

season from 2009-10 to 2014-15. The soil was sandy loam and low in organic matter. The soil pH was 8.03 and having organic carbon (0.27 %), available nitrogen (172.48kg ha⁻¹) and available phosphorus (36.60kg ha⁻¹) and medium in potassium (308.40kg ha⁻¹). The treatments comprised of three organic modules, one chemical module and control, the details of the module are presented in the following Table A.

The experiment was laid out in Randomized Block Design with five quadrates in each module (2m×2m). Manures and fertilizers were applied as per the treatment. Cluster bean variety GG-2 (Gujarat Guar) was sown at the seed rate of 15-20 kg/ha with the spacing of 45cm x 10cm. Gross plot size was 14.5m x 20.5m. Further observations were recorded and statistical analysis was done. The BCR value was computed by dividing net return by total expenditure of each module.

Research Findings and Discussion

The results obtained from the present investigation as well as relevant discussion have been summarized under following headings :

Effect of different modules on yield attributes :

In the Table 1 the pooled data of yield attributes from year 2009-10 to 2014-15 were presented. The results from the Table 1 indicated that there were significant difference among the treatments regarding the yield attributes *viz.*, plant height, number of branches per plant, number of pods per plant, pod length and number of seeds per pod. Module T₄ recorded the maximum plant height (55cm), followed by modules T₂ (52cm) and T₃ (50cm) which were at par with each other and least plant height *i.e.* 39 cm was recorded with the module T₅ (control).

Regarding the number of branches per plant, module T₄ recorded the maximum number of branches per plant (6.02), followed by modules T₂ (5.66) and T₃ (5.50) which were at par with each other and least number of branches were recorded with the module T₅ (control). Module T₄ (41) recorded the maximum number of pods per plant, followed by module T₂ (38) and least number of pods per plant were recorded with the module T₅ (control). Module T₄ recorded the maximum pod length *i.e.* 5.60 cm followed by module T₂ (5.43cm) and least pod length was recorded with the module T₅ (control). Module T₄ (7.61) and T₂ (7.33) recorded the highest number of seeds per pod and these were at par with each other, least number of seeds per pod were recorded with the module T₅ (control) *i.e.* 4.98. The significant improvement in growth parameters with the module T₄ that is application of recommended dose of fertilizers was observed, this might be attributed to quick and easy availability of nutrients through fertilizers. In organic modules T₂ followed by T₃ were found best for good growth of the plant due to adequate supply of photosynthates for development of sink. Balbhim *et al.* (2015) reported that growth and yield attributes of cluster bean were increased by the application of chemical fertilizers followed by application of vermicompost and FYM. Results are also in agreement with that of Gopinathan and Prakash (2015), who reported that vermicompost produced with earthworm digested organic waste are rich in NPK, micronutrients, beneficial soil microbes- nitrogen fixing and phosphate solubilizing bacteria and actinomycetes. They are proving as excellent growth promoter and protector. Vermicompost also has a positive effect on vegetative growth, stimulating shoot and root development. The effects include alterations in seedling morphology such as increased leaf area and

Table 1: Effect of different organic modules on growth and yield parameter of cluster bean (Pooled)

Treatments	Plant height (cm)	Branches/plant	Pods/plant	Pod length (cm)	Seeds/pod
Modules-T ₁	49	5.39	36	4.84	6.46
Modules-T ₂	52	5.66	38	5.43	7.33
Modules-T ₃	50	5.50	36	4.97	6.61
Modules-T ₄	55	6.02	41	5.60	7.61
Modules-T ₅ (Control)	39	4.61	32	4.41	4.98
S.E.±	0.801	0.110	0.536	0.102	0.292
C.D. (P=0.05)	2.22	0.30	1.49	0.28	0.82
CV%	8.11	10.71	7.63	9.83	9.89