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Chemically Induced Sprouting of Axillary Buds in Avocados

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Applications of TIBA (trüodobenzoic acid) have broken terminal dominance, and caused sprouting and growth of axillary buds in young avocado trees without killing the terminal shoot which continues to grow at a reduced rate. This chemical may offer a way to alter the marked upright growth of varieties such as Zutano and Bacon into a more desirable spreading-scaffold branch structure.

Varieties with predominantly upright growth characteristics are often hand pruned or mechanically topped to lower tree height and facilitate harvesting. Such pruning is expensive and results in delayed fruiting of young trees and reduced yield in mature trees. A secondary benefit associated with an open, spreading scaffold structure may be the successful shake harvesting of varieties which do not carry both young and ripe fruit on the tree at the same time.

Avocado trees sprayed with TIBA at concentrations of 250, 500, and 1000 ppm. Unsprayed control on left.



Apple trees

TIBA has been used to change the branch structure of young Red Delicious apple trees, by causing an outward bending of young shoots which allows a greater choice of limbs for the permanent scaffold structure. The increased crotch angle also produces a stronger union between the branch and the wood from which it arises. Trials on several varieties of citrus with TIBA caused a spreading branch pattern; however, the concentrations of TIBA needed to change the branch structure of citrus were so high

that considerable foliage damage occurred. Axillary bud sprouting and branch formation of avocados occurred at low rates with TIBA with no adverse affect on foliage.

In these tests, Bacon avocado seedlings were planted in January, 1971 in gallon containers. Prior to application of TIBA, selections were made for size and uniformity of growth. Each treatment consisted of five single tree replications in a randomized block.

TIBA was applied at concentrations of 250, 500 and 1,000 ppm in May, 1971 when the seedlings were four months old. Weather was overcast with a temperature of 65° F. The plants were sprayed with a hand sprayer using a moderately fine mist, and all foliage was sprayed to runoff. The spray contained 0.1% of X-77 as a wetting agent.

Four weeks after spraying, the shoots from axillary buds averaged 8 inches in length. The angle between shoots and the main stem averaged 50 degrees, indicating the start of a strong wide-angled branch structure. Other growth regulators tested gave crotch angles of five to 10 degrees. With small crotch angles, one of the upper axillary buds assumed near vertical growth and became the dominant leader in the tree. In general, these materials also caused the death of the apical shoot which led to dominance of one of the new sprouts. Because of the poor results experienced in these tests, these growth regulators are not included in this report.

The number of laterals ranged from two to seven with an average of 4.4 on trees sprayed with TIBA at a concentration of 250 ppm. No adverse foliage affects were noted, and total growth was enhanced. The number of laterals ranged from five to eight with an average of 6.6 when the TIBA concentration was raised to 500 ppm. New growth at 500 ppm consisted of generally smaller leaves than on the control plants and on the 250 ppm treatment.

TIBA at 1,000 ppm caused mild leaf distortion and spindly lateral shoots, which ranged in number from a low of four to a high of seven with an average of 5.2 per tree. No axillary buds sprouted on any of the untreated control trees.

Further field trials to induce more scaffold branching in upright-growing avocado varieties seem warranted as a result of these tests. TIBA has not received government registration for use on avocados, and is not recommended for use at this time.

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