perioxidase isoenzymes. Endogenous hormone levels affect enzyme activity and thereby, may regulate sex expression but such an effect at enzyme level with exogenous application has not been investigated. The effect of $AgNO_3$ or ethrel becomes manifested in plant parts other than 2-true leaves. Even at 5 days after spray, the patterns in 2-true leaves were nearly similar in both treatments. It has been shown that peroxidase with high electrophoretic mobility have higher IAA oxidase activity. Therefore, a decrease in peroxidase activity will result in a decrease in IAA oxidase activity which would result in higher auxin levels in ethrel-treated plants as compared to silver nitrate. Thus, hormone balance in these two treatments would be different, which may result in differential sex expression. The modification of sex, therefore, in cucumber plants occurs due to an interplay in *in vivo* auxin levels as also of differential gene expression for peroxidases and modulation of their activity.

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A SERIOUS ROOT DISEASE OF TOMATO CAUSED BY *PYTHIUM INFLATUM* MATTHEWS

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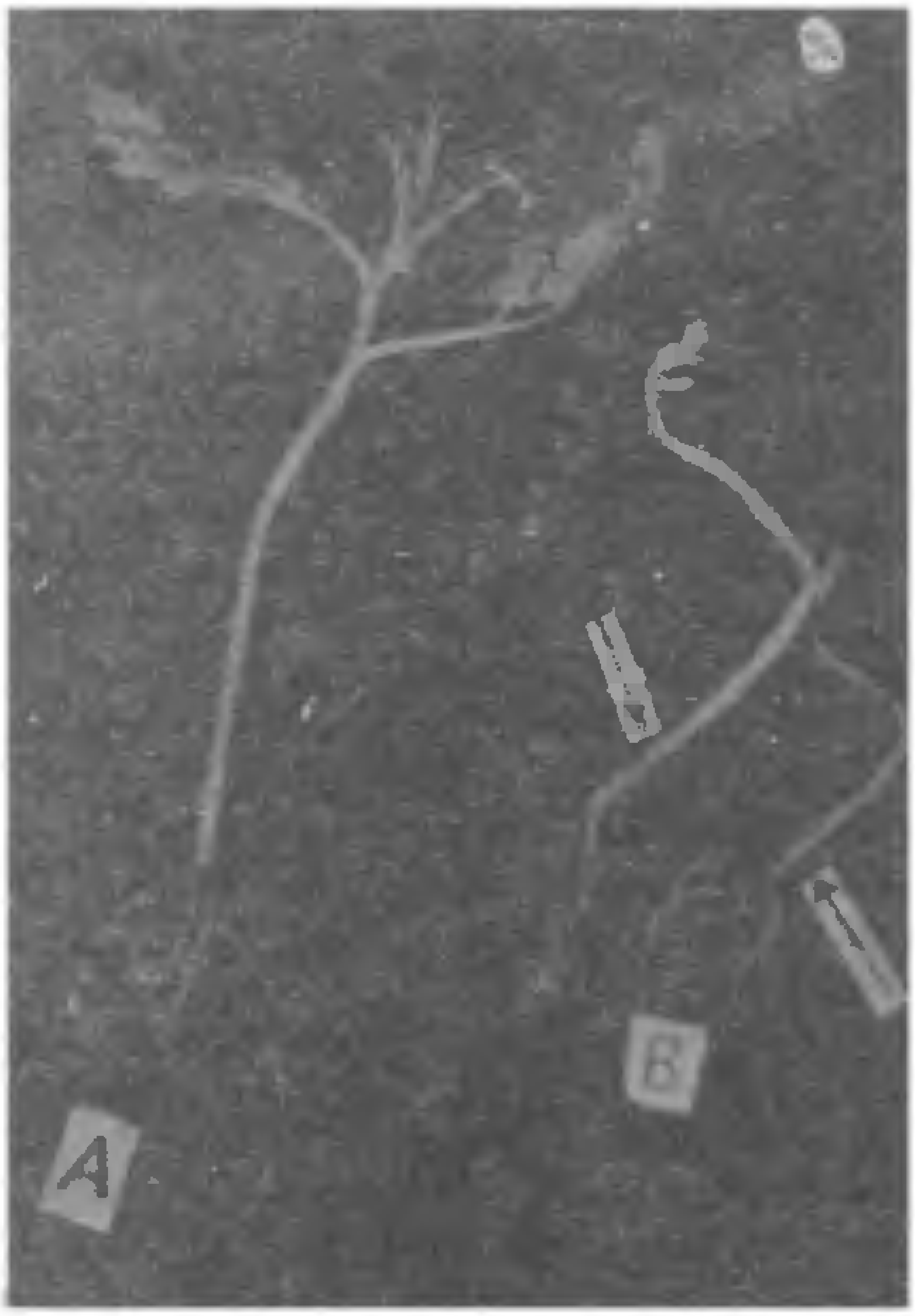
PYTHIUM species are common in cultivated soils and generally associated with seedling diseases of various crops[1]. During the course of a study on *Pythium* species in vegetable growing fields of Tarai region of Nainital, a serious root rot of tomato (*Lycopersicon esculentum* Mill.) incited by *Pythium inflatum* Matthews was observed in the fields[2].

Infected roots of tomato collected from fields were washed in vigorously running tapwater for 20 min treated for 30 sec in 0.5% NaOCL solution, rinsed with sterlized water, cut into small pieces and plated out on agar media[3]. After 5 days at room temperature, *Pythium* colonies were transferred to sterilized water and cultured on boiled hempseed halves, identified with the help of monographs by Middleton[4] and Robertson[5].

Pathogenicity tests were carried out on glass house bench in sterilized pot soil. Four-day-old culture of the isolate grown on CMA was used as inoculum. Eight agar discs of 8 mm diameter obtained with the aid of sterile metal cork borer were mixed in the pot soils prepared for the pathogenicity tests. Seeds of tomato were planted in the pot soil after infestation. Ten seeds were sown in each pot (12·5 cm diam.). Five replicates were used to test the isolate. The soil was moistened regularly throughout the test period[6]. In control pot, seeds were sown in the soil without inoculum.

Rotting of seedlings occurred most commonly in pot soil under glasshouse experiments. Pre-emergence rotting of seeds was less common. However, some seeds failed to germinate while some young seedlings were killed at the soil surface after 2 or 3



Figures 1 A and B. A. Controlled seedling with well developed roots; **B.** Infected seedlings show poor development of roots; arrows indicate the water soaking lesions developed in the collar region of the seedlings after infection.

days of their emergence. If seedlings produced primary leaves before infection, they were usually stunted and abnormal. Water soaking lesions were developed in the collar region of the seedlings near the soil surface and plants were frequently toppled over. Roots of these seedlings rotted and decayed with dark brown lesions on their surface (figure 1 B). Infection proceeded from root tips and checked the further growth. In control pots, all the seedling were healthy with well developed roots (figure 1 A). In inoculation experiments, pathogen caused infection on 59·5% seeds and seedlings of tomato.

This species of *Pythium* has not hitherto been reported to incite root rot of tomato in India or perhaps from any other Asiatic country. However, Robertson[7] artificially inoculated this species in tomato seedling roots and reported that *P. inflatum*, although, non-pathogenic to tomato seedlings in soil conditions, caused moderate infection of tomato roots in the laboratory assay. During the present study, *P. inflatum* was isolated from the Tarai fields both as pre- and post-emergence damping-off pathogen and showed its destructive effect to the growing crop.

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CERTAIN NEW TAXA OF *COSMARIUM* CORDA (DESMIDIACEAE) FROM KARNATAKA STATE (INDIA)

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ALGAL samples growing in a paddy field (with 40-day-old paddy crop and 6.5 pH of field water) at Belgaum were collected during August 1985 and preserved in 4% formaldehyde for further study. The collections are deposited at the British Museum (Natural History), London under accession number B.M. No. L993.

Cosmarium punctulatum Bréb. var. *minor* Oye et Cornill f. (figure 1) : 15.5–16.0 μm long, 14 μm wide, isthums 3·5 μm.

Differs from the type[1] in shape, the broadest area being at the base of semicells. Prof. G. W. Prescott also recorded a form similar to the present alga from Iowa (personal communication). The alga may also be compared with *C. reniforme* (Ralfs.) Archer[2] in the shape of outer margin, but greatly differs in that semicells are not reniform and hence is included in *C. punctulatum* Bréb. series.

Cosmarium regnelli Wille var. *pseudoregnellii* (Messik.) *Krieger* et *Gerloff* f. *angustum* Bongale f. nov. (figure 2):

Forma cellulorum velut in typo; sinus clausus, margines inferiores lateralesque verticales, et marginem parvum angularemque basalemque versus sinum formantes; margo superior lateralisque per angulum 45° deflexus, angula acuta formans; 15–16 μm longae, 12.0–12.5 μm latae; isthmus 3.5 μm.

Iconotypus: Figure 2.

Shape of the cells same as in type, sinus closed; lower lateral margins vertical and forming a small angular basal margin towards the sinus; upper lateral margin bent at nearly 45° forming acute angles; 15–16 μm long, 12.0–12.5 μm wide, isthmus 3.5 μm.

Iconotype: Figure 2.

Differs from the type[3] in having narrower apical margin and in the margin being not undulated.