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Begonia and Vinca Sensitivity to Paclobutrazol Drenches

Plant growth regulators (PGRs) can be successfully used to control growth or induce lateral branching of many bedding plant species, but some may be ‘sensitive’ to the PGR active ingredient. This Alert demonstrates PGR sensitivity for fibrous begonia and vinca where an accidental paclobutrazol drench application resulted in stunted plants, chlorotic (yellowing) leaves, and black spotting.

To produce high-quality compact flowering plants proportional to container size, growers can use non-chemical and chemical methods. While non-chemical methods can be successfully deployed, most greenhouse growers use chemical plant growth regulators (PGRs). These chemicals can be applied by various methods to either suppress or promote growth, increase branching, and/or promote or delay flowering of greenhouse crops. Most PGRs can be applied to floriculture crops, but there are instances where the labels warn against application on certain bedding plants species because of their sensitivity to the active ingredient. A perfect example of PGR sensitivity was observed during a recent greenhouse visit.

Small plantings each of fibrous begonia (*Begonia × semperflorens-cultorum*) and vinca (*Catharanthus roseus*) grown under the same greenhouse conditions were inspected because each species exhibited abnormal growth. For fibrous begonias, few plants exhibited hardened, stunted plant growth with dark green leaves (Fig. 1). Only a few plants in the same row exhibited the symptoms. Asymptomatic begonia plants exhibited ‘normal’ growth (Fig. 2). Similarly, a few containers of vinca exhibited stunted plant growth compared to other plants found among the crop (Fig. 3). Stunted plants displayed chlorosis to interveinal chlorosis (yellowing; Fig. 4) and black leaf spotting (Fig. 5). After speaking with the grower, it was revealed that both bedding plants species were

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accidentally drenched with 3 ppm (0.0125 mg active ingredient per pot) paclobutrazol (0.4% active ingredient). Since only a few plants were accidentally drenched the crop was not a complete failure but could have been a lot worse regardless of crop size and production scale.

Therefore, before applying any PGRs, growers should always read and follow the label, be familiar with MSDS sheet(s) for health hazards, know the personal protective equipment (PPE) requirements, and be aware of bedding plant species- or cultivar-specific notes. In some instances, labels will acknowledge or warn against the use of the PGRs on sensitive bedding plant species because of the potential for phytotoxicity. Growers should conduct an in-house trial for first time chemical use or if a species is not listed. Additionally, growers can contact the PGR technical manager or your greenhouse Extension specialist to obtain more information or address questions.

Finally, there are many educational resources and authored by e-GRO members. Three excellent resources include:

- [2021-22 Plant Growth Regulators for Annuals](#) guide by Dr. Brian Whipker, NC State.
- [2020-21 Growth Regulators for Containerized Herbaceous Perennial Plants](#) guide by Dr. Joyce Latimer, VirginiaTech.
- [PGRMix Master](#) can assist you in mastering all your PGR needs.



Figure 1. Fibrous begonias (*Begonia × semperflorens-cultorum*) exhibiting hardened, stunted growth with dark green leaves as a response from an accidental drench application of 3 ppm (0.0125% mg active ingredient per pot) of paclobutrazol. Photo by: W. Garrett Owen.



Figure 2. Comparison of symptomatic (left) and asymptomatic (right) fibrous begonias (*Begonia × semperflorens-cultorum*) that either received an accidental drench application of 3 ppm (0.0125 mg active ingredient per pot) of paclobutrazol or no drench. Photo by: W. Garrett Owen.



Figure 3. Vinca (*Catharanthus roseus*) exhibiting stunted plant growth (left) compared to a 'normal' plant (right) taken from the crop that was not accidentally drenched with 3 ppm (0.0125 mg active ingredient per pot) paclobutrazol. Photo by: W. Garrett Owen.



Figure 4. Stunted vinca (*Catharanthus roseus*) plants exhibiting chlorosis to interveinal chlorosis (yellowing). Photos were taken of plants that were accidentally drenched with 3 ppm (0.0125 mg active ingredient per pot) paclobutrazol. Photo by: W. Garrett Owen.



Figure 5. Variation of black leaf spotting symptomology of vinca (*Catharanthus roseus*) plants that were accidentally drenched with 3 ppm (0.0125 mg active ingredient per pot) paclobutrazol. Photos by: W. Garrett Owen.

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