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**EFFECT OF GRADED DOSES OF NITROGEN AND PHOSPHORUS
ON THE CHANGES OF SOIL pH DURING SUCESSIVE STAGES
OF GROWTH OF WET LAND RICE**

Very little is known regarding the effect of nitrogenous and phosphatic fertilizers on soil pH under flooded conditions. The present study was therefore undertaken with a view to finding the effect of different levels of nitrogen and phosphorus on the pH of submerged rice soils during successive stages of growth of rice crop. The experiment was conducted at the Agricultural College farm, Vellayani, Kerala State during the third crop season of 1972. The soil was sandy clay loam analysing 0.163% nitrogen, 0.045% phosphorus and 0.171% potash, with a pH of 4.9. The experiment was laid out as a factorial experiment in randomised block design with 3 replications. Triveni, a high yielding short duration variety of rice was used in the study. The treatments were four levels of nitrogen (0, 40, 80 and 120 kg per hectare as ammonium sulphate) and four levels of phosphorus (0, 15, 30 and 45 kg P_2O_5 per hectare as superphosphate). A uniform dose of 34 kg X O per hectare was applied to all plots. The full dose of P and K and half the dose of N were applied at planting and the remaining half dose of N was applied on the 40th day after planting. Soil samples were collected before sowing, at maximum tillering stage, flowering stage and at harvest and pH was determined by using Buckman pH meter.

The data on the pH of the soil during various growth stages are presented in Table 1. It is seen that there was a gradual increase in soil pH from the time of planting till flowering stage and thereafter it decreased. It was also noticed that incremental doses of nitrogen applied as ammonium sulphate significantly decreased the soil pH during all the three growth stages; while the pH in the control plot was raised by 0.8 units due to submergence, the pH in the treatments receiving 40 and 80 kg N per hectare were raised only by 0.5 units and that in the treatment receiving 120 kg N per hectare was raised only by 0.4 units during maximum tillering stage as compared to before sowing. Similarly during flowering stage also the pH values decreased with incremental doses of nitrogen. The decrease in soil pH noticed after flowering stage may be due to the oxidised condition of the soil since the entire field was drained two weeks

Table I. pH of the soil during various growth stages of rice

<i>Treatment</i>	Before sowing	Maximum tillering (50 days after sowing)	Flowering (70 days after sowing)	Harvest (99th day)
1. Levels of nitrogen				
0 kg / ha	4.9	5.7	6.1	5.8
40	5.0	5.5	5.9	5.6
80	4.9	5.4	5.7	5.5
120	5.0	5.4	5.6	5.4
'F' test	-	sig	sig	sig
C. D. (0.05)		0.122	0.095	0.081
2. Levels of phosphorus				
0 kg / ha	4.9	5.4	5.8	5.6
15	5.0	5.4	5.8	5.7
30	5.0	5.5	5.7	5.5
45	4.9	5.4	5.7	5.5
'F' test		N.S	N.S	N.S
S. Em.		0.056	0.033	0.029

Sig - Significant

N. S. - Not Significant

before the harvest of the crop. The addition of superphosphate had no significant effect on the pH of the soil.

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