

# Module 18:

## Vegetables – Everything Else



LSU AgCenter Home Gardening Certificate Course

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# Other Plant Family Vegetables



Amaryllidaceae



Asparagaceae



Malvaceae



Apiaceae



Convolvulaceae



Poaceae



Asteraceae



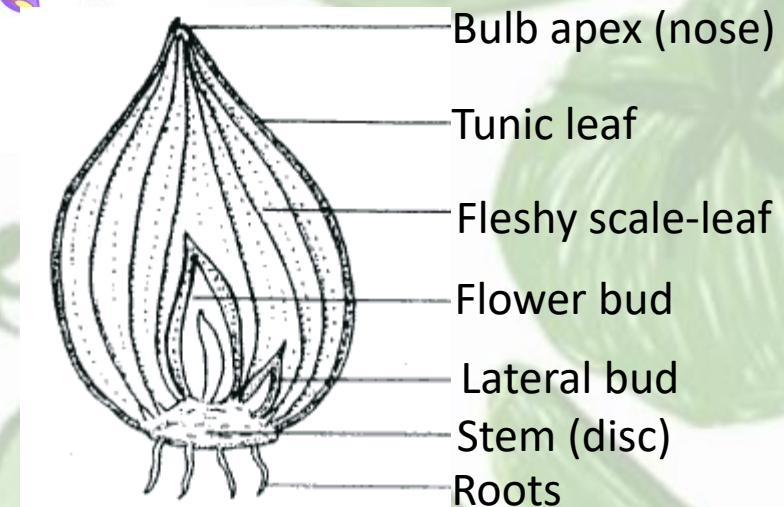
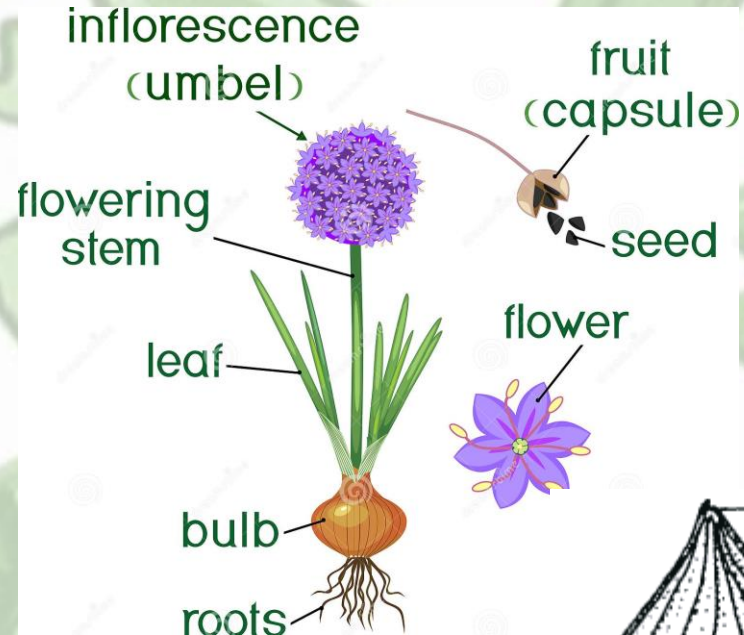
Chenopodiaceae





# Amarylidaceae

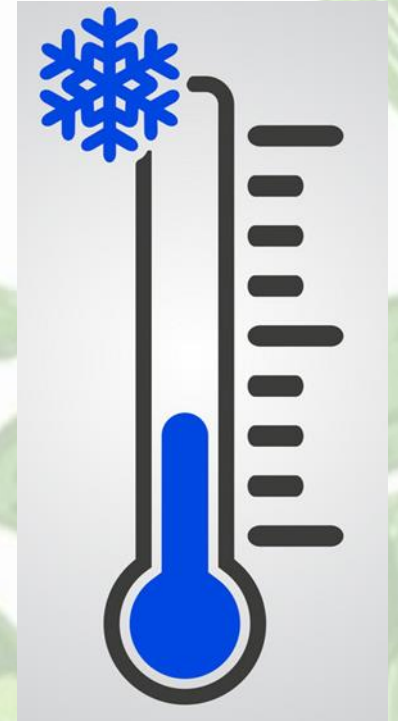
- Amarylidaceae (formerly Alliaceae) Characteristics:
- Perennial
- Monocots
- Produces bulbs
- **Flowers:** parts in 3's, flowers usually clustered in a ball
- **Fruit:** Dry capsule with black seeds



# Growing Onions, etc.

Includes: onions, shallots, garlic, chives and leeks

- Cool Season: Fall/Winter/Early Spring
- Full Sun
- Grown from seeds, transplants or bulbs – Leeks (seeds or transplants), Onions (seeds, transplants or bulbs), Chives (seeds or transplants), Shallots (seeds or bulbs)
- Germination: Optimum 68-78
- Well-drained loam or sandy loam, pH 5.5-6.5.
- Soil test for fertilization recommendations
- Generally, 1 lb. 8-24-24/75 ft<sup>2</sup> at planting, sidedress every 4-6 weeks with high N fertilizer





# Amarylidaceae

Somewhat Variety Dependent, but in general:

Crop	Spacing	Days to Harvest	Notes
Chives	4-6"	75-85	
Garlic	4-6"	210	
Leek	6-8"	110-125	
Onion	4-6"	60-160	Green/Scallions 60 Mature 100-160
Shallot	4-6"	105-110	

# Best Harvest

Crop	Harvest
Chives	Clip leaves as soon as they reach 4" or more.
Garlic	In summer when bottom leaves begin to yellow and turn brown
Leek	When plants reached desired size, leaves are still green
Onion	As green onions as soon as they reach desired size. As mature when neck becomes soft and tops are falling over.
Shallot	In summer when tops fall over and begin to brown.

# Amarylidaceae

## Common Pests:

- **Thrips** (Onion thrips (*Thrips tabaci*), Western flower thrips (*Frankliniella occidentalis*)) - Silvery scarring of leaves.

**Control:** Natural enemies, Spinosad

- **Leafminers** (*Lyriomyza* spp.) – Thin, white winding trails on leaves. **Control:** Usually no control needed.



Thrips Damage



Onion thrips



Leafminer Damage



# Amarylidaceae

## Common Diseases:

- **Black mold** (*Aspergillus niger*) – Post-harvest black discoloration and lesions. **Control:** use treated seed, store <59°F
- **Botrytis leaf blight** (*Botrytis squamosa*) - Small white lesions with light green halos. **Control:** Sanitation, Avoid OH watering, Good Air Circ., chlorothalonil
- **Downy mildew** (*Peronospora destructor*, *P. parasitica*) - Pale spots or elongated patches on leaves; gray-purple fuzzy growth on leaf surface; leaves turning pale then yellow; leaf tips collapsing. **Control:** Remove debris, good air circ., chlorothalonil
- **Purple blotch** (*Alternaria porri*) - Small water-soaked lesions on leaves or stalk with white centers; which enlarge to become zonate and brown to purple in color with red or purple margin surrounded by yellow zone. **Control:** Avoid OH watering, chlorothalonil.
- **White rot** (*Sclerotinia cepivorum*) - Older leaves yellowing; stunted growth; death of all leaves; fluffy white growth on base of bulb which spreads up bulb to storage leaves. Can survive in soil 20 yrs. **Control:** Sanitation to prevent soil infestation.



Botrytis Leaf Blight



Purple Blotch



Black Mold



Downy Mildew



White Rot



# Apiaceae

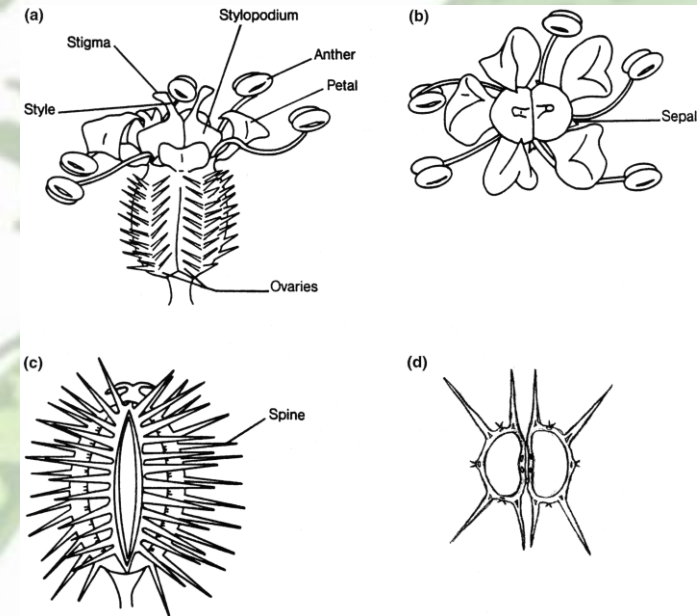
## Apiaceae (formerly Umbelliferae)

### Characteristics:

- **Leaves:** alternate with sheathing bases; internodes usually hollow
  - Plants aromatic
  - **Flowers:** small, inconspicuous.
- Parts in 5's
- Flowers in an Umbel - a number of short flower stalks which spread from a common point like umbrella ribs.



Umbel

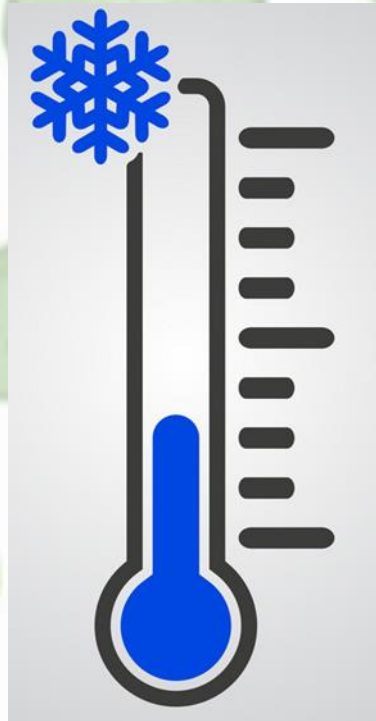


Apiaceae flower and fruit diagram

# Growing Carrots, etc.

Includes: carrots, celery, parsley, dill, parsnip, fennel, cilantro

- Cool Season: Fall/Winter
- Full Sun
- Well-drained, sandy soil. pH 5.5-7.0
- Germination: 61-74°F
- Planting: Carrot, parsnip (seed), celery, fennel, cilantro, parsley, dill (seed or transplants)
- Soil test for fertilization recommendations
- Generally, 2 lbs. 8-8-8/100ft<sup>2</sup> 3-4 weeks after planting





# Apiaceae

Somewhat Variety Dependent, but in general:

Crop	Spacing	Days to Harvest
Carrot	2-3"	60-75
Celery	6-8"	80
Cilantro	2-4"	50-55
Dill	2-4"	40-115
Fennel	4-6"	50-60
Parsley	8-12"	75
Parsnip	2-3"	110-120

# Best Harvest

Crop	Harvest
Carrot	Any time when they reached desired size
Celery	When stalks are edible size, usu. 3-5" diameter bundle
Cilantro	When plant has enough leaves to harvest
Dill	Leaves – when plant has enough to harvest. Seed heads – once seeds are set while they are green and tender. Seeds – after seed head is dry and seeds drop easily
Fennel	Leaf – when plant has sufficient foliage to harvest.
Parsley	When plant has enough leaves to harvest
Parsnip	When roots reach full size.



# Apiaceae

## Common Pests:

- **Aphids** (*Cavariella aegopodii*) – necrotic spots on leaves, sooty mold. **Control:** Natural predators, reflective mulch, malathion
- **Carrot weevil** (*Listronotus oregonensis*) - Irregular dark grooves in zig-zag pattern on roots. Adults overwinter in crop debris. **Control:** Remove crop debris, Crop rotation.
- **Nematodes**
  - **Root-knot** (*Meloidogyne* spp.)
  - **Stubby root** (*Paratrachodorus* spp.)
  - **Needle** (*Longidorus africanus*)
    - **Symptoms:** Forked, distorted or stunted taproots
    - **Control:** Soil solarization



Carrot Weevil  
Damage



Aphids



Larvae



Nematode  
Damage





# Apiaceae

## Common Diseases:

- **Black rot** (*Alternaria radicina*) - Damping-off of seedlings; root and crown necrosis; blighted foliage; lower portion of petioles black and necrotic; black, sunken lesions on taproot. **Control:** Resistant varieties, certified seed, crop rotation
- **Cottony rot (Sclerotinia rot)** (*Sclerotinia sclerotiorum*) - Small, water-soaked, soft lesions on crown and roots; white fluffy fungal growth all over affected tissues. Can survive in soil for years. **Control:** Sanitation (keep it out).
- **Bacterial Soft rots** (*Erwinia carotovora*, *Erwinia chrysanthemi*, *Pseudomonas marginalis*) - Sunken dull orange lesions on taproot which causes tissue to collapse and become soft. Odor. **Control:** Well-drained soil, sanitation.



Black Rot



Cottony Rot



Bacterial Soft Rots



# Asparagaceae

## Asparagaceae Characteristics:

- Morphologically diverse. One species that we eat is *Asparagus officinalis*.
- Tall plant with stout stems and feathery foliage.
- The flowers are bell-shaped and occur alone or in pairs. They are green-white to yellow in color. After flowering, a round red berry is formed with 1 to 6 black seeds. Asparagus can live for 20 or more years.





# Growing Asparagus

- Perennial, Full Sun
- Well-drained, deep sandy or clay loam soil. pH 6.0-7.5
- Most often planted as 1-2 year old crowns.
- Planting: Furrow 10" deep. Crown the area and place crowns 12-24" apart.
- Soil test for fertilization recommendations
- Generally, ¼ lb. 10-20-10/60 ft<sup>2</sup> prior to planting. Annually – 2 lbs. in late winter, then 1-2 lbs. 21-0-0 after last harvest.
- Do not harvest first 2 years after planting.
- Most varieties require a dormant period.
- Harvest tender shoots 4-10" long for about 8 weeks by cutting spears 1-2" below ground level.



# Asparagaceae

## Common Pests:

**Asparagus beetle** (*Crioceris asparagi*)

**Spotted asparagus beetle** (*Crioceris duodecimpunctata*) -

Chewed spear tips; brown stains; **Control:** Remove asparagus berries, Spinosad, carbaryl.





# Asparagaceae

## Common Diseases:

- **Asparagus rust** (*Puccinia asparagi*) - Orange pustules on spears and ferns; yellowing ferns and dieback. **Control:** Manage irrigation and ensure plants are not under or over-watered; cut and destroy diseased ferns; dust plants in sulphur.
- **Cercospora Blight of Asparagus** (*Cercospora asparagi*) - small, oval spots with gray or tan color with reddish brown borders on the needles and small branches. **Control:** Avoid OH watering, remove crop debris. Chlorothalonil.
- **Phytophthora crown and spear rot** (*Phytophthora* spp.) - Soft, watery lesions on stem near soil; brown lesions. **Control:** Plant in well-drained soil. Avoid over-watering.



Asparagus rust



Cercospora Blight



Phytophthora Rot

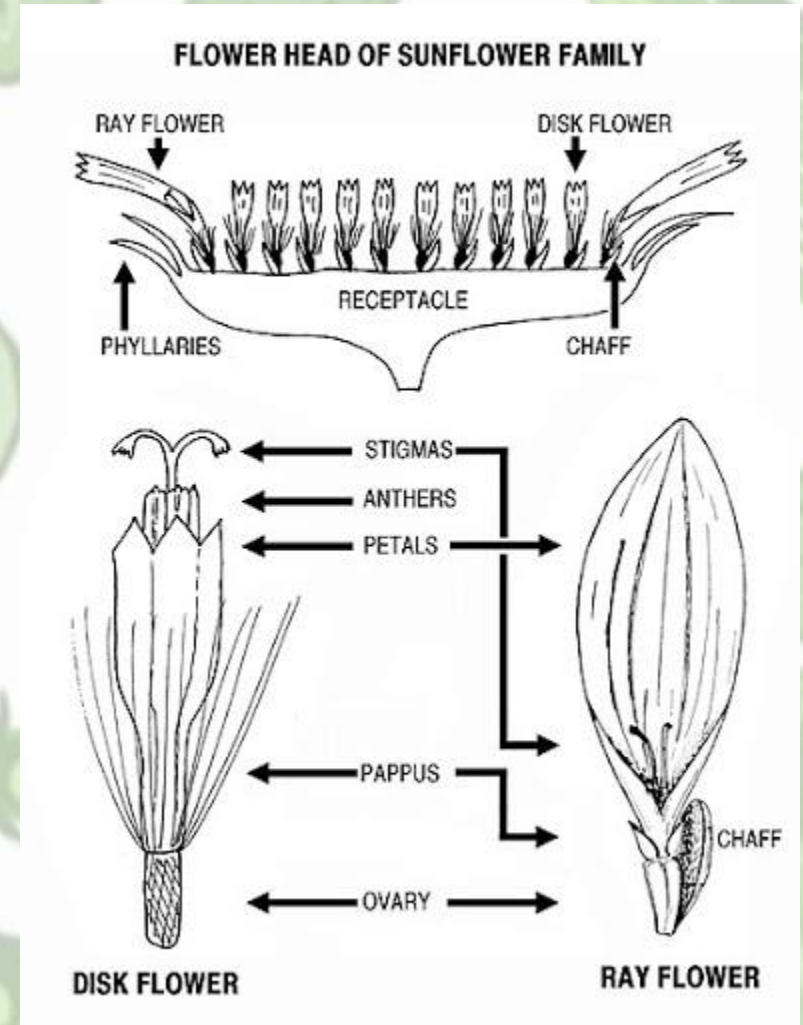
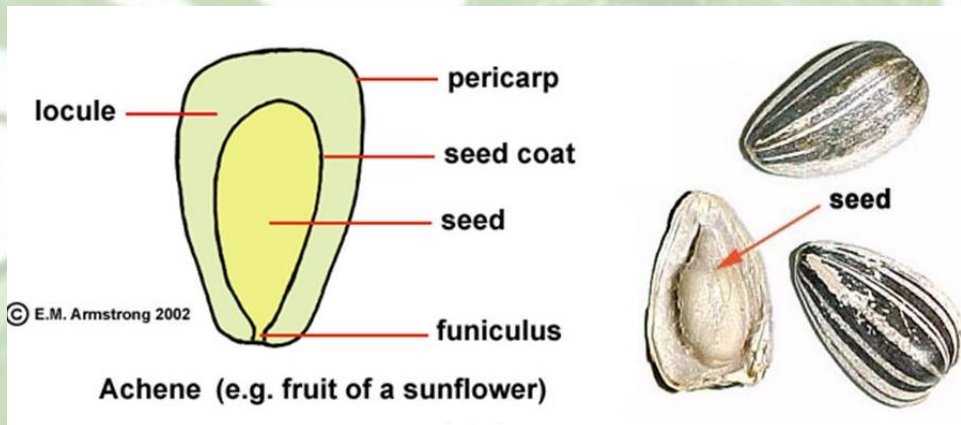


# Asteraceae

**Asteraceae** (formerly Compositae) characteristics:

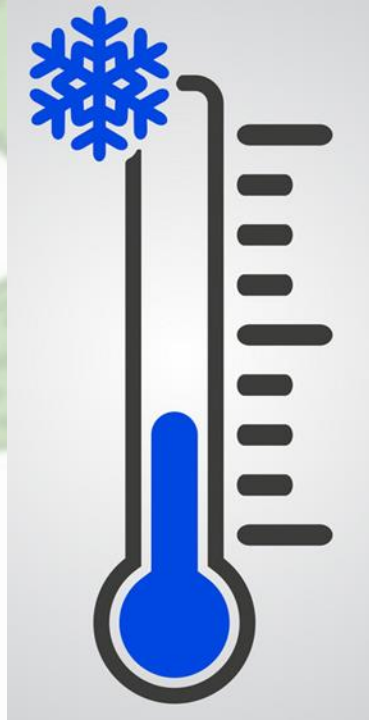
- **Flowers:** Flower head is a composite of many individual flowers, usually both ray and disc florets.
- **Fruit:** Achene - a small, dry one-seeded fruit that does not open to release the seed.

**Includes:** Lettuce, Endive, Artichoke



# Growing Lettuces, etc.

- Cool Season
- Germination: 59-69°F
- Well-drained soil rich in organic matter. pH 6.0-7.0.
- Full sun.
- Planting: Direct seed or transplants,
- Soil test for fertilization recommendations
- Generally, 2 lbs. 5-10-15/100 ft<sup>2</sup> monthly.





# Growing Artichokes



- Perennial – Herbaceous thistle.
- Deep, well-drained soil. pH 6.0-8.0
- The optimum daytime temperature is 20–22°C (68–71.6°F) and optimum nighttime temperature is 12–14°C (53.6–57.2°F). Temp. extremes reduce tenderness.
- Planting: Usually as transplants or vegetatively from underground shoots.
- Soil test for fertilization recommendations
- Generally, ¼ lb. 8-8-8 per plant per month.



# Asteraceae

Somewhat Variety Dependent, but in general:

Crop	Spacing	Days to Harvest
Artichoke	2-3'	75-85 from transplant
Lettuce	6-12"	28-58
Belgian Endive	2-4"	21-28 after forcing



# Best Harvest

Crop	Harvest
Artichoke	When flower bud is young and tight, before it starts to open
Lettuce	Leaf – as soon as desired size. Loose head and head – as soon as desired size.
Belgian Endive	When new buds are 2-4” long after forcing.

# Asteraceae

## Common Pests:

- **Aphids** – As you've already seen. Insecticidal soaps.
- **Lepidopteran caterpillars** – As already seen, use Bt.
- **Snails and slugs** – **Damage:** Irregularly shaped holes in leaves and stems; slime trails present; Frass. **Control:** Iron phosphate.





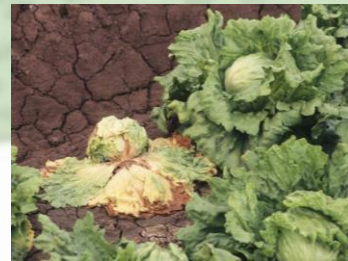
# Asteraceae

## Common Diseases:

- **Lettuce drop** (*Sclerotinia minor*, *Sclerotinia sclerotiorum*) – Survives 8-10 yrs. in soil. **Symptoms:** Wilting of outside leaves spreads inwards until whole plant is affected; soft watery lesions; leaves collapse and lie on soil surface; black fungal structures on infected leaf tissue and soil surface. **Control:** Avoid OH watering. Sanitation.
- **Bottom rot** (*Rhizoctonia solani*) – **Symptoms:** Small red to brown spots on lower leaves, usually on underside of midrib which may expand rapidly causing the leaves to rot. As stems rot, head of lettuce becomes slimy and brown and collapses. **Control:** Avoid excessive irrigation. Mulch.
- **Lettuce Mosaic Virus (LMV)** - Seedborne. Aphid vectored. **Symptoms:** Leaves of plants that are infected at a young stage are stunted, deformed, and (in some varieties) show a mosaic or mottling pattern. **Control:** Resistant varieties. Cert. seed.



Bottom rot



Lettuce drop

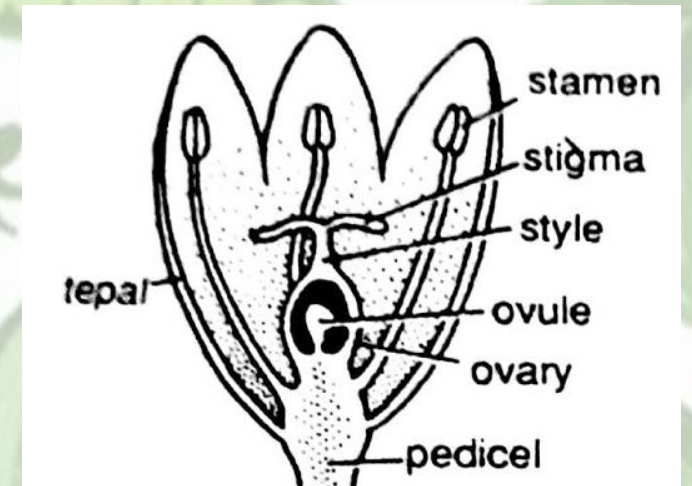


LMV



# Chenopodiaceae

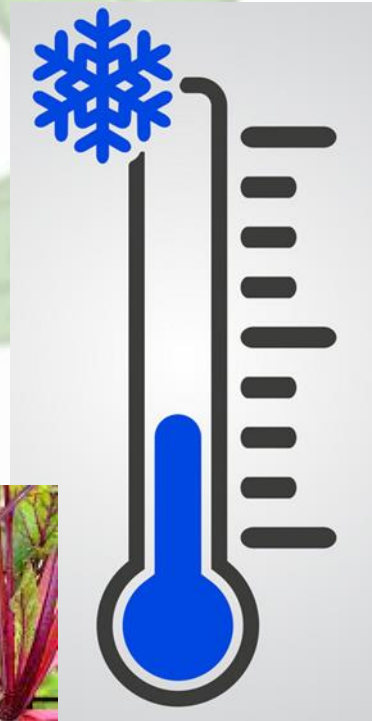
- **Includes:** Beets, Spinach, Chard
- **Leaves:** Simple
- **Flowers:** Minute and inconspicuous, greenish. The calyx usually consists of 1-5 sepals (usually 5). There are no petals. There are 2 (rarely 3 to 5) styles or stigmas.
- **Fruit:** Achene
- **Biennial**





# Growing Beets, Spinach & Chard

- Cool Season: Fall/Winter/Early Spring
- Full Sun
- Well-drained soil high in organic matter; pH 6.3-6.8.
- Germination: 59-69°F
- Planting: Direct seed; Chard and Spinach can be transplants.
- Soil test for fertilization recommendations
- Generally, 2-2.5 lbs. 8-8-8/100 ft<sup>2</sup> prior to planting and again when 4-6" tall.





# Chenopodiaceae

Somewhat Variety Dependent, but in general:

Crop	Spacing	Days to Harvest
Beet	2-4'	55-60
Chard	6-8"	25-55
Spinach	3-6"	35-45



# Best Harvest

Crop	Harvest
Beet	Young beets when roots are 1-2" diameter Mature beets when roots are sized, usually, 3-5" diameter
Chard	As soon as leaves reached desired size but are still tender
Spinach	Leaves or whole plants when dark green, young and tender

# Chenopodiaceae

## Common pests:

- Aphids
- Flea beetle
- Leafminers
- Armyworms
- Loopers
- Root-knot nematode
- Beet cyst nematode (*Heterodera schachtii*) - seedling exhibit stunting and reduced leaf growth. Roots stunted with lots of secondary roots and yellow-brown cysts. **Control:** Resistant var., Sanitation, Soil Solarization.



Flea beetle



Beet cyst nematode



Root-knot nematode



Beet Armyworm



Aphids



# Chenopodiaceae

## Common diseases:

- **Anthracnose** (*Colletotrichum* spp.) – **Symptoms:** Small water-soaked spots which enlarge and turn tan or brown with a papery texture. **Control:** Avoid OH watering, Cert. seed, Copper.
- **Downy mildew** (*Peronospora farinosa*) – **Symptoms:** yellow spots on cotyledons and leaves which enlarge over time and become tan in color with a dry texture; purple fungal growth is present on the underside of leaves; **Control:** Resistant var., Copper
- **Cercospora leaf spot** *Cercospora beticola* – **Symptoms:** Brown to gray spots surrounded by red-purple halos; yellow or brown necrotic leaves. **Control:** Remove debris, Avoid OH watering, tetraconazole
- **Bacterial blight** (*Pseudomonas syringae* pv. *aptata*) – **Symptoms** - leaves show irregular to circular shaped spots with tan to dark brown centers and dark black borders. **Control:** Cert. seed, avoid OH watering
- **Mosaic and other viruses** Cucumber mosaic virus (CMV) Beet curly top virus (BCTV); Tobacco rattle virus (TRV); Tomato spotted wilt virus (TSWV) –aphid, leafhopper and thrips vectored. **Symptoms:** Chlorotic leaves which may have necrotic spots, mosaic patterns or ringspots; leaves may be puckered. **Control:** Resistant var., Weed control.



Downy mildew



Bacterial blight



Anthracnose



Cercospora leaf spot



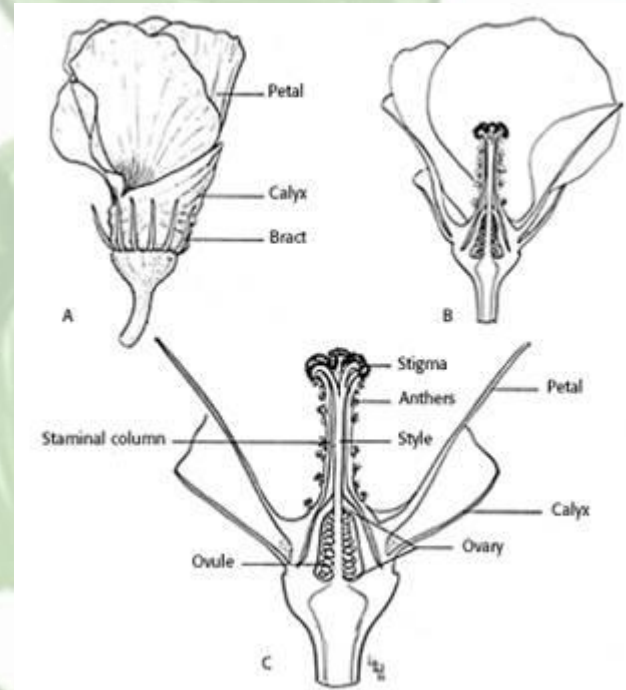
BCTV



# Malvaceae

## Malvaceae Characteristics:

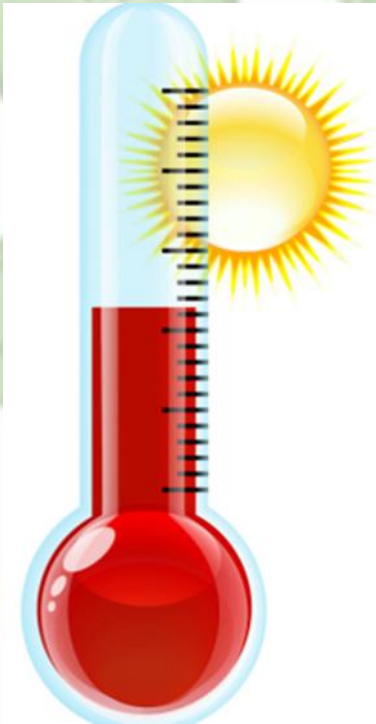
- Vegetative parts with mucilage (slimy protein).
- **Leaves:** often palmately veined and lobed with star-shaped hairs.
- **Flowers:** 5 petals & sepals; 5 to many stamens, often fused.
- **Fruit:** usually a capsule (simple, dry fruit that splits at maturity) with locules (chambers)
- Okra and hibiscus





# Growing Okra

- Warm Season – Summer, okra is a heat lover; Full Sun
- Well-drained sandy loam soil high in organic matter. pH 5.8-6.8
- Germination: 75-90°F, pre-soaking seed improves results
- Space plants 12-18" apart
- 50-60 Days to Harvest
- Harvest: Young tender pods 3-6" long. Become fibrous as they mature.
- Soil test for fertilization recommendations
- Generally, 1 lb. 8-8-8/100 ft<sup>2</sup> after first pod set and every 3-4 weeks thereafter.





# Malvaceae

## Common Pests:

- **Aphids** – Vector viruses
- **Thrips** – Vector viruses
- **Two-spotted Spider Mite**
- **Whitefly** – Vector viruses
- **Fire Ants:** fire ants eat the base of developing blooms, which causes misshapen pods, aborted flowers and the plant to may stop producing. **Control:** Fire ant insecticides outside of growing area.





# Malvaceae

- **Common Diseases:**
- **Southern blight** (*Sclerotium rolfsii*)
- **White mold** (*Sclerotinia sclerotium*)
- **Root-knot nematode** *Meloidogyne* spp.
- **Powdery mildew** (*Oidium asteris-punicea*) – Fungus overwinters in plant debris. **Symptoms:** Powdery white covering on leaves. **Control:** Remove plant debris, Neem, sulfur, copper, chlorothalonil
- **Yellow Vein Mosaic Disease** *Bhendi Yellow Vein Mosaic Virus (BYVMV)* - Whitefly transmitted. **Symptoms:** Infected leaves show alternate patches of green and yellow. Veins become clear and chlorotic. Fruits are yellowish green in color and small in size. **Control:** Resistant varieties, remove debris





# Poaceae

## Poaceae Characteristics:

### Monocots

- **Flower:** One to many florets are aggregated into spikelets;
- **Fruit:** a caryopsis (specialized type of dry, one-seeded fruit characteristic of grasses, in which the ovary wall is united with the seed coat).
- **Includes:** Corn, Rice, Wheat, Barley, Oats, Sugarcane, Millet, Sorghum
- **Worldwide,** 70% of all crops grown; corn, rice & wheat provide more than 50% of all calories consumed by humans.
- Sweet corn primary one in home gardens



# Growing Corn

- Warm Season
- Well-drained soil rich in organic matter. pH 6.0-6.8
- Germination: 68-95°F
- Direct Seed
- Space plants 10-12" apart; must be planted in blocks
- Days to Harvest: 65-95
- Soil test for fertilization recommendations. Corn is a heavy feeder, especially of nitrogen
- Generally, 2-2.5 lbs. 8-8-8/100ft<sup>2</sup> at 1' tall and at 3' tall.
- Harvest when kernels are plumb and milky – usually when silks turn brown





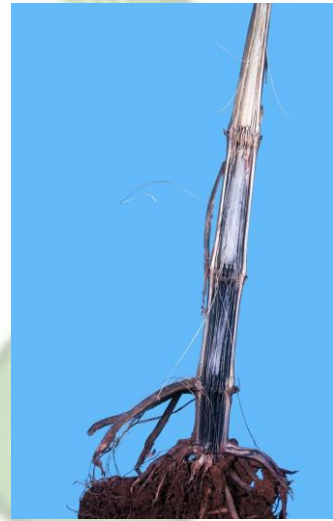
# Poaceae

## Common Diseases:

- **Anthracnose**
- **Cercospora**
- **Rust**
- **Downy Mildew**
- **Charcoal rot** (*Macrophomina phaseolina*) - plant stalks become shredded and pith is completely rotted. **Control:** no resistant varieties or fungicides. Avoid plant stress with good fertilization and water management.
- **Common smut** (*Ustilago zae*) – Overwinters on debris, long-lived. **Symptoms:** Tumor-like galls on plant tissues. **Control:** Resistant varieties, remove debris. Fungus is edible.
- **Viruses** - Maize dwarf mosaic virus (MDMV); Maize Lethal Necrosis Disease (MLND); Corn Lethal Necrosis (CLN); Maize Chlorotic Mottle Virus (MCMoV); Sugarcane Mosaic Virus (SCMV); Wheat Streak Mosaic Virus (WSMV)



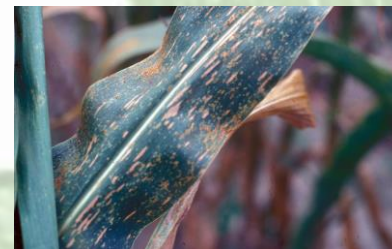
MDMV



Charcoal rot



Smut



Rust



# Poaceae

## Common Pests:

- Aphids
- Corn earworm  
(Control with Bt)
- Armyworm (Control with Bt)
- Flea Beetle
- Thrips – Vector  
Viruses
- Spider mites



Thrips damage



Armyworm



Aphids



Corn earworm



Spider mite damage



Flea Beetle



# This Can Come From YOUR Garden!







Please post all your questions and results to the message board that was emailed to you.

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