



DOR Newsletter



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Events

DOR Foundation Day



The 36th Foundation Day of Directorate of Oilseeds Research was celebrated on August 1, 2013 at DOR, Hyderabad. Dr. A. Padma Raju, Hon'ble Vice-Chancellor, ANGRAU was the Chief Guest. Dr. M.V. Rao, former Special Director General, ICAR and former Vice-Chancellor, ANGRAU also graced the occasion. In his address, Dr. A. Padma Raju complimented the staff of Directorate for excellent progress and advised to find the technologies for increasing the production in rainfed situations. Dr. V. Chockalingam, Professor Emeritus, Dept. of Cardiology, Dr. MGR Medical University, Chennai delivered the lecture on "Healthy Heart for Hearty Health". In his presentation, he advised the staff to get rid of negative thinking and opined that positive mind, ideal eating and adequate exercise are the most important factors for maintaining healthy life. Seven staff members of the Directorate were awarded for their

CONTENTS

Events	1
Meetings	6
Field Days	7
Publications	7
HRD	9
Awards & Recognitions	9
Personnel	10
From Director's Desk	11

significant contribution in their respective field in 2012. Twenty nine staff were also felicitated in recognition of their 25 years of service in the Directorate. On this occasion, four digitalized CDs *viz.*, DOR Annual Reports and Annual Progress Reports of AICRP on Sunflower, Safflower and Castor of previous years were released. The afternoon session was chaired by Dr. E.A. Siddiq, former Dy. Director General (CS), ICAR in which Dr. A.K. Pradhan, Professor, Dept. of Genetics, Centre for Genetic Manipulation of Crop Plants, University of Delhi (South Campus), New Delhi delivered the Foundation Day lecture on "Breeding through Doubled Haploids : A Geneticist's View". The former Directors Dr. V. Ranga Rao, Dr. M.V.R. Prasad and Dr. D.M. Hegde and retired staff members of DOR and representatives from local Institutes also graced the occasion.

Breeding through Doubled Haploids (DH): A Geneticist's View (Dr. A.K. Pradhan)

The induction and regeneration of haploids followed by doubling of chromosomes are widely used techniques in advanced breeding programs of several agricultural species. They have been successfully used for commercial cultivar production of species such as asparagus, barley, Brassica, eggplant, melon, pepper, rapeseed, rice, tobacco, wheat and more than 290 varieties have already been released. The successful use of DH in the breeding programme is highly dependent on the following criteria:

- ♦ Easy, consistent production of large number of DH
- ♦ The protocol of DH production should be genotype-independent
- ♦ DH should be genetically normal and stable
- ♦ DH population should contain random sample of parental gametes

At present no system presently being utilized can claim to fulfil all of these criteria. Nevertheless, the stage has now been reached where more than one system is available for use with certain species, and different breeding programmes are currently using different systems.

DH in pure line breeding of self-pollinating species: The basic breeding scheme in self-pollinated species starts with crossings of desired genotypes, leading to hybrids containing chromosome sets of both parents. Subsequent inbreeding generations followed by selection and evaluation leads to the development of pure line varieties (through pedigree, bulk and single seed descent methods). It takes 5-6 generations of selfing before a breeding line is selected. It has been highlighted that selection efficiency is low in early generations due to the presence of high degree of dominance and heterozygosity. Hence, DH lines induced as soon as from F1 generation (note that gametes on F1 plants represent the F2 generation) could overcome these problems and the superior DH lines could directly be evaluated for their use as pure line cultivars. The major arguments in favour of using DH in pedigree breeding are:

- ♦ It saves times considerably
- ♦ Instant homozygosity using a DH system increases

the efficiency of selection for both qualitative and quantitative traits

- ♦ High frequency of recessive trait in homozygous condition even if the trait is governed by more number of genes
- ♦ DH can be used to obtain and maintain a pure stock of a cultivar

However, several simulation and experimental studies have indicated that it is advantageous to develop DH from F2 or from selected inter-mated F2 or from advanced filial generations than from F1 as the response to selection is low in F1DH due to low frequency of recombination. The genetic arguments are as follows:

- ♦ An F2-derived DH population may contain almost 50% more of the best recombinants than an F1-derived population
- ♦ Breeders concern on the recovery of desirable transgressive segregants is best fulfilled in advanced filial generation when the complementary genes are dispersed between the parents and are linked in repulsion. It has been shown that complementary gene action increases the genetic variance among DH (F1DH) lines when coupling linkages are present and decreases the genetic variance among DH lines when repulsion linkages are present

DH in cross-pollinating species: In cross-pollinating species DH can be used at any or after each cycle of recurrent selection. Initially, DHs are produced from a random sample of parents. After the selection is practiced on the DH population, seeds of the superior DH are used for the next cycle of recurrent selection. This procedure helps to improve the selection efficiency for quantitative traits in DH population compared with random mating population. DH method has been extensively used for the development of heterotic inbreds in many field and vegetable crops. It has been a method of choice as inbred lines could be developed in one generation as compared to several generations of selfing or sib-mating. DH-based recurrent selection could be applied within a gene pool to develop superior inbred lines for their subsequent use in the development of more productive hybrids.

DH in backcross breeding: Backcross conversion is a standard plant breeding method for improving an elite line defective in a particular trait. Introgression of highly heritable recessive traits controlled by more than one gene is difficult and time consuming through conventional backcross breeding. For example, by a conventional breeding approach, the manipulation of seven recessive genes would require at least 16384 F2 individuals- $(\frac{1}{4})^n$, where 'n' is the number of genes segregating - to recover one individual homozygous recessive all the seven genes. The population size would be enormously high if the breeder had to undertake some selection among a few homozygous recessive individuals. Since the zygotic segregation ratio is the same as that of the gametic segregation ratio $(\frac{1}{2})^n$ in DH populations, a population of 128 DH individuals would be required to recover one individual recessive for all seven unlinked loci. This is particularly important for the introgression of quality traits in allotetraploid *Brassica* species (low glucosinolate and low erucic acid) which have been shown to be governed by 6 – 7 recessive genes. Another advantage of using DH is the recovery of homozygous individuals that can help to minimize the time for gene fixation in gene pyramiding programme.

DH in mutation breeding: Homozygosity of regenerants and true breeding propagation enables the fixation of mutations in the first generation after mutagenic treatment. All mutated traits are immediately expressed, allowing screening for both recessive and dominant mutants in the first generation without the need for self-pollination. The first option is that mutagenic treatment is applied to dormant seeds that, on germination and flowering, produce M1 gametes, which are used as donor material for haploid culture. The second option relies on mutagenic treatment of haploid cells *in vitro*. The mutagenic agent is usually applied soon after microspore isolation at the uninucleate stage, before the first nuclear division in order to avoid heterozygosity and chimerism caused by spontaneous diploidization through nuclear fusion.

DH in genetic analysis

Genome/gene mapping: Genetic maps are important for several reasons. It provides a framework for mapping qualitative and quantitative traits and understanding of

the structure and organization of genomes and provides syntenic relationships between species. The identification and location of genes in the genome help the breeders to undertake marker-assisted selection of the trait through the identification of desired recombinants. DH populations have become standard resources in genetic mapping in which DH are readily available. It provides permanent homozygous mapping populations for undertaking precision genetic and molecular analysis. Several applications of DH in molecular genetics are linkage map construction, gene tagging through both bulk segregant analysis (BSA) and linkage map methods, genetic dissection of quantitative traits by QTL analysis, marker-assisted breeding, genomics and gene identification and genetic transformation at haploid level.

Doubled haploidy is and will continue to be a very efficient tool for the production of completely homozygous lines from heterozygous donor plants in a single step. It is an established tool in genetic mapping, gene discovery and breeding. In spite of its proven potential which resulted in release of more than 290 varieties in several crop species, the application of doubled haploidy, even in the most responsive species, is restricted by genotype dependency and pose a greater challenge for their wider application in plant breeding.

Dr. R.S. Paroda visited the Directorate

Padmabhushan Dr. R.S. Paroda, Chairman, TAAS and former Director General, ICAR visited Directorate of Oilseeds Research on August 24, 2013. He visited the



research farm at Narkhoda and discussed with the scientists on the various experiments conducted. He later

interacted with all the scientists of the Directorate and the Directors from the other oilseed research institutes *viz.*, DGR, DRMR, DSR and DOPR. He urged the scientists to work as a team cut across different institutions and disciplines with greater accountability keeping the national goal in view. He suggested that younger scientists should be encouraged.

In the afternoon, he delivered the first Dr. M.V. Rao lecture on the topic "Addressing the Emerging Concerns of Indian Agriculture". This lecture was



organized by the Indian Society of Oilseeds Research keeping in view the valuable contributions of Dr. M.V. Rao to agriculture and especially to oilseeds. His lecture touched upon important issues pertaining to the declining farm-holdings, increasing small and marginal farmers, changing cropping patterns, quality of natural resources and the importance to develop innovative



technologies. He stressed upon low-cost production technologies to be developed for obtaining higher returns for the farm-produce. Dr. Paroda acclaimed achievements made by China in agriculture and India should implement them to achieve higher crop

production through hybrid development. Scientists research efforts should reach common farmer for which



intensive extension programmes are to be conducted. He quoted that China is investing huge amounts on agricultural research and development for increasing



productivity of various crops and also taking measures to reduce poverty that can be followed by India as well.

Eminent personalities who graced the occasion included Dr. A. Padma Raju, Hon'ble Vice-Chancellor,



ANGRAU; Dr. Anisetty N Murthi, former Head, Seed and Plant Genetic Resources, FAO; Directors of the local

ICAR institutes and other oilseed research institutes *viz.*, DGR, DRMR, DSR and DOPR. Dr. A. Padma Raju emphasized the need of working in collaboration with ICAR institutes to meet the growing challenges in the agriculture sector. In his remarks, Dr. M.V. Rao emphasized for focused research and development to enhance oilseeds productivity to make the Nation self-sufficient in oilseeds. Dr. K.S. Varaprasad, President, ISOR and Project Director, DOR opined that self-sufficiency in oilseeds can be achieved through concerted efforts by all the stakeholders involved and in this direction, new paradigms are initiated to increase the domestic oilseeds production.

Minister of State for Agriculture and Food Processing Industries, GoI visited the Directorate

Shri Tariq Anwar, Honourable Minister of State for Agriculture and Food Processing Industries, Govt. of India visited the Directorate on July 8, 2013. Hon'ble Minister expressed his concern about the high import bill on vegetable oils and reviewed the status on each of the annual oilseed crops, palm oil and other secondary sources of 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. Shri Tariq Anwarji acknowledged the very high demand for vegetable oils because of ever growing population and increase in standard of living necessitating imports. Soybean,



groundnut, mustard and castor crops would provide major momentum of growth while oil palm expansion is

to be pursued with infrastructure backing. Shri Tariq Anwarji also acknowledged the strength of biotechnological interventions for achieving quantum jump in oilseeds production in the country. He reiterated the TMOP's enhanced role, considering various issues and prioritization for achieving self-sufficiency in vegetable oils. On this occasion Hon'ble Minister also released two publications of DOR *viz.* "Kusum – *Utpadaan badaneke samagra sifarisyay*" and "Frontline Demonstrations Annual Report, 2011-12".



Earlier, Hon'ble Minister visited the Biotechnology, Pathology and other laboratories of DOR. The scientists briefed the research activities, technologies developed and their extension to the farmers through frontline demonstrations and audio-visual aids by DOR in sunflower, safflower and castor oilseed crops. Shri Tariq Anwarji expressed his happiness and said that DOR continue to do the good research work and meet the challenges in the oilseed sector. Dr. A. Padma Raju, Vice-Chancellor, ANGRAU and the Directors of the ICAR institutes located in Hyderabad have participated in the meeting. Dr. I.Y.L.N. Murthy, Principal Scientist & Head (Crop Production) proposed vote of thanks.

Chairman, PPVFRA visited DOR

Dr. R.R. Hanchinal, Chairman, Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), visited DOR on July 20, 2013. During the visit, the Chairman addressed the scientists on the importance of PPVFRA and suggested the scientific community to gear up for registration of important material to PPVFRA. He was felicitated by the Directorate for his contribution to the country's wheat research in general and to the farming



community in particular. On this occasion the Directorate hosted the meeting between National Seed Association of India (NSAI) and Protection of Plant Varieties and Farmers' Rights Authority.

Meetings

Meeting on Revision of Criteria for Promotion of Sunflower Entries

A meeting on Revision of criteria for promotion of entries to higher order of testing under AICRP on Sunflower was organized on July 2, 2013 at DOR, Hyderabad under the chairmanship of Dr. A. Seetharam, Former Project Coordinator (Sunflower and Small Millets), Bengaluru. Dr. K.S. Varaprasad, Project Director, DOR, senior sunflower breeders from AICRP system, PI and Co-PIs of sunflower, castor and safflower from DOR, eminent scientists from AICRPs on rice and maize and private seed industries were participated. Following brief recommendations emerged for further discussion and adoption.

- ❖ Revise the sunflower testing zones to 5 (from the present 3) based on the agro-climatic similarities and geographical contiguity of states, crop growing season and opportunity for further crop expansion.
- ❖ The present criterion on minimum per cent superiority over the checks was accepted to be followed.
- ❖ For classification of duration groups, it was recommended to adopt the criterion on the basis of days for 50% flowering as, short duration (<55 d), medium duration (56 to 65 d) and long duration (>65 d).

- ❖ AICRP centres to be identified and grouped for evaluating under two distinct growing situations for rainfed and irrigated evaluation as per the relevance and applicability.
- ❖ All the entries promoting to AHT shall be evaluated for two years (AHT I and II) irrespective of the performance in AHT I.
- ❖ DOR shall also conduct coordinated hybrid trials (IHT and AHT) at its farms for better assessment.
- ❖ UAS, Bengaluru centre would organize demonstration trial with the available pre-release hybrids of AICRP centres along with the existing checks for showcasing and possible commercialization.

Interface Meeting with Bio-Pesticide Entrepreneurs

The Interface Meeting with Bio-Pesticide Entrepreneurs was held on July 27, 2013 at DOR, Hyderabad under the Chairmanship of Dr. K.S. Varaprasad, Project Director. Representatives from 24 firms dealing with bio-pesticide production and sale in India were participated in the meeting. The technologies available for licensing (DOR *Bt-1* W.P. formulation and DOR *Beauveria bassiana* SC formulation) as well as those in pipeline (*Trichoderma harzianum* SC formulation and *T. asperellum* W.P. formulation) were presented by Dr. P.S. Vimala Devi, Principal Scientist (Entomology) and Dr. R.D. Prasad, Principal Scientist (Plant Pathology), respectively. This was followed by an active interaction with the entrepreneurs covering issues like consortium formation including membership fee, industry requirement for contract research as well as issues. Dr. R. Kalpana Sastry, Head, RSM, NAARM, Hyderabad made a presentation on the activities of their newly established Business Planning and Development (BPD) unit.

Institute Management Committee Meeting

The 31st meeting of the Institute Management Committee was held on August 2, 2013 under the Chairmanship of Dr. K.S. Varaprasad, Project Director, DOR. The meeting was attended by Dr. R. Sudhakara Rao, Director of Research, ANGRAU; Smt. G. Indira,

Assistant Director of Agriculture, Government of Andhra Pradesh, Hyderabad; Shri P. Gopal Reddy, Member (non-official); Shri Vishnupant Narayanrao



Mahale, Member (non-official); Dr. T. Radhakrishnan, Principal Scientist, DGR, Junagadh; Dr. G.K. Gupta, Principal Scientist, DSR, Indore; Dr. A.R.G. Ranganatha, Project Coordinator (Sesame and Niger), Jabalpur; Dr. S.N. Sudhakar Babu, Principal Scientist, DOR; Mr. K. Srinivasa Rao, FAO, DRR and Mr. Anil Behari, SAO, DOR and Member Secretary. The Chairman welcomed the Management Committee Members and presented the research achievement of the Directorate. The Committee reviewed different research and developmental activities and applauded the overall progress made by the Institute.

Field Days

Rythughosti

A *Rythughosti* was organized jointly by DOR and Vikashith Bharath Foundation (VBF) at Hazinathanda of Manchal Mandal, R.R. district on July 16, 2013. About 50 tribal farmers besides scientists from DOR and officials from Vikashith Bharath Foundation participated in the meeting. Scientists explained the importance of castor, sunflower and safflower and their suitability to their area and followed by a field visit, wherein farmers were given skill orientation techniques on sowing and application of fertilizer, etc.

Parthenium Awareness Day

Parthenium Awareness Day was organized at DOR, Hyderabad on August 22, 2013 as a part of “*Parthenium*

Awareness Week” observed from 16-22 August, 2013. All the scientists, staff and students of the Directorate attended the awareness programme. *Parthenium* is a poisonous, allergic aggressive weed. Owing to rapid and gregarious growth of *Parthenium*, its ill effects on human,



livestock and all crops including oilseed crops is evident necessitating organizing such awareness programmes. Principal Scientists of DOR viz., Dr(s). M. Sujatha, M. Padmaiah and H. Basappa elaborated the problems associated with *Parthenium* especially in reducing crop yields of oilseeds, spreading viral diseases like sunflower SND, efforts to control the weed through various methods, successful control of *Parthenium* through biological control. The harmful effects of weed and its successful control were explained to farm staff and labourers through charts/posters and other exhibits and a mass campaign was taken up for uprooting the weed at Rajendranagar farm. The programme was coordinated by Dr. G. Suresh, Principal Scientist, DOR.

Publications

Research Papers

- Jawaharlal, J., Kuldeep Singh Dangi, Sudheer Kumar and Suresh, J. 2013. Scaling and joint scaling test for quantitative traits of generation mean analysis in sesame (*Sesamum indicum* L.). *Journal of Oilseeds Research*, 30 (1): 1-5.
- Kallamadi Prathap Reddy, Sankaraneni Chander Rao, Pulugurtha Bharadwaja Kirti and Mulpuri Sujatha. 2013. Development of a scoring scale for

powdery mildew (*Golovinomyces cichoracearum* (DC.) V.P. Heluta) disease and identification of resistance sources in cultivated and wild sunflowers. *Euphytica*, **190** (3): 385-399.

- Lakshamma, P., Lakshmi Prayaga and Sarada, C. 2013. Genetic variability for root, shoot and water use efficiency traits in castor (*Ricinus communis* L.). *Journal of Oilseeds Research*, **30** (1): 85-89.
- Meena, C.R., Meena, H.P. and Sinha, B. 2013. Fertility restoration, combining ability effects and heterosis in sunflower (*Helianthus annuus* L.) using different CMS sources. *Journal of Oilseeds Research*, **30** (1): 60-64.
- Meena, H.P., Kumar, H. and Lal, J.P. 2013. Combining ability analysis in Indian mustard (*Brassica juncea* L. Czern & Coss.). *Journal of Oilseeds Research*, **30** (1): 55-59.
- Murthy, I.Y.L.N. and Mukta, N. 2013. Nutrient rich karanja (*Pongamia pinnata* L.) Pierre genotypes for diversified uses: An inventory. *Journal of Oilseeds Research*, **30** (1): 93-96.
- Qureshi Aziz, A., Dudhe, M.Y. and Suresh, G. 2013. Evaluation of sunflower genotypes for phosphorus acquisition and phosphorus partitioning. *Journal of Oilseeds Research*, **30** (1): 34-38.
- Ramesh, P., Murthy, I.Y.L.N. and Haripriya, Ch.V. 2013. Long-term effect of nutrient on castor (*Ricinus communis* L.) productivity, soil fertility, nutrient uptake and nutrient-use efficiency in rainfed Alfisols. *Journal of Oilseeds Research*, **30** (1): 39-42.
- 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.
- Thuirei Jacob Ningshen, Chaitanya, R.K., Prashanth, P.H., Vimala Devi, P.S. and Aparna

Dutta Gupta. 2013. Characterization and regulation of *Bacillus thuringiensis* Cry toxin binding aminopeptidases N (APNs) from non-gut visceral tissues, malpighian tubule and salivary gland: Comparison with midgut-specific APN in the moth *Achaea janata*. *Comparative Biochemistry and Physiology*, **166**: 194-202.

Popular Articles

- Praduman Yadav, Meena, H.P., Murthy, I.Y.L.N. and Padmaiah, M. 2013. *Rabi me tilhan. Utpadan Khad Patrika*, 54 (9): 22-26. (in Hindi)

Folder

- M. Padmaiah, G.D. Satish Kumar and S.V. Ramana Rao. 2013. Castor cultivation: A Boon to Chenchu Farmers.

Invited Lectures

- Dr. G. Suresh, Principal Scientist (Agronomy) delivered a lecture on "Response of oilseed crops to Zn" during "ICRISAT - Sabanci University Zn Day" organized at ICRISAT, Patancheru on August 1, 2013.
- Dr. M. Sujatha, Principal Scientist and Head (Crop Improvement) delivered a lecture on "Genetic Diversity in *Jatropha*" during National Seminar on "Tree Biotechnology 2013: Emerging Opportunities in Forestry and Tree Science" organized at IFGTB, Coimbatore during September 23-24, 2013.

Radio Talks and TV Presentations

- "Pest management in castor and top dressing to *kharif* castor" by Dr. M. Padmaiah, Principal Scientist (Agric. Extension). CVR-TV, Hyderabad broadcast on July 31, 2013.
- "Castor cultivation in tribal villages – a programme under Tribal Sub-Plan" by Dr.M.Padmaiah, Principal Scientist (Agric. Extension). AIR, Hyderabad broadcast on August 1, 2013.

- “Improved management practices for attaining higher yields in sunflower” by Dr. G. Suresh, Principal Scientist (Agronomy). AIR, Hyderabad broadcast on August 2, 2013.
- “Castor cultivation under irrigation” by Dr. M. Padmaiah, Principal Scientist (Agric. Extension). AIR, Hyderabad broadcast on August 3, 2013.
- “Live crop demonstrations improved management practices for attaining higher yields in sunflower” by Dr. G. Suresh, Principal Scientist (Agronomy). Gemini TV, Hyderabad broadcast on August 25, 2013.
- “Plant protection measures in castor” by Dr. M. Padmaiah, Principal Scientist (Agric. Extension). CVR-TV, Hyderabad broadcast on September 14, 2013.

HRD

Participation in Training Programmes/Workshops/Seminars/Conferences etc.

Name	Programme	Venue	Date
Dr. S.V. Ramana Rao Dr. P. Padmavathi Dr. P. Duraimurugan Mr. V. Sambasiva Rao	“Agropedia 2.0: Capacity Building Workshop for New Partners”	IASRI, New Delhi	July 15, 2013
Dr. G. Suresh	“Zinc Day”	ICRISAT, Hyderabad	August 1, 2013
Dr. Praduman Yadav	International Conference on “Emerging trends in Oleochemicals and Lipids Expo-2013”	IICT, Hyderabad	August 8-10, 2013
Dr. G. Suresh	“Meeting of the “National Level Standing Committee of Seed Producers”	Agric. Commissionerate, Hyderabad	August 12, 2013
Dr. M. Santha Laxmi Prasad Dr. Md. A. Aziz Qureshi Dr. P. Duraimurugan	Awareness Building and Sensitization Workshop on “National Fund for Basic, Strategic and Frontier Application Research in Agriculture (NFBSFARA)”	NAARM, Hyderabad	August 12-13, 2013
Dr. H. Basappa Dr. M. Santha Laxmi Prasad	International Training Programme on “Pest Risk Analysis”	NIPHM, Hyderabad	September 2-6, 2013
Dr. Jawaharlal Jothoth	Training Program on “Management of Plant Genetic Resources”	NBPGR, New Delhi	September 16-25, 2013
Dr. M. Sujatha	“South Asia Bio-safety Conference”	BCIL, New Delhi	September 18-19, 2013
Dr. M. Sujatha	National Seminar on “Tree Biotechnology 2013: Emerging Opportunities in Forestry and Tree Science”	IFGTB, Coimbatore	September 23-24, 2013

Awards and Recognitions

- Dr. R.D. Prasad, Principal Scientist (Plant Pathology) has been nominated as Member, Management Committee of National Bureau of Agriculturally Important Microorganisms (NBAIM), Mau for a period of three years w.e.f. August 19, 2013.
- Dr. S. Chander Rao, Principal Scientist (Plant Pathology) was honoured with “Best Research Paper Award 2012” during Foundation Day Celebrations of DOR held on August 1, 2013, for the research paper entitled, “Kallamadi Prathap Reddy, Sankaraneni Chander Rao, Pulugurtha Bharadwaja Kirti and Mulpuri Sujatha. 2013. Development of a scoring scale for powdery mildew (*Golovinomyces cichoracearum* (DC.) V.P. Heluta) disease and identification of resistance sources in cultivated and wild sunflowers. *Euphytica*, **190** (3): 385-399”.
- Dr. M. Padmaiah, Principal Scientist (Agric. Extension) and Head (Social Sciences) felicitated as “Best Scientist” by the *Rithunestham* for the

year 2013 by the *Rythubandhu* Association on September 26, 2013.



DOR Proficiency Awards

The Best Worker Awards in different categories of DOR staff were given away to the recipients on the occasion of DOR Foundation Day held on 1 August, 2013.

- Shri B. Sambaiah, T-4, Crop Improvement Section and Shri V. Sarath Babu, T-3, Farm Section won Best Worker Award in Technical Category.
- Shri K. Ramulu, SSS, A&A Section won Best Worker Award in Skilled Supporting Staff Category.
- Shri D. Mallesh, TSL and Smt. P. Venkatamma, TSL, Narkhoda farm and Smt. G. Pentamma, TSL, Rajendranagar farm won Best Worker Award in Temporary Status Labour Category.

Personnel

Retirement

- ❖ Shri B. Sambaiah, Technical Assistant (T4) retired on his superannuation on July 31, 2013. The Project Director and staff of DOR wished him a very happy and healthy retired life.



Visitors

A total number of 175 visitors consist of farmers, trainee participants, delegates and students from various agricultural universities visited the Directorate during the period July – September, 2013.

हिन्दी पखवाड़ा समारोह

निदेशालय में 10-14 सितंबर, 2013 तक हिन्दी पखवाड़ा मनाया गया। इस पखवाड़े के दौरान विभिन्न प्रतियोगिताओं का आयोजन किया गया जिनमें वैज्ञानिक, अधिकारी व कर्मचारियों ने उत्साह से भाग लिया। पखवाड़े के दौरान एक कार्यशाला का आयोजन भी किया गया। जिसमें श्रीमती नरेश बाला, सहा. निदेशक (रा.भा.) हिन्दी शिक्षण योजना ने हिन्दी के व्याकरण तथा आलेखन टिप्पण पर कक्षा चलाई।

पखवाड़े का समापन समारोह डॉ. के.एस. वरप्रसाद, परियोजना निदेशक की अध्यक्षता में हुआ। कार्यक्रम का आरंभ श्री. प्रदीप सिंह, सहा. निदेशक (रा.भा.) के स्वागत एवं मुख्य अतिथि परिचय से हुआ। इसके पश्चात प्रभारी राजभाषा डॉ. एन.मुक्ता ने राजभाषा की प्रमुख गतिविधियों पर प्रकाश डाला। इसके बाद प्रोत्साहन योजना के अंतर्गत वर्ष 2012-13 के दौरान हिन्दी में कार्यालयीन कार्य करने वाले अधिकारी व कर्मचारियों को नगद पुरस्कार मुख्य अतिथि डॉ. घनश्याम, रीडर, बीजेआर कॉलेज, नामपल्ली द्वारा वितरित किए गए। इसी क्रम में पखवाड़े के दौरान आयोजित विभिन्न प्रतियोगिताओं के विजेताओं में पुरस्कारों का वितरण किया गया। डॉ. आईवाईएलएन मूर्ति, प्रधान वैज्ञानिक ने प्रोत्साहन पुरस्कार वितरित किए।

अपने मुख्य अतिथि संबोधन में डॉ. घनश्याम जी ने भाषा और संस्कृति के बारे में बताते हुए कहा कि भाषा के बिना संस्कृति को जीवित रखना मुश्किल है। आज हिन्दी ही नहीं सभी भारतीय भाषाओं का अस्तित्व खतरे में है। पाश्चात्य संस्कृति का अंधा अनुकरण कर आज की युवा पीढ़ी धीरे-धीरे भाषा और संस्कृति दोनों से ही दूर होती जा रही है।

अपने अध्यक्षीय संबोधन में डॉ. के.एस. वरप्रसाद,



परियोजना निदेशक ने हिन्दी से जुड़े अपने अनुभवों से सभा को अवगत कराया। प्रारंभ में केवल वे ही फाईलों में टिप्पणी हिन्दी में करते थे। उनसे प्रेरित हो कुछ अन्य वैज्ञानिक, अधिकारी व कर्मचारी भी फाईलों में हिन्दी में आलेखन व टिप्पणी कर रहे हैं।

राजभाषा कार्यशाला का आयोजन

निदेशालय में एक दिवसीय कार्यशाला का आयोजन 11 सितंबर, 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।



इस कार्यशाला में श्रीमती नरेश बाला, सहायक निदेशक, हिन्दी शिक्षण योजना, हैदराबाद ने हिन्दी व्याकरण और अन्य आयाम पर प्रकाश डाला। आपने बहुत सरल तरीके से हिन्दी भाषा का व्याकरण इसके

उपयोग में आने वाली कठिनाईयाँ तथा इसे दूर करने के उपाए बताए। सरकार की राजभाषा नीति और इससे संबंधित नियमों की जानकारी दी। कार्यशाला में हिन्दी का उपयोग बढ़ाने से सम्बन्धित बहुत सारी महत्वपूर्ण जानकारी प्रदान की।

डॉ. मुक्ता, प्रधान वैज्ञानिक ने अपने धन्यवाद ज्ञापन में इस जानकारी को बहुत उपयोगी एवं कार्यालय में 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

Sunflower (*Helianthus annuus* L.) made significant inroads into Indian vegetable oil economy since its introduction in early 70's. The sunflower production has constantly increased up to 1996-97 and reduced subsequently up to 2003-04.

The production again started increasing from 2004-05 to 2007-08 and the highest production (1.5 m.tonnes) was recorded in 2007-08. The gains on impressive strides made in the production front could not be sustained due to stagnation in yield, increasing shortage and cost of inputs and unabated pest and diseases, besides relative low profitability compared to competing maize, cotton and chickpea.



Concerted efforts are being pursued at the Directorate for further crop expansion and to improve productivity through development of improved varieties and hybrids with high oil content and resistance to pest and diseases. DOR is facilitating NRAC for field evaluation of soil moisture sensor for calibrating recently launched India's first microwave radar imaging satellite RISAT-1 at Narkoda research farm. Besides, NRSC is associated in the long term fertilizer experiment on sunflower – sorghum cropping system in Alfisols for

developing spectral signatures of different nutrient management practices. A brainstorming session to



discuss about "Revision criteria for entries to higher order of testing in AICRP" was conducted at DOR that

assessed the newer areas and opportunities for sunflower in terms of regions, plant types (duration), quality *etc.*, as per the changing needs and regional requirement. Three regions *viz.*, Northern-Eastern, Central and Peninsular were identified based on distinct geographic distribution and common problems and prospects for sunflower improvement programme. Accordingly, specific targets have been identified for each region *viz.*, developing short duration hybrids of 90 to 95 days during spring / 75-80 days during summer and resistance to charcoal rot and *Sclerotinia* disease for Northern and Eastern region; developing hybrids of 90-100 days duration and downy mildew, *Alternaria* and powdery mildew resistance for Central region; developing hybrids of 90-100 days duration and SND, *Alternaria* and powdery mildew resistance for Peninsular region.

New initiatives, such as, pre-breeding programme utilizing wild annual *Helianthus* species aiming diversification of inbred base with specific emphasis on desired agronomic and quality traits, import and distribution of high yielding, high oil, high oleic and early maturity material obtained from Serbia, exchange of breeding materials across the centres through a national crossing programme and enhanced interaction within the identified three zones under AICRP were taken up to make a significant progress. Public hybrids have been evaluated in comparison with private hybrids and possible collaborative projects under public private partnerships are being explored.

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Editors

Dr. I.Y.L.N. Murthy, Dr. P. Duraimurugan
and Mr. V. Sambasiva Rao

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Mr. B. V. Rao

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Dr. K.S. Varaprasad
Project Director

On behalf of the Directorate of Oilseeds Research,
Rajendranagar, Hyderabad-500 030
Web site: <http://www.dor-icar.org.in>
E-mail: director@dor-icar.org.in
Fax: (+91)040-24017969 Phone: (040) 24015222