



DOR Newsletter



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Events

Minister for Agriculture, Govt. of India visited DOR



Shri Sharad Pawar, Hon'ble Union Minister for Agriculture and Food Processing Industries visited DOR on April 20, 2013 and reviewed the status of the annual oilseed crops, palm oil and other secondary sources of vegetable oils. He expressed concern about the high import bill of over ₹ 50000 crores on vegetable oils. Dr. K.S. Varaprasad, Project Director, DOR presented an overview of oilseeds scenario in the country highlighting the status, achievements, problems and strategies for increasing oilseeds production, including the status of imports and exports and needed policy initiatives. Dr. K.S. Varaprasad also highlighted the export of oilseed commodities to the tune of ₹ 24000 crores and the positive compound growth rates of oilseeds achieved in comparison to rice and wheat was commendable despite oilseeds

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cultivation under rainfed conditions by small and marginal farmers. The very high production growth rate achieved in cotton was acknowledged due to the *Bt* technology. The comfortable status of growth and expansion of soybean and castor and the potential of oil palm were convincing. The reasons for the declining area, especially of groundnut and sunflower despite increase in MSP were a concern. Shri Pawarji acknowledged the very high demand for vegetable oils due to the increase in population and increase in standard of living necessitating imports. The limitations for expansion of oil palm in the country with the limitations of germplasm, planting material, long gestation period, supportive irrigation and infrastructure support and relatively higher production cost of domestic production for the crop were discussed. Soybean, groundnut, mustard and castor crops would provide major momentum of growth while oil palm expansion is to be pursued with infrastructure backing. Shri Pawarji also acknowledged the strength of biotechnological interventions for achieving quantum jump in oilseeds production in the country. Dr. S. Ayyappan,

Secretary, DARE and DG, ICAR indicated the high nutritive value of linseed, while Dr. Swapan Kumar Datta, DDG (CS), ICAR discussed on the potential of tobacco seed oil. Mr. Atanu Purkayastha, Joint Secretary, TMOP indicated the enhanced role of technology mission on oilseeds considering various issues and prioritization for achieving self-sufficiency in vegetable oils. The Project Directors of DGR, DRMR and DOPR also participated in the meeting.

Meetings

Annual Group Meeting on Sunflower, Sesame and Niger

Directorate of Oilseeds Research and ANGRAU, Hyderabad jointly organized the Annual Group Meeting on Sunflower, Sesame and Niger at Hyderabad during April 8-10, 2013. More than 150 scientists from different National Institutes, Agricultural Universities, Govt. Departments and Private Sector Organizations were participated in the meeting. The Chief Guest, Dr. Swapan Kumar Datta, DDG (CS), ICAR, New Delhi in



his inaugural speech expressed that marker assisted breeding to provide essential support to applied sciences and proper G x E interaction studies to identify location specific best sunflower hybrid. He emphasized that, to make the crop more competitive and remunerative only high yielding varieties / hybrids should be promoted in farmers' field with appropriate support of seed availability, while encouraging on-farm conservation of different varieties, especially sesame and niger. Dr. Datta emphasized to characterize the production environment

to identify best crop situation for cultivation.

Dr. A. Padma Raju, Hon'ble Vice-Chancellor, ANGRAU in his presidential remarks indicated that sunflower is suitable for different cropping systems due to its short duration. The competitive ability of sunflower with rainfed cotton, maize and chickpea can be increased only if the productivity is increased beyond 1.5 t/ha.



However, major constraint of sunflower in India is quality hybrid seed availability. He stressed the significant role of micronutrients especially boron and secondary nutrient like sulphur for oilseeds production. He also emphasized that niger is an important crop for high altitude tribal areas of Andhra Pradesh and need for co-operative centres in tribal zones for sesame and niger.

Dr. K.S. Varapasad, Project Director, DOR informed that West Bengal, Odisha and Bihar are the potential states for expanding sunflower area. He appraised about new initiatives made by DOR to strengthen the sunflower breeding programme *viz.*, Development of prebred lines and diverse inbred lines through interspecific hybridization using wild species; National crossing programme initiated by DOR and AICRP centres; distribution of high yielding, high oil, high oleic and early maturity material obtained from Serbia.

Dr. A.R.G. Ranganatha, Project Coordinator (Sesame & Niger), JNKVV, Jabalpur remarked that sesame has a potential because of its high market price and

pointed that lines with low oxalic acid (<1%) have been identified that has high export potential. Productivity of sesame in West Bengal is very high and steps will be initiated to develop production technologies for the eastern India. He also stated that early sowing by one week could increase the seed yield of niger.

The following recommendations were made in the group meeting :

- In hybrid crops, priority should be for diversification of CMS sources and avoiding excessive reliance on one or few sources.
- Focus on incorporation / pyramiding of desirable traits and strong parental line development for seed yield, oil content and disease resistance.
- Continuance of population improvement and varietal development for specific low input situations and with resource use responsive features for better environment.
- Adopt innovative strategies and skills to achieve breakthroughs for purity of lines.
- Preference for multi parental crossing for better pyramiding of wide agronomic traits compared to the present method of selection from segregating population as wide array of traits that contribute to yield are not captured in selective bi - parental crossing.
- Region wise revision of nutrient requirements of crops considering the decline in soil fertility and emerging secondary and micronutrients for specific cropping systems considering the crop factor (legume effect).
- The appearance of new leaf curl disease in sunflower is a serious concern in addition to the existing diseases. IIHR, Bengaluru may be consulted to understand the experience on tomato leaf curl disease management for better strategy planning.

Annual Group Meeting on Castor

The Annual Group Meeting on Castor was held at Agricultural Research Station, Swamy Keshwanand Rajasthan Agricultural University (SKRAU), Mandor, Rajasthan during May 16-18, 2013 to review the results of research conducted during 2012-13 and formulate the technical programmes of castor for the year 2013-14. The meeting was attended by the scientists working under AICRP (Castor), officials of central and state Department of Agriculture, public and private seed entrepreneurs.



The introductory session of the group meeting was Chaired by Dr. A.K. Dahama, Hon'ble Vice - Chancellor, SKRAU, Bikaner. Dr. A.S. Faroda, former Chairman, ASRB, New Delhi was the Chief Guest. Dr. G.N. Parihar, Zonal Director Research, ARS, Mandor welcomed the gathering and elaborated on important areas of research carried out by ARS, Mandor. Dr. Govind Singh, Director of Research, SKRAU, Bikaner highlighted importance of castor crop which has great commercial potential having high quantities of ricinoleic acid. He also said that the area under castor crop in Rajasthan is increasing and may reach upto 2 lakh hectares during this year. He emphasized the need to identify gaps in the technology and take the benefits to the farmers.

Dr. K.S. Varapasad, Project Director, DOR presented the research highlights of AICRP (Castor) during 2012-13. He highlighted the growing importance of castor crop in Indian economy and stated that the productivity of castor crop in India is highest in the world and complimented the scientists for their contributions.

During the year 2012-13, GC-3, a castor variety developed by Junagadh centre was notified for release. The significant research highlights include: Development of 36 superior male lines at Anand, DOR, S.K.Nagar and Junagadh; 7 new pistillate lines at DOR, Anand and S.K.Nagar; a number of hybrids/varieties with high seed yield at each centre. The other research accomplishments are: pre-emergence application of pendimethalin @ 1 kg/ha + one intercultivation at 40 DAS resulted in better weed control efficiency to realize higher seed yield and net returns under rainfed conditions of Hiriyur, (1195 kg/ha), Yethapur (2337 kg/ha) and irrigated conditions at Bawal (3216 kg/ha), under rainfed condition of Tamil Nadu (Yethapur), adopting wider spacing (120 x 90 cm) resulted in higher seed yield (1840 kg/ha) and economic returns (B:C ratio 2.1) of YRCH-1 hybrid, for irrigated *rabi* castor (GCH-7) in south Gujarat condition, application of 120 kg N/ha in 3 equal splits is recommended to achieve higher seed yield and economic returns, three germplasm accessions *viz.*, RG 558, RG 2781, RG 3020 confirmed resistance to wilt at three locations (DOR, Palem and S.K. Nagar) and two germplasm accessions such as RG 631 and RG 2649 confirmed resistance to leafhopper at DOR and Palem. 15.07 quintal of breeder seed was produced during the year 2012-13.

Two publications *viz.*, "KVK Phalodi – Ek Jhalak" published by the Programme Coordinator, KVK, Phalodi and "Annual Report: AICRP Castor 2012-13" published by DOR were released on this occasion.

Dr. Faroda, the Chief Guest highlighted the importance of the crop to the region in view of higher economic returns. He suggested to initiate the research to develop frost resistant hybrids and the technology for diversified uses of castor. He appealed to the scientists to work hard to reduce the input cost of the cultivation and improve the economic conditions of the marginal farmers growing this crop. Dr. Dahama in his Chairman remarks highlighted the need of developing short duration hybrids to fit the existing cropping system. While appreciating the ICAR in giving financial support to the AICRP (Castor) centre at Mandor, he also stressed the need of strengthening the castor research in Rajasthan

through AICRP. The session ended with the vote of thanks by Dr. Ishwar Singh, the Organizing Secretary of Annual Group Meeting on Castor.

Research Advisory Committee Meeting

The 27th RAC meeting was held during 28-29 May, 2013 under the Chairmanship of Dr. E.A. Siddiq, Hon. Chair Professor, ANGRAU, Hyderabad & former DDG (CS), ICAR. The other members of RAC present were Dr. V. Muralidharan, Retd. Professor, TNAU,



Coimbatore; Dr. N. Seetharama, Ex-Director, DSR, New Delhi; Dr. S.P. Singh, Former Director, NBAIL, Chandigarh; Dr. H.S. Sen, Former Director, CRIJAF, Kolkata; Dr. R.B.N. Prasad, Chief Scientist & Head (LST), IICT, Hyderabad; Dr. M.N. Reddy, Ex-Director, MANAGE, Hyderabad and Shri Vishnupant Narayanrao Mahale, Member (Non - Official), IMC, DOR.

Dr. K.S. Varaprasad, Project Director, DOR welcomed the Chairman and Members of RAC and made a presentation entitled "An Overview of Oilseed Scenario in India" and the new research initiatives undertaken by DOR during the year. It was followed by the presentation on status, targets and approaches of different research projects by the identified scientists. The two day meeting of the RAC reviewed the status of research progress and strategies in the mandated oilseed crops of the Directorate and made recommendations for effective implementation of research programmes of the Directorate. The meeting ended with a vote of thanks

proposed by Dr. G. Suresh, Principal Scientist and Member-Secretary, RAC, DOR.

Institute Research Council Meeting

The meeting of the Institute Research Council (IRC) was held on 30th May, 1st June and 19th June, 2013. All the on-going research projects including externally funded projects were critically reviewed in the meeting. The technical programmes of the research projects for the year 2013-14 were finalized under the Chairmanship of Dr. K.S. Varaprasad, Project Director, DOR. Field IRC was conducted on August 17, 2013 for *kharif* season trials. IRC members visited Narkhoda farm and the concerned scientists explained the trials for an appraisal. Appropriate suggestions were made for the on-going field trials.

Field Day

Scientists-Farmers-Extension Staff Interaction

Frontline Demonstrations in sunflower were conducted during *rabi* season on whole package, site specific nutrient management (SSNM) based on soil test values, boron and sulphur application. When the crop was at flowering and seed filling stage, a farmers' day was organized on February 12, 2013 at Bavapuram village, Komrole mandal, Prakasam district, A.P., where the problems faced by farmers in sunflower cultivation were



discussed. Around 110 sunflower farmers and the officials from agricultural department (ADA, AO &

AEO) participated in the farmers' day. Farmers shared their experiences with DRSH-1 and SSNM technologies. Interaction with farmers revealed that they are not following the ridge and furrow method due to labour scarcity and the additional cost involved. Farmers were



educated on the importance of planting sunflower following ridge and furrow system, thinning, control of head borer or capitulum borer and leaf spots caused by *Alternaria* and powdery mildew diseases. Keeping in view the general high soil pH (8.5 to 9.0) in the region, importance of gypsum application in sunflower was stressed. Dr. S.N. Sudhakara Babu, Principal Scientist & PI (Sunflower); Dr. H. Basappa, Principal Scientist; Dr. G. Suresh, Principal Scientist and Dr. G.D. Satish Kumar, Senior Scientist attended the farmers' day.

Research News

Safflower varieties of Mexico show promise for enhancing oil content under Indian conditions

Oil content in the popular varieties of safflower remains low (~26-32%), which is one of the major concerns for safflower production in India. Improving oil content in safflower is a priority and several strategies are followed, which include germplasm augmentation/enhancement and development of improved varieties/hybrids through conventional as well as molecular breeding methods. Introduction of superior exotic varieties is an important option. In this study, an attempt was made to examine the potential of improved

Mexican safflower varieties for use in Indian safflower breeding programmes for high oil content. Thirty improved varieties were imported from INIFAP, Mexico through NBPGR, New Delhi during 2012. The original (imported) seeds of these varieties recorded oil content of 34 to 46% (by NMR method). Preliminary field evaluation of these varieties along with 12 Indian varieties/hybrids (as checks) was taken up at ICRISAT (Vertisols) and Rajendranagar (Alfisols) farms of DOR during *rabi* 2012-13 to verify oil content under local conditions. Mexican varieties recorded oil content of 26.7 to 37.8% compared with checks (22.6 to 30.6%) in

Vertisols and in Alfisols it ranged from 27.2 to 41.7% oil content. Varieties Humaya-65 and Aceitera recorded highest oil content (41%) in Alfisols. Overall, the results indicated that at least 10 of the imported Mexican varieties possess 7 to 10% higher oil content compared to the most popular variety Annigeri-1 (A1). Multilocation comparative evaluation of these promising Mexican safflower varieties for oil content, seed and oil yield are planned for 2013-14.

*P. Kadirvel, N. Mukta, Praduman Yadav and
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HRD

Participation in Conferences / Workshops / Seminars / Training Programmes

Name	Programme	Venue	Date
Dr. M. Padmaiah	Brainstorming session on "Improving Research in Agricultural Extension : Issues and Way Forward"	EEL, Rajendranagar, Hyderabad	May 26, 2013
Dr. Aziz Qureshi	Summer school on "Soil Health Assessment Techniques"	IARI, New Delhi	June 4-24, 2013
Dr. P.S. Srinivas	MDP Workshop on "PME"	NAARM, Hyderabad	June 18-22, 2013

Publications

Research Papers

- Ravi Charan, Lakshmi Narasu, M. and Vimala Devi, P.S. 2013. Genotyping and molecular characterization of local *Bacillus thuringiensis* isolates of DOR by using PCR based methods. *International Journal of Biotechnology and Biochemistry*, **9**(1): 101-113.
- Santha Lakshmi Prasad, M., Naresh, N. and Sujatha, K. 2013. Efficacy of plant extracts against *Alternaria* leaf blight (*Alternaria helianthi*) of sunflower. *The Andhra Agricultural Journal*, **60** (2): 360-365.
- Sujatha, M., Tarakeswari, M. and Francis, G. 2013. Start codon targeted (SCoT) polymorphism in toxic and non-toxic accessions of *Jatropha curcas* L. and development of a codominant SCAR marker. *Plant Science*, **207**: 117-127.

Book Chapters

- Duraimurugan, P. and Kandan, A. 2012.

Integrated Pest and Disease Management. *In*: Sandeep, K., Yadav, P.K. and Kumar, S. (Eds). Emerging Science and Technology for Food, Agriculture and Environment. *Agrobios*, Jodhpur, India. Pp. 273-290.

- Sujatha, M. and Dutta Gupta, S. 2013. Tissue culture and genetic transformation of safflower (*Carthamus tinctorius* L.). *In*: Jain, S.M. and Dutta Gupta, S. (Eds). Biotechnology of Neglected and Underutilized Crops. Springer Publishers. Pp. 297-318.
- Sujatha, M. Nithianantham, S. and Reddy, M.P. 2013. Plant regeneration and genetic transformation in *Jatropha*. *In*: Jain, S.M. and Dutta Gupta, S. (Eds). Biotechnology of Neglected and Underutilized Crops. Springer Publishers. Pp. 319-342.

TV Presentations

- ❖ "Castor cultivation in *kharif*" by Dr. M. Padmaiah, Principal Scientist (Agric. Extension). CVR - TV broadcast on June 6, 2013.

Awards and Recognitions

- ❖ Dr. M. Sujatha, Principal Scientist and Head (Crop Improvement) has been elected as Fellow of the National Academy of Sciences, Allahabad, India for the year 2013.
- ❖ Dr. M. Padmaiah, Principal Scientist (Agric. Extension) and Head (Social Sciences) felicitated as “Best Extension Scientist for 2013” by the Rythu Bandhu magazine on June 23, 2013.



- ❖ Ms. S. Vasavi, Ph.D. Scholar of the Directorate working under the supervision of Dr. M. Sujatha, Principal Scientist and Head (Crop Improvement) has received the K.V. Rao Scientific Society Award in Agricultural Sciences for the year 2013 for the Ph.D. work on sunflower.
- ❖ Dr. G.D. Satish Kumar, Senior Scientist (Agric. Extension) was awarded the Netherlands Fellowship Programme (NFP) by Netherlands Organization for International Cooperation for Higher Education (NUFFIC) for attending the short course on “Media Design for Social Change” offered jointly by the Centre for Development Innovation (CDI), Wageningen UR, Netherlands and the Van Hall Larenstein, University of Applied Sciences, Wageningen.

Visit Abroad

- ❖ Dr. G.D. Satish Kumar, Senior Scientist (Agric. Extension) was deputed to attend short course on “Media Design for Social Change” held in the Netherlands during May 24 to June 9, 2013.

Visitors

- ❖ A total of 450 visitors consisting of farmers, trainee participants, delegates and students from various states, other institutes and different agricultural universities visited this Directorate during the period April – June, 2013.

राजभाषा कार्यशाला

निदेशालय में एक दिवसीय कार्यशाला का आयोजन 20 जून, 2013 को किया गया। कार्यशाला की अध्यक्षता डॉ. के.एस. वरप्रसाद, परियोजना निदेशक ने की। कार्यक्रम का शुभारंभ श्री. प्रदीप सिंह, सहा. निदेशक (रा.भा) के स्वागत भाषण से हुआ। डॉ. के.एस. वरप्रसाद ने अपने अध्यक्षीय भाषण में इस तरह की कार्यशालाओं के आयोजन की आवश्यकता पर प्रकाश डालते हुए कर्मचारियों से हिन्दी में कार्य करने का आग्रह किया। उन्होंने कर्मचारियों से अनुरोध किया कि वे हिन्दी में काम करने की शुरुआत तो करें, इस दिशा में लिया गया छोटा कदम भी बहुत गहरा असर डालेगा।



इस कार्यशाला में श्री. होमनिधि शर्मा, वरिष्ठ प्रबंधक (रा.भा.) भारत डायनमिक्स लिमिटेड, हैदराबाद ने अपनी कक्षा में बताया कि कैसे हम पहले किसी भारतीय भाषा में काम करते और जैसे ही उसे किसी और को भेजते या दूसरे कंप्यूटर में उस पर कार्य करते तो काम नहीं कर पाते पर अब उन सभी समस्याओं का समाधान यूनिकोड से हो सकता है। आपने बहुत आसान तरीके से कंप्यूटर में यूनिकोड को सक्रिय करना तथा उस पर कैसे कार्य किया जा सकता है तथा इत्यादि पर प्रकाश डाला। फोनेटिक की-बोर्ड क्या है इस पर कैसे टंकण किया जा सकता है तथा कैसे इस एक ही की-बोर्ड द्वारा सभी भारतीय भाषाओं में कार्य किया जा सकता है। इस तरह यूनिकोड से संबंधित - सभी बातों पर आपकी प्रस्तुति से सहभागी काफी लाभान्वित हुए।

डॉ. एन.मुक्ता, प्रधान वैज्ञानिक तथा उपाध्यक्ष राजभाषा कार्यान्वयन समिति ने अपने धन्यवाद ज्ञापन में इस जानकारी को बहुत उपयोगी एवं कार्यालय में कंप्यूटर पर हिन्दी के उपयोग को बढ़ाने में एक महत्वपूर्ण कदम बताया। इस कार्यशाला में निदेशालय के वैज्ञानिक, अधिकारी एवं स्टॉफ सदस्यों ने भाग लिया।

From Director's Desk

Safflower (*Carthamus tinctorius* L.) is a multi-purpose crop with unexploited potential and world adaptability. Declining area and production of safflower has been a major area of concern. Owing to joint efforts of ICAR, ISOR and DOR, 8th International Safflower Conference was successfully organized at Hyderabad during January, 2012. The conference made several useful recommendations and helped in identifying new partners and further strengthening the working relationships with important stakeholders like M/s. Marico Ltd., Mumbai. Thirty improved varieties were imported from INIFAP, Mexico through NBPGR, New Delhi and



the varieties possess 7 to 10% higher oil content compared to the most popular indigenous variety Annigeri-1 (A1). Multilocation comparative evaluation of these promising Mexican safflower varieties are being conducted for oil content, seed and oil yield for further use in breeding programmes to develop improved varieties/hybrids with high oil content and quality.

Since the non-availability of quality seed is a major concern in safflower, it was felt that DOR should facilitate for quality seed availability through the network of AICRP (safflower) located in SAU's and State Department of Agriculture. DOR took the initiative in inviting breeders' from AICRP (Safflower) centres, seed officers of SAUs and representatives from Marico industries on a common platform. Marico expressed willingness to procure breeder seed, truthfully labeled (TFL) seed from the SAU's involved in producing safflower and modalities of quality seed production of specific safflower genotypes/lines on mutually agreeable terms was discussed and finalized during the Annual Group Meeting of Safflower and Linseed held at Raipur. During 2012-13, eight centres produced 1331 q of TFL seed and 185 q of breeder/foundation seed of nine varieties and procured by Marico under buy - back agreement. This new initiative is a small step to meet the quality seed demand of safflower which might help in increasing the area of safflower in traditional/non-traditional areas.

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