

Pinching azaleas chemically

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Azaleas in pots require pinching—removing the terminal bud (shoot tip) to induce branching—for a uniform crown of flowers. Manual pinching had been required before a chemical pinching compound, Off-Shoot-O, became available. Off-Shoot-O kills young terminal shoot tips, thereby achieving a pinch. But this compound harms mature leaves on many varieties, even when the effect is lessened by washing the chemical off the foliage 10 to 15 minutes after application, and tests show that Off-Shoot-O does not kill the terminal buds of some varieties.

To study the effectiveness of other azalea-pinching chemicals, a trial was established at Lewis Gardens, Inc., Vista, California, using two other chemicals reported to be effective. Chemicals used in this trial were:

■ *Atrinal*, a product of Hoffman-La Roche, Inc., containing Dikegulac (sodium salt of 2,3:4,6-bis-O-[1-methyl-ethylidene]-a-L-xylo-2-hexulofuranosonic acid). Atrinal was applied at 1.2 percent, 2.3 percent, and 3.3 percent of active ingredient.

■ *UniRoyal-P293*, developed by UniRoyal Chemical, contains 2,3-dihydro-5-6-diphenyl-1,4-oxathiin. Concentrations of 0.2 percent, 0.4 percent, and 0.8 percent of active ingredient were used.

■ *Off-Shoot-O*, a product of Procter and Gamble, contains methyl esters of fatty acids and was applied at 400 ml per gallon.

Hand pinching was used as a control. Well-established azaleas growing in a shade house were selected for use in this trial. Their terminal shoots were about 6 to 8 cm long. The chemicals tested were applied on May 19, 1976. The temperature at the time of application was 70°F (21°C). During the weeks following the application of the materials, temperatures ranged from 52°F (12°C) to 80°F (22°C). Relative humidity ranged from 32 percent to 86 percent. Irrigation sprinklers were used to raise the humidity, to cool the test plants, for irrigation, and for fertilization.

Varieties treated were: Cal-Sunset, Fuzzy White, Chimes, Red Beauty, and Dr. Bergman.

Within a week following treatment, all varieties treated with Off-Shoot-O showed burning on leaf margins. All varieties treated with Atrinal had amber-

orange discoloration on leaf margins and tips.

Rating the compactness of or the uniformity of growth of the crown would be influenced by many factors such as the number of shoots that grew and when the rating was made in relation to when shoots began to grow. If the shoots on different plants given different treatments did not begin growth at the same time, then early readings could favor the treatments with the earlier growth and later readings on the same plants could produce different results.

Early readings favored hand-pinched and Off-Shoot-O plants. The lateral shoots on the hand-pinched plants and Off-Shoot-O-treated plants were growing within three weeks following treatment. The growth of the lateral shoots on the Atrinal-treated plants was delayed for several weeks—a disadvantage. By July 28 (see table 1), the only chemical treatments that had resulted in significantly more uniform crowns than from hand pinching were 2.3 and 3.3 percent Atrinal on Chimes and Fuzzy White varieties. Off-Shoot-O treated plants did not differ from hand-pinched plants and often were less uniform than Atrinal-treated plants.

Data in table 2 show the effect of

chemical treatment on a number of lateral shoots by July 28. Except for Fuzzy White variety, Atrinal-treated plants had more shoots developing following treatment than plants that were hand pinched or treated with Off-Shoot-O. However, the number of shoots on any variety was not influenced by dosage of Atrinal. Except for plants of the California Sunset variety, the same was true for dosages of UniRoyal-P293.

No phytotoxicity was noted on plants treated with UniRoyal-P293. A temporary phytotoxicity was noted on all varieties of azalea treated with Off-Shoot-O and Atrinal chemicals. However, the nature of the injury differed. Off-Shoot-O caused a marginal leaf burn and killed the shoot tip. The injured leaves did not affect the quality of the plant because these leaves either fell off or were covered with new growth. Atrinal caused the leaves to turn an amber-orange color. Shoot tips were burned. The amber-orange color gradually disappeared and was not visible when plants were rated.

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TABLE 1. Uniformity of Crown* of Azaleas Treated May 19 and Rated July 28

Chemical treatment	Calif. Sunset	Chimes	Fuzzy White	Doctor Bergman	Red Beauty
Off-Shoot-O—400 ml/gal	5.33yz†	5.67x	4.33yz	5.67yz	6.00xyz
Atrinal—1.2%	5.33yz	6.67x	4.33yz	5.67yz	6.00xyz
Atrinal—2.3%	7.00x	8.33w	6.00x	6.33xy	7.67w
Atrinal—3.3%	7.00x	9.00w	5.67xy	7.67x	8.00w
UniRoyal P293—0.2%	4.00z	3.33z	3.00z	4.67z	5.33z
UniRoyal P293—0.4%	4.00z	4.00yz	3.67z	4.67z	5.67yz
UniRoyal P293—0.8%	6.00xy	5.33xy	4.00z	5.67yz	7.99wx
Hand pinch	6.67xy	5.67x	4.33yz	7.00xy	7.33wx

*Rated 1 to 10 with 10 being very uniform.

†Duncan Multiple Range at 5%. Means followed by same letter are not different statistically.

TABLE 2. Number of Lateral Shoots on Random Selected Stems of Azalea Plants Treated on May 19 and Sampled on July 28

Chemical treatment	Calif. Sunset	Chimes	Doctor Bergman	Fuzzy White	Red Beauty
Off-Shoot-O—400 ml/gal	3.78y†	4.22z	2.78z	2.67z	3.11z
Atrinal—1.2%	6.22w	6.11y	5.67x	4.11xyz	6.44y
Atrinal—2.3%	5.56wx	6.11y	5.89x	4.33xy	6.11y
Atrinal—3.3%	5.56wx	6.11y	4.67xy	4.22xyz	6.78y
UniRoyal P293—0.2%	2.22z	3.00z	2.89z	2.67z	3.00z
UniRoyal P293—0.4%	3.89y	3.22z	2.78z	2.78yz	2.89z
UniRoyal P293—0.8%	4.56xy	3.78z	3.11z	2.89yz	3.78z
Hand pinch	3.22yz	3.33z	3.33yz	4.56x	4.11z

†Duncan Multiple Range at 0.05.