



DONALD DANFORTH  
PLANT SCIENCE CENTER

*Integrated Plant Growth Facility*  
*Donald Danforth Plant Science Center, St. Louis, MO*  
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## CASTOR PROTOCOL

### Planting

1. Put an 1801 insert into a flat with holes. If fewer than 18 plants are needed, break off extra pots.
2. Pro-Mix HP is the recommended potting soil. Fill the pots with soil. Do not compact soil, and brush off excess so that soil is level with top of pots.
3. Moisten soil so that it is fully saturated.
4. Place one seed into each pot. Push seed down slightly and cover with soil.
5. Flats will go into 10A/Propagation House until they are ready to be transplanted.
6. Check the seedlings daily, and as they emerge physically remove the endosperm and/or seed coat from the cotyledons if it remains attached.

### Transplanting

1. Castor plants are transplanted 2 – 3 weeks after planting. Fill the appropriate size pot full with Pro-Mix HP or other high drainage soil.
  - a. Varieties Impala and 18 Baker 296, use 3-gallon pots
  - b. For larger lines/varieties like 3 PI 179729, 8 PI 209622, 17 PI 215769, 6 PI 209132, Gisonii, and Zanzibarensis: use 5-gallon pots.
2. Take plant out of 1801 pot and put into pot. Castor may be planted 1 inch deep to ensure the stem stays sturdy in the pot.
3. Fill pot with soil until it is almost to the rim.
4. Place plants in designated greenhouse space.
5. Water in the pots until soil is saturated. The soil should be at least 1 inch below the rim to allow space for water.

### Watering and Fertilizing

Plants are checked twice a day for watering needs. They should be allowed to dry down before adding more water. They are fertilized with Jack's 15-16-17 on the regular M – W – F feed schedule.

### Pollination and Growth

1. If multiple lines of castor are in the same greenhouse, place a bag over the first flower on each plant as it emerges. The first few leaves below the flowers are pruned off so the bag will stay on the flower. If any female flowers are open, pinch them off before bagging. The date is written on the bag with a sharpie and the stem below the flower is tagged with lab tape. The date is also written on the tape. A larger bag may need to be placed on the



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- flower once the seed heads start to form or the flower becomes too large for the smaller bag.
2. Once the female and male flowers begin to open, one of two pollination methods may take place.
    - a. Bag Pollination – using the bag covering the inflorescence move it up and down dragging pollen off of the male flowers up onto the female flowers.
    - b. Air Pollination – using canned air, blow air up into the bag over the male flowers to move the pollen up over the female flowers. This method seems to encourage mold on the inflorescence. This can be reduced by changing the bags out often, using the brown paper bags instead of the white ones.
    - c. Manual Pollination – this method has been the most successful in obtaining larger amounts of viable seed per plant. Using small floral snips remove open male flowers and touch them to the open female flowers. Also, the male pollen and flowers may be collected in an envelope and then shaken over the top of the inflorescence.
  3. Once the female flowers start to swell and new ones stop opening the bag may be removed.
  4. Once a plant has flowered several times, it needs to be cut back to approximately 3 – 4 feet tall, and a new plant to replace it needs to be started. Once the new plant is moved into greenhouse, dispose of the older plant.

### **Pest Management**

#### *Common pests:*

- **Mites** - The main pest and any **miticide** spray can be used without damaging the castor.
- **Thrips** - Occasionally thrips are present. **Conserve** or **Overture** are effective sprays for thrips.

#### *Pesticide notes:*

- Pylon will sometimes burn new growth on Castor.

### **Growing Conditions**

Temp: 82°F day/ 71.6°F night (28°C/22°C)

Humidity: 30% minimum (avg. 40%)

Light: Supplemental lights turn on when the sunlight is below 300 W/m<sup>2</sup> and maintain a 14 hour day length.

Shading: The shade curtain automatically closes to 50% when the sunlight level is over 800 W/m<sup>2</sup> and it pulls to 100% when the sunlight is over 900 W/m<sup>2</sup>.