

# Topflor: A New Plant Growth Regulator

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Plant growth retardants (PGRs) are commonly applied to container-grown plants to control stem elongation and produce high quality, compact plants. Flurprimidol (SePRO, Carmel, Ind.) was a molecule discovered over 20 years ago by Eli Lily and Company. It is a "Type 2" PGR, similar in its mode of action to A-Rest, Bonzi, and Sumagic. Flurprimidol has been labeled as Cutless for turf use in the U.S. and commercially introduced as Topflor in Europe for greenhouse crops. Cutless has been trailed extensively on nursery crops such as butterfly-bush (Keever and Gilliam, 1994), holly (Keever et al., 1994), and Mexican sage (Burnett et al., 2000) with growth control comparable to Bonzi and Sumagic.

Even though the initial Topflor trials were conducted in the United States on poinsettia, exacum, and pot chrysanthemum, the chemical was not introduced to the U.S. market. In Europe, Topflor has been extensively trailed since the early 1990's on a number of greenhouse plants such as chrysanthemum (Pobudkiewicz and Nowak, 1997), dianthus (Pobudkiewicz and Nowak, 1994),

osteospermum (Olsen and Andersen, 1995), and streptocarpus (Pobudkiewicz, 2000). Commercial recommendations for applying Topflor foliar sprays to a number of greenhouse crops have been developed for European growers.

In Europe, a 1.5% Topflor formulation is used, while the new formulation that will be available in the U.S. is 0.38%. With reformulating Topflor, it has not been tested under U.S. growing conditions or on cultivars available in North America. Research is currently being conducted at a number of universities: North Carolina State, Purdue, Virginia Tech, University of Florida, and Cornell. The goal has been to determine optimal application rates for U.S. conditions. This handout contains research findings from the Southeast trials conducted at North Carolina State University and the Midwest trials conducted by Dr. P. Allen Hammer and Terri Kirk at Purdue University.



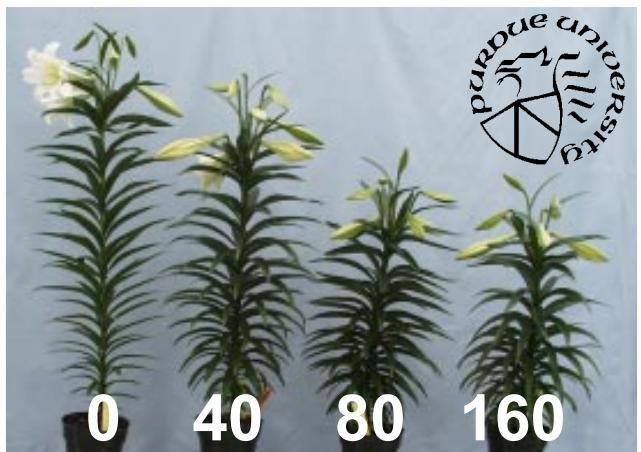
Topflor foliar sprays are effective in controlling growth of 'Yellow Blush' pot mum: (top) sprayed once or (bottom) sprayed twice, with the second spray applied 2 weeks after the first. Rates are given in ppm.



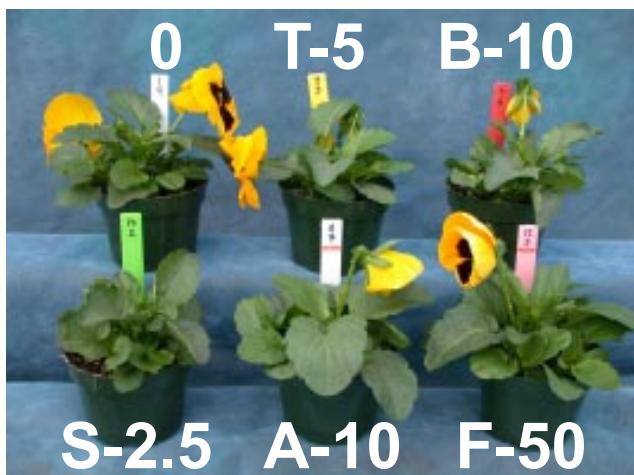
Foliar sprays of Topflor controlled growth of New Guinea impatiens. The rate response curve is above and the left photograph compares the untreated control, Topflor at 5 ppm and Topflor at 80 ppm. Southeastern U.S. growers should begin with 2.5 to 5 ppm sprays. Rates may vary by location and cultivar.

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Substrate drenches of Topflor were an effective means of controlling 'Ellen Houston' tuberous dahlia growth. Southeast U.S. growers should begin with 1 to 2 mg a.i./pot drenches. Rates may vary by location and cultivar.



Under Indiana growing conditions, Topflor foliar sprays of 80 ppm were required to controlled Easter lily growth (left). At 160 ppm (right), lower leaf yellowing occurred in North Carolina. Additional research is required to determine optimal rates.



Topflor foliar sprays of 5 ppm (T-5) provided comparable growth control for fall pansies as Bonzi at 10 ppm (B-10), A-Rest at 10 ppm (A-10), or Florel at 50 ppm (F-50). Sumagic at 2.5 ppm (S-2.5) provided a greater degree of growth control. The cultivar was 'Majestic Giants Yellow Blotch'.



Topflor foliar sprays provide excellent growth control for bedding plants. Left: Topflor rates of 2.5 ppm controlled growth of 'Pacificica White' vinca grown in 1801 cell packs. Right: 'Silverdust' dusty miller growth was controlled with 10 ppm of Topflor when grown in 1203 cell packs.



Topflor foliar sprays provided growth control of zonal geraniums. For the less aggressive cultivar 'Samba', rates of 20 ppm applied once or 15 ppm applied twice (with the second application occurring 2 weeks after the first). Higher rates of 30 ppm applied once or 20 ppm applied twice also worked well for the more aggressive cultivar 'Noblesse 99'. Rates may vary by location and cultivar.



## ► ACKNOWLEDGEMENTS

Use of trade names in this publication does not imply endorsement by NC State University of products named nor criticism of similar ones not mentioned. Thanks to Southern Gem Greenhouse, Fischer USA, Flower Fields, Wagners Greenhouse, and the Paul Ecke Ranch for plant material, Fafard for the root substrate, Scotts for the fertilizer, Dillen Plastics for the pots, and for grant support the North Carolina Commercial Flower Growers' Assoc. and SePRO Chemical Co.

### Literature Cited:

Burnett, S.E., G.J. Keever, J.R. Kessler, Jr., and C.H. Gilliam. 2000. Growth regulation of Mexican sage and 'Homestead Purple' verbena during greenhouse and nursery production. *J. Environ. Hort.* 18(3):166-170.

Keever, G.J. and C.H. Gilliam. 1994. Growth and Flowering Re-

- sponse of butterfly-bush to Cutless. *J. Environ. Hort.* 12:16-18.
- Keever, G.J., C.H. Gilliam, and D.J. Eakes. 1994. Cutless controls shoot growth of 'China Girl' holly. *J. Environ. Hort.* 12:167-169.
- Olsen, W.W. and A.S. Andersen. 1995. Growth retardation of *Osteospermum ecklonis*. *Acta Hort.* 397:129-138.
- Pobudkiewicz, A. and J. Nowak. 1994. The influence of flurprimidol and uniconazole on growth of the CMM dwarf *Dianthus caryophyllus* L. cv. Snowmass. *J. Fruit and Orn. Plant Res.* 2(4):43-52.
- Pobudkiewicz, A. and J. Nowak. 1997. Response of chrysanthemum (*Dendranthema grandiflora* Tzvelev) cvs Altis and Surf to flurprimidol application. *J. Fruit and Orn. Plant Res.* 5:135-142.
- Pobudkiewicz, A. 2000. Controlling the growth habit of *Streptocarpus hybrides* with flurprimidol. *J. Fruit and Orn. Plant Res.* 8:9-17.



The response of 'Orion' poinsettias to Topflor foliar sprays varied by location. Optimal rates appear to be 2.5 to 5 ppm for Indiana and around 35 to 40 ppm for North Carolina. Additional research is required to determine optimal rates.

Both foliar sprays (top, in ppm) and substrate drenches (bottom, in mg a.i./pot) of Topflor controlled growth of 'Pacino' pot sunflowers. These plants flowered in January and slightly higher rates may be required for Southeastern U.S. locations during other times of the year. Rates may vary for other locations.

