



सोयाबीन समाचार SOYBEAN NEWS

भा. कृ. अनु. प. सोयाबीन अनुसंधान निदेशालय
ICAR - DIRECTORATE OF SOYBEAN RESEARCH

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निदेशक की कलम से

From the Director's Desk

प्रिय पाठकगण,

भा.कृ.अनु.प.- सोयाबीन अनुसंधान निदेशालय एक विशिष्ट संस्थान है, जो वर्ष 1987 से राष्ट्रीय सोयाबीन अनुसंधान केन्द्र के रूप में देश में सोयाबीन अनुसंधान एवं विकास के कार्यों में मुख्य रूप से कार्यरत है। निदेशालय का सर्वप्रथम लक्ष्य देश में खाद्य तेल पूल हेतु योगदान करना एवं प्रोटीन ऊर्जा कुपोषण का उन्मूलन करना है।

वर्ष 2015, मानसून की विषम परिस्थितियाँ जैसे लम्बे समय तक सूखे की स्थिति, कम समयावधि में अतितीव्र वर्षा एवं मानसून का समय से पहले चले जाने के कारण बहुत ही असाधारण एवं असामान्य वर्ष था। विगत तीन वर्षों से लगातार मानसून की अनियमितता के साथ-साथ सोयाबीन की फसल पर आने वाली जैविक समस्याओं जैसे रोग एवं कीटों का प्रकोप ने सोयाबीन की खेती में समस्याओं को अधिक जटिल कर दिया है। इस स्थिति को देखते हुए विकसित तकनीकियाँ जैसे बीज उपचार, परिवर्तित भूमि संरचना में सोयाबीन की बुवाई, प्रजातियों का कैफेटेरिया, खरपतवार प्रबंधन तथा कीट नियंत्रण की विभिन्न अनुशंसित विधियाँ कारगर पाई गयीं और जिन कृषक भाईयों ने इन तकनीकों को अपनाकर खेतों में इसका प्रयोग किया, उनकी फसल सुरक्षित रही। संस्थान की ओर से फसल के मौसम के दौरान जारी की गई साप्ताहिक सलाह प्रणाली को कृषकों के साथ भा.कृ.अनु.प. ने भी सराहना की है।

विगत तीन वर्षों के दौरान आई विपरीत मौसम की स्थिति एवं उसका सोयाबीन की उत्पादकता पर प्रभाव को देखते हुए, हमारे वर्तमान अनुसंधान कार्य की वरीयता के पुनरावलोकन की अत्यंत आवश्यकता है। इसी प्रकार सोया खाद्य-तेल, खाद्य-पदार्थ, पशु-खाद्य के रूप में सोयाबीन खली का उपयोग तथा अन्य सोया आधारित उद्योगों के लिए सोयाबीन के आपूर्ति सुनिश्चित करने के लिए हमें अपने अनुसंधान कार्य में नए मानकों एवं नई अनुसंधान विधियों का प्रयोग आवश्यक हो गया है। हमें आशा है कि भा.कृ.अनु.प.-सोयाबीन अनुसंधान निदेशालय के वरीयता प्राप्त एवं अन्य अनुसंधान कार्यक्रम के माध्यम से हम इन चुनौतियों का सामना करने में सक्षम होंगे और सोयाबीन पर निर्भर आजीविकाओं के भविष्य को विकसित नई तकनीकियों से लाभांशित कर सकेंगे।



Dear Readers,

ICAR-Directorate of Soybean Research (ICAR-DSR) is a premier institute engaged in soybean research and development in the country since its inception as National Research Centre for Soybean (NRCS) in 1987. Directorate's vision is to contribute to edible oil pool and to eradicate protein-energy malnutrition in the country.

The year gone-by, 2015, had been an exceptionally unusual year in terms of weather conditions characterized with short span of high intensity rains, long dry spells, and early withdrawal of monsoon. The vagaries of monsoon coupled with biotic stresses further caused heavy damage to the cultivation of soybean continuously for last three seasons. The technologies developed particularly of seed treatment, sowing of soybean on changed land configuration, varietal cafeteria approach, weed management and insect and pest management were found to be promising and have saved the crop in the farmers field where ever these technologies were adapted. Also, the timely weekly advisory communicated by this Directorate highlighting these issues was appreciated by the farmers and ICAR.

Looking at the last three years of climatic aberration and its impact on soybean production, there is an urgent need to reorient our research priorities and overhauling of on-going research programmes so as to meet exigencies. Also, to meet the growing demands in terms of edible oil, food uses, soy meal for animal feed and various other industrial uses of soybean, we need to explore the untapped research areas and usher in novel research methodologies. We are hopeful that the flagship programmes of the ICAR-DSR and other scientific programmes would effectively address various challenges and generate technologies in future for soybean based livelihood and environmental security.

Salient Research Achievements

- A core set of 710 soybean germplasm accessions has been developed which constitute about 20.62% of total collections i.e. 3443 accessions.
- A genotype (IC 15089) was identified as to having early maturity allele *e1-as* using dCAPS analysis of E1 maturity gene, which was further confirmed by Sanger sequencing and phenotyping
- Three entries C-1-9-1(2298 kg/ha), C-1-2-3-3 (1914 kg/ha) and 2C-1-6-1-1 (1910 kg/ha) yielded significantly higher than checks besides resistant to Yellow mosaic Disease (YMD)
- Promising yellow mosaic disease (YMD) resistant line 'NRC 94' was identified and evaluated for yield under AVT-II in AICRP on Soybean
- Soybean derived miRNAs have been identified with antiviral potential. Begomovirus (MYMIV and MYMV) genes encoding viral movement proteins showed greater vulnerability for *Glycine max* derived miRNA binding and repression
- Transcriptome sequencing of rust resistant genotype EC 241780 and rust susceptible cultivar JS 335 identified that 1416 genes were upregulated while 546 genes were down regulated. A total of 323,986 SSRs were also predicted belonging to 6 classes of microsatellites.
- Multiparent advanced generation intercross (MAGIC) population was developed by employing 2-way, 4-way and 8-way intercross hybridization involving eight parents (Four popular cultivars of soybean JS 335, JS 95-60, NRC 37, NRC 86 and four promising exotic lines EC 546882, EC 333901, EC 572109 and EC 572136)
- An inter-specific advanced backcross population developed from the wild species *Glycine soja* and cultivar JS 335 was used for validation of yield associated QTLs in soybean. A total of six QTLs have been validated i.e. four QTLs for 100 seed weight, one QTL for number of pods and one QTL for seed yield per plant
- Soybean line (NRC 109) free from lipoxygenase 2, which is a major isozyme responsible for off flavor in soya products, has been registered (INGR15017) with Plant Germplasm Registration Committee
- A 'cup method of screening' has been standardized and employed to identify genotypes possessing water logging tolerance
- Eleven drought tolerant soybean lines have been identified based on less canopy air temperature differential
- Seven soybean cultivars [JS 20-29, JS 20-34, MAUS 162, MACS 1188, Pratap Soya 45 (RKS 45), Pratap Soya 2 (RKS 18) and RAUS 5 (Pratap Soya 1)] representing different growing zones have been protected under PPV&FRAct-2001



- Polymer coating of seeds (JS 95-60, JS 93-05) with micronutrients such as molybdenum (0.5g/Kg and 1.0g/kg), boron (100mg/kg and 200mg/kg), salicylic Acid (50, 75 and 100 ppm) improved seed viability, germination, field emergence, plant stand and seedling vigour
- Soybean (12 rows) + Suva (*Anethum graveolens*) (2 rows) intercropping was found to be suitable for effective and economical management of major soybean defoliators viz. *Gessonnia gemma*, *Chrysodeixis acuta*, *Diachrysis orichalcea* and *Spodoptera litura*
- Molecular analysis of seven Indian *Colletotrichum truncatum* isolates by sequencing ITS region, and phylogenetic analysis revealed two major groups wherein all the Indian isolates clustered in a single group
- Seed treatment with carboxin+ thiram @ 0.3% and spraying of thiophanate methyl or benomyl @ 0.2% at 25 and 45 DAS is recommended to control stem blight disease caused by *Colletotrichum truncatum*
- Best substrate for AMF production were identified as 100% organic (10 t/ha FYM) or 3 parts of integrated soil mix + 1 part of soybean hulls. Sorghum was found to be a suitable host for producing higher AMF (10.5 spores/g substrate)
- AMF inoculation in organic soybean-maize intercropping system enhanced C-stocks (14.27 Mg C ha⁻¹ yr⁻¹), microbial biomass carbon (313.89 mg C kg⁻¹) over the uninoculated plants
- Co-inoculation of *B. aryabhattai* MDSR14 (JF792521) and AM fungi significantly increased dry matter accumulation, seed yield and phosphorus use efficiency, rhizosphere properties, micronutrient availability in intercrop soybean and maize
- On-line Data Management and report generation system was developed to facilitate data-management for AICRPS trials
- Pedigree Management System, was developed to enable the plant breeders for efficient pedigree record-keeping
- Geoinformatic analysis of major *Kharif* crops (since 1982) revealed that soybean has not only replaced less profitable crops like sorghum, cotton, groundnut, *bajra* but also occupied *Kharif* fallow area

Commercialization of Research Emanated Technologies (ITMU/IPR Cell)

- Kunitz trypsin inhibitor free (KTI-free) soybean genotypes NRC101 and NRC102 were developed through marker assisted breeding (INGR 10054 and INGR 10055 respectively). License for NRC 101 and NRC 102 granted to M/s. Ruchi Hi-Rich Seeds Pvt Limited and M/s. ITC Limited, respectively for 5 years
- License of High Oleic acid soybean IC 210, which contain oleic acid to the magnitude of 42%, has been granted to M/s. ITC Limited, for 5 years



- Farm machineries such as Broad bed furrow (BBF) Seed drill, Furrow irrigated raised bed system planter / drill (FIRBS), Subsoiler, Broad bed furrow (BBF) planter, Sweep seed drill, Soybean Seed planter, Ridge fertilizer drill cum seed planter, Single ridge seed planter, Soybean seed drill cum planter have been developed in the Directorate. Non-exclusive license has been granted to manufacturers viz., M/s. New Patidar Iron Works, Station Road Rau Indore (M.P); M/s. R.B Agro Industries Indore; M/s. S.K.B Agrotech Private Limited, Indore (M.P); M/s. Rohit Steel Works, Pune (MH); M/s. Mahashakti Agro Energy & Innovation Pvt.Ltd, Wardha (MH); M/s. S.R. Engineering & Service, Wardha (MH).

- b) **National Science Day** : “National Science Day” was organized with the underlying theme 'Science for Nation Building' on 28th Feb, 2015 with the aim to motivate students towards agricultural research and development. Around 80 young students from various schools of Indore have participated in the event and interacted with staff members of DSR. Dr. M.P. Sharma, Principal Scientist welcomed the students, Dr. Vineet Kumar, Principal Scientist enlightened the students about nutritional and health benefits of soybean. Dr. M. Shivakumar briefed students about Agricultural Research Service, agricultural research and education services and future prospects for students in agriculture sector. Importance of agricultural sciences in general, and role of agricultural scientists in particular to provide food and nutritional security of the country was highlighted by Dr. V.S. Bhatia, Director and Chairman of the event

News and Events

- a) **French Farmers visit** : Thirty eight (38) farmers from France visited the Directorate on 14th Jan, 2015 and interacted with scientists regarding improved soybean production methodologies being followed in the country



- c) **Research Advisory Committee Meeting** : 18th RAC meeting was held on 30th Apr, 2015 at ICAR-DSR under the chairmanship of



Dr. V.S. Tomar, Vice Chancellor, JNKVV, Jabalpur. Dr. S.M. Husain, RAC secretary proposed Welcome address. Chairman opined that despite the phenomenal success of the growth of soybean in the country the productivity of the crop has not reached its potential and hence insisted that the scientific community to work towards harnessing the absolute potential of the crop. Chairman's report was followed by status report presented by Dr. V.S. Bhatia, Director, ICAR-DSR. The presentation dealt with soybean production in global scenario, Indian status which was marred with low productivity levels owing to late arrival of monsoon, delayed planting, early withdrawal of monsoon etc. RAC emphasized for working out biological factors responsible for low productivity, and plugging of technological yield gap through efficient transfer of technology. The meeting was attended by other members viz., Dr. M.A. Shankar, Director of Research, UAS, Bengaluru, Dr. S. Pandey, Rtd. Principal Scientist ICAR, Mr. J.S. Pangaria, Executive Director, SOPA, Mr. Saxena, Farmer's Representative and scientists of the Directorate

- d) Annual Group Meet of All India Coordinated Research Project on Soybean (AICRPS) : 45th AGM of AICRP on Soybean was organized by ICAR-Directorate of Soybean Research, Indore and Regional Research Centre, Amravati (Dr. PDKV, Akola) from May 9-11, 2015, which was attended by 82 soybean scientists from various states of the country. In his inaugural address, Dr R.G. Dani, H'ble Vice Chancellor, Dr. PDKV, Akola expressed his concern over vagaries of monsoon experienced during last two years which led to significantly low productivity. Dr. B.B. Singh, Asst. Director General (O&P), ICAR, assured that soybean scientists would take note of changing situations and orient their research activities to overcome them. Considering the global climatic changes, Dr. V.S. Bhatia, Director, ICAR-Directorate of Soybean Research, Indore stressed upon need to make soybean crop more climate resilient. During this group meeting two new soybean varieties viz. SL 979 for North Plain Zone and MAUS 612 for Southern Zone were identified



c) **Agriculture Fair-cum-Exhibition on Soybean:**

An Agriculture Fair-cum-exhibition on soybean was organized at ICAR-DSR, Indore on 25th Aug, 2015. The event was sponsored by Department of Agriculture & Co-operation (DAC), Ministry of Agriculture and Farmers Welfare, Govt of India. Beside the officials of DAC and ICAR head quarter, officials from State and other Govt. departments, Private sector organizations and large number of farmers (about 1000) from MP, Maharashtra, Rajasthan and Gujarat participated in the event. During the event live demonstrations on improved soybean varieties, production technologies and use of farm machineries were provided to the farmers. An interactive session involving scientists/experts of all the discipline with farmers was also held. On the occasion, Director, DSR urged farmers to adopt improved production technologies and adopt right planting date, Broad-bed furrow (BBF) system and follow the farmers advisories communicated from time to time. An online mobile-based farmer's advisory helpline



system on soybean developed by DSR was also inaugurated. On this occasion four progressive soybean farmers each one from Maharashtra, Gujarat, Rajasthan and Madhya Pradesh were felicitated

- f) **Vigilance Awareness Week :** Vigilance Awareness Week was celebrated at ICAR-DSR during Oct 26-31, 2015 in order to create awareness and inculcate the sense of vigilance among the staff of the Directorate. The theme of vigilance awareness week was "Preventive Vigilance as a tool of good governance"





g) Workshop for Preparing Road Map for Agriculture Development in Agro-Climatic Zone IX- Western Plateau and Hills : ICAR sponsored one day workshop was held at ICAR-DSR, Indore, on 4th Nov, 2015 for preparing road map for agriculture development in Agro-Climatic Zone IX- Western Plateau and Hills. Dr. K. Alagusundaram, Deputy Director General (Engg.), ICAR chaired the workshop. Dr. V. S. Bhatia, Director, ICAR-DSR, extended warm welcome to the delegates. Chairman said that interactions between farmers and scientists will result in recommendations for overall agricultural development of the region. Dr. R. G. Dani, Vice-Chancellor, Dr. PDKV, Akola during the inaugural address emphasized on local weather forecasts for the localized policy making. Dr. B. Venkateswarlu, Vice-Chancellor, VNMKV, Parbhani expressed that water management and moisture conservation across the crops and cropping system is crucial for agricultural development in the region. Progressive farmers from different districts of Madhya Pradesh and Maharashtra participated



in the workshop and expressed their concerns and problems for policy and research attention. Directors and scientists of various ICAR research institutes senior officials state agricultural universities, KVKs, and line departments participated in the workshop and deliberated various issues concerning attention, provided their inputs for agricultural development in the region and solutions to the farmers problems.

h) Institutional Biosafety committee (IBSC) meeting : Institutional Biosafety committee meeting was held on 22nd Dec, 2015. The meeting was chaired by Dr. V.S. Bhatia, Director, DSR, Dr. M.B. Ratnaparkhe (Member Secretary) proposed formal welcome address to the members including external members viz., Dr. Sourav Datta, Asst. Prof. IISER, Bhopal (DBT Nominee) , Dr. Prashant Kodgire, Asst. Prof. IIT-Indore (External Expert), Dr. M.S. Dilawari, Medical Officer. The meeting was also attended by scientists of the Directorate

I) Memorandum of Understanding (MoU) signed between ICAR-DSR and IIT (I) : ICAR-Directorate of Soybean Research (DSR) and Indian Institute of Technology (IIT), Indore signed MoU to strengthen relations through the development of academic and research collaborations between the two institutions. The two institutions agreed to promote and develop their cooperation by the exchange of information, academic faculty, scientific staff, students and exploring the possibility of carrying out joint research projects

Visit of Dignitaries

- a) Shri Om Prakash Dhankar, Hon. Agriculture Minister of Haryana visited ICAR-DSR on 3rd Aug, 2015



- b) Dr. R.R. Hanchinal, Chairman, Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), Govt. of India, Ministry of Agriculture & Farmers Welfare, Department of Agriculture and Co-operation, New Delhi visited Directorate on 5th Sep, 2015.



- c) Mr. D.S. Raghu, Member, Commission for Agricultural Costs and Prices (CACP), Govt. of India, Ministry of Agriculture, New Delhi visited ICAR-DSR on 17th Sep, 2015.
- d) Dr J.S. Sandhu, Deputy Director General (Crop Sciences), ICAR, New Delhi visited ICAR-DSR research farm, field experiments and interacted with scientists and staff of the Directorate on 3rd Oct, 2015.





Trainings

1. **Soybean Germplasm Day** : A three day workshop "Soybean germplasm day and hands on training programme on conventional and molecular soybean breeding" was organized during Sep 1-3, 2015. Dr. S.P. Tiwari, Ex DDG (CS), ICAR, was chief guest of the inaugural function. Total of eighteen soybean breeders from different states of India participated in the programme. The training programme was organized to take the stock of the large number of soybean germplasm planted at ICAR- DSR, and select the suitable germplasm for the breeding programme. To improve hybridization efficiency which is very less in soybean, pollination without emasculation technique (exploiting protogyny) was demonstrated by the ICAR-DSR plant breeders to the trainees. The participants were also exposed to basic molecular breeding techniques being employed in ICAR-DSR.



2. **Model Training Course** : Model Training Course on "Strategies for increasing soybean productivity through integrated approaches" organized during Sept 7-14, 2015. The participants included 22 officers from state department of agriculture belonging to six states viz. Madhya Pradesh, Maharashtra, Rajasthan, Haryana, Chhattisgarh and Punjab



3. **Soybean Production Technology, Processing and Utilization Related Trainings** : During Jan-Dec 2015, the institute organized 92 one day training programmes on Improved Soybean Production Technology involving 3348 farmers and farm women. Similarly, 24 one day training programmes were organized on "Processing and Utilization of Soybean for Food Uses" with total participation of 765 women belonging to Madhya Pradesh and Rajasthan



Awards and Recognitions:

- a) Dr. Vineet Kumar, Principal Scientist (Biochemistry) and Dr Anita Rani, Principal Scientist (Plant Breeding) were jointly awarded Department of Biotechnology (DBT) sponsored “Biotech Product And Process Development And Commercialization Award” 2015, during Technology Day Function on 11th May 2015 at Vigyan Bhawan, New Delhi



- d) Dr. M.P Sharma, was nominated as expert member of project approval committee for 3 years by Department of Science and Technology, Government of Madhya Pradesh, to review the project and other research activities of MP Biotechnology Council, Bhopal
- e) Mr. Avinash Kalanke (UDC) was conferred with cash award under Cash Award Scheme for Administrative/Technical/Supporting category employees of ICAR research institutes during ICAR Foundation Day award ceremony on 25th July, 2015

- b) Dr. Vineet Kumar, Principal Scientist (Biochemistry) has been nominated on the Scientific panel of Cereals, Pulses and Legumes and their Products” of Food safety and Standards Authority of India (FSSAI)

- c) Dr. M.P Sharma, Principal Scientist (Microbiology), secured travel award from SERB, DST, New Delhi, MPCST, Bhopal and CICS, Chennai and participated in 8th International Symbiosis Congress held in University of Lisbon, Lisbon (Portugal) from July 12-18, 2015





f) Mr. Prahlad Singh (SSS) was conferred with Certificate of Distinction under Cash Award Scheme for Administrative /Technical /Supporting category employees of ICAR research institutes during ICAR Foundation Day award ceremony on 25th July, 2015



h) Dr. Ramesh SV, Scientist (Biotechnology), was conferred Young Plant Biotechnologist Award by Association for the Advancement of Biodiversity Science (AABS), in an International symposium on Biodiversity, Agriculture, Environment and Forestry held at Ooty, Tamilnadu from Dec 11-12, 2015

g) Shri S.K. Verma, Technical Officer and Dr. B. U. Dupare, Principal Scientist (Agricultural Extension) received Third Prize for Best Hindi Article which was conferred upon by the Honorable His Excellency Shri Pranab Mukherjee, the President of India at Rashtrapati Bhawan on the occasion of Hindi Diwas celebration on 14th Sep, 2015



Transfer of technology

Twenty (20) Frontline Demonstrations (FLDs) were conducted on Improved Soybean Production Technology in Village- Kogawa, Dist-West Nimar. Similarly, the ICAR-DSR has adopted village Medapani (Block Khalwa, Dist-Khandwa) during the year and conducted 250 frontline demonstrations on farmers' field. In association with Agricultural Technology Applications Research Institute (ATARI), Jabalpur, two day Review-cum-Planning Workshop on Soybean was organized for KVK staff during April 22-23, 2015. A total of 23 scientists belonging to KVKs located in Madhya Pradesh and Chhattisgarh participated in this workshop

information to the farmers. The baseline survey of these villages has also been conducted to know the cropping systems, general problems and other relevant information.



Mera Gaon, Mera Gaurav

Under this scheme, six team of scientists have been constituted for establishing and maintaining close contact with farmers. Each team has selected five villages thus establishing contact with 30 villages on regular basis for providing technological

Swach Bharath Abhiyan

Swach Bharath Abhiyan was initiated on 02nd Oct, 2014 and since then sanitation measures were held once every month with the active participation of staff members of the Directorate. As per the directives under National Sanitation Campaign, a



focused sanitation drive was held in the institute from 25th Sep, 2015 to 31st Oct, 2015. The campaign also witnessed cleanliness drive in Directorate's premises, essay and slogan writing competition (*Swachh Bharath! Swasth Bharath!!*)



Personalia

Appointments

Dr. V.S. Bhatia, assumed charge of Acting Director, ICAR-DSR Indore on 1st Jan, 2015 and as a regular Director on 27th April, 2015 following his appointment by the ICAR, New Delhi.

Sh. Rakesh Dubey assumed the charge of Administrative Officer, ICAR-DSR on 16th Oct, 2015

Sh. Vikash Kumar Keshari was appointed as Hindi Translator (T-3) on 26th Mar, 2015

Promotions

DSR family heartily congratulates Dr. B.U. Dupare for his selection to the post of Principal Scientist (Agrl. Extension), and Sh. R.N. Singh (CTO), Dr. Nikhilesh Pandya (CTO), Dr. S.K. Sharma (ACTO), Sh. R.N. Srivastava (ACTO), Sh. S.S. Vasuniya (ACTO), Sh. Mahavir Singh (Sr.TA), Sh. I.R. Khan (Sr.TA), Sh. S.P.Singh (PS), Sh. Ajay Kumar (AAO) for their respective promotions.

Transfers : Dr. Y. Sridhar, Senior Scientist, transferred to ICAR-Indian Institute of Rice Research (ICAR-IIRR), Hyderabad, on 22nd Apr, 2015

Superannuation : Sh. Mahavir Singh retired from the post of Sr. Tech. Assistant on 31st July, 2015

राजभाषा-कार्यान्वयन संबंधी विभिन्न गतिविधियाँ

सरकारी एवं सरकार के अधीनस्थ या संबद्ध कार्यालयों, सार्वजनिक उपक्रमों एवं प्रतिष्ठानों में कार्यरत प्रत्येक कर्मचारी संवैधानिक प्रावधानों के अनुसार राजभाषा कार्यान्वयन हेतु प्रतिबद्ध है। उसी संकल्प को व्यावहारिक रूप प्रदान करने हेतु भा.कृ.अनु.परि.-सोयाबीन अनुसंधान निदेशालय, इंदौर में भी विगत वर्षों से इस दिशा में अनेकानेक कदम उठाए। जिनके फलस्वरूप सोयाबीन अनुसंधान निदेशालय में राजभाषा कार्यान्वयन के क्षेत्र में उत्तरोत्तर प्रगति के साथ अनेक आधारभूत कार्य हुए हैं, जो राजभाषा के प्रगामी प्रयोग में अत्यंत सार्थक सिद्ध हो रहे हैं। इस क्षेत्र में किए जा रहे क्रिया कलापों का संक्षिप्त विवरण निम्नवत् है:

क) प्रोत्साहन योजनाएं: निदेशालय में सर्वप्रथम राजभाषा संबंधित गतिविधियों के प्रसार-प्रचार हेतु प्रोत्साहन योजनाओं पर ध्यानाकर्षित किया गया। प्रोत्साहन योजना 2014-15 के दौरान प्रथम पुरस्कार श्री श्याम किशोर वर्मा एवं द्वितीय पुरस्कार तीन प्रतिभागियों को प्राप्त हुए, जिनका नाम श्री रविशंकर कुमार, श्री राकेश चंद्र शाक्या तथा श्री अजय कुमार जी हैं।

ख) प्रशिक्षण: निदेशालय में राजभाषा के प्रचार-प्रसार हेतु कृषको एवं प्रशिक्षणार्थियों को प्रशिक्षण संबंधित सारी सामग्रियाँ हिन्दी में भी प्रदान की जा रही है। इस दृष्टिकोण से सम्पूर्ण वर्ष में 18000 प्रतियाँ प्रसार फोल्डर हेतु एवं 15000 प्रतियाँ प्रसार बुलेटिन हेतु प्रदान की गई।



ग) हिन्दी पखवाड़ा का आयोजन: इस संदर्भ में वर्ष 2015 के दौरान निदेशालय में "हिन्दी पखवाड़ा-2015" का आयोजन किया गया, जिसमें विभिन्न प्रकार की प्रतियोगिताओं का आयोजन किया गया एवं सभी प्रतियोगिताओं में निदेशालय के वैज्ञानिक, अधिकारी एवं कर्मचारी के साथ-साथ सहायक वर्ग के कर्मियों ने भी अपनी





सहभागिता को स्वच्छंद रूप से व्यक्त किया। “हिन्दी पखवाड़ा” में हिन्दी भाषियों के साथ ही साथ हिन्दीतर भाषियों ने भी प्रतियोगिताओं में सम्मिलित होकर अपनी उत्साह को व्यक्त किया।

घ) हिन्दी में कार्य हेतु साफ्टवेयर एवं अन्य सुविधाएं : राजभाषा हिन्दी के अधिकाधिक प्रयोग के साथ इसमें कर्मचारियों, अधिकारियों एवं वैज्ञानिकों की सहभागिता में लगातार वृद्धि हेतु समस्त कम्प्यूटरों पर हिन्दी संबंधित साफ्टवेयर “नवीन अक्षर” को भी उपलब्ध कराया गया है।

ड) हिन्दी में कार्य हेतु यूनीकोड सुविधा : यद्यपि निदेशालय के सभी कम्प्यूटर्स पर हिन्दी फॉन्ट की सुविधा उपलब्ध है, इसके अतिरिक्त संपूर्ण भारत में प्रचलित यूनीकोड फॉन्ट की भी सुविधा समस्त कम्प्यूटर्स पर उपलब्ध की गई है।

च) हिन्दी कार्यशालाएं : इसी दिशा में निदेशालय में हिन्दीमय वातावरण विनिर्मित करने हेतु प्रत्येक तिमाही में कम

से कम एक हिन्दी कार्यशाला का आयोजन किया जा रहा है। जिसमें इकाई के सभी संवर्गों को आमंत्रित किया जाता है तथा संबंधित विषयानुसार कार्यशालाएं सम्पन्न की जाती हैं। वर्ष 2015 में 04 कार्यशालाओं का आयोजन किया गया, जिसकी सूची निम्नवत है :

विषय	अतिथि वक्ता
भाषा का विकास और प्रसार कैसे हुआ	डॉ. योगेंद्र नाथ शुक्ला विभागाध्यक्ष हिंदी अनुभाग, शासकीय श्री निर्भय सिंह पटेल विज्ञान, इंदौर
जनभावना में भाषा का विकास	डॉ. पुष्पेंद्र दुबे प्रोफेसर (हिन्दी), महाराजा रणजीत सिंह कॉलेज, इन्दौर
हिन्दी भाषा का विस्तार एवं संभावनाएँ	डॉ राजेन्द्र मिश्रा समन्वयक भाषा साहित्य पुनःश्चर्या पाठ्यक्रम देवी अहिल्या विश्वविद्यालय, इन्दौर
कम्प्यूटर पर हिन्दी का आसान प्रयोग	डॉ. अमरनाथ शर्मा प्रधान वैज्ञानिक एवं प्रभारी अधिकारी-राजभाषा भा.कु.अनु.प.-सोयाबीन अनुसंधान निदेशालय, इन्दौर





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