

OBSERVATIONS ON THE FLORAL BIOLOGY AND FRUIT SET IN VANILLA

The structural peculiarity of the flower involving the covering of the pollen by a sort of hood or anther cap and of the stigma by the **rostellum** prevents natural pollination in vanilla (*Vanilla planifolia*). Hence hand pollination is resorted to, to obtain fruit (bean) set.

Vanilla is being cultivated in the Central Horticultural Research Station, **Ambalavayal**, Kerala State. Results of observations made on the floral biology and on the setting of fruits by hand pollination and by the use of growth regulators are embodied in this paper.

The flower opening, as observed in 100 flowers on different days, commenced between 10.30 p.m. and 1 a.m. and was completed by 6 p.m. Fruit set was noticed even when the flowers were forced open just before opening and hand pollinated with the **pollen** of the same flower. Pollen viability was reduced considerably one day after anthesis. The average percentages of fruit set were 70, 15 and 10 per cent when 1, 2 and 3 days old pollen were used; the set was 100 percent when pollen of the day of opening was used. On an average, 49 days were taken from fruit bud initiation to the anthesis of the first flower in a cluster and 74 days for completing the **anthesis** in a cluster. Data on the success of artificial pollination at various intervals after flower opening are presented in Table 1.

Table 1

Fertilisation of vanilla flowers hand-pollinated at different periods
after flower opening

Time of pollination	Total number of flowers pollinated	Number of flowers set	Percentage of fruit setting
6 a.m.	40	40	100
7 „	40	40	100
8 „	40	39	97.5
9 „	40	40	100
10 „	40	40	100
11 „	40	40	100
12 Noon	40	40	100
1 p.m.	40	40	100
2 „	40	40	100
3 „	40	39	97.5
4 „	40	39	97.5
5 „	40	40	100
6 „	40	39	97.5

It is seen that hand pollination can be undertaken with 97.5 to 100 per cent success any time between 6 a.m. and 6 p.m. on the day of flower opening.

A preliminary trial conducted to ascertain the suitability of growth regulators in promoting fruit set showed that fruit set could be obtained with 2, 4, 5 - trichloro-phenoxyacetic acid (2,4,5-T) at a concentration of 100 to 500 ppm and with gibberellic acid (GA) at 20 to 100 ppm, if sprayed on the day of flower opening or on the previous day. Spraying on the inflorescence had no effect on fruit set except on the flowers which opened on the same day or on the flowers which were ready to open the next day. Eventhough successful set was obtained when the individual flowers were sprayed with the growth regulators most of the beans dropped before reaching maturity and the size of the surviving beans was only one-fourth to one-third of that of the beans obtained by hand pollination. Indole acetic acid, indole butyric acid and naphthalene acetic acid had no effect on the fruit set.

Central Horticultural Research
Station, Ambalavayal, Kerala State.

P. C. Sivaraman Nair
Leelamma Mathew

(Accepted: 2-9-1969)