

Controlling FRUIT FORMATION

on OLIVE and VICTORIAN BOX

with OFF-SHOOT-O and ETHREL

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IT IS OFTEN DESIRABLE to prevent fruit formation on many ornamental plants to eliminate a hazard or a nuisance created by the ripe fruit. The fruits of olive (*Olea europaea* L.) and Victorian box (*Pittosporum undulatum* Vent.) are messy and unsightly, they stain concrete and other surfaces, and can cause people to slip. The long-term solution has been to introduce and use fruitless cultivars or male plants. This, however, does not eliminate the need for other control methods because many cultivars which set fruit can usually be found in the neighborhood.

Crop use

The successful use of such chemicals as naphthalene acetic acid to regulate crop size on such commercial fruit trees as apple and peach was followed by their use to eliminate fruit from ornamental plants. Repeated applications were often necessary to eliminate all fruit because the chemicals were active only at a specific state of flower or fruit development. Chemicals were often effective only on a few species.

During the spring of 1969, a series of experiments was conducted in Orange and Los Angeles counties to study the effectiveness of several new chemicals for controlling fruit formation on olive and Victorian box. A chemical that would be effective over a wide range of fruit and flower development stages was sought.

Off-Shoot-O, a commercial formulation of methyl esters of C⁶ to C¹² fatty acids with water and surfactant has been effective in selectively killing terminal buds of azaleas and other plants. Applications of the chemical to shoots of olive and Victorian box containing young, developing flowers resulted in the selective killing of

these flower buds. Concentration of the active ingredient was important: all flowers were destroyed when a 5 per cent solution was applied.

Off-Shoot-O, was less effective after fruit set. It caused injury to and discoloration of the developing fruit but the fruit did remain on the plants. A weak solution of Off-Shoot-O on olive at full flower may have stimulated fruit set. This reaction should be further studied before definite conclusions are reached.

Injury to foliage and to developing vegetative shoots was noted following the application of Off-Shoot-O. Symptoms on the leaves were irregularly shaped dead areas. The extent of injury was limited and within the limits of acceptability. New growth later in the spring completely hid the injured leaves.

Formulation

Ethrel is 2-chloroethylphosphoric acid. The formulation used during the study contained 2 lbs of Ethrel as a mixture of acid, ester and anhydride in each gallon with propylene glycol as the solvent.

Ethrel caused abscission of the flowers of both the olive and the Victorian box and was effective over a long period of development. Very young, developing flower buds were not affected by Ethrel, although these buds were destroyed by Off-Shoot-O. Ethrel was less effective following fruit set; stronger concentrations were required.

Fruits were completely eliminated from both the olive and the Victorian box. A solution containing approximately 1,000 ppm Ethrel appeared effective on both species when the spray was applied prior to fruit set. Weak solutions may have stimulated fruit formation but further study of this possibility is needed. Injury

to foliage and abscission was not noted at the lower concentrations. Severe injury occurred on the olive when concentration exceeded 2,400 ppm.

Effectiveness

The reduced effectiveness of Ethrel in causing abscission after fruit set has been observed in tomatoes, apples and peaches. Olive and Victorian box responded similarly during these experiments.

Combinations of Off-Shoot-O and Ethrel were more effective than either alone. This was particularly notable in the increased amount of fruit and flower abscission as well as in leaf abscission. The combination of the two chemicals is most effective after fruit set.

Ethrel and Off-Shoot-O appear to be useful as chemical sprays to control fruit formation on landscape trees. Of the two, Ethrel may have greater use, but the effectiveness of the combination should not be overlooked. It would appear that the time of application is less critical with these chemicals than with the auxins previously used. And the chemicals appear to be effective on a wide variety of species. This is a progress report of research and is not to be considered a recommendation.

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