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Poinsettia Leaf and Stem Abnormalities

Given that poinsettias are propagated during the hottest months of the year and have a very long production time, they are prone to several pathogens, pests, and physiological disorders. Occasionally, greenhouse growers observe irregularities on the leaves or stems of their crop that are not caused by insects or diseases. Environmental factors during both propagation and production, such as drought stress, exposure to high light or temperatures, or changes in relative humidity, can all cause poinsettia leaf abnormalities, distortion, crippling, or puckering. These issues are often the most difficult to diagnose as you cannot isolate the problem in a petri dish or visually observe an insect or pathogen. Recent reports of leaf abnormalities align with the traditional occurrence of these symptoms that often occur from mid-September to early October.

Poinsettia leaf distortions (Figure 1) often occur on young or immature leaves and are believed to be caused by many factors.



Figure 1. Leaf Distortion and irregular meristem growth likely caused by extreme environmental factors or overhead fertility (Photo: Anonymous Grower).

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Leaf and meristem distortions can be caused by herbicide exposure, but if you can rule out an exposure there are many environmental and cultural factors that can lead to leaf distortions. Physical damage during pinching, ruptured cells and latex residue can cause the expanding leaf to become distorted. Therefore, care should be taken to avoid latex from dripping onto the plant during pinching.

Always remember to wash off fertilizer residue from foliage, especially young leaves if you overhead fertigate your crop with fertilizers containing phosphorus during propagation (Figure 2) or production. Leaf distortion can also result from dramatic temperature and humidity changes, high greenhouse temperatures after transplant as plants are moved from propagation to production. Typically, as plants grow, mature leaves will cover the distorted or damaged young leaves and not influence the marketability of the crop.

Leaf Curl from Desiccation

Leaf curl with browning/necrotic tissue are often a symptom of heat stress, leaf scorch or desiccation (Figure 3). The water stress symptoms on poinsettia typically occurs on leaves in the middle portion of the plant or leaf. As your crop is actively growing when greenhouse temperatures and light levels are high, it is essential that you provide adequate irrigation to avoid extreme conditions (excessively dry or wet) that can result in leaf desiccation, poor growth, and disease susceptibility. Excessively dry plants should not be irrigated with cold water as uptake and transport by the roots can be inhibited for a short interval. Under extended drought stress, lower leaves will turn yellow, brown, and eventually senesce (Figure 4).



Figure 2. Overhead fertilizer containing phosphorus during propagation can cause leathery, wrinkled and distorted leaves.

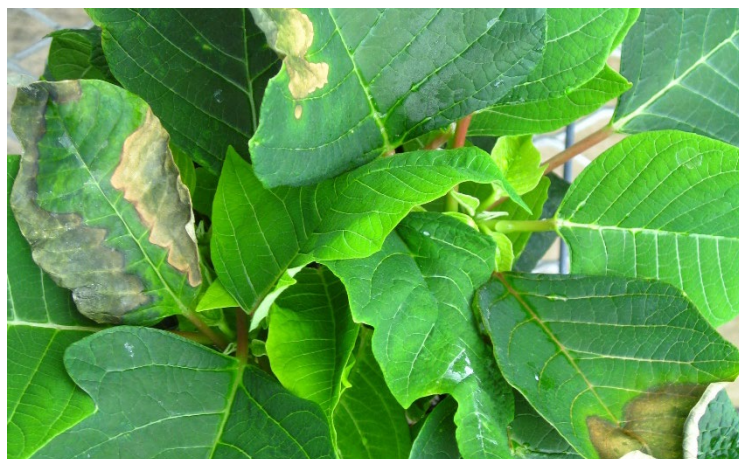


Figure 3. Leaf curl with browning/necrotic tissue are often a symptom of heat stress, leaf scorch from excessively high light or water stress and on poinsettia (Photo: Roberto Lopez).



Figure 4. Brown leaves and desiccation on the middle of the plant are symptoms of drought and heat stress on poinsettia (Photo: Royal Heins).



Figure 5. Excessive stretch of stems and poor branching can be a result of growing plants pot tight (not spaced apart) or from pinching plants too late. (Photos: Royal Heins and Roberto Lopez).



Figure 6. Lateral branches never develop due to heat stress (blind shoots). Photo: Royal Heins

Excessive Stretch and Poor Branching

Given that bracts provide the aesthetic beauty of the crop, excessive stretch and poor branching can significantly reduce crop quality. Poor branching is a disorder that results in uneven lateral shoot breaking (top breaks are larger and stronger than bottom breaks; Figure 7) or lack of breaks due to blind shoots (Figure 6).

Sometimes growers wait too long to pinch their plants resulting in poor and uneven branching. In such instances, plants become tall and lateral shoots emerge before pinch and break unevenly after pinch. Therefore, it is critical that plants are pinched before breaks form to promote uniform branching. For early branching cultivars, the maximum recommended time from planting to pinch is 12 to 14 days to minimize this disorder. For all other cultivars, plants should be pinched when the roots reach the edge of the container or 4 to 5 weeks after direct sticking into the final container. In general, the number of nodes remaining should match the finish container size. For example, 4 to 5 nodes for a 4-inch, 5 to 6 nodes for a 6-inch, and 7 to 8 nodes for an 8-inch container. If too many nodes are left, this will encourage weak, horizontal growth. Lastly, it is recommended to remove 1 to 2 “flag” leaves just below the pinch, leaving only the bottom three or four leaves to increase light penetration to the developing breaks, promoting stronger and more uniform branching. Removal of these immature leaves improves uniformity of lateral shoot development, as immature leaves contribute to apical dominance until the leaf is mature. For crops that receive a very soft pinch, it is critical to remove the upper leaves as apical dominance might not be overcome with just the pinch. This will help slow the growth of top developing breaks.



Figure 7. Removal of 1 or 2 “Flag” leaves will help promote uniform branching and increase light to those branches. Photo: Roberto Lopez.

Mechanical Injury

This type of injury can occur at any point during production. However, it is most typically seen when plants are individually handled (spaced, sleeved, and shipped). In addition, if your crop is hand watered, water nozzles can also cause mechanical injury. Symptoms include the wilting of the lower branch(s) that were damaged during the handling (Figure 8). Careful handling, plant rings or supports can be an insurance against mechanical injury.

Take-home

The first to 3 to 4 weeks after transplant are critical for the success of your crop. When rooted cuttings are transplanted and placed in very hot greenhouses (>90 °F), plants do not branch well and develop leathery, hard, strapped-shaped leaves several weeks later. If it is not possible to keep greenhouse temperatures below 90 °F, provide shade. If possible, place plants as close to cooling pads and mist them during the hottest parts of the day to try to reduce plant temperature. Also remember that cool temperatures will slow overall growth, while high temperatures can cause heat delay, leaf edge burn and foliage distortion. Lastly, improper application of insecticides can also mimic some of the physiological disorders discussed in this article (Figure 9).



Figure 8. Mechanical injury to a branch caused by a watering wand.



Figure 9. Phytotoxicity caused by an improper insecticide application (Photo: Royal Heins).

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