



# GURBACHAN SINGH FOUNDATION

for  
Research, Education and Development

## GSFRED NEWS LETTER

Vol. 2 (1)

Jan.-June, 2019



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## From Chairman's Desk

The period between January 01 to June 30, 2019 was quite momentous and full of events. A religious ceremony was held by organizing an Akhand Path of Shri Guru Granth Sahib Ji on 26 January, 2019 to seek blessings of the almighty for success of the GS Foundation for Research, Education and Development. This was followed by celebration of 1st Foundation Day of GSFRED on 3rd March, 2019. The Foundation Day lecture was delivered by Dr. R. S. Paroda, Ex-Secretary, DARE and Director General, ICAR. Dr. Gurdev Khush, World Food Laureate and Fellow of Royal Society, London presided and delivered the presidential address. More than 400 people including research managers, administrators, policy makers, scientists, farmers, students, representatives of public and private sector and press and media representatives participated. The notable participants included Dr. J. S. Samra, Former Chief Executive Officer, National Rainfed Area authority of India; Dr. Ramesh Kanwar, Vice Chancellor, Lovely University and Ex- Head, Agricultural Systems Engineering, IOWA State University, USA; Dr. M L Madan, Ex-Deputy Director General, ICAR; Dr. P. C. Sharma, Director, CSSRI, Karnal; Dr. Gopal Lal, Director, National Research Centre on Seed Spices, Ajmer; Dr. M. S. Chauhan, Director, Central Institute for Research on Goats, Mathura; Dr. Rajbir Singh, Director, ATARI, Ludhiana and Dr. Samar Singh, Regional Director, HAU RRS, Karnal.

The long term experiments and demonstrations in progress at the research, education and development centre focusing on doubling farmers income, multiple use of resources to increase efficiency and reduce cost of cultivation; climate smart conservation agricultural practices; diversification from rice-wheat cropping system to less water demanding and soil health building crops and practices; evaluation of 12 wheat varieties in terms of growth, productivity, resource use efficiency, resilience to short term weather aberrations (temperature, sun shine hours, relative humidity weed and pest scenario) and economies; organic agriculture; crop residue management alternatives and fruits and vegetable based agroforestry practices were continued.

Large no. of dignitaries, scientists, public and private sector representatives, farmers and students visited the centre. The notable visitors included Dr. Harkesh Sandhu, M.D. and President, Sahayata Organization, California, USA; Dr Ashok Dalwai, Chief Executive Officer, National Rainfed Area Authority and Chairman, Prime Minister Task Force on doubling farmers income; Dr. Kuldeep Singh, Director, National Bureau of Plant Genetic Resources; Dr. G. P. Singh, Director, IIWBR, Karnal; Dr. Inderjeet Singh, Director, Animal Husbandry and Dairying Department, Government of Punjab; Dr. Randhir Singh ADG, ICAR; Sh. Subhash Chandra, Vice Chairman, Swachh Bharat Mission; Dr. Dilip Kumar, Former Director, Central Institute for Fisheries Education (CIFE), Mumbai; Dr. GGSN Rao, Former PC, Agrometeorology; Dr. Yogeshwar Singh, Principal Scientist, NIASM, Baramati; Dr. K. C. Bansal, Former Director, National Bureau of Plant Genetic Resources, New Delhi and Dr. Rajinder Singh Sidhu, Registrar, PAU, Ludhiana.

More than 3000 students from Karnal and adjoining village schools visited the centre during this period. Trainees from 9 countries and 8 states of India; more than 100 students of Rajasthan Agricultural University, Jobner; large number of farmers and agricultural entrepreneurs also visited. The Foundation Chairman visited Canada to participate in family functions and also used the opportunity to share activities of the Foundation with North-American PAU Alumni Association; participated at home and presented a lead paper in the International Conference on Development of Dry Lands at Central Arid Zone Research Institute, Jodhpur; participated as Guest of Honour at Innovative Farmers Meet at IISR, Lucknow and inaugurated a training programme as chief guest at Indian Institute of Wheat and Barley Research, Karnal. An edited book entitled '**Crop Residue Burning : Management Strategies for Safe Environment**' was compiled and edited jointly by Drs J S Samra and Gurbachan Singh and submitted to the press for publication.

  
(Gurbachan Singh)

## Research Highlights

### Integrated Farming System Model for Doubling Income of Small and Marginal Farmers

An integrated farming system model has been established to double farmers income by making multiple use of resources and inputs. Various components of the farming system model such as fisheries, dairy, goatery, poultry, fruit trees, vegetables, food and feed crops have been blended in such a way on 2 acre of land so that all requirements of a family of 5 to 6 persons are met and daily income of Rupees 600 to 1000 is generated. The concept is based on reducing cost of cultivation via in-situ generation of manure by blending animal excreta with farm waste and crop residues. A gobar gas plant has also been established to meet energy requirement of cooking and lighting. A part of the cow dung is used in gobar gas plant, a small part as feed to fish in the pond and rest decomposed with farm waste to generate manure for the crops. The nutrient rich fish pond water is recycled for irrigating field crops to reduce fertilizer use and cost. The fruit plants such as peach, plum, guava, pomegranate, apricot, fig and citrus planted on the dyke of the pond are contributing to daily income. Similarly, a part of the 2 acre land used for year round growing of vegetables is

serving as daily source of income. Half of the land is used for growing green fodder, feed, pulses, oil seeds and cereal crops like rice and wheat. The one year preliminary observations revealed as under:

- The dairy component comprising of 3 cows (2 HF and 1 Sahiwal), a buffalo is generating maximum returns.
- The expenditure on rearing of goats is almost negligible. Their fodder and feed requirement is fully met through the daily vegetable waste and other bio-mass generated at the farm.
- Blending of poultry component was not very encouraging due to feed cost and unexpected mortality of the birds.
- The decomposed manure generated within the system was sufficient to meet 50% requirement for nutrition of fruits, vegetables and other crops.
- Now all components of the IFS model are in place. Detailed economics (direct and indirect benefits) will be worked out on yearly basis



## Testing of Promising New Wheat Varieties for Location Specific Suitability

A long term field experiment is in progress at GSF Research, Education and Development Centre to assess the performance of different rice and wheat varieties popularly grown by the farmers in terms of growth, productivity, resource use efficiency, response to weeds, insects, diseases, weather parameters (such as rainfall, temperature, relative humidity, heat and cold waves etc.) and economics. The wheat varieties grown included HD 2967, DBW 173, DBW 187, DBW 110, DBW 71, DBW 90, DBW 93, HDCSW 18, WB 2, KRL

283, PBW 343 and BR 36. The varieties are planted on ridges and paddy straw spread in the furrows to check weed growth, build soil organic matter and to conserve water. Bumper yield of wheat was obtained during Rabi 2018-19, probably due to cool temperature throughout the growing season. Seed production programme was also initiated to supply seed of farmer friendly location specific varieties to the farmers as mini kits. Most of the varieties yielded more than 6.5 t/ha grain yield. The highest yield of 7.5 t/ha was obtained from DBW 187.



## Fruit Based Agroforestry System on Field Boundary for Doubling Farmers Income

Farmers, in general do not grow trees along with crops on their farms due to negative shed impact on associated crops and also because of difficulty in executing field operations. A new concept of planting fruit trees on the boundary of the farm along with vegetables, aromatic and medicinal crops in between is being tried and evaluated at GSF research station. The fruits and inter crops planting has been designed in such a way that all 365 days of the year. The small and marginal farmers have regular supply of fruits and vegetables for home consumption and also surplus for the market to generate income needed for daily use. About two dozen fruit yielding

plants are planted along boundary of the farm. About 70% requirement of nutrients for these fruits and vegetables is met through the decomposed organic manure generated in the integrated farming system model. Most of the fruit trees like guava, mango, amla, pomegranate, ber, banana and lemon have started wearing fruits. The concept is being promoted that whatever carbon is generated from the field is sequestered by these trees at the farm itself. The preliminary results are very encouraging and surely help doubling income of small and marginal farmers and contribute to nutritional security at the grass roots level.



## Seed Production of Promising Wheat Varieties

In Punjab, Haryana and Western UP nearly 90% area is cultivated with rice and wheat grown in a sequence. Supply of quality seed of promising varieties of these crops can enhance production and income of the farmers. Seed production of the promising wheat varieties was undertaken. The seed of following varieties was produced,

processed and distributed to the farmers in mini kits. The concept is that the farmers can have a small quality of seed from the GSF research centre and multiply their own seed for expansion of the area and further distribution to the farmers in their respective villages.



## Celebrations

### Inauguration Ceremony of Research and Education Centre

An Inauguration function of GSFRED Research and Education Centre was held on 27th Jan, 2019. To seek blessings of the Almighty, Sri Akhand Path was organized from 25th to 27th Jan. More than 400 people including ex-vice chancellors, directors, scientists, civil society representatives, officers of line departments, farmers, students and other stakeholders attended the ceremony. The guests visited various research experiments and demonstrations laid out at the centre including integrated farming system model for doubling farmers income,

diversification options for agriculture, climate smart agricultural practices, rice residue management strategies, evaluation of wheat and mustard varieties, seed production plots and fruits and vegetable based models to enhance farmer income. The research and education centre has been established to communicate science and technologies to farmers, students, rural unemployed youth and other stakeholders in agricultural research, education and development.



## Celebration of First Foundation Day

The Gurbachan Singh Foundation for Research, Education and Development (GSFRED) celebrated its First Foundation day on 3rd March, 2019 at its Research and Education Centre near Karnal. Dr. R. S. Paroda, Ex-Secretary DARE and Director General, ICAR delivered the Foundation Day address and complimented the Founder Chairman for establishing state of the art research and education center for communicating agricultural innovations for welfare of small and marginal farmers. Dr. Gurdev Khush, internationally recognized World Food Laureate and Fellow Royal Society, London presided over the function and delivered the presidential address. Dr. Khush having very vast international experience commented that it is an initiative of its own kind for serving farmers especially small holders. Dr. J S Samra, Former Chief Executive officer, National Rainfed Area authority of India; Dr. Ramesh Kanwar, Vice Chancellor, Lovely University and Ex- Head, Agricultural System Engineering, IOWA State University, USA; Dr. M L Madan, Ex-Deputy Director General, ICAR and Ex- Vice Chancellor, Mathura (U.P.) and Akola (Maharashtra) also spoke and appreciated the very unique and innovative agenda of this Foundation. The Founder chairman Dr. Gurbachan Singh, Ex-Chairman, ASRB and Agricultural Commissioner, Govt. of India established this foundation to upscale agricultural innovations for skill and entrepreneurship development amongst farmers, youth and students. The Vice Chancellor, Lovely University announced signing an MOU for placing national and international students for exchanging knowledge and skill development. Dr. R S Paroda also desired there should be a MOU of this Foundation with Dr. Khush Foundation. Dr. M. L. Jat, Facilitator of CIMMYT, Mexico programme in India, desired to

have collaboration with GSFRED for upscaling conservation agricultural practices. There is also proposal to develop national and international funding to further strengthen this capacity and capability of the Foundation. Dr. Samra highlighted the speedy completion of setting up infrastructure including construction work within 15 month. He further said that research and other services will be delivered with the same spirit. The delegates also visited experiments already set up for integrated farming systems, crop diversification, climate resilient innovative practices, holistic management of the paddy straw, agroforestry and evaluation of promising crops and their varieties. Burning of crop bio-mass pollute the environment and creating health hazards. Looking to the menace, the Foundation has initiated experiments for in-situ management of straw as mulch, maize production and soil health improvement options. There was very elaborate interaction between scientists, farmers and representatives of public and private organizations providing input and services. More than 400 participants attended the Foundation Day including Directors of institutes of several private as well as public sector institutes and universities. The notable research and extension managers included : Dr. P. C. Sharma, Director, CSSRI, Karnal; Dr. Gopal Lal, Director, National Research Centre of Seed Species, Ajmer; Dr. Chauhan, Director, Central Institute for Research an Goats, Mathura; Dr. Rajbir Singh, Director, ATARI, Ludhiana and Dr. Samar Singh, Regional Director, HAU RRS, Karnal. On this occasion Dr. Paroda and Dr. Khush also inaugurated soil and water testing laboratory for testing of soil and water samples of farmers. The second newsletter of the foundation was also released.



## Visitors

### IWBR Director and Scientists at GSFRED

Dr. G. P. Singh, Director of the IWBR, Karnal visited GSF Research and Education Centre alongwith Dr. Ravish Chatrath and Dr. Sanjay on 10th April in the afternoon. The visiting scientists inspected the performance of 12 wheat varieties (mostly developed by IWBR) being compared in terms of growth, productivity, resilience to short term weather abstractions and resource use efficiency. All the

wheat varieties were grown on raised bunds and the paddy straw is placed in furrows to check weed growth, improve soil health and to conserve water. The visiting scientists were highly appreciative of the research and development work being done at GSF Research and Education Centre for linking agricultural science innovations to farmers, unemployed youth and students.



### Delegation of Precision Agriculture for Development (PAD)

A delegation of 3 scientists associated with Precision Agriculture for Development (PAD) accompanied by Dr. Samar Singh visited GSF research, education and development centre on 4 June, 2019 to discuss the important issues of residue management. GSF chairman

shared different options for sustainable management of wheat and rice residues at the farm level and facilitated visit of the delegation to various demonstrations and experiments planted at the centre for sustainable management of natural resources.



### Agricultural Entrepreneurs from Uttarakhand; Scientists from Agricultural Collage, Kaul And Sh. Joginder Nehra (IG), Police accompanied by Sh. Balwan Singh (SSP), Police



## Visit of NIASM Team

Members of QRT team NIASM, Baramati namely Drs. Dilip Kumar, Former Director, CIFE, Mumbai; GGSN Rao, Former Project Coordinator (Agrometeorology); KC Bansal, Former Director, NBPGR, New Delhi; RS Sidhu, Registrar, PAU, Ludhiana and Yogeshwar Singh, PS, NIASM visited GSF

Research, Education and Development Centre in 2<sup>nd</sup> week of March, 2019. The visiting team took keen interest in Foundation activities and appreciated the initiatives taken for up-scaling scientific interventions for benefit of farming community.



## Dr. Inderjeet Singh, Director, Animal Husbandry Department, Punjab



## Stakeholders and other visitors

A group of prominent stakeholders of the area including Sh. Ravi Beri, Beri Udyog, Karnal; Sh. Bhubnit Singh, Kaliana Farm, Kulvehri; Vinu Bhatia, progressive farmer, and a young entrepreneur from Australia visited the Centre on 31st March, 2019. The Chairman of the foundation had a long discussion with the visiting farmers and an industrialist to establish a Stakeholders Forum involving progressive farmers and farmer representatives, scientists, state government officials, private sector NGO's, industry representatives

dealing with agricultural inputs including implements and machinery, agricultural market and trade representatives etc. The agricultural Stakeholders Forum will comprise about 60 representatives, and as a first exercise about 20 names were finalized. Once established, this Forum will have a monthly meeting on topical issues related to problems of farmers and also initiate skill and entrepreneurship development amongst unemployed youth, farmers and students.



## Others



Dr. Harkesh Sandhu M.D. and President, Sahaita Organization from California, USA



Dr. Ramesh Kanwar, Vice Chancellor, Lovely Professional University (LPU)



Dr. Randhir Singh ADG, ICAR and Sh. Subhash Chandra, VC, Swachh Bharat Mission



Dr. Ashok Dalwai, Chief Executive Officer, National Rainfed Area Authority (NRAA)



Dr. Kuldeep Singh, Director, National Bureau of Plant Genetic Resource (NBPGR), New Delhi



## National/International Trainees Trainees from Eight States of India

Thirty five trainees from 8 states undergoing training at Indian Institute of Wheat and Barley Research (IIWBR), Karnal on entrepreneurship development in seed sector visited GSFRED on 28 June, 2019 in the afternoon. The trainees group comprised of progressive farmers, students, seed companies, scientists and others engaged in seed production, post harvest handling, storage, marketing and quality assurance domains. The Chairman, GSFRED interacted with the group and discussed various aspects of seed production quality assurance and distribution to the

farmers. The visiting trainees have a round of the research station and saw various demonstrations and experiments focused on doubling farmers income, alternate crops and practices to shift from high water consuming rice to maize, soybean, cotton, pulses and vegetables; in-situ use of crop residues for manure and mulching, integrated farming system model for making multiple use of water and reducing cost of production and year round production of fruits and vegetables on the boundary of the farm.



## Trainees from Nine Countries

Twenty Nine trainees from 9 countries visited GSF Research and Education Centre on 8 February, 2019. The Chairman of the Foundation delivered a lecture entitled "Food, Nutrition, Livelihood and Environmental Security in India : Issues and Strategies" to the trainees. After the lecture, the visiting trainees were shown various experiments and

demonstrations laid out at the centre such as doubling farmers income, organic agriculture, in-situ management of paddy straw, crop diversification options, vegetables and fruits based best management practices and multi-enterprise agriculture for multiple use of limited resources like water, energy and inputs.



## Students Exposure Visits Students of Rajasthan Agriculture University, Jobner

On 3rd April, 2019, about 60 students accompanied by their teachers visited GSF Research, Education and Development Centre as a part of their educational tour to various research and educational institutes. The visiting students were shown various experiments and demonstrations for doubling farmers income, efficient management of natural resources, organic farming and climate smart agricultural practices etc. On 2nd April, 2019 farmers from Punjab also visited the centre.



## Adarsh School Students : Earth Day Celebration

The Earth Day was celebrated with students of Adarsh Public School at GSF Research and Education Centre on 22 April, 2019



### Linking School students with Theory and Practice of Agriculture

One of the main objectives of Gurbachan Singh Foundation for Research, Education and Development (GSFRED) is to inculcate scientific temperament in students from beginning of their educational career. On 18 January, 2019 KG students of Adarsh School, Karnal visited GSF Research and Education Centre alongwith their teachers and caretakers. The students showed keen interest in seeing various innovative and awareness creating activities of the Foundation. They were happy to see dairy, goatary, poultry and duckery units established at the research farm as a part of integrated

farming system for doubling farmers income. The Chairman of the Foundation Dr. Gurbachan Singh interacted with the students while showing them various fruits, vegetables and flowering crops planted at the farm. The GSFRED is developing an agro-eco-tourism park to create awareness amongst the school students regarding innovative scientific interventions to save water, improve soil health, conserve bio-diversity, convert waste into wealth, love for animals and birds and conservation of environment for healthy living.



### Montfort World School Students

Nearly 1500 students from Montfort World School, Karnal visited GSF Research, Education and Development Centre in batches last week. The GSF team appreciated the initiative of school management and staff for giving exposure to the students to the recent scientific innovations in agricultural sciences demonstrated at the centre for efficient use and management of water, soil, biodiversity and climate. The visiting teachers and students had an opportunity to see crop cafeteria, several kinds of fruits, flowers, vegetables,

fodder crops and aromatic and medicinal plants grown at the centre. They also had the exposure to interact with our domestic animals; cows, goats, poultry birds, geese and ducks at the farm. This kind of relaxing farm visit before the start of examinations will certainly help to distress the students of exam phobia. GSF Research and Education Centre is being developed as an Agro-Eco-Tourism facility in this part of the country.



## Chairman's National/International Visits

### QRT Report of NIASM, Baramati to DG, ICAR

A Quinquennial Review Team (QRT) under the chairmanship of Dr. Gurbachan Singh was constituted by DG, ICAR to review the work of National Institute of Abiotic Stress Management (NIASM), Baramati for the period 2009 to 2017. The other members of the team included : Prof. K. E. Lawande, Ex. Vice Chancellor; Prof. Dilip Kumar, Ex- Director, ICAR-CIFE; Prof. Rajinder Singh Sidhu, Registrar, PAU, Ludhiana; Dr. G. G. S. N. Rao, Ex. Project Coordinator, ICAR-AICRP on Agrometeorology; Dr. K. C. Bansal, Ex. Director, NBPGR and Dr. Yogeshwar Singh, Principal Scientist, NIASM (Member Secretary). Dr. Gurbachan Singh visited Krishi Bhawan, New Delhi on 8th April, 2019 and submitted the QRT report to Dr. Trilochan Mohapatra, DG, ICAR. Dr. Alga Sundhram (DDG, NRM), Dr. S. K. Chaudhary (ADG, SWM) and Dr. N. P. Singh (Director, NIASM, Baramati) were also present.



## Innovative Farmers' Meet

Dr. Gurbachan Singh, Chairman, GSFRED participated in the Innovative Farmers' Meet as Guest of Honour at Karnal on 14 June, 2019. The innovative farmers meet was organized jointly by Confederation of Indian Industry (CII) and Modern Kheti Agro-Society. More than 200 farmers, scientists, industry representatives, state govt. officials and representatives of farmers organizations and private sector

participated in this Meet. Sh. Harvinder Kalyan, MLA, Gharaunda inaugurated the meet as Chief Guest. The innovative farmers and other stakeholders were honoured by Chief Guest Sh. Harvinder Kalyan and Guest of Honour Dr. Gurbachan Singh.

Lateron, in the afternoon, delegates of Innovative Farmers Meet visited GSF Research, Education and Development.



## Indian Institute of Sugarcane Research, Lucknow

Dr. Gurbachan Singh visited Indian Institute of Sugarcane Research in connection with participation as Guest of Honour in the First Foundation Day celebration of National Education Empowerment & Development Foundation (NEEDEF). Several awards to honour outstanding scientists,

farmers and entrepreneurs were presented. Dr. A. K. Singh, DDG, Agricultural Extension, ICAR was the Chief Guest and Dr. Gurbachan Singh presided over the function. A seminar on increasing productivity of sugarcane was also organized.



## Thiruvananthapuram

Dr. Gurbachan Singh visited Thiruvananthapuram, Kerala from 30-31 Jan, 2019 to participate as UGC nominee in the Governing Council Meeting of Mar Ivanios College (Autonomous) Thiruvananthapuram. The Governing Body Meeting was chaired by his Beatitude Basileos Cardinal

Cleemis Catholicos and attended by other members of the Governing Council. After the meeting in the college, Dr. Suju Joseph Ker, Professor of Chemistry accompanied Dr. Singh for a visit to places of educational and tourist interest in Thiruvananthapuram.



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Printed at : **Aaron Media, UG-17, Super Mall, Sector-12, Karnal**  
E-mail : [aaronmedia1@gmail.com](mailto:aaronmedia1@gmail.com) | Tel. : +91-98964-33225 | 0184-4043026