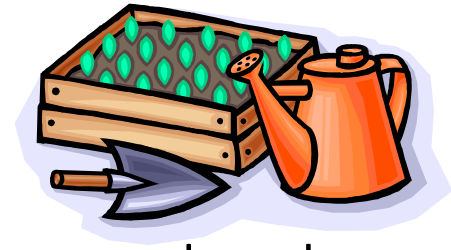


Vegetable Seed Sowing & Planting

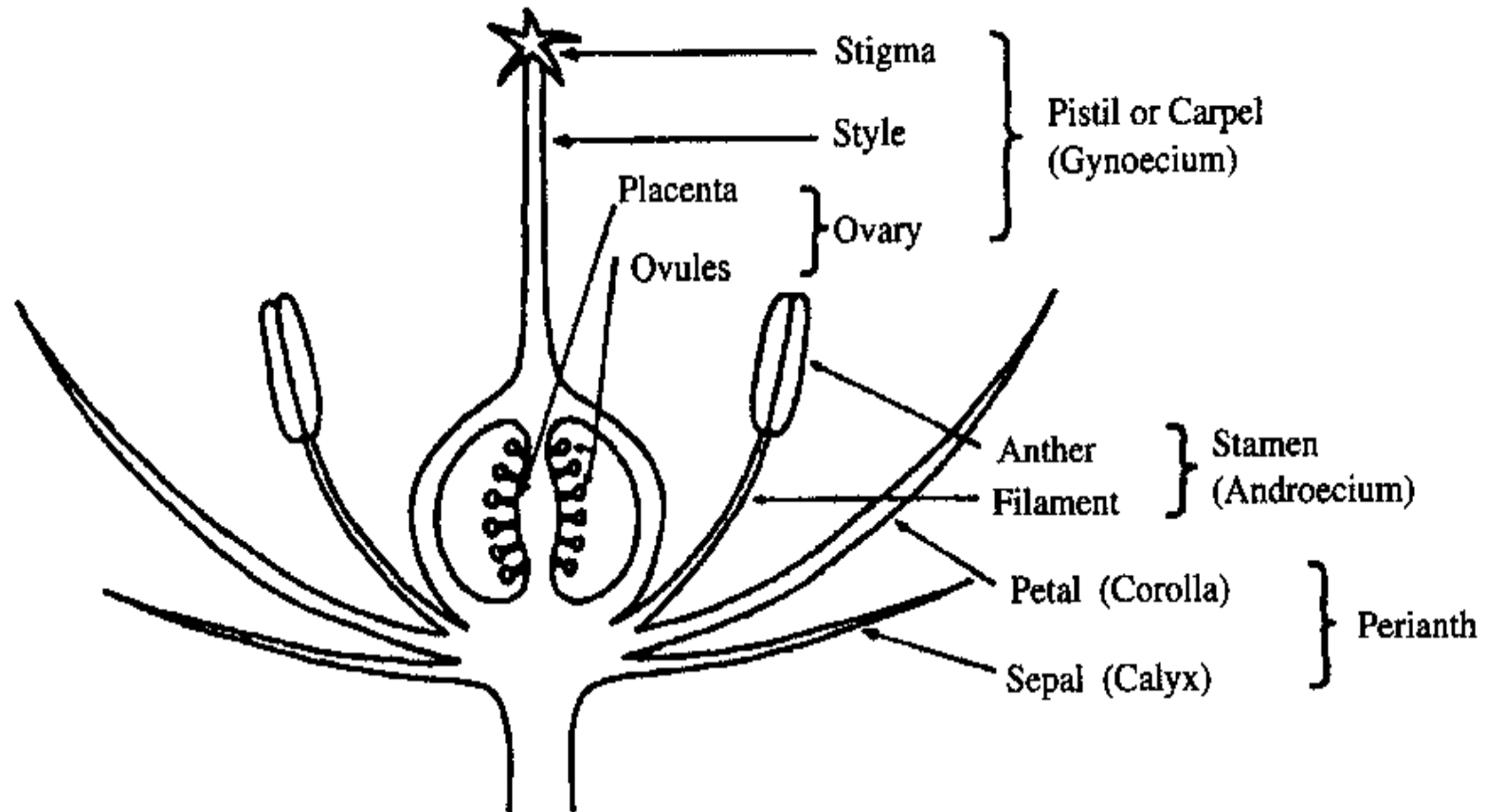


Why Plant Seeds?

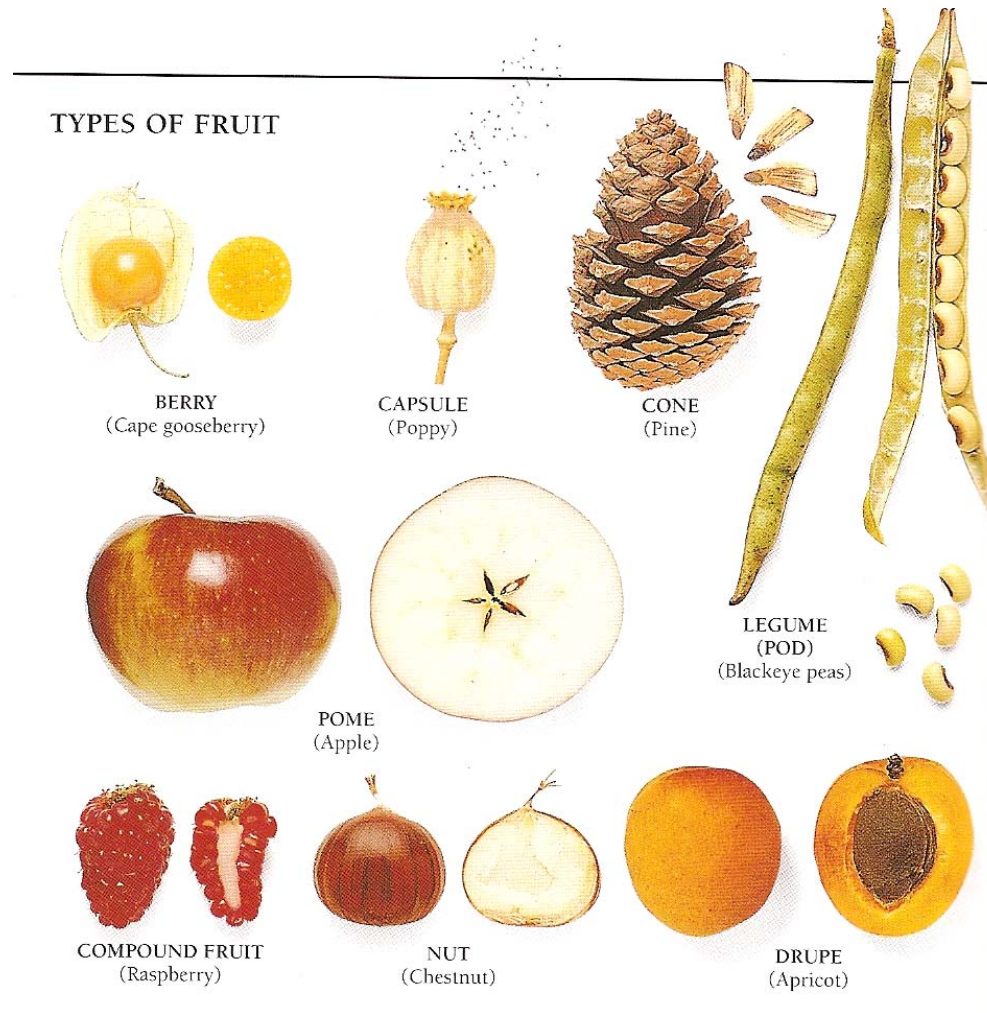
- Variety
- Saves money
- Head start on harvest and bloom
- Select plants well adapted to our climate by using saved seed
- Grow a vast variety of heirloom seeds
- Magic



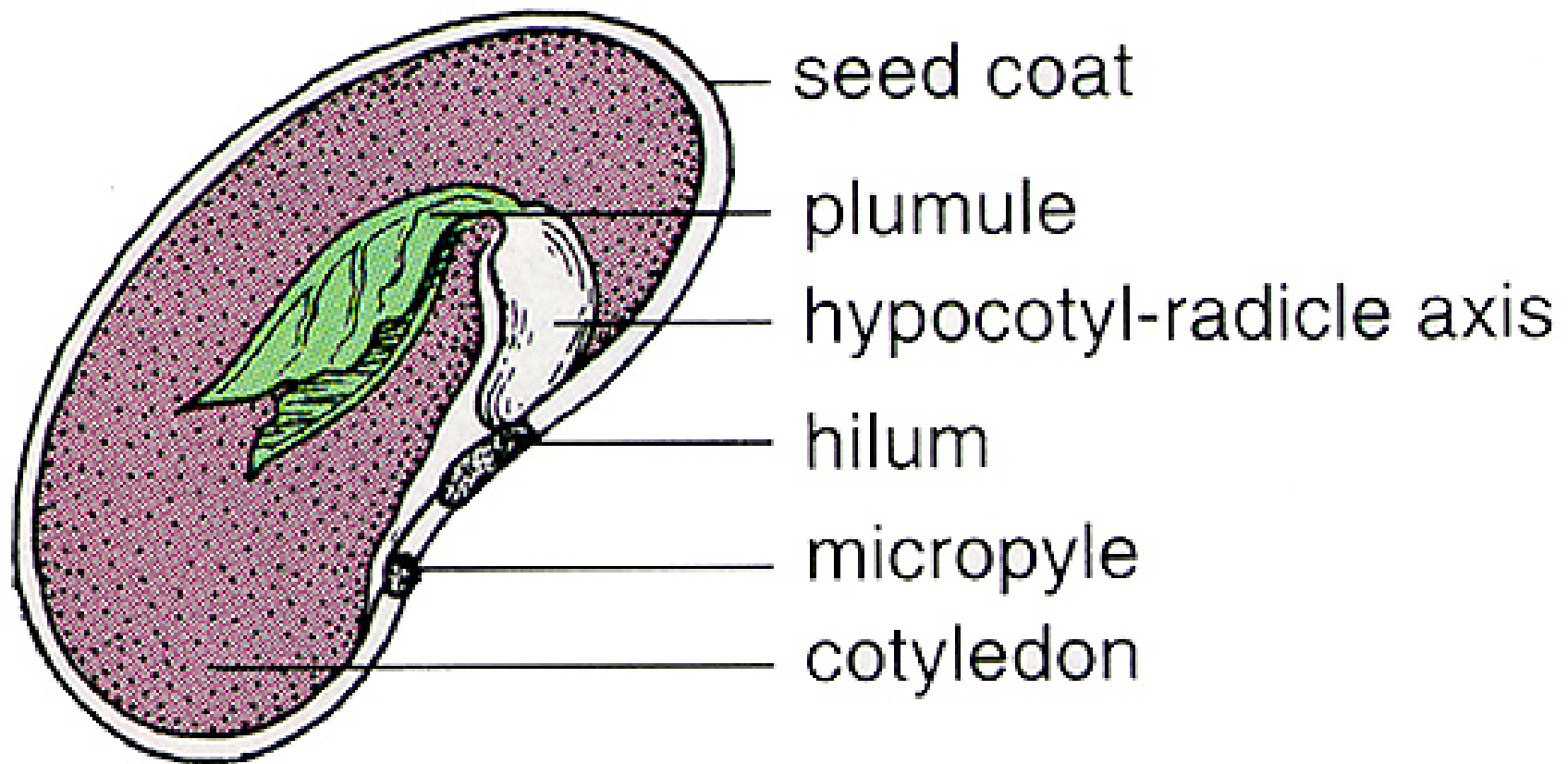
Quick Botany Review



Types of Fruit



Parts of the Seed



4 Critical Factors for Germination

1. Water
2. Oxygen

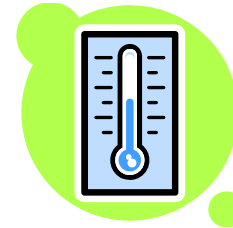
Indoor growing medium should have good water retention, be light and airy, drain easily, be sterile to prevent disease.



Critical Factors for Germination contd.

3. Temperature (within the soil)

- Depends on plant species
- Evaporation decreases temperature by 5 to 10 degrees
- General range at which seeds germinate



Critical Factors for Germination contd.

4. Light

- If seed needs light to germinate, don't cover seed or lightly cover
- If seed needs darkness to germinate, cover w/ planting medium if large seed, or w/ flat newspaper if very fine seed



Seed Dormancy

- Dormant = fails to germinate after given all required environmental conditions
- Dormancy prevents germination when conditions are not favorable



Common Causes of Dormancy

- Hard seed coats, often impermeable to water
- Dormant or immature embryo
- Chemical inhibitors

Treatments to Overcome Dormancy

- Scarification – physically degrading seed coat
- Soaking
- Stratification – period of moist chilling
- Other methods



Seed Quality

- Use fresh, good quality seed
- Check date on seed package
- Test old seed for viability



Sowing the Seed

- Read seed packet
- Know your climate
- Prepare
- Sow and water



Read Seed Packet

- Germination length
- When to plant (how long before last frost)
- Time from planting to flower or fruit

To Open: Peel back this flap. Peel back side and bottom flaps to find additional information on inside packet!

Cut plant tag along dotted line. Staple to stake such as popsicle stick, etc. Use as row marker in garden or in transplant trays.

Onion

Red Burgermaster

Allium cepa

Days to Emerge:

10-15 Days

Seed Depth:

1/4"

Seed Spacing:

2"

Row Spacing:

12" - 18"

Thinning

When 2" tall,
thin to 4" apart.

Artist:
David Sawyer

Bright red, globe shaped onion with very attractive, crisp red and white flesh. Wonderful for burgers and sandwiches. Also great in salads and thousands of other dishes where sweet, mild onions are a must! Long day onion: forms bulb grown north of Atlanta, Dallas, Los Angeles (grow short day onions for these areas and south). *This packet plants: 1 - 13 foot row.*

When to plant outside: As early in spring as soil can be worked.

When to start inside: 8-12 weeks before last frost. RECOMMENDED. The earlier the start, the bigger the bulb.

"Tons" more Information...
ON THE INSIDE OF OUR
PACKET!



© Botanical Interests, Inc.

Onion

Red Burgermaster

Allium cepa (Hybrid)

\$1.89

Net Weight
250 mg

110 days
Long day onion
Plant as early in
spring as soil
can be worked
or start indoors.

Burgers and
sandwiches are
not complete
without a big
slice of this
sweet onion!
Also stores well.

Botanical Interests TM

Botanical Interests, Inc. 660 Compton St, Broomfield, CO 80020.
www.botanicalinterests.com Lot#1 Packed for 2007 Sell by 12/07

Know Your Climate

- Average date of last frost
- Don't start seeds too early



Vegetable Planting Dates

Yavapai County



COLLEGE OF AGRICULTURE AND LIFE SCIENCES

Bulletin #51

Yavapai County Vegetable Planting Dates

Warm Season Crops: bean, cantaloupe, cucumber, corn, eggplant, herbs, okra, pepper, pumpkin, squash, tomato, watermelon

Cool Season Crops: beet, carrot, chard, collard, leaf lettuce, onion, pea, radish, spinach, turnip

Vegetable	Planting Dates		
	2000 – 3000 Foot Elevation <i>Black Canyon City</i>	3000 – 4500 Foot Elevation <i>Camp Verde, Cottonwood, Sedona, Skull Valley</i>	4500 – 6000 Foot Elevation <i>Chino Valley, Dewey, Prescott, Prescott Valley</i>
Asparagus	Oct 1-Mar 1	Feb 15-Apr 1	Apr 1-30
Bean, bush	Mar 1-Apr 1 Jul 15-Aug 15	Apr 25-Jul 15	May 15-Jul 1
Bean, pole	Jul 15-Aug 10	Apr 25-Jul 15	May 15-Jul 1
Bean, lima	Mar 1-Apr 1	Apr 25-Jul 15	May 15-Jul 1
Bean, edible soy	Apr 1-Jun 1	May 15-Jul 15	May 25-Jul 1

Indoor Preparation

- Choose containers
- Pre-moisten seed starting medium
- Pre-moisten fiber pots



Sow and Water

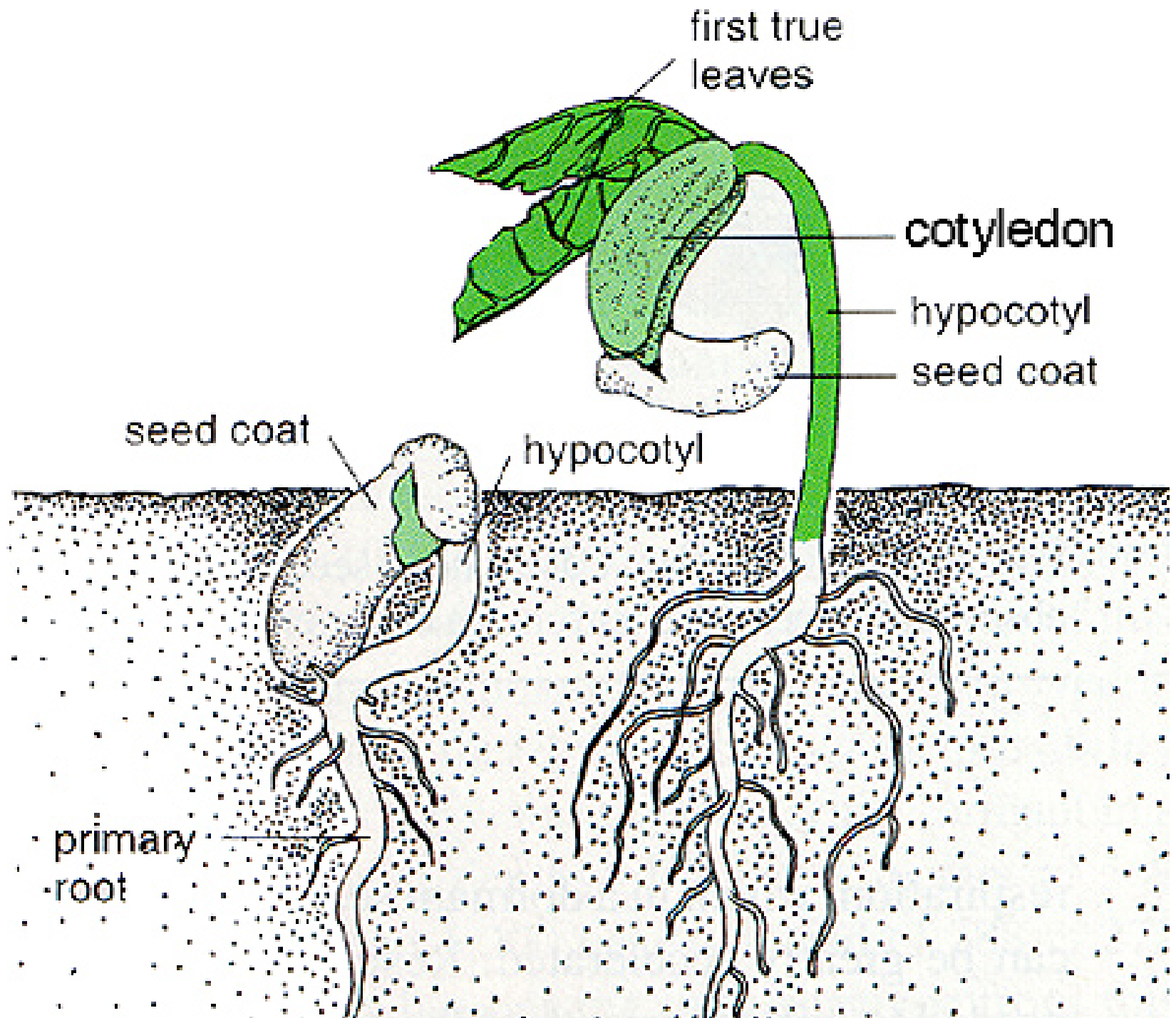
- Plant larger seed to recommended depth
- Do not cover very tiny seeds, or cover with fine dusting of vermiculite
- Water in to settle seed
- Use fine bulb sprinkler, fine sprinkler head on watering can, or spray bottle

Lighting Options

- Inexpensive shop light
- Two full spectrum Gro-Lux bulbs
- One cool white florescent bulb (strong in blue-green end of spectrum) & one warm white (strong in red-orange end of spectrum)

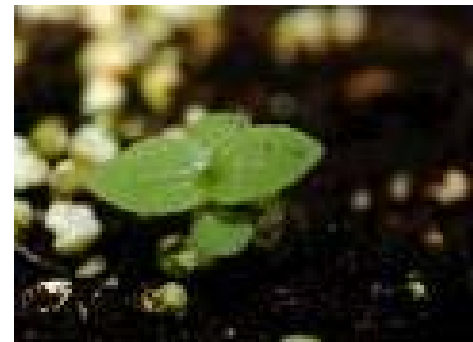


Seed Germination



After Germination

- Seed leaves are the first to emerge
- Remove covers when good percentage of seed has germinated
- Provide airflow
- Remove from bottom heat



Fertilizing

- Only after first true leaves emerge
- Diluted solution



Transplanting

- Many plants ready when first true set of leaves emerge
- Small or finicky plants benefit by waiting for second set of true leaves



Questions????



Planting Out

- Timing
- Hardening off
- Transplanting
- Succession planting

Timing



- Yavapai County Planting Dates bulletin
- Too early
 - Run the risk of frost damage
- Too late
 - Will not maximize the growing season
 - Run the risk of the season ending before ripening

Season Extenders

- Cloches
- Row covers
- Mulches
- Cold frames
- Walls of Water or Plastic Bottles

Cloches



Row Covers



Mulches



Cold Frames



Walls of Water Plastic Bottles



Cool Season Varieties

- Germinate and grow at lower temperatures and are not injured by light frost
- Generally perform poorly during periods of extended hot temperatures
 - Bolt and produce flowers
 - Taste bitter
 - Peas stop producing pods

Cool Season Veggies

Asparagus

Broad bean

Broccoli

Brussels sprouts

Cabbage

Collard

Garlic

Horseradish

Kale

Kohlrabi

Leek

Onion

Pea

Radish

Rhubarb

Shallot

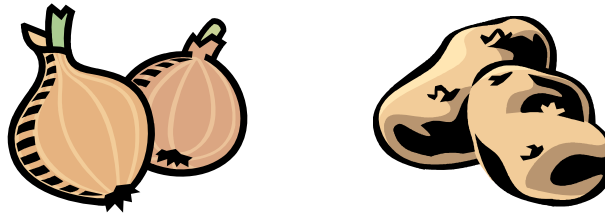
Spinach

Turnip

Wishy-Washy Crops

Require cool weather to become established, but grow into the warm season

Onions and potatoes



Warm Season Varieties

- Do not grow well at temperatures below 50°F
- Are killed by frost
- Will often rot if planted in cold, damp soil
- Cool weather will retard growth and delay fruit set

Warm Season Veggies

Cucumber

Eggplant

Lima bean

Melons

New Zealand spinach

Pepper

Pumpkin

Snap bean

Squash

Sweet corn

Sweet potato

Tomato

More Wishy-Washy Crops

- Injured by frost
- Intolerant of temperatures above 70°F

Beet

Carrot

Cauliflower

Celery

Chard

Chinese cabbage

Endive

Lettuce

Mustard

Parsnip

Potato

Swiss chard

Hardening Off

The gradual process of acclimating plants started indoors to outside conditions

- Can be moved to a cold frame
- 7 – 10 day period
- Mild day – 2-3 hours of sun in sheltered location
- Protect seedlings from strong sun, wind, hard rain and cool temps
- Increase exposure to sunlight a few additional hours a day
- Gradually reduce watering & avoid fertilizing
- Pay attention to weather forecasts for the low temps
- Know the relative hardiness of various crops
- Gradually increase exposure to cold

Hardening Off contd.

Recommended Minimum Temperatures		
Hardy	40°F	Broccoli, Brussels sprouts, kohlrabi, cabbage, onions, leeks, parsley
Half-hardy	45°F	Celery, Chinese cabbage, lettuce, endive
Tender	50°F	Squash, pumpkin, sweet corn
	60°F	Cucumber, muskmelon
	65°F	Basil, tomatoes, peppers

Hardening Off contd.

Timing

- 7-to-10 days before planting out date

Methods

- Racks that roll in and out
- Opening windows and doors
- Hand carry

Transplanting

Amending the planting hole

- Compost
- Bone meal
- Epsom salts

Direct Sowing

- Straight Rows
- Hill Planting



Planting Straight Rows

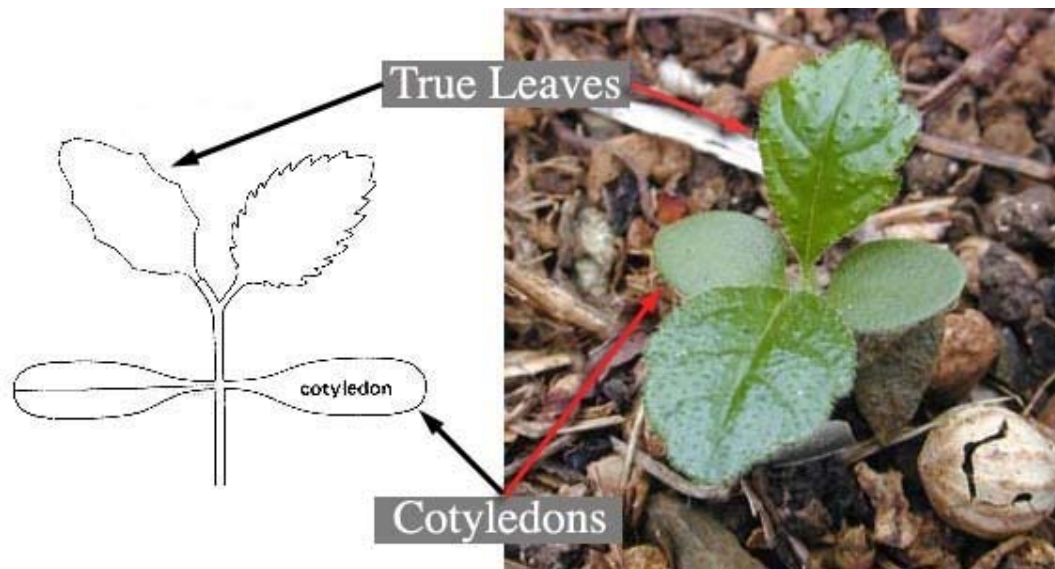
- Stretch string between two stakes or use a long rod as a guide
- Seed according to package directions
 - Cover, tamp, and water

Hill Planting

- Mounded soil heats sooner to speed germination of warm-season crops
- Allows plants to sprawl as they mature
- One ft in diameter and 6-to-10 ft apart depending on the crop
- Keep hills away from rows
- Allow up to 4 plants to grow from a hill
- Large vegetables to hill plant: melon, pumpkin, squash, cucumber

Thinning

When seedlings have their first true leaves, thin according to package instructions



Succession Planting

Planting a second crop in a space where an early maturing plant has grown and been harvested from

Why practice succession planting?

- To maximize space and time to have the highest productivity possible
- To maximize use of water and soil

Methods

- Cool to Warm to Cool
- Several plantings of the same crop – e.g. bush beans planted every 2 wks from mid-May to beginning of August
- Maturity date variation
 - Single planting of several different varieties with varying maturity dates
 - Continuous harvest over a longer period, e.g. cabbage, corn

Succession Planting Tips

- Have a plan
- Have transplants ready to go when the space has been harvested
- When direct sowing seeds for a fall crop

Water more often

Provide shade to help retain moisture (cardboard or newspaper)

Check seed bed daily & remove when 1st seed sprouts

Continue watering until all seedlings are established

Succession Examples

Perennial Crops	Crops that occupy the ground only the first part of the season	Crops that occupy the ground the major portion of the season	Crops to be planted in July or later for fall and winter gardens
Asparagus Rhubarb Chives Horseradish Winter onions	Early beets Early cabbage Lettuce Onion sets Peas Radishes Early spinach Mustard Turnips	Bush & pole beans Lima beans Cabbage Celery Sweet corn Cucumbers Eggplant Muskmelons Okra Peppers Potatoes Pumpkin Squash Tomatoes Watermelon Swiss chard	Bush beans Beets Broccoli Chinese cabbage Carrots Cauliflower Endive Kale Kohlrabi Radishes Spinach Turnips Collards Lettuce



Questions ???



Website

Yavapai County Cooperative Extension Publications

<http://extension.arizona.edu/yavapai>