MORE POINSETTIAS are grown than any other potted flowering crop. Sales exceeded $242 million in a recent year. Nearly all the sales were associated with Christmas. The poinsettia and its production have come a long way since the plant was introduced to the United States as a cut flower in the 1800s.

Objective:

Describe poinsettia production.

Key Terms:

- bracts
- breaks
- callused cuttings
- flower bud development stage
- flower bud initiation stage
- flowering stage
- photoperiodic pinching
- rooted cuttings
- thermoperiodic
- unrooted cuttings
- vegetative stage

Poinsettia Production

Poinsettias are closely associated with Christmas in the United States. The natural colors of the showy bracts, or modified leaves, include deep red, pink, white, speckled, and yellow.

The poinsettia plant is native to Mexico. U.S. Ambassador Joel Poinset found the plant of interest

FIGURE 1. Rows of different colors of poinsettias in a greenhouse.
and brought it to the United States in the early 1800s. Poinsettias were grown primarily for use as cut flowers up through the early 1900s. Since then, poinsettias have become the number one selling potted flowering crop in the United States. In a recent year, roughly 61 million potted poinsettias were produced.

The major promoter and developer of poinsettia cultivars is the Ecke family, of California. Through their work and the work of others, the quality of poinsettias has improved dramatically.

Poinsettias are both photoperiodic and thermoperiodic. Photoperiodic means they respond to day length. Poinsettias are short-day plants and will naturally initiate the formation of flower buds when nights reach 11 hours 50 minutes of darkness. That naturally occurs during mid- to late September in the central portion of the country. September 25 is considered the key date for flower bud initiation. The day length reaches the critical 11 hours 50 minutes a bit earlier in the north. As one progresses toward the south, the 11-hour 50-minute day is later in the calendar year.

Poinsettia varieties respond differently in terms of the number of weeks from flower bud initiation until flowering. Those with a short response may require only 8 weeks, while those with a longer response may require 10 weeks. Ten-week varieties are less sensitive to light at

ON THE JOB...

CAREER CONNECTION:
Greenhouse Manager, Crop Grower

Responsibilities of greenhouse managers and growers are often the same regardless of the type of crop grown. Typical duties include development of crop production schedules. Growers may order plants and supplies, propagate plants, and plant or transplant plant material. Growers oversee the irrigation and fertilization of plants, temperature, light intensity and photoperiod management, crop development and quality through pinching and height control, and insect and disease control. Responsibilities also include record keeping of production conditions, maintenance of environmental control systems, and handling of plants for delivery.

While no formal education is required to start as a greenhouse laborer, manager and grower positions usually call for some formal training and/or experience. Formal training can be obtained through an associate’s degree program from a community college or a bachelor’s degree program from a four-year college. Starting positions are usually as assistant growers. Grower and greenhouse manager positions usually come only with several years’ experience.
night than 8-week varieties. Growers consider the photoperiodic response in selecting the poinsettia cultivars.

**Thermoperiodic** indicates that poinsettias respond to changes in the temperature. The initiation of poinsettia flowers is influenced by temperature. Lowering night temperatures in the greenhouse to 62° to 64°F (17° to 18°C) contributes to flower bud initiation.

**Pinched or Non-pinched**

Poinsettias are grown as branched or single-stem plants. Branched poinsettias are the most commonly grown form today.

A branched poinsettia is produced by pinching. **Pinching** involves the physical removal of the apical meristem of the plant. The removal of the growing tip allows lateral buds in the axils of the remaining leaves to develop. The branches that grow from lateral buds as a result of pinching are called **breaks**. A flower will appear at the end of each new branch. Therefore, a single cutting can produce multiple flowers if it is pinched.

A non-pinched plant produces a lone flower at the terminal end of the plant. Such a plant is often referred to as straight up. For the best display of non-pinched plants, a number of cuttings must be planted in each pot. The production time for non-pinched plants is shorter than for pinched plants. Therefore, plants can be started later. Symmetry and uniformity are easier to achieve. Also, less breakage tends to occur during shipping and handling.

**PROPAGATION**

Poinsettias are propagated asexually by stem cuttings. Growers can buy stock plants and take their own stem cuttings. They can also purchase unrooted cuttings, callused cuttings, or rooted cuttings.

**Unrooted cuttings** have a length of 2 to 4 inches. Rooting of poinsettia cuttings takes three to four weeks. Most unrooted cuttings are stuck near the end of July as part of the overall crop schedule.

**Callused cuttings** are 3 1/4 to 4 inches in length. Root initials have developed on callused cuttings before shipping, and rooting takes one to two weeks less than for unrooted cuttings.

**Rooted cuttings** have a maximum height of 6 inches. They become established quickly once potted.

The propagation of poinsettias follows a number of steps. Usually in late July, 2- to 4-inch-long cuttings are taken from stock.
plants. The end of each cutting is dipped into or dusted with a medium-strength rooting hormone and stuck into a rooting cube or directly into the finish pot. The cuttings are placed under an intermittent mist for 24 hours the first day. The mist is adjusted to 15 to 20 seconds every 3 to 5 minutes during the first week and 10 seconds every hour at night. Mist permits higher light intensity, which helps the plants produce more sugars for root development. The period of mist is reduced to 10 seconds every 10 minutes as the cuttings form root initials. During propagation the rooting temperatures are maintained between 70° and 75°F (21° and 24°C).

**POTTING**

Potting is vital to the success of the crop. Use well-drained growing medium with a pH between 5.0 and 6.5. Pot the poinsettias shallow in the medium to encourage healthy root growth. Plant the cuttings in the center of the pot and at the same depth. Root cubes in which they may have been propagated can be exposed, because there is little concern about wicking moisture from the medium. When using soilless medium, fill the pot to the top and firm gently, as the medium will settle. Drench with a fungicide to control root and stem rot.

**SCHEDULING**

The schedule of a poinsettia crop can be divided into four main stages of production following potting. They are the vegetative, flower bud initiation, flower bud development, and flowering stages. A growing schedule follows for a 6- to 6⅓-inch multiflowered poinsettia crop in soilless mix in the central United States.

**Vegetative Stage**

The **vegetative stage** is a period when the grower encourages the plant to grow roots and leaves. A poinsettia will grow vegetatively while the days are long. Maintaining long-day conditions during the vegetative development of the plant is important. To accomplish this, interrupting the night with artificial lighting may be necessary. Lighting from 10:00 P.M. to 2:00 A.M. each night between August 1 and September 25 keeps poinsettias in a vegetative state of growth. Fertilize at a rate of 300 ppm nitrogen and potassium. Set night temperatures at 68° to 70°F (20° to 21°C) and day temperatures at 70° to 80°F (21° to 27°C).

**Pinching**

Before pinching poinsettias, the grower should see that the cuttings are well established in the pot. The root system should have reached the outsides of the pot. Leaves should also indicate healthy growth. Strong early growth contributes to stored sugars needed to produce branching of pinched plants. Plants grown in 4-inch pots require only eight days from potting to pinching. Those that are to be larger plants grown in larger pots need 10 to 25 days. Pinch
the plants on September 10, leaving four to six leaves. Raise fertilizer rates to 350 to 400 ppm nitrogen and potassium.

The height of poinsettias can be controlled with application of chemical growth retardants until the start of short-day treatments. DIF is also effective.

**Flower Bud Initiation Stage**

The **flower bud initiation stage** is the period during which the plants are encouraged to produce flower buds. It is usually started between September 20 and 25.

Turn the lights off at night and provide short-day conditions. Cover plants with black cloth if necessary from 5:00 P.M. until 8:00 A.M. Short-day conditions send a signal to the plants to begin initiating flower buds. This is important since no bract coloration occurs without flower bud initiation. Flower bud initiation occurs over a period of 8 to 10 days. Growth of the plants stops once the plants initiate flower buds. After that point, cells just enlarge. Larger finished plants result when more time is given between pinching and flower bud initiation. Drop night temperatures to 62° to 64°F (17° to 18°C) and day temperatures to 70° to 72°F (21° to 22°C). Lower fertilizer rates to 300 to 350 ppm nitrogen and potassium.

**Flower Bud Development Stage**

The **flower bud development stage**, or the phase during which flower buds develop, begins around October 10. Flower bud development takes place through much of October and the first couple weeks of November. During the flower bud initiation and flower bud development stages, flowering is delayed if light interrupts the darkness, even for short periods.

During the flower bud development stage, stop black cloth treatment. Raise temperatures to 64° to 66°F (18° to 19°C) at night and 70° to 75°F (21° to 24°C) during the day. Fertilize at a rate of 300 ppm nitrogen and potassium. Also, drench with a fungicide to control root rot.
Flowering Stage

The **flowering stage** is the stage when the bracts color and the flowers open prior to sale. Growers can increase the life of poinsettias by finishing them in preparation for shipping to customers. Begin to finish plants around November 15.

Lower night temperatures to 58° to 62°F (14° to 17°C) to deepen the bract color. Reduce fertilizer rates to 300 ppm nitrogen and potassium, and maintain good soil moisture management.

Poinsettias are very sensitive to cold temperatures. Placing plants in sleeves offers some protection from cold and physical damage during shipping. Plants can be stored in plant sleeves for a short while at 60° to 65°F (16° to 18°C).

**PEST PROBLEMS**

Poinsettias have a number of pests and disorders that require attention. Whiteflies are the number one pest problem. Other pest problems include mealy bugs, mites, thrips, and fungus gnats. The best control is to keep a clean, weed-free greenhouse and to have a well-planned pest control program.

Poinsettias are very susceptible to root rot disease caused by *Pythium*, *Rhizoctonia*, and *Thielaviopsis* fungi. Well-timed fungicide applications and proper watering practices reduce these problems.

**Summary:**

Poinsettias are the number one selling potted flowering crop in the United States. Poinsettias are both photoperiodic and thermoperiodic. Poinsettias initiate the formation of flower buds when nights reach 11 hours 50 minutes of darkness. Night temperatures of 62° to 64°F (17° to 18°C)
contribute to flower bud initiation. Poinsettias are grown as branched or single-stem plants. Branched poinsettias are the most commonly grown form today.

Poinsettias are propagated asexually by stem cuttings. Growers can buy unrooted cuttings, callused cuttings, or rooted cuttings. Propagation is usually begun in late July with 2- to 4-inch-long cuttings.

The schedule of a poinsettia crop can be divided into four main stages of production following potting. They are the vegetative, flower bud initiation, flower bud development, and flowering stages.

Whiteflies are the number one pest problem. Poinsettias are very susceptible to root rot disease caused by *Pythium*, *Rhizoctonia*, and *Thielaviopsis* fungi.

**Checking Your Knowledge:**

1. Give a brief history of the poinsettia.
2. How do light duration and temperature influence poinsettia production?
3. How are poinsettias propagated?
4. Describe a schedule for growing poinsettias.
5. What are the major pest problems associated with poinsettias?

**Expanding Your Knowledge:**

Schedule and grow a poinsettia crop in the school greenhouse for holiday sales. An alternative is to force a poinsettia to flower in your home. This is more challenging because of the temperature and light-duration requirements, but it can be done.

**Web Links:**

- **Poinsettia: Commercial Greenhouse Production**  
  [http://www.ag.auburn.edu/hort/landscape/poinset.htm](http://www.ag.auburn.edu/hort/landscape/poinset.htm)
- **Ecke Ranch Tech Help**  
- **Keeping a Poinsettia Until Next Holiday Season**  
- **Mastering Poinsettia Production**  
- **Agricultural Career Profiles**  
  [http://www.mycaert.com/career-profiles](http://www.mycaert.com/career-profiles)