

EFFECT OF ORGANIC AMENDMENTS ON RHIZOME ROT OF GINGER

A. K. SADANANDAN AND ROHINI IYER

Central Plantation Crops Research Institute, Regional Station, Calicut.

Ginger is grown in 46,000 ha with a production of 1,03,000 tonnes. Kerala accounts for 28% of the area and 32% of the production. By the export of 5000 tonnes of dry ginger, India is earning a foreign exchange of Rs. 12 crores which is 10% of the total export earnings from spices (1983-84). The rhizome rot of ginger (caused by *Pythium* sp) is causing anxiety to the farmers. The disease manifests first as yellowing of leaves at the apex, which gradually spreads downwards. The collar region becomes water soaked and rots. All the soft tissues are rotted away leaving only the fibers intact, leading to the toppling of the affected tiller. Below ground, as the name implies, rotting of the rhizomes is the important symptom. Due to this, every year there is heavy or sometimes even total loss to the produce.

This is a soil and seed borne disease and it is very difficult to eradicate the pathogen from the soil. Recurrence, development and spread of the disease depend a great deal on soil and weather factors. While the seed borne inoculum can be kept under check to a great extent by fungicidal treatments, the soil borne

inoculum and its build-up can be checked or reduced only by combining many manipulative techniques. One such very important technique is to alter the soil micro-flora. This can be achieved by supplementing the soil with various kinds of organic matter. In the CPCRI Regional Station farm at Peruvannamuzhi two such organic amendments viz., Neemcake and Pongamea cake were compared with farm yard manure for testing their efficacy in disease suppression.

This experiment was conducted for two consecutive years (1980-82). In a statistically designed experiment, plots received Farm Yard Manure (FYM) @ 10 tonnes per hectare or Pongamea cake @ 1830 kg per hectare or Neem-cake @ 2000 kg per hectare. These quantities were used so as to provide the same amount of nitrogen from any of the sources. The levels of nutrients in all plots were made uniform by adding inorganic fertilizers. The crop was mulched using green leaves @ 30 tonnes per hectare. Results are presented in Fig. 1 & 2.

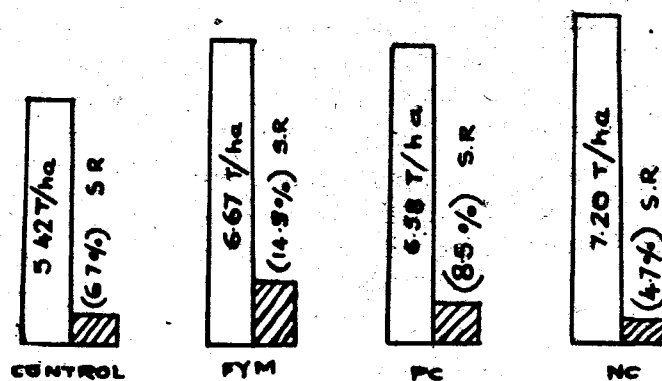


Fig. 1. EFFECT OF AMENDMENTS ON YIELD AND INCIDENCE OF SOFT ROT OF GINGER (1980-82)

□ YIELD ▨ DISEASE INCIDENCE

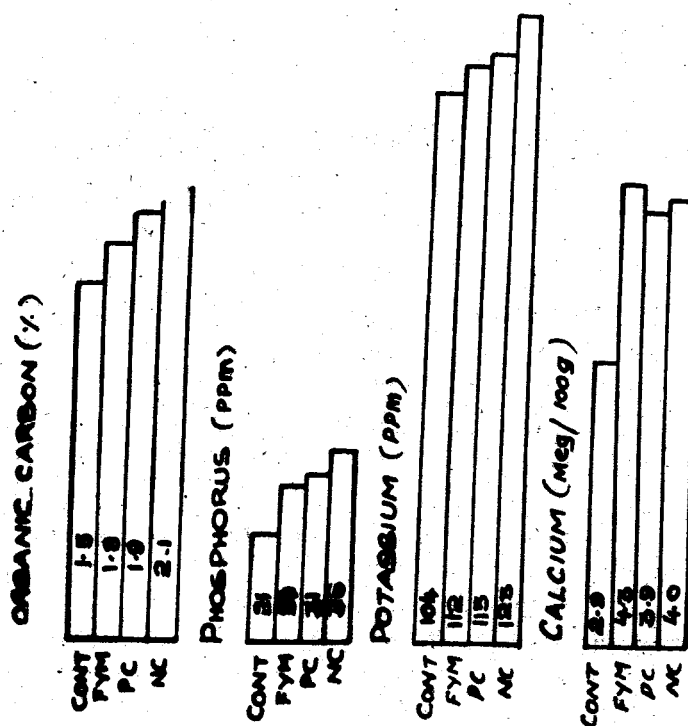


Fig. 2 EFFECT OF ORGANIC AMENDMENTS ON NUTRIENT AVAILABILITY IN SOIL

It is evident from Fig. 1 that organic amendments have significantly increased ginger yield over the control. Among the organic amendments Neemcake @ 2 t/ha. gave 7.2 tonnes of ginger per ha. which is 32.8% over the control, leading to a net increase return of Rs. 4,300 per hectare. Fig. 1 also shows that Neemcake and Pongamea cake gave significantly lower disease incidence compared to other treatments. Due to the application of Neemcake @ 2 tonnes/ha. disease incidence was 4.7% while Pongamea cake plots had 8.5 and FYM treated plot 14.5%. In the control plot though the disease incidence was less the yield was the lowest and hence cannot be considered as desirable or economical.

From Fig. 2, it becomes clear that application of organic amendments have significantly increased the organic carbon status of the soil. Among the organic

amendments Neem cake was superior to other amendments. Further it was also found that Neem cake was significantly superior in increasing organic carbon and potash availability in soil. However, in the case of exchangeable Calcium, FYM applied plot registered the maximum availability in the soil. This was followed by Neem cake. The increased availability of nutrients, particularly the organic carbon and K and better physical condition imparted to the soil due to the application of Neem cake has contributed to the increased yield and has reduced disease incidence.

ACKNOWLEDGEMENT

The author's record thanks to Dr. K.V. Ahamed Bavappa, Director, CPCRI, Kasaragod for his keen interest in the study, and to Dr. M.K. Nair, Joint Director, CPCRI Regional Station, Calicut for all the encouragements.