EPICOCCUM NIGRUM LINK. : A NEW REPORT FROM INDIAN SOILS

Epicoccum is a genus of Moniliales belonging to the family Tuberculariaceæ, reported as occurring in the soils of Canada.[1] Recently Ragab[2] has reported the genus from soils of Egypt. During the course of the study of the fungal flora of 'Usar' soils of Uttar Pradesh (R. N. Ghosh, unpublished), *Epicoccum nigrum* has been isolated from soil samples collected at Banthra Extension Nursery of the National Botanic Gardens, Lucknow. The fungus is isolated from soil samples collected during the rainy season (July to October) of 1959 at a depth of 6–18" from the surface. The soil is typically 'Usar' with an average pH range of 9·24 to 9·89 and an average moisture content of 2·35 to 6·99. Soil cultures were made by Waksman soil dilution plate method,[3] and maintained on synthetic nutrient agar slants. Sporodochia were produced in cultures maintained at room temperature in 4 to 6 days.

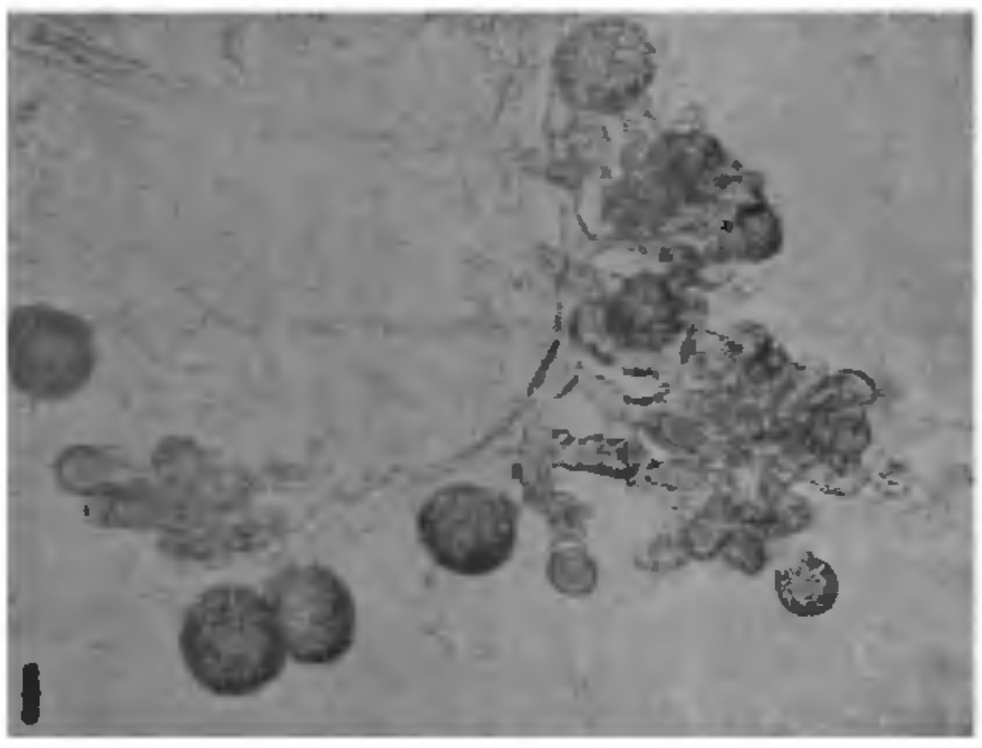

FIG. 1. Photomicrograph of *Epicoccum nigrum* Link. showing conidia and conidiophores.

The stroma is black and the reverse of the colony is bluish-black in colour. The sporodochia are scattered and hemispherical. Conidiophores are club-shaped (Fig. 1), and black in colour. The size of the conidiophores ranges from $12{\cdot}3 \times 5{\cdot}0$ to $14{\cdot}0 \times 7{\cdot}0\,\mu$. The conidia are spherical, 21 to 25 μ occurring singly at the tip of the conidiophores, and brown to black in colour. The surface of the conidia possesses minute granulation (Fig. 2).

Epicoccum nigrum Link. has been isolated for the first time from Indian soils.

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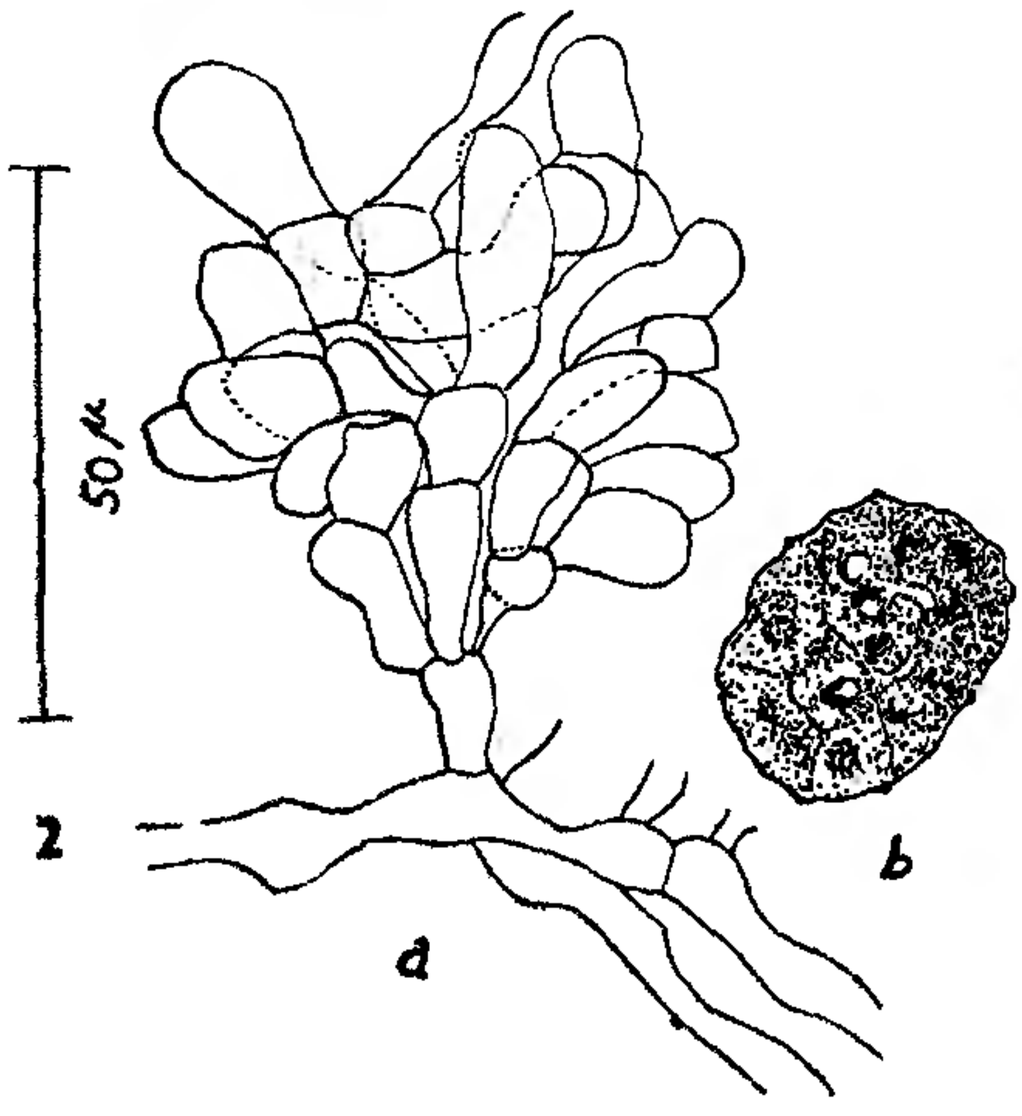

FIG. 2. (*a*) Conidiophores. (*b*) Single Conidium.

1. Bisby, G. R., Timonin, M. and James, N., *Canad. Jour. Res.* (Sec. C), 1935, **13**, 47.
2. Ragab, M. A., *Mycologia*, 1956, **48**, 167.
3. Waksman, S. A., *Principles of Soil Microbiology*, William & Wilkins Co., Baltimore, U.S.A., 1927.

MULTIPARASITISM BY *AHOLCUS EUPROCTISCIDIS* MANI AND *TRICHOGRAMMA EVANESCENS MINUTUM* RILEY IN THE EGGS OF *EUPROCTIS LUNATA* WALKER

Euproctis lunata Walker is a very serious pest of castor in the plains of India. Two species of parasites were observed to breed in the eggs of this pest. One was the scelionid, *Aholcus euproctiscidis* Mani, and the other the trichogrammatid, *Trichogramma evanescens minutum* Riley. Careful observations by the dissection of the eggs of *Euproctis* revealed the occurrence of multiparasitism. Very often multiparasitism results in the death of one or the other species and in the present case it was observed that invariably *Trichogramma* successfully completed development and emerged.

Experiment No. 3.—When these host eggs were dissected 5 hours after exposure to *Trichogramma*, dead first instar larvæ of *Aholcus* and *Trichogramma* eggs were observed.

Identical results were obtained when the host eggs were dissected one hour after exposure *Trichogramma*.

EXPERIMENTS AND OBSERVATIONS

TABLE I

Experiment No.	Condition of host eggs when exposed	Host eggs exposed to	Whether the parasite accepted them or not	Whether development of *Aholcus* takes place or not	Whether development of *Trichogramma* takes place or not
1	Just parasitised by *Trichogramma*	*Aholcus*	Yes	No	Yes
2	Just parasitised by *Aholcus*	*Trichogramma*	Yes	No	Yes
3	With 24-hour old larva of *Aholcus*	do.	Yes	No	Yes
4	With 30-hour old larva of *Aholcus*	do.	Yes	No	Yes

Experiment No. 4.—When host eggs containing 30-hour old larvæ of *Aholcus* were dissected 5 minutes after exposure to *Trichogramma*, live first instar larvæ of *Aholcus* and *Trichogramma* eggs were observed. Dissection 10 minutes after *Trichogramma* laid eggs, showed that the first instar larvæ of *Aholcus* were rather sluggish. Body movements were not noticed. Only the mandibles showed slight movement. In other words, they were in a moribund stage. All host eggs in which *Trichogramma* eggs were allowed to develop for more than 10 minutes showed only dead first instar larvæ of *Aholcus*.

It was further observed that when the host eggs were first attacked by *Trichogramma* and then by *Aholcus*, the number of *Trichogramma* emerged (from a single host egg) was more and the development was completed in a shorter period than when the host eggs were first attacked by Aholcus and then by *Trichogramma* (see Tables II and III).

TABLE II

Host eggs parasitised first by Trichogramma *and then by* Aholcus

Serial No. of host eggs	No. of *Trichogramma* emerged	No. of *Aholcus* emerged	No. of days taken for development and emergence at 75-80° F. and relative humidity 75%
1	5	0	11 days
2	6	0	
3	5	0	
4	5	0	
5	5	0	
6	6	0	

TABLE III

Host eggs parasitised first by Aholcus *and then by* Trichogramma

Serial No. of host eggs	No. of *Trichogramma* emerged	No. of *Aholcus* emerged	No. of days taken for development and emergence at 75-80° F. and relative humidity 75%
1	2	0	15 days
2	2	0	
3	2	0	
4	2	0	16 days
5	2	0	
6	3	0	

It is rather interesting to note that the very presence of *Trichogramma* eggs is detrimental to the grubs of *Aholcus*.

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PACHYTENE ANALYSIS IN *JAPONICA-INDICA* RICE HYBRIDS

CYTOLOGICAL analyses of inter-sub-specific hybrids of *Oryza sativa* L. were undertaken by several workers,[3,4,6,8] all of whom emphasized the existence of chromosome structural hybridity. Oka[5] and his collaborators,[2] on the other hand, postulated that the sterility in these hybrids is due to the recombination between several pairs of duplicate genes. Since all the earlier investigators except one[8] confined their analysis to diakinesis and later stages of meiosis, the present study was undertaken to analyze these hybrids at diplotene and pachytene stages.

The most significant observation in the present study was of the occurrence of small translocations which were recorded as quadrivalents at diplotene (Fig. 1) in 1·5 to 10·3% of the cells. Their infrequent occurrence is probably due to the smallness of the interchanges and their sub-terminal location. Unlike in the inversion heterozygotes, where the occurrence of an anaphase bridge is a prerequisite for the reduction in fertility, the translocation heterozygotes might be of reduced fertility by the independent assortment of the chromosomes whether the quadrivalents are recorded or not. It is possible to reinterpret Oka's G. D. genes as small translocations where the homologous segments are located on non-homologous chromosomes. The reduction in fertility is expected to be 25% by either of the hypotheses. Similar view was expressed by Stebbins (cited