National Symposium on

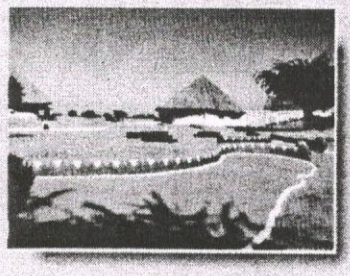
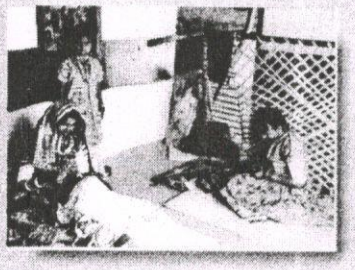
RESOURCE UTILIZATION THROUGH INTEGRATED FARMING SYSTEM AND BIODIVERSITY CONSERVATION IN DRYLANDS

December 20-22, 2011

ABSTRACTS

Organized by
Arid Zone Research Association of India
and
Central Arid Zone Research Institute, Jodhpur

At
Regional Research Station
CENTRAL ARID ZONE RESEARCH INSTITUTE
Kukma-Bhuj 370 105 (Gujarat)

Plant, Animal and Fish Genetic Resources for Livelihood Security in Fragile Ecosystem" during kharif and rabi seasons of 2010-2011. 70 villages were covered in different 6 blocks/taluks, namely Gogunda, Girwa, Jhadol, Mavli and Vallabhnagar of Udaipur district and Kumbhalgarh block of Rajsamand district (Rajasthan) by scientists and research fellows of NBPGR, RS, Jodhpur and NBPGR, HQ, New Delhi in collaboration with Seva Mandir (NGO) Udaipur. 179 germplasm accessions of landraces comprising of cereals (91), millets (9), pulses (11), oil seeds (9), minor millets (5), vegetables (3), economic plants (7) and others (7) were collected. The useful and important Indigenous Traditional Knowledge (ITK) related to these landraces was recorded. Out of 179 accessions, 64 accessions of Maize landraces known as Malan (28) and Sathi (36) were collected. It is recorded that landraces are being grown traditionally since long time having good nutrition quality and adaptability in this semi-arid regions. The collected landraces are also reliable crops/varieties for this region. The germplasm are characterized, evaluated, multiplied and conserved in National Gene Bank (Medium Term Storage and Long Term Storage facilities) as well as in field gene bank at this regional station. Desired characteristics, unique/important germplasm of landraces are identified and preceded for Farmer Variety Registration process. Superior germplasm of landraces with early maturity, high yield and dual purpose attributes are available for scientists, breeders, researchers and farmers for crop improvement programmes in the region.

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Identification and Evaluation of Sesame (*Sesamum indicum*) Genotypes under High Temperature Conditions

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High temperature stress is one of the most important but least studied abiotic stresses affecting plant productivity around the world (Hall 1992). Recent studies have indicated the probability of 10-40% loss in crop production in India with increase in temperature by 2080-2100 (IPCC 2007). Kachchh, the largest and the western most district of Gujarat state, has a very different terrain. Recurring drought, periodic seismicity, vast areas under salt marshes and ranns, undulating rocky terrain, shallow soil, high exploitation of potable ground water and depleting biodiversity pose serious threats to sustainable use of the land in the district. Sesame or gingelly (*Sesamum indicum*), commonly known as til (Hindi), is an ancient oil-seed crop grown in India and perhaps the oldest oil seed crop in the world. There has been a great transfer in sesame area from the kharif, long-season environment to warmer (summer), short-season environment. India is the largest producer of sesame in the world. In India, Sesame is grown in an area of 2.90 m ha with a productivity of 332 kg ha^{-1} which is far below the world average of 389 kg ha^{-1}. While, in Kachchh district of Gujarat state, sesame is grown in 40,900 ha area with total production of 20,500 t and productivity of 510 kg ha^{-1}. Yield of this warmer-season oilseed are limited by major abiotic stresses, like- heat and drought. Increase in seasonal temperature is an important climatic factor which has shown adverse effect on the yield of sesame. Among abiotic stresses, heat stress is major problem to sesame production in warm environment. High temperature (>40°C) at flowering and capsule development stages is one of the limiting factor which adversely affects the growth stages viz. capsule initiation, number of capsule, number of seeds per capsule, biomass and yield. Thus, in

view of aforesaid problems present investigation is an attempt to identify the heat tolerant genotypes along with those phonological and field attributing traits which directly affect the sesame yield under high temperature condition. In continuation of the above process seventeen genotypes of sesame were evaluated at the research farm of CAZRI, RRS, Kukma, Bhuj (at 220 41'11'' to 240 41' 47'' N latitude and 680 9' 46'' to 710 54'47'' E longitude) during *summer* of 2010 (high temperature) in a randomized block design with three replications. The analysis of variance for all the traits showed highly significant difference among the varieties indicating sufficient amount of variability in the genetic materials. On the basis of *per se* performance, Seed yield per plant and days to 50% flowering in genotypes ranged from 1.13 to 8.13 (g) and 50 to 75 days, respectively. The genotypes RT 103 provided highest seed yield per plant (8.13 g) followed by RT 125 (7.90 g) and RT 54 (6.74 g). The genotype RT 103 recorded the maximum number of capsules per plant (91.29) and number of seed per capsule (54.33) followed by RT 54 (74.30 and 53.00). The genotype RT 46 attained the maximum 1000-seed weight (3.42 g) followed by RT 125 (3.32 g) and RT 127 (3.03 g). Sesame genotypes RT 103, RT 125, RT 54, RT 46, GT 10 and RT 346 appeared promising which could be gainfully utilized for future breeding programme namely; diallel mating.

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Variability, Heritability and Character Association for Seed Yield and its Components in Buffel Grass (*Cenchrus ciliaris* Linn.)

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Ten genotypes of *Cenchrus ciliaris* L. were sown during July 2010 in a completely randomized block design with three replications through direct seeding using 5 kg seed ha^{-1} in a plot size of 3 x 4 m^2 with a row spacing of 50 cm to evaluate the fodder production potential. The experiment was totally under rain grown conditions and three cuts of fodder were taken up to November 2010, thereafter, the plants were allowed to produce seeds. Information on variability, heritability, genetic advance and correlations is important to efficiently design the breeding procedures for crop improvement; hence, data were recorded on seed yield and its components from the regenerated flush to estimate these parameters. Fodder of re-growth was finally harvested in June 2011 after seed collection. Analysis of variance showed significant variation among the genotypes for all the characters studied, viz. plant height, fertile tillers/running meter length, spike length, seeds/spike, seed weight/spike, 1000-seed weight and seed yield. The range of mean values was wider for all the traits, except spike length and 1000-seed weight, and seed yield ranged from 143.5 to 518.7 kg ha^{-1}. Values of genotypic and phenotypic coefficients of variation were high for all the traits studied, except plant height and spike length. Broad sense heritabilty was high for 1000-seed weight, spike length and seed weight/spike. Seed weight/spike and 1000-seed weight had more variability, high heritability and high genetic advance as percentage of mean indicated that simple selection could be effective for improvement of these characters. Fertile tillers and 1000-seed weight had positive and significant association with seed yield. Therefore fertile tillers and 1000-seed weight should be taken into consideration while formulating selection programme for seed yield in *C. ciliaris* under arid environment.