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Sumagic

and Tomato Transplants

A plant growth regulator recently received a supplemental label for foliar sprays on vegetable transplants, including tomatoes. Experiments at the University of Florida and University of Kentucky show high effectiveness for height control.

By Rebecca Schnelle and Jim Barrett

Figure 1. Average heights of market-ready 'Better Boy' tomato transplants after Sumagic drenches of 0.125 to 2 ppm at or one week after sowing.

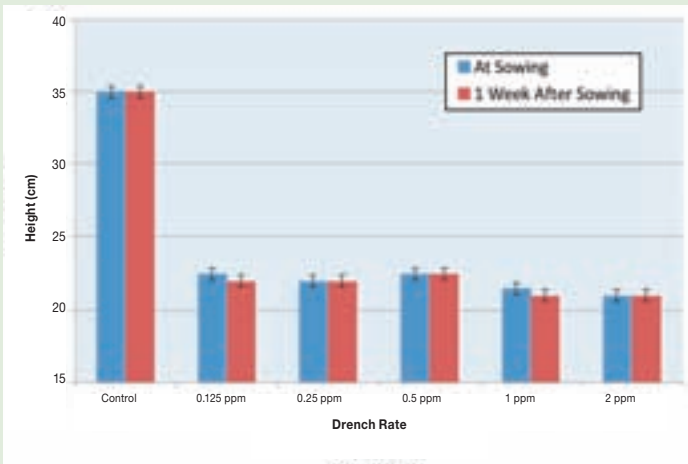
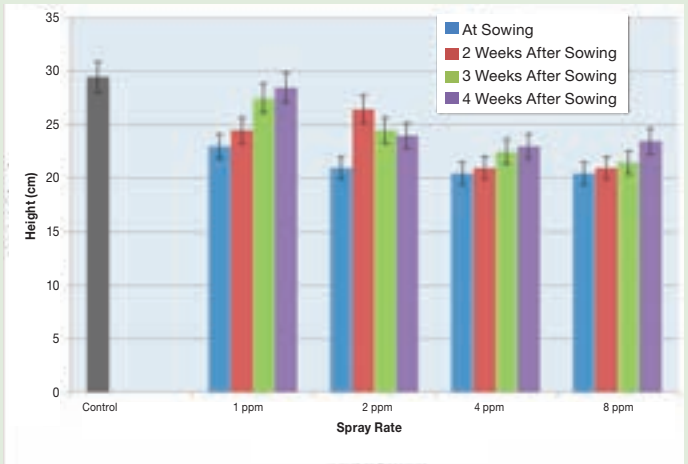


Figure 2. Average heights of market-ready 'Better Boy' tomato transplants after Sumagic sprays of 1 to 8 ppm at sowing through three weeks after sowing.



For years, there have been no PGRs labeled for use on vegetable transplants. Recently, a supplemental label for Sumagic (uniconazole) has been released to allow foliar sprays on some vegetable transplants: tomato, pepper, ornamental pepper, eggplant, tomatillo, ground cherry and pepino. But the new label is rather restrictive; the maximum total allowed application is 10 ppm at 2 quarts per 1,000 square feet. This means only one 10-ppm spray, two 5-ppm or four 2.5-ppm sprays are allowed, and so on. The last spray must be no later than two weeks after the two- to four-leaf stage, about four to six weeks after sowing.

We conducted a series of experiments to determine the effects of Sumagic rate, application time and technique on height control in several cultivars of garden tomatoes. Two experiments were conducted at the University of Florida in Gainesville, and a third was conducted at the University of Kentucky in Lexington. In all experiments we measured the heights of the tomato transplants at a market-ready stage (six weeks after sowing). We found that Sumagic is highly active on tomato: With one exception, all Sumagic-treated plants were shorter than untreated controls at the market-ready stage.

Drenches

Although only foliar sprays are allowed by the new label, it is important to understand the effect of Sumagic in the media as well. For the drench applications we applied Sumagic to 'Better Boy' tomatoes at rates of 0.125, .25, .5, 1, and 2 ppm, either at sowing or one week after (Figure 1). All Sumagic-treated plants were significantly shorter than the control plants. At both application dates, all the treated plants — regardless of Sumagic rate — ended up between 21 and 22.5 centimeters tall compared to the control plants at 35 centimeters. Because the response of 'Better Boy' was so dramatic at such low rates, we would not recommend using Sumagic drenches on tomato transplants even if it were permitted by the label.



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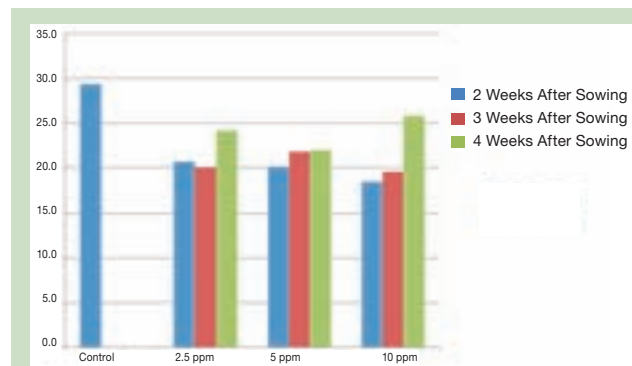


Figure 3. Average heights of market-ready 'Champion II', 'Early Girl' and 'Big Boy' tomato transplants following Sumagic sprays of 2.5 to 10 ppm applied two weeks after sowing.

Sprays

Sumagic sprays were applied at rates ranging from 1 to 10 ppm at sowing to three weeks after sowing. Sprays at sowing and one or two weeks afterward were essentially media sprays, as the foliage was covering little or none of the media surface at these stages. In both experiments, the earlier sprays were generally more effective for height control, probably because of a combination of early stretch prevention and more of the Sumagic absorbing into the media than the foliage (Figure 2). As the drench experiment demonstrated, Sumagic is much more active when applied to the media. Growers should understand that at any given rate, the earlier plants receive the Sumagic spray, the greater effect it will have on the final height of the transplants.

All tomato cultivars showed similar responses to Sumagic with each spray rate (Figure 3). Each rate of Sumagic produced plants of similar size at the market-ready stage. However, those treated with the higher rate would probably take longer to grow out of the treatment. This could be problematic as both commercial tomato growers and home gardeners expect tomato plants to grow rapidly immediately after transplant. So I recommend growers start with a rate of 2.5 ppm or less on any cultivar. Sumagic also has not been tested on enough tomato cultivars to ensure that they will all react similarly. As with any new PGR program, you should test the treatments on small portions of the crop on site before full-scale implementation.

There has been some question as to the effect of PGR applications on tomato flowering time and fruit size. Some preliminary work from the University of Guelph in Ontario, Can., found that Sumagic-treated plants actually bore fruit slightly earlier than controls in commercial field production with no reduction in fruit size. The results are not conclusive, but it appears that the treated plants experienced less transplant stress than the controls. At the University of Kentucky, we are planning another set of experiments in the spring to look into the effects of Sumagic

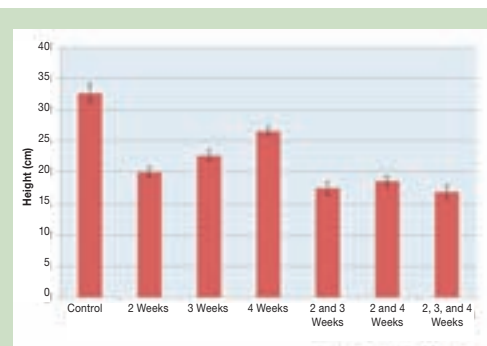


Figure 4. Average heights of market-ready 'Champion II' tomato transplants treated with one or more applications of 2.5-ppm Sumagic at various times.

sprays during the transplant stage on fruit timing, size and tomato yield in more detail. Of course, for many home gardeners, the exact timing of the harvest, fruit size and yield are not major issues. However, with the recent increase in interest in home food production I think we need to take care to ensure that our consumers have the most gardening success possible. That includes more tomatoes than they know what to do with. We certainly would not want a rash of unexplained marble-sized tomatoes or an outbreak of "never-grow-again syndrome." Used cautiously, Sumagic sprays have the potential to allow growers to improve tomato transplant quality for the retail and commercial markets.

Because of tomato plants' high sensitivity to Sumagic, we think it would be best for growers to start with a single low-rate application and follow with one to three additional low-rate sprays only if additional height control is necessary, which allows the grower maximum flexibility for height control while reducing the potential for overdose. Figures 4 and 5 illustrate the results of low-rate split applications. The initial spray was applied two weeks after sowing, then additional sprays were applied one or two weeks later, or both. The additional sprays did provide some additional height control.

Recommendations

For production of retail tomato transplants

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in six-packs to 4-inch pots, we recommend an initial Sumagic spray at 1 to 2.5 ppm two weeks after sowing. If additional height control is needed, up to three additional applications of 1 to 2.5 ppm can be made at seven-day intervals. Until we know more about the post-harvest effects and the range of cultivar sensitivity, we recommend growers stay away from the higher rates in excess of 5 ppm. Since we are dealing with a highly active PGR, again I want to emphasize that caution is paramount while implementing Sumagic sprays in vegetable transplant programs. With that said, I believe Sumagic sprays on tomatoes hold great promise to allow us to produce better-quality transplants with better performance potential in the retail and home garden settings. [GPN](#)

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Figure 5. From left to right, (A) control and 'Big Boy' tomatoes sprayed with 2.5-ppm Sumagic at (B) two weeks only, (C) two and three weeks, and (D) two, three and four weeks after sowing.

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