

Sumagic's Effect On Easter Lilies

Although an effective growth retardant, researchers have found that Sumagic causes flowering delay on Easter lily crops in Northern greenhouses.

by ROYAL D. HEINS

SUMAGIC is labeled in the U.S. as a growth retardant for use on Easter lilies. Current label rates for spray applications are 10-30 ppm (10-15 ppm in Florida).

When we first tested Sumagic at Michigan State University in 1989, we observed delayed flowering on plants sprayed with 10-30 ppm, the current label rates for Easter lilies. Analysis of the data showed a linear increase in flowering delay as either the total amount of Sumagic applied (in ppm) or the amount of reduction in plant height increased (Figures 1 and 2).

These results suggested the use of Sumagic at label rates in Northern greenhouses may result in undesirable flowering delay.

Response To DIF

To confirm the 1989 results, the experiment was repeated in 1992 with some modifications. Size 8/9 lily bulbs were programmed following standard CTF procedure. Plants were sprayed with 5 or 10 ppm Sumagic, split into three groups, and subsequently forced to flower under three DIF (mathematical DIF-ference between day and night temperatures) treatments: positive DIF (73°F day/64°F night), zero DIF (68°F day and night), or negative DIF (64°F day/73°F night). Plants were about 8-9 inches tall on January 22.

Appearance of the plants 4 and 9 weeks after the first Sumagic appli-

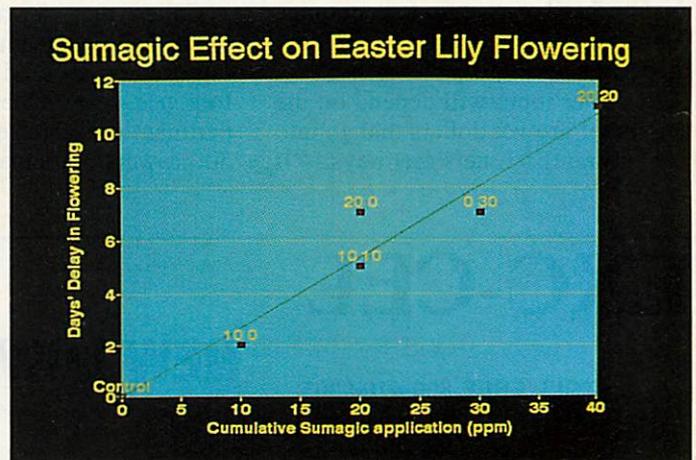


Figure 1: Effect of the cumulative quantity of Sumagic applied to Easter lily on flowering. Days' delay in flowering represents the difference in time to flower between control, untreated, and treated plants. The first number next to a data point represents the concentration of Sumagic applied on January 14, and the second number, January 30. For example, the number 10 10 indicates 10 ppm Sumagic was applied on January 14 and January 30.

Figure 2: Relationship between Easter lily plant height reduction and delay in flowering. Days' delay in flowering and data coding are the same as in Figure 1.

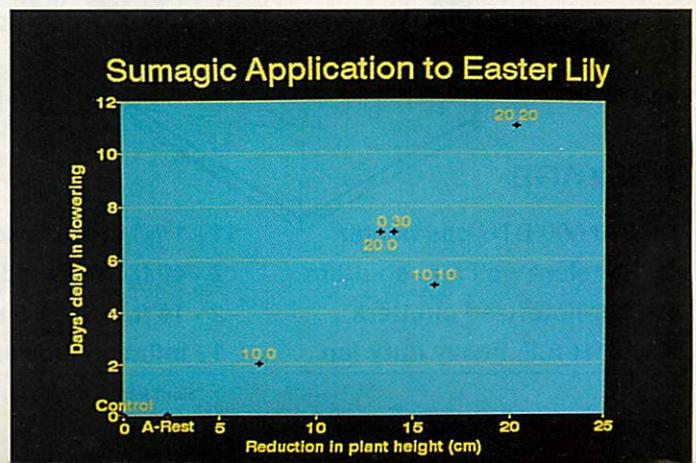




Figure 4: Appearance of plants 4 and 2 weeks after the first and second Sumagic applications, respectively. Top, middle, and bottom rows show plants growing in the positive, zero, and negative DIF environments. Plant received (left to right) 0 ppm once, 5 ppm once, 5 ppm twice, 10 ppm once, or 10 ppm twice.

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Figure 5: Appearance of plants 9 and 7 weeks after the first and second Sumagic applications, respectively. Plant treatments as in Figure 4.

tion (and 2 and 7 weeks after the second) is shown in Figures 4 and 5. Also notice the greater elongation as DIF increased (Figure 6).

Effect Of Higher Concentrations

Increasing the concentration of Sumagic resulted in a progressively greater reduction in plant height (Figure 7). The magnitude of response, however, was inversely related to DIF. As DIF decreased from positive to negative, response to the Sumagic application decreased.

Flowering delay followed the same pattern as height reduction (Figure 8); it extended as Sumagic concentration increased. Two applications at 10 ppm each delayed flowering by more than 7 days.

A linear relationship existed when reduction in plant height because of Sumagic application was plotted against flowering delay (Figure 9). These results agreed with those from 1989. The data showed that any benefit from Sumagic associated with reduced plant height resulted in a

flowering delay that increased linearly as height reduction increased.

Grower Observations

Roger McGaughey and Jim Mast at Neal Mast Greenhouses in Grand Rapids, MI, also tested Sumagic at rates similar to those we used, and they observed delayed flowering.

They also made two other important observations. Late applications near visible bud resulted in very short, "squatty" inflorescences, and neither grower considered the plant appearance desirable at flower.

Late applications also resulted in some flower-bud abortion and distortion. Specifically, McGaughey and Mast observed two to three of the smallest buds aborted on a six- to seven-bloom plant. The remaining buds became curved.

Both men felt, however, that early, selective spot treatment with Sumagic could be very useful in making normally tall plants grow uniformly.

Weigh The Benefits

Sumagic is a very effective growth

Figure 6: Influence of number and concentration of Sumagic applications on increase in Easter lily height from date of first application (January 22) until flower.

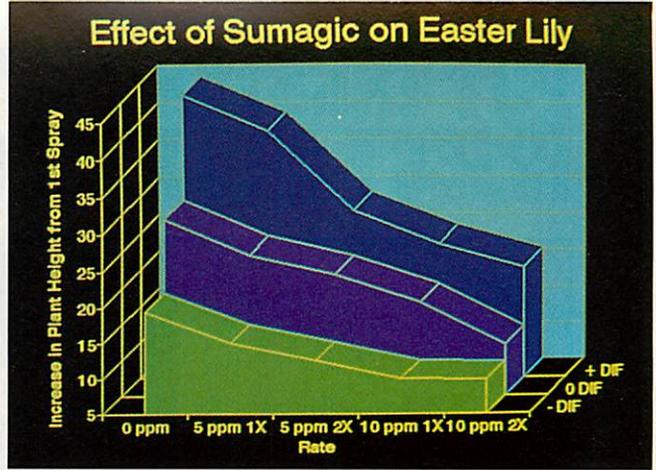
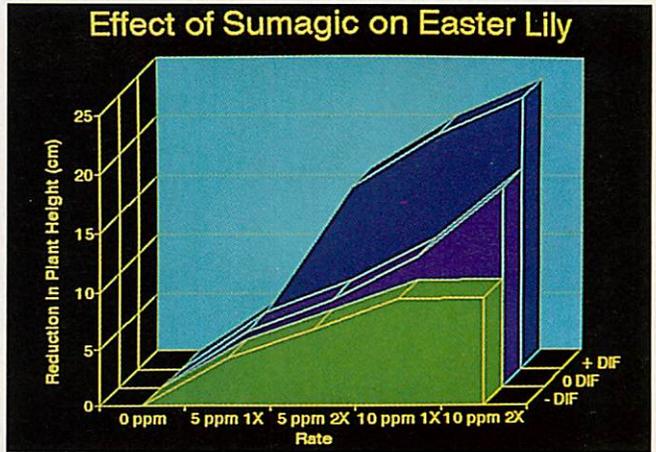


Figure 7: Influence of number and concentration of Sumagic applications on reduction in Easter lily height compared to untreated control plants from date of first application (January 22) until flower.

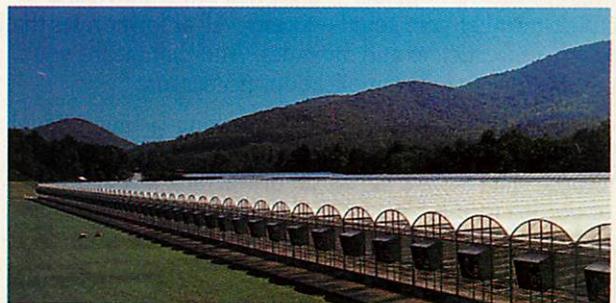


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retardant on Easter lilies and can be a useful tool for height control. However, growers must weigh the benefit of height control against the cost of potential additional time to flower. Both untreated and Sumagic-treated plants can flower at the same time if warmer greenhouse temperatures are used to accelerate development of Sumagic-treated plants.

When Easter is late, the flowering delay may not be a significant problem. When Easter is early, however, it could be. Be aware the absolute response to the Sumagic application will be a function of both chemical concentration and greenhouse environment, especially DIF. **GG**

About the author: Dr. Royal Heins is professor, Department of Horticulture, Michigan State University, East Lansing, MI 48824-1325. The experiment conducted in 1989 was supported in part by Valent U.S.A. Corp. The experiment conducted in 1992 was supported in part by growers supportive of MSU research through the Two-Cent Research Fund. The experiments in 1989 and 1992 were conducted with the assistance of Nathan Lange and Thomas F. Wallace, Jr., respectively.

Figure 8: Influence of number and concentration of Sumagic applications on flowering delay in Easter lily.

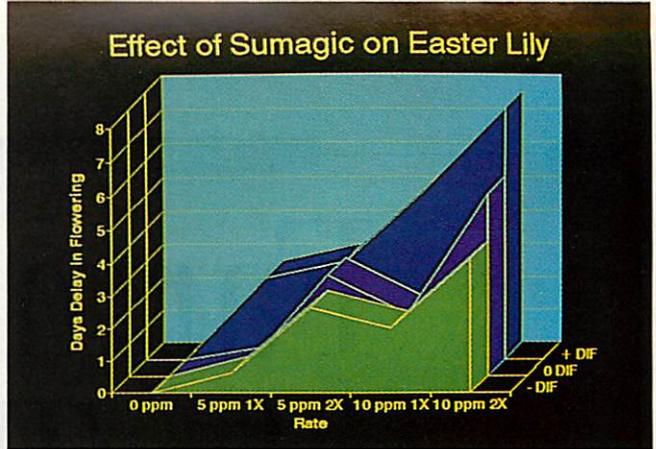
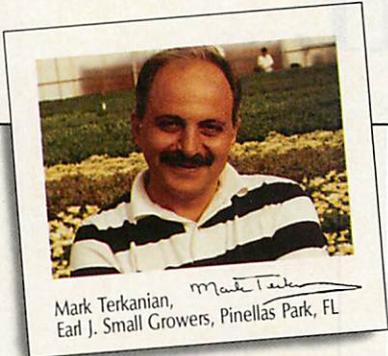
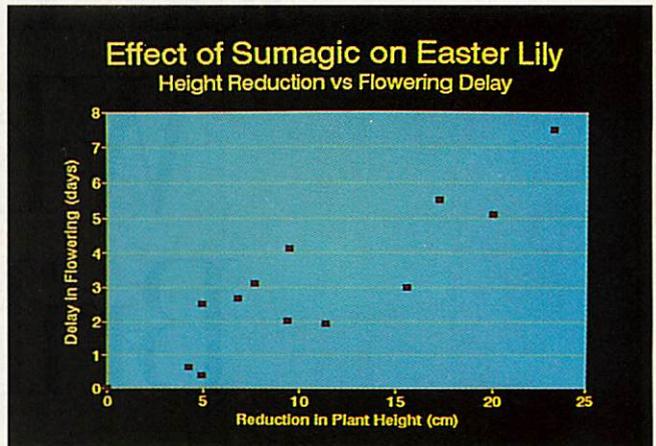


Figure 9: Relationship between Easter lily plant height reduction and flowering delay.



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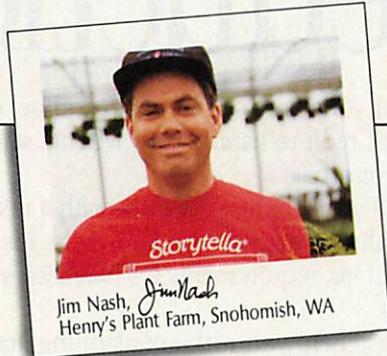
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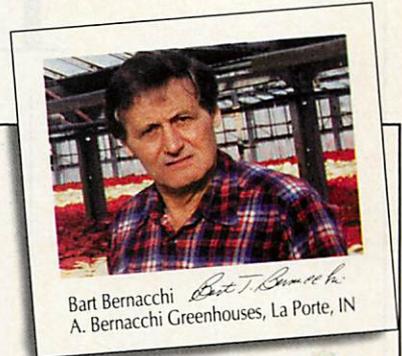
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