

# FUTURE FRONTIERS

A Quarterly Newsletter of the Punjab State Council for Science & Technology

Our Vision  
"To Harness the Potential of Science & Technology as an Instrument of Socio-Economic Change"

## Editorial

In 2016 also, keeping up with our tradition, we celebrated the year ending with congregation of science students & teachers from all over Punjab. They had gathered to share experiences of working on science projects under Children Science Congress. Their energy and enthusiasm to unravel the mysteries of science was infectious. It is heartening to share that out of 121 projects that reached the State Level after rigorous evaluations at District level competitions, 86 were from rural areas.

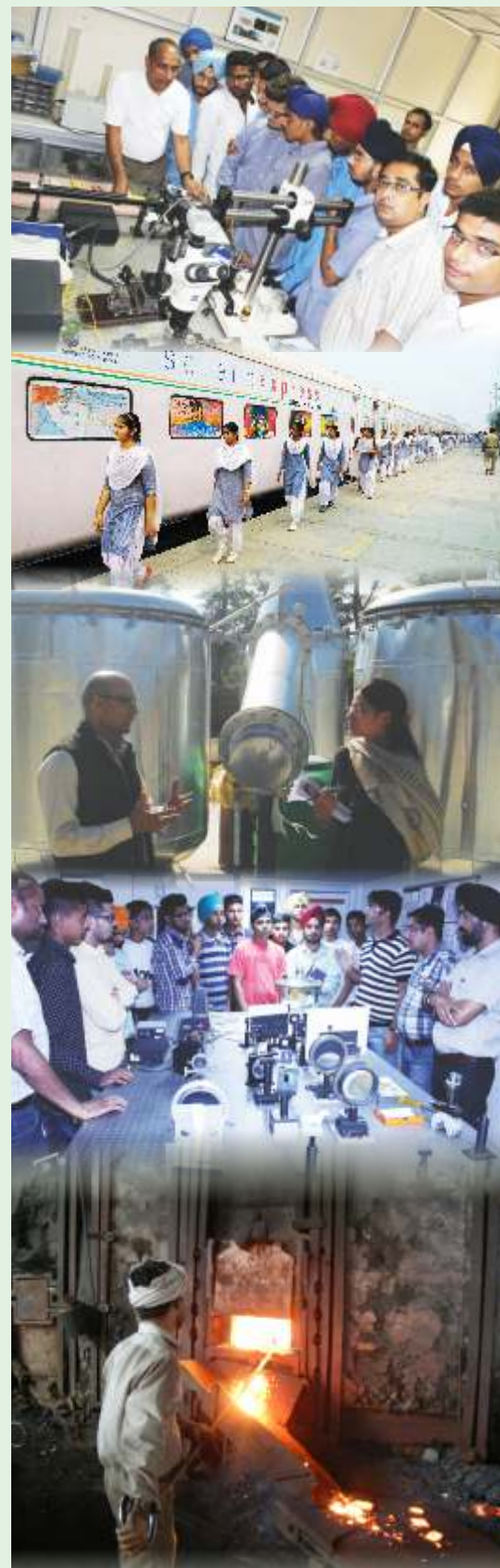
We also continued impacting the rural areas through S&T interventions for economic empowerment. Here, I would like to make a special mention of our initiatives in the Kandi area. Through sustained efforts, PSCST has been able to demonstrate cultivation and processing of aromatic crops in undulating, rain fed blocks of Kandi. The Council is also promoting value addition of local bio-resources in this region through polyhouse based solar drying as well as through fermentation route. Further, we collaborated with PAU for development & demonstration of biofertilizer consortium for summer moong bean.

I am also glad to share that due to PSCST's vast experience in brick sector, UNDP had entrusted upon us the responsibility of demonstrating resource efficiency in this sector. As Local Resource Centre of UNDP, we had facilitated setting up of four resource efficient brick (REB) manufacturing units in the region during 2009 to 2011. To give a phillip to this initiative, in 2015, UNDP assigned another project to us, under which we have prepared investment plans for 25 REB units. Out of these, two have already been commissioned and one is near completion. Besides clay and fuel savings, this endeavor would go a long way in reducing the GHG emissions.

We also took up several activities for promoting IPR protection and management. In the new year, we look forward to work in tandem with Department of Industrial Policy and Promotion, Govt. of India for implementation of recently released National IPR Policy in the State of Punjab and Union Territory of Chandigarh.

I wish the readers a Happy 2017.

**(Jatinder Kaur Arora)**



## State Level Essay Writing Competition-2016

To discover scientific talent and encourage students to think on broader aspects of science and technology, the Council organizes **Science Essay Writing Competition** every year for the children of Punjab in the age group of 12-16 years. This activity is taken up under National Science Day Celebrations. The Competition is organized at district and state levels. For the year 2016, the topics for competition (in English & Punjabi) were:

- 1.) Mysteries of Science and Technology
- 2.) Teaching Science in the 21<sup>st</sup> Century
- 3.) Make in India- S&T driven Innovations
- 4.) Indian Women in Science & Technology Careers

The Competition at the District Level was organized through District Science Supervisors. The best two entries from each district were evaluated by a panel of judges of Punjabi University, PAU & SISE, Punjab at the State Level Competition held on 4<sup>th</sup> November, 2016 at Chandigarh and the best four entries in both languages were chosen for cash prizes. The results of the State Level Competition were as under:-

| English               |  |
|-----------------------|--|
| 1 <sup>st</sup> Prize | Ms. Nandini, Holy Heart Presidency School, Amritsar                            |
| 2 <sup>nd</sup> Prize | Ms. Simratpal Kaur Gill, Dasmesh Public School, Faridkot                       |
| 3 <sup>rd</sup> Prize | Ms. Nitya Narang, Bhawans SL Public School, Amritsar                           |
| Consolation Prize     | Mr. Akashdeep Singh, Govt. Sen. Sec. School, Kuian Sarwai, Fazilka             |
| Punjabi               |  |
| 1 <sup>st</sup> Prize | Ms. Kiranpreet Kaur, Mussorrie International Public Sen. Sec. School, Amritsar |
| 2 <sup>nd</sup> Prize | Ms. Narinder Kaur, Govt. Sen. Sec. School, Wazirpur, Patiala                   |
| 3 <sup>rd</sup> Prize | Ms. Navseerat Kaur, Baba Farid Public School, Faridkot                         |
| Consolation Prize     | Mr. Amrinder Singh, Govt. Sen. Sec. School, Gajju Majra, District - Patiala    |

## State Level Children's Science Congress-2016

The National Children's Science Congress (NCSC), initiated in 1993, is a flagship program of National Council for Science and Technology Communication (NCSTC), DST, Govt. of India. It is aimed at inculcating the spirit of scientific investigation among science students of 10-17 years of age. PSCST is the nodal agency of DST, GOI for organizing Children's Science Congress (CSC) in Punjab since the last 24 years. Each year, the Council coordinates organization of District level Children's Science Congress followed by State Level CSC. From the State Level, 16 projects are selected for participation in the National Level CSC.

The focal theme for NCSC 2016 was '*Science, Technology & Innovation for Sustainable Development: With Special Emphasis on Accessibility for Persons with Disability*'. This year, the State Level CSC was organized on 26<sup>th</sup> to 28<sup>th</sup> November, 2016 at Chitkara University, Rajpura. The event

witnessed the participation of 574 students and 135 teachers. A total of 121 projects were presented, out of which 86 projects were from rural areas and 37 from urban areas. On the first two days, project presentations were made and the participating children and teachers were also kept engaged by Activity Corners set up by Resource Persons (RP) from various schools of the state on Science behind Miracles (RP- Ms. Puja Goyal); Mathematics and Geometry Module (RP- Sh. Gurmeet Singh); Science & Mathematics Teaching Aids (RP- Sh. Jaswinder Singh); Low Cost Science Teaching Aids (RP- Sh. Sanjeev Sharma) and Posters on Environment & Forests (RP- Sh. Jugraj Singh Rathore, DFO, Patiala). Following 16 projects were selected from the state for participation at the National level CSC-2016:

| Position        | Name of Group Leader | Name of the School   | Topic  |
|-----------------|----------------------|--|--|
| Senior Category |                      |  |  |
| 1 <sup>st</sup> | Pranit Badhwar       | DAV Public School, Amritsar                                | Revolution by Evolution: Bio-Plastic   |
| 2 <sup>nd</sup> | Vanshika Kaushal     | BCM Arya Model Sen. Sec School, Ludhiana                   | Effect of Blended Oils, Stevia, Bael on Lifestyle Diseases                       |
| 3 <sup>rd</sup> | Satgur Singh         | Govt. Sen. Sec. School Chhajli, Sangrur                    | Development of low-cost Domestic Grey-Water Treatment System                     |
| 4 <sup>th</sup> | Neha                 | Govt. Sen. Sec. School Nandpur Kesho, Patiala              | Different techniques to save Electric Energy                                     |
| 5 <sup>th</sup> | Nitya                | Bhavan's SL Public School, Amritsar                        | To study the effect of Electric and Magnetic Field on the growth of Plants       |
| 6 <sup>th</sup> | Sana Vohra           | Delhi Public School, Ludhiana                              | To study the emerging epidemic of Childhood Obesity                              |
| 7 <sup>th</sup> | Anmol Salhvi         | Bhagwan Mahaveer Public Sen. Sec. School, Banga, SBS Nagar | Livelihood in Slums: Problems and Solutions                                      |
| 8 <sup>th</sup> | Gagandeep            | Govt. Girls Sen. Sec. School, Abohar, Fazilka              | Impact of life-style and livelihood on the Sustainability of Environment         |
| Junior Category |                      |  |  |
| 1 <sup>st</sup> | Komal                | Govt. High School, Mehta Kapurthala                        | Development of eco-friendly energy efficient instant Water Heating System        |
| 2 <sup>nd</sup> | Gagandeep Kaur       | Govt. High School, Dasgrain, Ropar                         | Different ways to improve soil health for better agricultural production         |
| 3 <sup>rd</sup> | Adamyaveer Jain      | Bhagwan Mahaveer Public Sen. Sec. School, Banga, SBS Nagar | Lifestyle of Sweepers, Labourers and Traffic Controllers: Problems and Solutions |

|                 |                 |   |  |
|-----------------|-----------------|---|--|
| 4 <sup>th</sup> | Gurpreet Kaur   | Govt. Girls Sen. Sec. School Ajnala, Amritsar           | Zero Budget Eco-friendly Farming - An alternative way to chemical fertilizers and pesticides |
| 5 <sup>th</sup> | Sudhanshu Kumar | Army Public School, Kandrori, Pathankot                 | Soil Conservation  |
| 6 <sup>th</sup> | Prabhdeep Singh | Govt. Sen. Sec. School Naushehra Majja Singh, Gurdaspur | Pulses for Sustainable Agriculture   |
| 7 <sup>th</sup> | Parveen Kaur    | Govt. Sen. Sec. School, Dialpur Mirza, Bathinda         | Analysis of soil and ground water quality and its sustainable conservation                   |
| 8 <sup>th</sup> | Irshad Ali      | Govt. High School, Madhir, Sri Muktsar Sahib            | Fertilizers from Polluted Air  |

Dr. Jatinder Kaur Arora, Executive Director, PSCST, while giving away the prizes to state level winners, urged them to contribute to the society by developing and promoting scientific temperament. Dr. Madhu Chitkara, also encouraged the participating students and shared information on S&T innovation developed by Chitkara University.



**Glimpses of State Level CSC-2016**

At the National Level CSC-2016 held at VIIT, Baramati (Maharashtra) from 27<sup>th</sup>-31<sup>st</sup> December, 2016, 16 students, 5 teachers and 2 coordinators from Punjab participated. Around 650 projects were presented and 700 children attended the event including 647 from India, 53 overseas - 42 from ASEAN and 11 from the Gulf Countries.



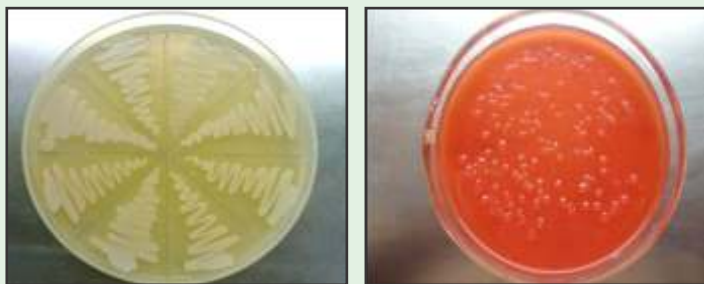
**Punjab Contingent at National Level CSC-2016**

## Development and Validation of Microbial Consortium for growth & promotion of summer mungbean in rice-wheat system in Punjab

The summer mungbean cultivation is being promoted in the state of Punjab as being short duration (of 60 days), it fits easily as intermittent crop between the wheat harvest and rice transplantation. Its cultivation as cash crop is giving boost to pulse production in the state. Further, being a legume, it restores soil fertility through biological nitrogen fixation. To enhance productivity of summer mungbean, PSCST and PAU had jointly taken up a project for development and promotion of a consortium of nitrogen fixing Rhizobium and Plant Growth Promoting Rhizobacteria (PGPR). This project was supported by DST-GOI for 3 years and has got completed in October, 2016.

Under this project, 23 strains of rhizobia and 52 strains of PGPR were isolated from rhizospheres of wheat-mungbean-rice cropping system of Punjab. On the basis of multifunctional PGP traits viz. P and Zn solubilization, Siderophore, IAA, ACC deaminase and HCN production, 4 potential strains (1 Rhizobium sp. & 3 PGPRs) were selected. These promising bio-inoculants were tested for single window delivery system using charcoal based carrier and its shelf life was studied. The scientific trials were conducted for evaluation of developed consortia for growth and symbiotic parameters in recommended varieties of summer mungbean. Demonstration trials were carried out to validate the developed technology at farmers' fields.

On the basis of growth and symbiotic parameters recorded during scientific & demonstration trials in summer mungbean varieties, the efficient strains for dual inoculation have been identified on molecular basis (Rhizobium and Stenotrophomonas maltophilia) and deposited in National Centre for Biotechnological Information, Maryland USA. The Research Evaluation Committee (REC) of PAU has recommended this dual inoculant in 2016 for use as biofertilizer consortium by farmers in summer mungbean. To popularize it among farmers, awareness programs cum field days were organized in adopted villages - Galib Khurd, Ludhiana and Mehtabgarh, Fatehgarh Sahib. The Resource Persons included Dr. Poonam Sharma, (Senior Microbiologist); Dr. T.S. Bains, (Senior Plant Breeder); Dr. Ravinder Singh, (Senior Entomologist); Dr. Harpreet Virk, (Assistant Agronomist) and Dr. Asmita Sirari, (Assistant Plant Pathologist) from PAU; Dr. Maninder Kaur, (Asth. Prof.-Agronomy); Dr. Reet Verma, (Asth. Prof., Plant Protection); Dr. Arvindpreet Kaur (Asth. Prof., Horticulture); Dr. Rampal, (Deputy Director) from KVK, Fatehgarh Sahib and Dr. Dapinder K. Bakshi, (PSO-Biotechnology, PSCST).



**Diversity of PGPR & Rhizobia in summer mungbean**



**Scientific pot trials uninoculated control Vs. Inoculated with biofertilizer consortium**

## Demonstration & promotion of technoeconomically viable options for sustainable livelihood generation in Kandi area of Punjab -Promoting Sericulture & Value-addition of local Bioresources

### (i) Field Demonstration of Cultivation & Processing of selected Aromatic Crops in Dhar Block

An end-to-end demonstration project for sustainable livelihood generation has been successfully implemented in Dhar block (Kandi Area) of District Pathankot by the Council in collaboration with Kelkar's Science Research Centre (KSRC), PAU's Regional Research Station, Gurdaspur and Unati Cooperative Society. The block being in Shivalik foothills has been categorized as backward area of the state as it yields low agricultural productivity due to various environmental and ecological constraints viz. undulating topography, rain-fed ecosystem, poor soil health, animal attack on agricultural crops and lantana infestation. The agricultural income is too less to sustain the livelihood of farming community. As the region has potential for cultivation of medicinal and aromatic plants, the said project was initiated with the mandate to evaluate performance of elite varieties of selected aromatic crops in farmers fields, set-up farm scale distillation units for value addition and essential oil extraction, arrange marketing tie-ups for buy back of essential oils and standardize agro technologies for optimal yield production under local conditions.

During five year tenure of this project, scouting of various villages, extensive field visits & interactions with local farmers and development agencies of Dhar block were carried out by project team for identification of potential project clusters and farmer beneficiaries. The nurseries of selected aromatic

crops viz. *Cymbopogon flexuosus* (lemongrass), *Cymbopogon winterianus* (citronella) & *Cymbopogon martinii* (palmarosa) were raised at farmers' fields in adopted villages. The area being rain-fed, phase-wise aromatic crop cultivation was carried out at 73.5 acres farmer's fields involving 10 villages of Dhar block, out of which 53.5 acres plantation got successfully established. The complete hand holding on cultivation and harvesting operations viz. land preparation, transplantation of aromatic slips, farm chemical inputs, spacing, irrigation, deweeding, bioresource harvesting, drying, collection and transportation was provided and regular onsite monitoring carried out. Three farm scale distillation units including 2 Steam Distillation Units were set up at farmers' fields for essential oil extraction. Total of 90 programs including awareness programs, farmer contact programs, hands-on-trainings, exposure visits and a District level workshop were organized which led to sensitization of about 1000 farmers. The marketing tie-ups for buy back of aromatic oil generated by adopted farmers have been arranged. The project has started making visible impact in the region as the fields in the kandi area have started yielding revenue to farmers which otherwise were yielding negligible returns earlier. Seeing the success of project, the farmers from adjoining areas of kandi region have also approached the Council for technological know-how. The district administration has also shown keen interest in promoting cultivation of aromatic crops due to their viability in the kandi region.



**Biomass loading in distillation unit for essential oil extraction**



**Signing of MoUs for buyback of aromatic oil with farmers by KSRC & Unati**

## (ii) Promotion of Sericulture & Value-addition of Bioresources

The kandi area holds strategic importance due to vast natural forest cover and rich biodiversity, which can be optimally utilized using location specific technologies for sustainable development of the area. Keeping in view the strength of this region, following S&T inter-relations have been made. A project has been taken up with support of DST-GOI to demonstrate 3 techno-economical viable technology packages viz. mulberry sericulture, natural vinegar production & polyhouse solar drying for natural bioresources.

The mulberry sericulture technology is being promoted in Dhar block of district Pathankot in collaboration with State Sericulture Department, Directorate of Horticulture and Central Sericulture Board. Under this, 50 beneficiaries have been adopted and trained in 3 selected clusters i.e. Sarti, Bhatwan & Langer. The support has been provided to adopted farmers in form of bivoltine silkworm seed and quality mulberry saplings for plantation. The requisite forward and backward linkages have been provided and various cultural operating parameters viz. rearing of adult larvae, feeding intervals, ambient conditions for larvae rearing etc. are being regularly supervised. Besides, regular awareness-cum-training programs are being conducted and exposure visit of adopted farmers to Regional Sericulture Research Station, Dehradun was also organized where they were exposed to latest advancements pertaining to rearing & harvesting of silk worm larvae, cocoon production, plantation and techniques for management of mulberry cultivation.



*Training-cum-exposure visit of progressive farmers from Dhar block to Regional Sericulture Research Station, Dehradun*

The natural vinegar production technology is being promoted in districts Hoshiarpur & Ropar in collaboration with Punjab Agricultural University. Awareness programs (7 nos.) on benefits and economic feasibility of technology have been organized in villages Handowal, Shekhowal, Nurpurbedi, Ramgarh, Nila Naloya, Fatehpur & Beh Darian of these districts. The self help groups selected from the said villages have been trained on complete technology protocol and handholding has been provided for initiation of vinegar

production by adopted self help groups. Further, R&D work w.r.t. semi-continuous production of vinegar from several local bioresources of kandi area is under progress at PAU.

The value addition of local bioresources using poly house based solar drying is being promoted in Talwara block in collaboration with Unati Cooperative Society. The survey of 30 villages in Talwara block has been completed to assess the availability of natural bio-resources in the region, and the farmers have been sensitized on the benefits of this technological intervention. A Forced Circulation Solar Dryer (FCSD), has been successfully set up and operationalized at Talwara with technical support of School of Energy Studies for Agriculture, PAU and the trial runs have been completed. R&D studies for optimization of Standard Operating Procedures for bioresource drying are underway at PAU.



*Forced Circulation Solar Dryer set up at Talwara and trial runs in progress*

## UNDP and MoEFCC-GOI supported Resource Efficient Bricks (REBs) manufacturing plant commissioned at Sonipat, Haryana

In India brick kilns constitute one of the largest MSME sub-sectors. The Indian brick industry is highly resource intensive, seasonal and characterized by using inefficient and labour intensive manufacturing practice. UNDP-GEF has launched a project on “Energy Efficiency Improvements in Indian Brick Industry” with an aim to address key barriers related to modernization of Indian brick sector and reduce the energy consumption and restrict GHG emissions by promoting and facilitating the production of Resource Efficient Bricks (REBs) such as hollow/ perforated clay bricks. The switch over from solid brick manufacturing to REB would lead to clay and fuel saving of around 20-50%, depending upon percentage perforation.

The REBs will replace conventional brick hand moulding process. In the mechanized clay preparation process, the clay is subjected to grinding and mixing process wherein 10-15% water is mixed into the clay to produce plasticity. The tempered clay after pugging, goes through a de-airing chamber wherein excess air and water is removed using a



**Team from UNDP, MoEF&CC & PSCST at Ganesh Bhatta Co. , Sonipat, Haryana**

vacuum pump, giving the clay increased workability and plasticity, resulting in greater strength. Next, the clay is extruded through a die to produce a column of clay. As the clay column leaves the die, an automatic cutter slices the clay column to create the individual brick. the cutter spacing and die sizes are opted in such a way to compensate for normal shrinkage that occurs during drying and firing.



**Flow-diagram for REB Production**

Ministry of Environment, Forests & Climate Change (MOEF&CC), Govt. of India is the executing agency of the project and PSCST was identified as Local Resource Centre (LRC) for the northern States. During the period 2009 to 2011, PSCST conducted road shows and awareness workshops for brick manufacturers, builders, architects and officers of government construction departments on benefits and use of resource efficient walling material. As a result of sustained efforts of PSCST, four REB manufacturing facilities were set up at Ludhiana, Dera Bassi, Hoshiarpur (Punjab) and Tohana (Haryana).

Hence in 2015, UNDP assigned another project to PSCST with a mandate to support setting up of 3 more REB units in the northern States besides preparation of 25 investment plans for the entrepreneurs interested in setting up of REB units in the near future. PSCST identified 29 entrepreneurs from the region after inviting Expression of Interest and conducting interaction meets with interested entrepreneurs and technology suppliers. Out of these, 3 entrepreneurs came up to establish REB facilities immediately while the remaining entrepreneurs have plans to set up units in the near future. After conducting the baseline studies, the investment plans were prepared. The implementation of REB technology by all the 26 units has the potential to provide energy saving to the tune of 188 million MJ and GHG reduction of 13192 tonne CO<sub>2</sub> per annum. A total investment of Rs. 54.60 crore has been envisaged for adoption of REB manufacturing technology; which would

result into an annual saving of Rs.19.10 crore (on account of resource saving i.e. fuel & clay besides savings on account of improved brick quality and reduced wastage in green brick preparation) and average break-even point after 2.68 years.

Under the current project, PSCST has facilitated setting of 3 more REB manufacturing units at Amritsar (Punjab), Sonipat (Haryana) and Nalagarh (Solan, H.P.). Out of these, the units at Amritsar and Sonipat have been commissioned whereas the third unit is near completion. A team of officers from UNDP and MOEF&CC-GOI; comprising Dr. S.N. Srinivas, Program Analyst, UNDP, Dr. Nyanika Singh and engineers of PSCST visited the Sonipat Unit – M/s. Ganesh Bhatta Co. - in December, 2016. The owner of the brick kiln informed the team that he has been producing 5000-6000 REBs per hour by deploying 8-10 persons only and that the quality of brick has improved significantly in comparison to conventional bricks.



**Successful Commissioning of REB Manufacturing Plant**

## Activities of ENVIS Centre

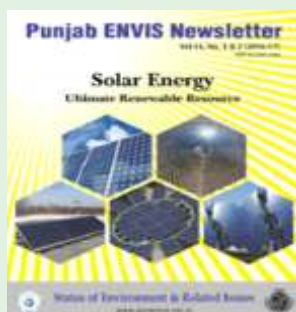
### RCE Recognition Award for publication on Climate Change

ENVIS Centre, PSCST in collaboration with Regional Centre for Expertise (RCE) Chandigarh published quarterly Newsletter titled, "Climate Change" (Volume 13, No.4). It covers comprehensive information on causes, impacts & future projections of climate change. It also summarizes major initiatives taken up at Global and National level to combat Climate Change. Further, it also enlists the key state specific Climate Change related actions undertaken at State level. The publication has been recognized and rewarded as "Honourable Mention" by a review committee of United Nations University-Institute for the Advanced Study on Sustainability (UNU-IAS), Japan for its role in addressing the issue of climate change by articulating information and promoting collaborations at the local level.

### Publication of Newsletter

ENVIS Centre published its quarterly newsletter ((Vol. 14, Issue No. 1&2) with a lead article on "Solar Energy: An Ultimate Source of Renewable Energy". The Newsletter

covers current solar energy scenario at global, national & state level and provides an overview of existing solar energy technologies. It further gives an account of the current status, major achievements and future potential of solar energy in Punjab. The soft copy of the Newsletter is available on Centre's website i.e. [www.punenvir.nic.in](http://www.punenvir.nic.in).



**ENVIS Newsletter**

### Training/Events/Exhibitions Attended

- **Climate Risk Management Training Program:** Ms. Ravleen, Senior Program Officer & Ms. Inderdeep Gill, Information Officer participated in a two day training organized by GIZ at Delhi on 3<sup>rd</sup> & 4<sup>th</sup> Nov., 2016. The training was focused on the concept of climate risk management, risk assessment and its approaches. Total 17 participants from five states of India participated in training.
- **Geographic Information System(GIS) Training Program:** Ms. Inderdeep Gill, Information Officer & Mr. Dinesh Kumar, Project Associate –IT participated in two day training on GIS, organized by Economic and Statistical Organization, Department of Planning, Chandigarh on 15<sup>th</sup> & 16<sup>th</sup> December, 2016. The main objectives of the training program was to train participants to use various features & utilities of ArcGIS Platform and to integrate features like buffer, clip, intersection, union, merge, dissolve etc. in Geoprocessing.
- **Exhibition on State Environment Issues:** ENVIS Centre put up an exhibition on State Environment Issues at 24<sup>th</sup> State Level Children Science Congress, 2016 which was jointly organized by PSCST and Chitkara University, Punjab. The main focus of the exhibit was to highlight the state environmental issues and the various measures being undertaken by Govt. departments and organizations towards conservation & management of natural resources.

## Activities for Promotion of IPRs

### Implementation of National IPR Policy in Punjab & Chandigarh

Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce & Industry, Govt. of India released National IPR Policy (NIPR), 2016 in May, 2016 to create and exploit synergies between all forms of intellectual property (IP), concerned statutes and agencies. Under the aegis of the DIPP, a separate Cell for IPR Promotion and Management (CIPAM) has been set up to facilitate promotion, creation, and commercialization of IP assets.

A meeting was held on 3<sup>rd</sup> November, 2016 with officers of CIPAM, DIPP, GoI wherein activities undertaken by the centre till date were presented. Based on the assessment of diverse activities being carried out by PIC, PSCST in state of Punjab & Chandigarh since its inception in the year 1998, CIPAM-DIPP, GoI has agreed to collaborate with PIC-PSCST as a key partner for implementation of National IPR Policy, 2016 in the state of Punjab & Chandigarh.



*ED, PSCST interacting with CIPAM Officers during the meeting*

### IPR Promotion in Health Sector

- The Chandigarh Chapter of Association of Clinical Biochemists of India had organized Symposium on 'Intellectual Property Rights – Patenting Medical Research' at PGIMER, Chandigarh on 4<sup>th</sup> November, 2016. The objective was to enable participants to identify intellectual potential of their novel observations that may lead to product development. Dr. Jatinder Kaur Arora, Executive Director, PSCST was the Guest of Honour at the Symposium. In her address, she gave an overview of initiatives taken up by Patent Information Centre, PSCST for IPR identification and promotion in the state of Punjab & Chandigarh. Also while citing examples of patents in medical field, she urged PGIMER to set up an IPR Cell and offered technical as well as financial support for the same.
- The Chandigarh Region Knowledge Cluster and DST Centre for Policy Research, Panjab University are taking initiatives to support a Medical Device Innovation Cluster in this region. In this regard, they had organized an Industry-Academia Meet and invited Executive Director, PSCST to share about the IP support that could be offered to the proposed cluster. ED shared the strengths of PSCST in the field of IP Management and offered to set up a dedicated Help Desk for the Medical Innovation Cluster to provide all the requisite technical support in matters relating to IPR filing, generating patent search reports, conducting technology scan and of patent studies for technology upgradation etc.

**Furthermore, the following activities were taken up:**

| Activities   | Details   |
|--|---|
| <b>Patent Searches</b>                                   | 19 International Patent Searches were conducted for the following institutions/individuals: P.U., Chandigarh: 4; GNDU, Amritsar: 3; INST, Mohali: 3; LPU, Phagwara: 2; T.U., Patiala: 1; NABI, Mohali: 1 & Individual Inventor: 5. In addition to these, 4 design searches were conducted for designer dresses of LPU, Phagwara for further filing of design application in Indian Patent Office, Kolkata   |
| <b>Patent Applications forwarded to TIFAC for Filing</b> | 7 Patent Applications of following institutions have been forwarded to TIFAC, New Delhi for filing of patents in the Indian Patent Office after conducting exhaustive patent search: P.U., Chandigarh: 2; LPU, Phagwara: 2; GNDU, Amritsar: 2 & Sri Guru Granth Sahib World University, Fatehgarh Sahib: 1  |
| <b>Industrial Designs Filed</b>                          | 3 Design Applications of Lovely Professional University, Phagwara forwarded by PIC, PSCST after conducting exhaustive design search to TIFAC, DST, GoI have been filed in Design wing of Indian Patent Office, Kolkata vide application no. 289428, 289429 & 289430   |
| <b>Expert Lectures</b>                                   | 4 Expert Lectures on IPRs were delivered by PIC team to create awareness on IPRs in academic institutions and industrial clusters   |
| <b>Workshops/ Meetings</b>                               | <ul style="list-style-type: none"> <li>• Scientist (PIC) and Project Scientist (PIC) attended PFC TIFAC's Selection Committee meeting on IP Filing (CIPF) on 26<sup>th</sup> October, 2016 at New Delhi. Eleven patent applications forwarded by PIC, PSCST for filing were presented before CIPF. Out of these, five patent applications were approved for filing. CIPF also approved three design applications forwarded by PIC, PSCST for filing.</li> <li>• PIC staff attended European Union Intellectual Property Office (EUIPO), Confederation of Indian Industry (CII) &amp; Indian Patent Office sponsored seminar on International TM protection Systems on 13<sup>th</sup> December, 2016.</li> <li>• Scientist (PIC) attended IPR Cell body meeting of Panjab University at CIIPP, PU, Chandigarh to discuss IPR cases of the institute on 21<sup>st</sup> December, 2016.</li> </ul> |

**PSCST at India International Science Festival**

India International Science Festival (IISF) was organized by Department of Science & Technology, Govt. of India from 7<sup>th</sup> to 11<sup>th</sup> December, 2016 at New Delhi to encourage and develop scientific temper, promote exchange of knowledge and ideas among young minds and showcase recent

developments of India in science and technology involving various scientific departments.

This being a prestigious international event, PSCST had put up an impressive display to showcase its endeavours. Several scientific activities such as Young Scientists Conclave with participation of 3000 young scientists, DST-INSPIRE Camp with participation of 1000 students and 200 teachers, International Science Film Festival (with 80 entries from 10 countries), Industry-Academia Meet with participation of 200+ industry and academic representatives were organized during the IISF.

The important publications, reports & industrial manuals prepared by PSCST were also displayed on the occasion. In addition, a special Science Activity Corner was set up by the Council wherein live experiments were performed and understanding of mathematics through origami were demonstrated by Mr. Jaswinder Singh, Master Trainer from Patiala and Mr. Jaswinder Singh, Master Trainer from Sangrur, respectively. The Expo was inaugurated by Dr. Harsh Vardhan, Hon'ble Minister for Science & Technology and Earth Sciences, Government of India. Besides, senior officers of DST, DBT, Department of Earth Sciences, MoEF & CC and foreign delegates visited the PSCST pavilion. On behalf of PSCST, Mr. Gurharminder Singh, SSO, (Env.) & ENVIS Coordinator, Mr. Dinesh Kumar, Project Associate and Dr. Baljinder Singh, Project Associate participated in the IISF.



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