

CHEMICALLY INDUCED SPROUTING OF AXILLARY BUDS IN AVOCADOS

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TIBA (Triiodobenzoic acid) has 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. Potentially, this offers a way to alter the marked upright growth habit of varieties such as Zutano and Bacon into trees with a spreading scaffold branch structure.

Varieties with predominantly upright growth characteristics are often hand pruned (4) 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 (3).

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 (2). 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 (1) 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, and no adverse effect on foliage occurred.

Materials and Methods

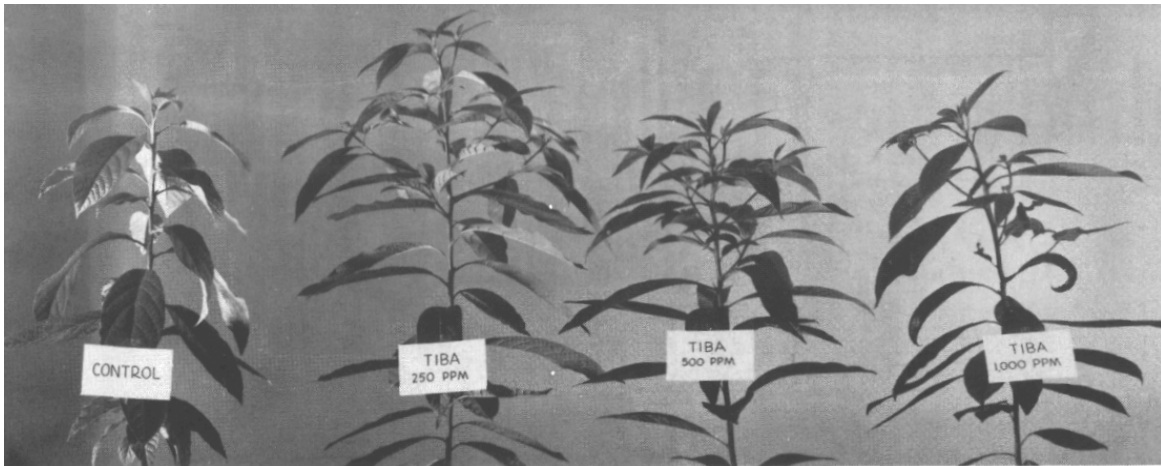
Bacon avocado seedlings planted in January of 1971 were grown in gallon containers. Prior to application of TIBA, selections were made for size and uniformity of growth. Each treatment consisted of five single tree replications in a randomized block.

TIBA was applied at concentrations of 250, 500 and 1,000 ppm in May of 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 run-off. The spray contained 0.1% of X-77 as a wetting agent.

Results

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 ten 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.



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

The number of laterals ranged from 2 to 7 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 5 to 8 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 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 4 to a high of 7 with an average of 5.2 per tree.

No axillary buds sprouted on any of the non-treated control trees.

Further field trials to induce more scaffold branching in upright-growing avocado varieties seem warranted as a result of these tests. While TIBA has not received government registration for use on avocados, it may prove useful on young trees where the basic scaffold structure can be formed before the trees reach fruit-bearing age.

LITERATURE

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