



Central Arid Zone Research Institute

**CAZRI NEWS**

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No. 3, October-December

## From the Director...



Grasslands are one of the Earth's major ecosystems, dominated by grass and grass-like species with or without scattered woody plants, occupying about 20-30 per cent of world's land area. In India, such a resource is mostly under community – common land - but its control is ill defined. This has resulted into their unscientific overuse and is now largely degraded. The present 12.15 million ha of grasslands in the country, constituting 3.7 per cent of the total area, is mostly located in arid regions, hilly regions and some other inaccessible regions.

After independence, the system of community pastureland management through caretakers appointed by the princely states weakened. Now, it is realized to have a system in place to take care of these resources for livestock production *vis-a-vis* re-growth of vegetation. The scientific principles of effective management of grasslands are well known and include soil and water conservation measures, reseeding, harvest and grazing management, selective removal of bushes and other species, use of manures, introduction of suitable leguminous species etc.

The present ownership of such resources fall under three categories viz., *Gram Panchyat* for village community pastures (*Gauchar*), revenue development for revenue wastelands and forest department for forest lands. Protection and phased utilization of such resources in a participatory mode through social fencing is urgently required. This institute is committed to provide required technical support to all concerned stakeholders for improvement in the existing conditions of the grasslands and also in planning for its managed use.



-M.M. Roy

## RESEARCH ACTIVITIES

### Integrated Development of Bernia Watershed

Under Tribal Sup Plan project a watershed site in Bernia village (District Dungarpur) was selected. A detailed bench mark survey was carried out to assess the problems and potential of the area. This 620 ha watershed area is dominated by gravel rocky land (289 ha) and 145 ha under agriculture use. The village has 175 households with 1015 population. Water scarcity and low crops and livestock productivity are the major challenges of the area.

Under the development activities, availability of water was upgraded by excavation of existing nadi and the capacity was enhanced from 4000 m<sup>3</sup> to 12500 m<sup>3</sup>. To improve the productivity of kharif crops 263 kg of high yielding paddy (Pusa-Sugandha-5) and 250 kg of urd bean (PU-31) seeds were distributed to the farmers along with 18 q of Urea, 12 q of DAP and 7.5 q of NPS @ 30, 20 and 15 kg/farmer. With the use of improved technologies paddy yield increased from 18 to 36 q ha<sup>-1</sup> and for Urd bean from 2.4 to 3.6 q ha<sup>-1</sup>. In rabi season 40 q wheat (Raj-4037) and 9.9 q of gram (Pratap Chana-1) seeds were distributed to 100 farmers. To manage soil sodicity gypsum application was suggested and was distributed.



A view of Bernia watershed

In horticulture development program, 450 seedlings of pomegranate (Bhagawa) and 350 seedlings of lemon (Kagzi) were distributed. Under energy management activities solar lanterns were distributed in each house holds. One training-cum-awareness generation program was also conducted for human resource development.

**-R.K. Goyal, P. Raja, Mahesh Gaur, R.N. Kumawat, A.V.S. Sirohi and C.B. Pandey**

### New Enzyme Identified in Nano-P Treated Plants

A new enzyme known as Endo--Mannanase (EC 3.2.1.78) in nano-P treated pearl millet samples has been identified. This enzyme plays a key role in plant growth and development including embryogenesis, seed germination, shoots growth, leaf formation, flower development and fruit ripening.

**-J.C. Tarafdar**

### Breeding High Seed Yielding Watermelon

Watermelon (*Citrullus lanatus* (Thunb.) Matsum. & Nakai) is grown as seed crop under rainfed mixed cropping in north-western parts of the Indian arid zone. The crop has potential to be promoted as cash crop in the region and may provide livelihood support for the farmers as the seed prices varies from Rs. 50-80/kg in local market.

Therefore, CAZRI, started genetic improvement work to develop high seed yielding genotypes at its Regional Research Station, Jaisalmer, where exotic collections and landraces are evaluated for seed yield and related traits. Based on three years data two genotypes namely CAZJK-13-1 and CAZJK-13-2 are identified for higher seed yield.

#### Seed yield and related traits of two promising lines of watermelon

Character	CAZJK-13-1	CAZJK-13-2	GK – 1 (Check)
Fruit weight (kg)	2.27	1.57	0.97
Rind weight (kg)	1.53	1.09	0.65
Fruit diameter (cm)	42.8	401.1	39.3
Number of seeds/fruit	660	717	469
Seed yield/fruit (g)	44.4	43.7	32.2
Number of fruits/plant	5.8	9.2	6.7
Fruit yield/plant (kg)	8.4	10.7	8.8
Test weight (g)	63.3	61.6	66.8
Seed yield/plant (g)	239	291	190



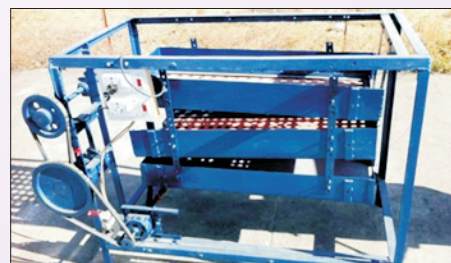
High yielding watermelon genotypes

**-H.R. Mahla and J.P. Singh**

### Hybrid Ber Grader

A hybrid power-cum-PV operated ber grader of capacity 500 kg hr<sup>-1</sup> was developed for grading ber into three sizes i.e. >35 mm, 25-35 mm and <25 mm, which can be collected separately from respective rubber padded screens to protect from physical damage of fruits. The machine comprises of specially designed oscillating screens (0.48 m<sup>2</sup>) that is driven by 200W asynchronous single phase 220 V, 50Hz, AC motor.

**-P.K. Malviya**



### Performance of *Prosopis juliflora* Pod Feed Blocks to Cattle: A Field Trial

One kilogram of the supplemented feed blocks were prepared with dried *P. juliflora* pods (73.5%), molasses (4.9%), urea (2%), dolomite (1.5%), guar korma (8.2%), tumba seed cake (6.9%) and vitamin added mineral mixture (3%). These blocks were fed to ten lactating indigenous and crossbred cows regularly for a period of two months. Average initial and



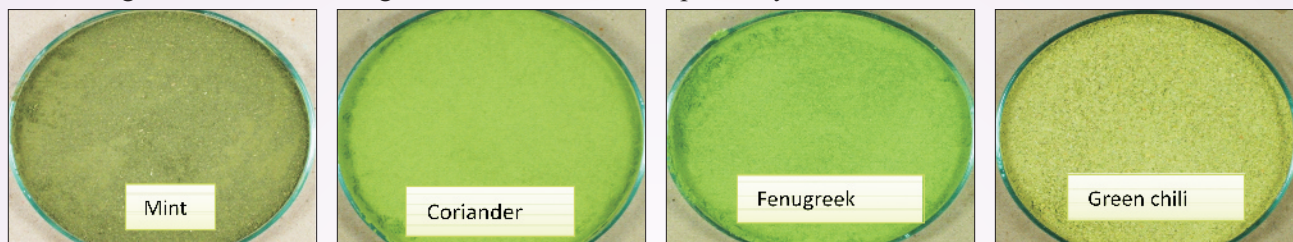
final milk yield/cow/day was 4.55 and 5.53 litres, respectively. Also an increase in body weight of cows was recorded. Besides this persistency in milk yield and no health problem due to feeding of the blocks was found during the trial.

**-A.S. Sirohi, B.K. Mathur, A.K. Misra and J.C. Tewari**

### Solar Drying of Green Herbs and Spices

Drying of green herbs (coriander, mint and fenugreek) and spices (green chilli) were assessed after pre-treatments in three different conditions of drying i.e. open sun, direct and indirect solar dryer. Among the four pre-treatments with solution of 0.5% sodium bicarbonate, 0.5% sodium hydroxide, 0.5% calcium chloride and 1% baking soda, solution of 0.5% sodium bicarbonate was found significantly better. Average drying time was observed to be 5, 5.5, 6 and 8 hr for coriander, mint, fenugreek and chilli respectively at a loading rate of 2.5 kg m<sup>-2</sup>.

The results revealed that indirect solar drying produce better products with 'a' value in coriander: -6.93±0.34; mint: -1.26±40; fenugreek: -8.14±0.30 and green chilli: -3.8±0.24, respectively.



**-Dilip Jain**

## OTHER ACTIVITIES

### CAZRI Foundation Day

Institute celebrated its 55<sup>th</sup> Foundation Day on October 1, 2013. Dr. Panjab Singh, Former Director-General, ICAR was the Chief Guest. He expressed his views about the work done by the institute on productivity of the crops, livelihood and employment in arid areas. On this occasion various awards were given to Scientific, Technical, Administrative and Supporting personnel for Institute development. Dr. L.N. Harsh, Vice Chancellor, Jodhpur Agriculture University, was the Guest of Honour. More than 7 publications were also released. Director M.M. Roy welcomed the guests and told the achievements of the past year. Dr. R.S. Tripathi, organizing secretary proposed vote of thanks.



### 78<sup>th</sup> Annual Convention and National Symposium of Indian Society of Soil Science

The convention and symposium were organized at CAZRI during 23-26 October, 2013. There were about 500 participants in the symposium. Padma Bhusan Prof. R.B. Singh, President, NAAS inaugurated the symposium and emphasized about the necessity to have human face of the R&D in soil science. New disciplines like, geo-informatics, socio-economy, soil biodiversity studies, soil biotechnology, nanotechnology applications in soil science need to be inculcated. 31<sup>st</sup> Prof. J.N. Mukherjee ISSS Foundation Lecture was delivered by Dr. Samar Chandra Datta, IARI, New Delhi and 40<sup>th</sup> R.V. Tamhane Memorial Lecture by Dr. J.C. Tarafdar, National Fellow & Organizing Secretary of the Convention. There were 107 oral, 185 poster, outstanding thesis presentations and exhibitions.



### Meetings/Celebrations

A guest lecture "Solar Energy Scenario in India: Facts, Features and Future" was delivered by Dr. T. C. Tripathi, former advisor, Ministry of Non-Renewal Energy, Govt of India on October 10, 2013

Vigilance awareness week 28.10.13 to 2.11.13

Workshop on “Stepping towards Digital Library for Efficient Information Management” sponsored by NAIP (e-Granth) on 9.12.2013.

Mid-term Review meeting of ICAR Regional Committee No. VI was held at CAZRI, Jodhpur on December 18, 2013. Various Directors of ICAR Institutes in Rajasthan, Directors Research of Gujarat and Rajasthan Agricultural Universities, Chief Conservator of Forest and personnel from Irrigation, Fisheries, Agriculture and Horticulture Departments of Rajasthan State participated.



### Trainings Organized

NAARM faculty conducted the specialized short term Training for Improving Efficiency of Administrative and Technical Personnel at CAZRI, Jodhpur during December 16-19 and December 17-20, 2013 with 25 participants each. Drs. P. Manikandam, K.H. Rao and R. V.S. Rao were the experts.

### Extension activities

1 on campus and 7 off campus training programs were conducted during this period at KVK, Jodhpur. In these programs 262 farmers, farm women and rural youth were benefited.

37 Front Line Demonstration in 15 ha on mustered and wheat production technology and method demonstration on use of seed-cum-fertilizer drill in 50 ha area were conducted.

530 farmers visited the KVK in 12 different groups.

3 farmer field school (FFS) for 75 farmers at different villages were conducted.

### Appointments

- Dr. Ramesh Chand Kasana, Sr. Scientist (Agril. Microbiology) on 17.10.2013
- Sh. Laxman Prasad Balai, T-6 (SMS) on 31.10.2013 at KVK, Pali
- Sh. Yogendra Singh, T-3 (Lab. Tech.) on 17.12.2013 at RRS, Leh

### Promotions

- Sh. Anil Bhandari, OS-cum-Accountant to AFAO, w.e.f. 14.11.2013
- Sh. Murli Manohar Solanki, Sr. Clerk to Assistant w.e.f. 25.10.2013
- Sh. Ramesh Kumar, Jr. Clerk to Sr. Clerk, w.e.f. 25.10.2013
- Sh. Sohan Lal, Jr. Clerk to Sr. Clerk, w.e.f. 25.10.2013
- Sh. Badri Narayan Meena, Jr. Clerk to Sr. Clerk, w.e.f. 25.10.2013

### Transfers

- Sh. Raj Kumar, Scientist (Horticulture/Floriculture), RRS, Bhuj to NRC, Orchids, Pakyong, Sikkim on 31.10.2013
- Dr. Nawlesh Kumar Sinha, Sr. Scientist (Seed Technology), RRS Jaisalmer to IIAB, Ranchi on 7.12.2013

### Visits Abroad

- Dr. Suresh Kumar, Head, Div. II attended VIII<sup>th</sup> International Cactus Pear and Cochineal Symposium at Paleromo (Italy), October 28-31, 2013
- Dr. N.D. Yadava, Head, RRS, Bikaner attended training course on “Improving Water Productivity in Agricultural Systems” under ICAR-ICARDA collaborative research project #8 at Amman (Jordan), October 27 to November 14, 2013



### Superannuations

- October:** Sh. M.M. Purohit, ACTO; Sh. Vinod Kumar, ACTO; Smt. Kamla/Ram Chandra, SSS; Smt. Patasi, SSS
- November:** Dr. R.R. Bhansali, Principal Scientist (Plant Pathology); Sh. Roop Chand, ACTO
- December:** Dr. H.A. Khan, Principal Scientist (Organic Chemistry)

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