Venus™ Pink Poinsettia

syngenta flowers

Poinsettia
Culture Guide

Propagation

SANITATION

To reduce the chance of fungal and bacterial infections, it is important that the propagation area is cleaned and sanitized before cuttings arrive. Weeds should be removed and algae-infected areas scrubbed and cleaned. All benches and floors should be thoroughly disinfected using a greenhouse disinfectant containing quaternary ammonium.

Make sure sanitation protocols are in place as the greenhouse is prepared to receive cuttings. Foot baths containing disinfectant should be placed at all entrance ways into the propagation area. These baths should be renewed daily with fresh disinfectant. Managers and workers should wash hands with a disinfectant or anti-bacterial soap before entering the propagation area after lunch and breaks.

UPON ARRIVAL

Make sure that the rooting media is laid out on clean benches several hours (or the day before) cuttings arrive. For direct-stick programs and those where cuttings are handled in sticking lines, make sure that all workers are present and that equipment is working correctly. Workers should be prepared for the day's shipment.

Store opened boxes at 50 °F (10 °C) for no more than 24 hours and prevent cutting dehydration during storage (ideally 90% relative humidity in coolers). Do not open up the individual bags of cuttings as this helps maintain high humidity around the cuttings.

Stick the cuttings immediately if possible. For relatively large shipments, pull out only enough cuttings for each worker to stick within an hour or so before replenishing with another fresh box of cuttings from the cooler. If cuttings can't be stored in a cooler, then try to store in the coolest area of the facility and monitor closely for humidity and cutting water loss. Some growers without cooler space also lay opened bags on propagation bench and begin misting. Do not leave opened, un-stuck cuttings on the propagation bench for more than a few hours or they can become twisted and curled.

Titan™ Red Poinsettia

TEMPERATURE

Warm temperatures and humid conditions are needed for successful poinsettia propagation. Bottom heat is very helpful, especially in northern areas where night temperatures are relatively cool. Try to maintain temperatures between 73–75 °F (23–24 °C) in the media until the cuttings are fully rooted. Poinsettias are propagated during the warm summer months so greenhouse day temperatures will normally be significantly higher than night temperatures and constant temperatures are more difficult to hold. If at all possible, try to avoid night temperatures below 70 °F and day temperatures above 85 °F the first two weeks of rooting.

After good root development, temperature and humidity can be reduced and the cuttings acclimated to higher light intensities. Ideal media temperatures would be between 70–72 °F (21–22 °C) with air temperatures varying based on climatic conditions. Again, try to avoid relatively low night temperatures and relatively high day temperatures as cuttings are finishing up the propagation process.

Most varieties are generally well-rooted in four weeks using these recommended temperatures.

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ROOTING HORMONE

Many growers feel that they do not need to use rooting hormones if they have good bottom heat and good healthy cuttings. Syngenta Flowers suggests that rooting hormones slightly reduce rooting time and even out rooting along the bench. Some growers use powdered material while others use liquid types (e.g., Dip'N Grow®, Hortus IBA water soluble salts®, or Rhizopon® AA water soluble tablets). When applying, use a 0.1–0.2% IBA or combination IBA + NAA applied only at the base of the cutting. Trials are recommended before using new rooting compounds or concentrations. It is not recommended to use IBA overhead sprays in propagation since leaf burning and distortion can occur, especially when using alcohol-based IBA sources.

HUMIDITY

High humidity, especially for the first five days, is critical to reduce stress on the cuttings and to help get them out of a wilted and flagged stage. Many growers are now using fog systems to maintain humidity above 90% in the poinsettia propagation area, especially in dry climates. High humidity should be combined with heavy shade and minimal air movement. This helps reduce the amount of misting that is needed and reduces the chances of Botrytis and other diseases.

MISTING

Use a fine mist, applying enough to wet the foliage but not to the point of drip. Short and more frequent bursts of mist are better than long mist cycles with less frequency. Adjust mist daily according to weather and the condition of cuttings. Avoid standing water on the leaves if possible. Puddles of standing water on young leaves for lengthy periods of time can cause tissue breakdown, water-soaked areas, and eventual disease.

It will take a day or two for the unrooted cuttings to become completely rehydrated and turgid after sticking. Avoid excess air movement across the leaf surface, especially in the first week. Mist so that the leaves do not roll—you do not want to see severely flagged poinsettia cuttings after becoming rehydrated following sticking. Severely flagged cuttings in the early morning indicates that inadequate mist was applied during the night. Running cuttings too dry causes leaf scorch, delays in rooting, and possible leaf loss. If the cuttings look stressed on sunny days, shade is recommended rather than additional mist.

Use a spreader-sticker (like CapSil® 30, at a rate of 2–4 oz/100 gal) on cuttings as soon as possible after sticking to reduce leaf surface tension and improve moisture uptake into the leaves. CapSil 30 causes the water to spread more evenly across the leaf surface. Many growers combine the CapSil 30 with an appropriate fungicide for Botrytis control. Reapply whenever water droplets are forming on the leaves and the moisture is not evenly distributed across the leaf surface. CapSil 30 at similar rates above can also be used as a pre-plant spray or dip on cuttings. Avoid dipping the cut end if possible when using pre-plant dips. When CapSil 30 is used in propagation, mist levels and frequency can normally be reduced. Avoid over-misting cuttings when using CapSil 30 or water-soaked young foliage might occur. Other adjuvants (ex. Uptake™ or Suffusion™) can also be used instead of CapSil 30, but these should be trialed extensively before implementing.

Sigma™ Poinsettia

SHADE

Provide heavy shading until the cuttings develop a good callus. Try to keep maximum light levels between 900–1,100 foot candles (4–6 mols/day). It is critical to pull enough shade under bright sunny conditions to help reduce stress and heat load on the plants. This will also help reduce the amount of misting needing which leads to less Botrytis and bleached foliage.

Once roots begin to form (10–12 days or so for most varieties), light levels can be gradually increased to 1500–2,000 foot candles (8–10 mols/day) as long as misting does not have to be significantly increased. When the plants are well rooted (~ three weeks), light intensities can go up to 3,500 foot candles (15–18 mols/day).

FERTILIZER

Start the fertilization program early. Poinsettias have relatively long requirements for misting during propagation and leaves can get heavily leached of nutrients, especially medium-green-leaf varieties. Many times the first leaves that develop on a rooted cutting are yellowish green caused by lack of nutrients within the plant.

The first feeding to the media can be done 9–10 days after sticking and after root initials have formed and early rooting has begun. Growers should start with 100 ppm N and K. Once the roots begin to form, rates can be increased to 150 ppm N and K and eventually up to 200 ppm N and K if needed. Some growers sub-irrigate the rooted cuttings to avoid overhead fertilizer burn; however, be aware of the potential disease spread along the bench using such setups. Cases of Rhizoctonia fungi moving along the bench and infecting cuttings in sub-irrigation troughs has been reported in several cases.

Finishing all overhead fertilization by 9:30 a.m. helps prevent foliage burn. It is also always wise to rinse off the fertilizer with plain water before the fertilizer solution dries on the leaves. Stay away from high phosphorus-containing fertilizers applied over the foliage, as this can stunt the young leaves if the foliage is not rinsed off afterwards with clean water. Use primarily calcium nitrate + potassium nitrate formulations during propagation, such as 15–0–15, 14–0–14, or 13–2–13. An occasional 20–10–20 or 15–15–15 type can be used if the plants need to be greened up before moving out of the propagation area, but the fertilizer should be rinsed off after application if possible to prevent leaf distortion and burn.

PLANT GROWTH REGULATOR (PGR)

PGRs should be applied as needed to control growth in propagation. They are generally applied either early morning or early evening when misting and irrigation can be turned off for several hours. It is helpful to know the relative vigor of varieties and, if possible, to group these together on the bench. Cycocel® sprays at 750–1000 ppm are commonly used on moderately vigorous varieties while spray combinations of Cycocel at 750–1000 ppm + B-Nine® at 1000–1500 ppm are used on more vigorous varieties. Sprays generally begin 17–21 days after sticking and as the cuttings begin to root out. One spray is sufficient for many varieties, but two or more sprays might be needed for the most vigorous. It is not recommended to use Bonzi® or Sumagic® sprays in propagation because of the risk of getting these chemicals into the rooting area and causing stunting.

DISEASES AND INSECT MANAGEMENT

There are several diseases and insect pests to watch for during poinsettia propagation.

Erwinia (bacterial soft rot)

Erwinia is a bacterial disease that causes slimy black lesions along stems and leaves eventually leading to "meltdown" of the cutting. Growers normally see this on the cuttings a few days after sticking. The worst cases of Erwinia show up in propagation when unrooted cuttings have over-heated during the shipping process or are otherwise stressed or very weak.

To help reduce Erwinia outbreaks, the propagation area should be very clean and disinfected beforehand. Keep temperatures lower than 78 °F (25 °C)—Erwinia is always worse when the propagation temperature is running extremely warm. Reduce misting if possible and pull plenty of shade to help reduce the heat load. If cuttings arrive warm, then placing them overnight in a cooler at 50 °F (10 °C) before sticking can sometimes help reduce Erwinia infections. (See earlier section on storing cuttings upon arrival.)

There is no complete chemical prevention or cure for Erwinia, but daily cleaning of infected cuttings, excellent sanitation, and a change in the environment helps reduce spread of the disease. Some growers use KleenGrow™ bactericide as a preventative sprench at 6 oz/100 gal to help reduce Erwinia incidence. This sprench can be used with compatible fungicides, such as Chipco® 26019 (1 lb/100 gal) or Medallion® (2–4 oz/100 gal), for broad spectrum pathogen prevention. Use of KleenGrow in propagation with poinsettias should be trialed extensively before full implementation—leaf burning has been reported under certain propagation conditions or when using too high of rate.

Botrytis

Botrytis is probably the most common disease seen during poinsettia propagation. It commonly occurs on "soft" cuttings when misting is too heavy and preventative fungicides are not used early on. As mentioned earlier, providing adequate shade levels early on will reduce mist levels needed to keep the plants turgid and will reduce Botrytis infections. Providing adequate spacing between cuttings and periodic cleaning of infected leaves helps minimize the spread of infection. Preventative fungicide sprays help reduce Botrytis infections. See Section below on Diseases and Plant Protection for recommended fungicides. Fungicides should be sprayed when cuttings are mostly turgid, the first occurring a day after sticking.

Pythium and Rhizoctonia

Pythium and Rhizoctonia are fungal root and basal stem rots that can occur in propagation. They generally occur a bit later in the propagation process compared to Erwinia and Botrytis. Both will cause blackened roots and eventual death of the young plant. Reducing the chance of infections starts with a clean propagation area and good sanitation protocols. If growers suspect either of these diseases, it is best to get samples sent off to a diagnostic lab for confirmation.

Rhizoctonia can occur when cuttings are stuck too deep into the rooting media. The disease commonly starts with blackening along the base of the stem, eventually working its way down into the root area. It can quickly spread along the bench from over-head and flood irrigation.

Pythium is common after roots have developed, but the rooted cuttings have then gone through a severe dry down. The stressed and damaged roots are highly susceptible to attack.

See Section below on Diseases and Plant Protection for recommended fungicides.

Fungus Gnats – Adults & Larvae

Root and stem injury caused by fungus gnat larval feeding can often begin during mid-late stages of propagation. This is especially true in direct stick programs and in propagation areas that have not been properly sanitized. Fungus gnat larvae can bore into the base of stems as well as feed on callus tissue and roots, restricting root growth and providing an entry point for disease causing pathogens. Periodically inspect developing callus and roots for larvae. Monitor adult populations by placing yellow sticky cards several inches above the crop canopy. See Section below on Insect Control for additional information and recommended control options.

Titan™ White Poinsettia

Production of Finished Plants Upon Arrival

It is recommended to plant rooted cuttings immediately. If you cannot plant immediately, distribute strips on benches or keep in cooler with lids opened at 50 °F (10 °C) for no more than 24 hours.

POTTING

To reduce the chance of stem rot by Rhizoctonia infection, avoid planting too deep. For broad spectrum control of fungal root diseases, immediately after planting drench with a tank mix of Subdue MAXX® at 1 oz/100 gal (or Truban® WP at 8 oz/100 gal) + Medallion (1 oz/100 gal), Terraclor® at 4 oz/100 gal, or other fungicides containing thiophanate-methyl, such as Cleary's® 3336 WP or OHP6672™ WP. Mural fungicide can also be drenched at 2–3 oz/100 gal for broad spectrum fungal disease prevention.

MEDIA

pH: 5.6–6.0 (measured in a saturated slurry). Use well-drained, porous media to allow sufficient aeration and good root growth.

FERTILIZATION

Exact feed levels vary by variety, condition, age of the plants, climate, water quality, watering practices and adjustments based on media analysis. Start feeding with a balanced fertilizer early. Poinsettias need fertilizer immediately after planting, especially if they are pale and hungry coming out of propagation. Under-nourished plants may be stretchy and soft, resulting in stem breakage at the end of the crop.

VERY IMPORTANT: It's critical for a future upright, strong plant to have well-toned and properly fertilized plants grown at high light conditions and with proper growth regulation before they get pinched. This will ensure a strong branch connection with compact internodes of the developing branches. See details below under Stem breakage, Height control and Florel.

Depending on light level, age, and growth rate, constant feed with 225–250 ppm N for dark-leaf varieties and 250–275 ppm N for medium-green-leaf varieties is recommended. In the beginning, up to 30% of the total N should be ammonium for optimum leaf expansion. If plants look strong with good leaf expansion, reduce ammonium to 15% by the end of September.

Whitestar™ Poinsettia

For softer, lush growth and to increase leaf expansion and overall plant size, use Peters® Professional 20–10–20 or similar ammonium-containing fertilizers until early October , then alternate with high nitrate-containing fertilizers, like 14–0–14, 15–0–15, 13–2–13, 14–4–14, or 15–5–15 until November 1. For more toned growth and smaller foliage early on, use 17–5–17, 15–5–15 or similar Cal-Mag (calcium nitrate + magnesium nitrate) fertilizers. In all production cases, use strictly high nitrate-containing fertilizers for the last two weeks before maturity and sale. Moving to solely nitrate fertilizer blends at the end of production will result in plants that are sturdier and with better post-harvest keeping quality.

Molybdenum and magnesium usually have to be added to the fertility program if not already supplied in higher amounts with the other regular fertilizers. Drench plants with magnesium sulfate at 1–2 lbs/100 gal when early stages of magnesium deficiency are observed. Add Molybdenum to fertilizers as supplemental ammonium molybdate or sodium molybdate.

VERY IMPORTANT: To catch potential problems and monitor overall nutrition of the crop, a complete media analysis should be done prior to planting and every two weeks thereafter. Tissue analysis should be done periodically to supplement the media analysis, especially if nutrient issues are suspected.

Keep the soluble salt level at 1.5 mS/cm (in a saturated media extract, SME) for the first few weeks, then 2.0–2.5 mS/cm for medium-green varieties and 1.5–2.0 for dark-leaf varieties after establishment and during the primary production period of the plant. From November 10 on, steadily reduce fertilization to about 25% of the original strength. Two strong clear-water leaches should be done just before shipping to reduce bract-edge burn and root rot at the consumer level.

TEMPERATURE

Managing heat stress can be difficult early in the season. Review the Poinsettias—Tips for Establishment and Early Growth document under Technical Services (click on Weekly Tech Tips) at www.syngentaflowersinc.com for more information.

For all varieties: 68–73 °F (20–23 °C) day and 66–68 °F (19–20°C) night is recommended until two to three weeks prior to shipping. Towards the end of the crop, slowly drop temperatures down to 65 °F (18 °C) day and 65 °F (18 °C) night for medium-green-leaf and 62–63 °F (16–17 °C) night for most dark-leaf varieties.

For red varieties with dark green leaves, night temperature can be 62–63 °F (16–17 °C). Consequently, bracts will be smaller and more upright, the color more intense and flowering delayed from several days up to one week. Dark-leaved white and pink varieties turn creamier white and salmon colored, respectively, if finished at 62–63 °F (16–17 °C). If plants are grown on the "cooler side," they should be planted and pinched about one week earlier than usual. Watch for Botrytis on leaves and bracts, and inspect roots regularly. Medium-green-leaf whites and pinks (e.g., Whitestar™, Maren™) are generally the first to show signs of late-season Botrytis infections.

If plants are behind schedule, or for maximum root and plant development, use 74 °F (23 °C) day and night temperatures until flower initiation, then drop night temperatures to 68 °F (20 °C) to avoid heat delay (flower delay due to high temperatures).

Titan™ Pink Poinsettia

For a compact plant habit without growth regulator use, a constant temperature of 68º F (20º C) (both day and night) is recommended to slow plant growth. Drop morning temperatures by 5 °F for two to three hours before first morning light (early morning DIP) to reduce height and control overall growth.

Negative DIF with 65 °F (18 °C) day and 68 °F (20 °C) night also works well to slow the growth of poinsettias, without risking Botrytis problems caused by low night temperature and consequent high humidity.

COLD GROWING/FINISHING

Syngenta Flowers conducted extensive trials across North America with many varieties to better understand the effects of cold growing/finishing on growth and flowering. For more information on cool growing and finishing, review the Energy Efficient Poinsettia Production document under Technical Support (click on Cultural Info) at www.syngentaflowersinc.com.

HUMIDITY

Keep humidity below 75% to avoid powdery mildew and Botrytis. Keep air circulating and maintain proper air exchange, especially during cloudy, rainy weather at the end of the crop; vent to remove humid air before sundown.

LIGHT

Light levels should be at 3,500–4,500 foot candles (15–19 mols/day) until the middle of October and at about 3,000 foot candles (13 mols/day) until three weeks before shipping. Light levels can then be dropped to 2,000–2,500 foot candles (10–11 mols/day) for the last two weeks of the crop.

AVOIDING STEM BREAKAGE

Pinching too high is not recommended and can lead to dominant shoots and eventual stem breakage. The number of leaves below the pinch should be one to two more than the number of bracts that are desired at finish. To promote strong joints among branches and the main stem, supply high light levels, assure a good root system, fertilize adequately, and apply early and sufficient plant growth regulators (PGRs). (See additional information below under Height control and Florel.)

Select varieties with V-shaped growth habits, like Titan™ Red, Titan Pink, Titan White , Early Mars™ Red, Mars Pink, Mars White and Mars Marble, Sigma™, Neva™ and Mars Late Red (formerly Mars Red 09).

PINCHING

Determine the amount of bracts that you want on the final mature plant and adjust your pinching and node number as needed. Pinch on seven leaves (nodes) for six fully developed branches for a 6- or 6.5-inch pots. For 4- or 4.5-inch pots with one plant per pot, pinch on four to five leaves for four to five fully developed bracts. For larger containers (e.g., 8- or 10-inch) with multiple plants per pot, pinch on seven to nine nodes depending on the final number of bracts needed for the pot.

HEIGHT CONTROL

The key to proper height control is to know the relative vigor of the varieties being grown and to anticipate and monitor rapid growth phases for the crop. Use of a graphical tracking system is recommended. With well-controlled, consistent day and night temperatures, chemical height control is minimal for many varieties. With day temperatures more than 5 °F (3 °C) higher than night temperatures, Cycocel® growth regulator treatment at 750–1,000 ppm, one to four times after pinching, is sufficient in Northern climates. With day temperatures greater than 80 °F (27 °C) and night temperatures greater than 70 °F (21 °C), spray a Cycocel plus B-Nine® growth regulator tank mix one to three times, one to four weeks after pinching at 1,000 ppm Cycocel plus 1,500 ppm B-Nine. Instead of the Cycocel plus B-Nine tank mix, Bonzi® growth regulator can be sprayed at 5–10 ppm. Avoid B-Nine and Bonzi sprays after flower initiation to avoid small bracts and flower delay.

VERY IMPORTANT for NEWER VARIETIES: More compact varieties like Sigma and Neva, usually need only two PGR treatments (one before and one after pinch). As the Titan varieties are quite vigorous early on and tend to get long internodes after the pinch if not regulated properly, three sprays of PGRs are needed (one 3–5 days before and one 3–5 days after the pinch and again 3–5 days later, resulting in compact internodes and uniform branching. Additionally they have to be fertilized sufficiently and exposed to sufficiently high light to achieve a strong plant base.

FLOREL®

The Florel treatments should be done instead of other growth regulator treatments. Do not apply Florel after flower initiation. Florel plant growth regulator applied at 500 ppm three to five days before and three to five days after pinching (for vigorous varieties again three to five days later) leads to shorter internodes, more even branching, and a rounder finished plant. For optimum results, spray Florel early in the morning and check for a good root system. Plants should not be wilting or under water stress during treatment. For best absorption of Florel, apply when the solution can remain wet on the plant for two to three hours. If Florel dries too quickly, moistening the foliage with a light spray of water helps to reactivate the Florel and facilitate additional uptake. A spray adjuvant, such as CapSil helps with absorption into the leaf surface. Keeping the Florel spray solution at a pH of 4.5–5.0 also maximizes its effectiveness.

MID-SEASON ULTRA-LOW-RATE BONZI DRENCH

When plants are taller or growing faster than desired and Cycocel growth regulator spray applications are not providing adequate growth control, an early to mid-season (late September through October), low-rate Bonzi growth regulator drench provides additional growth control without delaying color, distorting bracts, or significantly reducing the bract size. Recommended drench rate after flower initiation and prior to 50% color is 0.05 (1/20) to 0.1 (1/10) ppm. The 0.1 (1/10) ppm rate is used on medium-vigorous-growing varieties and when moderate growth control is desired. The 0.05 (1/20) ppm rate is used on compact-medium-growing varieties or when the growth rate needs to be slowed down slightly. Try to keep total accumulated amount (from several drenches) to a maximum of 0.25 (¼) ppm. The drench volume needs to be consistent from pot to pot. A good starting volume is about 1 fl oz/1-inch pot diameter. The early Bonzi drench can be reapplied as needed, so start at the 0.05 (1/20) ppm rate. Do not drench at rates higher than 0.25 (¼) ppm until plants are at least 50% colored to prevent delaying color and reducing bract size. A Bonzi drench rate that is too high affects bract development. Trial the ultra-low-rate Bonzi drench the first year to determine the best rate to apply for your growing conditions. Always have control plants of similar size that haven't been treated to give an idea of the treatment's growth-regulating effect. Ultra-low rate Bonzi drenches are more applicable for very warm, southern growing conditions; however, some northern growers have used these ultra-low rate drenches successfully for vigorous-growing varieties. The ultra-low rate drenches work best for controlling vigorous varieties that produce large bracts.

TRADITIONAL LATE-SEASON BONZI DRENCH

For traditional late-season growth control, Bonzi drenches are typically done in the north at ¼–½ ppm (0.75–1.5 oz/100 gal) or in the south at ½–1 ppm (1.5–3 oz/100 gal). This can be done when the plants are about ½–1" below the desired height and/or one to two weeks (up to three weeks in the south) before shipping. If the effect is not strong enough, the treatment can be repeated. The later the drenches are applied (and with more color on the bracts), the less affect they will have in reducing bract size at maturity. Applying these late-season drenches too early in production or when plants are being grown under very cool temperatures will result in overly small bracts. At these low rates, Bonzi drenches can be done through the watering system. Plants must be watered UNIFORMLY the day prior. It is also important to keep drench volumes CONSISTENT from pot to pot to ensure consistent results.

GIBBERELLIC ACID (GA)

For a moderate boost of growth, a 2–3 ppm spray of GA using ProGibb® 4% or Fascination® plant growth regulators is recommended. The maximum growth/stretch happens about two weeks after application. Two to four inches of growth are possible within that time frame depending on variety and temperature. Spray plants any time during production; however, experience shows that earlier sprays (up to mid-October and beginning of color development) often yield a better finished product. Very late sprays lead to upward cupping of bracts and some "necking." If plants become too vigorous, slow down growth with Cycocel sprays or Bonzi drenches (see earlier sections). Conduct small trials in good years before making large-scale applications for the know-how when the crisis hits. If plants color too slowly, use 3 ppm of GA as a spray 10 days before shipping for more even and quicker coloration. If plants are not sold when they are ready, drench with Bonzi to avoid late stretch. Make sure to conduct trials first. For white varieties (i.e. Whitestar, Titan White, Mira™ White, Mars White), applying

Mira™ White Poinsettia

Fascination will result in a better white color and larger bracts. Only make applications if high humidity is not a problem and humidity can be kept under 75%, as these softer, larger bracts become more susceptible to Botrytis.

CONSISTENCY OF BRACT COLOR

Providing even heat distribution and moisture levels along with good air flow yields the most consistent bract colors. Ensure plants have a good root system and avoid excess salt levels in the media. Eliminate nighttime light intrusion. (If you can read a newspaper, then there's too much light.) Watch for shaded areas in the greenhouse (e.g., gutters and shade curtains) which can result in slow or uneven bract coloration within the crop.
Diseases and Plant Protection

DISEASE MANAGEMENT

Pythium

Apply Subdue MAXX at 1 oz/100 gal as a soil drench after planting. Rotate with Truban® WP (6–8 oz/100 gal) or Segway® (1–3 oz/100 gal) fungicides every four weeks for protection. Some growers have success incorporating RootShield® G fungicide into the media or drenching RootShield WP fungicide one week after making the first chemical drench. A half-rate reapplication of RootShield WP is recommended midway through the crop. Regularly inspect the root system and apply additional fungicide treatments if needed. To help prevent root and stem infections, keep the planting media moist, avoid drying out or over-watering and monitor the EC levels regularly. High salts can damage roots. If the soil gets dry, use clear water before feeding. When root damage is confirmed, apply drench treatments listed above. It is also always a good idea to send root and media samples off to a reputable diagnostic lab to see if other pathogens besides Pythium spp. might be causing the root damage.

Botrytis

To minimize infections by Botrytis, maintain good air movement and low humidity (heat and vent simultaneously under moist and rainy conditions) especially at the end of the crop. Fungicide sprays of Daconil® Ultrex, Chipco 26019, or a mixture of both, at ¾ rate can be alternated with Mural™ 4–7 oz/100 gal early in production to prevent Botrytis as well as other foliar diseases such as powdery mildew and, Alternaria leaf spot. Phyton® 27, and biological fungicide products such as Cease® and Actinovate® SP, also have activity on Botrytis. Once bracts have developed, rotate Mural® with Palladium® (4–6 oz/100 gal) and Decree® (1 lb/100 gal) for Botrytis control. Adding CapSil spray adjuvant at 3–4 oz/100 gal to Chipco 26019, Decree, Mural and Palladium treatments can improve spray deposition on waxy plant surfaces, reduce residue and enhance performance. Mural, Palladium, Decree and Phyton 27 can be used once bracts are in color.

Powdery Mildew

Powdery mildew continues to appear on poinsettia crops around the country. To prevent outbreaks, maintain good air movement and low humidity in the production area. Apply preventive fungicide treatments throughout the month of October if a history of powdery mildew exists. Effective fungicide spray treatments include Mural (4 oz/100 gal), Palladium (4–6 oz/100 gal), and several products from FRAC group 3: Eagle® 20EW (8 oz/100 gal), Terraguard® (8 oz/100 gal), and Strike® 50 WDG (0.5 fl oz/100 gal). Do not rotate among products with the same FRAC group number. MilStop®, Cease and Actinovate SP fungicides also have suppressive activity against Powdery mildew. Fungicide products reported to be safe for bracts include: Mural, Palladium plus CapSil spray adjuvant, MilStop, Phyton-27, or Strike 50 WDG Growth-regulating effects (compact growth and puckered bracts) and severe flower delay can occur with repeated applications of Strike, Terraguard or Eagle fungicides. Select one product from FRAC group 3 and use in rotation with other fungicides listed above. Zerotol can be used on bracts, but will leave marks on infected bracts where the fungal colonies were located.

Rhizoctonia

To prevent root and stem infections by Rhizoctonia spp., avoid planting too deeply and maintain proper EC levels and moisture content of the media. Drench applications of Medallion (1 oz/100 gal) fungicide or a thiophanate-methyl product (e.g, Clearys 3336 or OHP6672) at full label rate can be alternated on a 4 week interval for prevention. If broader control of primary root and stem rots is needed, drench with Mural at (2–3 oz/100 gal) for control of Rhizoctonia spp., Pythium spp., and Phytophthora spp.,

Scab

Scab is an occasional problem that periodically shows up in poinsettias. Look for raised "bleached white" scab-like lesions on stems and leaves, with excessive elongation of the infected stems. For prevention and control, spray with Mural at 4–7 oz/100 gal or Eagle 20EW fungicide at 8 oz/100 gal. Products containing mancozeb (Fore®, Dithane® or Protect™ DF) can also be used in the rotation for prevention of this disease.

Mars™ Red Poinsettia

INSECT CONTROL

Whiteflies

To keep whitefly populations under control during the production season, drench the growing media with Mainspring® GNL Insecticide (IRAC Group 28) at 8–12 fl oz/100 gal, three to four weeks after pinching the crop and once the plants are well rooted into their container. This systemic alternative to neonicotinyl chemistry will provide extended protection against Bemesia tabaci, Biotypes B & Q for during the production season when following the application instructions on the labels. Kontos® Insecticide is another alternative that may be used as a soil treatment for control of whitefly, generally providing 4–5 weeks of protection. Prior to pinch, foliar sprays of Avid®, Endeavor®, Mainspring GNL, Scimitar® GC, Talstar®, Rycar® ,Sanmite®, Distance®, Enstar® II, Botanigard®, Preclude® TR, Attain® TR, and Talus® insecticides can be used for whitefly management. If late-season control is needed, spray with Avid, Talstar, Talus or Tristar® insecticides using a spray adjuvant like CapSil.

Thrips

Thrips feeding causes scarring on the leaves and bracts of poinsettia. Monitor populations using sticky cards and apply control treatments as needed. Drench applications of Mainspring® GNL applied 2–3 weeks after pinch will prevent injury and control thrips in addition to whitefly population in poinsettias. Avid, Botanigard, Conserve®, Mesurol®, Tame®/Orthene® tank mix (or total release aerosol) and Overture® insecticides can be used for thrips management prior to the drench or as needed. Conserve or Avid may be used if needed after bracts are in color.

Mites

Two-spotted spider mites and Lewis mites are the two primary mites that can cause injury to poinsettias. Early applications of Avid or Sanmite made after transplanting and/or during the first few weeks after new breaks begin expanding will prevent and control outbreaks from occurring and will also contribute to whitefly management.

Fungus Gnats & Shore Flies

Good sanitation procedures are still the first line of defense for controlling fungus gnats and shore flies. Products such as KleenGrow, MicroBLOC®, Greenclean®, Green-Shield®, Physan 20™, Triathlon® and Zerotol® disinfectants can be used according to label directions to control algae on floors, walkways and sidewalls of greenhouses, which serve as a breeding area for these pests. Options for controlling fungus gnat larvae include: Azatin® XL, Citation® insect growth regulator, Distance®, Duraguard® ME, Gnatrol® insecticides or beneficial nematode (Steinernema feltiae) products, such as Nemashield® and Nemasys®. Of the products listed, only Citation, Distance and Duraguard will also control the larval stage of Shore flies. If using Distance insecticide, read application instructions carefully and stay within the 2 oz/100 gal rate. Products in the neonicotinoid class (e.g., Flagship®) will control fungus gnat larvae when applied as a drench. Due to the importance of this class of chemistry for whitefly management, this treatment is best utilized when whitefly control is needed.

Biological control programs for whiteflies (*Encarsia formosa*, Encarsia transvena and *Eretmocerus californicus*, *Amblyseius swirskii*), thrips (*Amblyseius cucumeris*) or fungus gnats (*Steinernema feltiae*, *Hypoaspis miles*) work well for many growers. Extensive trials and good working relationships with suppliers and universities are critical for their success.

Shipping and Post-Harvest Handling

DURING SHIPPING

The keys to shipping poinsettias are to prevent exposure to extreme temperatures, avoid severe bruising and mishandling, and minimize the amount of time that plants have to sit in trucks or boxes. It can be discouraging and expensive when great-looking products have gone out the door only to have been damaged and refused by the retail buyer.

Depending on how they are finished in the greenhouse, poinsettias can be damaged from rough handling. Plants finished on the warm side that have larger, softer bracts are more susceptible to bract bruising and abrasion than those with smaller bracts. Care should be taken when sleeving and placing plants in boxes or on racks to be rolled onto trucks. Make sure that the boxes or cart shelves are slightly taller than height of the plant sleeve to prevent bruising.

There has been an increase in using plant-support rings to reduce stem breakage and improve the sturdiness of the plant during handling. These are usually placed on the pots anywhere from 5–8 weeks before shipping depending on the size of the container. Rings are highly recommended for 8-inch and larger containers, but many growers now use them for all sizes 6-inch and larger. While they add some cost to the final product, they are a good insurance against loss and improve the overall presentation of the product.

The best temperatures for shipping poinsettias are between 51–55 °F (11–13 °C). Temperatures above 65 °F (18 °C) can lead to increased ethylene exposure and epinasty, especially if plants are shipped for lengthy periods of time. Epinasty usually expresses itself as a distinct wilting of the plant after it is unsleeved.

On the other hand, poinsettias are chilling sensitive and can be damaged when exposed to temperatures below 50 °F. Generally the longer the low temperature exposure, the more damage that is seen at retail. Red varieties with chilling damage have bracts with bluing or necrotic edges with inner bracts that sometimes turn a whitish color.

The shipping manager should make sure that all logistics are in place and that the packing/shipping team understands how to handle finished poinsettias. Team effort is important in getting the plants on racks or in boxes in the appropriate number, by customer order, and in an organized manner.

Delivery times for poinsettias can range from a few hours to several days. Staying on schedule and minimizing delivery time is important in the post-harvest performance of the plants. The longer plants stay in sleeves, the greater chance of epinasty, especially under relatively warm transport conditions. Keeping poinsettias in the dark for several days also leads to a greater occurrence of bottom leaf yellowing and bract fading at retail. While some varieties handle shipping stress better than others, the general understanding is that the shorter the transport time, the higher the quality at retail and for the customer.

AFTER SHIPPING (RETAIL)

Properly handling poinsettias at retail ensures that plants will perform to their genetic potential for the end consumer. The key is to provide an optimum retail environment for the plants to maintain their health and overall beauty.

Carefully unsleeve plants and place them adequate spaced in the retail display area. While sleeved plants can be placed closer together and might not be damaged as easily by the shopper, unsleeved poinsettias make a better display, have better sell through, and have less chances of epinasty.

Although it can be difficult in big box stores and larger settings, retailers should try to water the plants before placing them on display. Make sure that the water drains thoroughly from the pot and that the excess water is discarded. One of the quickest ways to destroy roots and possibly kill poinsettias is to let them set in a pool of water for lengthy periods of time (i.e. “wet feet”). If removing the drained water from saucers or pot covers is not feasible during irrigation, then try to schedule irrigations by applying just enough water to wet the media with little water draining from the bottom of the pot and into the saucer or pot cover. Plants should be irrigated when the media feels dry to the touch. With experienced retailers, the plant and pot can also be lifted up and judged by weight on whether watering is needed.

The best retail environment for poinsettias is one where there is adequate light intensity and moderate temperatures. Temperatures should ideally be in the 65–72 °F (18–22 °C) range. Retailers should not place plants in areas where extreme heat or cold temperature exposure can occur. Retailers in the southern U.S. who have outdoor displays should make sure plants are monitored regularly and brought indoors when temperatures or other weather conditions are not conducive for the plants.

Plants exposed to higher light intensity exhibit better post-harvest quality. Many poinsettia varieties placed in areas with less than 100 foot candles (0.5 mols/day) generally have significant bottom leaf loss and poor keeping quality, especially under relatively warm temperatures. While incandescent and fluorescent lights are commonly used in retail displays, displaying plants under natural light is ideal for presenting the plants' true colors.

Maren™ Poinsettia

syngenta *flowers*

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