growing Tips:**
 - Carrots prefer well-drained, deep, loose, fertile soil.
 - For our clay soils, plant round and shorter varieties.
 - Pull or dig when roots reach the appropriate size for the type.
- **Types:** Chantenay, Imperator, Danvers, Nantes, Miniature and Oxheart
- **Good Bets:** Atlas (round), Mokum, Little Finger, Chantenay, Danvers Half Long

10

9

10

3. Root: Beets Chenopodiaceae Family



Photos © Dona Lee

- **Growing Tips:**
 - Seed capsules contain several seeds. Sprouting shoots clump together and need thinning.
 - As roots push out of the ground, mound soil over beets to prevent damage.
 - Harvest when beetroots are 1-3" in diameter.
- **Types:** Red, striped, yellow
- **Good Bets:** Early Wonder, Detroit Red, Chioggia Guardsmark (pink & white), Boldor (bright yellow)

11

4. Kale/Collards Brassicaceae Family

Kale



Collards

Photos © Dona Lee

- **Growing Tips:**
 - Kale works wonderfully in spring/summer and fall/winter.
 - Overwintered plants will bolt (flower and go to seed) attracting pollinators and pest predators.
 - Can harvest kale and collard leaves at sizes ranging from baby to full-size.
- **Types:**
 - **Kale:** Curly, Flat/Russian/Siberian, Tuscan/Italian/Lacinato/Dinosaur, Chinese kale (Gai Lan), or "Chinese broccoli"
 - **Collards:** Heading, Cabbage, Glazed, Tree, Curly Leaf, Colored
- **Good Bets:**
 - **Kale:** Dwarf Blue Curled Vates, Siber Frills, Dazzling Blue, Red/White Russian, Red Ursa, Darkibor/Rubybor/Redbor, Ebony, Nero Toscana, Scarlette
 - **Collards:** Champion, Georgia Southern, Flash

12

11

12

Kale interplanted with Garlic



Photo © Judy Salveson

Kale Flowering in Apr



Photo © Dona Lee

13

13

Keys To Growing Summer Vegetables

- **Sun:** Fruiting plants need 6-8+ hours (full sun).
- **Soil:** Plant in loose, well-drained soil. Keep well-weeded.
- **Mulch:** Add 2-3" around plants once established to keep down weeds, protect from high temps and keep in moisture.
- **When to Plant:** Summer vegetables typically thrive when soil temps are above 60° F; optimum soil temp range is 75-90° F.
- **Water:** Water deeply, plants typically need 1" of water weekly. Especially important when plants are flowering and fruiting.
- **Harvest:** For most flowering plants, the response to regular harvesting is increased flowering → increased yield.
- **Flowers:** Consider planting short, simple blossom flowers nearby to attract beneficial insects, aid pollination: alyssum, marigolds and zinnias.

14

14

5. Beans (Bush) Legume Family



Photo © Judy Salveson

- **Growing Tips:**
 - Plant every 2-3 weeks from mid-April (soil temp 60°F) to end of July.
 - Bushes are self-supporting.
 - Matures quicker than pole beans.
 - Beans fix nitrogen in the soil, improving its fertility.
 - Harvest continuously to promote production. Use scissors. Avoid touching wet plants.
- **Types:** Snap beans, green shelling beans, and drying beans.
- **Good Bets:**
 - Maxibel: French filet bean
 - Blue Lake 274: Round green
 - Roma II: Flat Italian green
 - Jade: Slim, round green
 - Dragon's Tongue: Flat yellow and purple
 - Pencil Pod: Golden round wax bean

15

15

5. Beans (Pole) Legume Family



Photo © Judy Salveson



Photo © Dona Lee

- **Growing Tips:**
 - Support with poles or trellises.
 - Plant in spring after soil temp reaches 60°F or more.
 - Produce pods all summer.
- **Types:** Green, yellow, long
- **Good Bets:**
 - **Green:** Blue Lake, Kentucky Wonder
 - **Yellow:** Montegusto (slim round yellow)
 - **Long:** Chinese Green or Red, Yard Long

16

16

6. Okra

Malvaceae Family





Photo © Mary Free

- **Growing Tips:**
 - Plant in full sun and in well-drained soil. Water-logged soil can lead to root rot.
 - Sturdy stalks can grow up to 8' tall.
 - Harvest when pods are immature and tender, 2-3" long. Larger pods are tough and woody.
 - Produces striking yellow blossoms reminiscent of its cousins, hibiscus and hollyhock.
- **Types:** Dwarf & Tall, Green, Creamy White, Red
- **Good Bets:** Clemson Spineless, Bowling Red, Okinawa Pink and other red varieties

17



Photos © Judy Salveson

18

7. Tomato

Solanaceae Family


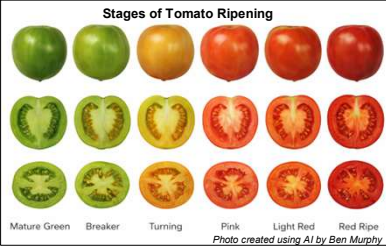


Photo © Dona Lee



Stages of Tomato Ripening

Mature Green	Breaker	Turning	Pink	Light Red	Red Ripe

Photo created using AI by Ben Murphy

- **Growing Tips:**
 - Tomatoes grow roots along their stems; plant deeply.
 - Support with tall stakes, tall cages, Florida weave, etc.
 - Trim leaves that touch the soil by removing leaves along first 12" of the exposed stem. Cut and discard yellowing or diseased leaves.
 - To avoid splitting and animal damage, pick any tomatoes that break color from green and ripen inside.
 - Fruit set and ripening will slow down if day temps are >90° F & night temps are >80° F.

19

7. Tomato

Solanaceae Family




Photo © Judy Salveson

- **Types:**
 - **Determinate vs. Indeterminate**
 - **Heirloom vs. Hybrid**
 - **Tomato Sizes:** Range from cherries (<1 oz) to beefsteak (1 # or more!)
 - **Color:** Purple to red to orange to pink to yellow to green, bi-color, & striped too!
 - **Intended Use:** Salad, slicer, sauce, cooking
- **Good Bets:**
 - **Smalls:** Sun Gold, Juliet, Supersweet 100, Purple Bumblebee, Gumdrop Black
 - **First to Harvest:** Early Girl, 4th of July, Early Treat
 - **Determinate:** Celebrity Plus, Jolene
 - **Medium:** Arkansas Traveler, Mountain Magic, Purple Zebra
 - **Large:** Cherokee Purple, Black Krim, Amana, Buffalosun, Striped German, Pink Berkeley Tie Dye
 - **Sauce:** San Marzano

20

8. Peppers Solanaceae Family



Photo © Dona Lee

- **Growing Tips:**
 - Support bushy, heavy-yielding plants with to 4-foot-high cages or stakes.
 - Prune away leaves that touch the ground to prevent transfer of soilborne diseases to the plant and promote airflow.
 - Side-dress plants after first fruit set with a (low N)-P-K fertilizer.
 - Harvest using shears. Peppers will not continue to ripen after harvesting.
 - Love the heat, just not the extremes. Need patience during hot late summer days.
- **Types:**
 - **Sweet vs. Hot:** The heat is derived from Capsaicinoids; measured in Scoville Heat Units (SHU).
 - **Two most popular peppers:** Bell (0 SHU) and Jalapeno (2,500-5,000 SHU).
 - **Intended Use:** salad, stir-fry, drying, stuffing, sauce
- **Good Bets:**
 - **Sweet:** Corno di Toro, Lesya, Banana (Goddess), Flavorburst, CA Wonder, Italian Sweet, Bridge To Paris, Jimmy Nardello's
 - **Mild Heat:** Shishito (Mellow Star), Poblano (Sergento), Venezuelan Tiger
 - **Hot:** Jalapeno (Megatron, PS11435807), Fresno (Red Flare), Cayenne (Rajah), Serrano (Attiplano, Tampiqueno), Thai (Buffy)
 - **Very Hot:** Habanero (Red, Orange, Chocolate)
 - **Super Hot:** Carolina Reaper

21

21



Photo © Judy Salveson



Photo © Dona Lee



Photo © Judy Salveson

22

22

9. Cucumbers Cucurbitaceae Family



Photo © Dona Lee



Photo © Judy Salveson

- **Growing tips:**
 - Can be grow from seeds or transplants.
 - Long vines benefit from caging or trellising. Bush varieties great for small spaces/containers.
 - Consistent watering is important.
 - **Pollination:** **Monoecious** have both separate male and female flowers; **Gynoecious** bred to have only female flowers; **Parthenocarpic** require no pollination.
 - May require insect netting to prevent cucumber wilt.
- **Types:** Slicing, pickling, and burpless (seedless and thin skinned)
- **Good Bets:**
 - **Slicing:** Marketmore 76, Summer Dance, Dragon Suhyo Cross
 - **Pickling:** County Fair, Boston Pickler, Wautoma, Lemon
 - **Burpless:** Persian (Diva, Beit Alpha, Mini Munch)

23

23



Photos © Judy Salveson



24

24

10. Squash (Summer) • Growing tips:

Cucurbitaceae Family
Cucurbita pepo




Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

Photo © Dona Lee

Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

- Plant seeds or transplants as soon as soil temps are above 75° F.
- Immediately protect with a row cover until squash flowers to avoid pests.
- Can succession plant.
- Flowers are edible.
- Harvest when 3-8"; larger sizes can be stuffed.

• **Types:** Yellow straightneck & crookneck, zucchini, patty pan

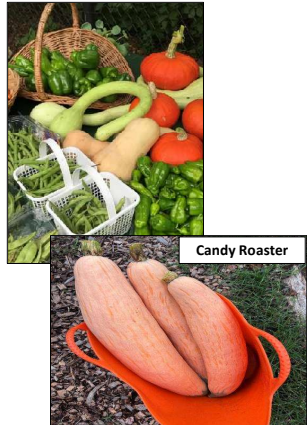
• **Good Bets:**

- **Yellow Squash:** Summer Chiffon, Early Prolific, Butter Dish, Rise & Shine
- **Zukes:** Cash Machine, Black Beauty, Dunja, Cocozelle Golden
- **Tromboncino:** Centercut
- **Patty Pan:** Sunburst, Jaune et Verte

25

10. Squash (Winter)

Cucurbitaceae Family
Cucurbita maxima, moschata, pepo

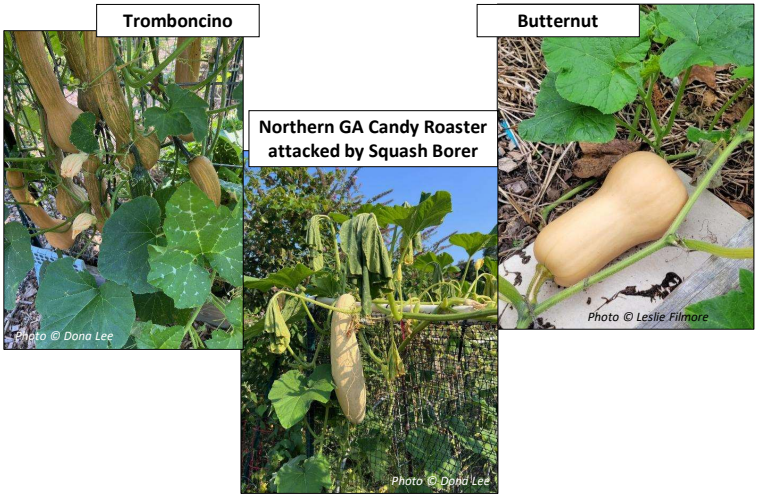


Candy Roaster

L-Photo © Judy Salvesson, R-Photo © Dona Lee

26

- **Growing Tips:**
- Plant when soil temps are > 70° F.
 - Can be left to grow on the ground or trellised.
 - **Moschata** and **Maxima** varieties mature on the vine and develop a hard skin for winter storage.
- **Types:**
- **Pepo:** Acorn, Spaghetti, and Delicata, Field Pumpkins
 - **Moschata:** Honeynut, Tromboncino, Musquee de Provence, Long Island Cheese, and Black Futsu
 - **Maxima:** Northern Georgia Candy Roaster, Hubbard, Red Kuri, Turban, Buttercup, Kabocha, and Banana
- **Good Bets:**
- Acorn (Table Queen), delicata, spaghetti, Autumn Frost, Buttercup, and kabocha
 - Squash-borer resistant types: butternut (Waltham), tromboncino



Tromboncino

Butternut

Northern GA Candy Roaster attacked by Squash Borer

Photo © Dona Lee


Photo © Leslie Fillmore

Photo © David Lee

27

Bonus: Garlic

Liliaceae Family
Allium sativum



Photos © Dona Lee

28

- **Growing Tips:**
- Heavy feeders and dislike competing with weeds.
 - Plant Oct/Nov in organically rich, well-drained soil; harvest Jun/Jul.
 - After planting, top dress with 3-6" mulch to deter weeds and provide winter protection.
 - Fertilize in early spring until scapes appear (hardneck only). Harvest scapes!
 - Reduce watering as it gets to harvest.
- **Types:** Hardneck (scapes!) and Softneck
- **Good Bets:**
- Softneck: Italian Late
 - Hardneck: German Extra Hardy, Chesnok Red, Montana Giant, Music

Bonus: Herbs

Lamiaceae Family




Photo © Judy Salveson

Cilantro with Red Lettuce

- Plants with leaves containing many small glands that secrete essential oils.
- Favorite annuals to grow are arugula, dill, parsley, basil, Thai basil and cilantro.
- Favorite perennials are oregano, thyme, sage, tarragon, rosemary.
- Herbs when allowed to flower are excellent for attracting pollinators and beneficial insects that attack garden pests.

29




Photo © Dana Lee

Overwintered Curly Parsley




Photo © Judy Salveson

Overwintered Italian Parsley

30




Photo © Kathryn Kellam

Harvested Genovese Basil












Photo © Kathryn Kellam

Thai Basil

31

Know Your Enemies: Pests

 <p>Photo: Larry Bredsoe, Purdue University Entomology Extension</p>	 <p>Photo: Ward Upham, Kansas State University, Bugwood.org</p>	 <p>Photo: Helene Daughy, Virginia Polytechnic Institute and State University, Bugwood.org</p>	 <p>Photo: Ansel Commens, Bugwood.org</p> <p>Photo: Alan N. Sparks, Jr., University of Georgia, Bugwood.org</p>
 <p>Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org</p>	 <p>Photo: Kansas Department of Agriculture, Bugwood.org</p>	 <p>Photo: John C. French Sr., Retired, Universities: Auburn, GA, Clemson and U of MO, Bugwood.org</p>	 <p>Photo: Whitney Cranshaw, Colorado State University, Bugwood.org</p>

32

Pest Control Preventive Measures

- Time planting of crops to avoid heavy insect infestations.
 - Green bush beans (plant early so harvest is complete by July)
 - Squash (plant late June/July to avoid squash bugs)
 - Cucumbers (plant after June 15 to avoid cucumber beetles)
- Inspect plants early & often to hand pick insects and destroy egg masses.
- Remove weeds and plant debris, especially in the fall to deter overwintering pests.
- Use physical barriers.

33

33

Use of Physical Barriers and Pollination

- Install physical insect barriers to discourage insect pests and even small rabbits or chipmunks.
- **Remove covers once flowers form:** squash, melons, pumpkins, cucumbers.
- **May cover continuously, removing just to harvest:** beans, carrots, chard, kale.



Photos © Dona Lee

34

34

Examples of Physical Barriers

Weather Extreme Protection



Insect Protection



Photos © Dona Lee

35

35

Attract Natural Enemies of Crop Pests

- **Natural Enemies**
 - Green lacewing
 - Lady beetle
 - Minute pirate bug
 - Parasitic wasp
 - Predaceous wasp
 - Spider
 - Syrphid fly
- **Plant/Natural Enemy/Crop Pest Interaction**
 - **Dill, fennel, cilantro** attract adult cotesia wasps – that lay its eggs in tomato hornworms
 - **Oregano** attracts syrphid flies
 - **Alyssum** attracts parasitic wasps that eat aphids
 - **Cosmos, black-eyed susan, annual sunflower** attract lacewings and lady bugs
- **Annual Flowers:** alyssum, ammi majus, bachelor's button, blanket flower, calendula, coreopsis, cosmos, annual sunflower, zinnia
- **Herbs: annuals** such as basil, borage, cilantro, dill, fennel;
perennials: oregano, thyme
- **Flowering Cover Crops:** buckwheat, clovers, forage radish, sunn hemp, vetch, brassicas and mustards



Alyssum Photo Credits: U of Wisconsin Extension

36

36

Pest Management: Beneficial Insects

Lady beetle adults and larvae



Attack aphids, mites, insect eggs and small insects.

Photo: R.J. Reynolds Tobacco Company, Bugwood.org

Parasitoid wasp



Sting, lay eggs in caterpillars, aphids or insect eggs. Larvae consume their prey from within.

Photo: Stephen Asmus, USDA ARS

Hoverfly (aka syrphid flies)



The harmless adults resemble bees, but the small larvae of one sub-family consume many aphids.

Photo: Mary C Legg, Bugwood.org

Know Your Enemies: Diseases

Downy Mildew



Photo: Charles Averre, North Carolina State University, Bugwood.org

Powdery Mildew



Photo: Howard F. Schwartz, Colorado State University, Bugwood.org

Fusarium Wilt



Photo: Howard F. Schwartz, Colorado State University, Bugwood.org

Septoria Leaf Spot



Photo: Tanna Blum, Colorado State University, Bugwood.org

Early Blight



Photo: Edward Sikora, Auburn University, Bugwood.org

Late Blight



Photo: Gerald Holmes, Strawberry Center, Cal Poly San Luis Obispo, Bugwood.org

Disease Control Preventive Measures

- Select cultivars of plants bred for disease resistance & tolerance of local conditions.
- Plant with sufficient space, prune to ensure airflow.
- Apply mulch to keep diseases in soil from splashing up on plant leaves.
- Avoid overhead watering; water early in day.
- Pruning diseased leaves/branches.
- Practice good sanitation.

Garden Pests	First Line of Treatment	Last Resort
Aphids	Insecticidal soap 2-9 Canola oil 2-9 Paraffin oil 2-9	Azadirachtin 2-9 Beauveria bassiana 2-9 Neem oil 2-9 Pyrethrins 2-9
Cucumber beetles	Hand pick; Plant after June 15; Use row crop covers until bloom to exclude beetles 2-16	Azadirachtin 2-16 Kaolin clay 2-16 Neem oil 2-16 Pyrethrins 2-16
Harlequin bugs, flea beetles	Hand pick, destroy eggs; Turn under weeds, fall crops 2-11, 2-12 Diatomaceous earth 2-11	Azadirachtin 2-13 Kaolin clay 2-13 Pyrethrins 2-11, 2-13
Mexican bean beetles	Hand pick; Plant as early as possible and harvest before July; Use row crop covers; Several species of assassin bugs and a parasitic wasp, (Pediobius foveolatus) 2-10	Pyrethrins 2-10
Squash bugs	Hand pick; Use row covers until flowering; Insecticidal soap 2-17	Permethrin, 2-17 Kaolin clay 2-17 Pyrethrins 2-17
Whiteflies	Insecticidal soap; Canola oil 2-20	Azadirachtin 2-20 Horticultural oil 2-20 Neem oil 2-20 Permethrin 2-20 Pyrethrins 2-20 Plant after June 15;

Note: Numbers at the end of entries, e.g., 2-7, 2-11 indicate page #s in the VCE Pest Management Guide

Top Garden Pests & Diseases Recommended Treatment

2026 VCE Pest Management Guide
Chapter 2 Home Vegetables (Insects, Diseases, Weeds)

https://www.pubs.ext.vt.edu/content/dam/pubs_ext_vt_edu/456/456-018/ENTO-634.pdf

(See pg. 2-7 for handy table cross-referencing pests by vegetable and pg. 2-29 for table listing diseases by crop)

University of Maryland Cooperative Extension
Vegetable Insects

<https://extension.umd.edu/resources/yard-garden/vegetables/vegetable-insects>

MGNV Resources

- Tour one of our **Demonstration Gardens**, including our **Organic Vegetable Garden**:
<https://mgnv.org/demo-gardens/>
- Visit one of our **Plant Clinics** in Alexandria or Arlington:
<https://mgnv.org/programs/plant-clinics/>
- Obtain **Help Desk Support** via email, phone or in-person:
<https://mgnv.org/programs/help-desk/>
- Visit the **MGNV** website:
 - **Master Gardener Classroom**, topics range from climate change to weeds
<https://mgnv.org/mg-virtual-classroom/>
 - **Between the Rows**, monthly vegetable gardening newsletter
<https://mgnv.org/plants/veg-herbs/between-rows/>

41

41

**Thank you for
attending today's
presentation!**

Virginia Cooperative Extension
Virginia Tech • Virginia State University

MGNV Master Gardeners of Northern Virginia
Arlington • Alexandria • mgnv.org



Photo © Dona Lee

42