



केन्द्रीय आलू अनुसंधान संस्थान Central Potato Research Institute Newsletter

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Research Highlights

MS/6-1947: An Early Bulking and Drought Tolerant Advance Stage Hybrid

In India about 90% potatoes are produced in sub-tropical plains, where crop is raised under short day conditions during winter season. The potato crop is grown mainly in cereal based system in these regions and especially in rice-wheat sequence therefore, short duration varieties with resistance to biotic and abiotic stresses are required to improve system based productivity which will enhance food security and income of growers. Potato is a drought sensitive crop and the detrimental effects of water stress on potato tuber yield and other related traits are well known. Water deficit is responsible for decreased number of leaves, plant water potentials, leaf area, plant height, ground coverage and tuber number which ultimately culminate in to tuber yield reduction. Identification of drought tolerant genotypes for yield maintenance and breeding purposes is need of hour to increase drought tolerance of the potato crop, saving irrigation water and ensuring yield and food security in

changing scenario of global climate and growing demand of water.

In initial investigation during winter crop season (2007-2008), segregating population of cross MS/82-638 x JX 576 (made during 2004-05) were evaluated under reduced irrigation regimes (only three irrigations as against 5-6 irrigation during 90 days crop duration) and promising clones MS/6-1947 was identified for its better yielding ability. The clone MS/6-1947 successfully passed through initial evaluation clonal generations. Subsequently in advance generation main crop season yield trial (2009-2010 and 2010-2011) at Modipuram, the advance stage hybrid MS/6-1947 produced significantly higher total tuber yield than the best control Kufri Pukhraj by margin of 15% at 80 days (2009-10), 14% at 75 days and 19% at 90 days (2010-11).

The advance stage hybrid MS/6-1947 produces 9 to 10 medium sized attractive light yellow oval tubers with shallow eyes and cream flesh colour. The tubers of MS/6-1947 are easy to cook (15-20 minutes) and cooked/boiled potatoes are free from discolouration. It possesses



pleasant flavour, mealy texture and good palatability. The results indicates that the advance stage hybrids MS/6-1947 can be good choice for integration in cereal based cropping sequences, for its exploitation as early/short duration crop and for attaining sustainable productivity in areas where water is limiting factor for raising the successful potato crop. This elite genetic stock can be well used in breeding

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Performance of advance stage hybrid MS/6-1947 in main crop season at Modipuram.

Genotype	Tuber yield t/ha (2009-10 and 2010-11)					
	2009-2010 (80 days)		2010-2011 (75 days)		2010-2011 (90 days)	
	Marketable	Total	Marketable	Total	Marketable	Total
MS/6-1947	38.88	41.16	40.85	42.20	53.27	54.77
Kufri Bahar	29.55	31.19	28.53	29.51	35.30	37.15
Kufri Pukhraj	33.64	35.93	35.86	36.86	43.46	46.03
Kufri Sadabahar	31.75	33.22	33.33	34.09	41.29	42.48
C.D. 5%	3.34	3.37	2.45	2.39	2.50	2.47

programmes aiming high productivity under abiotic stress conditions.

- SK Luthra, VK Gupta
& Sanjay Rawal

Storage of Processing Potatoes in Heaps-Adoption by Potato Industry

An improved heap storage technology integrating several pre and postharvest measures *viz.* tuber maturity and haulm cutting prior to harvest, curing and selection of potatoes prior to storage, providing ventilation during storage and sprout inhibition with the use of CIPC (isopropyl N-(3-chlorophenyl) carbamate) has been developed for short-term storage of table and processing potatoes. The technology was demonstrated in different villages of Punjab namely Badshahpur (Jalandhar district), Shamchaurassi (Hoshiarpur district.) and Khatkar Kalan (Nawanshar district) with processing variety, Kufri Chipsona-1 in collaboration with the potato industry (Satnam Agri Products Ltd. Pratapura, Jalandhar). Potato heaps with improved technology with



Condition of treated (left) and untreated potatoes (right) after 90 days of storage

CIPC treatment and without treatment were covered with 30-60 cm thick layer of locally available material such as rice straw (*pural*), and were laid side by side under high sheds in cold storage *varanda*/ shade of trees at all the locations in the 1st week of March, 2009. Heaps laid in open were protected from rains.

Total losses in even untreated (Control) heaps were much reduced (11-12%) up to 90 days of storage compared to traditional storage in heaps by the farmers (15-25%). CIPC treatment inhibited sprouting and further reduced total losses in tubers (to 5-6%) up to 90

days (March to June). Treated potatoes remained firm and sprout free while no visible shriveling was noticed even in untreated sprouted potatoes up to 75 days of storage.

For making good quality chips and French fries, reducing sugar content in potatoes should be below 0.15%. In North-Western plains, reducing sugars in potatoes at harvest are often quite high even in processing varieties due to low ambient temperatures (<10°C) in January-February. Potatoes of Kufri Chipsona-1 produced at all the locations were found unsuitable for processing



Large scale storage of potatoes in heaps

in March due to high reducing sugar concentrations (150-209 mg/100g fresh weight). Reducing sugar content in potatoes decreased in CIPC treated (19-30 mg/100g fresh weight) and untreated potatoes (26-119 mg/100g fresh weight) and chip colour improved remarkably up to 90 days of storage in heaps. Stored potatoes when tested periodically by the industry were found highly suitable for processing after 45 days of storage at all the locations. Both treated and untreated potatoes (though shriveled), were used in the industry up to mid June indicating thereby that by compromising on higher peeling losses, even untreated potatoes of processing cultivars stored on-farm in improved heaps can be used for processing up to 100 days after desprouting or without desprouting in case of steam peeling. There was however no shriveling in untreated potatoes stored in heaps up to 75 days.

Based on the excellent experience, the industry stored 25,000 quintals of cv. Kufri Chipsona-1 during March to May, 2010 in improved heaps in the cold store *Varandah* under guidance of CPRS, Jalandhar and used potatoes in making good quality flakes and French fries up to 20th of May, thus saving significantly on storage cost (Rs 25/q v/s 120/q) compared to 12°C storage where the potatoes meant for processing are essentially stored.

- **Ashiv Mehta, Brajesh Singh, R Ezekiel & BP Singh**

Involvement of CPRI in FASAL Programme

National Natural Resource Management System-Standing Committee on Agriculture and Soils (NNRMS-SCA) in its meeting held on May 26, 2011 at Krishi Bhawan, New Delhi has recommended continued participation of CPRI in FASAL (Forecasting Agricultural output using Space, Agro-meteorology and Land based observations) programme of Ministry of Agriculture, Government of India in view of the notable contributions

made by CPRI in procedure development for acreage and production forecast of potato through remote sensing, geographical information system and crop modeling as well as its implementation.

Training & Technology Transfer

Farmers Training at CPRI, Shimla

Two training programmes were organized at CPRI Shimla on “Modern Techniques for Quality Seed Potato Production” from March 2-4 and from March 24-26, 2011. These trainings were sponsored by ATMA, Anand (Gujarat) and ATMA, Moga (Punjab), respectively. Altogether 23 farmers from these districts were trained on improved varieties, planting operations, disease and pest management, integrated nutrient management, processing and storage of potato crop by scientists of CPRI. An exposure visit to potato seed farms at CPRS Kufri-Fagu was also organized to create awareness and give first hand information to these potato growers on seed potato production technology.

Training of Agri/Hort. officers at CPRI, Shimla

Training on “Production of foundation and certified seed potato” was organized at CPRI, Shimla for agri./hort. Officers of “Himachal Pradesh State Seed and Organic Produce Certification Agency, Shimla” from 25-27 April,

2011. A total of 16 agri./hort. Officers were trained on various techniques of production of foundation and certified seed at state farms such as control of viral infection, integrated nutrient management, disease and pest management etc.



Farmers training programmes under Mini Mission I

CPRI, Shimla has organized two On-campus and three On-farm training of potato growers under the project “Training entrepreneurial skills to farmers in potato based farming system of Himachal Pradesh” in Mini Mission-I from Jan-June, 2011. Altogether 170 potato growers from Shimla, Mandi, Kangra and Sirmour districts were trained in improved techniques of cultivation of potato and other vegetables in HP. These trainings were conducted in collaboration with KVK's of concerned districts.

Live Phone- in Programme at Doordarshan Shimla

Expert scientists of CPRI, Shimla on different subjects participated in the Live-phone in programmes of Shimla Doordarshan from January to June, 2011. The details of the topics along with experts are given below.

Month	Title/Topics	Name of the Expert
January	Planting and fertilizer application in potato in mid hills of HP	Dr. Ashwini Kumar Dr. Manoj Kumar
February	Disease and pest management in potato in mid hills of HP	Dr. BP Singh Dr. Sanjeev Sharma
March	Potato varieties, planting and fertilizer application in high hills	Dr. Vinay Bhardwaj Dr. VK Dua
April	Seed preparation and planting of potato in high hills of HP	Dr. Vinod Kumar Dr. Ashwini Kumar
May	Earthing up and potato disease management in mid hills of HP	Dr. Manoj Kumar Dr. Sanjeev Sharma
June	Harvesting and postharvest operation of potato in mid hills of HP	Dr. KK Pandey Dr. Brajesh Singh

Farmers Training at Shillong

An on station farmers training on “Improved Potato Production Technology” was organized at Shillong on 18th March, 2011. 50 farmers from different villages viz., Mylliew, Mawkriah, Mawkdok and Sanmer participated in this training.



Farmers training at Jalandhar

A group of 50 farmers from Banaskantha district, Gujarat visited Jalandhar station on 15-16 June 2011. The programme was sponsored by ATMA. The farmers were trained on agro-techniques for potato production, potato disease control, seed production and potato storage technology by the scientists of the station.

Important Meetings & Visitors

Director General, ICAR Visits CPRI for Steering Committee Meeting of Mini Mission-I

Dr. S. Ayyappan, Secretary (DARE) and Director General, Indian Council of Agricultural Research (ICAR) visited Central Potato Research Institute, Shimla during 2-3 June, 2011 during which he chaired the Steering Committee Meeting of the MM-I for the centrally sponsored scheme of “ Horticulture Mission for North East and Himalayan States” and also visited CPRI, its regional stations at Kufri & Fagu and other ICAR regional stations located at Shimla.



In the forenoon of 2nd June, Dr. Ayyappan inaugurated the “Kishan Bhavan” of CPRI. This farmers’ hostel with the capacity to accommodate 18 guests will help the institute to accommodate farmers coming from different corners of the country for training on specific areas of potato cultivation.



The steering committee meeting held in the afternoon of 2nd June, 2011 was attended by various dignitaries including Vice- Chancellors of SAUs, Directors & Nodal Officers from ICAR institutes, Additional Commissioner (Horticulture), Govt. of India, Directors of Research of different SAUs and Directors of Horticulture of various hill states. Dr. Ayyappan critically reviewed the programme and showed satisfaction with the ongoing research work. However, he stressed that MM-I is a technology mission aimed at generating location and crop specific technologies that need to be transferred to the end users through Transfer of Technology activities. Production of planting material is no doubt an ‘important component’, but meeting the requirement of the planting material through this project is not its mandate. Model nurseries and entrepreneurship need to be developed

for this purpose.

Dr. Ayyappan expressed his great appreciation about the institute management, scientists and staff after seeing the world class infrastructure facilities and quality of work being pursued in the institute. He visited all the laboratories including biotechnology, genomics, cell biology, diagnostics, tissue culture, plant physiology, GIS, Radio-tracer etc. as well as ATIC, museum, glass houses, library and other facilities. After inspecting all the infrastructure facilities, he commented “The institute has created world class research facility.



Dr. Ayyappan interacted with the scientists of CPRI for more than 4 hours in the evening of 2nd June, 2011. He individually asked all the scientists about their aspirations and dreams for the coming years. Many constructive and fruitful ideas emerged during this in depth deliberation which went on till late in the night. Dr. Ayyappan assured that all the aspirations of scientists will be taken care of in the 12th plan document of the institute. He also advised that a couple of “Centre of Excellence” should be created in the institute on areas like diagnostics, seed production etc.

Dr. Ayyappan also listened to the grievances of all the staff of the institute as well as that of other ICAR Institutes in the afternoon of 3rd June, 2011. Here also he individually asked all the categories of staff for their specific problem or any other observation for smooth running of the institute. He expressed his surprise to receive hardly any genuine grievance from any category of staff from an institute with total staff

strength of 515. He commented that it clearly shows the wisdom and capability of the management and the sense of fraternity among the staff.

First IRC Meeting

First Institute Research Council Meeting of 2011 was held on 29th April 2011 at CPRI, Shimla. It was attended by 37 scientists from Shimla and regional stations of CPRI. Basic objective of this meeting was to review the progress made in different research programmes of the Institute. Programme leaders presented the achievements made during 2010-11 under various research programmes of the Institute during this meeting.

Visit of DDG (Horticulture) to CPRS, Ooty

Dr. H.P. Singh, Deputy Director



General (Hort.) visited CPRS, Ooty on 30.04.2011. He interacted with the scientists about the research projects being undertaken at the station and gave valuable suggestions for the future line of work. He visited the museum, potato farm and polyhouse and discussed about the important problems in potato production in The Nilgiris and made suggestions for further improvement.

Deputy Director General (Horticulture) Visits CPRS, Shillong

Dr. H.P. Singh, DDG (Horticulture) visited CPRS, Shillong on 6.5.2011. He interacted with the scientists during his visit to the field, tissue culture laboratory and the poly houses. He advised to take further steps for improving the infrastructure of the station and particularly for the research aspects.



Human Resource

Appointments

Name	Post	Joined on
Scientific		
Dr. Sundaresha S	Scientist, Plant Pathology at CPRI, Shimla	10.01.2011
Dr. R Ezekiel	Head, Division of Crop Physiology, Biochem and PHT	7.05.2011

Promotions

Name	From	To
Technical		
Smt Tarvinder Kochhar	T-5	T-6
Smt Ruma Chakraborty, Sh Dinesh Singh, Dr Vineet Sharma, Dr YP Singh, Sh Jeet Ram	T-4	T-5
Sh Rajdeep Bux	T-3	T-4
Sh DP Gautam, Sh UP Paudal	T-2	T-3
Administrative		
Sh AS Negi	AAO	AO
Sh NK Gupta, Smt Roseline, Sh Jiwan Kumar, Sh Jeet Ram	Asstt	AAO
Sh Rajesh Kumar, Sh Suresh Kumar	Steno	PA
Sh Jai Ram Thakur, Smt Meena Verma, Sh Jagbir Singh, Smt Babli Bhawani	UDC	Asstt

Transfers/ Selections

Name	From	To
Technical		
Sh Tilak Raj, T-4	Kufri	Shimla
Sh Yogesh Kumar, T-5	Patna	Shimla
Sh Prithi Raj, T-2	Modipuram	Shimla
Sh Kamal Singh, T-1	Jalandhar	Modipuram
Administrative		
Sh Jagtar Singh, AAO	CPRI, Shimla	ICAR Res Complex, Goa as AO
Sh Joginder Prasad, Asstt	Shimla	Patna
Sh KC Verma, LDC	Patna	Gwalior
Sh Daljit Singh, LDC	Gwalior	Jalandhar
Sh Atar Singh, LDC	Gwalior	Modipuram

Retirements

Name	Post	Retired on
Dr. YK Sharma	Senior Scientist, CPRS, Kufri	28.02.2011
Dr. OP Singh	Principal Scientist, CPRIC, Modipuram	28.02.2011
Dr. RP Rai	Head, CPRS, Patna	31.03.2011
Sh Kashi Prasad	T-5, CPRS Gwalior	31.01.2011
Sh JS Jassal	T-5, CPRS, Jalandhar	31.01.2011

Sh SS Daulla	T-5, CPRS, Jalandhar	30.04.2011
Sh SKL Karna	CPRS, Patna	30.04.2011
Sh Hoshiar Singh	T-5, CPRS, Jalandhar	3.04.2011
Sh SK Rastogi	T-5, CPRS, Patna	30.06.2011
Sh AS Keprate	AAO, CPRI, Shimla	31.01.2011
Sh Didar Singh	AAO, CPRS, Jalandhar	31.01.2011
Sh Tulsi Ram	Asstt, CPRI, Shimla	30.06.2011
Sh M Pandey	SSS, CPRS, Muthorai	31.05.2011
Sh Mahip Yadav	SSS, CPRS, Patna	30.06.2011

Demise

Name	Post	Date
Smt Chinta Devi	SSS, CPRS, Patna	25.04.2011

Foreign Visits

- Dr. SK Chakraborty, Head, Division of Plant Protection participated in the Annual Board Meeting of ABSP-II during 29th Jan to 1st Feb 2011 at Dhaka, Bangladesh.
- Dr. RK Arora, Principal Scientist, CPRS, Jalandhar participated in 40th session of the UNECE specialized section on standardization of seed potato at United Nations, Geneva during 14th to 16th March 2011.

हिन्दी समाचार

नेशनल कन्सलटेशन कार्यक्रम का आयोजन

भारतीय कृषि अनुसंधान परिषद, केन्द्रीय आलू अनुसंधान संस्थान एवं इण्डियन पोटेटो एसोशिएशन शिमला द्वारा केन्द्रीय आलू अनुसंधान संस्थान परिसर मोदीपुरम, मेरठ में दिनांक 4 एवं 5 मार्च 2011 को "Production of disease free Quality Planting Material Propagated through Tubers and Rhizomes" पर एक नेशनल कन्सलटेशन कार्यक्रम का आयोजन किया गया। इस कार्यक्रम में भारतीय कृषि अनुसंधान परिषद के विभिन्न संस्थानों के लगभग 80 वैज्ञानिकों ने भाग लिया जिसमें उपरोक्त विषय पर विचार विमर्श किया गया कार्यक्रम का उद्घाटन मुख्य अतिथि डॉ.

सी. डी. मायी, चेयरमैन कृषि वैज्ञानिक चयन मंडल के द्वारा किया गया। इस कार्यक्रम में भारतीय कृषि अनुसंधान परिषद के सहायक महानिदेशक डॉ. उमेश श्रीवास्तव विशिष्ट अतिथि थे। इस कार्यक्रम के माध्यम से कृषि अनुसंधान के विभिन्न क्षेत्रों में अब तक हुई प्रगति के बारे में परिचर्चा की गयी।

उद्यान मेला एवं किसान गोष्ठी कार्यक्रम का आयोजन

भारतीय कृषि अनुसंधान परिषद के बागवानी अनुसंधान संस्थानों द्वारा पिछले दशकों में बागवानी फसलों के अधिक उत्पादन हेतु विकसित तकनीकों

बागवानी फसलों के उत्पादन में बहुत प्रगति हुई है। परन्तु कृषि विस्तार सेवाओं के साधन सीमित होने के कारण किसान इन तकनीकों का भरपूर लाभ नहीं उठा पाते हैं। इस बात को ध्यान में रखते हुये केन्द्रीय आलू अनुसंधान संस्थान एवं इण्डियन पोटेटो एसोशिएशन शिमला द्वारा केन्द्रीय आलू अनुसंधान संस्थान परिसर मोदीपुरम, मेरठ में एक उद्यान मेले का आयोजन किया गया। मेले का उद्घाटन



को कृषि विस्तार सेवा के माध्यम से समय-समय पर किसानों को अवगत कराया जाता रहा है। इसके परिणामस्वरूप

डा. हरीशचन्द्र प्रसाद सिंह, उप महा निदेशक, बागवानी द्वारा किया गया। इस सन्दर्भ में मोदीपुरम परिसर के संयुक्त निदेशक डा. सुरेन्द्र कुमार कौशिक ने बताया कि आलू की उन्नत खेती के अलावा अन्य बागवानी फसलों की नवीनतम जानकारी हेतु मेले में

भारतीय कृषि अनुसंधान परिषद के बागवानी अनुसंधान संस्थान, राज्य सरकार के अधीन कार्यरत कृषि एवं उद्यान विभाग, आलू आधुनिक प्रसंस्करण उद्योग, रसायनिक खाद/ उर्वरक एवं कीटनाशक दवाओं के निर्माता, कृषि विविधकरण, कृषि-ऋण देने वाले बैंक तथा औषधीय एवं सुगन्धित पौध इत्यादि कम्पनियों द्वारा स्टॉलों को लगाया गया। इस किसान मेले में प्रतिदिन किसान गोष्ठी का भी आयोजन किया गया जिसमें बागवानी एवं कृषि से संबंधित समस्त जानकारियों के अलावा किसान भाईयों की खेती सम्बन्धित समस्याओं का भी समाधान वैज्ञानिकों द्वारा किया गया। इस उद्यान मेले में उत्तरी भारत के समस्त बागवानी अधिकारियों को किसानों की भागीदारी सुनिश्चित कराने के हेतु अनुरोध किया गया।

हिन्दी कार्यशाला

संस्थान के जालन्धर स्थित केन्द्र में 30-31 मई, 2011 को दो दिवसीय हिन्दी कार्यशाला का आयोजन किया गया। इस कार्यशाला में केन्द्र में कार्यरत सभी वर्ग के प्रशासनिक, तकनीकी कर्मचारियों के साथ वैज्ञानिकों ने भाग लिया। कार्यशाला का उद्घाटन दीप प्रज्वलन के साथ हुआ। इस अवसर पर आकाशवाणी, जालन्धर के केन्द्र निदेशक श्री बी.एस.पंवार बतौर मुख्य अतिथि उपस्थित हुए। केन्द्र के अध्यक्ष डा. जोगिन्दर सिंह मिन्हास ने समस्त अतिथियों और प्रतिभागियों का स्वागत करते हुए बताया कि हिन्दी हमारी राजभाषा है और इसके प्रचार-प्रसार के लिए हमें मिलकर काम करना होगा। उन्होंने कहा कि आज के कार्यक्रम में मुख्य अतिथि के रूप में श्री पंवार की उपस्थिति और हिन्दी के प्रति उनके लगाव से हमें हिन्दी के इस्तेमाल की प्रेरणा मिली है। मुख्य अतिथि ने अपने संबोधन में केन्द्र की उपलब्धियों की प्रशंसा करते हुए हिन्दी कार्यशाला के आयोजन को सराहनीय प्रयास बताया। विशिष्ट वक्ता के रूप में उपस्थित नगर राजभाषा कार्यान्वयन समिति, जालन्धर की सचिव श्रीमती सुषमा गुप्ता ने राजभाषा की आवश्यकता और पंजाब में राजभाषा की



स्थिति का हवाला देते हुए कहा कि जालन्धर शहर सांस्कृतिक और साहित्यिक गतिविधियों का शहर है और यहां राजभाषा के प्रति सभी का लगाव है। इस कड़ी में भारत सरकार की राजभाषा नीति और उसमें दिए प्रावधानों के अनुरूप हमें काम करना होगा। उद्घाटन सत्र में प्रमुख वक्ता के तौर पर आमंत्रित संस्थान के सहायक निदेशक (राजभाषा) श्री प्रवीण चांदला ने अपने संबोधन में कहा कि जालन्धर केन्द्र में हिन्दी कार्यशाला के आयोजन की आवश्यकता काफी समय से महसूस की जा रही थी और इसी कड़ी में केन्द्र के अथक प्रयासों से यह आयोजन संभव हो सका है। श्री योगेश गुप्ता, प्रभारी हिन्दी ने उद्घाटन सत्र में उपस्थित अतिथियों/प्रतिभागियों का धन्यवाद किया और आशा व्यक्त की कि इस कार्यशाला का सभी कर्मी लाभ उठाएंगे।

उद्घाटन के उपरान्त दूसरे सत्र में सहायक निदेशक (राजभाषा) ने भारत सरकार की राजभाषा नीति एवं उसके कार्यान्वयन पर विस्तार से प्रकाश डाला तथा तीसरे सत्र में राजभाषा के कार्यान्वयन में आने वाली समस्याएं व उनका समाधान एवं राजभाषा नीति को कारगर बनाने के टिप्स दिए। इस अवसर पर प्रशासनिक शब्दावली, राजभाषा अधिनियम 1963 की धारा 3(3), नियमों, प्रशासनिक दायित्व आदि विषयों पर चर्चा की गई। 31 मई, 2011 के राजभाषा कार्यों का निरीक्षण किया गया और आवश्यक सुझाव दिए गए। इसके साथ ही केन्द्र के कम्प्यूटरों में यूनिकोड फोन्ट्स लोड किए गए। राजभाषा कार्यान्वयन की व्यवहारिक समस्याओं का

निवारण करने के साथ-साथ द्विभाषी रबड़ की मोहरों को तैयार करने के निर्देश दिए गए तथा सभी रजिस्ट्रारों में हिन्दी में इन्द्राज करने पर बल दिया गया। कुल मिलाकर यह आयोजन सफल रहा।

मानक मसौदों व प्रपत्रों का संकलन

राजभाषा को बढ़ावा देने के उद्देश्य से हिन्दी अनुभाग द्वारा हिन्दी के मानक मसौदों व रोजमर्रा के दैनिक कार्यों में इस्तेमाल होने वाले प्रपत्रों का संशोधित संकलन तैयार किया गया। इसके आने से कर्मचारियों को हिन्दी में काम करने में आसानी होगी और वह अपनी इच्छानुसार अंग्रेजी के साथ-साथ हिन्दी में भी हर तरह के फार्म भर सकेंगे। इस संकलन की साफ्ट कॉपी व हार्डकॉपी जल्द ही कर्मचारियों की सुविधा के लिए उपलब्ध हो सकेगी।

कम्प्यूटरों में यूनिकोड

संसदीय राजभाषा समिति की सिफारिश पर अमल करते हुए संस्थान में देवनागरी प्रयोग के लिए अन्तर्राष्ट्रीय मानक इनकोडिंग (यूनिकोड) फॉन्ट उपलब्ध हो चुके हैं। संस्थान के कई अधिकारियों व कर्मचारियों ने इसका प्रयोग आरम्भ भी कर दिया है। इस सुविधा के आने से अब हिन्दी टाइपिंग न जानने वाले कर्मचारी व अधिकारी अपने कम्प्यूटर पर बिना किसी पूर्व प्रशिक्षण के देवनागरी में अपने दस्तावेज़ तैयार कर सकेंगे और उन्हें दुनियां के किसी भी कोने में ई-मेल द्वारा ट्रांसफर कर सकेंगे।

From the Director's Desk

Unlike most crops where 'true' seed is used for cultivation, potato is usually propagated through tubers. This vegetative mode of propagation is beset with many problems; the most important of which is a progressive and significant decline in the yield potential of seed tubers over the years. This phenomenon was first noticed by the farmers of European countries during last quarter of 18th century. It was termed as 'degeneration', 'running out' or 'senility' of potato in 1792 by Dutch farmers. Later on, it was demonstrated that degeneration is due to viruses, mycoplasmas and viroids that multiply during successive clonal generations.

Initially, critical visual inspection of disease symptoms constituted a major step in virus detection. However, disease symptoms alone had the limitation as similar symptoms could be produced by nutrient deficiencies or other abiotic or biotic factors. Sometimes no perceptible symptoms may be visible in case of infection by PVA, PVX, PVM and PVS in certain varieties. This was overcome with use of indicator hosts. The technique of virus detection using indicator hosts, however, required more time, labour and space. Therefore, techniques based on serology and histochemical tests were standardized for detection of viruses and phytoplasma diseases during 1960s through 1970s. The most commonly used serological tests were the precipitin and chloroplast agglutination.

These tests were effectively used in

detecting PVX, PVS and PVM. Since large volume of antisera was required for testing all the clones under breeder seed production, the Institute started mass production of antisera by the year 1972. Chloroplast agglutination test was the standard method used for indexing potato clones till 1984. The technique suffered the following drawbacks namely requirement of large quantities of antisera, its applicability to only high tited viruses like PVX, PVS and PVM and a low sensitivity (detection had only about 60% reliability or confidence level). These limitations of chloroplast agglutination were overcome when CPRI introduced the use of ELISA (enzyme-linked immunosorbent assay) in 1984. CPRI started producing its own ELISA kits for potato viruses by 1990. Pure cultures of the important potato viruses are being maintained by CPRI for their multiplication, purification and antisera production. High titre and high degree of purification of the viruses is ascertained with electron microscope before use for immunization. Presently, CPRI produces ELISA reagents for PVA, PVM, PVS, PVX and PVY. ELISA is reasonably sensitive and highly amenable to high throughput automation. Hence, it is suitable for large scale screening of samples.

Electron microscope, which played a critical role in virus detection and diagnosis was installed in the year 1980. The more advanced technique of IEM for virus detection has been optimized for the most reliable detection of PVA,

PVM, PVS, PVX and PVY. Though costly and having low throughput, IEM has the advantage of being a direct method without any false positive results. IEM is very useful where freedom from virus infection has to be ascertained with a very high degree of confidence as in the case of pre-basic nucleus seed stocks, in post-entry quarantine testing of imported material and mericlones during cleaning of virus infected stocks.

CPRI has also been quick to adopt nucleic acid based virus detection techniques, which have been standardized for Indian isolates of potato viruses. CPRI has designed primers and developed protocols for the detection of PVX, PVY, PVA, PVS, PLRV, PALCV and Stem Necrosis. Nucleic acid spot hybridization is routinely used for detection of potato spindle tuber viroid (PSTVd). Sensitivity of PCR for virus detection is much better than ELISA and ISEM. However, strict laboratory setup and guidelines should be used to avoid false positive detection.

Further refinement in sensitivity of virus detection can be achieved by using real time PCR. The institute is working to standardize both simplex and multiplex detection and quantitation of potato viruses by using real time RT-PCR. The institute is also pursuing kit development for detection of potato viruses in field. Work on microchip development for simultaneous detection of all the major pathogens of potato is also under progress.

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