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EFFECT OF FRACTIONAL APPLICATION OF LIME ON THE GROWTH AND YIELD OF RICE (*Oryza sativa* L.) IN THE ACIDIC LATERITIC LOAM SOIL OF PATTAMBI

Field trials conducted in the Central Rice Research Station, Pattambi have shown lack of significant yield increases due to lime application at varying rates. Higher doses of lime (upto 3362 kg/ha) though resulted in increased yields, were highly uneconomic (Samad and Sahadevan, 1952.) In order to investigate whether split application of lime would be beneficial to rice grown under waterlogged conditions, an experiment was conducted at this station for 3 consecutive seasons from the second crop season (October to January) of 1967-68 to the first crop season (June to September) 1970-71. The soil of the experiment plot was lateritic loam (Organic Carbon, 0.92%, available P_2O_5 5.8kg/ha; available K_2O 100 kg/ha; pH 5.3). The treatments were (1) no lime (control); (2) 500 kg CaO per hectare as basal dressing; (3) 250 kg CaO per hectare as basal dressing plus an equal dose as topdressing at tillering; (4) $166\frac{1}{3}$ kg CaO per hectare each as basal dressing and as top dressings at tillering and at panicle initiation; (5) 250 kg CaO per hectare as basal dressing plus an equal dose as top dressing in 4 equal instalments at 10 days interval commencing from the date of transplanting and (6) 125 kg CaO per hectare as basal dressing plus 375 kg CaO per hectare at top dressing in 5 equal instalments at 10 days interval from the date of transplanting. The trial was laid out in randomised block design with 4 replications. The test variety was IR.8, transplanted at 20cm x 10cm spacing with 2 seedling per hill. The net plot size was 6.2 m x 5.0 m. N, P_2O_5 and K_2O Were applied at the rate of 80, 50 & 50 kg per hectare respectively.

Application of lime either in single dose or in splits exerted no significant effect on the height of plants at harvest, number of productive tillers per hill, ear weight, test weight of 1000 grains (Table-1) and grain yields (Table-2) in all the 4 seasons. The lack of significant effect of lime applied wholly or in fractions in contrast to no lime application, might be due to the waterlogged nature of the rice field which by itself gives a 'neutralizing effect' to the soil (Pattrick and Wyatt, 1964). The increase in pH is associated with the reduction of the soil consequent on flooding. The lower the pH of the soil before submergence, the greater would be the increase in pH (Ponnamperuma, 1964). The increase in pH and the stablization after 2 or 3 weeks, has an important bearing on the nutrition of the rice plant in lateritic soils as it decreases the concentration of iron and aluminium and creates conditions quite favourable for the growth

Table 1

Effect of fractional application of lime on the ancillary characters of rice (Mean of 4 seasons)

	Treatments						C. D. (0.05)
	1	2	3	4	5	6	
Mean height of plants (cm)	78.70	79.30	79.40	79.00	81.00	78.80	NS
Number of productive tillers per hill	5.29	5.39	5.22	5.24	5.12	5.12	NS
Mean ear weight (g)	3.12	3.25	3.34	3.54	3.35	3.43	NS
Test weight of 1000 grains (g)	30.01	30.38	31.13	30.38	30.25	30.25	NS

NS — Non-significant.

Table 2

Effect of fractional application of lime on grain yield (kg per hectare)

Year and Season	Treatments						F	C. D. 0.05
	1	2	3	4	5	5		
1968-69-2nd crop	5437	5673	5534	5255	5692	5492	NS	
1969-70-1st crop	4442	4592	4717	4620	4713	4624	NS	
1969-70-2nd crop	4928	4799	4831	5041	4702	4718	NS	
1970-71-1st crop	4473	4797	4594	4320	4816	4473	NS	
Mean	4820	4965	4919	4809	4931	4827		

NS = Non-significant.

of rice plants. Results similar to those of the present study have been reported by Mandal *et al* (1955) with higher and frequent applications of lime. It appears that unless there is excess of soluble iron in the soil low land rice will not respond to lime application.

സംഗ്രഹം

ചേരുന്നിലത്തിലെ നെല്ലിന് കുമ്മായം പലതവണകളായി നൽകുന്നതു് raws! rug മായി മാത്രം നൽകുന്നതിനേക്കാൾ കൂടുതൽ പ്രയോജനകരമായിരിക്കുമോ എന്നു പഠിയിച്ചുവാൻ പട്ടാമ്പിയിലെ നെല്ലു ഗവേഷണ കേന്ദ്രത്തിൽ ഹെക്ടറിന് 500 കി. ഗ്രാം എന്ന തോതിൽ നീർനുകക്കാ ഉപയോഗിച്ചു നടത്തിയ ഒരു പഠനത്തിൽ, അല്പത കുറഞ്ഞ മണ്ണായതുകൊണ്ടാകണം, കുമ്മായ പ്രയോഗം കൊണ്ടു് വിളവിൽ കാര്യമായ വർദ്ധന കാണുകയുണ്ടായില്ല. എന്നാൽ, ഒരാത്തവണയായി നൽകുന്നതിനേക്കാൾ താരതമ്യേന കൂടുതൽ പ്രയോജനം തവണകളായി നൽകുമ്പോഴാണു് ഉണ്ടാകുന്നതു് എന്നു് അനുഭവപ്പെട്ടു.

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