

Eco-friendly management of pest and diseases with neem kernels and leaves

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ABSTRACT

A powder of dry immature neem kernels and leaves was integrated with plant nutrients and used at planting of the crops which has given very fruitful results under National Agricultural Research Project at Mainpur. Use of dry powder of immature neem kernels and leaves @ 50 kg/ha in the integration of plant nutrients gave significantly higher economic yield of wheat by 47.80 q/ha and checked the incidence of soil insects including termite. Similarly, the integrated use of dry powder of immature neem kernels and leaves @ 100 kg/ha with other plant nutrients in groundnut, checked the incidence of pod borer, termite, white grub and BND disease. The use of powder gave healthy groundnut pods with good kernels. The residue of 100 kg powder of immature neem kernels and leaves which was applied to previous crop of groundnut gave higher grain yield of wheat by 46.25 q/ha and checked the incidence of termite and other soil insects. Mustard crop escaped from the incidence of saw fly with the use of dry powder of immature neem kernels and leaves @ 75 kg/ha and gave seed yield by a margin of 17.00 q/ha without any harm to quality of mustard oil. The incidence of pod borer in field pea was checked with the use of immature neem kernels and leaves dry powder @ 75 kg/ha. The field pea gave 22.00 q/ha seed yield.

Key words : Eco-friendly management, Pest and diseases, Neem powder

INTRODUCTION

The eco-friendly management of pest and diseases in different crop is essential for creating excellent environment to the farm families. Nitrates from pesticides have defected in ground water in many agricultural regions. High concentration of nitrates in drinking water affects human health, particularly infants and may prove fatal in some cases. Under such situation, eco-friendly farming has emerged as the answer to bring about sustainability in agriculture. For maintaining the clean, green and healthy environment to farm families, the experiments on pest and diseases management with neem products has been planned and executed at Regional Research Station, C.S. Azad University of Agriculture and Technology, Mainpuri for making the simulation model.

MATERIALS AND METHODS

The field experiments were laid out during *Rabi/Kharif* seasons of 1993-96 on mustard and field pea, 1995-97 on wheat and 1996-98 on groundnut and wheat after groundnut at Regional Research Station, Mainpuri, C.S. Azad University of Agriculture and Technology, Kanpur. The experimental site was sandy loam having pH 8.5-8.7, organic carbon 0.37% - 0.45%, total N 0.03% - 0.04%, available P 10 kg/ha and available K₂O 278-296 kg/ha. Therefore, the fertility status of the experimental site was low. The different doses of immature neem kernels and leaves for various crops were integrated with plant nutrients and applied in furrows at sowing (Table 1). The recommended agronomic practices for different crops were followed. The experiments were carried out

in three replicated RBD.

RESULTS AND DISCUSSION

The results obtained from the present investigation as well as relevant discussion have been presented under following heads:

Effect of immature neem kernels and leaves powder on :

Wheat:

The combination of NPK @ 120:60:60 kg/ha, FYM @ 100 q/ha, gypsum @ 100 kg/ha and 50 kg/ha immature neem kernels and leaves powder registered significantly higher economic yield (47.80 q/ha) in comparison to conventional system of wheat sowing (120:60:60 kg NPK/ha). The application of immature neem kernels and leaves powder @ 50 kg/ha checked the incidence of soil insects specially termite due to toxic effect, resulted in, the grain yield of wheat increased significantly (Table 1). This is in close agreement with the findings of Singh (1998) and Singh (2005).

Groundnut:

The higher BND affected plants were counted in conventional system of groundnut cultivation by 30.85% while lowest was recorded with the use of immature neem kernels and leaves powder @ 100 kg/ha by 15.29%. The use of immature neem kernels and leaves powder @ 100 kg/ha as botanical pesticides gave higher yield (10.37 q/ha) and also escaped the crop from the damage of termite, pod borer and white grub.

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Table 1 : Effect of immature neem kernels and leaves powder on yield and pest and diseases management

Sr. No.	Crop	Treatments	Yield (q/ha)	% increase over conventional system	Control of insects, pest and diseases
1.	Wheat	(a) Immature neem kernels and leaves powder @ 50 kg/ha	47.80	10.15	Soil insects including termite
		(b) Conventional system	43.40	-	-
2.	Groundnut	(a) Immature neem kernels and leaves powder @ 100 kg/ha	10.37	7.45	Bud necrosis disease, termite, pod borer and white grub
		(b) Conventional system	9.65	-	-
3.	Wheat after groundnut	(a) Residue of 100 kg/ha of immature neem kernels and leaves powder.	46.25	2.55	Termite
		(b) Conventional system	45.10	-	-
4.	Mustard	(a) Immature neem kernels and leaves powder @ 75 kg/ha	17.00	5.60	Sawfly
		(b) Conventional system	16.10	-	-
5.	Field pea	(a) Immature neem kernels and leaves powder @ 75 kg/ha	22.00	10.00	Pod borer
		(b) Conventional system	20.00	-	-

These results are in agreement with those of Singh and Srivastava (1995).

Wheat after groundnut:

The residue of 100 kg/ha immature neem kernels and leaves powder applied to preceding crop of groundnut gave higher yield of wheat (46.25 q/ha) and escaped from the damage of termite over the conventional system of wheat cultivation (Table 1). This indicate that the use of immature neem kernels and leaves powder has kept free to the field from the insects complexity upto longer time.

Mustard:

Application of immature neem kernels and leaves powder @ 75 kg/ha escaped the mustard crop from the damage of sawfly. The seed yield of mustard was available by 17.00 q/ha or about 6.00% higher than the control (Table 1).

Field pea:

The use of immature neem kernels and leaves

powder @ 75 kg/ha was found effective for minimizing the damage of pod borer over control. The grain yield of field pea was increased by a margine of 2.00 q/ha or 10.00% over the control (Table 1).

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