



# Reporter

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APRIL – JUNE 2014



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## Welcome and Greetings

Indian Council of Agricultural Research welcomes Shri Radha Mohan Singh, Union Minister of Agriculture and Dr Sanjeev Kumar Balyan, Minister of State for Agriculture on assuming charge of their new assignments. Shri Singh is also President of ICAR Society providing leadership to plan, coordinate and spearhead agricultural research and education endeavours in the country.

Shri Singh, belonging to a farmer family, is known for his work for the welfare of farmers. On assuming charge, he discussed various issues of agricultural research with senior scientists and officials of ICAR to get and overview of ongoing research and future strategies.



While appreciating XII Plan initiatives, he expressed his satisfaction over the accomplishments so far and appreciated programmes having farmers, students and youth on the centre stage.

During interactions Shri Singh shared his vision for agricultural development and stressed the need to accelerate the extension process for speedy adoption of new technologies by farmers. He emphasized the need to strengthen agricultural universities and Krishi Vigyan Kendras to help take the new technologies to the farmers' fields.

Dr Sanjeev Kumar Balyan, a veterinary scientist himself, expressed happiness over the new assignment of his interest and hoped that livestock will play a more intensive role in the overall agricultural development and inclusive growth of the farming community.



Dr S. Ayyappan (Secretary, DARE and DG, ICAR) welcomed new ministers on behalf of ICAR and hoped that their experiences in farms, social work and administration will lead ICAR to new heights. He assured the leadership the realignment of strategies as per the vision of new government.

## From the DG's Desk

Dear Readers,

Having achieved a satisfactory level of food security in the country through technology led enhancement in farm productivity and diversification of food basket, the challenge before Indian agriculture is to ensure household nutritional security for an ever growing human population. The projections are that our population will be around 2 billion by 2050 A.D. surpassing China.

According to a *FAO Report*, the global meat production is projected to be 308.3 million tonnes (mt) in 2013 including pork around 115 mt. Asia, the leading pork producing region, accounts for almost 60% of the total production. The meat production in India was 5.5 mt by the end of the XI Plan (2011-12) with an annual growth rate of about 13%, accounting for 25.8% of GDP agricultural produce. India is endowed with the largest livestock and poultry population in the world playing a vital role in providing livelihood security to rural masses. Presently, marginal-, small-, and semi-medium farmers own about 88% of the livestock in India. Hence, development of livestock sector would result in making the growth more inclusive.

During 2012-13, our domestic production of pork was 0.45 mt with an average meat yield of about 39 kg/ animal, which is lower than the world average (79 kg/animal). The share of pork is around 8% of total meat production. Pig production, among other species has a higher potential to contribute to more economic gain due to two facts: (i) the pigs have higher fecundity, higher feed conversion efficiency, early maturity, shorter generation interval and relatively smaller space requirement. Apart from providing meat, it is also a source of bristles and manure. (ii) pig farming provides employment opportunities to seasonally employed rural farmers and supplement income to improve their living standards.

As per the *XVIII Livestock Census (2007)*, pig population of India is 11.13 million, about 1.3% of its global population. Distribution of pig population across the country is not uniform, for instance, thick population of pigs is recorded in the eastern (2.8 million) and north-eastern (4.5 million) states; highest population is in Asom (2 million), followed by Uttar Pradesh (1.35 million), West Bengal (0.82 million), Jharkhand (0.73 million) and Nagaland (0.70 million). Most of the pig population is again in the tribal belts of the country where the people are non-vegetarian. Pork consumption being popular among

select populations, improved pig husbandry programmes and pig-based integrated fish farming have significantly contributed in the poverty alleviation strategies of the Government.

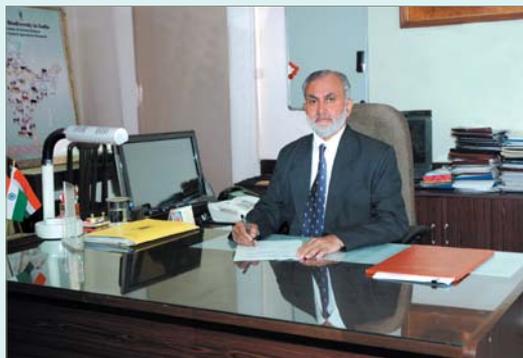
In India, 70% of the pig population is reared under traditional small holder, low-input demand driven production system, except for limited number of semi-commercial pig farms in Kerala, Punjab and Goa. The typical production system consists of a simple pigsty and feeding comprises locally available grains, vegetables and agricultural byproducts along with kitchen waste. Certain bottlenecks and threats in pig farming are: absence of sufficient number of breeder farmers, tendency of the pig grower to raise

pig to marketable age on zero to negligible inputs and lesser preference of the consumers for pork from the local pigs etc. Absence of sufficient number of breeder farmers throughout the country is a major constraint leading to lesser availability of quality pigs for fatter farmers and market. Therefore, genetic improvement of indigenous pigs through conventional and

molecular method must be undertaken on priority for production of superior germplasm. Religious taboo attached with pork consumption is also a weakness for which marketing of pork has to be confined to a selective group.

Of the 144 livestock and poultry breeds registered by the NBAGR, Karnal, two are of pigs while more than 10 unregistered populations/strains of indigenous pigs are found across the country. Their characterization, evaluation, conservation and documentation need to be taken up to help in identification of candidate markers for productive and reproductive traits. Large-scale application of artificial insemination (AI) technology under field conditions and horizontal spread of superior germplasm needs to be taken up expeditiously. Different strains of indigenous pigs from Indian states need to be identified, characterized, documented, improved and conserved (*in-situ* and *ex-situ*).

More than 60% deficiency in concentrate feed sources is a threat to the intensive pig production. Research efforts are needed to carry out nutritional analysis of locally available unconventional feed resources, and develop balanced ration for various categories of pigs using these feed resources to reduce feed cost. The existing and emerging swine pathogens, especially of transboundary nature, have to be closely monitored and suitable health interventions need to be developed on priority. Further, limited availability of vaccine, emergence of new disease like porcine reproductive and respiratory syndrome (PRRS) are



# WORKSHOPS, MEETINGS, SEMINARS, CONFERENCES, BRAINSTORMING SESSIONS

## Preparedness for Monsoon 2014

New Delhi, 7 June 2014. A Brainstorming Session on 'Preparedness in the wake of possible rainfall deficit during the ensuing south-west monsoon' was organized by the National Academy of Agricultural Sciences at NASC Complex. Dr S. Ayyappan (Secretary DARE and DG, ICAR) chaired the session and explained the purpose of the meeting and urged all stakeholders to take prompt and proactive actions for the preparedness of Monsoon 2014.

Dr A K Sikka (DDG, NRM) outlined the objectives and expected outcomes of the Brainstorming Session. Dr Sikka informed the house about the possible scenarios that may include delayed onset, prolonged dryspells - early withdrawal, less rainfall and excessive rainfall and other extreme weather events. Fallout of significant negative rainfall departures due to delayed onset of monsoon and/or breaks in its progress may result in the occurrence of droughts and drought-like situations whereas excessive rainfall may create flood-like situations. Dr Sikka mentioned that contingency planning in agriculture is one of the major strategies for preparedness for the aberrant



weather that could not be prevented. He informed that ICAR in collaboration with state agricultural universities through CRIDA has prepared more than 500 District Level Contingency Plans covering 23 states to tackle aberrant monsoon situations leading to drought and floods adversely affecting crops, livestock and fisheries. All the 500 district plans are placed in the 'farmer portal' of the Ministry of Agriculture, Government of India (<http://www.farmer.gov.in>) and also in the ICAR/CRIDA website (<http://www.crida.in>) for downloading the full plan by stakeholders for operational use. To

threats for pig production in India. However, it is possible to overcome all these constraints and threats by proper planning and scientific interventions.

Mega Seed Project on Pig and AICRP on Pig implemented by the National Research Centre on Pig enable regular supply of good quality pig germplasm, location-specific research on pig nutrition and breeding throughout India. The NRC on Pig is undertaking basic, applied and strategic research on pigs and also imparting training on low-cost production technology, modern husbandry practices, pork product processing, artificial insemination, and knowledge on zoonotic diseases, to produce good quality pork and pork products from healthy pigs. Besides, the Council emphasizes on developing 'pig villages' in selected areas, by establishing and strengthening the marketing mechanisms at the local level to the marketing channels, and integrate production programme with slaughterhouses to ensure better sustainability. Notwithstanding, technologies for low-cost production are being developed to produce pork economically. Further, the Government intends to promote pig farms as resource centers for supplying breeding animals to the breeder farms, wherein private players shall have

stakeholdership in production and value addition.

Out of 60 g of daily protein requirement as per Indian Council of Medical Research recommendation, about 20 g should be from animal protein source. Considering a modest figure of 20% of total population (254 million) consuming pork in the country and assuming 2 g out of 20 g of daily animal protein requirement sourced through pork, the total requirement of pork would be around 0.93 million tonne. Thus the present shortfall of pork in the country is about 0.48 million tonne or in other words there is a deficit of 48.38%. There is an urgent need to narrow the gap by scientific pig farming along with post-slaughter pork processing and development of products with improved shelf-life to promote the pork industry in India.

Given its prospects, piggery has the potential to have a positive impact on the livelihood of millions of resource poor, under-privileged, landless and marginal farmers.



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operationalize these contingent plans, ICAR has already conducted Interface Meetings with state departments (Maharashtra, Andhra Pradesh and Karnataka) by involving officials from all relevant line departments of agriculture and allied sectors together with officials from Department of Agriculture and Co-operation.

Dr N Chattopadhyay (DDG, IMD) and Dr K K Singh, (Head, Agromet Services) from India Meteorology Department (IMD) mentioned the details of the first stage forecast of south-west monsoon rainfall issued by IMD. This Long Range Forecast indicates that there is likely 95% south-west monsoon rainfall of the LPA (long period average) during 2014 with a model error of  $\pm 5\%$ . ESSO-IMD will issue the updated forecast on 9 June 2014 as part of second stage forecast. They also discussed the possible effect of El Nino on the occurrence of drought in different states.

Topics like availability of early maturing varieties, change of crops, timely availability of various inputs, farm machinery to complete sowing operation in limited sowing window available, fodder systems, livestock, management of fish ponds if monsoon is delayed were also discussed and a road map for contingency plans was developed.

#### **Drought preparedness for Karnataka**

The ICAR organized an Interface Meeting with the State Department of Agriculture and State Seed Corporation of Karnataka on implementation of district level contingency plans for aberrant rainfall situations in Karnataka on 23 May 2014 at UAS, Bengaluru. The meeting was aimed at enhancing the preparedness for *khariif* 2014 in view of the probability of a normal to below normal south-west monsoon according to forecast issued by the India Meteorological Department.

The following action points emerged in the meeting for immediate address.

- A list of contingency crops and their short duration, drought tolerant varieties be prepared by the State department for supply to State Seed Corporation for making them available in the districts.
- KVKs in the vulnerable districts to prepare a list of crops and varieties indicating available seed quantities with them for use in contingency situations.
- District level department officials to make an assessment of the extent of farm saved seed available with farmers in vulnerable *talukas* and make it available to the State Department for compilation and transmission to the Seed Corporation for procurement as truthfully labelled seed as a contingency measure to meet deficit rainfall situation.
- Farmers must be advised to take up *in situ* moisture conservation measures in view of proven benefits under low rainfall situations.

#### **Implementation of district contingency plans in Gujarat**

The ICAR organized an interface meeting of ICAR-DAC officials with the state and district officials of agriculture and line departments in Gujarat on 11 June 2014 at Ahmedabad. The meeting was aimed at enhancing the preparedness for *khariif*, 2014 and operationalization of Contingent Plans in view of the probability of a normal to below normal south-west monsoon according to forecast issued by the India Meteorological Department.

Dr A.K. Sikka (DDG, NRM) focused on a robust action plan for implementation during the ensuing *khariif*. Dr (Mrs) Maheshwari (Director, CRIDA) briefed the gathering about 500 district contingency plans to meet different monsoon scenarios.

Shri Rajkumar (Principal Secretary, Agriculture) emphasized the need for dissemination of contingency crop plans to farmers along with information on availability of seed of short duration varieties in view of the likely delay in monsoon onset and the projected deficit rainfall situation in this region during the *khariif*.

Shri D K Jain (Additional Secretary) said that implementation of the district contingency plans prepared for the 28 districts is key for ensuring food security and sustaining the agricultural growth rate in Gujarat. Both preparedness and real time implementation of contingency plans are crucial in view of below normal monsoon. Dr Jain informed that states have been advised to set aside 10% of funds under *Rashtriya Krishi Vikas Yojana* for implementation of contingency measures to face drought. Seed of alternate crops and short duration varieties should be stocked at the local level and seed indents need to be placed right away by district officers wherever shortage has been identified.

#### **Implementation of district contingency plans in Rajasthan**

An interface meeting of the ICAR-DAC officials with the state and district officials of Agriculture and line departments in Rajasthan was organized on 13 June 2014 at Jaipur. The aim of the meeting was to put in place an action plan for implementation of crop contingency plans during the ensuing *khariif* in the state in the event of a below normal south-west monsoon according to the forecast issued by the India Meteorological Department.

Shri J.K. Tanania (Additional Director, Agricultural Research) presented status on crop-wise requirement and availability of seed and other inputs at the state level followed by inputs from officers on the status of seed availability at the district level to meet the likely contingent situations. KVK and department officials will play a key role in the dissemination of the contingency measures to registered farmers through voice and text messages and also undertake

capacity building programmes on contingency measures related to crop production, rainwater harvesting and *in situ* moisture conservation measures.

The following action points emerged in the meeting for immediate address.

- Preparedness to be enhanced in terms of ensuring availability of suitable seed of alternate crops and short duration varieties for delayed onset and deficit rainfall conditions in different districts and to ensure their timely distribution to farmers.
- Shortage of moth bean seed was recognised in case of delay in monsoon beyond 15 July and the issue will be critically examined and addressed with suitable action plan.
- Funds under *Rashtriya Krishi Vikas Yojana* to the extent of 10% will be earmarked for implementing appropriate contingency responses at the district level.
- Farmers should be educated on the contingency responses required for different situations especially on avoiding growing certain crops beyond recommended cut-off date in case of monsoon delay and to follow better management practices such as intercropping, mulching, rainwater harvesting, recycling and *in situ* moisture conservation to minimize risk in case of mid-season drought.
- Animal husbandry department may prepare a contingency plan for ensuring timely availability of

fodder, supplemental nutrition of feed under stress conditions and use of tree fodders etc.

- Contingency measures for compensatory *rabi* production of oilseeds, pulses, grain and fodder crops.
- Information on latest short duration varieties in seed supply chain needs to be updated in the district plan. A special focus on contingency seed varieties, which are not in the seed chain is required.
- Appropriate literature and messages related to contingency measures may be prepared by the KVKs for wide dissemination to farmers by the department in campaign mode

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## Integrated Farming System

Patna, 11 June 2014. The Project Directorate on Farming System Research, Modipuram in collaboration with ICAR Research Complex for Eastern Region, Patna organized a workshop on Strengthening Partnership and Refined Methodology for On-station Experiment of AICRP on Integrated Farming System (IFS) at Regional Centre, ICAR Research Complex for Eastern Region. The workshop was aimed at strengthening the partnership among AICRP units in Bihar, Jharkhand, Chhattisgarh, Madhya Pradesh and Odisha and refining the methodology as per the need of the different farming situations in the region.

## Interface Meeting at DWSR

Jabalpur, 29 April 2014. The Directorate of Weed Science Research (DWSR) organized Interface Meeting of Progressive Farmers with State Department officers and scientists. Dr A.R. Sharma (Director, DWSR) gave an overview of the activities and initiatives taken for strengthening weed management through on-farm research and organizing training/awareness programmes. Dr Sharma also highlighted the role of conservation agriculture for sustainable crop production.

Shri B.P. Tripathi (Joint Director, Agriculture, Jabalpur Division) presented the outline of different agricultural development programmes. Shri J.M. Thakre (DDH, Chhindwara) briefed the audience about the activities of National Horticulture Mission and different developmental programmes. Shri Amitabh Tiwari (Deputy Director Agriculture, Rewa)

showed the polythene based marker for facilitating SRI transplanting. Sri Jitendra Singh (Project Director, ATMA, Katni) shared the success story of sweet corn cultivation of Katni district where farmers are earning about ₹ 70,000 to 80,000 per acre.

Shri Manu Narla (an achiever farmer from Katni) said that the adoption of SRI technology over traditional method of transplanting has increased rice production by 2.5-fold.

Summer green gram under conservation agriculture and improved farm machinery were shown to participants during field visit. DWSR provided *Sesbania* seeds to the representatives of different districts.

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The Agriculture Minister, Government of Bihar, Shri Narendra Singh, called upon the scientists to come up with demonstration of Integrated Farming System (IFS) models in different agro-climatic situations so that farmers can learn and implement the technologies pertaining to adoption of integrated mode of food production system. He also advised the scientists to document the technologies developed by the respective institutes in simplest form, preferably in regional languages, so that the farmers can easily understand. Shri Narendra Singh stressed upon the strengthening of training programmes on this issue. He desired that agricultural scientists should work as consultant even after their superannuation for food security of the resource poor farmers. He opined that ICAR should initiate production of the hybrid seeds of important commodities on large-scale.

Dr B. Gangwar (Director, PDFSR, Modipuram) apprised that 31 centres have been working on IFS in different agro-climatic conditions of the country.

Dr B.P. Bhatt (Director, ICAR Research Complex for Eastern Region) stressed on development of location specific IFS models for achieving food and nutritional security of small-holders on the one hand and to improve the socio-economic status on the other.

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## Common platform for researchers and users

Sikkim, 5 May 2014. The ICAR Research Complex for NEH Region, Sikkim Centre has been working in close association with state line departments and farmers for timely dissemination of scientific knowledge and technological backup to develop self-reliance in organic agriculture production in the state. To create a common platform for effective interaction between the researchers and users, ICAR Research Complex for NEH Region, Sikkim Centre organized State Level Research Advisory Committee meeting.

Dr R.K. Avasthe (Joint Director, ICAR Research Complex for NEH Region, Sikkim Centre) presented the overall

research and extension activities of ICAR Sikkim Centre. He emphasized the need for intensive research programmes including agriculture, horticulture and livestock components. He asked the dignitaries for their valuable suggestions, which will help in developing the roadmap for the future research and development programmes.

Shri P.T. Bhutia (Secretary, FSADD and HCCDD) applauded the role of ICAR Research Complex for NEH Region, Sikkim, for collaborative programmes. He suggested that there is need for integrated farming systems with at least two production systems including agriculture/horticulture and animal husbandry at village cluster level. He further suggested that there is need to develop programmes for organic milk production also in Sikkim.

Dr Sandeep Tambe (IFS, Special Secretary, RMDD) stressed that in the near future water will be the most precious commodity, hence, there is a need to develop technologies for optimum use of stored water. Dr Tambe further raised the concerns of farmers regarding organic disease and pest management in large cardamom and non-availability of quality planting material. He also professed future collaborative work with ICAR under MNREGA.



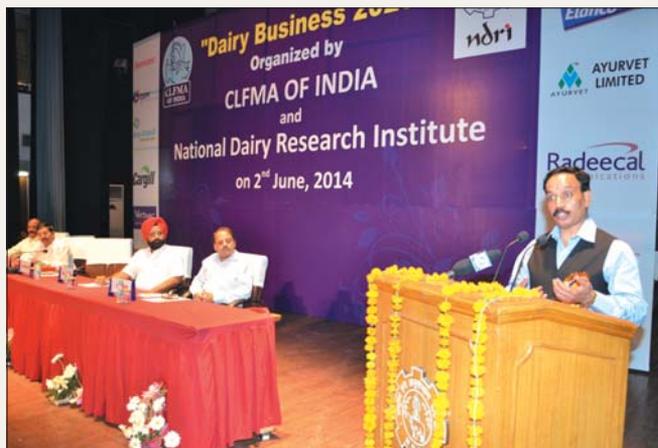
Shri Khorlo Bhutia (Principal Director, HCCDD) suggested that Washington Navel and Sweet Orange can be very successful table purpose oranges in Sikkim and trials need to be done. He also agreed to share the planting material of both crops with ICAR. He emphasized on the importance of high quality organic seed production in Sikkim.

Dr Senthil Kumar (IFS, MD, Sikkim Milk Union) suggested that there is an urgent need to raise the SNF content in milk of Sikkim, which is lower than the other states. He said that there is requirement to take up research on synchronization of oestrus cycle in dairy animals and establishment of embryo transfer technology facility at ICAR Sikkim Centre.

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## Dairy Business 2020

Karnal, 2 June 2014. The CLFMA (Compound Livestock Feed Manufacturers Association) of India and NDRI, Karnal organized a one-day programme on the



occasion of World Milk Day. Dr A.K. Srivastava (Director, NDRI) said that agricultural resources and by-products utilization should be implemented to increase the productivity and profitability of dairy business. Dr Srivastava also stressed on increasing the green fodder and water availability, aside from better livestock management practices for improved productivity by 2020. Besides, milk processing and quality assurance should also be the top agenda of dairy sector for developing the value-added dairy products.

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## Future of agriculture and small farmers

New Delhi, 5 June 2014. 'The future of agriculture is in the hands of small farmers who constitute the majority of vast farming community. We have already demonstrated our technological strength in practising profitable agriculture, attuned to social and environmental milieu', said Dr S. Ayyappan (President, National Academy of Agricultural Science, and Secretary, DARE & DG, ICAR). Dr Ayyappan delivered the Presidential Address of Annual General Body Meeting of NAAS on the theme 'Family Farms: Farm, Feed and Flourish'. He said the year 2014 is 'International Year of Family Farming' (IYFF) based on the significant contributions made by family farmers. He emphasised although family farming has contributed immensely towards enhancing agricultural production and reducing rural poverty, it is experiencing new challenges due to globalization and trade liberalization.

Dr Ayyappan said Indian economy has now reached a stage where labour has started moving out of agriculture in a big way and workforce in agriculture has started falling in absolute terms. Though this is considered positive change from economic transformation point of view, it has implications for agriculture. The family farming demands that besides economics, continuous up-gradation of knowledge levels, entrepreneurship and benefits to environment should be duly considered. The need is to make

agriculture more exciting and rewarding for family farms so that self-employed workers in agriculture are not pushed to move out to non-agriculture under distress. The approach hence of Family Farms is 'Farm, Feed and Flourish'. President, NAAS inducted newly elected fellows of the academy. On the occasion, Dr Ayyappan also informed that NAAS is organizing the 12<sup>th</sup> Agricultural Science Congress at National Dairy Research Institute (NDRI), Karnal during 3-6 February 2015. The theme of the 2015 Agricultural Science Congress has been specifically chosen as 'Sustainable Livelihood Security for Small Holder Farmers'.

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## Coping strategies for livestock smallholders...

Jodhpur, 29 May 2014. The Central Arid Zone Research Institute organized a Workshop on 'Coping Strategies for Livestock Smallholders in the Face of Climate Change and Soaring Feed Prices: Case Study of Livestock Mobility in the State of Rajasthan, India' in collaboration with International Centre for Agricultural Research in Dry Areas (ICARDA).

Dr Mahesh Katara (CEO, Rajasthan Livestock Development Board, Jaipur) underlined importance of pastoralism practised in Rajasthan in providing meat and milk on almost zero input. Mr K.K. Goel (Executive Director, Central Wool Development Board) highlighted the various sheep and wool development schemes of the board for the benefit of pastoralists migrating to far distances in search of fodder. Dr M.M. Roy (Director, CAZRI) stressed upon the importance of improving productivity of common grazing lands and creation of watering points along the established migratory routes to enhance productivity of such livestock production systems. Dr L. Mounir, (Research Scientist, ICARDA, Jordan) emphasized the need of disseminating of real-time information to the pastoralists for water points, routes, animal health care centres, abundance of forage resources and availability of crop aftermath/fallow fields for increased efficiency of migratory livestock.

## Recommendations

- Improving the productivity of common grazing lands.
- Creation of livestock watering points on different migratory routes and market infrastructure in production regions to enhance productivity and facilitate sale of animals at remunerative prices.
- Dissemination of near real-time information about forage resources for facilitating the migration process.
- Interventions of state agencies through provision of mobile veterinary services and quality medicines on migratory routes.
- Provision of Livestock Credit Card in the line of *Kisan*

Credit Card.

- Develop identification and traceability systems for better livestock management, and proper care of family members particularly women and children residing in their native places.
- The grazing charges vary (₹ 0.50 - ₹ 8.00) in different states; a uniform system will benefit interstate migratory livestock communities.

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## Annual Zonal Workshop of ZPD, Zone-II

Kolkata, 3 June 2014. The Annual Zonal Workshop for the Krishi Vigyan Kendras (KVKs) of Zonal Project Directorate, Zone-II was organized at National Institute of Research for Jute and Allied Fibre Technology (NIRJAFT), Kolkata from 2 to 3 June 2014. Professor C.S. Chakraborty (Vice Chancellor, West Bengal University of Animal and Fishery Sciences) inaugurated the workshop and emphasized upon the sustainable revolution in Indian agriculture through contribution of all the stakeholders involved in agricultural development process. Dr Chakraborty

highlighted the need of enhancement in productivity of crops and livestock and urged KVKs to narrow the gap between present level of productivity and attainable yield to ensure food and nutritional security.

Dr A.K. Singh (Zonal Project Director, Zonal Project Directorate, Zone-II, Kolkata) presented the achievement of 2013-14 and highlighted various initiatives taken at the ZPD level. Dr Singh stressed upon the adoption of farming system approach by the KVKs to optimize resource utilization, profit maximization and upholding environmental benignity. Dr D. Nag (Director, NIRJAFT) underscored the need to strengthen synergy between ICAR Institutes and KVKs for holistic dissemination of frontline technologies developed by ICAR Institutes. He briefed the gathering about technologies developed by NIRJAFT and urged ZPD to effectively collaborate in extending such farmer-friendly technologies in every corner of Zone-II. During technical sessions the KVKs presented proposed action plan and significant achievements. The action plan was critically reviewed and suggestions were made accordingly.

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## International Linkages

### Safeguarding nation's future food and nutritional security

New Delhi, 9 April 2014. The ICAR (Ministry of Agriculture, Government of India) has taken a step forward in securing its crop genetic diversity by depositing 25 accessions of pigeon pea in the Svalbard Global Seed Vault (SGSV). This was the first such deposit by India as 'safety duplicates' in the global gene bank, which is jointly maintained and managed



The Indian delegation – Shri Ashish Bahuguna, Secretary (A&C), Dr Manas K. Mandal (Director General, Life Sciences), DRDO and Dr K C Bansal (Director, NBPGR) with the Box containing the first official deposit from India, the pigeon pea seed material

by the Norway's Department of Agriculture and the Global Crop Diversity Trust (GCDT) under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). The SGSV, commissioned in February 2008, is located in the far north, in the permafrost region, in the remote arctic island of Svalbard (Longyearbyen, Spitsbergen, 78° North), only about 1,300 miles from the North Pole. The purpose of the SGSV is to ensure future food security by conserving rare seed material or 'safety duplicates' of food and forage crops already conserved in the national gene banks across the world. So far, 58 institutions across the world have deposited their precious germplasm raising the total number of accessions conserved in the SGSV to over 0.8 million. ICAR from India becomes the 59<sup>th</sup> such institution to add for the first time pigeon pea seeds in the SGSV.

The material was deposited with a message from the DG, ICAR that was pasted on the Box carrying the material, which read 'for the well-being of one and all on the planet earth'.

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## ICAR and IWMI Work Plan

New Delhi, 10 June 2014. The Indian Council of Agricultural Research (ICAR) and International Water Management Institute (IWMI) signed a memorandum of understanding for furthering scientific and technical cooperation in water management technologies through collaborative research and capacity building in a function held at the National Academy of Agricultural Sciences (NAAS). The proposed collaboration includes Strategic Research Programmes under the Consortium Research Programme (CRP-5): Water, Land and Ecosystems and Implementation of the activities/projects for the Indian component of the Consortium Research Programme (CRP-7) on Climate Change, Agriculture and Food Security, and Capacity Building, Publications, organizing Conferences/ Seminars and other activities for promoting research, influencing policy and knowledge dissemination. The session was co-chaired by Dr S. Ayyappan (Secretary, DARE and DG, ICAR) and Mr Jeremy Bird (Director General, IWMI, Colombo). At the outset, Dr Ayyappan, elaborated the importance of water in Indian agriculture and urged IWMI to work towards bringing global lesson on scientific water management to India and evolve a focussed, practical oriented approach towards enhancing water use efficiency and water productivity. He further emphasised IWMI's involvement in suggesting best practices as preparedness for ensuing Monsoon 2014. Mr Jeremy Bird highlighted the need for a water secure world focusing on agricultural water management. Dr A.K. Sikka (DDG, NRM) highlighted the need for water smart and climate smart products under the changing climate scenarios. Dr Sikka also mentioned the initiatives taken by NRM division of ICAR under



National Initiative on Climate Resilient Agriculture (NICRA) and urged the scientist community to align the research work with Government priorities so as to make the research outputs more visible.

Dr B R Shrama (IWMI) presented the progress made on collaborative research in India. Scientists from ICAR institutes and IWMI presented new project proposals covering various aspects of water management, namely, Ganges Aquifer Management for Environmental and Social outcomes (GAMES), Management Strategies for Reducing Energy Consumption and Carbon Emission due to the Groundwater Irrigation in IGP, Evolving an Efficient Framework for Rainwater Management in Upper Ganga Basin, Understanding the Productivity Variability across Rainfall Regions and Cropping, Wastewater Irrigation and Innovations for Producing More Food with Less Water. This was followed by discussion and finalization of the ICAR-IWMI Work Plan for 2014-2016.

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## Success stories

### Participatory Water Resource Development

Attal. A remote tribal village, Attal in Tuni block of Dehra Dun district was selected by Central Soil and Water Conservation Research and Training Institute, Dehra Dun for implementing Tribal-Sub Plan. There are about 300 households in the village and more than half of them are engaged in agriculture. Mostly cereals, pulses, vegetables and fruit crops are cultivated in this village. On field visits and interactions with farmers, Institute's scientists critically observed that there exists a huge potential of agricultural development if water scarcity problem is addressed.

The village community was organized in nine user groups to establish group horticultural plantation as alternative land use in about 7.2 ha area. All groups were further organized as Attal Fruit and Vegetable

Grower Association. As per the area available with each group, 3,250 fruit seedlings were distributed. Training was given to these groups for planting technique of horticultural plants, etc. But only 30% of horticultural plants survived due to water scarcity. Similarly in vegetable production the success was limited due to lack of assured irrigation facility.

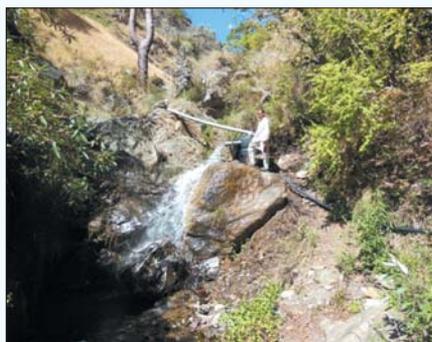
In last 3 decades the other agencies have tried to solve the problem of water scarcity – hydram system (could not be functional in long



Non-Functional Water Storage Tank in Attal Village



Activity of HDPE pipe laying in Attal Village



Water Source - Inlet Chamber 6 km away from Attal Village



Functional Water Resource Development in Attal Village

run), lift irrigation system (but with limited success due to high elevation difference and shortage of electricity power for running the system) and a masonry tank of about 280 cum storage capacity at elevated place (lying defunct).

After conducting detailed field survey and interaction with the farmers, water resource development was taken up in Attal village. An HDPE pipe line of 6.0 km length was laid in a very difficult hilly terrain to harvest the water from a perennial source where sufficient discharge was available (15 lps). This pipeline was connected to the above said non-functional water tank for water storage. On monitoring the water stages with time in this tank it was found that huge seepage loss of stored water (3 cm/hr at 1.25 m stage or about 1.45 lps) is occurring due to minor cracks developed in the tank. These seepage losses were arrested by lining the tank

with silpaulin sheet of 250 gsm. In these interventions, villagers had contributed in terms of labour required for digging of trench and burying of pipe for entire length of 6.0 km. This intervention was taken up in a participatory mode with a total cost of ₹ 7,20,000 in which about 21% (₹ 1,50,000) was contributed by the farmers towards cost of digging trench, manual labour required for transportation of pipes, laying the pipe line, cleaning of tank and fixing of silpaulin sheet in the tank. By now, 125 farmers have associated with this intervention of water resource development in Attal village, and tomato cultivation in about 20 ha area was initiated while total potential of this water resource is about 70 ha. Initiatives have been taken up for further extending this water resource to the entire agricultural area of Attal village.

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## Rainwater Harvesting

Water is a critical and limiting factor in semi-arid southern Rajasthan where the rainfed agriculture is predominant. Besides this, the rainfall variability and early-or mid-season droughts during crop season cause either poor performance of the rainfed crops or even failure of *khariif* crops. Smt Kesar Devi of Kochariya village, Bhilwara district was unable to earn enough money for her family because of frequent failure of crops due to drought.

### Interventions of AICRPDA Centre, ARJIA

All India Coordinated Research Project for Dryland Agriculture (AICRPDA) Centre adopted Kochariya



village in 2011 for demonstration of climate resilient technologies. During the benchmark and PRA survey and focused group discussions (FGDs), rainwater harvesting in farm pond for efficient utilization of rainwater was identified as a suitable intervention. Climate resilient technology to enhance productivity, income and livelihood of the farmers in the village were also prioritized. Smt Kesar Devi volunteered to adopt the farm pond technology. She constructed a *pucca* tank for rainwater harvesting in which the run off from the village was harvested and efficiently used as supplemental irrigation to cotton and manage mid-season drought. Further, she also adopted the same technology in her own field and constructed a farm pond with lining (*kachcha*) having capacity of 1,242 cu m (size: 18 m × 30 m top; 12 m × 24 m bottom; 3 m depth with 1:1 side slope).

### Efficient use of farm pond enhanced the income

Before the intervention, Smt Kesar Devi used to take up only mixed cropping of maize and blackgram during *khariif* and leaving the field fallow during *rabi*. Even in the mixed cropping of maize and blackgram, mid-season droughts resulted poor yields and often failure also. Due to availability of water in the farm pond, Smt Kesar Devi diversified the

cropping pattern from maize and blackgram mixed cropping to improved intercropping systems of maize and black gram (2:2) and groundnut and sesame (6:2) during *kharif*. She also raised mustard and chickpea during the *rabi*. Efficient use of farm-pond water to *kharif* crops during dry spells and pre-sowing irrigation to mustard with efficient micro-irrigation method (sprinkler) made agriculture a profitable venture for her. It increased cropping intensity to 212 % from 100 % and the net returns increased up to ₹ 35,090/ha from ₹ 15,090/ ha. Smt Kesar Devi, is now a successful woman farmer showing the path to other farmers to manage mid-season drought

through farm pond technology.

#### Government of Rajasthan recognized the success

In recognition to Smt Kesar Devi's achievement in Kochariya village, the Government of Rajasthan came forward to help the women farmers in the village for construction of another farm pond in 1.5 ha field. Now, Smt Kesar Devi also motivates several farmers not only in her village but also adjoining villages to adopt the farm pond technology as a climate resilient technology provided by AICRPDA centre, Arjia.

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## Water availability through public participation

Gunia is a small village in Gumla district of Jharkhand. The village is dominated by tribal population having agriculture as their main livelihood. Earlier, the village did not have any source of irrigation except three nearly defunct ponds and cultivation of crops was restricted to wheat for 5 to 7 ha, vegetables for 2 to 3 ha and sugarcane for only 0.5 to 1 ha. Hence, agriculture was totally rainfed and mono-cropped in nature and production was far below the required quantity. However, abundant natural resource in the form of a rivulet, Mahsaria (perennial in nature), flows across the village but utilization of river water for irrigation purpose was never given a comprehensive thought.

#### Implementation of NICRA

In implementing the NICRA project in Gunia village (affected by severe and regular drought), KVK, Gumla critically assessed the available resources to develop a workable plan of action towards improving agricultural situation of the village. Apart from human resources, the KVK also identified the abundant flow of river water which later became the prime source of development. Detailed and frequent interaction with the villagers finally convinced them to offer free labour (*Shram Daan*) in constructing check dam on the river to impound water with sand bags. It was also decided to partially arrest the river water at the end of monsoon by making sand-bag check dam in the rivulet. Voluntary participation of 350 villagers was ensured for two days to build a sand-bag check dam for impounding river water at a

minimal cost. The temporary sand-bag check dam helped in impounding large quantity of water for its use during post-*kharif* and entire *rabi*.

Unique method of constructing temporary check dam across the river with sand bags created opportunity to take up agricultural activities in Gunia village with renewed vigour. Besides, water-table in the village has risen by 44% followed by area expansion under off-season vegetable cultivation in 10.0 ha, summer paddy cultivation in 10.0 ha, wheat cultivation in 50.0 ha and safe harvesting of standing paddy in 30.0 ha during acute scarcity of rainwater.

#### Inspiration for neighbouring villages

The success did not confine only in Gunia village, farmers of adjoining villages and *janpratinidhi* extended their support in constructing such *bora bandi* in eight different places on the same river. The cumulative efforts resulted in large production of wheat crop in 125 acres of land beyond the imagination. The paramount success has attracted farmers, NGOs, elected members and administrators to find out efficient management and conservation of water in a mutually benefitting way. Initiative has been taken by Minor Irrigation Department of Jharkhand for constructing series of *pucca* check dam at the cost of ₹ 3.94 crore to arrest water on a perennial basis for irrigation purpose round the year. Deputy Commissioner, Gumla district sanctioned a sum of ₹ 89.0 lakh for implementing 'Micro-economic Socio-Organization Project' in the adjacent Dumri block to develop second model of check dam with the help of Krishi Vigyan Kendra.

Apart from ensuring round the year irrigation availability, expanding cultivable area and enhancing cropping intensity, construction of sand-bag check dam has also created an example of convergence among all the stakeholders to take up development issue in the form of joint venture. The tribal community in particular has been immensely benefitted out of this effort.

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## Hi-Tech Boroz for Betelvine cultivation out-scaled

South 24 Parganas. Betel leaf, one of the important commercial crops of the district South 24 Parganas, occupies 2,685 ha area covering around 35,000 number of households from six coastal blocks (Sagar, Namkhana, Kakdwip, Pathar Pratima, Mathurapur II and Kulpi). This crop has become mainstay of occupation for Sagar, Namkhana and Pathar Pratima blocks.

Betelvine is a shade loving crop usually grown in artificial shade structure, called *boroz*, made up of bamboo, paddy-straw and other related bio-degradable items. Growing betelvine within this *boroz* structure is prone to incidence of various diseases and insect pests. Also, in the coastal area these structures are frequently affected by storms and cyclones. Considering these aspects Ramkrishna Ashram KVK conceptualized a durable *boroz* structure



Traditional artificial shade structure (*Boroz*), made up of bamboo, paddy-straw and other related bio-degradable items

using GI pipes on concrete basement fitted with green shade net, 75% shade on the top and 50% shade on the side walls. Unlike traditional *boroz*, this new *boroz* is made up of non-degradable items and thereby chances of pest and disease attack is very less. Also, this modern *boroz* is fitted with micro-

sprinkler irrigation facility, which reduces irrigation cost and also maintains proper temperature and humidity within the *boroz* during the hot summer and dry winter. Another advantage of this hi-tech *boroz* is the uniformity in shading, thereby uniform coloration of leaf is achieved.

Adopting this modern *boroz*, farmers are experiencing better profitability in betelvine cultivation due to lower cost of cultivation, minimum/no recurring cost for maintenance of *boroz* structure, higher production and higher market value of the produce (leaf) due to good colour, shape (round) and luster of the leaf. A small comparison statistics on this modern system of *boroz* is given in the Table.

Since 2011-12, KVK has demonstrated nearly 400 units of hi-tech *boroz* in collaboration with Department of



Ramkrishna Ashram KVK's durable *boroz* structure using GI pipes on concrete basement fitted with green shade net (75% shade on the top and 50% shade on the side walls)

Comparative performance in Traditional Vs. Hi-tech *boroz* -

Parameters	Hi-tech <i>Boroz</i>	Traditional <i>Boroz</i>
Temperature (°C) at 12.05 pm, on 28.02.13 (Environmental temperature 29.3)	28.08	30.05
RH (%) (Environmental RH- 41)	49	38
Light intensity (Lux) (Outside - 108,500)	30,700	5,400 - 95,300
Leaf colour	Uniformly green	Scorching discolouration in some leaves
Chlorophyll (SPAD)	41.5	37.8
3 <sup>rd</sup> leaf from top mature leaf	55.7	48.1
Leaf shape (length/width)	1.12	1.18
Average leaf weight (g)	4.29	3.52
Leaf thickness (mm)	0.25	0.22
Plant internodal length (cm)	9.45	7.86
Disease severity (5 point-scale)	2.5	4.0
Annual yield	26,50,000 no./ha	21,30,000 no./ha

Horticulture, Government of West Bengal, South 24 Parganas through National Horticulture Mission (NHM). To construct a Hi-Tech *boroz* of 500 sq.mt the cost would be ₹ 300,000 (₹ three lakh only). The farmer needs to bear 50% of the total cost and the rest is supported by State Department of Horticulture through NHM. The KVK has made an arrangement of getting bank loan for the farmers' contribution amount (50% of the total cost) through a tying-up programme with Axis Bank, Joynagar Branch. For the ease of the farmers, door step bank account opening was done at village level. This institutional linkages facilitated by the KVK has enabled large number of youth to adopt hi-tech *boroz*. The KVK has facilitated over 2,000 farmers establishing hi-tech *boroz* in lieu of their traditional one.

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## Innovative methods for growing crop plants to record setting heights

Kolkata, 29 April 2014. Sri Sumanta Misra, a progressive farmer from Jalpaiguri district of West Bengal used innovative methods for growing crop plants to record setting heights: Chilli plant on soil (31'); chilli plant in pot (20'); cotton plant (37') and guava plant (34') at his home garden. Sri Misra, working as *Krishi Prajukti Sahayak* at Jalpaiguri is a plant breeder by hobby. He grows plants on land and



then trellis on rooftop. In case of fruit crops (mango, citrus and guava) trellis are normally not used. However, Sri Misra adopted trellis for better canopy development. He claims better yield of guava, mango etc. through this method of cultivation.

Vegetable crop, chilli grows without staking. However, for cultivation of this superior germplasm of chilli, staking is done with bamboo poles to ensure healthy standing. Owing to its height, chilli (average height 7.5 m) plant is susceptible to lodging during heavy rains and cyclone. Better canopy development of vegetable and fruit crops leads to increase in productivity. Crops are grown organically by the use of vermicompost, vermiwash, neem-based product. These are few secrets behinds Misra's achievement.



Sri Mishra Ji shared the plant germplasm with public authorities so that many other farmers may get benefit from it. Shri Mishra Ji is the recipient of Plant Genome Saviour Reward, 2013; Recognition for the unique research work by FAO, Rome 2012; Recognitions by Government of West Bengal and Government of Gujarat. He is actively associated with Krishi Vigyan Kendra, Jalpaiguri.

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## Regeneration of resected testicular tissue in male magur

South 24 Parganas. The Ramkrishna Ashram Krishi Vigyan Kendra, Nimpith, is engaged in breeding programme of the Asian catfish, *Clarias batrachus*, locally known as magur, to produce quality seed for the farmers. The standard breeding procedures as laid down by CIFA, Bhubaneshwar, is usually followed

with encouraging results. However, in this process both the testis of the male magur are taken out (castration) entirely rendering the fish unfit for repeated use in breeding programme. Non-availability of brooders often hinders breeding of magur and availability of juveniles for culture.

The KVK has tried a novel way of breeding through regeneration of resected testicular tissue. After taking the required quantity of testis to collect milt for breeding purpose, a small portion of both the testis, at the posterior region near the genital opening, is kept intact to observe testicular tissue regeneration and growth. In this process, the partially castrated magur is given a simple interrupted stitch along the incision made on its ventral portion to take out the testes. The stitching material monofilament silk was used to reduce the chances of infection. The fish recovered well and the wound healed satisfactorily within 12 days. The amount of fibrous tissue was minimum and hence the physiological movement and feeding was undisturbed.

Development of testicular tissue will be observed during the next maturity of the fish which is expected in May-June this year.

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## Model hygienic bulk drying yards for Bombay Duck

Cochin. Bombay Duck, a small pelagic fish accounts for 88% of the landings. The fishery serves as livelihood for millions of fishermen along the coast and the average annual landings in India is around 1.15 lakh tonne. The major landing centres for Bombay Duck are Umargam, Jaffarabad, Rajpara, Navabandar located in Gujarat and Diu.

Owing to high moisture content, the only processing method adopted for Bombay Duck is drying. Ninety per cent of the Bombay Duck processed from



Saurashtra as dry fish is distributed through Mumbai to dry fish markets located as far as Goa, Tamil Nadu and the North-East. Less than 8% (around 400 to 600 tonne) of the dry Bombay Duck processed in drying yards in the coastal fishing villages get exported to Sri Lanka, Mauritius, Bangladesh, UAE and Seychelles. Dry



Bombay Duck is highly appreciated in UK and was exported in bulk prior to 1997 when a ban on Bombay Duck exports to EU was imposed pointing out the quality problems. The traditional drying takes three days for drying, enabling flies to lay eggs on the open sun-dried products and later the products are packed unhygienically which are procured by dry fish merchants at the production site. The proper marketing strategies to channelize dry Bombay Duck to upcoming markets catering to quality conscious consumers who are willing to pay premium price is lacking.

Under the National Agricultural Innovation Project, 'Responsible harvesting and utilization of selected small pelagics and freshwater fishes (NAIP-RHSSP)' showed overall poor quality of products traditionally processed under highly unhygienic conditions.

Two seasons for Bombay Duck landings termed as static phase (September to January) and dynamic phase (February to May) dictate the pricing of the dry Bombay Duck product at the producer level, which is variable and the average price is ₹ 80/kg. Due to bulk landings, high moisture content and price sensitivity, the energy intensive mechanical methods involving investment and modern infrastructure may not be economical for adoption by the fishermen. Also the producers were not aware of the quality problems associated with the product processed in their traditional drying yards, the market value of quality products and that the upcoming markets can be cornered by hygienically produced dry Bombay Duck.

Jaffarabad, a major landing centre for Bombay Duck production and processing was selected for the experimental trials. A hygienic bulk drying system was designed and developed using fly proof nets, PVC pipes and indigenous water filtering system, and its use was demonstrated to the stakeholders.

Trial marketing of the superior grade dry laminated Bombay Duck, done at selected super markets in Mumbai showed acceptance for the product. A leading dry fish exporter based at Valsad, Gujarat has adopted the hygienic bulk drying system model for processing Bombay Duck and is successfully marketing improved product under the brand name 'FISHSTIX' registered under the project.

For popularizing the business model for dried Bombay Duck for domestic as well as export markets, the project has associated with NETFISH, and a commercial level drying facility was set up in Umbergaon, South Gujarat with funding from NETFISH during January 2014. This facility has a capacity of 2.5 tonne and consists of 24 m × 9 m drying chamber, a 12 m × 3 m solar dryer and laminating machine.

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## Burmese Fish-tail Palm

Thrissur. Developing new crops from wild resources is an important aspect of plant genetic resources utilization. *Caryota mitis*, commonly known as Burmese fish-tail palm or cluster fish-tail palm is one such candidate species for domestication as a potential ornamental and source of elephant fodder. It is closely allied to the fish-tail palm (*Caryota urens*) which is common in tropical and sub-tropical forests of India. However, striking differences between *C. mitis* from *C. urens* is the multiple-clump forming habit, dwarf nature and early reproductive maturity of the former. The species is a native of evergreen forests of South-East Asia and grows wild in the Andaman Islands.



A field plot of one accession (IC 553772) of this palm collected from Hutbay Island of Andaman & Nicobar island was established in the Field Gene bank (FGB) at NBPGR, Regional Station, Thrissur. It was multiplied through seeds. Plants formed narrow clumps from the base and crowd together forming a luxuriant crown at base. It has grown to a height of 3-6 m with a slender trunk. Fronds are of 1.8-30 m length and 1.2 m width with an average of 10 pairs of branches, each bearing 18-20 fan-like pinnae including the terminal fin. Trees came to bearing in four or five years. Single seeded fruits are borne in clusters on long spadix and seeds are recalcitrant in nature. Civet cats feed on ripe fruits and defecated seeds germinate in the wild. Fallen fruits from mature ripe bunches can be collected, de-skinned and seeds planted in polybags. For artificial regeneration, three-month-old hardened seedlings raised in poly bags may be planted without injuring the root system.

The plant has immense potential for domestication due to its varied uses. It can be grown as an ornamental palm, both indoor and outdoor, for landscape beautification. It is a non-thorny, non-toxic, non-staining and non-allergic, shade-loving plant and because of its dwarf habit, is a good choice for indoors. Leaves do not litter and only lower fronds need to be pruned annually. As its crown permits penetration of sunlight it can be accommodated in lawns also. However, one has to be careful in handling seeds for planting as fruit skin causes itching on skin surface due to presence of calcium oxalate

crystals. The basal clump forming nature and compactness make it an ideal choice for cultivation as elephant fodder. Fronds can be harvested without the help of a tree climber. The heart of the palm is used as a delicacy vegetable in South-East Asian countries. Good quality palm wine (*toddy*) is extracted by tapping the inflorescence which is also used for jaggery preparation. The palm *toddy* is said

to be cooling, refreshing and rich in minerals and vitamins. Food grade starch equivalent to sago is extracted from the pith of bunching palms. Leaves are excellent source of elephant fodder and can also be used for decoration and foliage in flower arrangements. Flowers are a good source of bee forage.

(Courtesy : K. Joseph John, NBPGR, Thrissur)

## Capacity Building

### 'Lalima' buffalo born at NDRI

Karnal, 2 May 2014. The female cloned calf named 'Lalima' was born on 2 May 2014. The calf was born by normal parturition, and is the clone of an elite Murrah buffalo (MU-5345) of the institute farm.



The team of the scientists informed that practically there are two windows in which cloning technique will be very useful to dairy sector for faster multiplication of superior germplasm, i.e. (i) through males by producing clone of progeny tested bulls, and (ii) through females by producing clone of high-yielding lactating females. In present case the donor cell was taken from the ear of a elite Murrah buffalo, which produced 2,713 kg milk in standard lactation period of 305 days and 3,494 kg in total lactation period of 471 days, during her third lactation. The calf was produced after standard gestation period, born through normal parturition without any assistance and had normal birth weight.

Dr S. Ayyappan (Secretary DARE and Director General ICAR) said that this new achievement will facilitate faster multiplication of elite germplasm. Dr A.K. Srivastava (Director, NDRI), emphasized that this technology could go a long way in multiplying the number of best milch buffaloes in India. He said that although, the world's largest population of buffaloes is in India and they contribute about 55% of the total milk production in the country, yet there is an urgent need to enhance the population of the elite buffaloes.

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## Trainings

- A six-day advanced training on 'Planning and Design of Engineering Structures in Watershed Management Programme for South India' was held at Regional Centre, CSWCR&TI, Udhamandalam from 26 to 31 May 2014. It was sponsored by National Rainfed Authority, Planning Commission, Government of India, New Delhi.

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- Goa, 25 April 2014. A training programme on 'Diagnosis of insect pests and diseases of plantation and spice crops of Goa' was conducted by ICAR Research Complex for Goa at Old Goa.

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- Guwahati, 29 May 2014. The Central Inland Fisheries Research Institute (CIFRI), Regional Centre, Guwahati organized a training-cum-workshop on 'Pen aquaculture in beels of Asom' was held at the Centre from 27 to 29 May 2014.

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### Vanaraja chicks distribution-cum-training programme

Sikkim, 16 April 2014. With the aim to improve the livelihood security of the tribal farmers of remote area of the state by backyard farming of improved Vanaraja chicken, the ICAR Research Complex for NEH Region, Sikkim Centre, Tadong, Gangtok organized Vanaraja chicks Distribution-cum-Training Programme. The aim was to improve livelihood security of tribal farmers under the aegis of Tribal Sub-Plan, Lingdong, Dzongu, North Sikkim. Necessary inputs along with 1,550 day-old chicks were distributed to 52 tribal beneficiaries of five Self-Help Groups.

Dr R. K. Avasthe (Joint Director, ICAR, Sikkim Centre) emphasized upon the importance of backyard poultry farming for improving the rural livelihood and highlighted the advantages of Vanaraja poultry birds over the local fowl under backyard poultry farming.

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## Visits

### Union Minister of Agriculture visits CSWCR&TI

Dehra Dun, 30 May 2014. The Union Minister of Agriculture, Shri Radha Mohan Singh, visited Central Soil and Water Conservation Research and Training Institute. The Minister had a meeting with senior scientists and officials of the institute and other central and state government organizations related with agriculture and allied sectors. Shri Singh interacted with officials to take stock of the agricultural scenario of the region. Dr P.K. Mishra, (Director, CSWCR&TI) apprised the Union Minister about the ongoing activities of the Institute and future programmes/initiatives. The Union Minister called upon agricultural scientists to work for the development of agriculture and farmers of the region.

## Celebrations/Awareness

### World Veterinary Day 2014

Izatnagar, 26 April 2014. The World Veterinary Day - 2014 - was observed at Indian Veterinary Research Institute under the theme of 'Animal Welfare'. To mark the occasion, a 'Free Rabies Vaccination and De-worming Camp' was inaugurated by Dr R.K. Singh (Director, IVRI) at the Referral Veterinary Polyclinic at IVRI. The Director, IVRI emphasized the importance of animal welfare.

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### World Environment Day

Cochin, 5 June 2014. The Central Institute of Fisheries Technology (CIFT), Cochin celebrated the World Environment Day 2014. Dr Leela Edwin (Director-in-Charge) addressed the gathering and conveyed the theme 'Raise Your Voice, Not the Sea Level' of the World Environment Day 2014. A 40-minute film of National Geographic Channel 'Earth Under Water' directed by Tilman Remme was also screened at the Conference Hall of CIFT.

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### Geographical indicator for litchi

Muzaffarpur, 6 June 2014. On the occasion of its XIV Foundation Day, National Research Centre on Litchi organized a workshop on 'Geographical Indicator (GI) for Litchi' which was inaugurated by Dr R.K. Mittal (Vice Chancellor, Rajendra Agricultural University, Pusa, Samastipur), who emphasized upon the role of sustainable technologies in the era of globalization under changing climate scenario. Dr Mittal also discussed about the GI for its uniqueness of the produce and the role of NRC on Litchi for uplifting the productivity of litchi in the country. Prof. (Dr) Vishal Nath (Director, NRC on Litchi) delivered lectures on Geographical Indicator Registration process, Patent and its importance on the occasion.

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## Personnel

### Appointments

Name	Designation and address	Date of appointment
Dr Tilak Raj Sharma	Project Director, NBAGR, New Delhi	16 April 2014
Dr A.K. Patra	Director, IISS, Bhopal	01 May 2014
Dr Alok Jha	ADG (International Relations), ICAR Hqrs	06 May 2014
Dr Ashok Kumar Singh	ADG (Agril. Extn.) ICAR Hqrs	12 May 2014
Dr Pawan Kumar Agrawal	ADG(NFBSFARA), ICAR Hqrs	13 May 2014
Dr T Jankiram	ADG (Hort-1), ICAR Hqrs	15 May 2014

### Superannuation

Name	Designation and Address	Date of supper-annuation
Dr K.D. Kokete	DDG (Agric. Extn. ICAR Hqrs	7 April 2014*
Dr A.G. Ponniah	Director, CIBA, Chennai	30 April 2014*
Dr S. Maiti	Director, DMAPR, Anand	30 April 2014
Dr A. Subba Rao	Director, IISS, Bhopal	30 April 2014
Dr Arvind Kumar	DDG (Edn.), ICAR Hqrs	08 May 2014*
Dr C.S. Prasad	Director, NIANP, Bengaluru	31 May 2014
Dr B.C. Viraktamath	Project Director, DRR, Hyderabad	31 May 2014
Dr Kusumakar Sharma	ADG (HRD), ICAR Hqrs.	30 June 2014

\* Date of relieving from ICAR Headquarters

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