Leaf Cutting Propagation

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February 10, 2024

Bayard Cutting Arboretum
Horticulture Society

100 LIHREC 1922 - 2022

Your are cordially invited:
OPEN HOUSE
Saturday, July 13
10 am – 3 pm

Free Admission

Garden tours

Lectures –

Flower arranging at noon under the tent

Plant sale

Displays and much more…..

PLANT BREEDING

Impatiens Downy Mildew

ALSTROEMERIA – Lily of the Incas

‘Mauve Majesty’

‘Freedom’

‘Tangerine Tango’

NEW THIS YEAR
’Coral Chaos’

‘Sweet Laura’

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TEACHING

- **Plant Propagation**
  - fall semesters

NEW: Online Propagation classes

Learn basics of sexual propagation, vegetative propagation, and micropropagation via Zoom

- **Module #1 – Sexual Propagation: February 28, March 6 & 13**
- **Module #2 – Vegetative/Asexual Propagation: March 27, April 3 & April 10**
- **Module #3 – Plant Micropropagation: April 24, May 1, & May 8**

- **Wednesdays, February 28-May 8, 2024 (no class on March 20 and April 17) 2-4pm (EST)**
- **3 modules, with 3 two-hour sessions within each module**
- **Participants can attend all modules or register for individual modules.**

- **For more information contact Shari at: sr369@cornell.edu or 917-747-2286**

Plant Propagation

- The multiplication of plants by both sexual and asexual means.
  - *Sexual*: seeds
  - *Asexual*: vegetative or clonal propagation

ASEXUAL PROPAGATION

- Taking a part of one parent plant and causing it to **regenerate itself into a new plant**.
- Asexual propagation involves the vegetative parts of a plant: **stems, roots, or leaves**.

ASEXUAL PROPAGATION

- The best way to clone plants
  - plants that are identical to their parent
- The major methods are cuttings, layering, division, and grafting.

CUTTING PROPAGATION*

***Definition:** the clonal multiplication of plants with propagules of stems, leaves, or roots

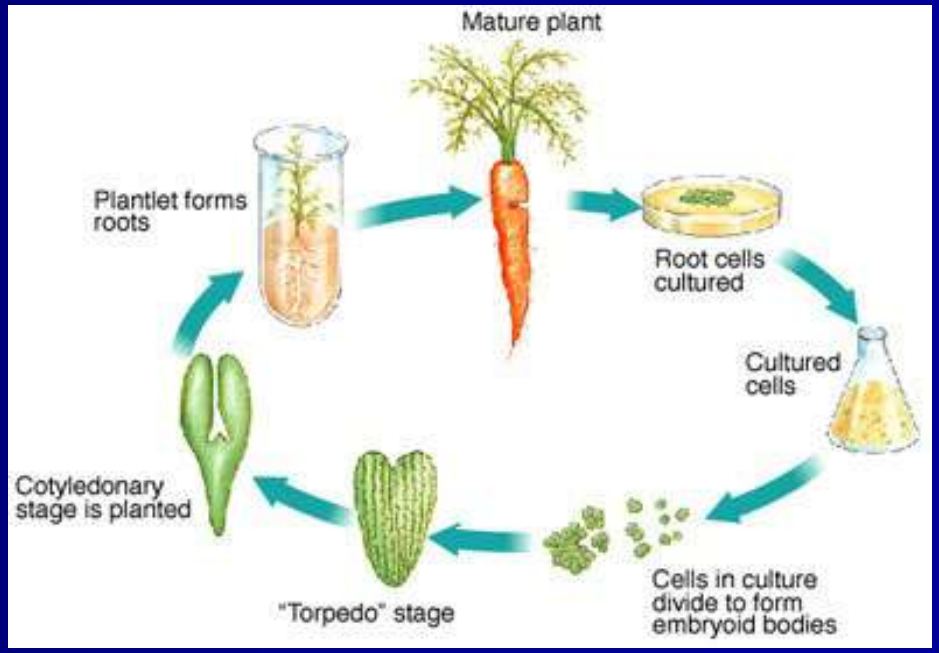
MOST important for clonal regeneration of many horticulturally-valuable crops.

CUTTING:
A portion of a plant is removed and made to form roots.

LIHREC 100 1922 - 2022

DO you remember "Totipotency"?

- Each plant cell retains a capacity for regeneration.
- Ideally, genetically identical to parent plant.



Considerations:

- Select healthy, fully-grown leaves
- Leaf cuttings can be done any time of the year
- Avoid any damaged or diseased leaves, or any with insect pests
- Keep propagation medium slightly moist
- Remove any rotting or decaying leaves
- Growing temperatures 70° -75°F
- Bright, indirect light – avoid direct sunlight

Materials you will need

- Cutting board
- Knife or hand clippers
- Growing pots
- Propagation trays or plastic bags
- Medium

What is the primary regenerative process in cutting propagation?

- *ADVENTITIOUS* **roots or** *adventitious* **buds/shoots**
- **Stem cuttings need** *adventitious* **roots and root cuttings or leaf cuttings need both!**
  - **Plant cells dedifferentiate and develop into a root or shoot system.**

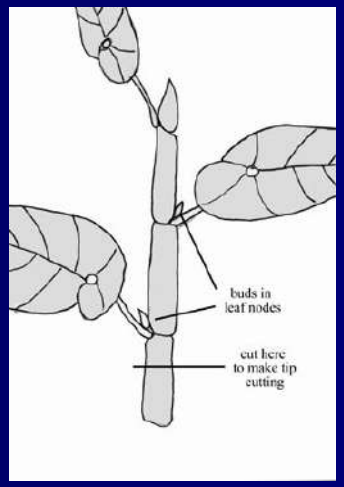
Focus: Adventitious bud and Shoot formation:

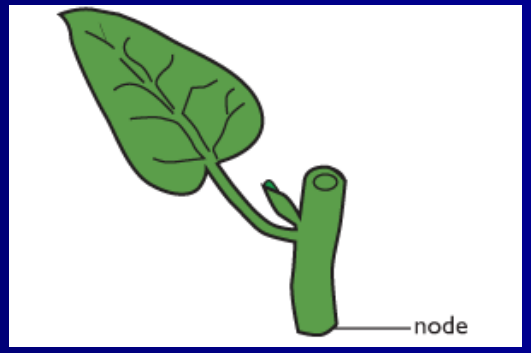
Root cuttings

Leaf Cuttings

Focus: Adventitious root formation:

Stem cuttings





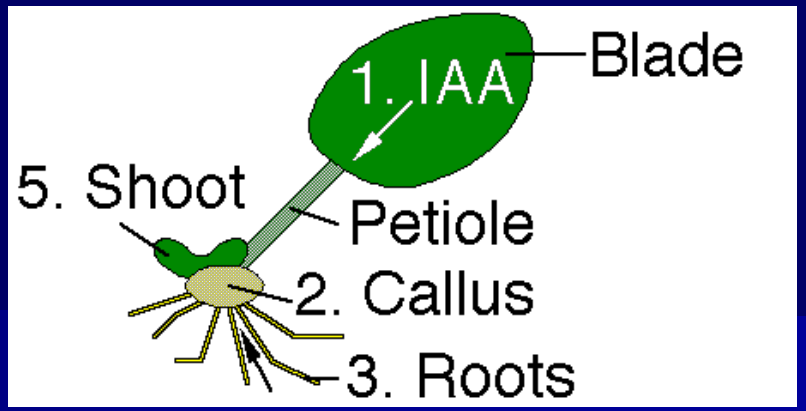
Leaf Bud cuttings

Focus: BOTH Adventitious Shoot and Root formation:

Leaf Cutting Propagation

- Easy!
- Inexpensive!
- Large number of plants will be produced from a small number of propagules
- In a short time, you will have an exact clone!
- A FUN ACTIVITY!

LEAF CUTTINGS



- **Leaf blade w/ or w/o petiole**
- **Adventitious shoots & roots**
- **Only a limited # of species**
- ***Sansevieria, Begonia rex, Achimenes, Saintpaulia, Streptocarpus, Kalanchoe pinnata, Peperomia, Heuchera***

Leaf Cuttings

- **Leaf petiole cutting** - African violet
- **Leaf section/ Split Vein** - rex begonia
- **Leaf blade cutting** - snake plant
- **Bract cutting** - umbrella palm

Leaf Petiole Cutting

Pepperomia

Saintpaulia ionantha
The African Violet

Leaf Sections

Streptocarpus
-The Cape Primrose

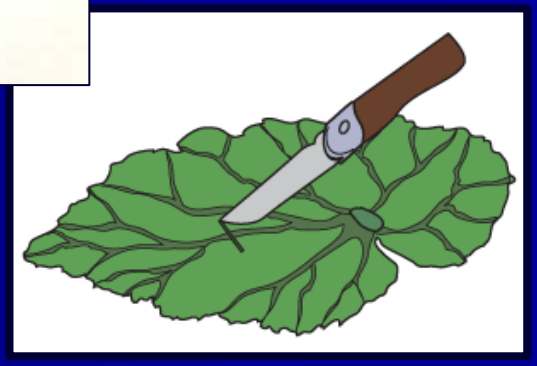
Leaf Cutting

Achimenes
The Magic Plant
or
The Hot Water Plant

Fleshy leaf cuttings

- *Begonia rex*

Begonia rex



Fleshy leaf cuttings

leaf sections

Snake Plant

Sansevieria trifasciata

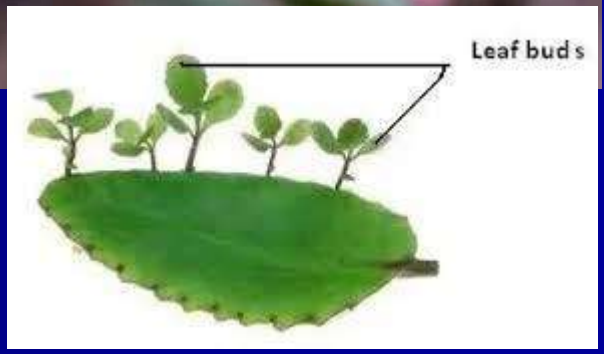
NATURAL leaf cuttings

Piggy back plant

Tolmiea

Foliar Embryos

Kalanchoe



SUCCULENTS

Bract cutting - umbrella palm

ALSO….

- Pilea Peperomioides

- ZZ plant

Zamioculcas Zamiifolia

Water Relations

- Prevent water loss from leaves
  - Low transpiration to maintain TURGOR
  - Avoid heat stress
  - Maintain adequate water levels in the cutting
  - Humidification

Water Relations

HOW to prevent water loss

- **Enclosure Systems (Closed-Case Propagation)**

ENCLOSURES

Environmental Factors

Light

- Photoperiod
- Light Intensity
- Quality – Wavelength

Environmental Factors

Temperature

Generally, 70F to 75F is best (65F okay….)

Heating cables or heating mats to maintain optimum temperature.

Maintained 24 hours a day.

GROWING MEDIA

Good Qualities:

1. Well-aerated and loose
2. Free of insects, disease organisms, and weed seeds
3. Low fertility or total soluble salts
4. Capable of holding and moving moisture
   - Example: 50% sand or vermiculite or perlite, and peat moss. **'Soilless Mix'**

Growing Media COMPONENTS:

- Organic Component:
  - Water-holding ability
  - Improves drainage
- Coarse Mineral Component:
  - Improves drainage
  - Improves aeration

Growing Media
EXAMPLES of COMPONENTS:

- Organic Component:
  - Peat (Peat Moss)
  - Sphagnum Moss Peat
  - Shredded Bark
  - Coconut Coir
  - Compost

- **Coarse Mineral Component:**
  - Soil
  - Sand
  - Vermiculite
  - Perlite
  - Rockwool

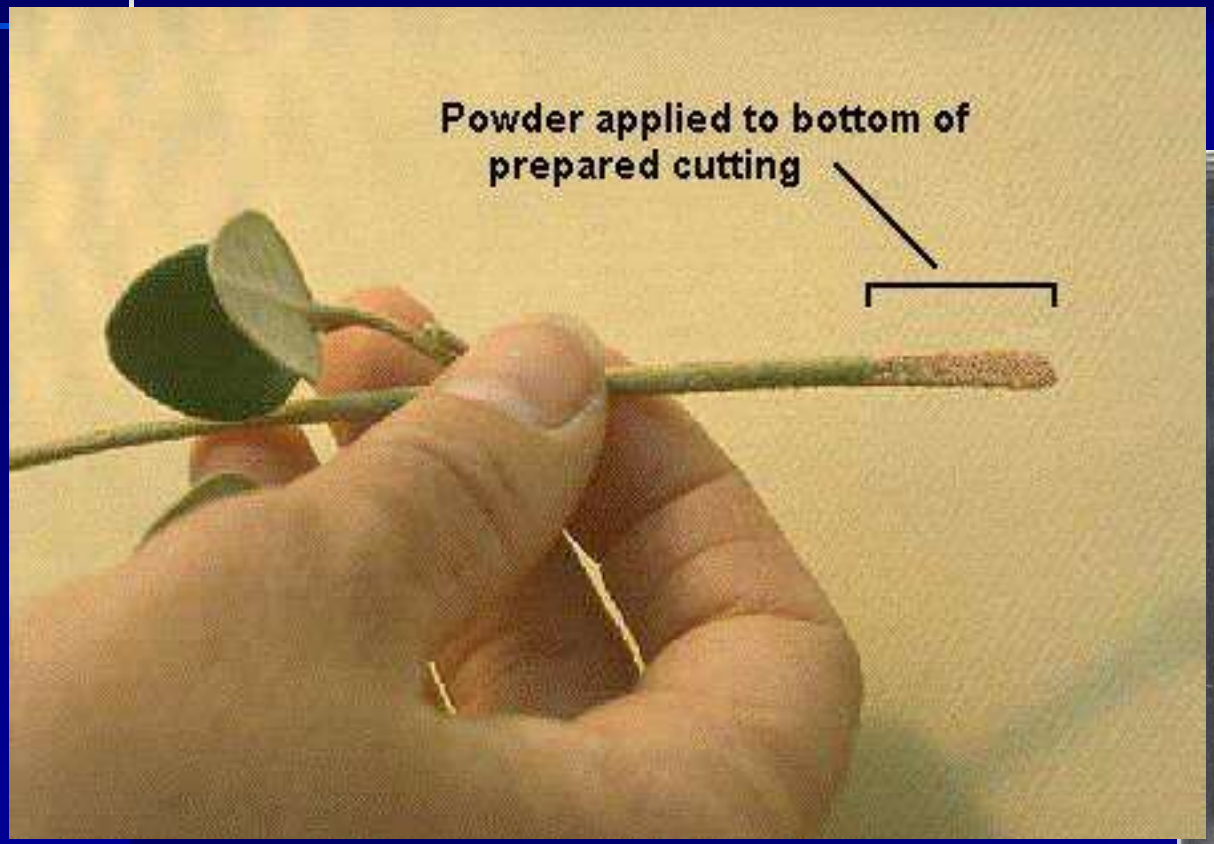
GROWING MEDIA
Good Qualities:

1. **"Sterile"**
2. **Soil: cook in an oven.**
   - **Slightly moist soil in a heat-resistant container in an oven set at about 250 degrees F. for at least 1/2 hour. (internal temperature of 180F)**
   - **Avoid over-heating**
   - **Unpleasant odors!**
3. **Prevent damping-off**
4. **Pots too!** 1 part chlorine bleach to 9 parts water.

GROWING CONTAINERS

1. "Sterile"
   - 1 part chlorine bleach to 9 parts water
2. Flats or trays or pots
   - Clay, plastic, wood, peat, coconut coir, paper, etc.

AUXINS???



IBA **Indolebutyric acid**

NAA **Napthaleneacetic Acid**

THANK YOU!

Come and visit us:
OPEN HOUSE:
Saturday, July 13