

University of California
Cooperative Extension



El Dorado County Master Gardeners Present





Plant Propagation

Gail Fulbeck & Debbie Hillel

March 1, 2014



Thank you to....

Today's Hosts!



- Sue McDavid
- Cheryl Turner
- Bobbie Handen
- Barbara Finley
- Other MG's



Handouts Prepared by:

- Gail Fulbeck
- Debbie Hillel
- Sherrie Zirkle
- Virginia Feagans



Why Propagate by Seed?

- More plants
- Establish/maintain desirable characteristics
- Perpetuate a species

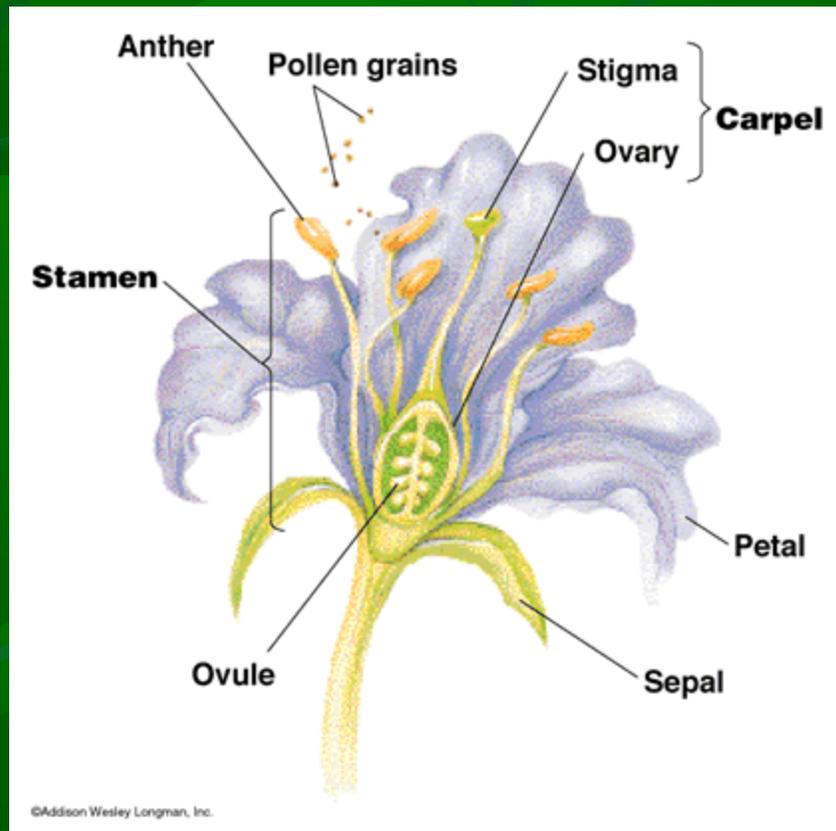


Introduction

- Plant propagation is the process of increasing the number of a given species
- Two types: sexual & asexual



Sexual Reproduction



- Union of the sperm with the egg
- Use of viable seeds to produce new plants
- Adults only!
 - Juveniles incapable of flowering..

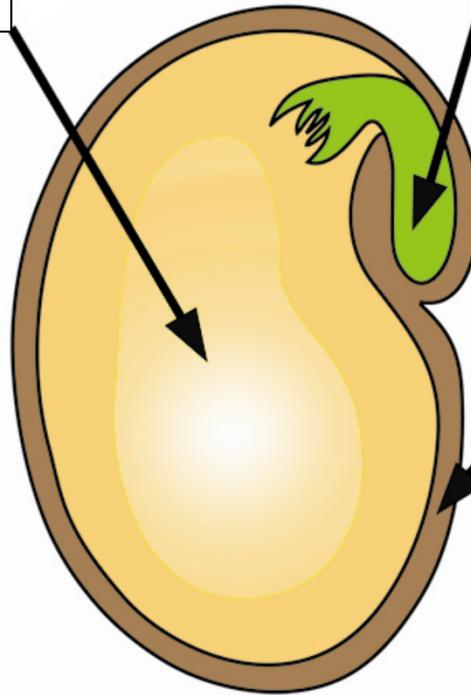
Seed Physiology

3 Parts

Endosperm
Food reserves

Embryo
Developing young plant

Outer seed coat
Protection



Seeds

- High Quality
- Fresh
- Varieties adapted to our area



Decisions, Decisions....



Hybrid vs open-pollinated (non-hybrid)

- More uniform plants
- Better productivity
- Disease resistance
- More expensive
- Do not breed true



Seed Storage

- Foil or paper
- Tightly-closed jars
- Cool - 40 degrees
- Dark, dry
- Refrigerator is good
- Label & date



Germination Requirements

Termination of dormancy

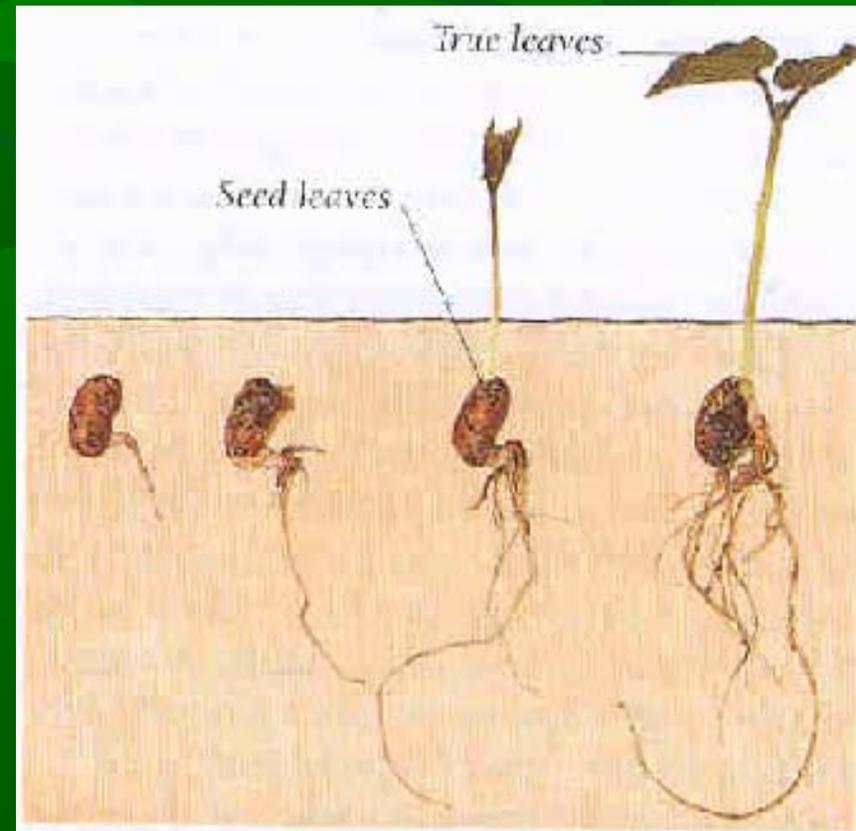
- Scarification
- Stratification
- Hormones

Satisfactory environmental conditions

- Water
- Air
- Light (some seeds)
- Temperature

Support – during

- Nutrients - after



Germinating Media

- Insect/disease/weed-free
- Fine, uniform texture
- Well aerated
- Holds moisture
- Drains well



Roots & Shoots

Radish seeds sprouting

Getting to the Root of
Things



Containers

- Re-use & recycle!



Sterilization

- Soak container in water
- Remove all dirt & debris
- Immerse in 10% solution of household bleach
1 minute
- Rinse w/clean water
- Let dry
- Dispose of bleach responsibly



Fill your Container

- Hydrate your medium
- Fill container
- Lightly tamp surface



makeover.about.com

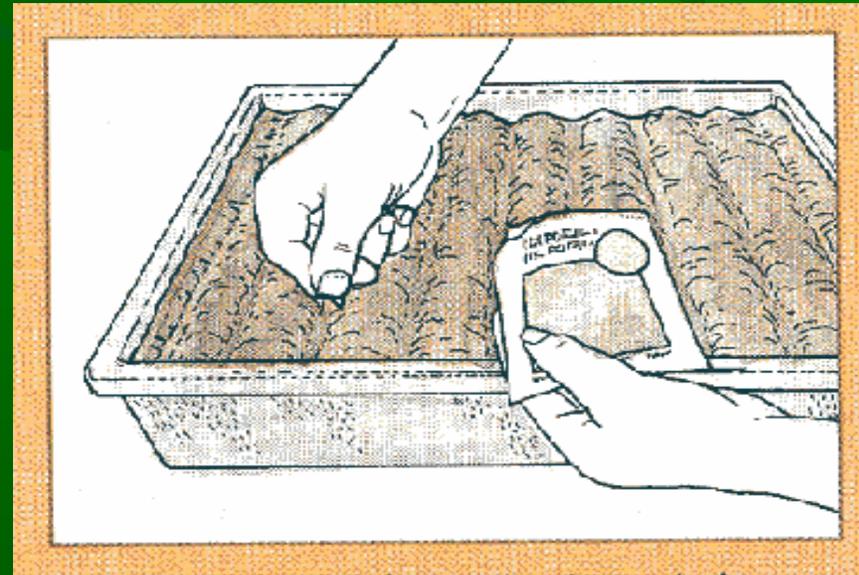


backyardnature.net

Sowing Seeds

Medium to large seed

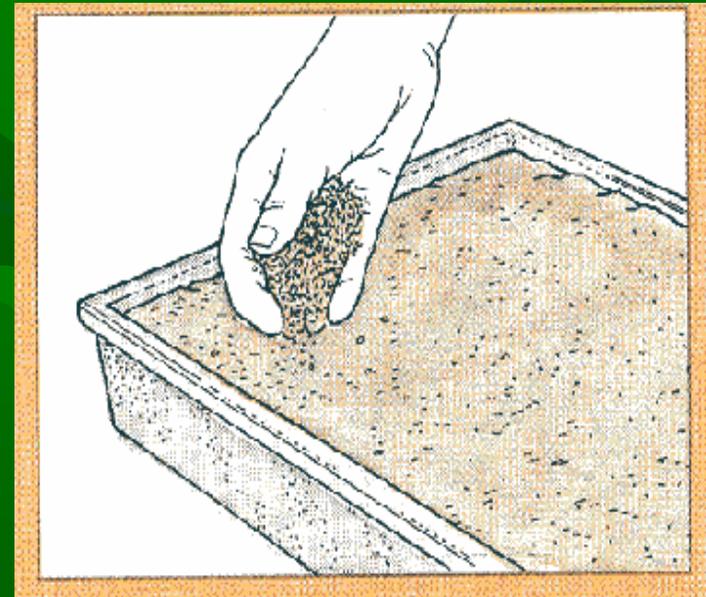
- Make furrows in rows 1 to 2" apart
- Sow thinly & uniformly
- For 6-packs, use dibble



Sowing Seeds

Tiny seed: Broadcast uniformly, half in each direction

- Lightly press into planting medium or water in with fine mist spray
- Gently sprinkle a thin layer of dry vermiculite over seed. (Use a flour sifter!)



Gel, Baby

- Soak & drain seeds, keep moist & warm until germinated.
- Make a gel: 1 T per cup water, stir constantly over heat, boil 1 minute. Cool thoroughly & place in a plastic bag.
- Add germinated seed, snip a hole in bottom, and squeeze gel through the hole along your garden row
- The gel keeps germinating seeds moist until they establish themselves in the garden soil



Water-Cover-Keep Warm



- Moisten planting mix thoroughly
 - Fine mist OR Place in 1-2" of warm water
 - Maintain moisture / humidity throughout germination
 - Low-pressure misting system
 - 1-10 seconds every 15 -60 minutes
- OR
- Cover w/glass or plastic
 - Warm spot out of direct sunlight
 - Remove cover when first seedlings appear
 - Regularly feed w/ half-strength water soluble fertilizer

Temperature

- Best germination temperature 65° - 80°
 - Soil heating cable
 - Heat mat
 - Waterbed heater?



amazon.com



freplants.com

Exceptions:

- Sow directly into the ground or into individual containers
 - Corn
 - (can soak first to speed germination)
 - Beans, peas
 - Can pre-sprout to decrease likelihood of rot
 - Carrots
 - Inter-plant w/radishes
 - Squash, cucumbers, melons
 - Potatoes



Care of Seedlings

- After germination move to bright airy location
 - 55 to 60 degrees at night
 - 65 to 70 degrees during the day
- If insufficient light is available, supplement w/ fluorescents
 - 6" above seedlings
 - 16 hours per day
- Keep soil evenly moist, do not allow to dry out



Pricking Out

- Minimize setback by transplanting before plants outgrow their container or flat
 - Shortly after appearance of first true leaves
- Carefully dig & lift
- Handle by leaves, not by stem
- Avoid tearing roots. If necessary, cut roots cleanly



Transplanting

- Make holes 1 to 2" apart in transplant medium to same depth as seedling was growing in flat
- Carefully insert seedlings



Video Clip

[How to prick out seedlings](#)

[Capel Manor College](#)

Care of Transplants



- Keep away from sun & direct heat sources for a few days
- Keep soil evenly moist, do not allow to dry out



Time to go Outside!

- But we're so tender....



What is Hardening Off?

- Process of slowing plant growth to withstand changes in environmental conditions that occur when plants are transferred from a greenhouse or other protected environment to the garden
- Critical with early crops when adverse climatic conditions can be expected
- Gradual lowering of temp & relative humidity, gradual reduction of water result in thickening of cell walls
- Soft, succulent growth becomes firmer & harder



How to Harden Plants

- Start at least 2 weeks prior to planting outside
- Move to shady location approx 45 to 50 degrees (cold frame!)
- Move gradually into sunlight, increasing the length of exposure each day
- Reduce frequency of watering but do not allow plants to wilt
- Protect from wind & temps below 45
- Plant outside after 2 weeks

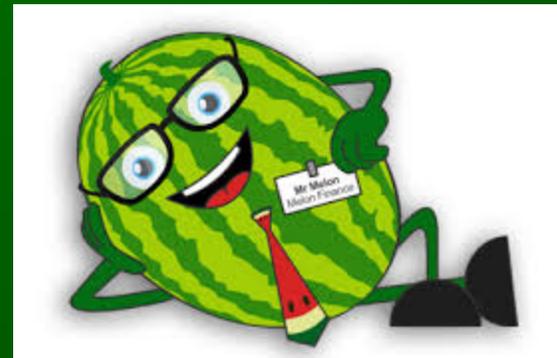


When is the Soil Warm Enough?



Which are the Warm Season Veggies?

- Cucurbits
 - Squash, cucumbers, melons
- Corn
- Beans
- Peppers, eggplants



How can I warm my soil?

- Bury active compost or manure 1 foot under bed
- Pull mulch away & allow direct sunshine onto soil
- Clear plastic stretched over soil
- Greenhouse cover
 - Can be as simple as plastic stretched over sticks & weighted at edges



Questions so far



Seed Saving

- Easy/Difficult
- Procedures
 - Mature and dry
 - Temperature
- Storage
 - Mason jar
 - Heavy ziplock
- How long can I store



Questions?



El Dorado County Master Gardeners

T-F 9:00 AM – 12:00 noon 530-621-5512

http://ucce.ucdavis.edu/counties/ceeldorado/Master_Gardener

References

- California Master Gardener Handbook
 - Dennis R. Pittenger, Editor
- Sunset Western Garden Book
 - Kathleen Norris Brenzel, Editor
- Propagation Handbook
 - Geoff Bryant
- American Horticulture Society Plant Propagation
 - Alan Toogood, Editor-in-Chief
- Making More Plants
 - Ken Druse

Thank You!

- Ingrid Bergman
- Climbing Peace
- Dr. Huey (rootstock)
- Penstemon
- Red Globe grape
- Louisiana iris
- Begonia

