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Effect of *Neemsaar* (Organic Manure) on Yield Components and Yield of *Kharif* Paddy

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Abstract

A field experiment was conducted in a medium fertile soil during the *kharif* (rainy) season of 2003 to evaluate the effect of *neemsaar* (organic manure consists of mustard and linseed oil cakes, bone dust, cow dung along with large quantity of *neem* oil cake) on the yield components and yield of transplanted paddy (cv IET-4786). The maximum number of panicle/ m^2 (295) and the highest number of filled grains/panicle (72.4) were recorded with 100% NPK (120-60-60) + *neemsaar* 150 kg / ha which was followed by and at par with the treatment NPK + *neemsaar* 175 kg / ha. Grain yield of paddy varied significantly with different treatments. The highest grain yield (4.42 t / ha) was recorded with NPK + *neemsaar* 150 kg / ha which however was statistically at par with the grain yield (4.38) of NPK + *neemsaar* 175 kg/ha. *Neemsaar* had given 12.18% yield increase as compared to FYM at 5t / ha and 35.16% yield increase as compared to 100% NPK.

Key words : *Neemsaar* Organic manure, Yield components, *Kharif* paddy.

Fertilizers and especially the nitrogenous fertilizers have played an important role in making the country self sufficient in food grain production (1). But it is of prime concern that fertilizers alone cannot sustain the productivity as it cannot take care of soil health, for which use of organic matter along with fertilizer is advocated. It is estimated that the demand of rice in India will be 140 million tonnes in 2,025 and this projected demand can only be met by maintaining steady increase in production over the years along with sustainability and prevention of environmental quality (2). To achieve the higher production level use of organic manure along with NPK is crucial. Now a days organic manure like FYM is not readily available and it involves higher application and handling costs due to its bulky nature. Therefore, researchers must unearth other sources which are not that much bulky and at the same time useful as organic manure. One such organic manure, *neemsaar* (commercial formulation from M/S Ruia Herbals Pvt Ltd. was tried for enhancing the productivity of paddy in this experiment. Like FYM, *neemsaar* also forms humic acid and salts during break down of organic matter which act as a growth stimulant, chelating agent, catalyst and many more. Similar beneficial effect of humic acid was reported earlier (3, 4).

Methods

Field experiment was conducted during the *kharif* season of 2003 at the Instructional Farm (22.93°N, 88.53°E and 9.75 m altitude), BCKV, West Bengal in entisol soil of neutral reaction (pH 7.2) having 0.065% total N, 18.11 kg/ha available P and 179 kg/ha available K to study the effect of organic manure (commercially available as *neemsaar*) on the yield components and grain yield of transplanted paddy (cv IET-4786). *Neemsaar* is made of mustard oil cake, linseed oil cake, bone

dust, dried cow dung along with large quantity of *neem* cake. The field experiment was conducted in RBD with six treatments replicated four times having the plot size of 6 m×4m. The treatments were T_1 : NPK+*neemsaar* 125 kg/ha, T_2 : NPK+*neemsaar* 150 kg/ha, T_3 : NPK+*neemsaar* 175 kg/ha, T_4 : NPK+FYM 5 t/ha, T_5 : NPK (100%), T_6 : Control (no fertilizer, no manure). All the plots other than untreated control received 120 kg N, 60 kg P, 60 kg K/ha (ie, 100% NPK). Full amount of P and K along with 1/2 of N (ie, 60 kg/ha) was applied as basal. At tillering 1/4th and the rest 1/4th N was applied at panicle initiation stage as top dressing. *Neemsaar* and FYM were applied as basal only. Transplanting of 28 days old seedlings was done on first week of August and the crop was harvested during the third week of November. Observations on yield components and grain yield were recorded at harvest.

Results and Discussion

Effect on Yield Components

Yield components of paddy ie, number of panicle/m², number of filled grains/panicle differed significantly with different treatments (Table 1). The maximum number of panicle/m² (295) was recorded with NPK+*neemsaar* 150 kg/ha which was followed by and at par with the treatment NPK+*neemsaar* 175 kg/ha. The lowest number of panicle/m² (224) was recorded with treatment receiving no fertilizer or manure. Regarding the number of filled grains/panicle the highest value (72.4) was recorded with NPK + *neemsaar* 150 kg/ha which was, however, at par with NPK + *neemsaar* 175 kg/ha (72.2). The test weight of paddy did not differ significantly with different treatments.

Effect on Grain Yield

Grain yield of paddy varied significantly with different treatments (Table 1). The highest grain yield (4.42 t/ha) was recorded with NPK+*neemsaar* 150 kg/ha which was statistically at par with the grain yield (4.38) of NPK + *neemsaar* 175 kg/ha. No fertilizer and manure treatment produced the lowest grain yield of 2.85 t/ha. It was reported that application of bio organic material in different forms increased the grain yield of transplanted paddy (5). Grain yield of paddy was increased by 44.91—55.08% with *neemsaar* treatments over control. Further, *neemsaar* had given 12 18% yield increase as compared to FYM at 5t/ha. Again NPK+*neemsaar* at 150 kg/ha gave an increased yield of

Table 1. Effect of *neemsaar* (organic manure) on the yield components and grain yield of paddy.

Treatments	Dose/ha	No. of panicle/ m²	No. of filled grain/ panicle	Test weight (g)	Grain yield (t/ha)	Percent increase over control
NPK + *Neemsaar* (kg)	125	286	68.0	22.1	4.13	44.91
NPK + *Neemsaar* (kg)	150	295	72.4	22.4	4.42	55.08
NPK + *Neemsaar* (kg)	175	292	72.2	22.3	4.38	53.68
NPK + FYM (t)	5	278	68.2	22.0	3.94	38.24
NPK	120-60-60	266	61.7	21.7	3.27	14.73
Control	—	224	58.4	21.8	2.85	—
CD at 5%		12.09	2.47	NS	0.26	

paddy by 35.16% over 100% NPK. Therefore, 100% NPK along with 150 kg *neemsaar* / ha is beneficial for getting much higher grain yield in paddy. The stubstantial yield increase by the application of *neemsaar* along with 100% NPK was due to the reason that the paddy crop gets the required nutrients through balanced nutrition from both organic and inorganic sources. The best effect of chemical fertilizers could be obtained only when it is applied along with oganic materials (6) and the same had been reflected in this experiment also.

To conclude it may be assumed that soil incorporation of *neemsaar* at 150 kg/ha (along with recommended dose of NPK) at the time of final land preparation can enhance the grain yield of transplanted paddy by 35.16% as compared to 100% NPK.

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