Rice Research Institute[4]. Our studies pointed out better performance of *Corcyra* eggs as a food source for the predator.

In a subsequent experiment 70 to 100 first instar nymphs were reared in groups of 10 per replication on *Corcyra* eggs + water, water alone or BPH eggs in rice seedlings While nymphs could not survive beyond 3 days on water alone, 26.0 and 47.1% of them developed to adult stage on *Corcyra* and BPH eggs, respectively. Relatively lower survival on *Corcyra* eggs was not due to nutritional requirement problems as indicated in individual rearing of newly hatched mirid bug nymphs wherein 81.8% could survive and develop to adult stage. Daily rate of *Corcyra* egg consumption noted in this experiment is presented in figure 2. On an average 7.5 ± 1.3 eggs were consumed per day per nymph. However, nymphal duration was slightly prolonged on *Corcyra* (14.0 ± 0.4 days) as compared to that on BPH (12 3 ± 0.3 days). Emerging adults survived for 10.5 ± 1.9 days and consumed 9.84 ± 1.2 eggs daily.

In further experiments filter paper fold as a substrate for oviposition was evaluated. When given a choice to gravid females, all the eggs were laid in rice seedlings while none in paper roll though it contained *Corcyra* eggs as the only food source. However, if choice is not given the eggs were laid in the paper roll (av. no. 25.1/female) though less in number as compared to the rice seedlings (31.3/female). Eggs in the paper roll could be incubated in closed screw cap vials. Thus the entire life cycle of *Cyrtorhinus lividipennis* could be completed on *Corcyra* egg diet without resorting to maintenance of BPH culture on rice plants. Adopting this method a small culture is being maintained in laboratory for several generations.

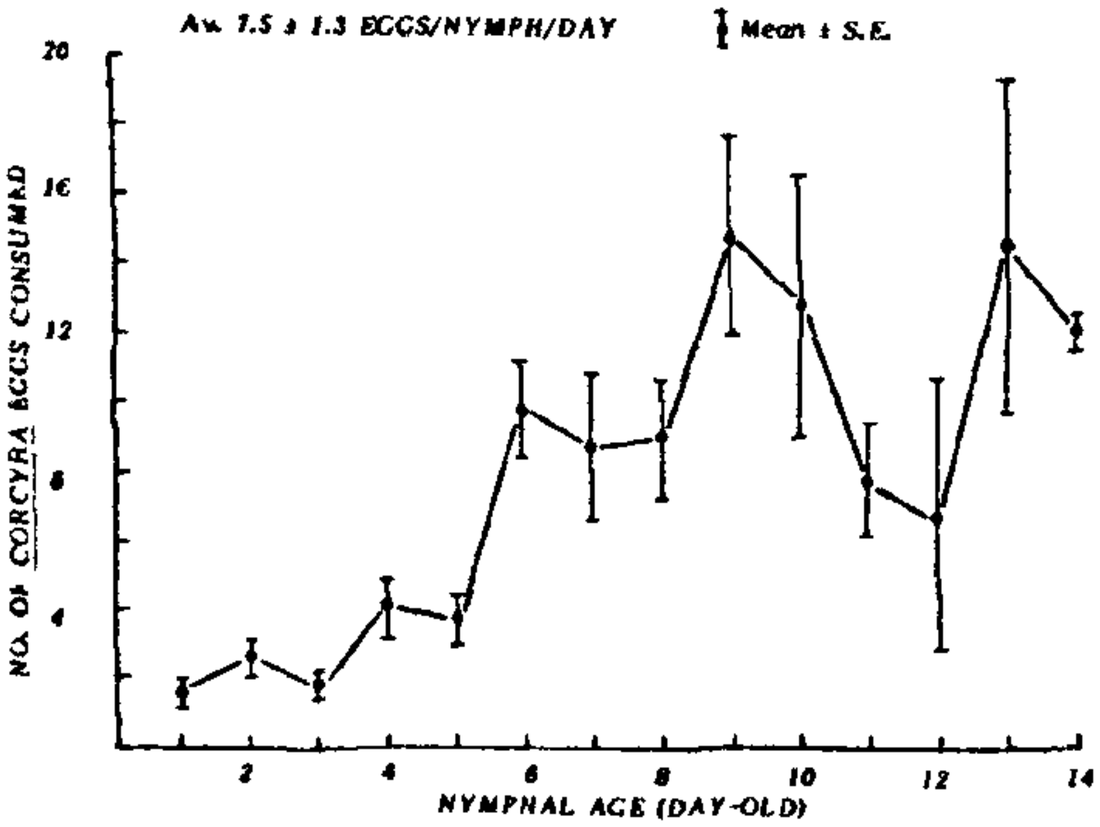

Figure 2. Daily egg consumption by nymphs of *C. lividipennis* when offered with eggs of the rice moth *Corcyra cephalonica* (Stainton).

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A SOURCE OF MORPHOLOGICAL RESISTANCE TO LEAF BLIGHT DISEASE OF RAPE SEED AND MUSTARD CAUSED BY *ALTERNARIA BRASSICAE* (BERK) SACC.

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ABSENCE of resistant varieties against leaf blight disease caused by *Alternaria brassicae* (Berk) Sacc is one of the principal reasons for low productivity of rape seed and mustard in India[1, 2]. In field trials during 1979 to 1983 crop seasons, a large number of germplasm materials comprising various species of *Brassica* were tested to identify resistance against Alternaria leaf blight under conditions of its natural incidence. During these trials, *Brassica oleracea* L var *alboglabra* Bailey plants consistently showed resistant reaction, forming only a few small scattered lesions on their leaves even though the disease developed in severe form on other cultivars. Tiwari and Skoropad[3] reported that epicuticular wax layer on two cultivars of *B. napus* L confers a physical type of resistance to black spot disease incited by *A. brassicae*. The present study was undertaken to determine whether the resistance in *B. oleracea* var *alboglabra* is also due to the presence of such wax layer.

Plants of *B. oleracea* var *alboglabra* together with

two checks namely, Pusa bold (*B. juncea* L—susceptible) and yellow sarson YS-8 (*B. campestris* L—highly susceptible) were raised in 25 cm earthen pots at the rate of four in each.

When these plants were 50 days old, the abaxial surface of the third and fourth leaf counted from the first cotyledonary leaf was gently rubbed with a dry cotton swab to remove the epicuticular wax layer. An equal number of these plants without rubbing of their leaf surface was used as control. Each treatment consisted of four pots which were replicated four times. Plants were uniformly inoculated with equal amounts of conidial suspension of *A. brassicae* (5–7 conidia/low power microscopic field) made from freshly isolated PDA culture of the fungus and then incubated in a moist chamber for 48 hr. Data on the average number and size of lesions developed on the leaves of the three cultivars were taken respectively, after 7 and 15 days following inoculation (table 1). The daily maximum and minimum temperature and relative humidity during the period varied between 9° to 16°C and 90 to 95% respectively.

The results show that the three cultivars differ with respect to the average number as well as the size of lesions on their leaves both under unwiped and wiped conditions. Wiping of the leaves with cotton swab increased the disease susceptibility greatly in *B. oleracea* var *alboglabra* and only marginally in Pusa bold but not in yellow sarson. *B. oleracea* var *alboglabra* contains epicuticular waxy material in the form of white powdery bloom on its surface and its removal from the leaf surface by wiping increased its susceptibility to the disease. It appears to be present in trace on Pusa bold and absent on yellow sarson YS-8 since wiping slightly increased the disease susceptibility of the former but not that of the latter.

According to Skoropad and Tiwari[4] the presence of epicuticular wax on the cultivars of rape seed and mustard confers a physical type of resistance to *A. brassicae* under field conditions. It probably acts by preventing water droplets to stay on the leaf surface and also as mechanical barrier to the invading pathogen. It has apparently no effect on the pathogen after the latter (*A. brassicae*) has made an entry into the host. However, examination of a large number of cultivars belonging to *B. juncea* and *B. campestris* group revealed that resistance against leaf blight is very rare in these two species. Therefore, attempts should be made to incorporate this type of resistance into cultivated varieties by resorting to inter-specific hybridization.

We are grateful to Dr Sham Prakash for the supply of seed materials.

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Table 1 *Effects of epicuticular wax on infection of A. brassicae in Brassica spp.*

Cultivars	No. of lesions/leaf		* Size of lesions (mm)	
	Unwiped	Wiped	Unwiped	Wiped
B. oleracea var *alboglabra*	3.0	9.2	4.7	4.3
B. juncea (var Pusa bold)	19.5	24.7	7.4	8.2
B. campestris (yellow sarson var YS-8)	21.0	21.2	8.0	7.7

* Average of 50 lesions.

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A SIMPLE TECHNIQUE FOR *RHIZOBIUM* PLANT INFECTION TEST

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PLANT infection and nodulation is the ultimate characteristic in authentication of an isolated bacterium as *Rhizobium*. For this authentication, even though small seeded legumes of the respective cross inoculation group can be substituted for large seeded ones, ideally, a *Rhizobium* strain is tested for its ability to form nodules in the host from which it was originally isolated and/or on plant species to which they are intended. Leonard jar[1] and growth pouches[2] were recommended as growth units for large seeded legumes like soybean and cowpea for establishing nodulation. Prefabricated plastic pouches are preferred due to their ease in handling and economy of space and labour. But these ready made pouches are not