

National Symposium on
**RESOURCE UTILIZATION THROUGH
 INTEGRATED FARMING SYSTEM AND
 BIODIVERSITY CONSERVATION IN DRYLANDS**

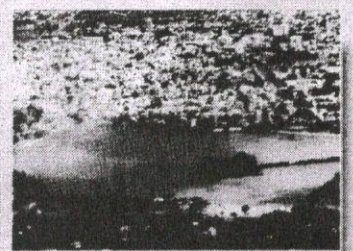
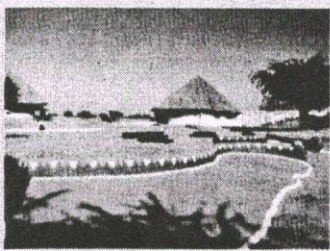
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ABSTRACTS

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fruit clusters/plant, number of fruits/cluster and 100-seed weight exerted their major effects on seed yield indirectly via dry fry yield/plant.

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Genetic Variability, Cluster Analysis and Correlation among Clusterbean (*Cyamopsis tetragonoloba*) Genotypes for Qualitative Traits

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Fodder is an important component in arid zones as availability of both green and dry fodder remains always less than required quantity and quality. Clusterbean [*Cyamopsis tetragonoloba* (L.) Taub] is a hardy, drought resistant annual herb imparts a good source of fodder besides the versatile properties of its seed gum. It has deep rooted system with variability in the flower colour from white to purple and well adapted to arid and semi-arid parts of the world requiring low inputs and care. A little information is available for genetic variability in clusterbean addressing the qualitative traits within the green plant. The range, genotypic and phenotypic coefficient of variation, heritability, genetic advance, correlation and cluster analysis among 8 qualitative traits were estimated in 40 genotypes of clusterbean. The genotypes showed considerable amount of variability for all the traits except acid insoluble ash. Irrespective of their place of collection the genotypes were grouped in to seven clusters. High magnitude of heritability and genetic advance for protein, ash and fibre was recorded indicating high additive gene effects. Protein had positive correlation with chlorophyll, organic matter, crude fibre and acid insoluble ash. Genotypes RGM 114, RGC 1030, GAUG 9808 and RGC 1078 with superior chlorophyll, protein, carbohydrate and crude fibre respectively may be utilized for future breeding programme for improvement of quality traits in clusterbean. Positive correlation of protein with chlorophyll, crude fibre, organic matter and acid insoluble ash indicated that the genotypes with higher chlorophyll content in leaves would be proteineous along with good fibre content.

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Assessment of Sesame Cultivars under Different Rainfall Regimes in Arid Gujarat

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Sesame is an important ancient and traditional major rainfed oil-seed crop of semi-arid and arid regions of Indian subcontinent. India ranks first in the world in sesame cultivation (27.7% area) but its productivity is very low (368 kg ha⁻¹) as compared to worlds average (489 kg ha⁻¹) (FAO, 2004). The one of the main factors of low average productivity of leading states especially Gujarat and Rajasthan is drought stress, because 79% of the total area of Gujarat and 62.8% of total area of

Rajasthan has been reported as drought prone area. Sesame cultivars especially bred for drought tolerance/resistance are so far not available for arid ecosystem. Therefore, the present study was carried out to assess the performance of sesame cultivars under variable rainfall conditions over 10 years for higher grain yield. Seventeen varieties collected from different agro climatic zones were evaluated using complete randomized block design with three replications at CAZRI, Regional Research Station, Bhuj, Kachchh, Gujarat during two consecutive rainy seasons of kharif 2009 with low rainfall (483.8 mm in 10 rainy days) and 2010 with high rainfall (830.2 mm in 26 rainy days) during the crop period of June to October. Under low rainfall condition, maximum yield (560 kg ha⁻¹) was recorded by MURG 1 followed by PT 64 (456 kg ha⁻¹) and the lowest yield was recorded by RT 125 (262 kg ha⁻¹). However, under high rainfall situation, maximum yield was recorded by again MURG 1 (570 kg ha⁻¹) followed by PT 64 (559 kg ha⁻¹) and PB Til 1 (541 kg ha⁻¹), while lowest yield was recorded by RT 4b (343 kg ha⁻¹). Based on pooled data over the years maximum yield (565 kg ha⁻¹) was given by MURG 1 followed by PT 64 (507 kg ha⁻¹) and GT 3 1 (465 kg ha⁻¹) and lowest yield was given by RT 125 (321 kg ha⁻¹). Considering the stress tolerance indices i.e. drought susceptibility index (DSI) and drought tolerance indices (DTE), the high yielder cv MURG 1 recorded the lowest value of DSI (0.088) as well as highest value of DTE (98.15%) showing the drought tolerance nature. Thus, based on grain yield and stress tolerance indices, cv MURG-1 performed well under low rainfall condition in arid Gujarat.

A- 20

Agro-Morphological Evaluation of Sesame (*Sesamum indicum* L.) Cultivars under Low Input Environment of Arid Ecosystem

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Sesame (*Sesamum indicum* L.), one of the oldest oil seed crops of the world is mostly grown by small and marginal farmers of arid and semi-arid regions of the country. The productivity of sesame in major sesame growing states ranges from 74 kg ha⁻¹ in Rajasthan to 291 kg ha⁻¹ in Gujarat, and is far below from national average (368 kg ha⁻¹). Low yield in farmer's fields often results from applying low level of inputs and encountering frequent soil moisture deficit by the crop. Under these circumstances, problems of low yields in resource poor farmer fields remain a major challenge. The present study aimed at identifying the high yielding sesame cultivars and the potential breeding resources for low input agriculture in arid ecosystems.

Seventeen released cultivars collected from different agro-climatic zones were evaluated under low input conditions (no fertilization, irrigation and pest management etc.) using RBD with three replications at CAZRI, Regional Research Station, Bhuj, Gujarat during kharif 2010-11. The soil of the experimental site was loamy sand in texture with shallow depth (21 cm), low in organic C (0.38%), available N (214 kg ha⁻¹), and P (7.0 kg ha⁻¹), and medium in available K (138.3 kg ha⁻¹) with pH 8.7. The crop received rainfall of 980.5mm in 33 rainy days during crop season. Fifteen agronomical and yield attributing traits recorded at the time of harvest were analysed to select the best performing varieties under low input management practices. The result of the analysis of variance for plant height (cm), days to 50% flowering and maturity, number of seeds/capsule, first