University of California
Cooperative Extension

El Dorado County
Master Gardeners
Present
Plant Propagation

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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
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

freeplants.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