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

Containers
- Re-use & recycle!

Fill your Container
- Hydrate your medium
- Fill container
- Lightly tamp surface

Roots & Shoots
Radish seeds sprouting
Getting to the Root of Things

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

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?

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
Prickling 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?

- 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

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

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

Seed Saving
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