Table 1 *Disease incidence on inoculated plants*

Treatment	Disease rating									Infection index
	0	1	2	3	4	5	6	7	8	
C. quinqueseptatum	0	8	3	1	0	6	23	4	5	56.22
C. colhounii	8	9	3	3	12	12	3	0	0	33.33

of *E. grandis* show slight difference in length, conidia of the leaf isolate are larger, 46.6–57.5 × 2.7–5.5 μm, whereas conidia from the twig measure 38.4–52.1 × 2.7–5.5 μm. Sterile filament of the conidiophore ends in a elavate vesicle of 5.48–6.85 μm. *C. colhounii* attacks *E. grandis* seedlings in the nursery and in plantations during the first year. In the field the symptoms were identical to those of the other species of *Cylindrocladium*. This pathogen is considered to be a foliage parasite not observed on stem, roots or to cause collar rot of seedlings[10]. Contrary to this observation it causes more stem lesions rather than leaf spots on *E. grandis*.

On the inoculated plants under controlled conditions initial symptoms of minute spots on leaf and twigs were visible after 18 hr. After 4 days of inoculation 14 plants showed apical dying in *C. colhounii* treatment and 21 plants in *C. quinqueseptatum* treatment. After 10 days all the plants inoculated with *C. quinqueseptatum* were dead whereas three plants inoculated with *C. colhounii* survived with stem lesions and leaf spots. Inoculation experiment under field conditions also proved that *C. colhounii* is not that virulent as *C. quinqueseptatum* (table 1). The infection index is 56.22 and 33.33 respectively in *C. quinqueseptatum* and *C. colhounii* treatments.

There was no conidial germination in Bordeaux mixture, Bavistin, MK 23 and Daconil. In Topsin M, although 2 conidia out of 422 germinated the growth of the germ tube was arrested just after emergence. In the tapwater control 93 spores out of 431 were germinated.

We thank Dr C. Booth of CMI, England for identification of the pathogen and the Managing Director, Hindustan Newsprint Limited, for his keen interest and support.

20 January 1986; Revised 11 April 1986

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DIGENIC MALE STERILITY IN SUNNHEMP (*CROTALARIA JUNCEA* L)

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IT is reported in literature[1–4] that male sterility in plant species may be due either to genic or gene-cytoplasmic interactions. In *Crotalaria juncea*, the spontaneous occurrence of male sterility was reported earlier[5]. The present investigation deals with its mode of inheritance. The progeny of the male sterile line showed segregation of fertile and sterile plants in 1 : 1 ratio[5]. Since a population of sunnhemp is exclusively of a heterozygous[6–8] nature, controlled pollination was required to be followed during crossing. Ten male sterile plants were randomly selected from the above segregating population just after initiation of flowering because of the absence of any marker in them. Each of these sterile plants was back-crossed

singly to one of the ten fertile heterozygotes of the same population and thus ten back-cross populations (BC_1) were raised separately for each sterile line. Segregation for fertility and sterility was recorded. It was observed that out of 10 populations grown, 8 showed 1:1 segregation (fertile:sterile) like the previous generation while in the remaining two, segregation occurred in the ratio of 6 fertile to 10 sterile plants. However, no clear explanation could be found from the above data. For further clarification, a number of individuals, six at least, were randomly selected from the fertile counterpart of the above BC_1 and they were crossed with one another in all possible combinations within each line. Seeds were collected from the above 15 single cross combinations, each grown in a separate row for recording segregation properly. It was observed that out of ten families studied in F_2s three showed only one type of segregation ratio (3:1) while in the remaining seven, two types of ratios (9:7 and 3:1) were recorded; the *P* value ranging between 0.50 and 0.70 in each case. The results showed that out of the above two segregating ratios one (namely, 3:1) was common in all ten families. In addition, some families had 9:7 ratio which appeared to have arisen out of crossing between individuals heterozygous for two gene pairs, assuming each pair assorting independently. The other ratio which was common to all (e.g. 3:1) would possibly be the outcome of digenic parents for male sterility assuming one of them to be homozygous and the other heterozygous for the dominant gene.

The present results indicate that two male sterile genes (MS_1, MS_2) are involved in this species and either of them when homozygous and recessive (i.e. ms_1ms_1/ms_2ms_2) causes male sterility. It would appear that 10 sterile parents used initially as seed parents in the crossing programme were mixtures of two different genotypes. However, further study for identifying all the five sterile genotypes is in progress.

8 April 1986; Revised 12 May 1986

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POLLINATION STUDIES IN *CALONYCTION MURICATUM*

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CALONYCTION MURICATUM (L) G. Don (Syn. *Ipomoea turbinata* Lag) is a wild twiner of the family Convolvulaceae. The species grows on fencings and hedges during rainy season, and the swollen flower pedicels are used as vegetable. There are two varieties, namely, white-seeded and black-seeded.

The seeds of this plant were collected from different localities of Rewa. The plants were grown in the Botanical Garden of the Government Science College, Rewa, during rainy and summer seasons of 1981 and 1982.

To assess the extent of pollination, the flowers were subjected to different pollination regimes such as, natural open-pollination, self-pollination, cross-pollination, natural cross-pollination and intergeneric pollination with *Ipomoea crassicaulis*. The flowers were also subjected to 'no pollination' to see if there was any parthenocarpy. The pollination value was calculated by the formula,

$$\text{Pollination value (\%)} = \frac{\text{Number of mature seeds}}{\text{Number of mature seeds} + \text{Number of immature seeds}} \times 100$$

Despite repeated trials made in every flowering month on hundreds of flowers, no fruit setting was observed in any of the pollination methods employed, except in self-pollination. Hence the specimen is strictly self-pollinated.

Mechanism of self-pollination

At the early stage of floral development, the stamens and the styles are of equal length. Later, the style grows very fast so that the stamens remain below the stigma. When the style has completed its growth, the slow growing stamens resume their faster growth. One day earlier to the day of anthesis and at the time of anthesis, the anthers burst and a powdery mass of pollen adheres to the stigma. The growth of stamens continued even after the pollination has taken place, and within one or two days the corolla as well as androecium become shrivelled.

Pollination value

Table 1 presents the pollination value of *C. muri-*