RESPONSE OF RAJMAH (Phaseolus vulgaris L.) TO SPACING AND FERTILITY LEVELS

ABSTRACT

**Keywords:** Rajmah, rabi, spacing, fertility levels

A field experiment entitled “Response of rajmah (Phaseolus vulgaris L.) to spacing and fertility levels” was carried out during rabi season of the year 2015-16 at the Instructional Farm, Department of Agronomy, College of Agriculture, Junagadh Agricultural University, Junagadh. The soil was clayey in texture, rich in organic carbon, medium in available nitrogen and potash, high in available phosphorus and alkaline in reaction with pH of 7.9.

Total twelve treatment combinations, consisting of three spacing (S1 = 30cm x 10cm, S2 = 45cm x 10cm and S3 = 60cm x 10cm) and four fertility levels (F0 = 00-00 kg NP ha⁻¹, F1 = 60-20 kg NP ha⁻¹, F2 = 80-40 kg NP ha⁻¹ and F3 = 100-60 kg NP ha⁻¹) were tested in a split plot design with three replications.

The results indicated that sowing of the rajmah crop at 60cm x 10cm wider spacing recorded significantly higher values of almost all the growth characters viz., number of leaves plant⁻¹, number of branches plant⁻¹, dry matter accumulation, days to maturity and yield attributes viz., number of pods plant⁻¹, pod length, number of seeds plant⁻¹, seed and stover yields plant⁻¹ and protein content. Days to 50% flowering, test weight and harvest index remained unaffected due to spacing. Plant height, seed and stover yields and protein yield of rajmah were significantly higher under closer spacing of 30cm x 10cm. Nitrogen content in seed and potassium content in seed and stover; NPK uptake by seed, stover and total; and available N, P₂O₅ and K₂O in soil after harvest of crop were not significantly influenced by different row spacing. Nitrogen content in stover and phosphorus content in seed and stover were significantly higher under 60cm x 10cm spacing. Higher gross and net realization of ₹ 85,424 ha⁻¹ and ₹ 57,542 ha⁻¹, respectively with B: C ratio of 3.06 was obtained when rajmah crop was sown at 30cm x 10cm spacing.

Almost all the growth characters, yield attributes, quality parameters, seed and stover yields were found significantly higher when crop was fertilized with 100-60 kg
Abstract

NP ha\(^{-1}\) followed by fertility level F\(_2\), except plant population at initial and final; and harvest index which were not significantly affected by the fertility levels. Maximum gross (₹ 81,338 ha\(^{-1}\)) and net realization (₹ 50,010 ha\(^{-1}\)) along with higher B: C ratio of 2.60 were observed under fertility level 100-60 kg NP ha\(^{-1}\) followed by fertility level 80-40 kg NP ha\(^{-1}\).

Interaction between spacing and fertility levels were also observed significant for pod length, number of seeds pod\(^{-1}\), seed and stover yields ha\(^{-1}\), protein content and yield, nitrogen uptake by seed and phosphorus uptake by stover.

Thus, from the present study, it could be concluded that *rabi rajmah* (Gujarat Rajmah-1) should be sown at 30cm x 10cm and fertilized with the 100-60 kg NP ha\(^{-1}\) statistically followed by 80-40 kg NP ha\(^{-1}\) for getting higher yield and maximum gross and net realization as well as B: C ratio under medium black calcareous soils of South Saurashtra Agro climatic conditions.