Teaching With Plants

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Teaching With Plants in the Botany Department

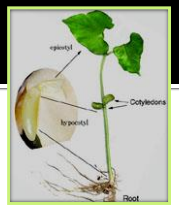
- Plant requests from general botany, plant anatomy, plant systematics and taxonomy
- Plants are requested for demonstration, dissection, microscopy and experimentation
- Most commonly requested plants are bean and corn.

Growing Plants For Teaching

Considerations:

- How are you going to use this plant?
- Light, temperature, media, watering, fertilizer, pests and cultivar selection
- Examples: Bean, corn, carnivorous plants

Phaseolus vulgaris Common Bean



Teaching Uses:

- Identifying basic plant parts
- Planting seeds in class
- Growth and elongation
- Seed development and structure
- Flower and fruit structure

Growing Beans

- Cultivar: Taylor Horticultural or French Hort. Beans, 65 to 70 days to maturity
- Light: Full sun. Supplemental light improves growth in a greenhouse in the winter.
- Day length increased to 14 hrs. Some types are photoperiod sensitive, require short days!
- Temperature: 75° -80° day, 65° night. High heat inhibits flowering in many cultivars.

Growing Beans

Media:

- Use straight vermiculite when plants will be uprooted
- Direct sow in all-purpose media for most teaching applications

Fertilization:

- Requires regular applications of balanced fertilizer

Growing Beans

Pest problems:

- Whiteflies! Monitor closely

Other considerations:

- Staking- Use bamboo stakes or tomato cages
- Preventing tangling
- Seeds- can be saved by allowing the pods to dry on the plant

Zea mays Corn

Teaching Uses:

- Leaf tissue for epidermal peels
- Consumption of O_2 by respiring seeds
- Flower and fruit structure and development
- Shoot tip anatomy and growth
- Root development, elongation and anatomy
- Seed germination and early development

Growing Corn

- Cultivar selection: Use field corn when not growing to maturity. Dwarf sweet corn is best when growing for flowers and fruits.
- Light: Full sun, supplemental light in the winter and day length extended to 14 hours.
- Temperature: 75° -85° day, 65° night

Growing Corn

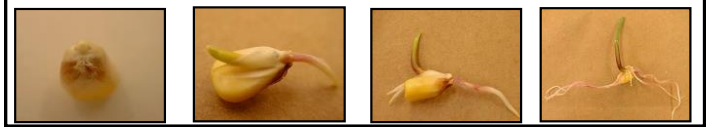
- Media: all purpose potting media for growing to maturity.
- Fertilization: lots!
- Pest problems: Aphids can be a problem, monitor closely.

Special Treatments for Corn

- Root hair development: grow in a dish on wet filter paper for 4 days
- Respiration experiments: grow a large amount of corn on filter paper in a pizza pen. Keep in water to depth of ½ seed for 4 days.
- For leaf tissue, sow several seeds in one pot in all-purpose potting media for 28 days

Special Treatments for Corn

- For root development grow in flats in fine sand, for shoot development use all-purpose potting media
- Stages of seed development: Seeds are soaked, planted in LC1, and then observed after 1, 4 and 8 days of development.



Carnivorous Plants

- *Sarracenia spp*.- Pitcher Plants
- *Dionaea spp*.- Venus Fly Traps
- *Drosera spp*.- Sundews
- *Nepenthes spp*.- Monkey Cups

Teaching Uses:

- Adaptation to acidic soil
- Convergent/Divergent evolution
- Insect traps
- Leaf specialization and modification

Growing Carnivorous Plants

Light: Full sun
Temperature: Summer 75° day, 65° night.
Winter 60° day, 50° night
Media: 2/3 fine milled sphagnum, 1/3 silica sand
Watering: keep in saucer with 1" RO water
Fertilization: infrequent light fertilization. Do not feed meat!
Pests: susceptible to mealy bugs, watch closely

Thank you!

Use plants for teaching, and remember:

Cultivar, light, temperature, media, watering, fertilizer and media- put it all together and you'll have great plants!

Questions?
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