Growth Regulators

Effect of 2,4-D Investigated in Studies on Washington Navel Oranges

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Satisfactory Control of naval orange fruit drop is achieved by California citrus growers who have applied 2,4-D as a plant growth regulator on commercial acreage since 1947.

Operators generally add the 2,4-D to a mixture containing other spray chemicals such as zinc or manganese. No spray chemical was found incompatible with the 2,4-D. No reports of reduced yield, lower fruit quality, or tree injury were received when instructions were followed.

During the past five years 43 field experiments were made to determine the effects of 2,4-D and other plant growth regulators on preharvest drop of mature fruit, drop of young fruit, fruit stem dieback, water spot susceptibility, yield, fruit size and quality.

The experiments indicate that 2,4-D is effective in reducing mature fruit drop. A reduction of the spray zone as low as 48 ppm 2,4-D appreciably reduced water spot susceptibility of the fruit.

Application of 2,4-D to young fruit, or six to eight weeks prior to bloom at sufficiently high concentrations, generally induced an increase in fruit size at harvest. The increase was usually proportional to the concentration of 2,4-D. The size increase was primarily due to an accelerated growth rate.

Factors considered to contribute to this growth increase were: 1, a thicker fruit stem in proportion to the fruit diameter; 2, a direct effect of the 2,4-D in stimulating the growth of various fruit tissues; and 3, in some cases, especially when applications were made at high concentrations near flowering, a reduction of the number of fruit per tree.

Annual applications of eight ppm 2,4-D in an oil spray for pest control were made for four consecutive years on Valencia orange trees. There were no indications of injurious or detrimental effects of the 2,4-D on the trees.

These results confirm the experience of citrus growers who have used 2,4-D on navel orange trees. One complaint, made in some instances, was that the spray reduced the drop of cull fruit/unmarketable fruit as well as that of healthy oranges. It was claimed that the increased cost of removing the cull fruit after harvest nullified the savings in sound fruit. But this view is not held generally, and when a severe drop of mature navel oranges is anticipated, or in progress, spraying with 2,4-D is becoming standard practice.

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