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Integrated Pest Management with Reference to INM

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Abstract

Modern agriculture is highly input intensive and greatly dependent on chemical pesticides for the control of insect pests, diseases and nematodes. Indiscriminate and excessive use of pesticides in agriculture has played havoc with agro-ecosystem by polluting water and food chains and causing emergence of pesticide resistance both in target and non-target pests. INM techniques recognize the importance of biological control used against noxious

of ecosystem and sustainable agriculture. In the context of changing cropping pattern and the environmental degradation, strategies are needed to minimize present use of organic inputs hence, INM assumed is a part of

crop protection.

Integrated nematode management; Pests; Diseases; Nematode

Among various pest control methods, Integrated Pest Management (IPM) has gained importance as it is eco-friendly and helps in sustainable production. IPM is de ned as the selection, integration and implementation of available pest control methods. e common and major components of IPM are cultural, physical, chemical and biological control. IPM packages have to be developed based on the crop, the environment and it should be region speci c. Information technology helps in IPM programs [1]. Success of IPM depends on sharing and transferring the technology to the farmers. IPM deals with economic pro tability, human health and environmental risk [2]. olo

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for low and medium value crops in the tropical and subtropical region, which would be applicable to root-knot and cyst nematodes as well as to many other concomitant nematodes [22] is suggested here:

Two or three deep summer ploughing with a soil turning harrow at fortnightly intervals, preferably with a light irrigation between two ploughing, soil solarization of nursery-beds or pit soil using clear thin polyethylene mulch for 3 -6 weeks before sowing; application of granular systemic nematicides to nursery-beds; growing of non-host or antagonistic commercial crop, and ploughing back non-commercial crop residues before monsoon.

Green manuring with non-host or trap crop or application of organic soil amendments/manure.

Growing non-host and commercial crops; nematicidal treatment of nursery-beds and seed, spot application of systemic nematicides in high value crops; uprooting and burning of roots of host crops and weeds a er harvest.

Delaying sowing/planting to mid-November (when soil temperature falls to 15-18°C) restricting growing of susceptible or tolerant crops to Rabi season with a suitable period of rotation; removal and burning or roots ploughing back non-commercial but disease-free crop residues.

e options given above have to be location speci c and additional to the normal sanitation [27] and good crop husbandry practices of tillage, manuring, irrigation, weed control, etc.

Heterodera avenae,

H. lipjevi Summer ploughing twice at 2 week interval, Crop rotation with mustard, chickpea, lentil, pea, carrots, fenugreek for two years or application of carbofuran @ 1 kg a.i./ha at the time of sowing wheat and barley or grow barley var. Rajkiran.

Meloidogyne incognita

M. javanica

Summer ploughing of main eld twice at 2 week interval, Soil solarization of area for nursery-beds, Application of carbofuran or phorate @ 0.1 g a.i. per m^2 or application of neem-cake 1 kg/m^2, if available, Organic amendment with FYM @ 10 tonnes per ha, Crop rotation with mustard, African marigold, sesamum, onion, garlic, wheat, rice, maize, ragi, etc. for one year or grow resistant variety.

Summer ploughing of main eld twice at 2 week interval, Crop rotation with mustard, African marigold, onion, garlic, sesamum, wheat, rice, maize, Ragi etc. for one year, Seed dressing with carbosulfan @ 3% w/w or, neem seed kernel powder @ 5-10% w/w or some other neem based product at recommended dose or application of neem cake @ 1 kg/m^2, if available, Organic amendment with FYM @ 10 tonnes per ha

( ) Summer ploughing of main eld twice at 2 week interval, Crop rotation with mustard, African marigold, onion, garlic, sesamum, wheat, rice, maize, ragi, etc. for one year, if feasible, Seed dressing with carbosulfan @ 3% w/w or, neem seed kernel powder @ 5-10% w/w or some other neem based

A eld trial was undertaken during 2005 crop season in plots of 4 m^2, replicated thrice with following treatments: T1=Multineem (0.03% Aza) @ 2 l/ha, T2=*T. ha, ian, m*, T3=Phorate @ 1 kg a.i/ha, T4=T1=T2, T5=T1+T3, T6=T2+T3, T7=T1+T2+T3 and T8=Control. All the treatments were applied in rows before sowing mung crop cv. *P. a, a na*. Soil samples before the treatment at harvest were recorded for *R. , enifo, mi* population (Table 3). Yield was also taken at the end of the experiment. All the treatments either alone or combination were e ective in reducing *R. , enifo, mi* population under eld condition. However, maximum reduction was recorded in treatment where all three components of INM was used. is in turn enhanced the yield of mung bean crop. Maximum yield was recorded in T7 (Multineem+*T. ha, ian, m*+Phorate) treatment as compared to control [29].

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