



हर कदम, हर डगर  
किसानों का हमसफर  
भारतीय कृषि अनुसंधान परिषद

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*ICAR Mail wishes its readers happiness, prosperity and peace in New Year*

### Success through precision farming

Rajamani, a young farmer of Pullagoundan pudur village, Coimbatore district, Tamil Nadu practised conventional farming in growing vegetable crops like onion, chilli and turmeric in the red sandy loam soil. But the gained benefits were not as good as expected. He participated in a training on precision farming organized by Directorate of Extension Education, Tamil Nadu Agricultural University (TNAU) and approached Horticulture Department for further advise. Department suggested him to follow the precision farming as a group to get high profit. He planned to cultivate onion, tomato, brinjal, cauliflower, chillies and turmeric. Then, he prepared his land under the supervision of scientists of Horticulture Department, TNAU.

He got high yield and quality farm produce by using sufficient water and fertilizers at regular interval. Particularly onion fetched high price in markets because of same size and good quality. Retailers came to field to take the produce directly. He spent 3,35,400 for cultivation practices and got high profit of 9,66,000/ha from turmeric, onion, chillies, coriander and red gram. He got this huge profit since he shifted from conventional farming to precision farming. Now, Rajamani is one of the happiest farmers in the region. He is enjoying precision farming with his family. Now he is stimulating other farmers in his village to follow precision farming.

### Union Agriculture Minister Shri Sharad Pawar visits ICAR Institutes Central Institute for Research on Goats

Shri Sharad Pawar, Union Minister for Agriculture and Food Processing Industries, visited Central Institute for Research on Goats (CIRG), Makhdoom, Mathura, Uttar Pradesh on 24 January 2011. He visited the Jakhra, Jamunapari and Barbari goat units and Muzaffarnagari Sheep units of the Institute, and also the rumen microbiology, feed processing, male reproduction and IVF laboratories of the Institute. He had an interactive meeting with the farmers and scientists and also released the area-specific mineral mixture technology developed by the Institute. Shri Pawar expressed satisfaction on the quality animals being maintained by the Institute and suggested that knowledge sharing



initiatives should be undertaken by the Institute to disseminate benefit of scientific goat rearing to the farmers. He told that good animals are available with the farmers but these are not properly utilized for breed improvement for want of proper recording of performance data. It is therefore crucial to register farmers for getting superior germplasm from field to experimental farms. He asked the CIRG to prepare a road map for state governments for goat breed improvement programme and develop effective vaccines and disease diagnostic technologies for disease-free flock at farmers level to improve production to meet the domestic and export demands in terms of both quality and quantity of goat meat. He appreciated the CIRG technologies such as complete feed block, area-specific mineral mixture, value-added goat milk and meat products (nimkee, murukku and pops), and herbal medicines. He congratulated the scientists for producing IVF kids at CIRG. While emphasizing need to develop goat gene/semen bank, he demanded that scientists should find out solution to combat goat diseases at farmers' level.

Shri Pawar advised scientists of CIRG to standardize basic framework of Artificial Insemination (AI) in goat so that same can be adopted by State Governments in their AI programmes already in vogue for cattle and buffaloes. He called State Agriculture and Veterinary Universities and mass media to popularize goat breeding programme. Shri Pawar was satisfied with the Kisan Help Line and the farmers training at the Institute but

wanted vast coverage of such training programmes. He said that livestock production has become more knowledge-intensive, technology-led and demand-driven and asked the scientists to contribute accordingly. He was accompanied by Dr S Ayyappan, Secretary, Department of Agricultural Research and Education (DARE) and Director General, Indian Council of Agricultural Research (ICAR), Dr KML Pathak DDG (AS), and Dr CS Prasad, ADG (ANP) and a host of dignitaries notably Dr (Ms) Chanda Nimbkar from Phaltan and Ms Kadirbai from Baramati, Maharashtra.

Dr S Ayyappan, Secretary, DARE and DG, ICAR, complimented the efforts made by the scientists of CIRG, and indicated that the council is considering initiating outreach programme on goat production as it is the future animal. He said that invention of farmer-friendly technology would go a long way in sustainable livestock production and poverty alleviation.

Dr Devendra Swarup, Director, CIRG, informed that 18 patent applications have been filed by the Institute and many of these are in the final stage of award. He informed the august gathering that commercialization of technologies has been taken up on priority. Alquit, a herbal drug, has been already commercialized and is available in the market. Four other technologies are in the pipeline for commercialization.

Speaking on the occasion, Dr Chanda Nimbkar, stressed the need to set up disease-free multiplier flocks for production, maintenance and distribution of quality nucleus stock of improved goat breeds.

### Indian Institute of Pulses Research

The Minister visited Indian Institute of Pulses Research (IIPR), Kanpur on 29 January 2011. He was accompanied by Mr PK Basu, Secretary, Department of Agriculture and Cooperation (DAC), and Dr S Ayyappan, Secretary, DARE and Director General, ICAR, Mr Raja Ram Pal, Member of Parliament, Dr TP Rajendran, Assistant Director General (PP) and Dr BB Singh, Assistant Director General (O&P).

At the main campus of the Institute, Hon'ble Minister inaugurated the Pulse Genetic Resource Centre. He visited the experimental fields at the main farm and took showed interest in the development of new varieties, particularly the hybrids. He also visited the Institute museum. Hon'ble



Minister visited the Genetic Stock Management Farm of the Institute and took keen interest in the breeder seed production of different pulse crops.

Dr Nadarajan, Director, IIPR, presented before the Hon'ble Minister the pulse production scenario in the country. He highlighted the achievements of the Institute in development of new high-yielding varieties and matching crop production technologies.

In his address, the Hon'ble Minister called upon the scientists to develop short-duration varieties of pulse crops to foster multiple cropping system. Focusing upon the research priorities, he asked the scientists to develop pulse varieties and matching production technologies keeping in mind climate change. He also honoured five progressive farmers of the area.

### Indian Grassland and Fodder Research Institute

The Minister visited Indian Grassland and Fodder Research Institute (IGFRI), Jhansi on 30 January 2011.

Shri Pradeep Jain 'Aditya', Union State Minister for Rural Development, also graced the occasion. Dr S Ayyappan, Secretary, DARE and Director General, ICAR; Dr PK Basu, Secretary, DAC, Dr SK Datta, Deputy Director General (Crop Sciences), Dr AK Singh, Deputy Director General (NRM) were also present on the occasion. A scientists-farmers interaction was

organized with the Hon'ble Ministers. A large number of farmers, press and media persons attended the programme.

Shri Sharad Pawar expressed that he was eager to visit these Institutes for a long time, and congratulated the scientists of the IGFR and National Research Centre for Agroforestry. On this occasion, a publication *Forage Crops Varieties* and a special issue of *Chara Patrika* were released. Shri Pawar stressed the need for development of fodder and feed resources so that the huge livestock populations in the country are fed adequately. He emphasized that new forage varieties should be developed and the seeds should be made available timely at adequate prices. Various technologies such as making fortified feed-blocks should be encouraged to improve feeding standards of animals.

Dr S Ayyappan, in his address informed that development of forage resources is high on the agenda of ICAR.

### Stem cell treatment brings back pet dogs from the brink of death

Pet dogs suffering terminally with spinal injuries were treated successfully with allogenic mesenchymal stem cells by scientists of Physiology and Climatology (P&C) and Surgery Divisions of Indian Veterinary Research Institute (IVRI). These dogs could not be treated with conventional methods and owners had lost all hope and were contemplating euthanasia. Prof. M C Sharma, Director, IVRI, informed that stem cells, considered as the wonder cells, can be used for regeneration therapy. It is a promising field of research with immense potential, and research related to mainly embryonic stem cells, cord blood and mesenchymal stem cells is being conducted at this Institute. This is the first research outcome from stem cell treatment in animals in India.

The Head of Division P&C, Principal investigator (PI), Dr (Mrs) Taru Sharma and Dr Amar Pal, Senior Scientist and Co PI, Division of Surgery under whom the research project was initiated, informed about the treatment. A three-and-a-half-year-old male Dachshund dog that suffered from hind limb paralysis could move with forelimbs very fast but dragged the hind quarters. Animal did not respond to the superficial pain but deep pain was intact. The bone marrow cells were transplanted (allogenically) at the site of injury. After one-and-a-half-month time the animal showed some improvement and it started to put some weight on its right hind limb when the animal was brought to standing position by the owner. However, the animal was not able to get up on its own. After 40 days of a second injection, the animal was able to get up for a few seconds and after another five days was able to walk for short distances. Thereafter the animal improved very fast and in the next 15 days the animal was able to walk and move freely without any in-coordination and all the wounds on the hind feet had healed. In another case, a 10-year-old Spitz dog was suffering for more than a year. This dog was given the allogenic mesenchymal stem cell therapy, it showed some improvement after a month's time. In coordination of hind limbs reduced and the animal was able to get up and sit down without difficulty. It walked without dragging the limbs and used hind limbs even for scratching. Proprioception was almost normal and patellar reflexes were normal in both hind limbs. The animal was again treated with the stem cells and it improved greatly. The animal owner reported that the dog could support full weight on hind limbs. The overall recovery was considered as very satisfactory.

Further research and clinical trials are continuing at IVRI and hopefully the stem cell technology will soon be used in specialized veterinary clinics to treat such cases that are not amenable to conventional treatment.

### National seminar on gender and biodiversity

A two-day National seminar on gender and biodiversity was organized on the occasion of the International Year of Biodiversity by the Directorate of Research on Women in Agriculture, Bhubaneswar in collaboration with UNDP, National Biodiversity Authority, Chennai and Research Association for Gender in Agriculture, Bhubaneswar on 28–29 December 2010 to discuss and understand the role of women in biodiversity in different agro-ecosystem and policies and rights relating to biodiversity conservation and management in India, share experiences and best practices in biodiversity conservation and management in gender perspective, and sensitize the stakeholders about the importance of biodiversity conservation and management.

Dr Aurobindo Behera, Principal Secretary, Forest and Environment Department, Government of Odisha and Chairman, Orissa State



Biodiversity Board, Bhubaneswar in his address highlighted the important role played by women through ages in conservation of biodiversity and stressed upon developing linkages and collaborations between agencies to address the issues of biodiversity. About 70 delegates including researchers, policy-makers, development practitioners, academicians and NGOs from Madhya Pradesh, New Delhi, Tamil Nadu, Karnataka, Meghalaya and Odisha participated in the seminar. Twentyfive invited papers were presented in the seminar.

### Strategies for technology-led inclusive growth in the Indo-Gangetic Plains

'Ecosystem-based production will have to be the order of the day. The programmes and policies must be realigned. Subsidy, services and incentives should be used as instruments of this positive change', recommends the strategic document entitled 'State of Indian Agriculture-The Indo-Gangetic Plain' released in New Delhi on 31 December 2010. A publication of the National Academy of Agricultural Sciences, New Delhi, an apex think-tank of the country on Indian agriculture, emphasizes the importance of the Indo-Gangetic Plains (IGP) in sustaining food and livelihood security of the country and reminds that on per unit land, population pressure in India is about five times more than the world average, and in the country, it is highest in the IGP. Document is a compilation of in-depth studies and analysis by the distinguished experts of the country.

In all, document proposes 24 recommendations with specific action points on western IGP and eastern IGP. Some selected recommendations are as follows:

- As a strategy, incentives be provided to promote diversified agro-industries based on local agricultural production
- For sustainably enhanced total production, align, integrate, and harmonise the crop and livestock production, processing, storage, transportation, marketing and trade policies and practices
- Promote conservation agriculture and reorient research on natural resource management, varietal improvement, plant protection, agronomic packages and livestock integration and management
- Prepare for precision agriculture. Generate technologies, develop appropriate human resources and logistics for future.

'Looking at the gravity of the situation, I hope that this publication would culminate into an efficient, effective and relevant action by both state and central governments. The Academy would be available for any further clarification or academic assistance', noted Dr Mangala Rai, President, National Academy of Agricultural Sciences, India.

Dr S Ayyappan, Secretary, DARE and Director General, ICAR highlighted the important role of the NAAS in bringing out such significant policy documents and discussed the importance of IGP in Indian agriculture.

### ICAR at 98<sup>th</sup> Indian Science Congress

Indian Council of Agricultural Research participated in 98<sup>th</sup> Indian Science Congress held at Chennai (3-7 January 2011). Commensurating with the theme "Quality Education and Excellence in Science Research in Indian Universities", four ICAR institutes which are deemed to be universities, viz. Indian Agricultural Research Institute, New Delhi; National Dairy Research Institute, Karnal; Indian Veterinary Research Institute, Izatnagar; and Central Institute of Fisheries Education, Mumbai participated in the "Pride of India" exhibition and showcased their higher education programmes. During the event, large number of visitors, mainly students visited the stalls and took keen interest in agricultural educational programmes of ICAR. Communication arm of ICAR, DIPA also participated and showcased the publications and other information products catering to the needs of students. Internationally renowned agricultural scientist and thinker Prof. M S Swaminathan appreciated the efforts of ICAR for bringing the excellence for the agricultural education in the country.



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