

The comparative studies of the changes in apices of some kinds of tropical fruit and temperate fruit

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Abstract

The transition from vegetative growth to flowering is one of the most important periods of ontogenesis. Changes in apices of mangosteen (*Garcinia mangostana* L.) and rambutan (*Nephelium lappaceum* L.) were studied at Chanthaburi Horticultural Research Centre in Chanthaburi. Also, strawberry (*Fragaria ananassa* Duch.) were studied at Doi Tung in Chiangrai. The samples were taken every fortnight and were dissected under a stereomicroscope magnified 10 to 64 times. Vegetative apices of all crops studied were seen as flattening apices. These were rounded and flattened in mangosteen, lobed and flattened in rambutan and non-swelling with last trifoliate leaf in strawberry. The first evidence of flower initiation appeared as an enlargement and raising of the apices. Then the sepal development was noted. As sepals grew, petal initiation was seen. When the sepals began to enclose the bud, it was about the same time that the pistils and/or stamens began to develop. The minimum temperature was the most important factor and was highly correlated with changes in apices of all crops studied.

Introduction

The transition from vegetative growth to flowering is a result of the coordinated interaction of all parts of the plant after the receipt of some type of environmental signal for flower induction to occur (Aksenova et al. 1980). The literature is not well established on tropical fruit, how environment, such as maximum and minimum temperature (°C), sun shine hours (hr/day), amount of rainfall (mm/day), maximum and minimum relative humidity (%) and soil temperature (°C) affects the transition from vegetative stage to reproductive stage of this crop. Contrasting with the literature on the effect of the environment, such as temperature and daylength on the flowering of temperate fruit, the literature on tropical fruit is not well established (Gur 1985; Tran Thanh Van 1985; Guttridge 1985). However, the correlation between the environmental factors and the transition from vegetative growth to flowering, or in other words, induced apices to flower, has not been studied in detail. Thus, comparative studies of the changes in apices of some kinds of tropical fruit and temperate fruit were done. This was to assess the morphological changes from vegetative apices to flower apices of mangosteen, rambutan and strawberry (*Garcinia mangostana* L., *Nephelium Lappaceum* L. and *Fragaria ananassa* Duch.) respectively, and to correlate these changes with environmental factor studies.

Materials and Methods

The experiments were conducted from 1991 to 1992 at Chanthaburi Horticultural Research Centre, Chanthaburi, for mangosteen and rambutan, whereas strawberry were studied at Doi Tung, Chiangrai in 1993. Ten plants of 16 to 17 year -old mangosteen and 10 plants of 12 to 15 year -old rambutan that were equal in size and maturity were sampled. Ten strawberry plants cultivar Tioga No.16 that were transplanted from tissue culture in March 1993, and were grown in nursery, were used as materials from September to the end of November 1993.