FLORAL BIOLOGY AND VARIATION IN CINNAMON

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ABSTRACT

The floral biology and the variation in flower characteristics like time taken from planting to the first flower, number of flowering flushes per year, nature of inflorescence, pigmentation in floral parts and structural abnormalities of the flower were studied in 97 plants belonging to 13 accessions of *Cinnamomum verum* Presl. planted during 1978.

The floral biology showed that the flower opens and closes in two stages on two consecutive days. When the flower opens on the first day the stigma appears to be fresh and the anthers are not dihisced. After a few hours the flower closes and the same flower opens on the next day when the stigma shows signs of drying up and the anthers start dehiscing. In 61 plants, the fresh flower opened at noon and closed in the evening. They again opened on the next day morning and closed at noon. In the remaining 36 plants the fresh flower opened in the morning and closed at noon. They again opened next day noon and closed in the evening. Thus the flower appears to be adapted to cross pollination.

INTRODUCTION

Even though the morphology of flower and inflorescence in *Cinnamomum verum* Presl. (Syn. *C. zeylanicum* Blume) has been reported (Hooker, 1886; Gamble and Fischer 1915-1936; Sastri, 1958) the extent of variation occurring in inflorescence and flower of this species has not been reported so far. From the point of view of breeding, information on floral morphology and anthesis are also important. This paper deals with the variation in inflorescence and flower as well as anthesis in some exotic and indigenous collections of *C. verum*.

Materials and Methods

One hundred and fifty-two seedlings (one year old) of *C. verum* consisting of 119 from Sri Lanka and 33 from Kerala and Tamilnadu were planted in the Central Plantation Crops Research Institute Farm at Peruvannamuzhi during 1978. Data on the number of flushes of flowering with the date of first flowering in each flush, nature of inflorescence, pigmentation in the inflorescence and floral parts and anthesis were recorded. Twenty plants at random were screened for the percentage of abnormal flowers.

Results and Discussion

Fifty-five plants from Sri Lanka flowered, one in 1979 and 55 in 1980. The duration from planting to flowering ranged from 15 months and 5 days to 28 months and 15 days. None of the indigenous collections flowered. In 1980 the flowering occurred in different flushes, the first in January-February, the second in March-April, the third in September-October and the fourth in November. Twenty plants had single flush, seventeen two flushes, twelve three flushes and four four flushes.

In three plants the inflorescence was condensed, others were normal. In eleven plants a purple pigmentation was noticed on the base of the inflorescence rechii, young flower buds or on the pistil (Table 1).

The flower normally has 6 tepals arranged in 2 whorls and 9 functional stamens arranged in 3 whorls and an innermost whorl of 3 staminodes. Abnormal flowers showing 4 to 8 tepals, 7 to 12 functional stamens and 3 to 6 locules in the anthers were found. Their frequency varied from 2 to 72.5%.

Studies on anthesis revealed that the flower opened twice on subsequent days in 2 stages. In stage 1 on the first day, when the flower opened the stigma was whitish and fresh and appeared to be receptive. The anthers did not dehisce and the stamens of the first whorl and the corresponding ones of the third whorl were appressed to each other. After about five hours, the flower closed. In stage 2 on the second day the flower opened again. The stigma by then

Table 1. Frequency of variation in inflorescence and flower

	Normal inflorescence	Condensed inflorescence	Pigmented inflorescence and flower	Stage-1 flower in morning	Stage-1 flower at noon	Range in percentage of abnormal flowers
No. of Plants	52	3	11	33	22	2-72.5

was shrivelled and was not receptive. The stamens of the third whorl had been separated from those of the first whorl and they were adhering to the pistil. The anthers dehisced 30 to 60 minutes after the flower opening. After about five hours the flower again closed and did not open again.

In 33 plants, first stage occurred in the morning, with the state 2 occurring at about noon the next day. On the very same day at about noon flowers of the previous day, in state 1, would open and enter stage 2. Thus on the same day functionally female flowers and functionally male flowers would appear in the same plant in the morning and at noon respectively. In 22 plants first stage occurred at about noon, with the stage 2 occurring the next day morning. Thus the flower of cinnamon is highly adapted to cross pollination. Almost similar anthesis has been reported in avocado (Mc Gregor 1976).

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