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Improving Your Success with Granular Pre-emergence Herbicides

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Summary

More time and money are spent in nursery weed control than other pest group. The biggest nursery cost is not being proactive – and implementing a well-designed, effective weed control program. All pre-emergence herbicide active ingredients slowly degrade over time – affecting a product's ability to offer optimal weed control. Applying split applications of granular herbicide can improve herbicide performance and significantly extend its longevity. Split applications are applied at lower rates than just one singular application. The practice of sequential split applications has proven to be as safe on treated crops as a single, full-rate treatment. Split application techniques of granular herbicide can increase effectiveness and longevity on multiple weed species: bittercress, large crabgrass, doveweed, eclipta, longstalk phyllanthus, common purslane, common groundsel, oxalis and spotted spurge.

INTRODUCTION

Nursery weed control is time-consuming, labor intensive, and costly. Nursery growers spend more resources – time and money – on controlling weeds than any other pest group (insects/mites or diseases) - when you factor in chemical costs, labor, hand-weeding, and periodic spot spraying for escaped weeds. When it comes to nursery weed control, I would argue that the biggest cost is the cost of neglect. Growers that fail to create and execute an effective weed control strategy are likely to spend the most money on nursery weed management.

Weed control is hard (**Fig 1**). It requires a year-round commitment to timely chemical applications, periodic hand weeding, and constant scouting to keep weeds under control. Pre-emergence herbicides are an important tool growers have at their disposal to minimize expensive hand weeding. When deciding on which re-emergence herbicide to use, growers must consider both the 'regionality' and 'seasonality' of the weed activity at their nursery. Selecting the proper preventative herbicide for the predominant weeds in your geographic region is critical. Regional weed species differ significantly – South Alabama and Northern Ohio nurseries have different weed species at different times of the year. It is essential that a grower knows which weeds they will encounter in their geographic region and select effective pre-emergence herbicide options accordingly.

Each season of the year (spring, summer and fall) offers unique and different types of weed pressure. In the southern US, the Spring and Summer seasons typically bring stronger spurge and eclipta weed pressure, while the Fall season brings higher bittercress, chickweed and Oxalis weed activity. Each nursery requires a unique weed management program that considers it's regionality and seasonality of local weed activity.

Figure 1. Weeding is hard, tedious work – and an expensive labor cost.

Growers using granular pre-emergence herbicides in their weed management program are always looking for ways to improve product performance, especially improve herbicide longevity. Once applied,

all pre-emergence herbicide active ingredients begin to slowly lose activity over time (**Fig. 2**). Products vary in their performance longevity due to a combination of factors such as: microbial degradation, natural half-life, photo degradation, volatilization, soil adsorption, application rate, and environmental factors (temperature and rainfall). All or some of these factors play a role in a products' ability to offer optimal weed control over time.

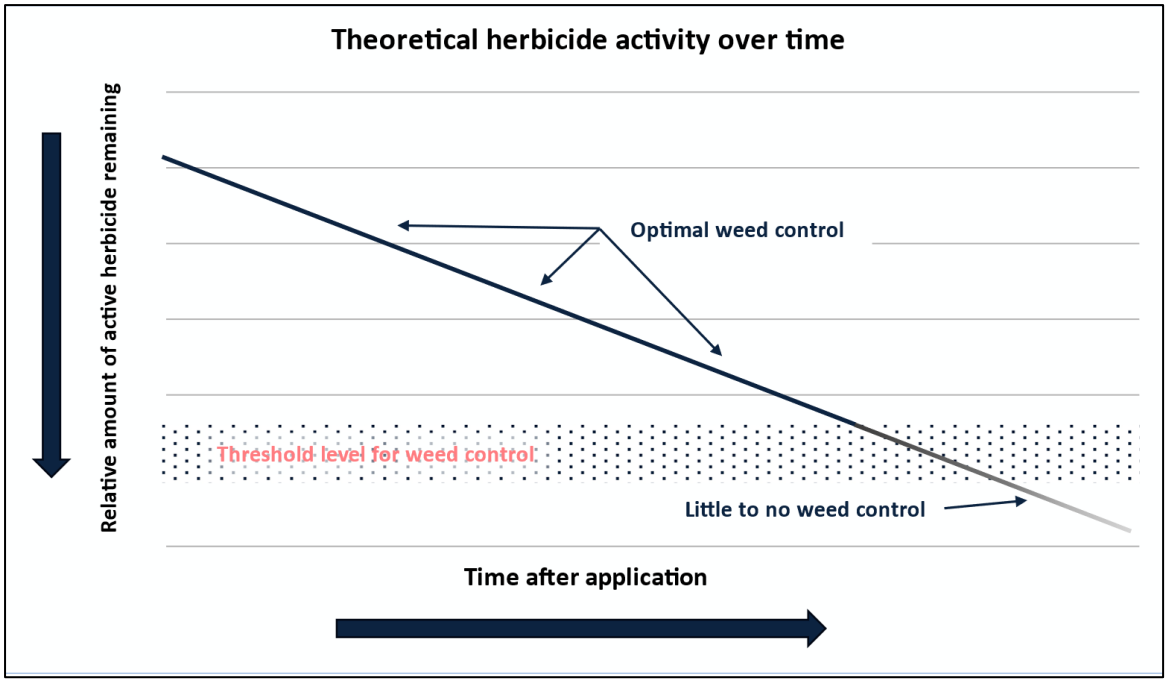

Figure 2. Theoretical herbicide activity over time.

Through recent research, there is a proven technique to improve herbicide performance and significantly extend herbicide longevity: the use of split applications. Turfgrass managers (golf course superintendents and commercial lawn care managers), have used split applications of their pre-emergence herbicides for decades. Rather than apply one single, high rate, they split the applications to two, reduced-rate treatments 4-6 weeks apart.

For a nursery using granular pre-emergence herbicides, a split application might look like this: rather than a single 200 lb. per acre application, consider splitting the application into two treatments of one application of 150 lbs. per acre, followed by a sequential treatment 4-6 weeks later with a second, 150 lb. per ace treatment of the same herbicide **(Figs. 3, 4 and 5**). This technique is legal (within label guidelines) for most pre-emergence herbicides, reduces potential injury to sensitive crops, and the two sequential applications combine to significantly extend herbicide longevity. The practice of sequential split applications has proven to be as safe on treated crops as a single, full rate treatment.

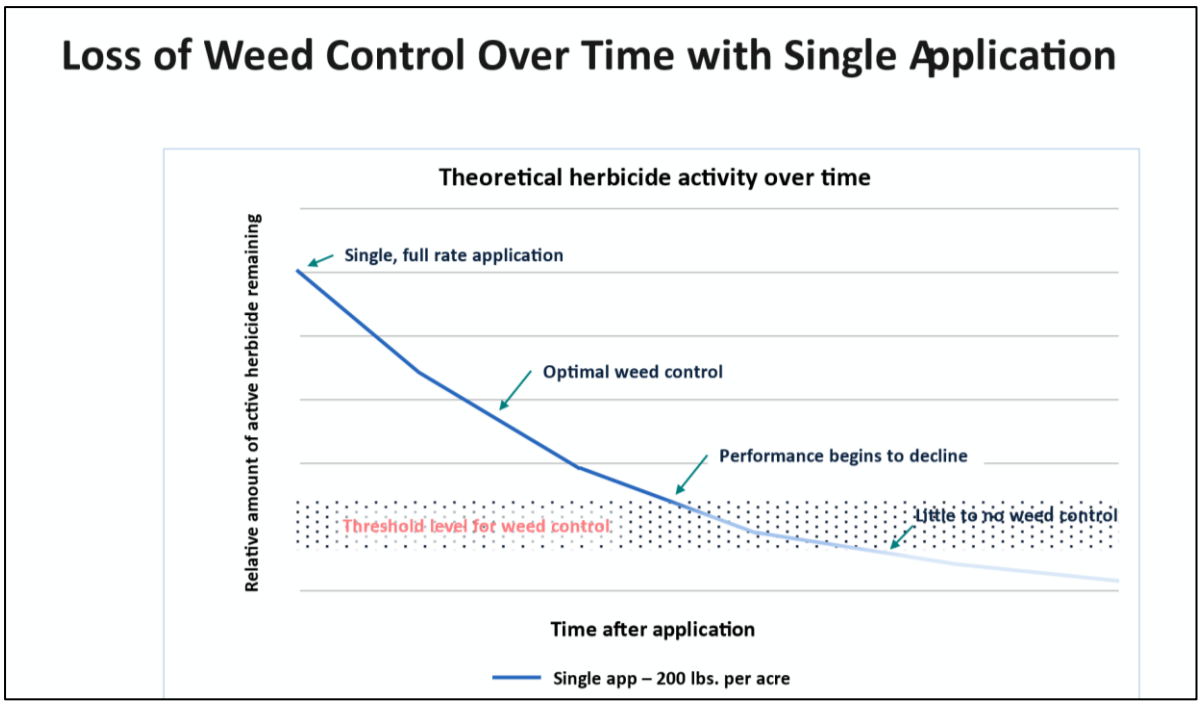

Figure 3. A single application of recommended herbicide treatment at higher concentration (200 lbs/acre) – showing gradual loss of weed control.

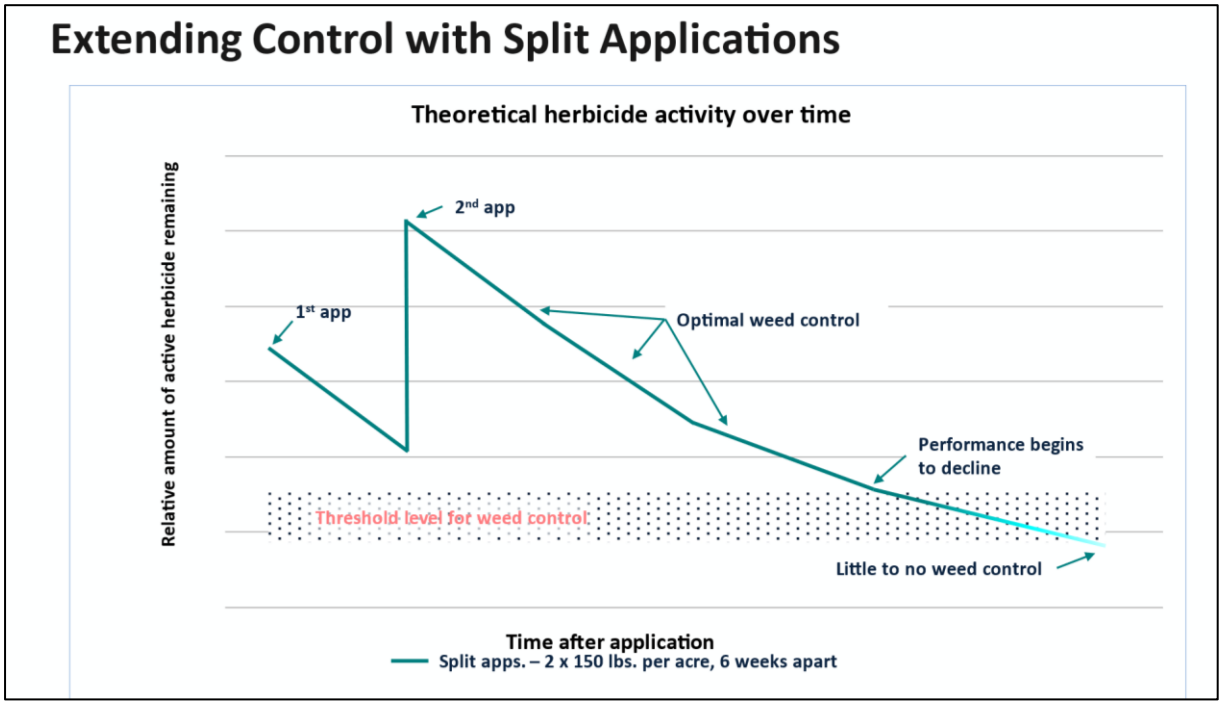

Figure 4. Split applications of two appications of lower concentration [2 x (150 lbs./acre)] applied 6-weeks apart – which extends the period of weed control.

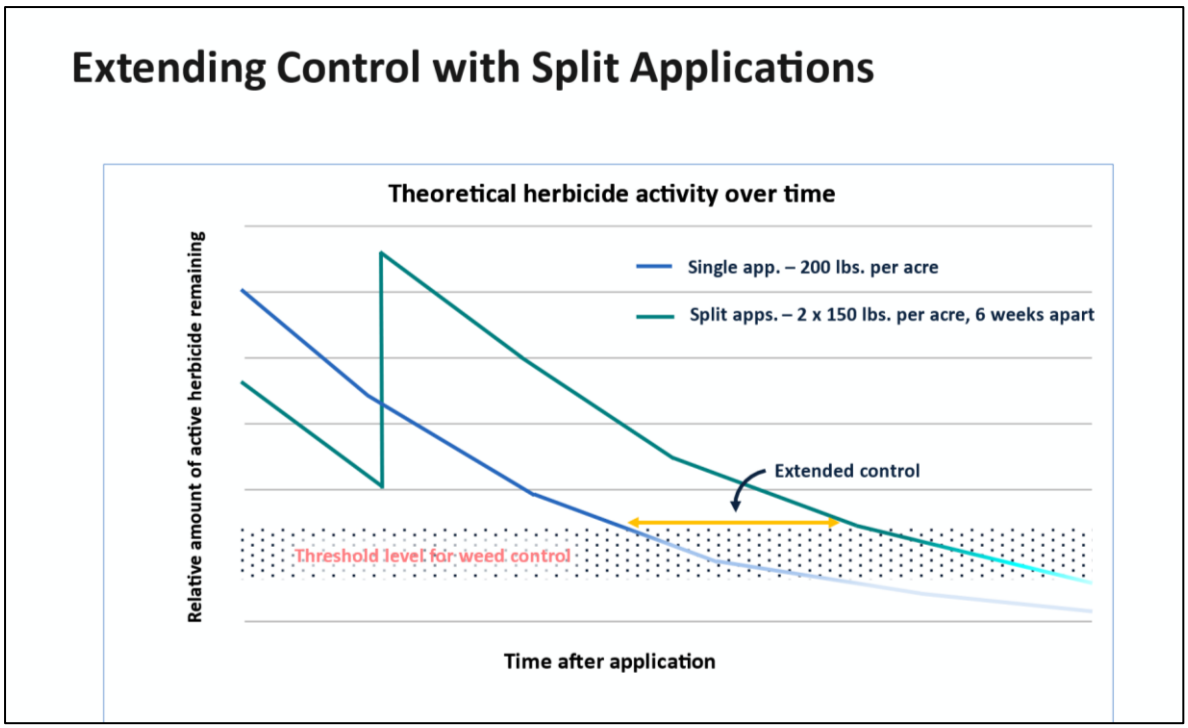

Figure 5. Comparison of a single application (200 lbs./acre) – compared to a split applications at lower concentration [2 x (150 lbs/acre)] applied 6-weeks apart; this leads to an extended period of weed conrol.

To test the theory of split application treatments on container-grown ornamentals in a nursery setting, research was conducted by Dr. Chris Marble (University of Florida) to test the effectiveness of split applications of Marengo G and a competitive granular herbicide. The results showed that the split application technique increased herbicide effectiveness and longevity on multiple tested weed species: bittercress, large crabgrass, doveweed, eclipta, longstalk phyllanthus, common purslane, common groundsel, oxalis and spotted spurge (**Figs. 6 and 7**). Subsequent use of the split-app technique by several prominent container growers confirms Dr. Marble's research findings.

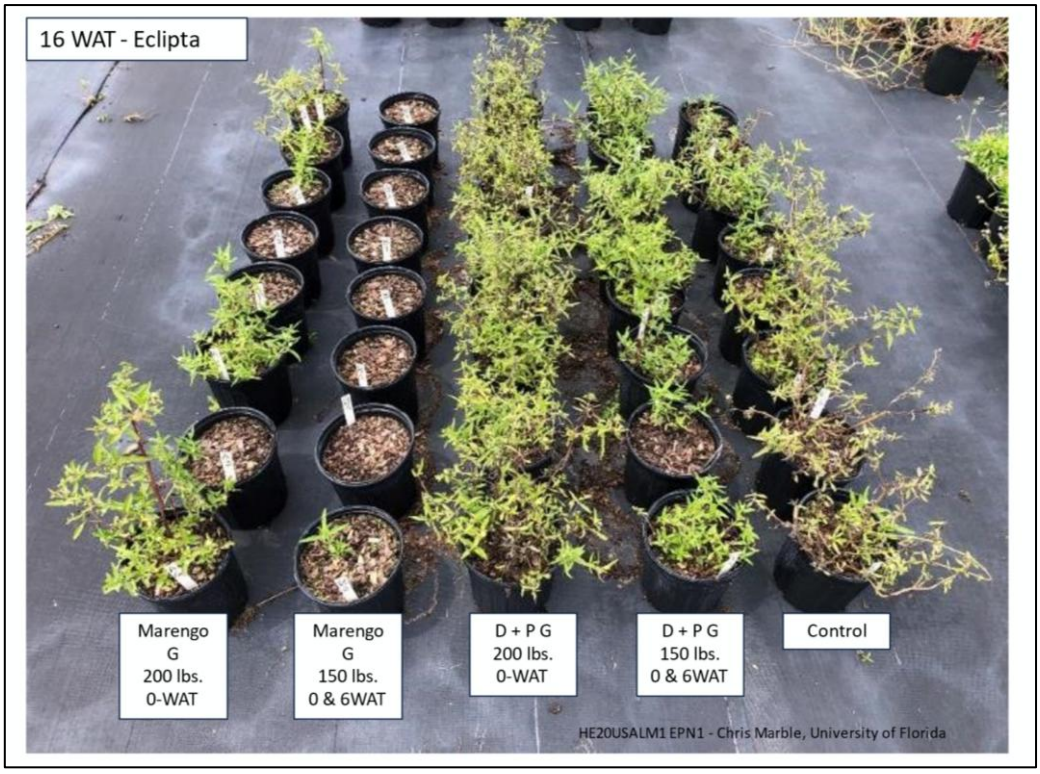

Figure 6. Extending weed contorl with split herbicide applications on eclipta, 16 weeks after treatment (WAT).

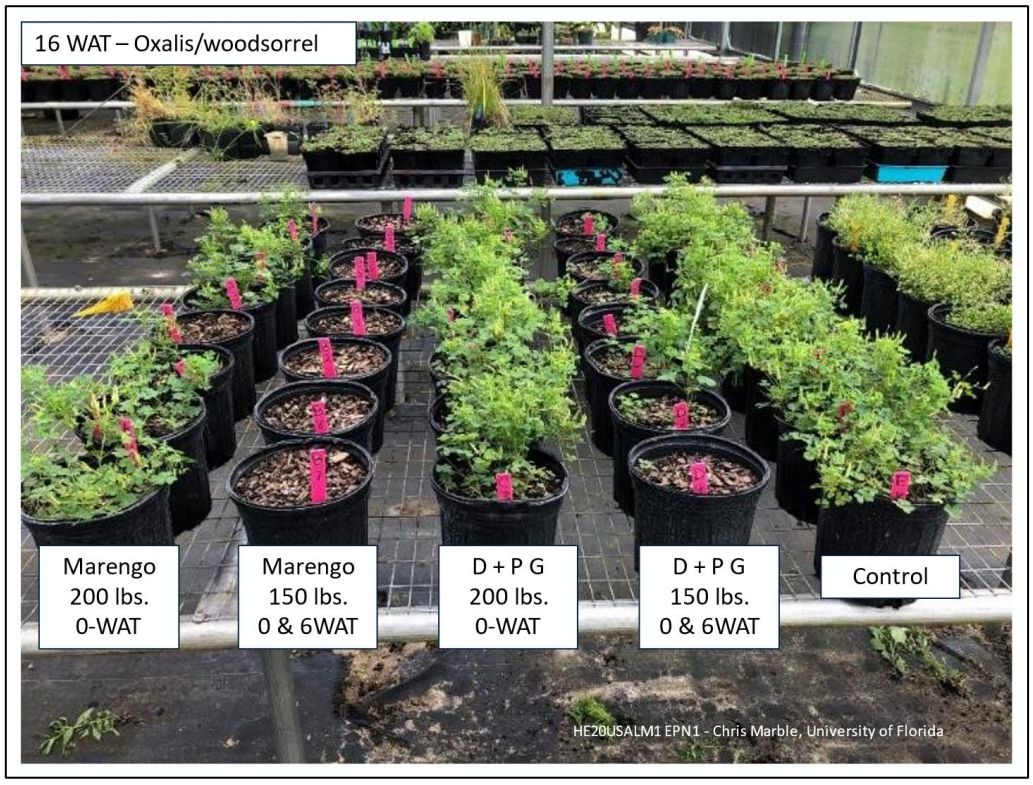

Figure 7. Extending weed control with split herbicide applications on Oxalis/woodsorrel, 16 weeks after treatment.