FURTHER STUDIES OF FLORAL INDUCTION IN THE HADEN MANGO (MANGIFERA INDICA L.)

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AN ABSTRACT

(Complete paper will appear in American Journal of Botany)

Leaves of the mango produce a hormone during the fall and winter that causes the growing tissues in the terminal buds to develop flower clusters. In the absence of this substance, growth from these buds would be leafy shoots. As long as the terminal bud, or the flower cluster that develops from that bud is present and undamaged, growth is suppressed in the lateral buds. Later in the season when the hormone is no longer being produced and after the flower clusters are gone, some of these lateral buds produce new leafy shoots.

If the terminal bud or the flower cluster is damaged or removed during the fall or winter, some of the lateral buds immediately below begin growth. The hormone produced by the leaves at that time causes the developing tissues in these lateral buds to form a flower cluster instead of a leafy shoot which otherwise develop from such a bud in the late spring or summer. Even if the leaves are removed from the stem, the buds nearest the end developed flower clusters because the hormone that is being produced in other parts of the tree moves considerable distances to affect the growing buds. Movement of the hormone to the buds in the defoliated region is prevented by a girdle through the bark and the resulting growth is vegetative.

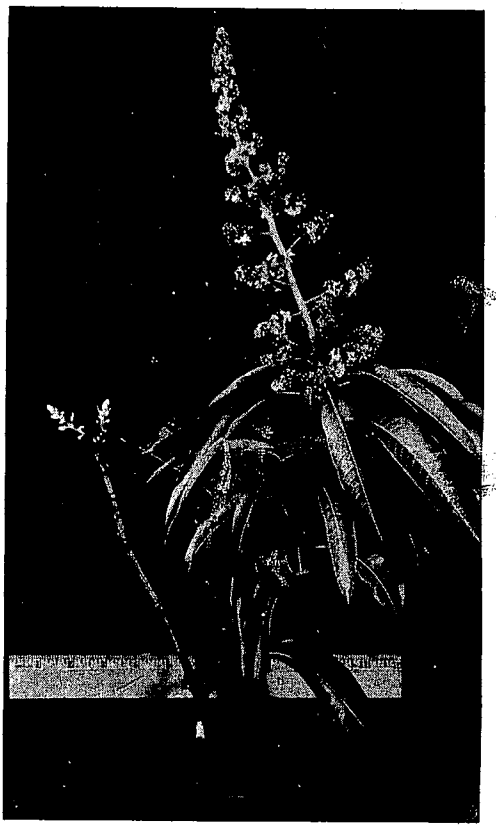

Fig. 1. The terminal bud and leaves were removed from the left branch and the lateral buds were removed from the right branch of a forked pair. Hormones produced in the leaves were transferred to the lateral buds on the leafless branch where they induced flower formation. The inhibiting effect of the terminal bud was not transmitted to the defoliated branch.

Terminal buds were removed from girdled branches of the Haden variety of mango, and all leaves were removed from the area between the girdle and the cut end at various intervals to determine the minimum length of time that was required for the hormone to influence floral development. In 1945, growth from these lateral buds was vegetative if the leaves were removed 24 hours after girdling and the removal of the terminal bud. When leaves were allowed to remain for 96 hours or longer flower clusters developed.

In 1946, an attempt was made through histological studies to correlate the length of this period with cell division. A longer period was required because drought delayed growth. Evidence from these studies indicates that the hormone does not initiate growth and cannot affect the course of the development of a bud until cell division has started.

Studies of the movement of the floral-inducing hormone and the growth-inhibiting effect of the terminal bud upon the lateral buds were conducted on forked branches. When the terminal bud and the leaves were removed from one branch of the fork and the lateral buds were removed from the other branch, lateral flower clusters appeared from the buds at the end of the leafless branch (Fig.1). The hormone produced in the leaves moved down that branch and up the leafless branch and caused growth in those buds to be floral. The inhibiting effect of the terminal bud was not observed to move into an adjacent branch. However, flower clusters appeared from lateral buds below the girdle which indicates that the transmission of the inhibiting effect was intercepted by the girdle.

Flower formation was caused by the action of the hormone in buds previously unspecialized as late as March 4, 1946. The fact is emphasized that floral initiation begins shortly before the flower cluster is clearly discernible.

EARLY EXPERIENCES WITH THE CHAYOTE

By David Fairchild
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When the members of the Florida Horticultural Society see on the program the name "Chayote," and that I am giving some notes on it, I am sure there will be those who will smile and say: "Fairchild is back at his old game; trying to cram this so-called 'new' vegetable down our throats again."

Nothing of the kind. Fifty years ago I did get a lot of people to grow the chayote and thousands of them learned to like it, but a combination of the root knot and other factors which I propose to describe, discouraged them. Now, however, with the possibility in sight of controlling its worst enemy, the nematode, it seems to me that it should be given another chance to take its place among the excellent vegetables of our southern states.

Feeling as I do that the chayote is worthy of a more extensive trial than was ever given it, I thought it would be helpful to give you some account of the experiences my colleagues and I had with it in the early days of the Section of Seed and Plant Introduction of the Department of Agriculture.

It was at Christmas time in 1895, forty-nine years ago, that I first saw a chayote arbor. I had stopped off in New Orleans on my way to the West Indies and was in the seed store of Stechler and Co. interviewing them about the various local fruits and vegetables.

They told me of a little French horti-