



# Central Potato Research Institute Newsletter

Number 37

December, 2007

## From the Director's Desk



Potato is a good host to a large number of pests and pathogens which threaten its economic cultivation without proper control/ management. The most dreaded ones are late blight disease caused by *Phytophthora infestans* and virus diseases, viz., mosaics, leaf roll, leaf curl, stem necrosis, etc. While late blight can wipe out the crop within a week under heavy disease pressure, virus diseases cause extensive losses only in years. India is very much concerned at the almost stagnant growth in food crops production. Potato is a good candidate as an alternate food crop due to its wide adaptability to diverse climates and high dry matter production per

unit area and time. Late blight disease has posed a serious threat to the productivity of potato due to changes in the pathogen population. Till late 80's, most of the potato growing countries in the world had only A<sub>1</sub> mating type of the pathogen and both A<sub>1</sub> and A<sub>2</sub> mating types were known to be present only in Mexico. Due to reasons still not well understood, migration of A<sub>2</sub> mating type to North America and then to Europe occurred during late 1980's. A<sub>2</sub> mating type in India was reported in the hills during early 1990's. Due to the presence of both the mating types required for sexual reproduction, pathogen has become more versatile, adaptable to non-traditional weather and more aggressive to breakdown the host resistance with quicker development of the disease epidemic. The article on late blight scenario and management in the present issue describes the disease epidemiology and also addresses the control measures to be adapted by the farmers to combat the dreaded disease. I hope the suggestions made by authors will help the policy makers, state agricultural and horticultural departments and the farmers in controlling late blight disease with appropriate measures.

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## Research Highlights

### CPRI releases a new potato variety for northern plains

Kufri Bahar is the predominant potato variety grown in Uttar Pradesh and presently occupies nearly 75 % of the potato production area. It is a very popular variety, however, it suffers from lack of resistance to late blight. In recent years, it has been seen that late blight is appearing early and early in the season and has become a regular feature in the plains of Uttar Pradesh. In order to overcome this problem, CPRI has developed a new potato variety Kufri Sadabahar, having moderate degree of resistance to late blight and yielding nearly 10 to 15 % higher over Kufri Bahar. This variety has been released for cultivation in UP by UP State Variety Release Committee. On an average this



Tubers of Kufri Sadabahar

variety gives an yield of 35 tonnes per hectare and has dry matter between 19 to 20 %. The attractive oblong tubers having good keeping quality give this variety an edge over Kufri Bahar. It is expected that with the production of its breeder seed in the next 1-2 years, Kufri Sadabahar will slowly replace Kufri Bahar providing added remuneration to the farmers of the highest potato producing state of the country.

### The potato workshop recommends two new hybrids

In the recently held Group Meeting of Potato Workers at Rajendra

Agricultural University, Pusa, Bihar between 7-9 September, 2007 two new potato hybrids were recommended for cultivation in the plains and hills of the country.

### Hybrid SM/93-237: A late blight resistant line for hills

Hybrid SM/93-237 has been developed for the hill region of the country where late blight is a menace. The hybrid possesses very high degree of resistance to late blight which regularly appears every year in hills and causes damage to the crop ranging from 30 to 80 %. It is a white tuber hybrid producing oval-oblong tubers with pale yellow pulp. The hybrid has shown its superiority over two important varieties namely Kufri Jyoti and Kufri Giriraj now predominantly being grown in hills. The resistance for late blight in Kufri Jyoti and Kufri Giriraj has eroded over the years and it is expected that together with recently released variety Kufri Himalini, hybrid SM/93-237 will replace the varieties Kufri Jyoti and Kufri Giriraj. The hybrid has tentatively been named as Kufri Girdhari and its breeder seed is likely to be available in the next 2-3 years following its notification in the Central Sub-Committee on Crop Standards Notification and Release of Varieties of Horticultural Crops.



Tubers of Kufri Girdhari

### Hybrid J. 93-86: An early bulking potato line for fitting in rice-wheat system

Hybrid J. 93-86 is a very high yielding white tuber hybrid maturing in 75 to 80 days. This hybrid was



Tubers of J.93-86

recommended for release for cultivation in the plains specifically for Haryana, Punjab, Rajasthan, UP, Gujarat, Bihar, MP and West Bengal. The cultivation of this hybrid as a sandwich crop between rice and wheat in the Indo-Gangetic plains is expected to increase the area of potato through this cropping system. The hybrid has shown superiority over an early maturing variety Kufri Ashoka and is likely to give added benefit to Indian farming community by way of providing increased area and remuneration of potato crop between two major crops, rice and wheat. This hybrid is likely to be a good replacement of existing varieties Kufri Ashoka and Kufri Chandramukhi and may help in increasing potato area in the country.

### J.93-139: An early bulking potato line with high carotenoid content

In the ongoing programme on breeding early bulking varieties at Central Potato Research Station Jalandhar, J.93-139 was identified for evaluation under multi-location trials. This promising yellow-flesh breeding line was also evaluated for carotenoid content which is reported to be correlated with flesh colour. Carotenoids are potent antioxidants. Diets rich in antioxidant have been associated with a lower incidence of atherosclerotic heart disease, certain cancers, muscular degeneration and severity of cataracts. The contents of carotenoids mentioned



Tubers of J.93-139

in the literature range widely (27 to 329  $\mu\text{g}/100$  g fresh weight) among potato genotypes. The carotenoid content of the J.93-139 was very high (192.6  $\mu\text{g}/100$  g fresh weight) which was significantly much higher than other high carotenoid containing genotypes like JN 1197 (158.4  $\mu\text{g}/100$  g fresh weight), Kufri Chamatkar (152.2  $\mu\text{g}/100$  g fresh weight) and Kufri Surya (133.4  $\mu\text{g}/100$  g fresh weight). This line can be useful in future breeding programmes aimed at developing cultivars giving high yield in short duration and/or with high carotenoid content.

*-Raj Kumar, GS Kang,  
RS Marwaha and SK Pandey*

#### Control of potato tuber moth in country stores using CIPC

Warmer mid hills and plateau regions in the country suffer from the attack of potato tuber moth (PTM). It has emerged as one of the important pests of these areas affecting the crop in the field and produce in the stores. However, major losses take place in traditional, non-refrigerated rustic stores where field exposed infested tubers carrying the eggs of PTM serve as the primary source of infestation. The eggs hatch under the congenial storage temperature (23-24°C), and the emerging larvae tunnel through the stored tubers. Sometime in absence of control measures, losses in stores reach as high as 100%, where PTM infested tubers are further attacked by various rot

causing organisms.

Mid hill area of Himachal Pradesh is an important potato growing region providing fresh potatoes when they are not available from plains. Kangra valley in H.P. besides providing fresh potatoes, is also known for supplying potatoes of variety Kufri Jyoti, to the processing units located in the plains of Punjab, UP and Delhi. The valley is infested with PTM. Farmers hold their potato produce after harvest in May-June for another one to two months to get better price in the market. They apply toxic and banned chemical to control PTM in stores. These chemicals are not safe for human consumption as their residues are known for their carcinogenic effects.

Considering the importance of both availability of fresh potatoes during lean period and problem of PTM, CPRI in search of a safer and effective chemical, extensively experimented with CIPC (isopropyl N-(3-chlorophenyl) carbamate). CIPC is a sprout suppressant and is commonly used for potatoes stored at higher temperatures (8°C and above) meant for processing. The experiments were conducted consecutively for two years during 2004 and 2005. Application of CIPC spray "Grow Stop Basis 30 EC"

containing 30% a.i. (M/s Global Agri Systems Private Limited, New Delhi) @ 40 ml/tonne of potatoes (dissolved in 160 ml of water and applied with a rotary disc sprayer) was found very effective in controlling PTM in stores besides checking the sprout growth.

The incidence of PTM in treated tubers in country stores was observed to be negligible (0.3-2.8%) compared to 3.6-27.6% in untreated tubers up to 50 days. Further the CIPC tubers were not only healthy but also showed no shrivelling. In contrast untreated tubers showed PTM damage, having typical PTM galleries inside, and tubers also shrivelled during storage. The treated tuber were analyzed in laboratory for CIPC residues, which were found to be under permissible limit, thus tubers being safe for human consumption.

The experimentation clearly established that CIPC can be safely used by farmers for (i) controlling the PTM damage in stores and (ii) maintaining the desirable quality of potatoes both for table and processing purposes at least for two months after storage.

*-VK Chandla, Brajesh Singh, RS  
Chandel and SK Pandey*

#### First report of "hopperburn" damage on potato in Gujarat state

Britishers introduced potato in Gujarat around 100 years ago from their Kothi (warehouse) at Surat as an ornamental plant. Later regular cultivation of potato was started first under riverbed conditions of Banas, Saraswati and Vatrak rivers. Major potato growing districts of Gujrat are Banaskantha, Mehsana, Kheda, Anand, Ahmedabad, Sabarkantha, Baroda, Gandhinagar and Jamnagar where it is mostly grown under irrigated conditions. Warm, dry and mild night temperatures during the crop season in Gujarat favour the production of high dry matter and accumulation of low sugars. Kufri Badshah, Kufri Chandramukhi, Kufri Lauvkar, Kufri Pukhraj and Kufri



CIPC treated and untreated tubers



Treated and untreated tuber from inside



Burned leaflet



Burned foliage



Hopper burned fields in Deesa

Chipsona-1 are the prevalent varieties in the region. Regarding disease/pest problems in the state, early blight (2-3%), black scurf (3-5%) and common scab (10-15%), cut worm (< 1%), leaf eating caterpillar (10-15%) and sucking pests: aphids, jassids, thrips and whitefly (8-10%) are the major problems. During January 2007, potato crop was completely annihilated in the state and the reasons were attributed to heavy late blight attack. Since occurrence of late blight is a rare phenomenon in Gujarat, a team of scientists comprising Drs. BP Singh, SV Singh and Er. Sukhwinder Singh visited the state during 26-27 February 2007, to assess the crop losses and the reasons associated with the crop failure. The team surveyed the potato crop in tehsil Deesa, Dantiwada (Distt. Banskantha), Ladol in tehsil Veejapur and Kheralu in Mehsana. Apparently the crop looked blighted but close examination of the crop/plants revealed that the crop damage was not due to late blight but it was associated with insect infestation causing 'hopperburn'.

Although 'hopperburn' is a serious problem of early crop (September

planted) in western Uttar Pradesh when temperatures are high but it has never been encountered in Gujarat where crop is planted in October. Discussion with AICRP Scientists at Deesa and progressive growers of the area revealed that the crop damage started by 1<sup>st</sup> January and by 15<sup>th</sup> of January 2007, most of the crop was killed. Temperatures data collected from Deesa observatory (weekly averages) revealed that during the crop period right from December to first week of January in 2006-07, ambient temperatures were higher and relative humidity was comparatively lower than 2005-06. The increase in temperature was up to 5.8°C during fourth week of December, 2006. This increase in temperature had led to faster multiplication of hopper which in turn resulted in more feeding by mature (adult) and immature (nymphs) forms of hopper leading to 'hopperburn'. The affected leaf samples contained heavy loads of live nymphs and adults as well as exuviae. The number of average exuviae/alive insect per leaf varied from variety to variety. Highest number of hopper were recorded

on Kufri Chipsona-3 as 72.0 exuviae/leaf, none alive followed by Kufri Pushkar (19 exuviae /leaf, 22.5 hopper/leaf), Kufri Badshah (12.0 exuviae /leaf, 3.5/leaf alive) and Kufri Surya (4.5 exuviae /leaf, none alive), respectively. In addition to this early blight and phoma infection were also encountered. In fact, it was a mix of 'hopperburn' and early blight/phoma blight which led to crop damage. Some of the farmers of Dantiwada area who had sprayed their crop with thiodon along with mancozeb, could save their crop. Yield loss due to hopperburn at Deesa Research farm ranged from 15-30%. Based on available records it is the first outbreak of "hopperburn" in the state of Gujarat causing severe damage which needs regular attention of the researchers in the area.

*-BP Singh, Kamlesh Malik, NH Patel, PJ Patel, SV Singh and Sukhwinder Singh*

#### Potato trials at Kharapathar

Trials on healthy seed potato production, late blight and white grub management were conducted for the first time in Kharapathar area which is about 80 kms from Shimla. This area is still a major potato belt in the district in spite of the fact that the other areas of the district are showing a declining trend in potato acreage due to competition from more remunerative crops like cabbage and peas. The preliminary survey of the area revealed that each farmer on an average grows potato in about 2-3 hectares area in the apple orchards. The



Healthy potato crop at Kharapathar

farmers are not getting quality seed potato from authorized sources due to failure of state seed supply chain. They purchase seeds from the farmers of Punjab which does not give good yield due to varietal impurity and disease inoculum.

The results of the demonstrations indicated that the farmers were able to harvest on an average 230 q/ha yield from demonstration plot as against the yield of 140 q/ha from farmers' own control plot. The incidence of late blight was upto 5%, whereas that of white grubs was around 2%. Infestation of wire worm was found to the extent of 11% in some of the plots.

*-Anil Kumar*

#### DBT accredited CPRI Laboratory for virus testing

Head, Division of Plant Protection, Central Potato Research Institute, Shimla is the designated authority by the Directorate of Plant Protection, Quarantine and Storage, Department of Agriculture & Cooperation, Ministry of Agriculture (Govt. Of India) for undertaking inspection and issuing of phytosanitary certificates for the export of potatoes from India. CPRI, Shimla is also the channelising agency for the import of potato germplasms and its post entry quarantine clearance. Recently, Department of Biotechnology, Ministry of Science and Technology, Govt. of India has accredited Central Potato Research Institute as Accredited Test Laboratory for certification of tissue culture raised plant material under the National Certification System for Tissue Culture raised plants. CPRI will undertake testing of tissue culture raised potato plants for virus freedom and genetic fidelity. CPRI is amongst the few research organization to have this accreditation and shall get funds from DBT for strengthening the testing facilities.

*-Dr. ID Garg*

## Training & Technology Transfer

### Entrepreneurship development programme in biotechnology

A five-day training programme on Entrepreneurship Development was organised at Central Potato Research Institute (CPRI), Shimla from June 11-15, 2007 by Biotech Consortium India Limited, New Delhi. The programme was attended by 32 prospective entrepreneurs from the states of Himachal Pradesh, Punjab, Haryana and Uttarakhand. The Entrepreneurship Development Programme (EDP) was structured to initially provide training on management aspects such as finance, accounting, marketing, etc followed by biotech projects suitable for small and medium scale set up, containing both technical and economic details. The programme was aimed to train the prospective entrepreneurs on various technical and management topics relevant for biotechnology projects.

Dr. SK Pandey, Director, Central Potato Research Institute, Shimla, inaugurated the event and emphasised on developing the entrepreneurial instinct among the scholars for better prospects towards their as well as country's future. Dr. Purnima Sharma, Executive Director and CEO, Biotech Consortium India Limited, New Delhi, Sh. DP Singh, Director (Biotech), Office of DCSSI, Ministry of SSI, New Delhi and Dr. Suman Govil, Advisor, Department of Biotechnology also addressed trainees on this occasion. Speakers from prominent



Inauguration of the training

institutions such as Institute of Management Sciences, HP University, MDU-Rohtak, CGBDA, Raipur and renowned biotech industries delivered the presentations to make this event a success.

### Model training course on "Recent advances in potato production technology"

A model training course on "Recent Advances in Potato Production Technology" was organised by the Central Potato Research Institute (CPRI), Shimla from July 13-20, 2007. The training course was sponsored by the Directorate of Extension, Ministry of Agriculture, Govt. of India. The objectives of the training course were, improving the knowledge of the trainee officers regarding seed potato production and certification, improving the skill of the trainee officers regarding seed potato production, and to get the feedback from the trainee officers regarding field problems in the adoption of potato production technologies and in the seed certification.

The training was inaugurated by Dr. PC Kapoor, Principal Secretary (Agriculture), Govt. of Himachal Pradesh. Twenty-two participants from 11 states attended this training course. The training included lecture-cum-discussions, practical sessions, skill demonstrations, field visits and video film shows. In all, 24 lectures were delivered and a field visit to CPRI farm at Kufri was organised during the training course. Pre- and post-training evaluation of the trainees was conducted to assess



Inauguration of the training

the effectiveness of the training course. This exercise revealed that after the training, the knowledge of the participants was improved by more than 15 %.

### Trainings on potato cultivation and late blight management

A number of training programmes were organized where in scientists from CPRI and its regional stations participated by way of giving advice and practical demonstrations on potato cultivation practices and to combat the late blight from spreading in the potato fields. About 2000 farmers, extension workers, cold store owners and state officials of different states were trained through these trainings.

- Dr. R.K. Arora, Principal Scientist, Central Potato Research Station, Jalandhar provided training on potato disease management to contract farmers of M/s Pepsico India Holding Pvt. Ltd from September 17 to 19, 2007 at Jalandhar, Patiala, and Khanna in Punjab. The training was attended by about 100 farmers at each location. The farmers were guided on identification and management of different potato diseases likely to occur during the ensuing crop season.



Farmers' meeting

- Drs. R.K. Arora and J.P. Singh, Principal Scientists, Central Potato Research Station, Jalandhar provided training to group of contract farmers of M/S Merino Industries Limited regarding the best cultural, manorial and plant



Training on potato cultivation

protection practices for growing a good crop of Chipsona-1 in Punjab. The trainings were organized at Khanna and Kamal during September 24-25, 2007 and were attended by about 60-70 farmers at each location.

- Syngenta India Ltd. took help of CPRI in organizing specific training on late blight management at Shimla to its officers and field workers. The programme was organized on 26<sup>th</sup> October 2007 and was attended by 25 trainees. The lectures were delivered by Drs. SK Pandey, ID Garg, PH Singh and RK Arora. Besides this, practical demonstrations were given on diagnosis of viral pathogens and identification and culturing of late blight pathogen.
- Dr. M Narayan Bhat, Sr. Scientist, CPRIC, Modipuram conducted a survey on assessing the severity of late blight in Karnataka during 13-19<sup>th</sup> August. He demonstrated the farmers about the identification of late blight disease in field and also explained its control measures in Hasan, Chikmangalore, Dharwad and Belgaum districts.
- Dr. VS Kushwah, Head, CPRS, Gwalior addressed about potato cultivation practices to a large group of farmers during Kishan Sangosthi at Jabalpur during 4-6<sup>th</sup> October, 2007.
- Drs. GS Kang and JP Singh, CPRS, Jalandhar addressed the farmers of Jalandhar in growers meeting on 23<sup>rd</sup> September, 2007.

- Drs. RS Marwaha and SV Singh trained group of cold store owners and managers regarding the post harvest handling and storage of potatoes in western Uttar Pradesh.
- Several other field trainings were also organized where scientists from Modipuram (Drs. SV Singh, Parveen Kumar and Dinesh Kumar) and Patna (Dr. RP Rai) imparted trainings on potato cultivation, protection and post-harvest management.

### On-farm demonstrations record better yield in Shillong

On-farm demonstrations carried out in 45 farmers' fields in eight villages of East Khasi Hills district to demonstrate the potential of improved package of practices in potato was a big success. On-farm trainings were organised to demonstrate the improved planting method and disease management. Kufri Giriraj used for the demonstration, recorded an average yield of 9.36 t/ha



On-farm demonstration of potato crop

while the local variety used by the farmers recorded only 2.47 t/ha. On an average 379% yield increase was achieved over the farmers' practice in these demonstrations. Farmers expressed their desire to follow the improved methods of potato cultivation.

### Potato exhibits at farmers fairs

The Institute put up an exhibition stall of potato technologies in the Kisan Mela organised by National Research

Centre for Mushroom, Chambaghat, Solan on September 10, 2007. The exhibition stall of CPRI was attended by more than 200 farmers from different parts of HP who were briefed about the potato technologies. A potato stall was put up during Horticulture Summit 2007 held at CISH, Lucknow between 16-19<sup>th</sup> June 2007. This summit was jointly organized by CISH and the Confederation of Indian Horticulturists and was attended by Drs. BP Singh, SV Singh, PC Pande and Anil Kumar of the Institute. Exhibition stalls were also put up by CPRS, Patna at the farmers fairs organized at IIVR, Varanasi, at RAU, Pusa, Samastipur and at Hazaribagh, Jharkhand. These endeavors proved worthy in getting first hand information from the farmers and transferring the potato technologies to them. Besides, a number of priced publications of the Institute were sold to the farmers and scientists visiting the stall.

#### Live phone-in programme on Doordarshan and All India Radio

Doordarshan and All India Radio organize 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) put their queries to the studio invited experts by phone calls. Drs. ID Garg, PH Singh, Anil Kumar and Ashwani Kumar Sharma from Shimla and Drs. Barsati Lal, Shambhu Kumar



DG, ICAR visiting CPRS, Patna stall at Varanasi

and Manoj Kumar from CPRS, Patna participated in these programme as experts during July to December, 2007 to discuss various aspects of potato production. Besides, field recording on seed treatment was also done at CPRS, Kufri by Shimla Doordarshan team in the month of October and was subsequently telecasted in November, 2007.

#### Activities of ATIC

Scientists, teaching staff, students and farmers from different parts of the country make visit to CPRI for acquaintance with potato research and for purchase of CPRI publications. A total of 45 scientists/teaching staff, 413 students of UG and PG and 183 farmers visited the Institute at Shimla during July to Dec., 2007. These visitors were shown a potato film and museum by the ATIC staff and extension scientist.

### Important Meetings

#### ICAR-CIP collaborative workshop on Crop Improvement

The workshop on ICAR-CIP collaboration on crop improvement was organized by Central Potato Research Institute and International Potato Center (CIP-SWCA), New Delhi at CPRI Campus, Modipuram, Meerut during 10-12<sup>th</sup> October, 2007. Forty two delegates from CIP, NARS representative from India and SWCA region attended the workshop. Dr. SN Pandey, ADG-Horticulture, ICAR inaugurated the workshop. He stressed the need for utilizing wild gene pool for developing varieties with high yield, multiple disease resistance and enhanced nutrient efficiency. The workshop had two components i.e. collaboration on crop improvement in India (potato breeding, quality seed production and use of GIS for potato R&D) and strategic plan for research for the collaboration on potato crop improvement in South West, Caucasus and Central Asia.

Dr SN Pandey chaired the deliberation on crop improvement in



#### Inauguration of the workshop

India. Dr SK Pandey, Director, CPRI, Shimla delivered a lead lecture on Potato Research and Development in India. Deliberation were held under three theme areas with presentations from experts on Potato Breeding by M Bonierbale, J Gopal, BH Girish, M Kadian, S de Haan and E Chujoy; Quality Seed Production by I Barker, ID Garg, VK Chandla and on Geographic Information System (GIS) for potato research and development by G Kumari and P Govindakrishnan. The draft work plans and activities for theme areas were prepared by the component groups on:

1. Development and evaluation of breeding materials to assess adaptation, and tolerance to abiotic stress and viruses.
2. Survey of vector and pathogen pressures in potato production areas of North-East regions of India.
3. Building spatial information resource on the spatio-temporal probabilities of biotic and abiotic stresses in potato crops in India, for effective targeting through crop improvement programs.

Dr Umesh Srivastava, ADG-Horticulture, ICAR chaired the deliberation on collaborative strategic research plan on potato improvement in South West, Caucasus and Central Asia. Dr Sarath Hlangantileke, Regional Director, CIP-SWCA presented CIP vision for conducting research and supporting partnerships on root and tuber crops and on natural resources management in mountain and other less-favored areas. M Hossain (Bangladesh),



DDG (H) releasing bulletin on potato

K Doe, K Nidup and Walter Roder (Bhutan), Khalid Farooq (Pakistan), M Nugaliyade (Sri Lanka), K Partoev (Tajikistan), Z Kodirova, Carlo Carli (Uzbekistan) delivered presentation for their respective countries. The strategic plans for potato research and development were developed for Bangladesh, Bhutan, India, Pakistan, Sri Lanka, Tajikistan, Uzbekistan and CIP.

Dr HP Singh DDG-Horticulture, ICAR chaired the plenary session of the workshop. The work plan of the collaborative project on potato breeding, quality seed production and use of GIS for potato research and development were presented and discussed. Dr HP Singh stressed the need for refining the screening methods for drought tolerance in potato and applying the marker assisted selection methods.

### 26<sup>th</sup> Group Meeting of AICRP (Potato)

26<sup>th</sup> Group Meeting of the All India Coordinated Research Project on Potato was organized at Rajendra Agricultural University, Pusa, Samastipur (Bihar) during September 7-9, 2007.

The meeting was inaugurated by Dr. HP Singh, Deputy Director General (Horticulture), ICAR, New Delhi and attended by Mrs. Ashwamegha Devi (MLA, Bihar), Shri Bilal Paswan (MLA, Bihar), dignitaries from ICAR, CPRI, RAU, AICRP delegates, farmers and representatives from potato based industries. In addition to 3 technical sessions on crop improvement, crop production and crop protection, there were two special sessions on "Action



Inauguration of the group meeting

Plan for Enhancing Potato Production in Indo-Gangetic Plains" and "ICAR *ad-hoc* projects".

On this occasion a Souvenir on "Potato Production and Utilization in India" and two AICRP (Potato) bulletins entitled "35 Years of AICRP (Potato)" and "Eco-friendly Approaches for Sustainable Management of Potato Pests" were released.



Release of souvenir at 26<sup>th</sup> Group meeting

Two improved potato hybrids viz., J/93-86 for cultivation in Indian plains and another SM/93-237 possessing resistance to late blight and suitable for cultivation in hills were recommended for commercial release. Besides, 7 cultural practices and 2 plant protection measures were recommended for efficient potato production in different parts of the country.

### ASRB member visited CPRI

Dr. NK Tyagi, Member, ASRB visited the Institute during 12-14 September, 2007 in connection with the conduct of interview of Heads of Divisions of CSWCR & TI, Dehradun and IISS, Bhopal. The other members of the interview team were Dr. PD Sharma,

ADG (Soil), Dr. CL Acharya, Ex-Director, IISS, Dr. PN Takkar, Ex-Director, IISS, Dr. JS Bali, Ex-Head, CSWCR&TI, Dr. UC Sharma and Dr. AC Gaur, Ex-Head, IARI. Dr. NK Tyagi and other members visited various laboratories and divisions at CPRI and CPRS, Kufri-Fagu farm. Dr. NK Tyagi also delivered a talk on "Water Management-Past, Present and Future" in the Scientists Meet.

### Stake holders meet to finalise the proposal for value chain on potato and potato products

A two day workshop of National Agricultural Innovation Project (NAIP) was held at CPRI campus, Modipuram on 3<sup>rd</sup> and 4<sup>th</sup> October, 2007 to deliberate and finalise the value chain on potato and potato products. The workshop was attended by all the stakeholders, viz., CIPHET, TERI, Govt. of Manipur, Merino Industries, Hapur, Haldiram Foods, Noida, Satnam Agro, Jalandhar, United phosphorus Limited, Mumbai and Bhatti Farms, Punjab.

The NAIP was represented by Dr. JP Mittal, National Coordinator, NAIP. Besides two outside experts, viz., Dr. DP Singh, Ex-ADG (Vegetable Crops) and Dr. PK Chattopadhyay, Ex-Professor, IIT, Kharagpur and Mr. Pradeep Raj from Sathguru foundation, Hyderabad also attended the workshop. Dr. SK Pandey, Director, CPRI, chaired the meeting on 3<sup>rd</sup> October where all the partners presented their respective programmes. Based on the discussions held, a consolidated proposal was prepared which was presented by Dr. BP Singh,



Discussions during NAIP meeting



Joint Director and Consortium Leader, on 4<sup>th</sup> October in front of all the participants and experts. The presentation was chaired by Dr. JP Mittal of NAIP. The value chain proposal was hailed by one and all and was approved for submission to NAIP as full proposal.



Meeting on value chain on potato

high spatial resolution remote sensing data. Agro-meteorological conditions play important role in determining the crop growth and yield, hence they will be considered at all the stages of crop growth. Land based observations will be an important input for classification of remote sensing data, determining model coefficient for crop growth simulation model and validation of the results.

The methodology developed using AWiFS (Advanced Wide Field Sensor) data of Indian Remote Sensing Satellite (IRS P6) and geographical information system for acreage estimates of potato by CPRI, Shimla in collaboration with SAC (ISRO), Ahmedabad will be used in the project for forecasting acreage of potato in the states of Punjab, Haryana, Uttar Pradesh, Bihar and West Bengal. CPRI will work with National Remote Sensing Applications Agencies (NRSA) on the operational aspects of winter potato acreage estimation in the North Indo-Gangetic plains. The research work on techniques development/refinement on use of remote sensing and GIS in acreage and production estimation of potato at national level will be continued by CPRI, Shimla in collaboration with SAC (ISRO), Ahmedabad.

#### RAC and IRC Meetings held at CPRI

The new research advisory committee has been constituted to advice on the on-going research programmes of the Institute. The committee consists of Dr. Mahadevappa Madappa as the Chairman and Dr. PC Gaur, Dr. AN Maurya, Dr. M Kalia, Mr. Prakash Lohia, Dr. SN Pandey, Mr. Devadatta J Nikam, Chaudhary Mann Singh and Dr. SK Pandey as the members with Dr. R Ezekiel as the member secretary of RAC. The committee met for the first time on 25<sup>th</sup> and 26<sup>th</sup> July, 2007 at CPRI, Shimla to critically evaluate the on-going research programmes of the Institute and suggested improvisations in them.

The RAC meeting was followed by the Institute Research Council (IRC) meeting between 27<sup>th</sup> to 29<sup>th</sup> July, 2007.

Dr. SK Pandey, Chairman, IRC and Director, CPRI presided over this meeting and suggested modifications in the research programmes of the institute taking care of suggestions given by the RAC.

#### IJSC Meeting

7<sup>th</sup> Institute Joint Staff Committee meeting was held at CPRI Campus, Modipuram on 18<sup>th</sup> September, 2007 under the chairmanship of Dr. SK Pandey, Director, CPRI, Shimla. Council side members Dr. BP Singh, Joint Director, CPRI Campus, Modipuram, Dr. SV Singh, Principal Scientist, Sh. AK Singh, Senior Administrative Officer, Mrs. Kamlesh Sharma, Account Officer, Mr. AD Sharma, AAO and Shri Avinish Kumar Attrey, Technical Officer attended the meeting. From staff side IJSC members Sh. YP Singh, Sh. Naresh Kumar Singh, Sh. Munna Lal Bharati, Sh. Roshan Lal, Sh. DD Kashyap, Sh. Mansha Ram and Sh. Raghuvir Singh also attended the meeting. Dr. GS Kang, Head, CPRS, Jalandhar was the special invitee for this meeting.

### Invited lectures & Visitors

#### DDG visits CPRS, Patna

Dr. HP Singh, DDG (Horticulture), ICAR, New Delhi visited CPRS, Patna on 24<sup>th</sup> July and 8<sup>th</sup> October 2007. During the visits he interacted with the scientists of the station and gave guidance for improvements in the on-going research



DDG (H) visiting CPRS, Patna

#### CPRI participated in the FASAL project flag-off Meeting

A meeting of members of collaborative agencies in the FASAL (Forecasting of Agricultural output using Space Agro-meteorology and Land based observations) project was held on 22<sup>nd</sup> August, 2007 at Space Applications Centre (SAC), ISRO, Ahmedabad. Dr. SK Pandey, Director and Dr. SS Lal, Head, Crop Production, CPRI, Shimla attended the meeting. This project has been approved by the Department of Agriculture and Co-operation, Govt. of India, New Delhi for its implementation. Space Applications Center (ISRO) has been identified to coordinate and guide development and implementation of remote sensing component of FASAL project. The operational work will be coordinated by National Remote Sensing Application Agency (NRSA), Hyderabad and techniques development will be taken up by the SAC in collaboration with other nodal agencies/institutions.

The main objective of FASAL project is to develop procedure to make in season multiple forecasts using data from different sources. Use of econometric and weather based models is proposed early in the crop season. It will be followed by high temporal and moderate spatial resolution and later on

work of the station. He also suggested improvements in the present activities of seed production and infrastructural facilities for laboratories, office and fields.

### Scientist meet at CPRI, Shimla

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

Date	Speaker	Topic of scientist meet
6.7.07	Neena Minhas	Antigen-antibody interaction and disorders of immune system
5.9.07	Scientist Trainees from NAARM	Geographical indicators for <i>pahari</i> potato
14.9.07	Dr NK Tyagi	Water management
12.10.07	Social Science	Screening of films on agriculture and allied fields
18.10.07	Dr Jai Gopal	IPR guidelines of ICAR
25.10.07	Dr J Horwath	Potato virus research in Hungary
16.11.07	AXIS bank	New avenues for investment

## Human Resource

### Promotions

Scientific		
	From	To
N.K. Pandey	Sr. Scientist	Principal Scientist
T.A. Joseph	Sr. Scientist	Principal Scientist
R. Roy Burman	Scientist	Scientist (SS)
Technical		
Ram Dayal	Supporting	T-1
Anil Kumar Dubey	Supporting	T-1
Mohan Lal	Supporting	T-1
Dev Raj	Supporting	T-1
Prithi Singh	Supporting	T-1
S. Nongrum	Supporting	T-1
Administrative		
Didar Singh	Asstt.	AAO
Rakesh Negi	Supporting	LDC
Raghubir Singh	Supporting	LDC
Naresh Kumar	Supporting	LDC
Supporting Staff		
Dhani Singh and D. Maukhleng	SSG III	SSG IV
Heera Singh, Adi Lal, Saran, Ramesh Kumar, Tellinora, K. Kharsyntielo, Komal Ram, Kumari Thapa and Sarju	SSG II	SSG III
Ram Parkash, Sukhwinder, Subhash, Hans Raj, Sompal, Jagai Ram, Krishan, Shiv Singh, Narayan Singh, Kailash, Ram Singh, Jagdish, Paramjit Singh, Ram Rattan, Shyam Singh, Parkash Tomar, Tara Chand and Kamal Singh	SSG I	SSG II
24 Staff members	Temporary	SSG I

### Transfers

Name	From	To
Rajesh K. Singh	CPRS Jalandhar	KVK, Lucknow
Daishey Tuly	CPRS Jalandhar	CPRS Gwalior

### Retirements

Name	Post	Retired on
R.S. Yadav	AAO	30.06.2007
Inder Deo	SS Gr III	30.06.2007
Shiv Dutt	T-5	31.07.2007
S.D. Chaturvedi	Asstt.	31.07.2007
V Ramamurthy	SS Gr IV	31.07.2007
Raj Ballam Dass	SS Gr III	31.10.2007

## Awards & Honours

### CPRI shines in sports

CPRI participated in ICAR North Zone inter institutional sports meet held at NDRI, Karnal during 26-29<sup>th</sup> September, 2007 in the Badminton, Table Tennis, Volleyball Shooting, Volleyball Smashing and Athletic events. CPRI won the north zone championship in Badminton and Table Tennis.

CPRI players of Badminton (Shashi Rawat, Sachin and Surinder) and Table Tennis (Vinay Bhardwaj and CM Bist) participated in ICAR inter zonal sports tournament held at IARI from 20-23<sup>rd</sup> November, 2007 and were runner-up in Badminton and Table Tennis events.



Team members of the sports team

## Future Activities

### Kisan Mela to be organised at Shimla

The institute will hold a Kisan Melas at CPRI, Shimla & CPRI, campus, Modipuram, Meerut in the first quarter of 2008 to disseminate the latest potato production, protection and post-harvest technologies.

## Potato Facts

### Saving the world with potatoes

The United Nations has declared 2008 as the International Year of the Potato (IYP). The year is aimed at increasing awareness of the potato as a food in developing nations, and promoting research and development of potato-based horticulture systems to help meet the UN's Millennium Development Goals. The UN wants to establish potato production in economically challenged countries in order to reduce hunger and poverty, to improve nutrition, and to promote sustainable biodiversity. The potato is known to be a staple food in diets everywhere. Up to 85 percent of the plant is edible human food compared to around 50 percent in cereals. Potatoes are also rich in carbohydrates, protein, vitamin C and important minerals like potassium.

A range of activities for 2008 are being planned around the world and New Zealand, the UK and Europe, Latin America, the US and Canada, South Africa, China, Russia and India are all participating.

*Source: Internet*

### Punjab's pest-free potato likely to head for Europe

Potato growers in Punjab could now export potatoes to European markets as the two-year research by the Punjab Agricultural University (PAU) has finally declared that potato production in

the state is pest-free. The findings of our research for establishing Pest Free Areas (PFA) indicate that the potato production in Punjab is completely pest-free," PAU, Head, Department of Plant Pathology, SK Mann told PTI here. PAU will now submit its report to the directorate of plant protection, quarantine & storage, for its approval which in turn would issue a phytosanitary certificate for the export of potato to European countries. Western Europe and the UK import large quantities of potato to meet their requirements in the months of January to April. Since Punjab's produce is ready by January, it can tap high paying markets by exporting its produce to these countries.

*Source: Internet*

### 'Healthy fries' - Can it be done?

Dutch institute for technological research TNO announced that it has developed a special technique to deep-fry French fries with steam. The new method cuts the amount of fat in French fries in half, TNO says. The discovery evolved from a different research subsidized by the Ministry of Economic affairs. The ministry had asked TNO to develop a method to deep-fry French fries in an energy-saving way. French fries are usually deep-fried twice.

*Source: Internet*

## Article on Potato

### Late blight Disease - Threat to Potato Cultivation

Late blight caused by a fungus like organism *Phytophthora infestans* has historically been an important disease of potatoes and tomatoes worldwide. In the mid 19<sup>th</sup> century, late blight caused wide spread crop failures throughout northern Europe including Ireland where it was responsible for the 'Irish famine'. Since then, it has spread far and wide to the extent that it now occurs wherever potato crop is grown. On overall basis, late blight causes losses over US\$ 3.25 billion in developing countries alone, while in

India, it inflicts losses up to 10% annually amounting to US\$ 0.5 billion. This disease is more severe in hilly regions where it appears in epiphytotic form every year while in sub-tropical plains it occurs in severe form once in 2-3 year. Conditions for late blight remains conducive in hilly regions throughout the cropping season but it is not so in sub-tropics where low humidity coupled with low temperature during winter generally do not permit late blight to reach severe proportions. However during the rabi season of 1985-86, 1997-98, 2004-2005 and 2006-2007 early out break of late blight epidemic led to severe crop losses ranging from 40-85%. During 2006-2007, the potato crop was badly hit by this disease in western UP, Punjab, Haryana, West Bengal, Bihar and Maharashtra leading to crop losses of over two million tons. The state of Punjab in particular has a special significance since it provides seed potatoes to almost all the non traditional potato producing areas in the country. Seed potatoes destined for other states from Punjab are likely to carry moderate to heavy load of inoculum of late blight which may initiate outbreak of this disease early in the season. This prophesy has come true in the case of Karnataka where crop losses up to 43% have been estimated during Kharif season in 2007.

### Pathogen population structure

*P. infestans* population has undergone drastic change during the last two decade. The new population was found to be more diverse having more pathotypes, carrying the new mating type (A<sub>2</sub>) and being resistant to metalaxyl. This population is more aggressive, caused widespread and frequent epidemics in Europe and both in North and South American countries. The new population has low latent period, can cause epidemic even at much wider temperature regimes (3 to 27°C) compared to old population (7 to 23°C) and requires wetness period of 3 h instead of 7 h. This has led to approximately 40% higher fungicide usage in Europe.



Symptom on leaf and stem

In India, the 'new population' ( $A_2$  mating type) was first reported from Shimla hills during early 90's. Since then, it has completely displaced the old population in almost all the hilly regions of the country. In the subtropical plains, although, new population was recorded in 1997 but it failed to displace the old population ( $A_1$  mating type) which is still the most dominant one. Introduction and wide spread use of metalaxyl based fungicides for managing late blight led to development and selection of metalaxyl resistant isolates. Although, metalaxyl resistance was recorded for the first time during 1988 in the Ooty hills, but it became a real threat during the last few years only in the country. During 2006-2007, 50% isolates showed resistance to metalaxyl making its further use redundant. Pathological specialization (races) within potato isolates of *P. infestans* was first reported by Schick in 1932 after almost 7 years of introduction of resistant hybrids/ potato cultivars having R genes. However, universal appearance of races, or at least their detection, did not occur until resistance genes from *S. demissum* were transferred to commercial potato, *S. tuberosum*. In India, more than 100 physiological races have been documented. Initially during 50's and early 60's, only simple races, 0 and 4 were prevalent. However with the introduction of germplasm carrying

major genes and their subsequent transfer to common cultivars led to selection of complex physiological races. Three to five gene complex races were recorded immediately after the release of Kufri Jyoti in the hills and within no time by the end of 1980, 7-8 gene complex races predominated in the hilly regions. As of now, only 7-11 gene complex races are prevalent in the hills and the plains which have the capacity to knock down most of the known major R genes and their combinations. Molecular characterization of *P. infestans* population revealed that hill population is distinct from the population occurring in the plains indicating that two populations have clonally multiplied independent of each other.



Symptom on tubers

Sexual bodies 'oospores' have been reported from almost all the potato growing regions of the world soon after the introduction the new mating type ( $A_2$ ) outside Mexico. Its implications have already been documented from almost all the countries in Europe. Possibility of sexual reproduction under Indian conditions has since been demonstrated. Oospores in India are able to survive and serve as primary source of the diseases both in the hills and the plains.

#### *Disease epidemiology*

*Congenial weather conditions for late blight*

Fungal growth	: 16-20°C
Spore production	: 18-22°C
Spore germination (indirect)	: < 14°C
Infection and disease development	: 0-22°C

For spore formation, germination and infection, saturated atmosphere (100 % relative humidity) is required whereas > 80% relative humidity is needed for lesion expansion. Cloudy and overcast conditions also favour late blight.

#### *Primary source of infection*

Late blight infected tubers stored in the country store (hills) and cold stores (plains) are the major source of infection in the country. Besides, refuse piles and volunteer plants also serve as primary source of disease in the hilly region. The infected seed tubers carrying late blight infection serve as primary source of the disease. The *P. infestans* spores get washed down from the infected plant parts to the soil / exposed tubers by rain / dew drops. The spores germinate and infect the exposed tubers. The germinated spores also reach the tubers lying in the upper part of the ridges and infect them. Under high disease pressure, especially under rainy condition, the tuber infection goes very high. Although, some of the infected tubers get completely rotted by the time crop is harvested but, still lot of tubers



**Field showing severe late blight infection**

carry incipient to few mm sized late blight lesions which do not attract the attention of the farmers during harvest and subsequent sorting and finds its way to the cold store / country store where they remain dormant but alive. These tubers if used as seed, become the source of infection of the disease in the next crop season.

#### ***Disease appearance and build-up***

Under congenial weather conditions (temp. 10-22°C; RH > 80%, intermittent rains, cloudiness), the late blight fungus becomes active in the infected seed tuber and colonizes, fast reaching the outer surface of the tuber where it sporulates. The resultant spores then infect the leaves touching the soil thereby initiating the disease. Within 3-4 days, the entire plant gets infected. Besides, sideways plants also get infected and within 7-8 days a 'disease focus' is formed which serves as the source of the disease. If the tuber infection is more, the number of such 'foci' will also be more which would hasten the pace of disease development. Normally, *P. infestans* spore dispersal is up to short distance but under congenial weather (>90 % RH and cloudiness) the spores may be carried to few kilometers as well. Under sun light, the spores get killed within an hour thereby stalling the disease progress.

#### ***Breeding strategy to combat new population***

Most of the potato varieties developed so far have been bred taking into consideration the prevailing *P. infestans* population of that location and

time. As already stated, pathogen population structure has undergone a sea change since then and therefore, breeding strategies including sources of resistance need to have a re-look. To start with, existing varieties should be re-evaluated against the current *P. infestans* population and any shift in resistance response from the original should be documented. Even the sources of resistance including diploid wild species should be tested employing the prevailing populations and a fresh catalogue on blight reaction be prepared. It has been observed that the new population is more aggressive, especially its colonizing ability is very high. Therefore, while breeding for blight resistance the tissue colonization should be given priority over other field resistance attributes/components. In essence, the germplasm firstly, needs to be evaluated for all resistance components and subsequently level of desired resistance component needs to be enhanced through parental line breeding. The other major difficulty in breeding for field resistance is the dilution of the resistance during process of breeding. This difficulty can be overcome by resorting to marker-assisted breeding approach. For this, QTLs for late blight resistance needs to be identified.

#### ***Integrated disease management***

*Use of healthy seed:* Only disease free seed should be used. Avoid seed from a field which has been infected by late blight in the previous year. At the time of planting also, sort out late blight infected tubers and bury them.

*Use of resistant cultivars:* Grow varieties which have moderate to high degree of resistance to late blight. Some of them are Kufri Giriraj, Kufri Shailja, and Kufri Himalini (for hills) and Kufri Pukhraj, Kufri Anand, Kufri Sutlej, Kufri Badshah, Kufri Arun, Kufri Jawahar, Kufri Chipsona-I, II and III (for plains).

*Disease forecasting:* Development of 'decision rules' for disease appearance,

buildup and spread are prerequisite for developing a Decision Support System (DSS) for applying need-based fungicides. The institute has already developed decision rules for the first appearance of late blight for hills and the plains. The models for predicting late blight development have also been developed. Yield loss assessment models have been standardized for both hills and plains. Above information is being utilized to develop a Decision Support System (DSS) for applying need-based fungicides.

*Cultural methods:* They are employed to reduce/eliminate the initial inoculum from the seed tubers/field and to check the spread of the disease. These include selection of well drained soils, high ridging to avoid exposure of infected seed tubers, scouting of the field for identifying primary infection foci and their destruction, checking the irrigation as soon as the weather conditions become congenial for late blight and destroy and remove the haulms from the field when the disease severity reaches > 80%.

*Chemical control:* A spray schedule of minimum of four fungicide sprays is recommended for managing late blight. However, the number of sprays may be increased or decreased depending on disease pressure. As a prophylactic measure, crop should be sprayed with contact fungicides like mancozeb 75% WP (0.2%), propineb 70% WP (0.2%) or chlorothalonil (0.2%) as soon as the weather conditions become congenial for late blight. On appearance of the disease, any of the systemic fungicides, viz., metalaxyl-based (0.25 %) or cymoxanil - based (0.3 %) fungicides should be applied. Thereafter apply contact fungicides within 8-10 days of 2<sup>nd</sup> application. Subsequently resort to systemic fungicides or contact fungicides as mentioned above depending on disease severity and weather conditions.

### Future thrust

'New Pathogen Population' is more challenging than the old one. Concerted and continued efforts are therefore required to manage it. Some of them would include:-

- Continuous monitoring of the pathogen population structure
- Cataloguing the shift in pathogen population structure and its usage in developing new breeding strategies
- Identification of new chemical molecules which can replace metalaxyl.
- Development of Decision Support System (DSS) for applying need based fungicides.
- Development of fungicide schedules which can manage the new population more effectively.
- Use of marker assisted breeding for developing field resistant cultivars.

-BP Singh and M Narayana Bhat

### Right to Food – A Human Right

It has been estimated that more than 852 million people throughout the world are chronically undernourished in spite of a record availability of food per capita in most of the countries and globally. Nearly 40,000 children die due to malnutrition and its diseases every day. The Universal Declaration of Human Rights of 1948 recognised the right of food as a human right. It was then incorporated in the Article 11 of the International Covenant on Economic, Social and Cultural Rights adopted in 1966 and ratified by 156 states, which are today legally bound by its provisions. The right to food was reconfirmed in the 1989 Convention on the Rights of the Child and in the 1996 World Food Summit. This right got an enormous boost in 2004 with the unanimous adoption of the Voluntary Guidelines on the Progressive Realisation of the Right to Adequate Food by the governing Council of the Food and Agriculture Organisation.

The Food and Agriculture Organization (FAO) has declared the theme of this year's World Food Day (16<sup>th</sup> October) as the 'Right to Food'. According to the UN Special Rapporteur, the right to food is the right to have regular, permanent and unrestricted access, either directly or by means of financial

purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensure a physical and mental, individual and collective, fulfilling and dignified life free of fear.

Thus, the right to food guarantees all people the ability to feed themselves. It contributes to a broader question of whether the people live in basic dignity. The right to food has five basic requirements:

1. **Availability:** Food must be available, either directly or by access to a well-functioning distribution, processing and marketing system that responds to the demand.
2. **Dietary needs:** Food must satisfy the dietary needs of the people. A diet consists of a mix of nutrients, calories, proteins necessary for physical and mental health.
3. **No adverse substances:** Food must be free from adverse substances hazardous for health. For this purpose, the government must set and enforce health and safety standards for food quality.
4. **Cultural acceptability:** Food must be culturally acceptable to the people, meaning it is necessary to take into account non-nutrient based values for judging the acceptability of food.

5. **Accessibility:** Food must be accessible, meaning it should be economically affordable and physically accessible.

#### Enforcement mechanisms

The right to food provides an example of the inter-dependency of human rights. The human right to food is part of the right to an adequate standard of living which entails the right to work, right to health and right to social security. The Govt. of India is already implementing several programmes like Mid-day Meal Scheme in Primary Schools, Antyodaya Anna Yojana, Swarnajayanti Gram Swarozgar Yojana, National Rural Employment Guarantee Scheme, etc. to strengthen people's access to food.

Implementation and enforcement mechanisms for the human right to food are not just any mechanisms that respect, protect and fulfill people's access to food. For example, it is not a question of merely having any food policy regimes, agrarian reform, employment guarantee schemes, minimum wages laws, welfare programs and social legislation, consumer protection, criminal codes, etc. These may facilitate enjoyment of the right to food and are part of states' obligations. What is fundamental is the concept of *guaranteed remedy*. Human rights are legal in nature, even if they are not implemented in positive law.

The rights-based approach is a key tool in the pursuit of the internationally agreed Millennium Development Goals, aiming at the eradication of extreme poverty and hunger. These goals target for the year 2015 for reducing by half the proportion of people living on less than 1 dollar a day, and halving the proportion of people who suffer from hunger. The rights-based approach to food security has a further legal dimension in that governments have a legal obligation progressively to enable all individuals within their borders not merely to be free from hunger but to produce or procure, in ways that are fully consistent with their human dignity, food that is adequate for an active and healthy life.

-Anil Kumar

## हिन्दी समाचार

### हिन्दी चेतना मास 2007

संस्थान में 14 सितम्बर से 13 अक्टूबर, 2007 के दौरान हिन्दी चेतना मास का आयोजन किया गया। उद्घाटन समारोह के अवसर पर हिमाचल प्रदेश सरकार के विभागाध्यक्ष के संपादक डा. तुलसी रमण बतौर मुख्य अतिथि उपस्थित हुए। संस्थान के निदेशक डा. सुमन कुमार पाण्डेय ने कार्यक्रम की अध्यक्षता करते हुए संस्थान की गतिविधियों और उपलब्धियों की जानकारी दी। अपने संबोधन में उन्होंने कहा कि ये प्रसन्नता की बात है कि संस्थान दिन-प्रतिदिन प्रगति के पथ पर अग्रसर है और संस्थान में हिन्दी का अच्छा काम हो रहा है। हाल ही में प्रकाशित बीज आलू का उत्पादन (सिद्धान्त एवं कारक) नामक पुस्तक बीज आलू का उत्पादन करने वाले किसानों व प्रसारकर्ताओं के लिए मार्गदर्शन का कार्य करेगी। इस कड़ी में आलू विधायन मार्गदर्शिका और गह्वे व ठेरो में आलू का भण्डारण नामक दो हिन्दी बुलेटिन प्रकाशाधीन हैं। उन्होंने बताया कि यह वर्ष की बात है कि माननीय संसदीय राजभाषा समिति की आलेख एवं साक्ष्य उप समिति ने संस्थान का दौरा किया और माननीय सांसदों ने हिन्दी में हो रहे कार्यों की सराहना की। आगे बोलते हुए उन्होंने कहा कि हमें

संस्थान में हिन्दी पत्राचार बढ़ाने की दिशा में निरन्तर प्रयत्नशील रहना चाहिए ताकि आने वाले समय में हम निर्धारित लक्ष्य को प्राप्त कर सकें।

हिन्दी चेतना मास के दौरान हिन्दी निबन्ध, हिन्दी नोटिंग एवं ड्राफ्टिंग, कम्प्यूटर पर हिन्दी टाइपिंग, एक सिक्के के दो पहलू व प्रश्नमंच जैसी कई प्रतियोगिताओं का आयोजन किया गया, जिसमें संस्थान के हर वर्ग के कर्मचारियों ने बढ़-चढ़कर भाग लिया। इस वर्ष कम्प्यूटर पर हिन्दी में काम करने का अभ्यास देने के लिए एक दिवसीय कार्यशाला का आयोजन भी किया गया जिसमें स्थानीय यूको बैंक के प्रबन्धक श्री प्रदीप चतुर्वेदी ने कर्मचारियों को कम्प्यूटर से संबंधित महत्वपूर्ण जानकारी दी।

राजभाषा समारोह व पुरस्कार वितरण कार्यक्रम का आयोजन 15 अक्टूबर, 2007 को किया गया। इस अवसर पर आकाशवाणी शिमला के केन्द्र निदेशक श्री तेज कृष्ण रावल बतौर मुख्य अतिथि उपस्थित हुए। संस्थान के सहायक निदेशक (राजभाषा) श्री प्रवीण चांदला ने जनसभा को संबोधित करते हुए उन्हें भारत सरकार की राजभाषा नीति व उसके कार्यान्वयन की जानकारी दी। समारोह का समापन वरिष्ठ प्रशासनिक अधिकारी श्री अनिल कुमार सिंह के धन्यवाद प्रस्ताव के साथ हुआ।

### मोदीपुरम परिसर में हिन्दी पखवाड़ा

भारतीय कृषि अनुसंधान परिषद् के निर्देश पर कर्मियों को हिन्दी में कार्य करने के लिए प्रोत्साहित करने के उद्देश्य से 14-29 सितम्बर, 2007 के दौरान संस्थान के मोदीपुरम परिसर में 'हिन्दी पखवाड़ा' मनाया गया।

कार्यक्रम का शुभारम्भ संस्थान के संयुक्त निदेशक डा. बीरपाल सिंह के

कर-कमलों द्वारा हुआ। अपने संबोधन में उन्होंने परिसर में कर्मचारियों/अधिकारियों से अधिक से अधिक सरकारी कामकाज हिन्दी में करने का आह्वान किया। इस अवसर पर पहले दिन वाद-विवाद प्रतियोगिता आयोजित की गई, विषय था, 'युवा पीढ़ी में बढ़ती अनुशासनहीनता के दोषी युवा या अभिभावक'। विषय के पक्ष विपक्ष में प्रतिभागियों ने अपने विचार व्यक्त किए। पन्द्रह दिन तक चलने वाले इस कार्यक्रम में निबन्ध, कम्प्यूटर पर हिन्दी टाइपिंग, सामान्य ज्ञान पर प्रश्नमंच, नोटिंग एवं ड्राफ्टिंग, कवितापाठ, आलू पर लिखित सामान्य ज्ञान व चतुर्थ श्रेणी के लिए इमला लेखन प्रतियोगिता का आयोजन किया गया।

कार्यक्रम का समापन कविता पाठ प्रतियोगिता के साथ हुआ जिसमें विजेताओं को सम्मानित किया गया। पुरस्कार पाने वालों में श्री मैराजुल हक, श्री दिनेश सिंह, श्री राजेश कुमार, श्री ऋषिपाल, श्री अशोक कुमार आदि प्रमुख रहे।

### ऊटी केन्द्र में हिन्दी पखवाड़ा

संस्थान के ऊटी स्थित केन्द्र में 14-30 सितम्बर, 2007 के दौरान नगर राजभाषा कार्यान्वयन समिति के तत्वाधान में हिन्दी पखवाड़ा मनाया गया। इस अवसर पर हिन्दी कविता पाठ प्रतियोगिता का आयोजन किया। ऊटी केन्द्र के स्टाफ को प्रोत्साहित करने के लिए विशेष तौर पर हिन्दी का प्रयोग प्रतियोगिता आयोजित की गई। इस अवसर पर संस्थान के मुख्यालय से डा. सरजीत सिंह बतौर मुख्य अतिथि उपस्थित थे। उन्होंने अपने अभिभाषण में हिन्दी के महत्व और उसकी आवश्यकता पर बल देते हुए केन्द्र की हिन्दी समिति द्वारा किए गए कार्यों की सराहना की।



निदेशक महोदय का संबोधन

## पटना, जालन्धर, शिलोंग व ग्वालियर केंद्रों में हिन्दी पखवाड़ा

संस्थान के पटना, जालन्धर, शिलोंग व ग्वालियर केंद्रों में भी हिन्दी पखवाड़ा के अवसर पर निबंध, कविता पाठ, कहानी व भाषण जैसी प्रतियोगिताओं का आयोजन किया गया। इस मौके पर प्रथम व द्वितीय स्थान पाने वाले प्रतिभागियों को पुरस्कृत किया गया। अपने अभिभाषणों में इन केंद्रों के केन्द्राध्यक्षों ने कर्मचारियों से अधिक से अधिक सरकारी कामकाज हिन्दी में करने का अनुरोध किया।

## प्रोत्साहन योजना

राजभाषा विभाग, गृह मंत्रालय, भारत सरकार की प्रोत्साहन योजना के अन्तर्गत हिन्दी में अपना सरकारी कामकाज करने वाले कर्मचारियों को हिन्दी चेतना मास के अवसर पर नकद पुरस्कार देकर सम्मानित किया गया। इस क्रम में संस्थान के ग्वालियर केंद्र के श्री दलजीत सिंह व श्री तेज सिंह को प्रथम तथा मुख्यालय शिमला के श्री जोगिन्दर प्रसाद व जगदीश चन्द को द्वितीय

और श्रीमती मीना वर्मा, नरेन्द्र कुमार सूद व श्रीमती कान्ता रानी को तृतीय पुरस्कार देकर सम्मानित किया गया।

## प्रशिक्षण कार्यक्रम

केन्द्रीय हिन्दी प्रशिक्षण संस्थान, नई दिल्ली द्वारा हिन्दी में कम्प्यूटर का आधारभूत ज्ञान के अन्तर्गत संस्थान के मुख्यालय से श्री हंस राज, कनिष्ठ लिपिक ने चण्डीगढ़ में आयोजित प्रशिक्षण कार्यक्रम में भाग लिया। इसी प्रकार 5 पूर्ण दिवसीय गहन हिन्दी कार्यशाला में संस्थान के ग्वालियर के श्री संजय कुमार शर्मा व श्री राकेश सिंह तथा जालन्धर केंद्र की श्रीमती संध्या कपिला और पटना केंद्र के श्री हरेकृष्ण सेन ने भाग लिया।

## दीपावली मेला

दीपावली के पुनीत अवसर पर संस्थान के स्टाफ वेलफेयर एसोसिएशन के तत्वाधन में दीपावली मेला आयोजित किया गया। मेले का उद्देश्य था स्टाफ और उनके परिवार के लोग आपस में

मिल-जुलकर मनोरंजन करें। इस मौके पर खाने-पीने के कई स्टाल लगाए गए और विभिन्न खेलों का आयोजन किया गया। जहां एक ओर सभी ने तम्बोला खेला वहीं दूसरी ओर पुरुषों की रस्सा-कसी, बच्चों की फैंसी ड्रेस, पेंटिंग, सुई-धागा प्रतियोगिता आकर्षण का केन्द्र रहीं। इस अवसर पर लकड़ी झा भी निकाला गया।



दीपावली मेले में मुख्य अतिथि व अन्य

कार्यक्रम का उद्घाटन श्रीमती नीरजा पाण्डेय के कर-कमलों द्वारा हुआ। बतौर मुख्य अतिथि उन्होंने सभी विजेताओं को पुरस्कार वितरित किए। कार्यक्रम का संचालन एसोसिएशन के सचिव डा. मिलाप चन्द सूद ने किया।

*Printed :*

December 2007 (500 copies)

*Editorial Committee :*

Brajesh Singh, Anil Kumar, Avnish Atrey

*Published by :*

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*Printed at :*

Nirmal Vijay Printers, New Delhi-110 028; Phones : 25891449, 45576780 Mobile : 9811053617