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.

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1. Chohan, J. S. *Indian Phytopathol*, 1978, **31**, 1.

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.

TABLE 1

Activity of α-amylase in the intestine of Peretima posthuma

Normal	Treatment phosphamidon tech. (ppm)	Exposure time			
		30 min	1 hr	2 hr	4 hr
0.24 ± 0.007	10	0.229 ± 0.011 N.S.	0.220 ± 0.001 < 0.02	0.14 ± 0.003 < 0.001	0.115 ± 0.003 < 0.001
0.258 ± 0.033	25	0.175 ± 0.028 < 0.05	0.125 ± 0.004 < 0.01	0.075 ± 0.001 < 0.001	0.030 ± 0.001 < 0.001
0.242 ± 0.008	50	0.162 ± 0.008 < 0.001	0.091 ± 0.001 < 0.001	0.044 ± 0.002 < 0.001	0.0144 ± 0.001 < 0.001

N.S. = Not significant

Mean value calculated from 4 determinations ± S.E. Probability evaluated by student 't' test.
Unit of enzyme – μmol of maltose liberated/min/g fresh tissue equivalent.

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1. Li, T. and Shetlar, M. R., *Comp. Biochem. Physiol.*, 1965, **14**, 275.
2. Stockli, A., *Jabrb. Schweiz.*, 1958, **7**, 699.
3. Bahl, K. N. and Lal, M. B., *Q. Hour. Micr. Sci.*, 1933, **76**, 107.
4. Heran, H., Z. *Vergl. Physiol.*, 1956, **39**, 44.
5. Stringer, A. and Lyons, C. H., *Pesticide Science*, 1975, **5**, 189.
6. Martin, N. A., *Newzeland J. Agri. Research.*, 1976, **19**, 111.
7. Ishaaya, I, Moore, I, Hoseph, De. H. *Insect Physiol.*, 1971, **17**, 945.
8. Gupta, S. K., *Curr. Sci.*, 1976, **45**, 198.

HEPATIC HYPERPLASIA IN A CATFISH, *MYSTUS GULIO* (HAM), COLLECTED FROM VISAKHAPATNAM HARBOUR

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AN unusually large specimen of *Mystus gulio* (total length 26 cm) was collected in a castnet along with 12 other specimens of the species (less than 19 cm) on 20 January 1983, from the Visakhapatnam harbour waters. The large-sized specimen was different from the others in having a bloated abdomen and emaciated tail. *M. gulio* lives up to a maximum of 6 years when it reaches a total length of 19 cm only[1]. The specimen under study obviously lived upto a ripe old age, attaining perhaps the maximum size possible for the species. The cumulative effect of prolonged exposure to the toxic elements in the highly polluted harbour waters[2], seems to have manifested in the abnormal appearance of the fish. A case of epidermal tumour on *Johnius aneus* caught from the nearshore waters off Visakhapatnam was attributed to the influence of harbour waters[3]. A total of 153 specimens of *M. gulio* have been observed so far during the routine collections for histological studies from the same area. All the other specimens were smaller than 22 cm. None of them manifested any kind of abnormality.

Immediate autopsy of the specimen revealed that among the internal organs in the viscera, the liver was egg shaped (figure 1) and very large in size (4.3 × 3 cm), unlike the flat triangular (apex towards head) lobed organ (figure 2) measuring 0.9 × 0.7 cm in a fish of 11.5 cm length. (Normally, the length of the liver is 2/3 of the length from the beginning of oesophagus to the tip of cardiac stomach and the width slightly exceeds the combined width of cardiac and pyloric stomachs). The length of the liver was about twice the combined length of oesophagus and cardiac stomach and the width was about four times the width of the entire stomach. The thickness of the liver slightly exceeded the width. The thickness was much too disproportionately high compared to any normal specimen.

In a normal fish the liver is flat, soft and brownish with distinct lobes. It is somewhat asymmetrical and situated ventrally extending from the middle of the oesophagus to the pyloric bend of the stomach. The