

Benefits of Using Pageant Intrinsic Fungicide During Propagation

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The first three articles in this series described various trial results demonstrating how the active ingredient pyraclostrobin in Pageant Intrinsic fungicide provided cold protection, increased drought tolerance and recovery, and improved the shelf life of the various crops tested. In this final article, I will share research results demonstrating how Pageant Intrinsic fungicide can be used to improve rooting and plant development during propagation.

Propagation Trials

Last year conducted several trials applying Pageant Intrinsic fungicide to newly stuck cuttings at various rates and application intervals. The objectives were to demonstrate plant health benefits above and beyond disease prevention and control following applications of Pageant.

These trials consisted of making foliar spray applications using one or two application rates, typically 4.0 and 8.0 ounces per 100 gallons. In all trials, a single application was made either on the same day as the cuttings were stuck (within hours of sticking) or at two to three days after sticking.

The cuttings were evaluated to determine differences in rooting times, root lengths, root thicknesses, and overall root mass. The quality of the top growth was also observed; differences in leaf expansion, stem thickness, and overall quality attributes were noted.

Trial Results

The majority of the twenty-plus plant species I've tested have responded favorably to Pageant Intrinsic fungicide applications during propagation. In several cases, the results are very significant, while in other instances, the outcomes were more subtle (slight to moderate responses). With most plant species tested, the cuttings treated with Pageant Intrinsic fungicide developed more root mass, had thicker roots, and better top growth compared to the untreated cuttings.

Verbena and Evolvulus

In May 2012, unrooted cuttings (URCs) of *Verbena estrellae* 'Voodoo Star' and *Evolvulus glomerata* 'Hawaiian Blue Eyes' were stuck into 51-cell strip trays. Approximately two hours after the cuttings were stuck, several liner trays of each of the varieties were sprayed with Pageant Intrinsic fungicide using application rates of 4 oz/100 gallons or 8 oz/100 gallons. Other trays were treated 4 days after sticking using these same rates.



Verbena estrellae 'Voodoo Star'

Top Row: Untreated

Bottom Row: Pageant 4 oz per 100 Gallons

Applied at sticking

Image taken: 7 Days After Sticking

At 16 days after sticking, the liners of both *Evolvulus* and *Verbena* which were treated with Pageant had more nodes, larger leaves, thicker roots, and greater root mass compared with the untreated plants. These improved attributes were slightly more evident on the liners treated with Pageant the same day as the cuttings were stuck; however, there were very significant improvements observed on liners treated with Pageant 4 days after sticking.

Poinsettia

In August 2012 cuttings of Poinsettia 'Prestige Early Red' were direct stuck into 4-inch pots. Applications of Pageant (4 oz and 8 oz per 100 gallons) were applied to some of the plants a couple hours after the cuttings were stuck and others were treated 3 days after sticking.



At 17 days after sticking, there were significant differences in root mass and leaf expansion between treated and untreated plants at both rates and application intervals tested.

Top Row: Untreated

Bottom Row: Pageant 4 oz per 100 gallons

Applied after sticking

Image Taken 17 Days After Sticking

One observation worth noting was that although the 8 oz per 100 gallons rate applied the day the cuttings were stuck resulted in more root mass than the untreated plants, the amount of rooting was significantly less than that observed with the 4 oz per 100 gallons rate applied on the same day.



Left: Untreated

Middle: Pageant 4 oz/100 gallons

Right: Pageant 8 oz/100 gallons

Applied After Sticking

Image taken 42 Days After Sticking

Plants treated with Pageant after sticking developed more roots and top growth compared with untreated plants. Treated plants were larger and had greater leaf expansion.

However, when the 8 oz per 100 gallons rate was applied three days after sticking, the amount of root growth obtained was nearly as much as at the lower rate applied the day of sticking. This result may imply that if growers cannot apply the low rate in the first day or two of propagation, then they may still be able to obtain similar results using a higher rate several days later.



Left: Untreated

Middle: Pageant 8 oz/100 gallons
Applied After Sticking

Right: Pageant 8 oz/100 gallons
Applied 3 Days After Sticking

Image taken 42 Days After Sticking

Applying Pageant at 8 oz per 100 gallons resulted in more root development at both application intervals.

The 8 oz rate was more effective at 3 days after sticking. At this application timing the results were comparable to the 4 oz rate applied the same day the cuttings were stuck.

Trial Summaries

Based on the results from several of the propagation trials that I have conducted, Pageant Intrinsic fungicide has proven to have a positive rooting benefit when used in the early stages of propagation. Plants treated with Pageant tend to root slightly faster and more uniformly than untreated plants. Additionally, the propagation benefits often results in significantly more root mass and improved top growth characteristics compared to untreated plants. The magnitude of improvements following the Pageant Intrinsic fungicide applications have varied from trial to trial; however, the benefits were still present and significant.

Guidelines for Using Pageant Intrinsic Fungicide in Propagation

Apply Pageant Intrinsic fungicide using 4 to 8 ounces per 100 gallons within the first few days after sticking cuttings. The best and most consistent results are obtained when applying Pageant at the 4 oz/100 gallons rate and making the application the day the cuttings are stuck or on the following day. When applications cannot be made within the first couple days of propagation, the rooting benefit might still be obtained by applying Pageant Intrinsic using the 8 oz/100 gallons rate. In both instances, apply Pageant using an approximate application volume of 2 quarts of spray material per 100 square feet of production space.

Following the application, allow the Pageant Intrinsic fungicide application to remain on the foliage for approximately 30 minutes or longer before resuming mist applications. Consider applying Pageant as the last mist cycle in the evening or the first mist cycle in the morning to maximize leaf absorption and efficacy.

Growers should note that although the 4 oz/100 gallons rate is sufficient to obtain a rooting and plant health benefit in the early stages of propagation, the ability to control diseases at this rate will be limited. Therefore, if disease control is needed during propagation consider using a higher rate (8 oz/100 gallons). Avoid using the highest labeled rates as they would provide excellent disease control, but may actually reduce the rooting benefits altogether. Choose the application rate based on what you are trying to obtain - improved rooting or disease control.

Using Pageant Intrinsic fungicide in the early stages of propagation will be very advantageous for commercial propagators. Growers will likely observe decreased misting requirements, less disease pressure, and reduced propagation times, potentially allowing them to turn their production space more rapidly.

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