

**CONTROL OF 'CHENTHAL' (BACTERIAL BLIGHT) DISEASE OF CARDAMOM WITH PENICILLIN**

CHENTHAL disease of Cardamom caused by *Corynebacterium* sp. was the first bacterial disease reported by Mathew George *et al.*<sup>1</sup> on the host *Elettaria cardamomum* (L.) Maton. This is a destructive disease causing severe crop losses in the high ranges of Kerala. Six antibacterial compounds were screened in an attempt to control the disease. Penicillin was found most effective in experimental field trials.

30 days of treatment is attributed to the rainy weather which is congenial to the pathogen. Results of the second observations revealed the efficacy of penicillin as a proper control against the disease. Improvement of the treated plants was marked, while the untreated controls deteriorated.

Under field conditions 217 clumps in another plot of experimental plants were similarly sprayed with penicillin. The plants showed improvement after 60 days. The feasibility of using penicillin because it is rapidly translocated has been indicated elsewhere<sup>2</sup>.

TABLE I

	Average number of lesions per leaf					
	I leaf		II leaf		III leaf	
Pre-treatment observation	2.0		26		40.3	
	Treated			Control		
	I leaf	II leaf	III leaf	I leaf	II leaf	III leaf
I observation	11.3	57.5	45.3	25	78.1	51.4
II observation	1.11	14.3	37.4	44.4	93.3	90.2

For comparative evaluation, sensitivity discs (Bharath Laboratories, India) were placed in nutrient agar plates seeded with the pathogen. After 24 hr of growth the inhibition zone was measured. Penicillin was found most effective. Kanamycin, Sulphadiazine, Erythromycin and Tetracycline inhibited growth partially, while Streptomycin was ineffective. In bioassay, using tube dilution technique, penicillin at 1 mcg/ml concentration completely inhibited the growth of the pathogen.

Field trials were undertaken at Kalarikal Estate, Vadanmedu, Kerala. Twenty-five clumps from a diseased spot were selected, each having an average of 15 to 20 pseudostems. The plants were sprayed with 100 mcg/ml solution of penicillin for three consecutive days followed by a second round of spray after a lapse of 30 days. Out of the 25 clumps, 10 were selected at random and 3 pseudostems from each were taken for disease observations. Water-soaked lesions, the first visible symptoms (Mathew George *et al.*<sup>1</sup>) on the youngest three leaves were counted. Observations were recorded at 30 and 60 days after the initial spray. The average number of lesions in relation to number of leaves of comparable age has been consolidated and presented in Table I. The increase in the number of lesions recorded after

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**DISEASES OF FRUITS FROM HARYANA  
 A NEW LEAF SPOT DISEASE OF  
 ZIZYPHUS MAURITIANA LAMK.**

DURING October-November, 1975, a new leaf spot disease of Ber (*Zizyphus mauritiana* Lamk.) var. *Sandhura-Narnaul* and *Rashmi* was observed in the orchard of Haryana Agricultural University. The disease is characterised by foliar sooty tuft like circular to irregular black spot. When infection advances, it covers a large area on the lower

surface of the leaves and upper surface shows brownish discoloration (Fig. 1).

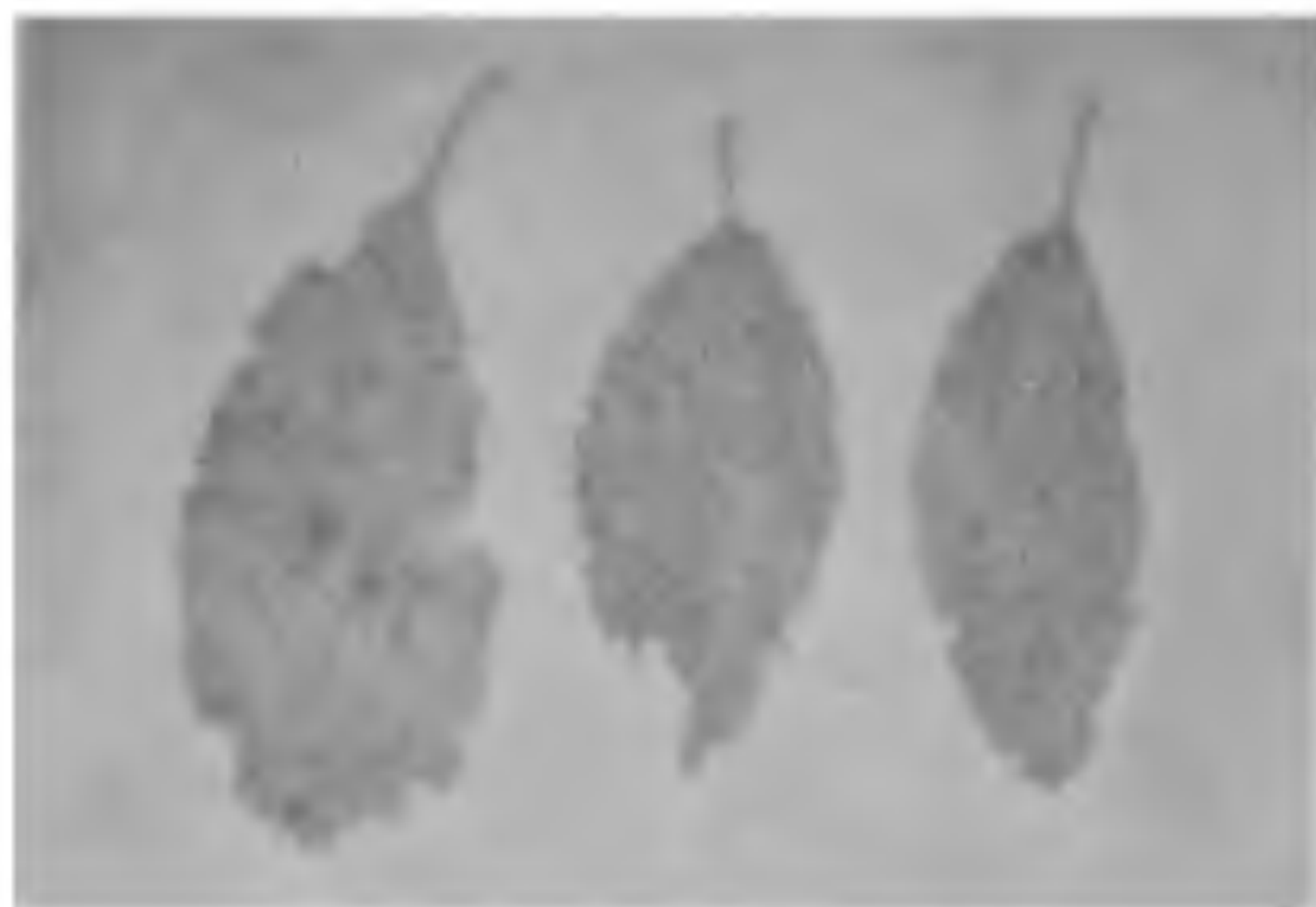


FIG. 1. The leaves of Ber showing typical symptoms caused by *Isariopsis indica* var. *zizyphi*.

The fungus was isolated on Czapek's agar medium and pathogenicity was proved on fresh and healthy leaves. Morphology of the fungus, resembles with *Isariopsis indica* with marked differences in size of conidia and synnemata<sup>1</sup> (Fig. 2). Therefore, a new variety, viz., *Isariopsis indica* var. *zizyphi* is proposed to accommodate it.

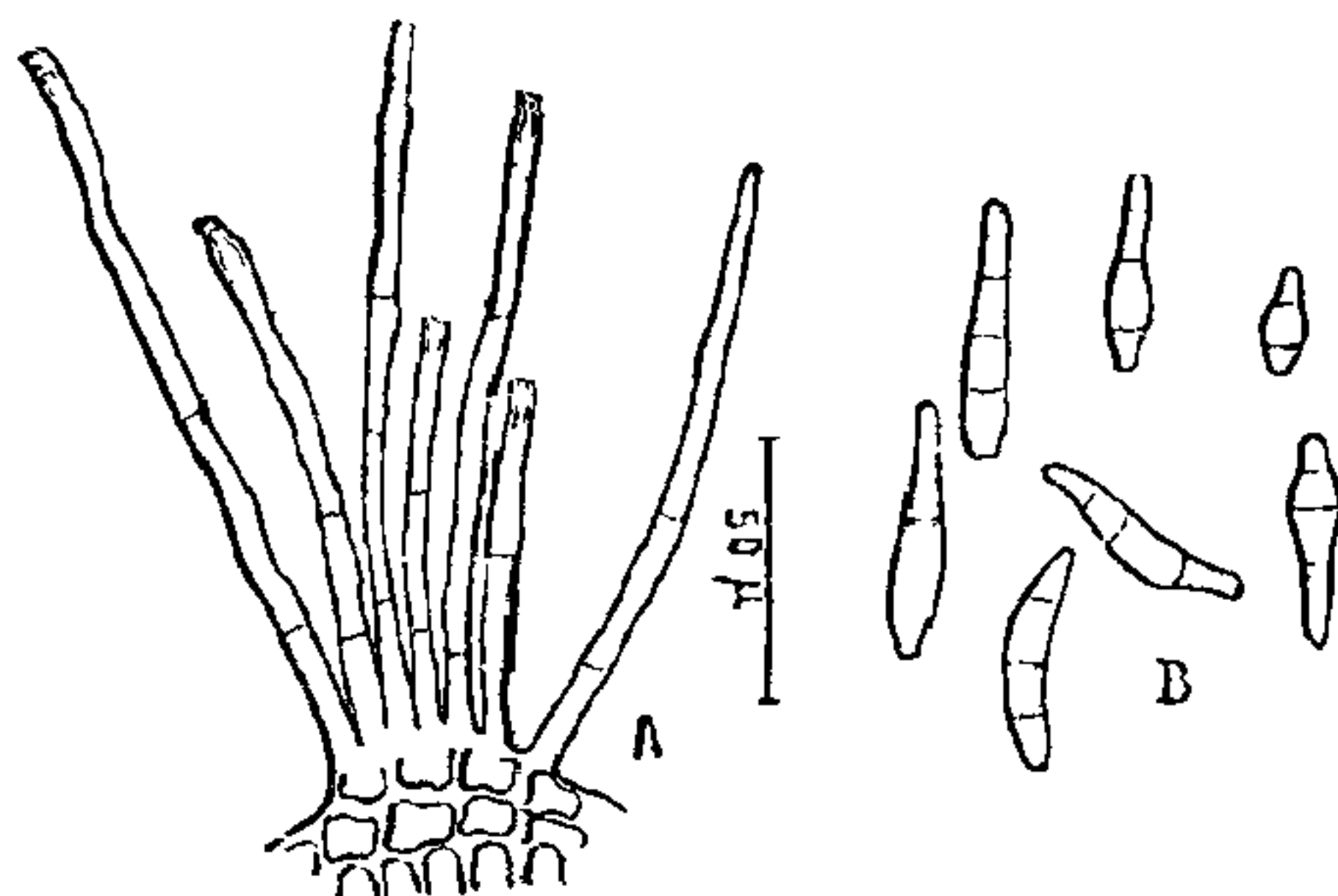


FIG. 2. A. Synnematum, B. Conidia (camera lucida).

*Isariopsis indica* var. *zizyphi* var. nov.

Infection on lower surface of the leaves in the form of black colour, circular to irregular spots measuring 0.5–5 mm. Synnemata dark olivaceous, divergent, measuring  $220 \times 102 \mu$  (average) composed of loose conidiophores. Conidiophores, erect, simple, olivaceous in colour, bears conidia terminally and laterally, measuring  $54.4\text{--}138.4 \times 6.8 \mu$ . Conidia olivaceous, 0–3 septate, cylindrical to obclavate, sometimes pyriforms measuring  $17.0\text{--}44.2 \times 8.5\text{--}10.2 \mu$ .

*Isariopsis indica* var. *zizyphi* var. nov.

Infections maculae foliicolae, hypogaeae, nigris, circulares vel irregulares, 0.5–5 mm diameter.

Synnemata fusce olivacea, divergentia,  $220 \times 102 \mu$ , mediet. Conidiophores recti, simplices, olivaceis, supportantes. Conidia singula terminaliter et lateraliter  $54.4\text{--}138.4 \times 6.8 \mu$ . Conidia divaceis 0–3 septata, cylindrica vel obclavatis, raro pyriformibus,  $17.0\text{--}44.2 \times 8.5\text{--}10.2 \mu$ .

The type specimen is deposited in Herb. Plant Pathology Laboratory, HAU, Hissar (PPHAU 70), and Herb. Crypt. Ind. Orient, IARI, New Delhi.

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### REPRODUCTIVE BIOLOGY OF *BIDENS* *PILOSA* L. (COMPOSITAE)

THE following is a preliminary report on seed germination, mitosis, meiosis, pollen fertility and germination of pollen grains, seed-setting and flavonoid chemistry of 15 populations of South Indian materials of this aggressive weed carried out at the Jodrell Laboratory, Kew, U.K.

(1) Fresh seeds gave 100% germination within 36 hours of sowing, with a peak of germination between  $27^{\circ}\text{C}$  and  $31^{\circ}\text{C}$ . (2) Root tips pretreated with alpha-bromonaphthalene for four hours at  $18^{\circ}\text{C}$  gave clear counts of  $2n = 72$ ; an occasional satellite was seen (Fig. 1). (3) Meiotic preparations (36 bivalents)



FIG. 1. *Bidens pilosa* L. Mitosis showing  $2n = 72$ ; one satellite visible.