

## DAINCHA AS AN ORGANIC SOURCE OF NUTRIENTS FOR RICE

Green manuring plays an important role in supplying major and minor nutrients in addition to increasing the nutrient and moisture holding capacities of the rice soils. *In situ* sowing and incorporation of daincha, a short season leguminous green manure crop has been found to increase the fertility and productivity of problem soils as acidic, alkaline and waterlogged soils. An observational trial was conducted at the Agricultural Research Station, Mannuthy to study the effect of *in situ* incorporation of daincha in the presence or absence of inorganic fertilizers on rice production in acidic paddy fields

Seeds of daincha were sown at the rate of 20 kg per ha with the receipt of pre-monsoon showers in April. The soil of the experimental field was acidic with a pH of 4.9. At fortyfifth day after sowing, when the crop was in the flowering stage it was incorporated in the soil at the rate of 25 t of green matter per hectare. The treatments consisted of applying N,  $P_2O_5$  and  $K_2O$  at the rate of 70:35:35, 52.5:26:26, 35:17.5:17.5 kg/ha and no NPK in daincha incorporated plots. In another treatment N,  $P_2O_5$  and  $K_2O$  at the rate of 70:35:35 kg per ha were applied through fertilizers, avoiding daincha incorporation. Seedlings of the test variety, Triveni (100 days duration) were transplanted in the normal first crop season of 1984 (June to September) two weeks after the incorporation of daincha. Entire doses of  $P_2O_5$  and  $K_2O$  were applied as basal and N was top dressed in daincha incorporated plots. Half the nitrogen was applied as basal and the remaining half as top dressing in the treatment where daincha was not included.

On chemical analysis of daincha, the percentage contents of N, P and K were found to be 2.1, 0.7 and 1.1 respectively on dry matter basis. The dry matter recovery on drying was 10 per cent and the availability of N,  $P_2O_5$  and  $K_2O$  from 25 t of green matter was in the order of 52.5, 17.5 and 27.5 kg respectively.

Results of the trial presented in Table 1 revealed that incorporating a daincha crop grown *in situ* and supplementing N,  $P_2O_5$  and  $K_2O$  at the rate of 35:17.5:17.5 kg/ha was better than supplying N,  $P_2O_5$  and  $K_2O$  at the higher rates of 52.5:26:26 in the presence of daincha incorporation or applying N,  $P_2O_5$  and  $K_2O$  at the recommended rate of 70:35:35 kg/ha in the presence or absence of daincha incorporation. The effects of application of N,  $P_2O_5$  and  $K_2O$  at the rate of 70:35:35 kg/ha in the presence or absence of daincha incorporation or supplementing N,  $P_2O_5$  and  $K_2O$  at the rates of 52.5:26:26 and 35:17.5:17.5 kg/ha in the presence of daincha incorporation were on par. The grain yield of 3246.5 kg/ha obtained under daincha incorporation in the absence of NPK application was significantly inferior to the grain yield obtained in all the other treatments.

The highest mean per hectare grain yield of 4208 kg/ha obtained under daincha incorporation supplemented with N,  $P_2O_5$  and  $K_2O$  at half the recommended rate, i. e. 35:17.5:17.5 kg/ha was 961.5 kg more and also was significantly higher

Table 1

Mean grain yield as influenced by daincha incorporation in the presence and absence of fertilizers

Treatments	No. of panicles per m <sup>2</sup>	Total no. of grains per panicle	Percentage of filled grains	Grain yield kg/ha	Cost of cultivation Rs/ha	Cost involved in the production of 1 kg grain(Rs)
Daincha + NPK 70:35:35 kg/ha	347	68.71	67.87	3775.50	3280	0.87
Daincha + NPK 52.5:26:26 kg/ha	340.6	74.15	68.62	3893.50	3119	0.80
Daincha + NPK 35:17.5:17.5 kg/ha	366.25	86.48	71.13	4208.00	2972	0.71
No Daincha, NPK 70:35:35 kg/ha	365	79.13	70.44	4129.00	3145	0.76
Daincha alone (No NPK)	347	59.15	69.10	3246.50	2625	0.81
C. D. (0.05)	NS	NS	NS	490.34	—	—

than the yield of 3246.5 kg/ha obtained when no NPK was applied in daincha incorporated plots. Between these two treatments the mean number of panicles per square meter, total number of grains per panicle and filling percentage varied much, though not significantly. When the recommended dose of N,  $P_2O_5$  and  $K_2O$  at the rate of 70:35:35 kg/ha was applied in the absence of daincha incorporation, the mean per hectare grain yield of 4129 kg was only 79 kg less compared to the highest grain yield of 4208 kg/ha obtained in the best treatment i.e, application of N,  $P_2O_5$  and  $K_2O$  at the rate of 35:17.5:17.5 plus daincha incorporation. However, on economy basis the cost involved in the production of one kg grain was only Rs. 0.71 under daincha incorporation supplemented with N,  $P_2O_5$  and  $K_2O$  at the rate of 35:17.5:17.5 kg/ha compared to the same at Rs. 0.76 under N,  $P_2O_5$  and  $K_2O$  application at the rate of 70:35:35 kg/ha in the absence of daincha incorporation. The highest cost of production of Rs. 0.87 per kg grain was observed when N,  $P_2O_5$  and  $K_2O$  at the rate of 70:35:35 kg/ha was applied in addition to daincha incorporation followed by daincha incorporation alone in the absence of NPK application.

### സംഗ്രഹം

ഡെയിഞ്ചിയുടെ വിത്ത് ഹെക്ടറിന് 20 കിലോഗ്രാം എന്ന കണക്കിന് വിതച്ചു 45 ദിവസം കഴിഞ്ഞ് ഉഴുതുചേർക്കുകയും പാകുജനകം, ഭാവഹം, കപ്പാരം എന്നിവ രാസവളങ്ങൾ വഴി ഹെക്ടറിന് 35:17.5:17.5 കിലോഗ്രാം എന്ന ക്രമത്തിൽ ചേർക്കുകയും ചെയ്യുന്നതാണ് കുറഞ്ഞ ചെലവിൽ ഏറ്റവും അധികം വിളവുണ്ടാക്കുവാൻ സഹായിക്കുന്നതെന്ന് തെളിഞ്ഞിരിക്കുന്നു.