Module 5:
Plant Propagation
- Seeds

LSU AgCenter Home Gardening Certificate Course

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Gardening Notebook/Garden Journal

1. Soil Test Results
2. Amendments or fertilizers used, how much, when
3. Plant varieties planted and when
4. Seedlings started and when
5. Transplants planted and when
Gardening Notebook/Garden Journal

6. Insects or diseases noted, when, control measures
7. Sprays (chemical or organic) used, when, how much, why
8. Unusual weather conditions
9. Production of vegetables, which ones you liked best
10. History
Two Basic Methods of Plant Propagation

Seeds (sexual)

Vegetative (asexual)
Sexual Reproduction in Plants

Flowers contain the male and female flower parts either in the same flower (perfect) or in separate flowers (imperfect)

Pollen (male) is moved from the anther to the stigma (female)

Transfer of pollen can be by wind, by insects and animals, or by self-pollination
Sexual Reproduction in Plants

The pollen tube forms and the sperm cell moves down the tube to the egg (ovule) in the ovary. They join and the act of fertilization is complete. The plant develops (sets) seed. The seed contains genes from the male and female flower parts. They can both be from the same plant or from different plants.
Sexual Reproduction in Plants

Sexual reproduction allows for crossbreeding or sharing of differing genetic material. Sexual reproduction allows greater genetic diversity. Many garden plants and trees/shrubs create seed that is easy to save and collect.

The mustard or *Brassica* family creates seed that is easy to collect.
Sexual Reproduction in Plants
Seed Anatomy & Germination

Diagram showing the anatomy of monocotyledon and dicotyledon seeds. Key components include:
- Endosperm
- Cotyledon
- Coleoptile
- Epicotyl
- Hypocotyl
- Radicle
- Seed coat
- First leaf
- First leaves

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A Note on Seed Dormancy

1. All seeds have some form of dormancy
2. Physical dormancy - Scarification
3. Chemical dormancy - Stratification
Scarification

Need to Break Seed Coat Integrity

1. Physical Methods
   1. Clippers
   2. File
   3. Sandpaper
   4. Heat (e.g. fire)

2. Chemical Methods
   1. Sulfuric Acid
Stratification

- Cold moist period
- 4-8 weeks
- 38-45°F
Seed Germination

1. Moisture
2. Temperature
3. Oxygen
4. ~Light
Moisture

1. Too much moisture and the seed may rot
2. Too little moisture and the seed won’t germinate or it may germinate and the seedling quickly dies.
3. When the moisture is just right, the seed germinates and the seedling begins to mature
## Temperature

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Optimum germination temperature</th>
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</thead>
<tbody>
<tr>
<td>Lettuce</td>
<td>60-68 F. (16-20 C)</td>
</tr>
<tr>
<td>Spinach</td>
<td>65-75 F. (18–24 C)</td>
</tr>
<tr>
<td>Cucumber</td>
<td>60-90 F. (16-32 C)</td>
</tr>
<tr>
<td>Okra</td>
<td>85-90 F. (29-32 C)</td>
</tr>
<tr>
<td>Tomato</td>
<td>65-85 F. (18-29 C)</td>
</tr>
<tr>
<td>Broccoli</td>
<td>60-80 F. (16-27 C)</td>
</tr>
<tr>
<td>Pepper</td>
<td>65-75 F. (18-24 C)</td>
</tr>
</tbody>
</table>
Oxygen
Light?

1. Majority aren’t affected by light
2. Lettuce, Savory, Lemon Balm and Chamomile require light
3. \textit{Allium} (onions, shallots, garlic, chives, leeks) may be inhibited by light
Starting Your Own Seeds for Transplants

1. Extend the Growing Season
2. Wider Selection of Varieties
3. More Control Over Environmental Conditions
4. Save Money
Starting Your Own Seeds for Transplants

5. Helps you have the exact number of plants you want to grow.
6. Increases Survival Rate
7. Reduces Weed Competition
Seed Planting Pointers – Before Planting

1. Select your seed varieties, have them at least 6 weeks before the growing season starts
2. Get your seed trays
3. Get your seed starting mix
4. Have your “seed starting area” selected and ready
Container Possibilities

- Flats
- Old cans
- Plastic pots
- Milk jugs
- Egg cartons
- Baby food jars

Drainage is Key!
Seed Planting Pointers – At Planting

1. Fill your seed trays with seed starting mix.
2. Moisten the soil, settle the soil
3. Fill out plant label
4. Know seed planting depth and spacing
5. Plant your seed, Water in
6. Move trays to germination area
Seed Planting Pointers – After Seedlings Emerge

1. Move to sunny location
2. Fertilize lightly
3. Bump up if necessary
Many heirloom vegetables are worth saving seeds from.

**Saving Seeds - Why**

1. Create new varieties adapted to your growing conditions and tastes
2. Save money
3. Preserve genetic diversity (heirlooms)
4. Retain pest resistance
5. Connect with what you grow

Many heirloom vegetables are worth saving seeds from.
Open-pollinated plant varieties are those, which if properly isolated from other varieties of the same species, will produce seed that is genetically “true to type.” This means the seed will produce a plant identical to the parent, or nearly so.
Hybrid plant varieties come from the selective and deliberate cross pollination of two different parent varieties. The goal is to produce offspring with the best traits from each of the parents. The majority of seed produced by a hybrid plant will not be “true to type”. Cross-pollination is a process that occurs naturally within members of the same plant species.
 Saving Seeds

1. The Fruit and Seed Generally Mature Simultaneously
2. Remove Seed From Fruit
3. Clean the Seed
4. Dry the Seed
5. Package the Seed and Label Completely
6. Label – Label - Label
Seed Storage

1. Dry - 6-8% Relative Humidity
2. Cool - 32-45°F (0-7°C)
# How Long Can Seed Be Stored

<table>
<thead>
<tr>
<th>Variety</th>
<th>Avg. Yrs. Under Proper Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans</td>
<td>2-4</td>
</tr>
<tr>
<td>Broccoli</td>
<td>3-5</td>
</tr>
<tr>
<td>Carrots</td>
<td>3-4</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>4-5</td>
</tr>
<tr>
<td>Corn</td>
<td>1-3</td>
</tr>
<tr>
<td>Cucumber</td>
<td>3-6</td>
</tr>
<tr>
<td>Eggplant</td>
<td>4-5</td>
</tr>
<tr>
<td>Lettuce</td>
<td>1-6</td>
</tr>
<tr>
<td>Okra</td>
<td>2-3</td>
</tr>
<tr>
<td>Pepper</td>
<td>2-5</td>
</tr>
<tr>
<td>Tomato</td>
<td>3-7</td>
</tr>
</tbody>
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Please post all your questions and results to the message board that was emailed to you.

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