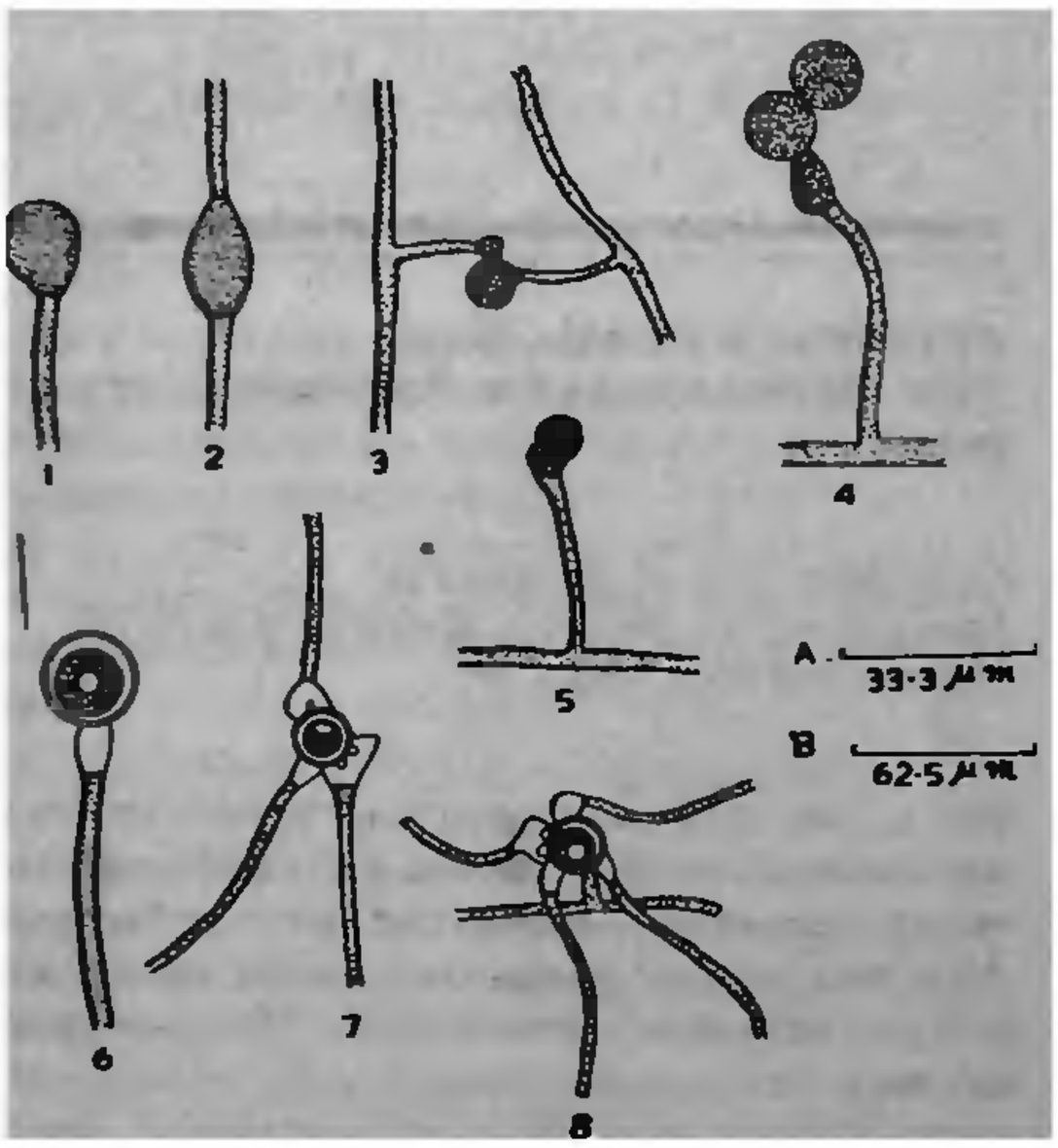
rumque hypogynae raro androgynae vel diclinae; oosporae singlae tunica levelibus, globosis, eccentrica, plerumque aplerotica raro plerotica, 9.9-16 μm diametro, plerumque 10.7 μm.

Pythium vexans var. *minuta* var. nov.

Hyphae slender, branched, 2-9 μm in diameter; zoosporangia formed abundantly, terminal or intercalary, spherical, sub-spherical or pyriform, 12.5-25 μm in diameter, predominantly 16-18 μm, germinating by 1-2 germ tubes; chlamydospores few, spherical, sub-spherical or pyriform, 14-28.5 μm in diameter, germinating by germ tubes; oogonia abundant, terminal on short lateral branches, occasionally intercalary, spherical, smooth walled, 13.2-31 μm in diameter, predominantly 15-18 μm; antheridia mostly hypogynous but androgynous and diclinous antheridial branches are not uncommon, bell-shaped; oospore single, smooth-walled, spherical, eccentric, mostly aplerotic, rarely plerotic, 9.9-16 μm in diameter, mostly 10.7 μm.

Etymology: The variety is named *minuta* on the basis of its smaller oospores.



Figures 1-8. 1. Terminal zoosporangium; 2. Intercalary zoosporangium; 3. Young oogonium with diclinous antheridium; 4. Young oogonia in chain; 5. Young oogonium with androgynous antheridium; 6. Mature oogonium with aplerotic, eccentric oospore and hypogynous antheridium; 7. Mature oogonium with hypogynous and diclinous antheridia; 8. Mature oogonium with diclinous antheridia. (1,2,4, & 6, scale A and 3,5,7,8 scale B.)

Habitat: Soil, Ram Tal (one of the Sat Tal lakes) and Naina peak, March 5, 1979, G. S. Mer and R. D. Khulbe. The type culture has been deposited in the herbarium, CMI (IMI-255017), Kew, England.

The present isolate differs significantly from the one described by other workers[1,2] in the germination of zoosporangia by germ tubes, smaller oospores and preponderance of hypogynous antheridia. This isolate also differs from the isolate described by Middleton[3] in having smaller oospores and hypogynous antheridia. It is identified as *P. vexans* on the basis of the presence of bell shaped antheridia which is a characteristic feature of this species.

Keeping in view the above characters, the isolate is described as a new variety of *P. vexans viz P. vexans* var. *minuta*.

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ROOT ROT OF GROUNDNUT INCITED BY *FUSARIUM NIVALE*

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DURING the kharif season of 1980 and 1981, root-rot was observed in T28 variety of groundnut grown in the Dayalbagh region of Agra district. The disease was observed in July, 15 days after sowing. The infected root portion was isolated and the fungus was identified as *Fusarium nivale* (Fr). Ces.

The root portion near the hypocotyl region turned brown followed by rotting. Simultaneously the leaves showed yellowing, drying and curling at the margins proceeding inward and downward. The infected plants drooped and later died. The infected plants on pulling, in some cases, left behind the root system in the soil. The disease caused 8-10% plant mortality.

The field incidence was determined in 4 fields, out of 200 plants in each field distributed on 4 sides and in the centre.

The pathogenecity of the fungus was confirmed by growing seeds of var. T28 in artificially-infested soil. The seedlings raised in pots died after 15–20 days due to the attack of the fungus. The affected plants on reisolation yielded *F. nivale*.

Fungi like *Sclerotium rolfsii, Macrophomina phaseolina* and *Rhizoctonia solani* have been reported to cause stem and root rot of groundnut in India[1]. *Fusarium nivale* is so far unrecorded in literature and is the first record causing root rot of goundnut in India.

Grateful thanks are due to Dr K. G. Mukerji, Botany Deptt., Delhi University for identifying pathogen. One of us (RK) is thankful to CSIR for a Fellowship.

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EFFECT OF PHOSPHAMIDON ON α-AMYLASE ACTIVITY OF *PHERETIMA POSTHUMA* (ANNELIDA:OLIGOCHAETA)

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IT is well known that earthworms are omnivorous[1]. They digest not only the dead organic matter of the soil but also decomposed animals, living protozoa, rotifers and others minute organisms[2]. The digestive enzymes of only a few oligochaets have been studied[3,4]. The presence of amylase in the intestinal caecae of the segments 22-26 of *Pheretima* was detected[3] The amylase activity in every part of the gut was detected in *Lumbricus terrestris* and *Eisenia foetida*[4].

It has been known that soil fertility is closely linked with the population of earthworms in the soil besides other factors. The population of earthworms is directly related to the microclimatic conditions of the soil. Almost all agrochemicals used to combat the menace of insect pests, weeds and fungi ultimately find their way to soil and disturb the population of earthworms and other beneficial organisms[5,6]. We have attempted here to determine the effect of phosphamidon technical (dimethyl phosphate ester with 2-chloro N-N-diethly-3-hydroxycrotonamide, Dimecron) on α-amylase (1,4-α-D-Glucan glucanohydrolase, E.C. 3.2.1.1.) activity of *Pheretima posthuma*.

The soil was treated with 10.25 and 50 ppm of phosphamidon tech and the worms were released in the soil. The worms were sampled at different intervals, washed first with tap water and finally with distilled water. Each worm was incisioned and the intestine was taken out. A 10% homogenate of the whole intestine was prepared in chilled double distilled water for enzyme assay and it was centrifuged at 12,000 g for 20 min at −4°C. Amylase activity was determined by the method of Ishaaya *et al*[7]. The reaction mixture contained 1 ml substrate solution (1% soluble starch, BDH, in 0.05 M phosphate buffer) and 1 ml of enzyme extract. The reaction mixture was incubated at 25°C for 1 hr. The reaction was stopped by adding 2 ml of 3.5 dinitrosalicylic acid reagent and the optical density was measured at 540 nm (Spectronic 20 spectrophotometer).

The changes in α-amylase activity of the intestine of *P. posthuma* exposed to different concentrations of phosphamidon are shown in table 1. Worms exposed to high concentrations of phosphamidon (25 and 50) wriggled out of the soil after 3 hr. All the three concentrations caused immobility, rigidity and swelling of some segments beyond clitellum.

The activity of α-amylase in all the three concentrations of phosphamidon decreased significantly except in 10 ppm where after 30 min exposure three was a little decrease. The inhibition of activity was done and exposure time-dependent. Very significant inhibition was observed in 50 ppm right from 30 min exposure.

Amylase is secreted in the pharynx by the pharyngeal gland it self and pharyngeal nephridia[8]. Thus there is high concentration of amylase in the pharynx and the digestion of starch begins in this organ. It is also secreted in the intestine and therefore the quantity of starch which passes undigested from the pharynx is digested in the intestine. Thus the starch appears to be the most important carbohydrate for the worm. Present investigations revealed that due to phosphamidon the activity of amalase decreased to an appreciable extent. Thus it is clear that the worm cannot utilize this most important carbohydrate in phosphamidon contaminated soil.

The implication of abuse of several potentially toxic pesticides at much larger quantities and contamination of our soil and water and the consequences on organisms like earthworms, which are beneficial to soil fertility deserves extensive investigations. More work in this direction is in progress.