ABSTRACT

Jute is one of the important cash crops of North East India which suffers severe losses due to infestation of *Meloidogyne incognita* and *Ralstonia solanacearum*. The present investigation was formulated to know the relationship of these two pathogens on development of disease on jute, to estimate the losses in yield caused by them individually and together and to find out a suitable management practice as well as a crop rotation schedule to minimise the losses in yield of jute.

The results revealed that presence of these two pathogens at pathogenic and above pathogenic levels induced higher wilt incidence in jute. Males constituted higher proportion in the root-knot nematode population in presence of the bacteria. In respect of different inoculation schedules, it was observed that inoculation of nematode 2-3 weeks before the bacteria enhance the incidence and severity of wilt in the host. The histopathological study did not reveal much differences between wilted and unwilted plants except the giant cells which were found either with more granulated cytoplasm or without cytoplasm and the nuclei were also missing in some giant cells found in roots from wilted plants.

*M. incognita* alone, *R. solanacearum* alone and both pathogens together caused 18.32%, 26.11% and 35.6% losses in fibre yield of jute respectively at a pre-plant population densities of 328 J/250 cc soil for the nematode and 7.2 × 10^6 cfu/g soil for the bacteria. Similarly, at pre-plant population densities of 264 J/250 cc soil and 7.6 × 10^6 cfu/g soil the losses were estimated to be 16.49%, 25.27% and 31.25% due to nematode, bacteria and for the both pathogens respectively.

In respect of management of the disease complex, treatments with neem cake, mustard oil cake, carbofuran in combinations with bleaching powder, streptocycline and dhaincha were more effective compared to individual treatments of these compounds. The best result was obtained with neem cake @ 2000 kg/ha in combination with bleaching powder @ 12 kg/ha. Nematode population in soil was found to reduce by the application of bleaching powder whereas application of streptocycline caused no effect on nematode population. Mustard oil cake, neem cake, dhaincha and bleaching powder reduced the hatching, penetration of nematode into roots and increased the mortality of nematode as well as inhibit the growth of the bacteria, thereby managed the disease complex to various degrees.

Crop rotation schedules of jute-fallow-mustard-jute and jute-fallow-wheat-jute were found equally effective in reducing the root-knot and wilt disease complex and increasing the fibre yield of jute.