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## STUDIES ON THE RESPONSE OF RICE VARIETY *TRIVENI* TO PHOSPHORUS APPLICATION,

Ghose *et al* (1956) estimated that the rice crop, on an average removed 30 lbs  $P_2O_5$ , 40 lb N and 75 lb  $K_2O$  from an acre for producing grain and 3500 lb of straw. Mahapatra (1969) has reported that a crop yielding 8 tons each of grain and straw removed 80 kg  $P_2O_5$ , 192 kg N and 240 kg  $K_2O$  per hectare. However, the results of trials with phosphatic fertilizers either alone or in combination with organic or inorganic fertilizers show that phosphate generally give little response at most of the places. (Mahapatra and Sahu, 1961) and Suseelan, (1969). But some of the recent experiments with high yielding varieties have shown positive response to phosphorus. The present investigation was therefore taken up to study the yield response of rice variety *Triveni* to graded doses of phosphorus.

The experiment was conducted at the farm attached to the Agricultural College, Vellayani, Kerala State during the first and second crop seasons of 1972. The soil of the experimental area was sandy clay loam containing 0.091 per cent nitrogen, 0.059 per cent phosphoric acid, and 0.189 per cent potash with a Ph of 5.4. The trial was laid out in a randomised block design with six replications. The treatments were 0 kg  $P_2O_5$ , 20 kg  $P_2O_5$ , 40 kg  $P_2O_5$  and 60 kg  $P_2O_5$  per hectare. In addition to the above, all treatments received a uniform dose of 80 kg nitrogen and 50 kg  $K_2O$  per hectare. Nitrogen was applied in two split doses, one at planting and the remaining at maximum tillering stage. The entire quantity of potassium was applied as basal dose. Rice variety *Triveni* which is high yielding and of short duration was used for the trial during both the seasons.

The yield of grain and straw obtained from each treatment during both seasons are presented in Table 1 and the data on some yield components are given in Table 2.

From the statistical analysis of the individual seasons yield data it was revealed that there was no significant difference in the yield of grain as well as straw due to the various levels of phosphatic fertilizers tried in the experiment. Though there does not appear to be any significant difference due to various levels of phosphatic fertilizers,  $P_2O_5$  at 20 kg per hectare give increased yield of both grain and straw during the first season. During the second season there was no difference in yield of grain and straw by application of 20 kg  $P_2O_5$  per hectare, but the application of 40 and 60 kg gave

**Table 1**  
**Effect of different levels of phosphorus on the yield of grain  
 and straw of rice variety 'Triveni'**

Levels of P	Yield of grain in kg/ha.		Yield of straw in kg/ha	
	First season	Second season	First season	Second season
0 kg P <sub>2</sub> O <sub>5</sub> /ha	3081	1483	5900	2741
20	3331	1473	6250	2712
40	3376	1499	5950	3035
(0	3205	1509	6650	3238
test	Not significant	Not significant	Not significant	Not significant
S. Em. +	277.00	101.00	331.50	152.00

**Table 2**  
**Effect of different levels of phosphorus on some yield  
 components of rice variety '7'**

Levels of P	No. of effective tillers/plant.		No. of filled grains/ ear head	
	First season	Second season	First season	Second season
0 kg P <sub>2</sub> O <sub>5</sub> /ha	7.63	6.16	80.30	94.05
20	7.86	7.30	73.77	90.23
40	7.80	6.56	72.41	92.56
60	8.06	5.93	80.66	83.80
F <sup>2</sup> test	Not significant	Not significant	Not significant	Not significant
S. Em. +	0.454	0.354	4.800	5.443

an increasing trend in yield of both grain and straw. The different levels of phosphorus had no effect on the number of effective tillers as well as the number of filled grains per earhead (Table 2).

The lack of response due to different levels of phosphorus may be because of the fact that sufficient amount of available phosphorus was already present in the soil to meet the requirement of the crop. David (1960) reported that unless a soil is deficient in phosphate, yield response to its addition in field experiments could not be detected. In addition to this flooding might have further increased the availability of phosphorus as reported by Basak and Bhattacharya (1962). Irrigation water also supplies some quantity of  $P_2O_5$  (Mahapatra and Sahu, 1961). The effect of all the above factors might have resulted in the lack of response to added phosphorus.

### സംഗ്രഹം

വിവിധ അളവിൽ ഫോസ്ഫറസ് നൽകുന്നതുമൂലം ത്രിവേണി നെല്ലിൽ നിന്നുള്ള പ്രതികരണം മനസ്സിലാക്കുന്നതിനുവേണ്ടി വെള്ളായണി കാർഷിക കോളേജിൽ 1972-ലെ ഒന്നാം വിളയിലും, രണ്ടാം വിളയിലും പരീക്ഷണങ്ങൾ നടത്തുകയുണ്ടായി.

ഉത്തമ അളവിൽ ഫോസ്ഫറസ് നൽകുന്നതുകൊണ്ട് വിളവോ, വിളവിനാധാരമായ മറ്റു ഘടകങ്ങളോ വർദ്ധിക്കുന്നില്ലായെന്നാണ് പരീക്ഷണങ്ങളിൽനിന്നും മനസ്സിലായത്. നല്ല വിളവ് കിട്ടുന്നതിന് ഹെക്ടറൊന്നിന് 20 കിലോഗ്രാം ഫോസ്ഫറസ് നൽകിയാൽ മതിയെന്നും മനസ്സിലാക്കുകയുണ്ടായി.

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