RESPONSE OF FENUGREEK (Trigonella foenum-graecum L.) TO PHOSPHORUS AND SULPHUR

ABSTRACT

Key words: Phosphorus, Sulphur, Fenugreek, Protein, Yield

A field experiment entitled “Response of fenugreek (Trigonella foenum-graecum L.) to phosphorus and sulphur” was conducted during rabi season of 2016-17 on clayey soil at Instructional farm, College of Agriculture, Junagadh Agricultural University, Junagadh. The experiment conducted with nine treatments in randomised block design (Factorial) with three replications.

Application of phosphorus @ 40 kg ha⁻¹ recorded significantly the highest values of growth parameters viz., plant height (14.78, 42.07 and 62.67 cm at 30 and 60 DAS and at harvest, respectively) and number of primary (7.57) and secondary (11.60) branches per plant at harvest. Significantly higher number of pods per plant (15.26), length of pod (12.40 cm), number of seeds per pod (13.14), test weight (17.76 g), seed yield (1565.33 kg ha⁻¹) & stover yield (3273.33 kg ha⁻¹) and biological yield (4875.05 kg ha⁻¹), but, remained statistically at par with treatment P₁ (20 kg P₂O₅ ha⁻¹) in case of number of branches per plant and test weight. The lowest values of growth parameter as well as yield attributes and yield were observed under control (0 kg P₂O₅ ha⁻¹). Considerable improvement in N, P, K and S uptake by seed as well as stover was also recorded under application of 40 kg P₂O₅ ha⁻¹. With regard to economics, the highest net return (Rs. 95115 ha⁻¹) as well as B: C (2.21) ratio was also obtained by application of 40 kg P₂O₅ ha⁻¹.
Application of 40 kg S ha\(^{-1}\) was recorded significantly the highest plant height (13.75, 38.69 and 59.17 cm at 30, 60 DAS and at harvest, respectively) at successive growth stages and found statistically at par with application of 20 kg S ha\(^{-1}\). Similarly primary (7.18) and secondary (11.29) branches per plant at harvest were recorded significantly higher under treatment of 40 kg S ha\(^{-1}\) and statistically at par with 20 kg S ha\(^{-1}\). Application of 40 kg S ha\(^{-1}\) recorded significantly higher values of yield and yield attributing parameter viz., number of pods per plant (14.52), number of seeds per pod (12.08), length of pod (11.84 cm), and test weight (16.92 g), as well as seed yield (1492 kg ha\(^{-1}\)) and stover yield (3082 kg ha\(^{-1}\)) and remain statistically at par with application of 20 kg S ha\(^{-1}\) in case of length of pod, number of seeds per pod, number of pods per plant and test weight. Significantly higher value of protein content (22.68\%) and protein yield (342.31 kg ha\(^{-1}\)) was recorded under 40 kg S ha\(^{-1}\). The higher values of N, P, K and S uptake by seed and stover were observed under the treatment of 40 kg S ha\(^{-1}\). Application of sulphur @ 40 kg ha\(^{-1}\) proved economically beneficial as it recorded higher net return and B:C ratio as compared to treatment P\(_1\) 20 kg S ha\(^{-1}\).

In general, better crop yield and the highest net returns from fenugreek could be obtained by fertilizing the crop with application of phosphorus @ 40 kg P\(_2\)O\(_5\) and sulphur @ 40 kg S ha\(^{-1}\).