

EFFECT OF DIFFERENT PHOSPHATIC FERTILIZERS AND EFFICIENCY OF THEIR METHODS OF APPLICATION ON THE GROWTH AND YIELD OF COWPEA

Cowpea responds very well to fertilizers particularly the phosphatic ones. Sharma and Garg (1973) reported that green and dry matter production of Cowpea were increased significantly due to phosphorus application upto 70 kg P_2O_5 /ha.

To evaluate the effect of different sources of phosphatic fertilizers and to assess the relative efficiency of the methods of application on the growth and yield of cowpea an experiment was conducted at the Rice Research Station, Pattambi, during July to September, 1978. The soil was lateritic loam containing 0.85% organic carbon, 16.5 kg available P_2O_5 /ha and 185 kg available K_2O /ha with a pH of 4.9. The field experiment was laid out in a Split plot design with levels of phosphorus as main plot treatments and combinations of sources of phosphorus and methods of application as sub plot treatments there being four replications. C-152 Cowpea was the test variety. Uniform doses of nitrogen and potassium were given to the crop as per the KAU package of practices. The seeds were sown at a spacing of 30 x 20 cm with a seed rate of 25 kg per hectare.

The data given in Table-1 would reveal that the phosphate levels did not influence either the yield or yield attributes. However, maximum yield of dry pods (1167.5 kg/ha) was obtained by the application of 50 kg P_2O_5 /ha. Subramanian *et al.* (1977) reported that maximum yield of cowpea C-152 was obtained by 25 kg P_2O_5 /ha which was on par with the dose of 50 kg P_2O_5 /ha.

The data presented in Table-2 show that among the combinations of the sources of phosphorus and their methods of application tried in sub plots, the treatment $RM_{1/2}$ (placement of Mussori rock phosphate) gave significantly higher yield (1632.5 kg/ha) as compared to all other treatments. As evidenced by superiority of placement of Mussori phos over its broadcasting, availability of phosphorus in the rootzone was advantageous. This is probable especially on view of the high phosphorus fixing capacity of the soil. However, such an advantage due to placement is not evident in the case of Superphosphate in which the mean yield was lower in the case of placement as compared to broadcasting. Presumably, the combined effects of residual acidity and salt effect of this soluble phosphatic fertilizer were responsible for masking the advantage due to placement. It may be recalled that the fertilizer was applied through contact placement which offers direct contact between fertilizer and the crop. But the treatment differences were not significant in any of the yield attributes.

സംഗ്രഹം

രണ്ടിനം ഫോസ്ഫറസ് വളങ്ങളും അവയുടെ പ്രയോഗരീതികളും സി.152 എന്ന വൻപയറിനത്തിന്റെ വളർച്ചയേയും, ഉൽപ്പാദനത്തെയും എപ്രകാരം ബാധിക്കുന്നുവെന്നു പഠി

കൂന്നതിനായി 1978ൽ പട്ടാമ്പി നെല്ലുഗവേഷണ കേന്ദ്രങ്ങളിൽ ഒരു പരീക്ഷണം നടത്തുകയുണ്ടായി. ഹെക്ടറോന്നിന് 12.5, 25.0, 37.5, 50.0, 62.5 കിലോഗ്രാം എന്ന കണക്കിൽ ഫോസ്ഫറസ് നൽകിയതിൽ 50 കിലോഗ്രാം എന്നതോതാണ് ഏറ്റവും കൂടിയ വിളവ് നൽകിയത്. പരീക്ഷണവിധേയമായ രണ്ട് ഫോസ്ഫറസ് വളങ്ങളിൽ മുസോറി റോക്ക്ഫോസ്ഫേറ്റ്, സൂപ്പർ ഫോസ്ഫേറ്റിനെക്കാളും മെച്ചമാണെന്നും, വളം, നിലമാകെ വാരിവിതയ്ക്കുന്നതിനെക്കാളും നല്ലത് വിത്ത് വിതയ്ക്കുന്നതിനു മുൻപായി ഉഴവുചാലിൽ നിക്ഷേപിക്കുന്നതുമാണെന്നും കാണുകയുണ്ടായി.

Table 1
Effect of phosphorus levels on yield attributes and yield

| Treatment | No. of fruiting branches per plant | No. of pods per plant | Length of pods (cm) | No. of grains per pod | Yield of dry pods (Kg./ha.) |
|----------------|------------------------------------|-----------------------|---------------------|-----------------------|-----------------------------|
| P ₁ | 11.31 | 13.94 | 13.64 | 13.25 | 815.5 |
| P ₂ | 11.30 | 14.31 | 13.44 | 13.69 | 1166.5 |
| P ₃ | 13.50 | 14.00 | 13.56 | 13.63 | 1087.5 |
| P ₄ | 12.06 | 14.44 | 13.78 | 13.75 | 1167.5 |
| P ₅ | 12.81 | 14.88 | 13.75 | 14.19 | 1156.0 |
| F test | NS | NS | NS | NS | NS |

NS-Not significant
 P₁—12.5 kg, P₂O₅/ha
 P₂—25.0 kg, P₂O₅/ha
 P₃—37.5 kg, P₂O₅/ha
 P₄—50.0 kg, P₂O₅/ha
 P₅—62.5 kg, P₂O₅/ha

Table 2
Effect of sources of phosphorus and methods of application on yield attributes and yield

| Treatments | No. of fruiting branches per plant | No. of pods per plant | Length of pods (cm) | No of grains per pod | Yield of dry pods (Kg/ha) |
|-----------------|------------------------------------|-----------------------|---------------------|----------------------|---------------------------|
| RM ₁ | 12.63 | 13.30 | 13.73 | 13.90 | 911.00 |
| RM ₂ | 12.60 | 15.40 | 13.76 | 13.65 | 1662.5 |
| SM ₁ | 12.75 | 14.05 | 13.25 | 13.10 | 900.0 |
| SM ₂ | 11.25 | 14.60 | 13.70 | 13.60 | 841.5 |
| F test | NS | NS | NS | NS | Sig. |
| CD (0.5) | — | — | — | — | 229.56 |

RM₁—Mussori rock phosphate basal application
 RM₂—Mussori rock phosphate placement
 SM₁—Super phosphate basal application
 SM₂—Super phosphate placement

References

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