Sixteen tubers showed populations from 100 to 900. Very low populations of 15 were seen on two accessions.

D. rotundata harboured large numbers of *S. bradys* comprising eggs and larvae along with adults in the tuber tissue. The nematodes were found associated with yellow lesions or dark brown necrotic areas in the tubers. The *S. bradys* infection and the dry rot symptoms were mainly confined to the sub-epidermal, peridermal and the underlying parenchymatous ground tissue layers penetrating 1-2cms into the tubers as reported by Bridge (1972). It was noticed that nematodes above thousand caused extensive browning of the tissues and other symptoms of heavy damage. Malformation of the tubers and flaking off of parts of the epidermal layers were the clear symptoms of these tubers. Low populations produced yellow lesions under the epidermis but discrete brown areas of necrotic tissue were observed in other cases. Damage to the tubers was related to populations of *S. bradys* present in the tissues (Bridge, 1973). The high percentage of tubers infected with *S. bradys* and the serious damage caused by them clearly indicates their economic importance.

REFERENCES

Bridge, J. (1972). PANS. **1** : 89-91.

Bridge, J. (1973). *Mededelingen Fakulteit Landbouuwwetenschappen Gent*, **38** : 841-852.

Mohandas, C., Palaniswamy, M.S. & Potti, V.P. (1990). CTCRI Annual Report 1989-90. 72-73pp.

Production of Nematode Egg Parasitic Fungus, *Paecilomyces lilacinus*, on Banana Wastes and Certain Plant Leaves

P. SUNDARARAJU and I. CANNAYANE

Crop Protection Laboratory, National Research Centre for Banana (ICAR), Vayalur Road, Tiruchirapalli- 620 017, Tamil Nadu, India.

Plant parasitic nematodes constitute one of the major limiting factors to banana production. Use of chemicals for management of plant parasitic nematodes is environmentally unsafe and therefore, biological control is a promising option. In this respect *Paecilomyces lilacinus*, a facultative fungal parasite on eggs and females of root-knot nematodes, is a promising tool. The fungus proliferates in the rhizosplane without causing any adverse effect on the plant. Though a commercial formulation of *P. lilacinus*, named BIOACT, is available in Philippines, no such formulation is available in India. Carrier used in the mass production system and application technology determines the successful use of bioagents against nematodes. The substrate used in the mass production technology should not only be economical but also facilitate easy availability in abundant quantity. Jatala (1981) suggested that the fungus can be effectively cultured on cereal grains like wheat, rice, *bajra* and rye. Hence, an attempt has been made to mass produce *P. lilacinus* with relatively cheaper materials (banana wastes and plant leaves) which are abundantly available in banana plantations.

The waste materials from banana like unused leaves, petiole, pseudostem and plant leaves of castor and pungam were collected and cleaned in tap water to remove adhering soil particles and dust. These were then cut into small pieces ranging from 1-1.5 cm and approximately 50 g each of plant material was filled in 150 ml conical flask and autoclaved at 15 lbs for 30 min. Combination of banana waste and plant leaves was also made in the

ratio of 1:1. *P. lilacinus* culture was obtained from Department of Nematology, Tamil Nadu Agricultural University (TNAU), Coimbatore and was subcultured on Potato Dextrose Agar (PDA) medium for 12 days. One cm plug was cut from the actively growing point of the fungus and inoculated into the autoclaved plant materials under aseptic condition. The flasks were then kept in a BOD incubator at 26±1°C for 25 days. A standard check with autoclaved pre-soaked sorghum grain alone served as control. The spore load per g of substrate was estimated using haemocytometer. The experiment was repeated after one month for confirmation.

Banana petiole alone gave higher spore load of 2.8×10^6 spores per g of substrate when compared to the rest of the banana waste. Among plant leaves, castor recorded a maximum of 3.01×10^6 spores than pungam leaves (1.6×10^6) per g of substrate. Pseudostem and pungam leaves were comparable. A combination of banana petiole + castor leaves gave higher spore load of 8.01×10^6/g of substrate followed by banana leaf + castor leaves (7.15×10^6) and pseudostem + castor leaves (6.22×10^6). However, presoaked sorghum grains recorded the maximum of 12.37×10^6 spores/g of substrate (Fig. 1). The same trend was observed in the confirmation test also. The present investigation is in agreement with Siddiqui & Mahmood (1994) who reported that maximum spore load/g of substrate was recorded from leaf extracts and leaf residues of *Peristrophe bicalyculata* and *Dalbergia sissoo*. Davide & Zorrilla (1995) also observed the profuse

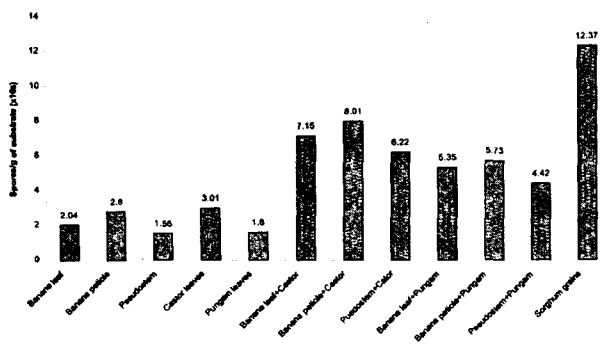

Fig. 1. Mass production of *Paecilomyces lilacinus* on banana wastes and certain plant leaves.

growth of *P. lilacinus* on dried water lilies and suggested its use for mass multiplication.

From the present investigation it may be concluded that banana wastes (leaf, petiole and pseudostem) which are readily available in the banana field can be effectively utilized for mass multiplication of *P. lilacinus*.

REFERENCES

Davide, R.G. & Zorrilla, R.A. (1995). *Biocontrol.* **1** : 63-75.

Jatala, P. (1981). Biological control of *Meloidogyne* species: Methodology for preparation and establishment of *Paecilomyces lilacinus* for field inoculation. International *Meloidogyne* project. Proceedings of the 3rd Research planning conference on root-knot nematodes, *Meloidogyne* spp, Jakarta region VI. pp. 228-231.

Siddiqui, Z.A. & Mahmood, I. (1994). *Bioresource Tech.* **49**: 187-189.