

**3rd National Symposium on
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Nutritional Security and
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through Arid Legumes**

Abstracts

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time of sowing and farmers inclination towards local varieties for easy availability and non involvement on market, lack of actual knowledge primarily due to nature of occupation and illiteracy, risk of crop failure due to erratic or poor rainfall, scattered settlements and age old traditional farming. To accelerate the processes of adoption of leguminous crops, which has nutritive as well as commercial values, the easy availability of improved varieties through village co-operatives, dissemination new varieties through market linkage extension activities to make aware about the commercial importance of the crops would pave the way for higher adoption. The key-communicators could be identified at village level for effective dissemination of technologies.

S8-O3: The present status, potential and constraints in the production of clusterbean in the Kachchh region of Gujarat

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Kachchh is the largest district (45,652 sq km) in the state of Gujarat and the second largest district after Leh in India. The rainfall is scanty, erratic and irregular with annual average of 315.3 mm, distributed in 10 rainy days (average of last 15 years). The cultivated land constitutes only 17.15% of the total district area. The major crops in the district are pearl millet, sorghum, pulses like clusterbean, green gram, moth bean and cash crops like groundnut and cotton. The status of clusterbean in the Kachchh region of Gujarat was analyzed for the last 15 years (1991 to 2005) to find out the constraints and suggest suitable remedial measures for improving the production. During the five year period from 1991 to 1995, the average area under clusterbean was 77,763.8 ha with a production of 36,272.2 tonnes. The area, production and productivity showed a positive growth rate of 11.01%, 16.1% and 4.4% respectively during this period. A rainfall of 329.9 mm distributed in 8 rainy days was major factors contributed to positive growth rate in area, production and productivity of the crop in this period. The area under clusterbean decreased during 1996 to 2000 and the growth rate reduced to 4.78%. The production and productivity also showed a negative trend in growth and the average productivity was 224.6 kg/ha against 462.6 kg/ha during the 1991 to 1995 period. The negative trend was continued during 2001-2005 also. Considering the last 15 years, there was decrease of 1.2% in the productivity of clusterbean in Kachchh even though a slight increase in growth rate in area (1.4%) and consequent increase in production (1.17%) was noticed. The major constraints for clusterbean production in Kachchh are shallow soil depth, very low content of organic carbon, deficiencies of nutrients like nitrogen, phosphorus and micronutrients like zinc, boron and manganese and, non awareness of the improved varieties and technologies among the farmers. The heavy doses of nitrogen in the form of urea are the major cause of nutrient imbalance in the clusterbean growing soils. There is much scope for increasing the production of clusterbean in arid Kachchh by substituting low productive crops like sesame and moth bean with clusterbean, adoption of integrated nutrient management based on the scientific recommendations, and proving timely life saving irrigation during the moisture deficit stage.

The straw yield followed similar pattern and the yield decreased from 602.5 to 352.5 kg ha⁻¹ of guar and from 918.5 to 331.2 kg/ha in cowpea. The economic evaluation of the two systems revealed that under aonla-guar cropping system, gross income increased by 9.9% over aonla alone but with aonla-cowpea system, it increased by 36.9%. This indicated that for arid Gujarat aonla-cowpea system is more economically beneficial than aonla-guar system.

S3-P5: Productivity of sorghum + greengram intercropping system as affected by row ratio and nitrogen under rainfed condition

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Grain legumes like green gram (*Phaseolus radiatus*) offers an opportunity for intercropping with the latest release of short stature grain sorghum variety CSV-17 matching the moisture availability period of arid fringes. A field experiment was conducted during 2007 to study the effect of sorghum (variety-CSV 17) intercropped with green gram (RMG 62) at different N levels. The soil was sandy clay loam in texture having pH 8.1, organic carbon 0.36%, available N content 210.0 kg ha⁻¹, available P 11.6 kg ha⁻¹ and available K 235.0 kg ha⁻¹. Three row ratio of sorghum: green gram 1:1, 2:1 and 3:1 each at four nitrogen level (0, 25, 50 and 75 kg ha⁻¹) along with their sole treatment were laid out in randomized block design with 3 replications. During 2007, onset of monsoon rainfall was 320 mm on a single day and 279.8 mm rainfall was recorded during pendency of crop growth. The total dry matter production increased significantly due to intercropping in different row ratio and nitrogen application. The highest grain yield of sorghum (CSV-17) was obtained with sole sorghum followed by sorghum + green gram in 2:1 row ratio with 50 kg N ha⁻¹ and sorghum + green gram in 2:1 row ratio with 75 kg N ha⁻¹ and sorghum + green gram in 3:1 row ratio with 50 kg ha⁻¹. The intercrop yield of green gram was highest under sole crop followed by sorghum + green gram in 1:1 row ratio at 50 kg N followed 75 kg N ha⁻¹ (380 kg ha⁻¹). The maximum price equivalent ratio was obtained when sorghum intercropped with green gram in 2:1 ratio with 50 kg N (1.31) followed 75 kg N ha⁻¹ under same row ratio (1.26) or 50 kg N ha⁻¹ with 1:1 ratio of sorghum + green gram.

S3-P6: Improving productivity and profitability of clusterbean (*Cyamopsis tetragonoloba* L. Taub) + sesame (*Sesame indicum* L.) intercropping system with optimum row ratio and balanced fertilization under arid region of Gujarat

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A three year field study was conducted during rainy season of 2005, 2006 and 2007 to find out possibility of increasing production of pulses and oilseed through intercropping system in relation to spatial arrangement of crops and integrated nutrient supply. The soil of the experimental site was gravelly-sandy loam with shallow depth, EC