Poinsettia Care During Bract Development

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Poinsettia care during flower initiation and bract development directly affects the final appearance of the crop and the postharvest integrity of the product. Unlike mistakes early in the crop, which may damage leaves, damaged or poorly formed bracts can not be covered up by subsequent plant growth. During the bract development phase, October 15 to finish (late November or early December for most cultivars), growers should pay special attention to the growth environment, particularly temperature, insect and disease control, and crop nutrition.

Poinsettia growth is most vigorous from September to mid-October. During this period, night temperatures should be run at 63° to 65°F and day temperatures at 75° to 80°F.

During bract development, mid-October through mid-November, run night temperatures at 64° to 65°F and day temperatures at 70° to 75°F. Avoid both high and low temperature extremes. Low night temperatures (60° to 62°F) will slow growth and result in small bracts, while night temperatures over 80°F will delay flowering.

Optimal bract development and expansion occurs when the daily temperature average is in the 68° to 70°F range. If using DIF, it is still important to maintain this average during bract expansion.

Once bracts are fully expanded, about one week before initial pollen shed, temperatures can be lowered to intensify bract color development. Use a night temperature in the 57° to 62°F range to intensify or tone bract color. When toning poinsettias, lower temperature gradually, 2°F each night until the targeted temperature is attained. The exact night temperature used will depend on the cultivar produced. White poinsettias

should be toned using a night temperature of 65° to 67°F since, at lower temperatures, greenish bract color may develop on some cultivars.

During bract development, maximum light (5,000 fc) is desirable. After bracts are fully expanded, light levels can be reduced to 2,000 to 3,000 fc. This will acclimate the plant to the low-light retail or consumer environment, improving the post-harvest life of the plant.

Whiteflies are usually the most important insect pests growers encounter on poinsettia. Heavy whitefly populations late in the crop are difficult to manage and must be avoided.

Both the greenhouse whitefly, *Trialeurodes vaporariorum*, and the sweet potato whitefly, *Bemisia tabaci*, feed on poinsettia. Control of these pests starts with early detection. Use both plant inspection and sticky trap monitoring, on a weekly basis, to detect problems as they develop. Remember, infestations are rarely uniformly distributed throughout the crop, so look for hot spots during weekly inspections and during routine crop care. At normal poinsettia cropping temperatures, whitefly eggs will hatch in 7 to 10 days. Therefore, use a 7- to 10-day spray frequency to control the insects. Once a spray program is initiated, continue it for 30 days. (For example, five spray applications at seven-day intervals.)

Spray coverage is critical. Immature whitefly develop on the underside of leaves. If sprays do not get underneath leaves, where the whitefly are, you will not control the immature stages of whitefly development, and the infestation will build over time.

Insect growth hormones, such as the neem-based materials, will provide good control when used at the low rate provided applications are started early when insect populations are low. Growers also report good control when tank mixing ultra-fine oils with biological and/or synthetic insecticides. However, once bracts are in color, smokes and aerosols are the safest choice.

Rot root and *Botrytis* are important late-season disease problems on poinsettia. The late-season root rots growers encounter are primarily caused by *Pythium* and *Thielaviopsis*. Although *Thielaviopsis* is still a problem for many growers, it is less often a concern when artificial media are used. This disease is most damaging at low temperatures (60°F) and high pH

(6.4 or above). For *Thielaviopsis* control, drench with Banrot 40WP (1.5-3 oz/25 gal every four to 12 weeks).

Pythium control starts with good sanitation, control of fungus gnat populations (a *Pythium* vector), and careful water and nutrient management.

Pythium thrives in a wet environment and on the roots of injured or stressed plants. To control *Pythium*, use a well-drained medium, do not overwater and avoid excessively high soluble salts buildup in the potting medium. Test soil regularly and adjust the feed program accordingly. Control *Pythium* with drench applications of Truban 30WP (0.75-2 oz/25 gal. every four to 12 weeks) or Subdue 2E (0.75-3tsp/25 gal at six-week intervals). A drench in mid- to late-October should be enough to finish the crop. The last fungicide drench should be applied two to three weeks before shipping.

Botrytis is a serious problem when temperatures are cool and free water (i.e. condensation) collects on plant surfaces. Unfortunately, these conditions often prevail when bracts are developing and the crop is finishing (i.e. October-November). Bract tissue is most susceptible to *Botrytis* attack and damage. Proper greenhouse management and strict sanitation is the key to controlling this disease.

Remove dead plant material from the greenhouse regularly. This includes dead leaves, broken stems and dead weeds under benches. Dead plant material quickly becomes infected by this organism and serves as a source of inoculum.

Provide good air circulation and keep plant surfaces dry. Space plants properly to avoid overlapping leaves which trap free water and block air movement. Use horizontal air flow to keep air moving and plant surfaces dry. Heat and ventilate at sunset to lower humidity and prevent condensation from forming on the glazing and dripping onto the tender bracts. This is a most important step. (See the following article on humidity control.)

Once bracts are in color, avoid fungicide sprays which may leave a residue or cause damage on the bracts. Exotherm Termil bombs can be used to prevent the spread of this disease. Bombs are most effective when used in conjunction with sanitation and humidity control.

Poinsettia nutrition should be managed in three distinct phases: early rapid growth from September to mid-October,

bract development from mid-October to mid-November and finishing from late-November to sale.

Poinsettias are heavy feeders and the nutritional requirements are highest during the early rapid growth phase. Do not starve poinsettias during early development. Provide 300 to 400 ppm nitrogen on a constant feed basis during this period. Once bract development begins, vegetative development slows and feed rates should be reduced to 200 to 250 ppm N. Fertilization should stop one to two weeks before sale, when temperatures are reduced to tone the crop.

There are many commercial fertilizer formulations which can be used for poinsettias. In general, a balanced feed—one containing nitrogen, phosphorus and potassium (N-P-K)—should be used as the base feed, and a high-calcium supplement can be used on an alternating basis.

Poinsettias in peat-lite media require extra micronutrients. Some soluble fertilizers are supplemented with micronutrients. Alternatively, provide 2.5 lbs of Compound 111 for each 100 lbs of 15% nitrogen fertilizer provided or 3.3 lbs for each 100 lbs of fertilizer if a 20% nitrogen formulation is used. Peat-lite media should also be amended with superphosphate.

Poinsettias are susceptible to molybdenum deficiency problems and require extra magnesium and calcium. The nutrient requirements are most acute during early development when growth is rapid. Fertilizers with high ammonium (greater than 50%), such as most 20% N formulations, are okay during early development but should be discontinued once bract formation begins in mid-October. When the crop reaches the full bract expansion stage, stop feeding and allow the soluble salt levels in the mix to decline.

Poinsettias are very susceptible to bract edge burn or bract necrosis. This physiological disorder usually appears as the crop approaches full bract expansion or after the crop is sold. High soluble salt levels aggravate this problem. Use regular soil testing to monitor the nutritional status of the crop and avoid excessive salt buildup. Cultivar susceptibility to bract necrosis will vary widely. V-14, Supjibi and Celebrate 2 are very susceptible. In Connecticut studies, Lilo also developed the symptoms quite readily under the right conditions. The Hegg varieties tend to be relatively resistant.

Weekly calcium spray applications during bract development represent the only sure way to prevent this problem. Spray 400 ppm calcium, beginning in mid- to late-October and continuing through bract expansion. If using calcium nitrate, mix 2.7 oz per 10 gal of water to make a 400 ppm calcium solution. With calcium chloride, use 1.5 oz per 10 gal.

The cultural practices you use late in the crop will determine the success or failure of the crop. Be alert, monitor changes in the crop and manage the crop according to the stage of plant development. Good luck for Christmas 1992.