FLOWERING ASPECT IN STRAWBERRY BY LIGHT MICROSCOPE AND ELECTRON MICROSCOPY

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ABSTRACT

SEM and Stereomicroscopy were used to examine the flowering aspect in strawberry. The cultivar Torrey from Califonia and the cultivar Toyonoka from Japan were used as the test plants. Three frequencies of liquid leaf fertilizer were applied after cutting back (defoliation) to the Torrey cultivar at the University of Sydney. The effect of temperature on the flowering of the Toyonoka cultivar was studied in the growth chamber at Suranaree University of Technology. There were at least 6 ontogenies of the apices from vegetative to flower by SEM technique, while under the stereomicroscopy only 5 ontogenies were found. SEM gave the most detail while the stereomicroscopy was appropriate for determining flowering in the field.

Introduction

Cultivars of the cultivated strawberry (*Fragaria ananassa* Duch.) are categorized as either 'Junebearring', Everbearing', or 'Day neutral', based on the photoperiodic responses of various development processes, particularly flower bud formation [1],[2]. However, care must be taken when specifying that a cultivar is short-day, long-day, or day neutral, since Junebearers (short-day types) can be classified as Day neutral at low temperatures and Day-neutrals could be classified as Everbearers (long-day types) at high temperature. An examination of the effect of environmental factors e.g. temperature, daylength, nutrition and defoliation, on the separate flowering processes of induction, initiation and development would be beneficial.

Materials and Methods

Scanning electron microscopy (SEM) is a well established technique which has allowed a considerable advancement in studies on flowering processes. A series of experiments using stereomicroscopy and SEM to compare and study flower initiation and development in cultivated strawberry were done in 1989 and in 2001 at the University of Sydney and Suranaree University of Technology. Three frequencies of liquid leaf fertilizer were applied after cutting back (defoliation) to the torrey variety. Twenty plants sampled from each treatment were dissected every fortnight under a wild Heerbrugg M5 stereo-microscope at a magnification of 6 to 50 times, and together with the SEM technique, the flowering processes was studied [3]. The number of induced apices were recorded. At Suranaree University of Technology, the variety Toyonoka was planted in the growth chamber under 20/16°C and 23/18°C (day/night temperature) and 12/12 hr (day/night light). The light intensity used was 10,000 Lux and the RH was 80%. The plants were in the growth chamber for 6 months. Then, the dissecting technique under the stereo-microscopy and SEM were used to investigate the effect of temperature on flowering process of this short day variety.