



Year: 2011-2012

No. 3, October-December

From the Director...

Over millennia, dry land communities have lived with variable rainfall and frequent droughts by adopting a range of coping strategies. However, several factors like population growth, climate change and socio-economic aspects are putting enormous pressures on these communities at a great cost to their livelihood and supporting natural resource base.

Enhancing livelihood options for dry land communities is essential for building resilience of dry land communities to cope with the effects of drought. Promotion of sustainable land and water management practices, value addition to agricultural and natural products, creation of efficient supply chains and better market access besides opportunities for off-farm employment are extremely relevant in this context.

There could be several approaches to build resilience in Indian context. Support and mobilization of small scale dry land producers, especially women with state, national and international level markets; strengthening of local development groups through capacity building in the areas like water harvesting, land care, facilitating access to energy and water services besides promoting livelihood diversification are needed.

Community adaptation to drought has emerged as an important area for dry land people. Integrated community development approach will build community resilience to drought etc. in a much more effective way. As the climate change models predict much more serious challenges for such communities; greater support in research and development is needed so that these vulnerable communities are not left on their own to deal with the consequences.

-M.M. Roy



RESEARCH ACTIVITIES

Prosopis juliflora Pods – Mixed: Cheap and Balanced Feed for Lactating Cattle

A simple hand mixing technology was standardized for the preparation of economic balanced concentrate feed mixture using locally available pods of *Prosopis juliflora*, oilseed cake of Tumba (*Citrullus colocynthis*) and Til (*Sesamum indicum*), Guar (*Cyamopsis tetragonoloba*) korma, wheat bran, maize grain, common salt and mineral mixture as per requirement. A feeding trial was conducted to understand palatability, acceptability, digestibility and effect of feeding of *Prosopis juliflora* pods containing cheaper concentrate mixture on the production of lactating Tharparkar cattle. The animals were fed as per maintenance and production requirement with mixture having 20% crude protein and 73% total digestible nutrients. The average live body weight before and after the feeding trial was 385 and 369 kg in case of mixture without *P. juliflora* pods (T1), and 353 and 344 kg in case of mixture with the pods (T2). Most of the animals parturited during November 2009 to March 2010. The differences among the groups were non-significant for fat and SNF% of milk, biochemistry of blood and average water intake per animal per day. Fat % and SNF% of milk were 3.40-5.80 and 7.71-9.90 in T1, and 3.0-4.80 and 7.93-9.73 in T2. Blood biochemistry showed that animals had normal body functions and maintained normal health. Palatability scores, calculated as dry matter intake (DMI), were 2.85 and 3.0 kg/100 kg body weight; water intake/animal/day 45.0 and 44.0 litres in T1 and T2, respectively. The digestibility coefficient of nutrients was comparable between the groups. *Prosopis juliflora* pods containing concentrate increased the milk yield up to 21% and extended the calving interval with no adverse effects on health, reproduction and production. This technology is becoming popular among farmers, as it is easy to make the mixture with minimum labor and feasible at livestock owners' doorstep.



- B.K. Mathur, A.C. Mathur and J.C. Tewari

Development of Cleaner-cum-Grader for Value Addition of Cumin

In cumin there are about 15-20% impurities including non-uniform size of seeds in the produce and due to this farmers are getting lower price in the market. A cleaner-cum-grader was developed for value addition in cumin; and that consists of hopper, frame with three screens and blower. The selection of the screens was made on the basis of the length, width and thickness of the seed. Accordingly, three sieves were selected for cleaning and grading. The cumin seeds are fed in hopper and dropped on to the first sieve through feeder. Impurities of larger size, stubble, chaff, etc., are retained by the top sieve and taken out through outlet. The other two

sieves clean and grade the seeds. Broken seeds, dust and powder are dropped on bottom screen and are collected through outlet. The air is blown across falling grains to remove lighter impurities.

Salient Features:

- ◆ The screen effectiveness is 78% and cleaning index 0.93 with 75% cleaning efficiency.
- ◆ The power requirement of the machine is 1.5 KW, 220V, 50 Hz with single-phase electric motor.
- ◆ The machine has capacity of cleaning up to 300 kg h⁻¹.
- ◆ The graded product is classified as Grade-I and Grade-II material and fetches 20-30% more price.
- ◆ The machine can be made more economically viable by modifying it for cleaning and grading other agricultural produce.
- ◆ The machine can be installed on individual basis or in an agro-processing centre or at Panchayat level in rural areas.



- P.K. Malaviya, D. Mishra and P. Sharma

OTHER ACTIVITIES

National Symposium on “Resource Utilization through Integrated Farming System and Biodiversity Conservation in Drylands”

The National Symposium jointly by Arid Zone Research Association of India and Central Arid Zone Research Institute as part of the Silver Jubilee celebration of CAZRI Regional Research Station, Kukma was organized during December 20-22, 2011 at Bhuj.

ICARDA, Syria, Kachchh University and M/s Agro-Cell co-sponsored the symposium. 130 delegates from various institutions of ICAR, ICFRE, SAUs, NGOs, and KVKs, etc., representing states Gujarat, Rajasthan, Himachal Pradesh, Karnataka, West Bengal, Uttar Pradesh, Madhya Pradesh, etc., participated in the Symposium. International delegates from ICARDA centre at Morocco and New Delhi also attended the symposium.

Dr. A.K. Singh, DDG, NRM (ICAR) inaugurated the symposium in presence of Dr. S.R. Yadav, Vice-Chancellor, Kachchh University, Bhuj, Dr. Ashutosh Sarker of ICARDA and Sh. Trikam Bhai Chhanga, Zila Pramukh as Guest of Honour.

Dr. P.C. Pandey, Head, Division of Agricultural Engineering and Arid Production System, CAZRI, Jodhpur conducted the entire inauguration programme. Dr. M.M. Roy, Director, CAZRI, Jodhpur welcomed all the dignitaries. Organizing Secretary, Dr. Devi Dayal, Head, CAZRI, RRS, Bhuj proposed vote of thanks. AZRAI Secretary, Dr. R.S. Tripathi informed the house about detailed three days programme of the symposium.

In all, 138 abstracts were received for six major themes of the symposium. Thirty abstracts were on dryland biodiversity and its conservation, 33 related to natural resources and their management, 38 on crop land management, 10 on livestock production and management, 7 on engineering, energy and post-harvest technology and others were on socio-economic and gender issues.

Dr. A.K. Singh, DDG, delivered plenary lecture. 14 lead/key lectures, 21 oral papers and 65 papers through posters were presented. The symposium was conducted in 5 Technical Sessions.

Following publications were released by the guests at the symposium:

- ◆ Carrot Production Technology for Arid Areas
- ◆ Horticulture Nursery Establishment and Management
- ◆ Rodent Pest Management
- ◆ Dissemination of Technologies Through Farmers Participatory Approach in Kachchh, Gujarat
- ◆ Agrometeorological Data Handbook of Jodhpur
- ◆ Clusterbean Production Technology in Arid Areas

Plenary session was on 22nd December 2011 and Dr. M.M. Roy, Director, CAZRI, Jodhpur chaired the session. The deliberations of the technical sessions were discussed and suitable recommendations were made on future needs for upliftment of dryland farmers. Dr. V.S. Rathore, CAZRI Bikaner, Dr. A.K. Rai, KVK Panchmahal and Dr. Inder Dev, IGFR, Palampur (HP) were awarded for First, Second and Third best posters, respectively.

The following recommendations emerged from the symposium:

- ◆ Climate change mediated elevation in temperature in Indian arid zone will end up in enhanced wind activity and suspended dust loads in view of increased soil disturbance by way of intensive agriculture and other degradational causes. Renewed efforts in stabilizing sands using suitable local biodiversity and a policy shift from expansion of agriculture to providing permanent vegetation cover is needed.
- ◆ To meet challenges of increasing water stress, conjunctive use of surface and groundwater is very essential. The research agenda should include a better understanding of ecohydrological properties, hydrological cycle and aquifer recharges under changing climate, with policy intervention including enforcement of water allocation rules and basin development plans.
- ◆ Conservation agriculture and the application of thiourea and N-fertilizer are recommended to stabilize dryland crop yield under drought stress.



- ◆ Integration of biotechnological tools, viz., plant tissue culture, use of molecular markers, genetic transformation and bioinformatics is needed to meet crop improvement in drylands.
- ◆ Intensification of nanotechnology for improving productivity of dryland crops.
- ◆ Integration of biotechnological tools and techniques with phenotyping, genotyping and conventional breeding techniques for developing varieties tolerant to abiotic and biotic stresses using wild and weedy relatives as gene source.
- ◆ There is acute shortage of quality seeds of forage grasses; efforts are needed to augment seed production of forage crops.
- ◆ Development of location specific sustainable integrated farming systems.
- ◆ Village Cluster approach is suitable for developing community grazing land, whereas Joint Forest Management approach is good for grasslands under forest. Fodder bank and stall feeding are essential components of the management.
- ◆ Conservation and improvement of dryland agro-biodiversity through better cooperation between the national and international research organizations, especially in the use of biotech tools, gene bank creation, capacity building of researchers and dissemination of technologies.
- ◆ Encourage utilization of solar and wind energy through development of low cost and simple devices for farm operations.
- ◆ For arid Gujarat, especially Kachchh district, interventions in changing land use due to better policy are now paying dividends to the local farmers, especially in horticulture and in cash crops. Research and development need to be strengthened for Banni grassland, capacity building of the local farming communities in their endeavours and through conveyance of efforts by the state line departments.
- ◆ Possibility of introduction of suitable fodder legumes for production of quality forage in arid and semi-arid regions.

- Devi Dayal, Organizing Secretary

Model Training Course on Integrated Farming System for Dry lands

Indian agriculture has performed remarkably well over the last 50 years, but this success has been at the expense of critical natural resource base which reviewed the question of sustainability. In this context, eight-day Model Training programme on Integrated Farming System for Dry lands, sponsored by Directorate of Extension, New Delhi was organized by Division of Transfer of Technology & Production Economics during 10-17 October, 2011. The programme was a composite of theoretical sessions along with practical exposure for a better learning experience. The Director, CAZRI highlighted the importance of integrated farming systems for sustainable agricultural development and future food security particularly for the dry land areas. The main aim of the training programme was to fill the gap between research institutions and government development agencies for technological intervention and it was designed for various government officials, agriculture/ horticulture/extension officers to provide exposure to recent technologies and upgrade their knowledge to delineate broad contours of sustainable farming systems especially suitable for dry lands of the country. 13 delegates from Karnataka, Maharashtra, Tamilnadu, Nagaland and Chhattisgarh attended the programme. The major topics were integrated farming systems for dry lands, efficient water management, livestock management, sustainable production of food and fodder crops, rodent and pest management, value addition etc.



Off-campus Specialized Short-term Training for Improving Efficiency of Technical Personnel of CAZRI

NAARM faculty conducted the training at CAZRI, Jodhpur during October 17-20. In this training 25 technical officers participated. Dr. P. Manikandam, Dr. K.H. Rao and Dr. R.V.S. Rao were the experts from NAARM. The topics covered were Human Relations Management, Personality Development, Trust Building, Stress and Conflict Management, etc.



Model Training Course on Improved Agricultural Practices for Arid Horticulture

Division of Transfer of Technology & Production Economics organized a training programme, sponsored by Directorate of Extension, New Delhi, during November 15-22, 2011. Dr. M.M. Roy, Director CAZRI expressed the need for promoting horticultural crops in arid region particularly the multipurpose and fruit trees for enhancing income and sustainability of the farming systems. The lectures were on relevant topics like improved cultivation practices for arid horticultural crops, nursery management, integrated nutrient, disease and pest management in horticultural crops, post harvest processing, value addition and marketing of horticultural produce etc. The participants were agriculture/ horticulture/extension officers from Karnataka, Chhattisgarh, Jharkhand and Rajasthan states.



Exhibitions

November 3-5, 2011: Bharat Nirman Jan Soochna Abhiyan Mela at Barmer (Balotra)

December 20-22, 2011: National Symposium "Resource Utilization through Integrated Farming System and Biodiversity Conservation in Drylands" at Bhuj (Gujarat)

Visits of Farmers: 460 farmers, 145 farm women, 588 students/trainees and 107 officer from various states visited CAZRI to acquaint with the new technologies.

Distinguished Visitors

Dr. Gurbachan Singh, Agril. Commissioner, Govt. of India, New Delhi on 1-10-2011

Dr. G.S. Gujral, Head, Science British Council (India), New, Delhi on 10-10-2011

Dr. Purnima Chouhan, IAS, Induction group 109th Course, LBSNAA, Mussoorie on 18-10-2011

Dr. P. Manikandan, Head, Human Resource Development Division, NAARM, Hyderabad on 20-10-2011

Smt. Madan Kaur, Zeela Pramukha, Barmer; Shri P.R. Vishonia, SDM, Balotra; Shri Madan Prajapat, MLA, Pachpadra; Shri Mahesh Chouhan, Chiarmn, Nagar Palika, Balotra visited CAZRI Stall at Balotra on 3-11-2011

Smt. Veena Pradhan, Collector, Barmer on 5-11-2011

Demonstrations

KVK Jodhpur conducted 122 demonstrations on improved crop and livestock production technologies, 21 training programmes for 538 farmers & farm women, and other 4 extension activities.

Celebrations

CAZRI Foundation Day (October 1)

Children's Day (November 14)

Quami Ekta Week (November 19-25)

Women's Day in Agriculture (5th December): It was celebrated by Krishi Vigyan Kendra, Jodhpur on 04th and 05th December 2011 at Purkhawas village of Luni Panchayat Samiti to sensitize the farm women about gender specific crop and livestock technologies under Technology Demonstration Component of National Initiative on Climate Resilient Agriculture. Training programme on value addition of agricultural and horticultural crops was organized and a series of lectures were delivered on different aspects of women empowerment by distinguished personalities. 200 farm women from near by villages participated. Chief guest, Smt. Asha Bothra, Secretary Meera Sansthan Jodhpur urged the rural women specially to Smt. Shobha Devi Sarpanch of the Gram Panchayat to eradicate the social evils like Pardha Partha, Child marriage etc. Dr. A.K. Mishra, Head and Officer-in-charge, KVK explained the role of women in agriculture and Dr. (Mrs.) Sharmila Roy, Senior Scientist, focused on role of education in girls for all-round development of the society. Drs. H.C. Bohra and Pratibha Tiwari Principal Scientists and Dr. Lalita Vata, Asstt. Prof. K.N. College (J.N.V.U) Jodhpur also expressed their views. At the end of the programme girl students of the K.N. College performed 'Role play' on dowry in the society. Smt. Savita Singhal, KVK Jodhpur coordinated the programme. Drs. A.S. Tomar, Hari Dayal, Manoj Kumar and Sh. Dinesh Kumar of KVK also imparted training to the participants.

Flag Day (November 25)

Appointments

Sh. Jabbar Singh as Regular Mazdoor on 25.10.11

Mr. Sushil Kumar as Scientist (Agronomy) on 22.12.2011

Ms. Monika Shukla as Scientist (Agronomy) on 23.12.2011

Mr. Venkatesan K. as Scientist (Economic Botany) on 23.12.2011

Promotions

Sh. Mohan Lal Swami, T-7-8 (F/S) to T-9 (F/S), w.e.f. 30.07.2009

Sh. Murl Manohar Purohit, T-6 (TO) to T-7-8 (TO), w.e.f. 01.07.2008

Transfer

Dr. S.S. Rao, Sr. Scientist transferred to NBSS&LUP, RRS, Udaipur on 9.12.2011

Superannuations

October: Dr. P.B.L. Chaurasia, Principal Scientist

November: Sh. Durlabh Chand, Asstt. Adm. Officer

December: Dr. H.C. Bohra, Principal Scientist, Sh. Kheta Ram, Regular Mazdoor and Sh. Basti Ram, Forest Guard

Visits Abroad

Dr. R.K. Bhatt, Head, Division III visited Rome, Italy from October 24 to 25, 2011 to attend the Geo-Carbon Conference: Carbon in a Changing World, at FAO Headquarter.

Dr. Dheeraj Singh, Training Organizer, visited Nairobi, Kenya from November 13 to 18, 2011 to participate in 2nd GKRAS Annual Meeting and International Conference on "Innovations in Extension and Advisory Services".

Dr. T.K. Bhati, Principal Scientist visited Burkina Faso from December 14 to 19, 2011 to participate in 9th International Workshop on "Sustainable Management of Marginal Drylands- Phase 2 (SUMAMAD)-2", at Bobo Dioulasso.

Obituary

Sh. Amar Nath Bohra, T-3 (Workshop Group) on 07.10.2011.



Published by : Director, CAZRI, Jodhpur 342003
Contact : Ph.: 91-0291-2786584 (O), 91-0291-2788484 (R), Fax: +91-0291-2788706
E-mail: director@cazri.res.in; Website: http://www.cazri.res.in
Editorial Committee : S.K. Jindal, D.V. Singh, Nisha Patel and Ajayvir Singh Sirohi
Compilation : S.B. Sharma