



Central Potato Research Institute Newsletter

Number 35

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From the Director's Desk



If we look at the nutritional composition of potato and its suitability to intensive cropping systems, potato offers great potential to eradicate poverty and hunger in developing countries. Potato production in India has excelled both rice and wheat on many accounts. However, the increased potato production is accompanied by recurrent gluts posing a big question mark on the sustainability of potato production in the country. About 90 per cent of total potato production is harvested between December – February in the north Indian plains. The harvest is followed by hot and humid summer. Being semi-perishable commodity, potato requires proper storage in order to ensure continuous supply of good quality potato to the consumers and also to provide remunerative price to the producers

at harvest and until the next potato season. Hence, alongwith increased production, there is a need to continuously increase storage capacity and improve storability of potato. Storage could be for seed, ware or processing for which, there are distinct storage requirements. However, most of the potatoes harvested from north Indian plains are stored in cold storages at 2-4°C, which is suitable for storage of seed only. Storage at this temperature makes the potatoes unfit for processing and loses consumer preference for table purpose due to accumulation of sugar content. Also, the storage cost of cold storage is exorbitantly high and beyond the affordable limit of small farmers. A number of low-cost indigenous storage systems suitable for short-term storage at around 12°C are in use in the Indo-Gangetic plains and the plateau regions. These storage systems need to be assessed and refined through suitable innovations in order to improve the storage period and reduce the storage losses. The thematic article in this issue has dealt with this aspect in detail. The indigenous potato storage systems viz. heap and pit storage have been assessed in Punjab, UP and Bihar and found suitable for 3-4 months storage. Varieties like Kufri Chandramukhi, K. Jyoti and K. Chipsona-1 could be stored for 90 days in heaps and 105 days in pits. The storability could further be improved through desprouting and through application of sprout inhibitor like CIPC (isopropyl-N-3-chlorophenyl carbamate). Such potatoes fetch good price in the market and are also suitable for processing due to low accumulation of sugar content.

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Research Highlights

JW 96: An elite potato parental line for earliness

JW 96 was approved for registration (Indian Germplasm Registration Number INGR No. 05023; National Identity IC 524019) as a line for earliness in XIV Germplasm Registration Committee Meeting, 2005. JW 96 possesses good general combining ability for yield at very early (60 days) and early (75 days) harvests. Under early (75 days) harvest, this germplasm accession yielded at par with best control Kufri Ashoka in Indian plains and plateau region under multi-location trials of All India Coordinated Potato Improvement Project from 1997-1998 to 2001-2002. JW 96 is a selection from the progeny of the cross Kufri Jyoti × CP 1362. The clone was selected from the progeny of this cross at Central Potato Research Station Jalandhar, Punjab.



Tubers of JW 96

Tubers of JW 96 are oval shaped, large sized with white skin, shallow eyes and creamy flesh colour. JW 96 flower profusely at Kufri. Flowers are red purple in colour. This accession is

moderately resistant to late blight and susceptible to early blight.

- Raj Kumar, GS Kang, Jai Gopal and SK Pandey

JX 123 : An elite potato parental line for early blight resistance and earliness

JX 123 was approved for registration (Indian Germplasm Registration Number INGR No. 06021; National Identity IC 547013) as a source of resistance to early blight in XV Germplasm Registration Committee Meeting, 2006. Early blight (*Alternaria solani*) is one of the most common diseases of potato in warm-growing-season areas of potato production. The disease is prevalent in many potato growing areas and is of economic importance in plains of India. The result of the disease is hastening of maturity, i. e. early death which results in smaller tubers. Observations made on early blight resistance showed that JX 123 was free from early blight spots. While the leaf area covered with early blight spots for early bulking cultivar Kufri Ashoka and susceptible genotype MS/J.92 was 25% and 60%, respectively.

JX 123 is high yielding under early (75 days) harvest and has good general combining ability for yield at very early (60 days) and early (75 days) harvests. This line performed well for yield under early (75 days) harvest in Indian plains and plateau region. Under early (75 days) harvest, this accession gave yield at par with best early maturing variety Kufri Ashoka in Indian plains and plateau region under multi-location trials of All India Coordinated Potato Improvement Project from



Tubers of JX 123

1993-1994 to 1996-1997. The average yield over locations of JX 123 was 25.3 tonnes per hectare as compared to 24.9 tonnes per hectare of Kufri Ashoka and 19.1 tonnes per hectare of Kufri Chandramukhi.

JX 123 is a selection from the progeny of the cross JE 812 × CP 2144. The clone was selected from the progeny of this cross at Central Potato Research Station, Jalandhar, Punjab. Tubers of JX 123 are oval shaped, large sized with yellow skin, shallow eyes and light yellow flesh colour. This accession is moderately resistant to late blight.

- Raj Kumar, GS Kang and SK Pandey

Training & Technology Transfer

Farmers' Day at Ooty

Central Potato Research Station, Muthorai (ootacamund) organised Farmers' Day on 14.07.2006 as a part of its Golden Jubilee year celebrations. Nearly 300 farmers participated from various parts of Nilgiris and also few from plains of Tamil Nadu. About



Farmers in potato field

13 private companies dealing with fungicides, pesticides, tractors and organics exhibited their products. This was a one day programme.

In the forenoon all the farmers were taken to the field where the scientists of CPRS, Ooty explained the ongoing trials, cultivation practices, potato varieties and other technologies. All the farmers were shown the seed production area too. They also visited the exhibitions put up by the private companies.

In the afternoon, a function was organized which was presided over by Dr. SK Pandey, Director, CPRI, Shimla. The chief guest was Mr. Santosh K Mishra, IAS, Collector of Nilgiris. At the outset Dr. G. Ravichandran, Head (Incharge) CPRS, Ooty welcomed all the dignitaries and farmers. Dr. SK Pandey in his presidential address explained the activities of CPRI and CPRS, Ooty particularly. Mr. SK Mishra in his chief guest's address stressed the need for seed village concept for potato seed production and assured the farmers to provide some subsidy for seed in the due course of time. Dr. PS Naik, Project Co-ordinator, CPRI, Shimla, Dr. Sarjeet Singh, Head, Seed Technology, CPRI, Shimla, Dr. Durai, Director of Distance Education, Tamil Nadu Agricultural University and Mr. A. Sankaran, Jt.

Director (Horticulture) also spoke on this occasion.

Mr. Krishnamoorthy, President, Crop Potato Growers Association, the Nilgiris alongwith two other farmers also expressed their views. They demanded new varieties with higher productivity and increased supply of quality seed to more number of farmers. The programme ended with vote of thanks by Dr. R. Muthuraj, Scientist, CPRS, Ooty.

Interface of Research, Extension and Farmers on Production, Protection and Storage handling of Potato under Mini Mission I

A training programme entitled "Interface of Research, Extension and Farmers on Production, Protection and Storage handling of Potato" was organized at Central Potato Research Station, Shillong under Mini Mission I on 16th and 17th October 2006. The training programme started with an inaugural session. Dr. Shantanu Kumar, Head, Central Potato Research Station, Shillong welcomed the participants of the training programme. Farmers from east *Khashi* Hills district and the extension officials from the Department of Horticulture & Agriculture, east *Khashi* Hills district, Government of Meghalaya took part in the training. In all, 22

participants attended the training programme. All the participants in this interface training were women. Dr. K. R. Dhiman, Head, Central Potato Research Station, Kufri, Dr. P. H. Singh, Principal Scientist, Plant Pathology, CPRI, Shimla and Nodal Officer, CPRS, Shillong, Dr. V. K. Chandla, Principal Scientist, Entomology, CPRI, Shimla and Dr. Brajesh Singh, Senior Scientist, Plant Physiology, CPRI, Shimla were the resource persons for this interface training programme. Dr. R. Roy Burman presented the vote of thanks to the resource persons, farmers and the extension officials who came for this training.

The technical session started with the feedback from the farmers as well as the extension officials who enumerated the constraints in potato production, protection and storage in their respective area. Dr. K. R. Dhiman delivered a very informative lecture on the improved varieties of potato and agro-techniques for potato production using these varieties. Dr. P. H. Singh deliberated with the trainees on the major diseases of potato in north eastern hills and their management. Dr. V. K. Chandla talked about the potato seed production technology and major insect-pests of potato in NE region and their management. Dr. Brajesh Singh discussed about the post harvest management of potato including the storage and value addition opportunities in potato. Each lecture was followed by discussions among the resource persons and the trainees. A practical hands-on experience session was organized after the interactive lectures. Trainees were exposed to the potato planting techniques,



Training on TPS technology to Farmers

preparation of TPS nursery beds, TPS seedling raising, transplanting of TPS seedlings in the main field and production of seedling tubers. Farmers felt that the training was very useful for them to overcome the constraints in potato cultivation and thanked the organizers.

Training programme at the West Bengal Cold Storage Association, Kolkata from 14th to 16th July, 2006 held at Indian Chamber of Commerce, Auditorium, Kolkata

West Bengal contributes about 27% of total potato production in India. It has about 420 cold stores with capacity to hold nearly 51 lakh tones. A two day training programme was organized jointly by CPRI Shimla and the West Bengal Cold Storage Association at Indian Chamber of Commerce, Auditorium, Kolkata from 14th to 16th July, 2006. Around 120 participants attended the training. The trainees were mostly the cold store owners, businessmen, potato cultivators or traders. It was addressed by Sh. Sant Kumar Tibrewal, President, West Bengal Cold Storage Association, Sh. Bimal Pande, IAS & Secretary, Department of Agriculture (Marketing), Govt. of West Bengal, Sh. Mohanta Chatterjee, Hon'ble Minister of Food Processing, Horticulture and Environment, Govt. of West Bengal and Sh. Sushanta Ghosh, Hon'ble Minister for Paschimanchal Affairs, Govt. of West Bengal. The event was widely covered by press and TV channels.

The scientists of CPRI delivered lectures on (i) 'principle of refrigerated preservation of potato' and 'scientific approach to reduce energy consumption and losses' by

Dr. (Mrs.) Ashiv Mehta, (ii) 'major diseases of potato and their management' by Dr.R.K. Arora (iii) 'product development from potato' and 'changes in potato during processing and preservation' by Dr. R.S. Marwaha.

A lively question-answer session on problems encountered in cold stores was held on the last day where various problems faced by the cold storage owners in storage of potato were raised and the suitable remedies were suggested by the scientists. Feedback from question-answer session and visit on the site to various cold stores helped the visiting scientists to identify the following major problems on potato cultivation and storage:

- Land holdings are very small mostly less than an acre, cultivation is labor- intensive with minimum mechanization.
- Potato is taken after paddy which is a main crop. Potato period is short. The crop is planted after paddy by 15th November and harvested before 15th March by which time soil temperature start rising and become unfavorable for potato cultivation. Delay in planting paddy and subsequent delay in its harvesting further reduces actual period available for cultivation of potato crop.
- Good quality seed is a major constraint. It is mostly supplied from outside by the traders at a very high cost.
- To save cost on seed, tubers are usually cut before planting and planted at a very narrow space. Almost all operations are carried out manually.

- Kufri Jyoti and Kufri Chandramukhi are the main potato varieties. However, Kufri Chipsona-1 is also being planted by some of the progressive farmers and supplied to local processing units under contract farming.

- No haulm cutting is carried out at the end of crop season; the harvested uncured and un-graded potatoes as such are filled in 50kg bags and transported to cold stores for storage. The storage of uncured potatoes result in a number of storage problems. The owners point the adoption of this practice due to the paucity of time.

- Diseases such as soft rot, dry rots, bacterial wilt, charcoal rot, black scurf are prevalent in the stored potatoes.

- Second grade thin jute gunny bags usually are used for storage which frequently decay and get torn during storage and subsequent handling.

- Potato bags (50kg) are staked very high leaving very less space for aeration. Spacing between rows of bags is also insufficient. This results in poor aeration and development of thumb like impressions on surface of tubers.

- Grading of potato is carried out after taking out the bags from cold stores. No graders are used.

Live Phone-in Programme on Doordarshan

The Shimla Doordarshan telecasts live phone-in programme of "Krishi Darshan" in

collaboration with various organizations concerned with agricultural development. In this programme burning issues related to crop, animal husbandry, fishery, etc. are discussed by the expert and the viewers (farmers) can ask questions from the expert by dialing the phone number announced just before the start of the programme. Drs. SK Pandey, KR Dhiman, ID Garg, VK Chandla, JS Minhas, NK Pandey, Brajesh Singh, Anil Kumar and Vinod Kumar participated in the programme as experts from CPRI, Shimla during July-December, 2006 and discussed various aspects of potato production and utilization. Besides, Shimla Doordarshan team also recorded in field the method of seed treatment and storage at CPRS, Kufri. The recordings were telecasted during the months of September and October.

Activities of ATIC

Scientists, teaching staff, students and farmers from different parts of the country visit CPRI to acquaint with latest in potato research and for purchase of CPRI publications. A total of 43 scientists/ teaching staff, 394 students of UG and PG and 253 farmers visited the Institute at Shimla during July- September. These visitors were not only educated by delivering lectures on various technologies developed by the institute but were also shown films and taken round the visit to the institute museum. Technical bulletins worth Rs. 7,120/- were sold to the visitors during the period. Besides, a number of extension bulletins were also supplied free to the visiting

farmers, students and extension officers.

Potato Seed Production Training

One day training programme on Potato Seed Production was organized for the district Horticulture / Seed Certification officers of Bihar on 25.09.2006 at CPRS, Patna.

Participation in TV & Radio Programme

Dr. Shambhu Kumar, Sr. Scientist, CPRS, Patna participated in TV talk on '*Kendriya Aaloo Anusandhan Kendra Mein Uplabdh Aaloo Beej Ke Prabhed Aur Mulyaon Ki Jankari*' was telecasted by Doordarshan, Patna on 03.10.2006 and in Radio talk on '*Aaloo Beej Utpadan Kaise Karen, Fasal Ki Dekhbhal Aur TPS Beej Kaise Tayaar Karen*' telecasted by AIR, Patna (Kheti-Grihasti) on 22.08.2006.

Important Meetings

RAC Meeting at CPRI

The thirteenth meeting of the Research Advisory Committee (RAC) was held at Central Potato Research Institute, Shimla on July 24-25, 2006 under the chairmanship of Dr. Kirti Singh, Ex Chairman, ASRB, New Delhi. The following RAC members were present- Dr. GS Shekhon, Dr. MN Khare, Prof. PK Gupta, Dr. Brajesh Rai, Sh. Devadatta J Nikam, Ch. Maan Singh, Dr. SK Pandey and Dr. R Ezekiel. The Chairman in his opening remarks appreciated the work being done in the Institute and emphasised that scientists need to address newly emerging concerns. He also released a technical bulletin

"Potato Breeding in India" on this occasion. The Member Secretary, RAC, Dr. R Ezekiel presented the action taken report on the recommendations of the previous RAC meeting held last year. The programme leaders of 22 ongoing research programmes presented the progress report for the year 2005-06 and the plan of work for the next year. Following two days deliberations the Director, CPRI in the end thanked the Chairman and other members of RAC for rendering constructive suggestions and valuable guidance and promised to implement their recommendations in letter and spirit.

SRC Meeting at CPRI

The Staff Research Council meeting, 2006 was held at CPRI, Shimla on 27th-29th July, 2006. It was attended by 68 scientists from the Headquarters and regional Stations. The meeting reviewed the achievements of 2005-06 and formulated plan of work for 2006-07 of different research programmes. In this meeting all the Project/ Programme leaders presented the achievements of 2005-06 and work plan for 2006-07. These were discussed in details and suggestions were given to improve the work plan.

QRT visits CPRI

The Quinquennial Review Team (QRT) was constituted by ICAR under the Chairmanship of Dr. VP Gupta, former Vice Chancellor, RAU, Bihar to review the work of CPRI, Shimla and AICRP (Potato) for the period 2001-05. The other members of QRT are- Dr. SJ Singh, Ex Head, IARI Regional Station,

Pune; Dr. RP Sharma, Ex Project Director, NRCPB, IARI, New Delhi; Dr. HC Sharma, Ex Director of Research, HAU, Hissar; Dr. ML Lodha, Ex Head, Division of Biochemistry, IARI, New Delhi and Dr. Seema Wahab, Advisor, Dept. of Biotechnology, Govt. of India. The Team visited CPRI, Shimla and Kufri on 18-19 October, 2006; CPRS, Gwalior on 18-12-2006; CIP, New Delhi on 19-12-2006; CPRIC, Modipuram on 20-12-2006 and CPRS, Jalandhar on 21-22 December, 2006. The Team appreciated the work being done at CPRI and gave several suggestions for further improvement.

IJSC Meeting at CPRS, Shillong

The Institute Joint Staff Council (IJSC) meeting was held at CPRS, Shillong on October 7, 2006. Mr. AD Sharma, AAO & Member Secretary (OS) welcomed the Director & Chairman, IJSC Dr. SK Pandey and all other members of IJSC in the meeting. Dr. Pandey in his address apprised the members about various activities being carried out in the Institute. He informed the members about the delegation of powers to HODs and Head of Regional Stations and urged everybody to create a congenial working atmosphere. He also sought cooperation from all the staff in creating infrastructural facilities at HQ and regional stations. The meeting discussed several issues which were amicably resolved. Shri DD Kashyap, Secretary (staff side), thanked the Chairman and all the members of IJSC and expressed gratitude to Dr. Shantanu Kumar, Head, CPRS, Shillong and all other staff of the station for extending full cooperation in holding this meeting at the station.

CPRI Participated in Sports Meet

The Table Tennis team of CPRI participated in ICAR Inter-Zonal Sports Meet (Final) organised by CIFRI, Barrackpore at Kolkata during 27 November-2 December, 2006 in which CPRI got 3rd position.

Invited lectures & Visitors

DDG visits CPRS, Patna

Dr. G. Kalloo, DDG, Horticulture, ICAR, New Delhi visited CPRS, Patna on 3rd September 2006. During the visit he interacted with the scientists of the station and took note of the on-going research work of the station. He suggested improvements in the present activities of seed production and

infrastructural facilities for laboratories, office and fields.

Dr. Bachem visits CPRI

Dr. Christian Bachem, PGSC Coordinator, University of Wageningen, Netherlands, visited CPRI, Shimla on 6-7 November, 2006 to get acquainted with the work being done at CPRI, which is one of the PGSC participating Institute.

Scientist Meet at CPRI, Shimla

Scientist meet is the regular activity of the Institute where, on every Friday, scientists, technical workers and research associates meet to discuss and deliberate on emerging R&D issues. Following lectures were delivered & discussed in the last 6 months:

Speaker	Topic	Date
Sneh Sharma	Virus elimination techniques in potato	14.07.2006
BP Singh	Value chain in potato	22.07.2006
R Murali	Recent advances in DNA sequencing	31.07.2006
JS Parihar	Remote sensing applications in crop production forecasting	24.08.2006
Brajesh Singh	Uses of HPLC in biological studies	01.09.2006
AK Kundiala	Confocal microscopy and its application	08.09.2006
Manik Majumdar	Introduction and applications over Real time PCR	15.09.2006
Ms. Sonu	<i>Bacillus thuringiensis</i> -Biology, ecology and safety	22.09.2006
Sudhar Mathur	New technology in DNA sequencing	13.10.2006
Christian Bachem	Potato genome sequencing	07.11.2006
D Sarkar	Mystery of time- the enigmatic circadian clock	17.11.2006
MC Sood	Micro-irrigation-an efficient method of water application	15.12.2006

Human Resource

Promotions

Scientific		
	From	To
Dr. EP Venkatsalam	Scientist	Scientist (SS)
Dr. Shashi Rawat	Scientist	Scientist (SS)
Dr. D Pattanayak	Scientist (SS)	Sr. Scientist
Dr. Anil Kumar	Scientist (SS)	Sr. Scientist
Dr. G Ravichandran	Scientist (SS)	Sr. Scientist
Dr. Vinod Kumar	Scientist (SS)	Sr. Scientist
Dr. MA Khan	Scientist (SS)	Sr. Scientist
Er. Sukhwinder Singh	Scientist (SS)	Scientist (SG)
Administrative		
Sh. AK Singh	AO	Sr. AO
Sh. Jagbir Singh	UDC	Sr. Clerk
Technical		
Sh. Atma Ram	SSG-IV	T-1
Sh. Sheesh Chand	SSG-IV	T-1
Supporting Staff		
3 Persons	SSG-III	SSG-IV
5 persons	SSG-II	SSG-III
5 persons	SSG-I	SSG-II

Transfers

Name	From	To
Dr. NR Kumar	CPRIC, Modipuram	IIVR, Varanasi
Dr. AK Shukla	-do-	PDCSR, Meerut
Dr. RR Burman	IIPR, Kanpur	CPRS, Shillong
Dr. Shantanu Kumar	CPRS, Shillong	IIPR, Kanpur
Dr. (Mrs.) Uma Sah	CPRS, Shillong	IIPR, Kanpur
Dr. VP Chimote	CPRI, Shimla	MPKV, Rahuri
Dr. Birbal	CPRS, Gwalior	CAZRI, Jodhpur
Dr. RK Singh	CPRS, Jalandhar	IISR, Lucknow
Dr. KS Krishna Prasad	CPRS, Muthorai	IIHR, Bangalore
Dr. N. Somasekhar	SBI, Coimbatore	CPRS, Muthorai
Dr. Shiv Kumar	CPRI, Shimla	CPRIC, Modipuram
Dr. AV Gadewar	CPRI, Shimla	Regional Station of NRC Sorghum, Solapur
Administrative		
Sh. Charles Ekka	CPRI, Shimla	SBI, Coimbatore
Sh. JS Thakur	CPRIC, Modipuram	CPRI, Shimla
Sh. Chaman Singh	CPRI, Shimla	PDC, Meerut
Technical		
Sh. SK Gupta	CPRI, Shimla	CPRS, Gwalior
Sh. R. Kumar	CPRS, Gwalior	CPRI, Shimla

Retirements

Name	Post	Retired on
Dr. SM Paul Khurana	Ex Director	31.12.2006
Sh. JN Srivastava	AAO	30.09.2006
Sh. RN Sharma	Carpenter	31.07.2006
Sh. Sheebu Ram	TO	31.05.2006
Sh. Ragunath Sharma	TO	31.07.2006
Sh. Mahinder Pandit	SS Gr.III	31.07.2006
Sh. S. Bachan Paswan	SS Gr. III	30.10.2006
Sh. Sant Ram	SS Gr IV	10.10.2006

Appointment

Dr. SK Chakrabarti as Principal Scientist (Biotech) at CPRI, Shimla w.e.f. 14.07.2006.

Foreign Visits

1. **Dr. SK Pandey**, Director, CPRI, Shimla and **Dr. BP Singh**, Joint Director, CPRI, Modipuram visited USA from 9th -16th September, 2006 to attend partner level meeting involving representatives from India, Bangladesh and Indonesia with ASBP-II at Cornell University, Ithaca, New York and University of Minnesota. The meeting and the discussions with the scientists at both the universities facilitated exchange of notes on various aspects related to Rb gene and its role in late blight resistance using both breeding and transgenic approaches.
2. **Dr. SK Pandey**, Director, CPRI, Shimla visited International Potato Centre (CIP), Lima, Peru from 28th October to 4th November, 2006 to attend Annual Review Body Meeting of CIP. Dr. Pandey was special invitee and Guest of Honour in the meeting .
3. **Dr. SK Chakrabarti**, Principal Scientist, CPRI, Shimla visited Manila, Philippines from 21st -25th October, 2006 to participate in the Board meeting of Agricultural Bio-technology Support Project (ABSP-II) to review the progress of this Collaborative Project on development of late blight resistant potato using Rb gene.

Awards & Honours

Dr. SM Paul Khurana, Former Director of the Institute and presently Vice Chancellor, RDVV, Jabalpur was elected the Fellow of the National Academy of Biological Sciences, Chennai for 2005.

Dr. SM Paul Khurana, Former Director of the Institute bagged "UNO 2006-Dr. S. Radhakrishnan International Award for Excellence in Higher Education". The award-Trophy, Gold medal and Certificate was conferred on 30th January by Hon'ble Governor of Gujarat Shri Naval Kishore Sharma at Ahmedabad.

Dr. SK Pandey, Director, CPRI has been awarded the prestigious LC Sikka Endowment Award of 2006 by the National Academy of Agricultural Sciences, New Delhi.

Future Activities

IPA Symposium at Ooty

Central Potato Research Institute, Shimla in association with Indian Potato Association (IPA) is organising one-day symposium on "A Step Towards Brown Revolution with Potato" on January 19, 2007 at Ooty as a part of Golden Jubilee celebration of CPRS, Muthorai (Ootacamund). There will be about 100 participants in the symposium with 7 lead speakers. On this occasion, the IPA will publish a special issue of the Potato Journal comprising more than 50 research papers.

Quick Potato Outlook Survey

The team of scientists and technical staff of Division of Social Sciences will be conducting survey of UP, Bihar, West Bengal, and Punjab during January, 2007 to obtain advanced estimate of potato area and production during the year.

Potato Facts

Turkey: Microwave pre-cooking of French fries reduces cancer chemicals

Microwaving your French fries before you fry them reduces the levels of acrylamide, reveals findings published in the *SCI's Journal of the Science of Food and Agriculture* on 31st October, 2006. Numerous studies have been conducted to explore the possibilities of reducing acrylamide levels in French fries, but a team of researchers from Turkey has shown that microwave pre-cooking of potato strips prior to frying reduces the frying time and the acrylamide formation.

Article on Potato

Improved heap/pit storage for table and processing potatoes

Introduction

Potato production in India has shown a gradual and steady increase in the last 50 years and has led to several post harvest problems including storage. About 90% of crop in India is harvested between January-February from the Indo-Gangetic plains comprising the states of Punjab, Haryana, U.P.,

Bihar and West Bengal. Recurring gluts are common due to inadequate refrigerated storage and transport infrastructure, lack of modern marketing avenues, low domestic utilization and insignificant processing and export. Potato prices fluctuate during the year; generally crash drastically at harvest, increase rapidly in April-May and are almost double in July-August. Indigenous potato storage methods can be used as a part of marketing strategy to increase profits from potato cultivation. Surplus produce can be stored on-farm for short periods by cheap storage methods to bypass the immediate postharvest period when prices are the lowest.

Need for non-refrigerated storage of potato

Fresh potatoes are available only for three months in a year. There is a need to store seed potatoes for 6-8 months and potatoes for table and processing purposes up to 9 months to maintain the potato supply through out the year. Seed potatoes have to be stored at 2-4°C to maintain them in the right physiological age till the next planting season. Storage of table potatoes at low temperatures is not desirable as they accumulate large amount of sugars resulting them unfit for processing leading to browning in chips. These potatoes are also not preferred for table consumption due to their apparent sweet taste.

There has been a surge in potato processing sector over the last decade. Processing potatoes

need to be stored under higher temperatures (10-12°C) with the use of sprout inhibitor isopropyl - N (3-chlorophenyl) carbamate (CIPC), but the commercial facilities for potato storage at 10-12°C are not yet fully developed in India. Under the circumstances, the refinement of traditional on-farm storage methods like pit and heap are attractive propositions for short term storage of table and processing potatoes.

Traditional methods of potato storage

Farmers use indigenous practices like pits, heaps, trenches and basements to store some of their produce for short-term to fetch better prices. These on-farm storage methods are continuing for many years because they are cheap, materials required are locally available and construction can be done by the farmers themselves. Besides, there is less cost involved in handling and storage compared to cold storage charges. Though these methods are economical and practical, they are not efficient because of higher rottage during storage. Extensive studies were, therefore, conducted at CPRI to improve the efficiency of these traditional methods through better post harvest handling and modifications in the storage methods.

Improved heap/pit storage

The heap method of storage is a very simple way of storing generally under the shade of trees or a thatched roof made of straw (*Sarkanda*) and bamboos. Heaps ranging from 1-2 m height are covered with 30-60 cm thick layer of locally available material such as

rice straw (*purul*). The *purul* cover can be further covered with loose soil or soil clumps irregularly positioned as a weight to prevent the *purul* from being blown away by strong winds.

The size of the heap can vary depending upon the quantity of potatoes stored but the height of the heap should not be more than 1.5 m. Placement of perforated PVC pipes in the centre of potato heap helps in the removal of carbon dioxide accumulated due to respiration during storage (Fig. 1). To enhance ventilation to bigger heaps, basal ventilators need to be placed under the potato piles. Basal ventilators can be triangular or square duct made of wooden



Fig. 2. A potato heap with triangular or tubular basal ventilator

strips or a well perforated tube (Fig. 2).

Pits, *kutchra* and *pucca* (with an inside lining of bricks) can be dug under the shade of trees. *Kutchra* pit dug at a cost of Rs 200/tonne of potatoes has a life of 10 years and needs minor repairs every year.

Construction cost of *pucca* pit is about Rs 2500/ tonne with a life span of 50 years. Proper aeration of heaps and pits in particular is essential. Providing a platform made of bamboo sticks tied at 5 cm spacing at about 60 cm above the base (Fig. 3) and placing perforated PVC pipes in bulk stored potatoes in pits increases ventilation and significantly reduces the rottage. A thatched roof over the heaps and pits helps to further reduce the temperature and protects the stored potatoes from rain water.



Fig. 1. An uncovered and a covered potato heap fitted with temperature-humidity recorder



Fig. 3. Base structure of pit

Storage environment

The two storage systems (heaps and pits) reduce the range of variation in temperatures, while maintaining a high relative humidity (RH). While the day time variation in ambient temperature and relative humidity is considerable, the atmosphere is quite stable inside the heaps and pits. Minimum-maximum temperatures inside heap and pit during storage (March to June) range between 13-31°C and 13-27°C as compared to 8-44°C of the ambient and RH remains consistently high (60-95%) compared to wide variation and lower levels (27-87%) of the ambient. Maximum ambient temperatures in May-June are generally 40-44°C, while the maximum temperatures observed in heap and pit is 30-31°C and 26-27°C, respectively.

Losses in stored potatoes

Weight loss and rotting are significantly reduced in potatoes stored in heaps and pits as compared to those stored in an ordinary room. Weight loss up to

10% is considered acceptable when no visible shriveling takes place. When the weight loss exceeds 10%, shriveling takes place which reduces the market value of table potatoes. Further, peeling losses increase with increased weight loss affecting the processing quality of

potatoes. Weight loss in potatoes is minimum under pit storage throughout the storage period, but losses due to rotting can be heavy in pits in the absence of proper curing and sorting out of tubers and lack of proper ventilation. It has been demonstrated that it is feasible to store potatoes on-farm by improved traditional methods, viz, heaps and pits for 3-4 months with acceptable storage losses.

Keeping quality of commercial potato varieties under heap and pit storage

When properly cured and well sorted out tubers are stored, generally tuber rotting is not observed till 90 days of storage in potato varieties except in Kufri Sutlej and Kufri Chipsona-2. When potatoes stored in bulk remain undisturbed under humid and cool environment throughout the storage period, total losses remain below 10% and tubers appear firm up to 90 days (May end) in most of the varieties stored in the pit. In heap, total losses remained low (8.5-10.5%) in Kufri

Chandramukhi, Kufri Jyoti, Kufri Chipsona-1, Kufri Lauvkar and Kufri Sindhuri up to 90 days of storage. Among varieties, Kufri Sutlej and Kufri Chipsona-2 suffer maximum losses whereas, Kufri Chandramukhi, Kufri Chipsona-1 and Kufri Jyoti show minimum weight loss during storage under both the conditions.

Varieties Kufri Chandramukhi, Kufri Chipsona-1 and Kufri Jyoti can be stored for the maximum period up to 90 days (May end) and 105 days (Mid June) in heaps and pits, respectively with minimum losses and gradually released in the market to avoid distress sale at harvest. These varieties with good keeping quality have promising export potential also. Other varieties, viz, Kufri Lauvkar, Kufri Sindhuri, Kufri Lalima, Kufri Badshah, Kufri Bahar, Kufri Pukhraj, Kufri Ashoka and Kufri Jawahar can be safely stored in pits for a period of 90 days i.e. by end of May and in heaps up to 75 days without much deterioration in quality and appearance.

Marketability of stored potatoes

Rates fetched by the varieties with good keeping quality, viz, Kufri Chandramukhi, Kufri Chipsona-1 and Kufri Jyoti stored in heaps and pits were comparable to cold stored potatoes up to 90 and 105 days of storage, respectively. The rates were 40-50% higher than the rates at the time of harvest. Other varieties with medium keeping quality stored in heaps and pits can get remunerative prices up to 75-90 days only.

Taste and processing quality of stored potatoes

Potatoes stored in pits and heaps are highly suitable for processing due to low accumulation of reducing sugars whereas content of reducing sugars in cold stored tubers is very high (Fig. 4) and chips made from all the Indian varieties are of dark colour, bitter in taste and highly unacceptable (Fig 5).

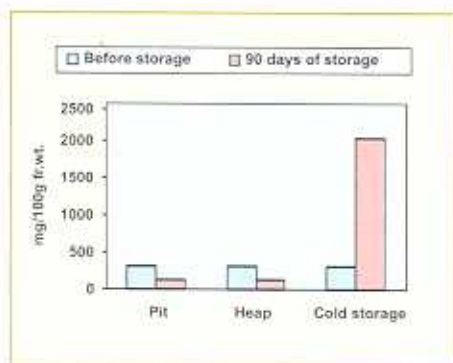


Fig. 4. Reducing sugar content in potatoes under different storage conditions (mean of 7 cultivars)

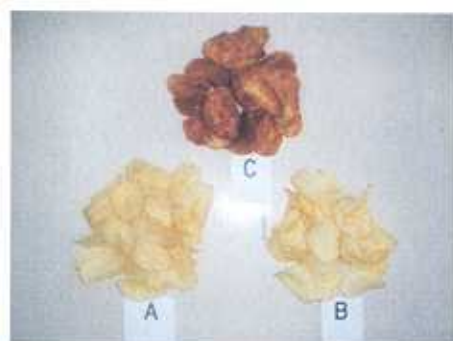


Fig. 5. Chip colour of potatoes stored in A) pit, B) heap and C) cold storage

Processing quality of varieties differ significantly with Kufri Chipsona-1 producing highly acceptable chips up to 105 days of storage in heaps and pits. Chips made of potato varieties from pit are far superior in colour, taste and texture up to 105 days of storage, while acceptable chips can be made

from potatoes stored in heaps up to 75-90 days only. A major problem of potato chip industry is the non-availability and continuous supply of potatoes with low reducing sugars and acceptable chip colour. Storage of potatoes in heaps and pits is a suitable alternative for providing potatoes with acceptable processing quality for 3-4 months after harvest, which will help not only in stabilizing potato prices, but also in accruing higher returns to the farmers.

Due to low total sugar contents the potatoes stored in heaps and pits are not sweet in taste and are more preferred as table potatoes. Therefore, the prices fetched by these potatoes in markets as table potatoes are also more than the cold stored potatoes.

Control of sprouting in stored potatoes

In modified heap and pit storage methods though the storage losses are much reduced, the problem of sprouting in potatoes still remains which involves additional expenditure on labour for desprouting of tubers before sending them to the market. Studies conducted to overcome this problem has proved the effectiveness of CIPC under non-refrigerated storage also. Table potatoes can be treated with CIPC dust @ 25 mg a.i./tonne of tubers at the time of storage. For treating small quantity of potatoes, powder form of CIPC can be used but for large scale treatment, liquid formulation can be applied in the form of fog using a fogging machine without disturbing the stored

potatoes. CIPC fog is applied in heaps through a perforated plastic pipe placed at the base (Fig. 6) and the heaps are kept airtight with a plastic sheet during fogging and 48 hours after the treatment. Even single application of CIPC fog, 20-30 days after storage i.e. on the onset of sprouting can significantly reduce sprout growth and total losses in potatoes up to 90 days of storage. The sprout suppressant can



Fig. 6 Sprout suppression in potatoes with CIPC fog and spray in comparison to control (untreated) after 90 days of storage in heaps

be applied even as spray and single spray application of CIPC is more effective than the fog application under heap storage (Fig. 6).

The efficiency of CIPC spray treatment is more pronounced under pit storage where complete sprout inhibition can be achieved up to 105 days of storage (Fig. 7). Total losses in treated potatoes are significantly reduced under pit storage (2.9-5.3%) as compared to heaps (6.1-10.6%). There is no need to desprout the tubers before sending them to the market in case of spray application and the labour used for desprouting in fog application is also significantly reduced. The treated potatoes appear very firm and fetch market rates better than the control (untreated) potatoes stored under respective conditions.



Fig. 7. Sprout suppression with CIPC spray in pit

Application of CIPC does not affect the processing quality of tubers and chips made from treated tubers stored in heaps and pits are of acceptable light yellow colour and superior in taste as compared to freshly harvested tubers.

CIPC residues in stored potatoes

The maximum residue level of CIPC in potato tubers permissible for human consumption is 30 mg/kg of tubers. CIPC residues in treated potatoes stored in heaps and pits were analyzed periodically during storage. Residues in peels of treated tubers ranging between 1.19-3.38 mg/kg of tuber weight after storage were far below the permissible levels.

Economics of storage in heaps and pits

Normal cold storage rent varies from Rs. 90-100/q of potatoes in addition to the expenditure incurred by farmers on transportation. Whereas, on farm storage is much cheaper; for 20 tonne of potatoes, heap storage costs not more than Rs. 5000 (Rs. 25/q) and for storage in *pucca* pit the cost is around Rs.55,000 (Rs 50,000 as cost of construction + Rs. 5000 as storage cost). The average life span of a *pucca* pit is about 50 years and the pits once dug can be used for many years thereby reducing the net storage costs to about Rs. 30/q.

Problems and remedial measures

- Potatoes stored in heaps and pits for more than 90 days sometimes become shriveled and do not fetch good prices. Varieties with medium/average keeping quality should be marketed earlier than the good keepers to get remunerative prices.

- When there are untimely rains, potatoes stored in open heaps and pits suffer heavy losses due to rotting. All possible efforts should be made to protect heaps and pits from rain water either by erecting a thatched roof or by covering with tarpaulin sheets.
- Sprouting of potatoes under non-refrigerated storage is the main problem faced by the farmers. Treatment with CIPC can significantly inhibit sprout growth in stored potatoes. It also helps in prolonging the storage life of potatoes by reducing total storage losses in tubers.
- Due to significantly lower maximum temperatures (27°C) inside the pits as compared to the ambient (>40°C) during May-June, the entry of snakes into the pits is quite obvious. This becomes hazardous, while unloading of pits. A net cover to the pits should be used after the loading of potatoes in the pits is complete to avoid this kind of problem.

Recommendations for traditional storage systems

- Irrigation should be stopped two weeks before dehauling and the crop should be harvested after 20-25 days to facilitate proper skin curing of the tuber.
- Only mature tubers should be stored because immature tubers have poor keeping quality due to a weak skin.
- As far as possible, the potatoes should be harvested in dry weather. If harvested under wet soil conditions, potatoes must be

dried before storage because even little moisture on the surface of tubers could lead to infection and rotting during storage.

- In spite of best efforts, cutting and bruising, while harvesting cannot be completely eliminated and, therefore, curing is essential to heal the wounds. Potatoes should be temporarily kept in heaps covered with rice straw for 10-15 days after harvest for creating the micro-climate necessary for wound healing and skin curing.
- Since non-refrigerated storage conditions are congenial for growth of micro-organisms, bruised, cut and diseased tubers should be carefully removed before loading the potatoes into heaps and pits.
- Storage in heaps and pits should be completed by the end of February so that the lower temperatures prevailing during this period can be taken advantage of. Stored potatoes should be preferably sold before the temperatures inside the heaps and pits reach 30°C.
- Because the pit is a closed system with little air circulation, entry of water creates anaerobic conditions at the bottom and humidity level becomes very high. These conditions favour the spread of (*Erwinia*) bacteria causing soft rot. Placement of perforated plastic pipes in the bulk stored potatoes and raising the level of storage on a slatted floor 50-60 cm above the base helps in increasing ventilation

and reducing losses due to rotting.

- Pits should not be filled to full capacity and about 20% of space above the potatoes should be left vacant. Storage in *kutch* pit is not safe due to seepage of rain water from the walls and damage caused due to frequently made *rat* tunnels.
- Potatoes stored in heaps and pits are highly suitable for processing. Potato processing units should make full use of these potatoes. This will be mutually beneficial since farmers will get better price for their produce and processors will locally get potatoes suitable for processing during summer months, thus saving on transportation costs.
- Selection of varieties with good keeping quality would ensure better performance with reduced storage losses.

-Ashiv Mehta, R Ezekiel, Brajesh Singh, Dinesh Kumar, SK Pandey

हिन्दी समाचार

केन्द्रीय आलू अनुसंधान संस्थान परिसर, मोदीपुरम, मेरठ में उत्तर प्रदेश उद्यान एवं खाद्य प्रसंस्करण निदेशालय, लखनऊ के तत्वावधान में 22-25 सितम्बर, 2006 तक 'आधारीय एवं प्रमाणित बीज आलू उत्पादन तकनीक' विषय पर प्रशिक्षण कार्यक्रम का आयोजन किया गया। प्रशिक्षण कार्यक्रम में उद्यान विभाग के 25 प्रशिक्षार्थियों को आलू बीज उत्पादन से संबंधित सभी विषयों पर



समुचित जानकारी व्याख्यानों एवं प्रयोगों के माध्यम से उपलब्ध करायी गई।

परिसर में दिनांक 14 से 30 सितम्बर, 2006 तक हिन्दी पखवाड़े का आयोजन किया गया जिसके अन्तर्गत हिन्दी के प्रचार-प्रसार के लिये सामान्य ज्ञान, कम्प्यूटर हिन्दी टाईपिंग, इमला, पत्र लेखन, प्रचलित लेख लेखन, ड्राफ्टिंग नोटिंग, प्रश्न मंच तथा कविता पाठ इत्यादि प्रतियोगिताओं का आयोजन किया गया। इन सभी प्रतियोगिताओं में परिसर के अधिकारियों एवं कर्मचारियों ने उत्साहपूर्वक भाग लिया।



सरदार बल्लभ भाई पटेल कृषि एवं प्रौद्योगिकी विश्वविद्यालय, मोदीपुरम, मेरठ द्वारा दिनांक 8-11 अक्टूबर, 2006 को आयोजित अखिल भारतीय किसान मेला एवं कृषि उद्योग प्रदर्शनी में केन्द्रीय आलू अनुसंधान संस्थान परिसर, मोदीपुरम, मेरठ ने किसानों को आलू उत्पादन सम्बन्धी



जानकारी देने हेतु अपना स्टॉल लगाया। परिसर के स्टॉल को भारतीय कृषि अनुसंधान परिषद् वर्ग में प्रथम पुरस्कार प्राप्त हुआ।

संस्थान परिसर में होने वाले क्रियाकलापों एवं मैदानी क्षेत्रों में आलू उत्पादन से सम्बन्धित नवीनतम जानकारी सूचना प्रौद्योगिकी के आधुनिकतम माध्यम इन्टरनेट द्वारा देने के लिए परिसर की अपनी वेबसाइट की स्थापना अक्टूबर, 2006 को की। वेबसाइट का पता <http://cpri.ernet.in> हैं।

संस्थान परिसर में 16 लाइनों वाले डिजिटल इपीएबीएक्स की स्थापना की गई। जिसके द्वारा परिसर के विभिन्न अनुभागों में आन्तरिक संचार व्यवस्था की सुविधा प्रदान की गई है। साथ ही इसके द्वारा परिसर के चुनिंदा पदाधिकारियों को बाहर दूरभाष करने की सुविधा प्रदान की गई है। बाहर के दूरसंचार नेटवर्कों से प्रत्येक लाइन पर सीधे फोन आने की सुविधा उपलब्ध है। बाहर से फोन आने के लिए 2791xxxx (xxxx: रु. एक्सटेंशन संख्या) उपलब्ध है। इसके अलावा फोन लाइन 2576350 पर भी बाहर से सम्पर्क किया जा सकता है।

हिन्दी चेतनामास, 2006

संस्थान के मुख्यालय में 14 सितम्बर से 13 अक्टूबर, 2006 के दौरान हिन्दी चेतना मास का आयोजन किया गया। इस मास का शुभारम्भ 14 सितम्बर, 2006 को संस्थान के परिसर में कार्यकारी निदेशक डा. आर. इजेकिल की अध्यक्षता में किया गया। कर्मचारियों को संबोधित करते हुए उन्होंने संस्थान में चल रहे हिन्दी कार्यों की जानकारी दी तथा राजभाषा की आवश्यकता पर बल दिया।

हिन्दी चेतना मास के अवसर पर संस्थान में निबंध लेखन, कम्प्यूटर पर हिन्दी टाइपिंग, चित्र कहानी, एक सिक्के के दो पहलू, हिन्दी नोटिंग ड्राफ्टिंग, कृषि अनुसंधान संबंधी प्रश्नोत्तरी, प्रश्न मंच प्रतियोगिता तथा चतुर्थ श्रेणी के लिए हिन्दी पत्र लेखन व संशोधन आदि प्रतियोगिताएं आयोजित की गईं। इन प्रतियोगिताओं में सभी वर्ग के कर्मचारियों ने बढ़ चढ़कर भाग लिया।

चेतना मास का समापन 13 अक्टूबर, 2006 को आयोजित किया गया जिसमें हिमाचल प्रदेश भाषा एवं संस्कृति विभाग के संयुक्त निदेशक श्री सुदर्शन वशिष्ठ बतौर मुख्य अतिथि उपस्थित हुए। सभा को संबोधित करते हुए उन्होंने संस्थान में हिन्दी में हो रहे कार्यों की सराहना करते हुए बताया कि किसी भी देश की पहचान उसके राष्ट्रध्वज, राष्ट्रगान और उसकी राष्ट्रभाषा से होती है। जिस राष्ट्र की अपनी भाषा, अपना ध्वज, अपना राष्ट्रगान नहीं है वह पंगु है। उन्होंने बताया कि हमारे देश में मुगलों व अंग्रेजों ने राज

किया इसलिए हमारे देश में उर्दू, फारसी व अंग्रेजी भाषाओं का बोल-बाला रहा। स्वतंत्रता प्राप्ति के बाद हमारे संविधान में हिन्दी को राष्ट्रभाषा का दर्जा दिया गया और आज सम्पूर्ण भारत में हिन्दी का प्रचार-प्रसार हो रहा है। यही नहीं आज विदेशों तक हिन्दी पहुंच चुकी है और कई देशों में हिन्दी की शिक्षा दी जा रही है। उनका कहना था कि हिन्दी के प्रचार-प्रसार में हिन्दी सिनेमा का बहुत बड़ा योगदान रहा है। बढ़ते टी.वी. चैनलों पर प्रसारित होने वाले हिन्दी कार्यक्रम न केवल दक्षिण भारत में बल्कि विदेशों में भी बहुत रुचि के साथ देखे जा रहे हैं।

इस मौके पर बोलते हुए संस्थान के निदेशक डा. सुमन कुमार पाण्डे ने बताया कि निदेशक होने के नाते मेरा दायित्व है कि अंग्रेजी जानते हुए भी मैं सभी कर्मचारियों को हिन्दी में काम करने के लिए प्रेरित करूं। उन्होंने कहा कि संस्थान में योग्य कर्मचारियों की कमी नहीं है लेकिन जरूरत है इन्हें आगे लाने की। इसी उद्देश्य से हर वर्ष हिन्दी प्रतियोगिताओं का आयोजन किया जाता है। उन्होंने कहा कि हमें हिन्दी पुस्तकों को पढ़ने की आदत डालनी चाहिए। हमारे संस्थान के पुस्तकालय में हिन्दी की अच्छी पुस्तकों की कमी नहीं है। कर्मचारियों को चाहिए कि वह पुस्तकालय की किताबों का भरपूर फायदा उठाएं। उन्होंने बताया कि संस्थान द्वारा हिन्दी में आलू पर एक पुस्तिका तैयार करने का कार्य पूरा हो चुका है, जिसमें आलू अनुसंधान के हर विषयों को शामिल किया गया है। परिषद् ने इस पुस्तक के प्रकाशन के लिए अपनी सहमति दे दी

है। उन्होंने जिक्र किया कि डा. सरजीत सिंह द्वारा बीज आलू उत्पादन विषय पर हिन्दी में एक पुस्तक तैयार की जा रही है जो जल्द ही प्रकाशित कर ली जाएगी। उन्होंने कर्मचारियों से आह्वान किया कि संस्थान की राजभाषा पत्रिका समाहित के लिए बढ़-चढ़कर लेख दें ताकि उन्हें हिन्दी में अपने विचार व्यक्त करने का अवसर मिले।

इससे पहले बोलते हुए संस्थान के सहायक निदेशक (राजभाषा) ने बताया कि 14 सितम्बर, 1949 को भारत संविधान सभा ने हिन्दी को राजभाषा के रूप में स्वीकार किया। उस महान दिन की स्मृति में हर वर्ष 14 सितम्बर को हिन्दी दिवस के रूप में मनाया जाता है। इस अवसर पर सरकारी कामकाज हिन्दी में करने के लिए श्री जगदीश, श्रीमती कान्ता रानी व श्री नरेन्द्र कुमार को निदेशक महोदय द्वारा नकद पुरस्कार देकर सम्मानित किया गया। हिन्दी चेतना मास के दौरान आयोजित प्रतियोगिताओं में प्रथम, द्वितीय व तृतीय पुरस्कार जीतने वाले कर्मचारियों को मुख्य अतिथि द्वारा पुरस्कार वितरित किए गए।

संस्थान के वरिष्ठ प्रशासनिक अधिकारी श्री अनिल कुमार सिंह के धन्यवाद प्रस्ताव के साथ समारोह सम्पन्न हुआ।

हिन्दी प्रतियोगिताओं के विजेता

संस्थान के मुख्यालय में हिन्दी चेतना मास के अवसर पर आयोजित प्रतियोगिताओं में प्रथम, द्वितीय व तृतीय स्थान पाने वाले प्रतिभागियों को सम्मानित

किया गया। निबंध में श्रीमती पूनम सूद, कम्प्यूटर पर हिन्दी टाइपिंग में श्री जगदीश चन्द, चित्र कहानी में श्रीमती तरविन्दर कोछड़, नोटिंग इफ्टिंग में जोगिन्दर सिंह ठाकुर, कृषि अनुसंधान प्रश्नोत्तरी में श्रीमती श्रुति गुप्ता व प्रश्न मंच में डा. मिलाप चन्द सूद व धर्मेन्द्र कुमार गुप्ता तथा चतुर्थ श्रेणी वर्ग के श्री नरेश कुमार प्रथम रहे। अन्य पुरस्कार डा. नरेन्द्र कुमार पाण्डेय, श्री चन्दा राम, श्री नरेन्द्र पाल, श्री रघुवीर, श्री पदम चन्द शर्मा, श्रीमती शशि ठाकुर, श्री हीरा नन्द शर्मा, श्री कली राम, श्रीमती सोनिया चौहान, श्री देवराज, श्री सचिन कंवर, कुमारी वसुधा, श्री किशोर चन्द चोपड़ा, श्री चन्द्र मोहन बिष्ट तथा श्री दीप कुमार को मिले। इन्हें 13 अक्टूबर, 2006 को आयोजित समारोह में मुख्य अतिथि द्वारा पुरस्कृत किया गया।

निबंध

राजभाषा का भविष्य

देश की आजादी का दिन! क्या उजला सूरज था, क्या मस्त हवा थी, क्या निर्मल शान्ति थी, क्या रूपहला जन जीवन था और क्या चहल-पहल थी। हवा का हर झोंका देशवासियों की सूकून की सांसों को अपने में समेटे चल रहा था। हमारे वीर जवानों, नेताओं, शहीदों और देश के हर वर्ग के संयुक्त प्रयत्नों का मीठा फल आज सामने था। गुलाब का फूल हमारे हाथ में था। सभी कुछ मिल गया था।

आजादी ले आई अपने साथ कुछ कांटे, कुछ समस्याएं या हम कह सकते हैं आवश्यकताएं। आवश्यकता अविष्कार की जननी होती है। जिस-जिस प्रकार की

आवश्यकता महसूस होती गई उसका समाधान भी तदनुरूप प्रयास करने पर निकलता गया। सरकारी कामकाज अंग्रेजी में चलता था, सो उस पर देश की नींव टिकी थी। उसे बदलना इतना आसान न था। देश के विभिन्न वरिष्ठ नेताओं की कई अहम बैठकें हुईं और इस मुद्दे पर गहन विचार-विमर्श किया गया। अन्त में यह निर्णय लिया गया कि देश की राजभाषा हिन्दी और लिपि देवनागरी हो। संविधान की विभिन्न धाराओं में हिन्दी के उपयोग हेतु विभिन्न प्रकार के प्रावधान रखे गए।

आज हमारे पास अपना राष्ट्रध्वज है, राष्ट्रीय पक्षी है, राष्ट्रीय गीत है, राष्ट्रीय गान है, राष्ट्रीय पशु है और सर्वोत्तम राजभाषा-राष्ट्रभाषा हिन्दी है। आज हमारी राजभाषा का भविष्य सूर्य के प्रकाश की भांति उज्ज्वल है। राजभाषा के भविष्य के उत्थान के लिए सरकार और जन-मानस द्वारा किए गए प्रयत्न सराहनीय हैं। इस आशय से सरकार आपने वार्षिक बजट में हिन्दी के प्रोत्साहन हेतु विशेष प्रावधान रखती है।

सरकारी कामकाज में राजभाषा का शत-प्रतिशत प्रयोग किया जाना अनिवार्य है। परिणामस्वरूप पहले तो अधिकारी/कर्मचारी मजबूरी में इस कार्य को करते थे, किन्तु अब स्वेच्छा से सभी सरकारी कार्यों में हिन्दी का प्रयोग किया जा रहा है।

कृषि, चिकित्सा या कोई भी क्षेत्र हो, सभी में शब्दावली का निर्माण किया जा चुका है, अतः आम आदमी हर प्रकार की जानकारी अपनी भाषा में प्राप्त कर सकता है। सरकार द्वारा बनाए गए विभिन्न

प्रावधानों के कारण हर क्षेत्र में हिन्दी में क्रान्ति आ गई है, जो राजभाषा के भविष्य की उज्ज्वलता का संदेश देती है।

अन्तर्राष्ट्रीय स्तर पर विभिन्न सम्मेलनों का आयोजन होता है, जिसमें प्रायः देखा जाता है कि उस सम्बन्ध में पूर्ण जानकारी राष्ट्रभाषा में उपलब्ध करवाई जाती है। हमारे कुछ नेता तो विदेशों में जाकर भी अपना भाषण अपनी राष्ट्रभाषा हिन्दी में देते हुए देखे जाते हैं। हमारे रेल मंत्री महोदय ने तो प्रबन्धन संस्थान में तीन घंटे का पूरा लेक्चर ही दे दिया। विद्यार्थियों ने बाद में बताया कि उन्होंने अपनी साधारण भाषा में जो सुना उससे उन्हें बहुत अच्छी जानकारी मिली। अतः यह कहना गलत न होगा कि हमें अपनी भाषा में सुनना, कहना, लिखना व पढ़ना अच्छा लगता है।

आज देश की 60 से 70 प्रतिशत जनता हिन्दी समाचार पत्रों को पढ़ती है और अपनी आवश्यक जानकारियों को प्राप्त करती है। समाचार पत्रों में प्रचलन

से इस क्षेत्र से संबंधित रोजगारों में बढ़ोतरी हुई है। पत्रकारिता से सम्बन्धी कार्यों में युवा वर्ग आगे बढ़ रहा है। वह हिन्दी से सम्बन्ध बनाकर अपना सिर गर्व से ऊंचा रखता है।

आज के युग से पुराने युग की ओर झाँकें तो हम पाएंगे कि हमारे वेदों की भाषा हिन्दी ही थी, हिन्दी हमारे ऋषि-मुनियों की भाषा थी, इतिहासकारों की भाषा थी। इन्हीं की सभी जानकारियों को लेकर अंग्रेजों ने हमारे सोने की चिड़िया रूपी भारत को कंगाल कर दिया। लेकिन अब हमने अपनी राजभाषा की पताका को संभाल लिया है। अब हम इसके भविष्य को उज्ज्वल ही रखेंगे।

आज धार्मिक क्षेत्र में मीडिया के हस्तक्षेप से जो क्रान्ति आई है उसका श्रेय भी हिन्दी को ही जाता है। हर बूढ़ी मां, हर बूढ़ा बाप भी सुबह कह उठता है हमें फलां स्वामी जी के प्रवचन सुनने हैं। यदि यह हिन्दी में न होते तो मीडिया भी अपनी सफलता पर नाज नहीं कर सकता

था। किसान नई तकनीकों से सम्बन्धी सभी प्रकार की जानकारियां दूरदर्शन, आकाशवाणी व इंटरनेट से राजभाषा हिन्दी में ग्रहण कर लेता है।

अन्त में यह कहना ठीक रहेगा कि आजादी की स्वर्ण जयंती मना लेने के बाद हम यह गर्व महसूस कर रहे हैं कि हमारी राष्ट्रभाषा-राजभाषा हिन्दी को अब वैसाखियों की आवश्यकता नहीं है। हम देश की उत्तर दिशा में हों या दक्षिण, पूर्व या पश्चिम, हम राजभाषा ही चाहते हैं। आज हम दूब को हाथ में लेकर संकल्प लेते हैं कि अपनी राजभाषा को और उज्ज्वल तथा भविष्य में अन्तर्राष्ट्रीय स्तर पर लाएंगे।

सुबह की शुरुआत हिन्दी,

आज की हर बात हिन्दी,
देश की हर बात हिन्दी,

हम सबकी शान हिन्दी
राजभाषा हिन्दी केवली हिन्दी

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Editorial Committee :

Brajesh Singh, Anil Kumar, Avnish Atrey

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Dr. S.K. Pandey

**Director, Central Potato Research Institute
Shimla-171 001, Himachal Pradesh, India**

Phone: 0177-2625073, Fax: 177-2624460

E-mail: dircpri@sancharnet.in

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