GURBACHAN SINGH FOUNDATION

for
Research, Education and Development

ANNUAL PROGRESS REPORT 2024-25

Contents

PREFACE

The present GSFRED report covers the activities and programs of the foundation undertaken during the year 2024-25. Long term field experiments initiated at the research farm during 2018-19 viz. evaluation of rice and wheat varieties for their response to weather abrassions during the season like minimum and maximum temperature, sunshine hours, relative humidity, unseasonal rainfall events, cold and heat waves etc.; in-situ management of paddy straw; integrated farming system and climate smart agriculture practices were continued. Three wheat varieties DBW-372, PBW-872 and DBW-327 gave highest yield of more than 26q/acre during 2023-24 season. Wheat variety DBW-372 found highly tolerant to unusual event of heavy rain coupled with high wind speed and hailstorm occurred at heading stage of the crop. To make awareness and sensitization of farmers regarding agricultural innovations and technologies developed at GSF research farm and to provide quality seed of new varieties of rice and wheat, two Kisan Melas were organised in March and September last year. The foundation day of the Institute was celebrated on March 3, 2024. The foundation day lecture was delivered by Dr. Inderjit Singh, Vice Chancellor, GADVASU, Ludhiana and chaired by Dr. S.K. Malhotra, VC, Maharana Pratap University of Horticulture and Technology, Karnal. Several academic and scientific workshops / meetings including workshop on strategizing the collaborating agenda on agriculture and policy research and meetings with delegations form Mauritius and Africa to develop collaboration in the area of agricultural research and development were organised. The Chairman, visited CSSRI, Karnal; Central Coastal Agricultural Research Institute (CCARI), Goa; MPUAT, Karnal and other organisations to deliver inaugural / key note lectures in the International and National conferences / symposiums and meetings organised by them. During the report period, large number of scientists, entrepreneurs, farmers, civil society representatives and students visited the farm. The Chairman of the foundation was nominated as convener of Karnal Chapter of National Academy of Agricultural Sciences, New Delhi and also listed amongst 2% scientists in the world as per the list released by the world renowned Stanford University, USA. I believe and hope the information will be of interest to the readers. I will look forward for your valuable comments and suggestions.

GURBACHAN SINGH
FOUNDER CHAIRMAN

1. Research Highlights

1.1 Performance of New Wheat Varieties Developed by National Agriculture Research System

A long term field experiment is in progress since 2018 wherein all new varieties developed by the National Agricultural Research System (NARS) are evaluated for their resilience to prevailing weather abrasions such as max and min temperature, sun shine hours, relative humidity, cold wave, heat wave, rainfall and incidence of pests etc. during the growing season. The wheat varieties grown during 2023-24 and their relative productivity is given in Table 1. Most of the varieties yielded more than 24 q/acre and found resilient to climatic abrasions. The maximum yield (27.86 q/acre) was given by DBW 372 followed closely by PBW 872 (26.74 q/acre) and DBW 327 (26.70 q/acre).

Table 1: Performance of Wheat Varieties at GSF Research Farm During Rabi 2023-24

Sr.no	Variety	Date of Sowing	Date of Harvesting	Maturity period (Days)	Grain yield (qt/ha)	Grain yield (qt/acre)
1	HI-1653	10-11-23	22-04-24	163	66.50	26.60
2	HI-1654	10-11-23	22-04-24	163	66.43	26.57
3	DBW-187	10-11-23	22-04-24	163	56.04	22.42
4	DBW-222	10-11-23	22-04-24	163	64.80	25.92
5	DBW-303	10-11-23	22-04-24	163	64.66	25.86
6	DBW-327	10-11-23	22-04-24	163	66.75	26.70
7	DBW-332	10-11-23	22-04-24	163	60.10	24.64
8	DBW-370	10-11-23	23-04-24	164	66.55	26.62
9	DBW-371	10-11-23	23-04-24	164	63.78	25.51
10	DBW-372	10-11-23	23-04-24	164	69.64	27.86
11	PBW-826	10-11-23	23-04-24	164	64.00	25.60
12	WH-1270	10-11-23	23-04-24	164	63.18	25.27
13	DDW-55	10-11-23	23-04-24	164	63.56	25.42
14	PBW-872	05-11-23	16-04-24	162	66.84	26.74
15	HD-3385	10-11-23	20-04-24	161	65.36	26.14
16	RS 1	10-11-23	17-04-24	158	50.00	20.00
17	HD-3406	20-11-23	24-04-24	156	63.00	25.20
18	Chapati	4-12-23	25-04-24	142		
19	Barley DWBR 137	20-11-23	06-04-24	137	52.94	21.18

1.2 Evaluation of Wheat Lines Received from BISA

The Borlaug Institute for South Asia (BISA), Ludhiana supplies promising wheat lines to select research centres in the country for location specific testing. Small quantity seed of about 100 lines was received during 2023 for performance evaluation at GSF research farm, Karnal. These seeds were grown during 2023-24 wheat growing season (November to April). Based upon bundle weight, grain weight, 100 grain weight, grain colour / luster; 20 most promising lines were identified (Table 2). The selected lines were grown during 2024-25 season for multiplication and further evaluation in large plots. Most of the selected lines seems to have the potential to yield about 32 q/acre.

Table 2: Location Specific Testing of BISA Lines at GSF Research Farm

Sr. No	Wheat lines	Bundle Weight (Kg)	Grain Weight (Kg)	Grain : Straw Ratio	100 Grain Weight (gram)	Grain Yield qt/Acre
1	2004	3.86	1.66	0.43	4.783	32.13
2	4023	2.69	1.22	0.45	4.514	32.44
3	4024	3.19	1.38	0.43	4.772	36.86
4	4046	1.93	0.75	0.39	4.424	31.52
5	4048	3.07	1.29	0.42	3.857	34.37
6	4049	3.49	1.19	0.39	4.239	31.68
7	4052	3.49	1.44	0.41	4.377	39.84
8	4053	2.85	1.24	0.44	4.835	33.02
9	5019	3.46	1.35	0.39	4.784	36.09
10	5036	3.15	1.19	0.38	4.069	35.52
11	5042	2.91	1.17	0.40	4.461	31.10
12	7009	3.15	1.35	0.43	5.040	36.09
13	7035	3.74	1.74	0.47	4.896	33.53
14	7037	3.87	1.78	0.46	4.561	34.36
15	7051	3.92	1.67	0.43	4.905	32.28
16	8057	3.65	1.71	0.47	4.465	32.97
17	9014	4.10	1.72	0.42	4.462	33.25
18	7044	4.33	2.04	0.47	5.225	39.37
19	9046	4.11	1.79	0.44	5.464	34.64
20	9055	4.21	1.89	0.45	4.677	36.59

Evaluation trial conducted during 2023-24 with wheat lines supplied by BISA

Evaluation of select promising BISA wheat material in large plots during 2024-25

1.3. Relative Resistance of Wheat Varieties Developed by the National Agricultural Research System to Unseasonal Heavy Rains Coupled with High Speed Wind and Hailstorm During Growth Period

- Most of the new varieties of wheat and rice are grown at the farm to study the climate change related weather aberrations such as high and low temperature, sunshine, relative humidity, unseasonal heavy rainfall coupled with high speed wind and hailstorm, weed and pest scenario etc. on the crops.
- There was very heavy rain coupled with high speed wind and hailstorm on 2nd March, 2024 in Karnal. The wheat crop was flattened in most of the area.
- During the 2023-24 season, wheat varieties sown at the research farm were: DBW187, DBW 222, DBW 303, DBW 327, DBW 332, DBW 370, DBW 371, DBW 372 developed by IIWBR, KARNAL; HD 3385, HD 3406, HI 1653, HI 1654 of IARI (PUSA, New Delhi); PBW 826 and PBW 872 of PAU, Ludhiana and WH 1270 developed by CCSHAU, HISAR.
- The effect of heavy rain coupled with high speed wind and hailstorm was monitored since the event happened on 2nd March till harvest. Large variation in relative resistance in different varieties to lodging was observed. Some of the varieties lodged but regained their straightness later on. The varieties are listed below according to their relative tolerance to lodging.
- Highly Resistant: DBW 372 (not a single plant was lodged) followed by HI 1654 and HD 3406
- Lodged but recovered and regrained straightness later: DBW 370, DBW 327, DBW 222, DBW 303, HI 1653
- Remained lodged even after 38 days: DBW 187, DBW 332, DBW 371, PBW 826 and WH 1270
- The frequency of such weather related aberrations is likely to increase in the future. There will be strong need to develop lodging resistant varieties to offset negative effect on crop yields.

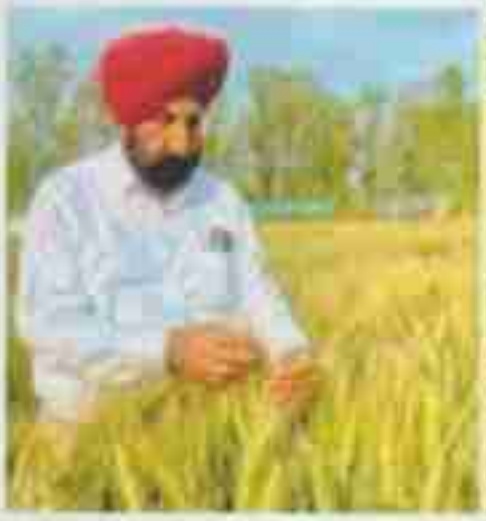
Field scenario as on 3rd March, 2024

Field scenario as on 10 April, 2024

1.4 New Heat Tolerant Wheat Varieties: HI-1653 and HI-1654

High Yielding, climate resilient and pest resistant new varieties of wheat HI-1653 and HI-1654 developed by Indore Centre of IARI (PUSA Institute) were tested at GSF Research Farm, Karnal for two years. During 2023-24 season both the varieties were grown at the native village of Chairman, GSFRED. A field day was organised before harvesting to show the field performance of these

varieties. Looking to the performance of these varieties, all farmers desired to have seed for planting in the next season.



Chairman, GSFRED with Farmers at his native village, Bhaini Mehraj, Punjab

1.5 Relative Performance of Rice Varieties During Kharif, 2024

After the harvest of wheat crop, all new varieties of rice developed by the NARS were grown at the farm to assess their comparative performance in relation to climatic variations experienced during the growing season (July to October). The varieties planted included Basmati PB-1509, PB-1692, PB-1847, PB-1885, PB-1886, PB-1401, CSR-30 and non-Basmati PR-114, PR-126 and PR-131. Performance of all the Basmati varieties was not satisfactory during this season. The yield was less almost by 15 to 25%. However, coarse varieties performed better. Herbicide tolerant variety PB-1985 performed better than PB-1979.

1.6 Multienterprize Agriculture Model for Multiple use of Limited Resources

A Permanent integrated farming system experiment was established in 2018 to make multiple use of limited input resources. Various components of the multienterprize system included: crops, horticulture, dairy, fishery, poultry, goatery, gobar gas plant and compost pits. Five years results revealed as under:

- Synergetic blending of production resources through multienterprize agriculture has the potential to reduce cost pf cultivation up to 80 percent.
- Blending of dairy, fishery, goatery and Desi poultry (Kadaknath and RIR) with crops has the potential to double farmers income and regenerate nutrient depleted natural resources.
- Integration of livestock and trees with crops provides resilience against climate change risks to agriculture in the near future.
- Multienterprize agriculture system has a great hope to make 80 percent small and marginal famers to stand them on their own feet and take them out of debit in the long run.

IFS : A way forward to double income of small and marginal farmers

1.7 In-situ Management of Paddy Residue to Stop Burning

- Inspite of best efforts at the level of governments of Panjab and Haryana to stop burning of residue of rice and wheat crops, a sizeable quantity of crop residue is put on fire every year causing air pollution in the region affecting quality of life. Ever since its establishment in 2018, the GSF has started a permanent experiment to make in-situ use of paddy straw as an alternate to burning. Six years results are very encouraging and proved that paddy residue can be managed in-situ in the field of about 80 percent small and marginal farm land holders. The model developed at GSFRED based upon six years research results suggests as under:
- Sowing of wheat on raised bunds and placing harvested paddy residue in furrows. This practice, in addition to making eco-friendly disposal option helps to save irrigation water by about 20 percent, in-situ storage of unprecedented rainfall, rejuvenation of soil health and moderating cold and heat wave impact on wheat crop. Use of paddy straw as mulch for last six years helped in building appreciable amount of organic matter and associated increase in beneficial pests and microbes in the soil.
- After the harvest of wheat crop, summer moong (green gram) and summer mash (black gram) are grown on the same bunds without cultivation. In addition to yielding 3 to 5 quintal grains, this practice further helped to improve fertility status of the soil.
- Summer pulse crops of moong bean and black gram were under ploughed each year before paddy transplanting in July. This practice helped to improve organic matter in the soil reduction in application of urea by 15 to 10 percent.
- -Short duration paddy varieties; PB-1509, PB-1692, PB-1847, PR-126 were grown in July which took 95-110 days after transplanting to harvest. This further helps to save irrigation water by 20 to 25 percent.
- To see wheather application of paddy straw for five years followed by cultivation of summer pulses and associated improvement in soil health has the potential to support natural farming. An observation experiment was conducted wherein green gram and black gram were grown in the same field without application of agro-chemicals and any other cultural practices. It was astonishing to see that the field supported luxuriant growth of pulse crops and so many grasses.

Paddy residue used as mulch: A good in-situ management practice

Natural growth of vegetation in a field where paddy straw was applied and mixed in the soil for 5 years

1.8 Natural and Organic Farming

To create awareness about safe food and to reduce excessive use of chemicals in agriculture; research efforts are in progress to standardize natural and organic farming technology for growing high value food crops. During the year, a medicinal crop (turmeric) was grown in association with fruit trees without application of agro - chemicals. Sugarcane variety CO-15023, having high sugar content, was also grown without the application of pesticides. Sugarcane jaggery (Gurh), jaggery powder (Shakker) got prepared at Sugarcane Crusher (Kohlu) near Shambli town. No chemicals were added during conversion of sugarcane juice to jaggery. Similarly, turmeric was processed at the farm itself. Whole nutrition requirement of both crops was met through application of large quantity of compost generated at the farm itself.

Processing of turmeric at GSF Farm

Processing of sugarcane for preparing jaggery

2. Scientific Meetings

2.1 Workshop on Strategizing the Collaborating Agenda on Agricultural Research and Policy

A one day workshop was organised on 8th November, 2024 to develop a collaborative strategy on agricultural policy research. Representatives from O.P. Jindal Global University, Sonipat; Jindal School of Government and Public Policy; Jawaharlal Nehru University; Sharda University; Shiv Nadar University Delhi NCR; Inclusive Business Ecosystem Network; Professors and their students; DGM, NABARD; Shri Vijay Setiya Ji; Dr. Devinder Malik, Dr. S.K. Tomar and other NGO's and Industry representatives participated. In this meeting, Research Agenda and Modalities for Collaboration were discussed. It was unanimously decided to constitute a Network for Agriculture Policy Research under the guidance of Dr. Gurbachan Singh and Coordinated by Dr. Gurpreet Singh and Dr. Dinesh Abrol.

2.2 QRT of CAZRI, Jodhpur

As Chairman of QRT of Central Arid Zone Research Institute (CAZRI), Jodhpur the chairman GSFRED reviewed the Research and Development work done by the institute for the period 2017 to 2023. The final report containing the recommendations of the committee was submitted to the DG, ICAR and Secretary, DARE. Govt of India on August 1, 2024 in the presence of Dr SK Chaudhary, DDG (NRM); Dr Rajbir Singh, ADG (Agronomy, Agroforestry and climate change); Dr. A. Velmurugan, ADG (SOIL and Water Management); Dr OP Yadav, Director, CAZRI and others.

Dr Gurbachan Singh with Dr Himanshu Pathak, DG, ICAR and Secretary, DARE

2.3 NAAS Regional Chapter Karnal Activities

The President, National Academy of Agricultural Sciences (NAAS), New Delhi nominated Dr. Gurbachan Singh as Convener of the Karnal Regional Chapter of the Academy to plan and execute activities of the academy in Haryana, Rajasthan and Chandigarh. During the year, four activities were organized at the GSF research centre.

(i) The first meeting was held on July 20, 2024 both in offline and on line mode in committee room of GSF research centre. Various activities and programs to be undertaken during the year were finalized. The meeting was attended by Karnal based fellows and entrepreneurs.

(ii) An Interaction Session on Climate Change with more than 100 students of Adarsh Cambridge International School was held on September 3, 2024. NAAS convener gave a comprehensive presentation on climate change and agriculture.

Students also made power point presentations. The presentations were followed by long discussion. Later on, students were exposed to various experiments established at GSF farm focusing on climate smart agriculture.

(iii) To address climate change impact on agriculture, an interaction session between fellows of the academy and progressive farmers was organised in the conference hall of GSFRED on September 22, 2024. The farmers shared their experience about climate change and its impact on agriculture and the strategies they are adopting to make agriculture climate resilient. The fellows made brief presentations related to their area domain covering various technologies being developed to moderate or negate climate change impact on agriculture.

NAAS Karnal Chapter fellows interaction with farmers

(iv) A New Year family get together of Karnal based NAAS fellows was organized on January 11, 2025. Problems of agriculture in the region and required research, development and policy interventions were discussed. The fellows also had the opportunity to see various experiments being conducted at GSF research farm such as IFS model, crop diversification, residue management and water saving and soil rejuvenation practices.

2.4 Visit of Mauritius Delegation

A delegation from Mauritius visited GSFRED on December 2, 2024 to explore the possibility to join hands for development of agriculture in Mauritius. The delegation was accompanied by Shri Pritpal Singh Pannu, Chairman, NIFA.

2.5 African Delegation at GSFRED

A delegation from Africa along with their Indian partners visited GSF Research Centre on September 6, 2024. Chairman, GSFRED briefed the delegation about the agricultural research and development activities in progress at the farm. They were exposed to the experiments on integrated farming system for doubling farmer's income, conservation agriculture, crop diversification, residue management, agroforestry, new rice varieties, seed production, edible cactus, nursery and organic/natural farming practices. The visiting delegation showed keen interest to develop collaboration with GSFRED to transfer these innovations and technologies for improving agriculture production and productivity in African Region.

2.6 Senior Officers of NABARD

Senior officers of National Bank for Agriculture and Rural Development (NABARD) accompanied by Chief General Manager and General Manager from Himachal Pradesh visited the Centre on November 28, 2024. A detailed discussion was held to explore the possibility of up-scaling of IFS model and crop residue management technologies developed by GSFRED

District heads of NABARD, Himachal Pradesh accompanied by their senior officers at GSFRED on November 28, 2024

3. Celebrations

3.1 Celebration of Kisan Mela and Seed Diwas

A Kisan Mela and Beej Diwas was organized at research centre, Karnal on September 22, 2024. The function was organized to share agricultural technologies and innovations developed at GSFRED for the welfare of the farmers. Seeds of high yielding, climate smart, pest resistant, new varieties of wheat DBW 327, DBW 370, DBW 371, DBW 372, WH 1270, RS 1, PBW 826, PBW 872, HI 1653, HI 1654, HD 3385, HD 3406, were distributed to the visiting farmers. Ten kg seed of these varieties was given to 20 small and marginal farmers to conduct demonstrations in their fields for location specific testing. An exhibition of innovative technologies developed at GSFRED was also organised. Dr. M.L. Madan (Padma Shri Awardee), Dr. S.K. Malhotra, VC, MPUAT, Karnal, Dr. P.C Sharma, Ex-Director CSSRI, Karnal and Dr. Randhir Singh, Ex ADG, Agriculture Extension ICAR participated as guests of honour.

Chairman of the Foundation shared the activities and programs of GSFRED initiated for the welfare of farmers and skill and entrepreneurship development in unemployed youth and students. He talked about the Integrated Farming System Model developed at GSFRED for doubling income of small and marginal farmers and to make agriculture climate resilient. He further shared that about 50% irrigation water can be saved through raised bed planting of wheat and placing rice residue in furrows as mulch, growing moong on same bunds without cultivation followed by planting short duration varieties of rice such as PB 1509, PB 1692, PR 126 in the month of July.

Dr. Madan, strongly advocated the need for up-scaling of IFS model developed at GSFRED for food, nutrition and livelihood security of small and marginal farmers who account for about 85% of the total number of farmers in the country. He appreciated Chairman (GSFRED) for establishing a Foundation after retirement for the benefit of school students, farmers and civil society members.

Dr. S.K. Malhotra emphasized a strong need for integrating horticulture with agriculture to improve farmers income and to sequester carbon at the farm level. He appreciated the foundation for supplying quality planting material of horticulture species, aromatic and medicinal plants to the farmers and others. Dr. P.C. Sharma shared that this Foundation has become a central platform for exchange of agricultural innovations and technologies amongst the scientists of the region and its onward transfer to farmers and other stakeholders in the country. The urgent need to link agricultural technologies with the farmers in a participatory mode was stressed by Dr. Randhir singh. More than 600 people including about 120 women farmers, scientists, research managers, entrepreneurs and civil society representatives participated.

3.2 Celebration of Sixth Foundation Day and Kisan Mela

The Sixth Foundation Day of GSFRED was celebrated along with a Kisan Mela on March 3, 2024 at its Research, Education and Development Centre near Kachhwa Town, Karnal. This year's Foundation Day Lecture was delivered by Dr. Inderjeet Singh, Vice Chancelor, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana and Chaired by Dr. S.K. Malhotra, Vice Chancellor, Maharana Pratrap University of Horticulture and Technology, Karnal. Dr. R.K. Yadav, Director, CSSRI, Karnal; Dr. Gyanendra Singh, Director, IIWBR; Dr. H.S Jat, Director, Indian Institute of Maize Research, Ludhiana and Dr. Parvinder Sheoron, Director, Agricultural Technology Application Research Institute, Ludhiana participated as guests of honour. Dr. Randhir Singh, Former ADG, (Agriculture Extension), ICAR, Coordinated stage management. About 500 people including farmers, enterpreuners, scientists and civil society members participated in this celebration. The farmers had the opportunity to buy seeds of high yielding new varieties of rice

4. Visitors

Large number of farmers, stakeholders, civil society representatives and students visited the research centre during the report period

4.1 Trainees from HAMATI, Jind

A group of about 50 farmers, input dealers and other entrepreneurs undergoing training at HAMATI, Jind visited the research farm on October 12, 2024. They were exposed to various experiments and demonstrations in progress at the farm to double farmers income, climate smart agriculture, water saving and soil health improvement techniques and seed processing plant etc.

4.2 Progressive Farmers from Panjab

Progressive farmers from Panjab visited GSF Research Farm in April 2024 to buy quality seed of new rice varieties. They purchased seeds of PR 130, PR 131, PB 1692, PB 1885, PR 126, PB 1847 and other varieties. The visiting farmers took keen interest in seeing new varieties of wheat grown at the farm. They visited each of the varieties, plucked wheat ears and counted seeds in each ear. They were

highly impressed to see the performance of HI 1653 and HI 1654 varieties.

4.3 School Students

One of the main objectives of GSFRED is to link school students to theory and practice of agriculture and to motivate them to follow agriculture as their professional career. As a part of this initiative, large number of school students visit the institute every year.

(i) More than 200 school students of standard 11th and 12th of Adarsh School, Karnal visited the farm in April 2024. They were exposed to several experiments and demonstrations established at the centre to conserve water, rejuvenate soil, create biodiversity and climate smart agricultural practices. They had the opportunity to see various wheat varieties, nursery of fruit, vegetable, flower and medicinal/ aromatic plants, seed processing plant and integrated farming system model.

(ii) As a part of their Agro-Eco-Tourism activity, about 200 students of Adarsh Cambridge International School visited the Centre on December 3, 2024. Chairman, GSFRED interacted with the students and showed them various experiments and demonstrations in progress at the farm.

(iii) Forty five students of Government Senior Secondary School, Subhri Village accompanied by their teachers visited the research centre on October 15, 2024.

(iv) About 80 students from Government Higher Secondary School, Pundri village accompanied by their teachers visited the farm on October 25, 2024. The visiting students had a round of the experimental farm and seen demonstrations on new wheat varieties, nursery plants, integrated farming system model, seed processing plant, vertical farming, natural farming, technology museum etc.

4.4 Civil Society Representatives

Every year, several civil society representatives visit the GSF research farm. Some selected elite visitors during 2024-25 are as under

Shri Parveen Arora, Senior Press Reporter, The Tribune, Chandigarh with family

Dr. Saad, CEO, Park Hospital, Karnal

Mr Kapoor Ex DSO, Karnal with doctor friends

4.5 Senior Research Managers

Dr. S.K. Malhotra, Vice Chancellor, Maharana Pratap University of Horticulture and Technology, Karnal; Dr. S.K. Singh, Deputy Director General, Horticulture, ICAR and Dr. J.P. Yadav, Vice Chancellor, Indra Gandhi State University, Rewari at GSFRED on 6th April, 2024.

5. Chairman Visits

5.1 International Soil Salinity Conference at CSSRI, Karnal

The GSFRED Chairman participated in the International Soil Salinity Conference (ISC – 2024) held at CSSRI, Karnal from 14 to 16 February, 2024. The theme of the Conference was "Rejuvenating Salt Affected Ecologies for Land Degradation Neutrality under Changing Climate". He presided over the inaugural function on 14th and also delivered the Valedictory Address as Chief Guest on 16th February. Dr. S.K. Choudhary, Deputy Director General (NRM) inaugurated the conference as Chief Guest. The conference was attended by about 350 scientists including about two dozen salinity experts from abroad. Soil Salinity Map of the country was released during the conference. The Chairman, lauded Dr. R.K. Yadav, Director, CSSRI and his team of dedicated scientists and other staff for organizing this conference meticulously.

5.2 Central Coastal Agricultural Research Institute (CCARI), Goa

The Chairman visited ICAR-Central Coastal Agricultural Research Institute (CCARI), Goa to participate in the 53rd Foundation Day Celebration as Chief Guest on April 1, 2024. The event was organized very meticulously under the able dynamic leadership of Dr. Parveen Kumar, the Director of the Institute. About 300 persons including former directors, heads of state line departments, national and state level award winner farmers including Padam Shri Awardee farmer Shri Sanjay Patil ji and all staff of CCARI participated. It was good opportunity to visit excellent field experiments and demonstrations conducted by the institute scientists including a special visit to Padam Shri Awardee farm Shri Sanjay Patil ji. Very pleased to meet highly innovative and motivated scientists of the institute.

5.3 Maharana Pratap Horticulture and Technology University, Karnal

The Chairman participated as Chief Guest and delivered inaugural address in the National Seminar on Smart Agriculture Practices and Ornamental Horticulture held at MPUAT, Karnal, on 8 to 9 November, 2024.

5.4 Kisan Sanghosti Organized by Samar Foundation

GSFRED Chairman participated in a Kisan Sanghosti organised by Samar Foundation on May 14, 2024 at Jat Bhawan, Karnal. He delivered a key note speech on current agriculture scenario in the country and priorities for future research, development and agriculture policy.

5.5 OP Jindal Global University, Sonipat

Participated in One Day Workshop on Collaboration Between Agriculture and Public Policy Institutions held on 24 June, 2024 at Jindal School of Government and Public Policy. About 20 delegates including Prof Naresh Singh, Former Director General (Policy), Federal Govt. of Canada; Prof D.K. Marothia, President, Indian Society of Agricultural Economics; Dr. Dinesh Abrol, Professor, JNU, New Delhi; Prof; Rajeswari S. Raina, Shiv Nadar University,

Delhi; Dr. Kamal Vatta, Secretary, Indian Society of Agricultural Economics and Dr. Gurpreet Singh; OP Jindal Global University participated. After day long discussions, a proposal was drafted to establish collaborative programme between the participating institutions. It was also proposed to have next meeting of the group at GSF Research, Education and Development Centre, Karnal.

5.6 National Conference on Agriculture and Rural Development at Mount Abu

Chairman, GSFRED was invited as honoured guest to deliver a keynote address in the National Conference on Agriculture and Rural Development organised by Rajyog Education and Research Foundation and Prajapita Brahamkumari Ishwaria Vishva Vidialaya, Mount Abu from 13 to 17 June, 2024. As a follow up, Head of Karnal Centre, respected sister Prem Didi ji invited to share the experiences of Mount Abu visit with sisters and brothers of Karnal. GSFRED has decided to work in collaboration with Prajapita Brahamkumari Ishwaria Vishva Vidialaya, Mount Abu to upscale its mission of skill and entrepreneurship development in farmers, students, unemployed youth and also to link agriculture science with spirituality. Need based joint programs will be organised for capacity building and creating awareness about climate smart agriculture to save water, rejuvenate mother earth, conserve biodiversity, promote peace, harmony and well being of the humanity.

5.7 Independence Day Celebration

Invited to participate in the Independence Day Celebration organised by Brahmakumaries sisters and brothers under the patronage of Didi Prem ji on 10th August, 2024 at their Ishwarya Vishwavidyalaya Regional Centre, Karnal. Large number of prominent citizens including Ex Servicemen of Karnal celebrated the Day under the banner EK SHAM DESH KE NAAM.

6. Facilities Created

- **Agro-Eco-Tourism Facility**

डॉ. गुरबचन सिंह फाउंडेशन फॉर रिसर्च, एजुकेशन एंड डेवलपमेंट (जीएसएफआरईडी)

Agro-Eco-Tourism

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- Crop Cafeteria
- Nursery : Fruits, Vegetables, Flowers and Aromatic Plants
- Farm Fresh Natural Food Outlet
- Technology Museum
- Livestock : Horses Buffaloes, Cows, Goats and Rabbits
- Fisheries : Different Species
- Poultry and Ducks, Kadaknath
- Fruit Trees (30 kinds)
- Seed Processing Plant
- Soil and Water Testing Lab
- Gobar Gas Plant
- Crop Residue Management Techniques

- **Open Animal Housing Facility**

- **Renovated GSFRED Outlet**

7. Honours and Recognitions

- The National Academy of Agricultural Sciences (NAAS), New Delhi nominated Chairman, GSFRED as Convener, Karnal Chapter of the academy.
- Chairman, GSFRED listed amongst top 2% scientists in the world as per the list released by world renowned Stanford University, USA

8. Publications and Invited Guest Lectures

- Singh, Gurbachan. 2024. Multiple use of water through multienterprize agriculture for livelihood and environment security of small land holder farmers. Accepted as full length paper for presentation in ICID Irrigation Conference in Malaysia
- Singh, Gurbachan. 2024. Diversification options for rice-wheat cropping system to save water and to provide resilience for climate change in north –west India. Accepted as full paper for oral presentation in ICID Irrigation Conference in Malaysia

9. GSFRED in Press and Media

10. OBITUARY

The first Barsi of Dr. Hardyal Singh Brar, former professor, PAU, Ludhiana; former president, Adarsh School Education Society and father-in-law of Chairman, GSFRED was organised on November 24, 2024 at GSFRED Research Centre, Karnal. To commemorate sweet memory of the departed soul, an Akhand Path Sahib was organised. Large number of eminent people participated and paid tributes to Brar Sahib.

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