

Performance of mothbean varieties to spacing and fertilizer application in arid western Rajasthan under rainfed condition

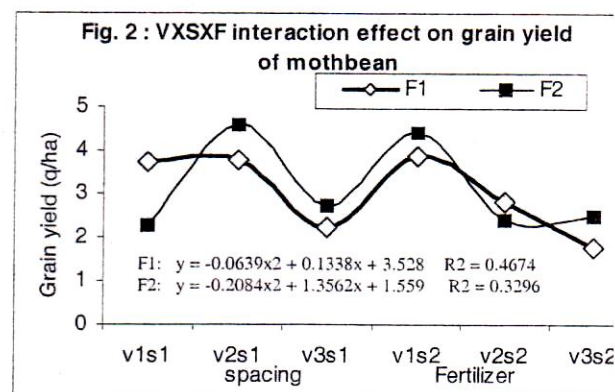
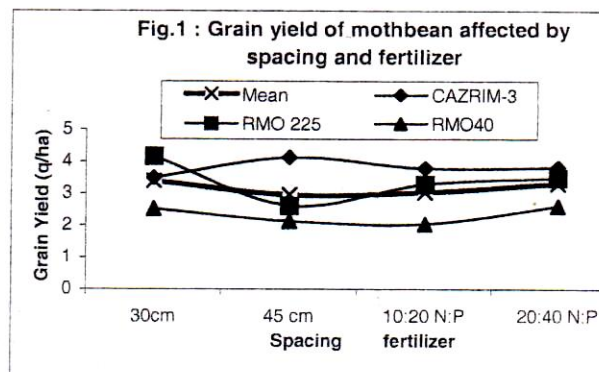
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Mothbean is a very important arid legume of western Rajasthan which is grown in a large area under rainfed condition. In Rajasthan mothbean contribute 34.32 per cent of total pulse production of the state. It is cultivated in 11.14 lakh ha area which is about 85 per cent area under moth in the country with a production of 2.96 lakh tones but average yield (231 kg/ha) is very poor. The crop has high tolerance to high temperature and drought. The development of short duration high yielding varieties has opened a new avenue for growing the crop even under poor rainfall with less number of rainy days situations with assured production. The present investigation has aimed to see the performance of different mothbean varieties under different spacing and fertilizer doses. It will help to find out the optimum spacing and fertilizer dose for mothbean varieties.

The experiment was conducted at Central Arid Zone Research Institute, Regional Research Station, Bikaner during 2005 on sandy loam soil under rainfed condition. Three varieties CAZRI M-3, RMO 225 and RMO 40 were tested at two row spacing (30 & 45 cm) and two fertilizer doses (10:20 & 20:40 N:P kg/ha) under three replications. All the fertilizers were applied as a basal dose at the time of sowing. The crop was sown in month of July 2005 at the onset of monsoon.

Different varieties did not affected significantly by various spacing and fertilizer doses in terms of their plant height and number of pods per plant. However, highest plant height was recorded in CAZRI M-3, which was 20.6 and 21.0 per cent higher over RMO 225 and RMO 40, respectively (Table1). This was due to the varietal characteristics. Highest biological (19.29 q/ha) and grain yield (3.81 q/ha) was recorded with variety CAZRI M-3 which was 14.54 and 94.45 per cent higher in biological yield and 12.39 and 64.24 per cent higher in grain yield over RMO 225 and RMO 40, respectively (Table 1). The same results have also been observed by [1,2].



There have been observed a quadratic relationship of grain yield of different varieties with spacing and fertilizer in which highest ($R^2=0.97$) was observed with RMO-40. As per the coefficient values the lowest value ($R^2=0.556$) was recorded with var-CAZRI M-3 (Fig2), whereas the mean value ($R^2=0.960$) was very close to var. RMO-40. This was only due to significant decrease and increase due to the change in spacing and fertilizer doses apparent from table 1. Kumar *et al.* [3] also observed same trend in the fertilizer application with pearl millet. The same trend was observed with straw yield of different mothbean varieties. Highest harvest Index (HI) and attraction Index was observed with variety RMO-40 at 45 cm spacing with 20:40 N fertilizer dose.