



PANT RESEARCH NEWS

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DIRECTORATE OF RESEARCH
GBPUAT, PANTNAGAR

Inside this issue:

1. Dean VAS Message
2. Editor's Desk
3. Research Story
4. Events to Recall
5. University News

Dean Veterinary & Animal Sciences Message



Dr. N. S. Jadon , Dean Veterinary & Animal Sciences

I am very much honored and pleased that the Directorate of Research has planned to release its research newsletter entitled "Pant Research News" shortly to commemorate technical publications of research attainments of the University.

I understand that scientific academic publications are the most accurate and trusted source for communication. Thus, these highlights may provide remarkable insight into the flow of scientific information in various technical groups as well as social media.

—Contd on Page 2

Editor's Desk



Dr. S. P. Singh, Editor-in-Chief

I wish very happy New Year 2021 on behalf of editorial team and Directorate of Research, Pantnagar. The year 2020 has taught us many lessons. In true sense it opened our eyes to look back, do care for our mental as well as physical health. We left behind the extremes of COVID-19 pandemic not only for our survival but everyone shown a character of determination and dedication which results in two National awards in the name of University i.e. Sardar Patel outstanding ICAR institution award and II in ICAR university ranking award for 2019 (awarded in 2020).

—Contd on Page 2

Dean's Message

I expect that the newsletter will be very much informative and supportive in finding the hidden talents thought their innovative attainments. It will also give glimpse of the University to the public-at-large who are the stakeholders of the University.

I owe my hearty felicitation and congratulations to the editorial team for their meticulous work and sincere efforts to make the release of this newsletter a reality.

Editor's Desk

Release of 15 varieties, several individual and group awards, tie up between university and the industry for the benefit of agriculture fraternity, so many research papers and many recommendations are the few glimpses of the 2020. I wish best is still to come. Thank you everyone for your immense contribution for the nation.

Congratulations

**G.B. Pant University of Agriculture and Technology
For being Awarded
Second among SAUs and Fifth
among SAUs and ICAR Institutes
for the year 2019**

Research Story

Wheat Variety UP 2572: A Success Story in the Hills of Uttarakhand



Dr. J.P. Jaiswal
Professor, GBP

Contributors in the release of variety: Dr. Sohan Pal, Dr. T.B. Singh, Dr. S.K. Malik, Dr. D.P. Saini, Dr. R.S. Rawat and Sri K.V. Singh.

Wheat variety UP 2572 was released by the State Variety Release Committee (SVRC), Uttarakhand and was notified in the year 2007 by Central Variety Release Committee (now Central Sub-Committee on Crop Standards, Notification and Release of Varieties). UP 2572 was developed through pedigree breeding method involving the parents HD 2009/Sonalika//HD2329. This variety was recommended for cultivation in rainfed and irrigated conditions of Uttarakhand hills. UP 2572 was released considering its superiority over 4 checks, namely, HS 240, VL 719, VL 738 and VL 804 by 27.43, 10.53, 7.92 and 7.81 percent, respectively. It was having high resistance to yellow (stripe) and brown (leaf) rusts. It was also possessing high protein content (13.6%). UP 2572 is being used as check in the standard varietal trials (SVTs) organised by Directorate of Agriculture, Dehradun, Uttarakhand. It has been is still in chain and 48 qtls. of Breeder seed was produced in 2018-19.



CVRC Notification No.: 122 (E) dtd. 6.2.2007

UP 2572, a high yielding variety with wide adaptation, and resistant to important diseases like rusts and powdery mildew, became very popular in Uttarakhand hills. It reigned in whole hilly region of Uttarakhand for almost a decade during 2007-08 and 2016-17. During the period 2007-08 and 2016-17, a total of 1264.8 qtls. of Breeder seed was produced by the Breeder seed production centre (BSPC) of the G.B. Pant University of Agriculture & Technology, Pantnagar

Contd—

Research Story

which was at higher side against the DAC indent (Fig.1). A total of 28248 qtls of certified seed of UP 2572 was produced during 2012-13 and 2016-17 as per the information provided by the Directorate of Agriculture, Dehradun, Uttarakhand (Fig.2). Share of UP 2572 in certified seed production was 59% in the year 2016-17 against 41% of other popular varieties in seed chain in Uttarakhand hills (Fig.3).

It is noteworthy that not only in Uttarakhand hills but also in neighboring state Uttar Pradesh, UP 2572 has made a dent due to its wider adaptability. In the year 2015-16, certified seed of UP 2572 was distributed in U.P. to the tune of 1,24,820 qtls (Source: Directorate of Seeds and Farm, U.P.). UP 2572 was in demand by the farmers of Bihar and Uttar Pradesh (Source: Uttarakhand Seeds and Tarai Development Corporation, Haldi, Pantnagar).

Considering high yield potential, wider adaptability and its resistance to rust disease, UP 2572 is now being improved by introgressing 3 resistant genes using marker assisted breeding (MAB), and it is envisaged that with improved resistance its re-release would be beneficial for of the farmers of hilly region of Uttarakhand as major area under wheat in hills is under rainfed conditions.

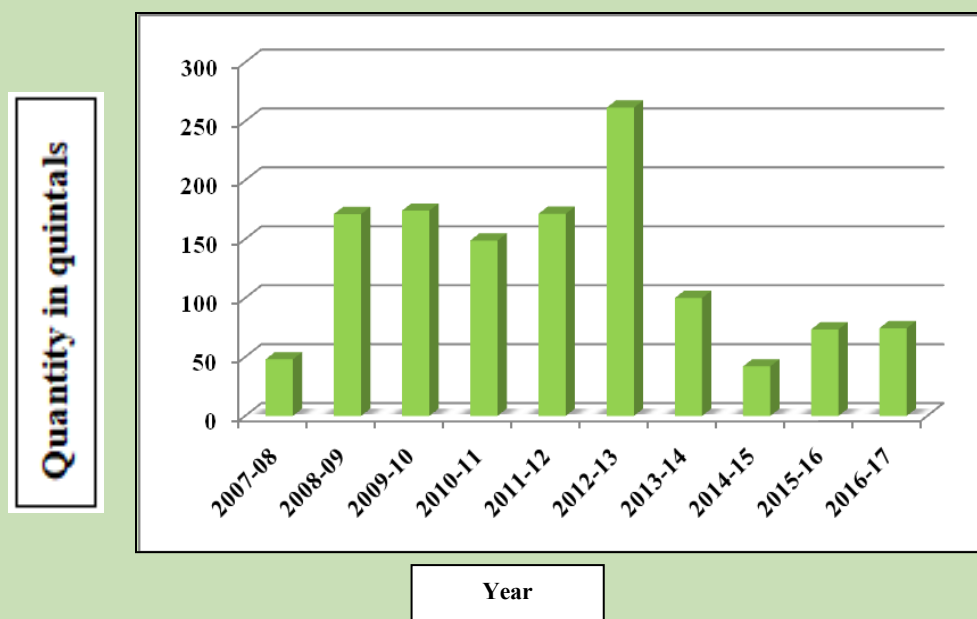


Fig.1. Breeder seed production of wheat variety UP 2572 during 2007-08 to 2016-17

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Research Story

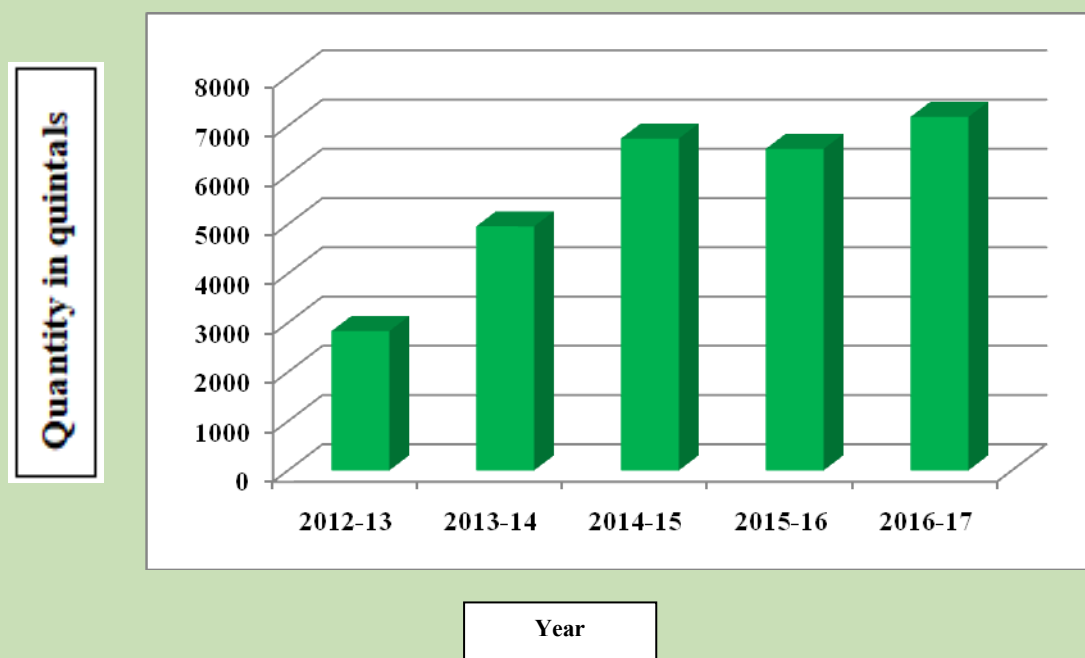


Fig.2. Certified seed distribution of wheat variety UP 2572 during 2007-08 to 2016-17 (Source: Directorate of Agriculture, Dehradun, Uttarakhand)

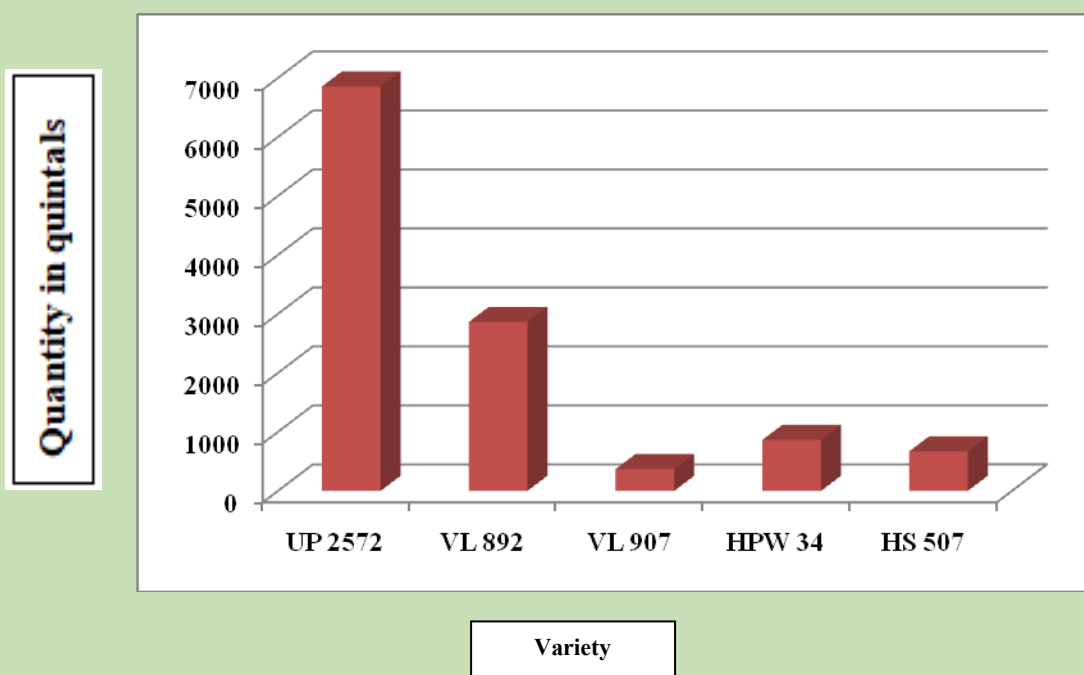


Fig. 3. Certified seed production of wheat variety UP 2572 and other popular varieties in Uttarakhand hills in 2016-17 (Source: Directorate of Agriculture, Dehradun, Uttarakhand)

Research Story

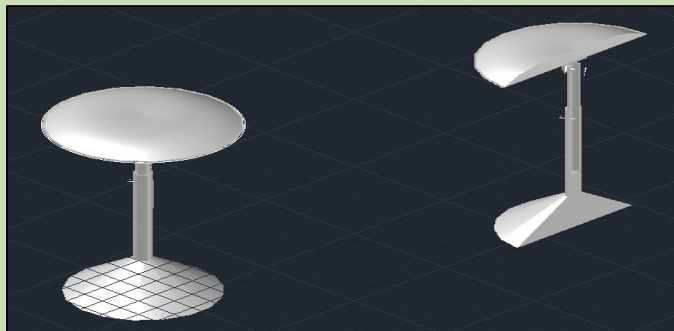
Occupational Health Hazards among the Employees Engaged in Laundry Sectors



Ms. Kanchan Pant, Ph.D. Scholar

Guide - Dr. Seema kwatra, Professor, College of Home Science

The laundry workers are often exposed to various conditions leading to chemical, biological and ergonomic hazards that harm their health and well beings. In order to prevent their occupational accidents and ill health the study was designed with the main objective to identify physical demands, perceived discomfort, complexity of task and fatigue during laundry work and to suggest appropriate preventive measures to mitigate occupational health hazards. Rinsing was found to be most strenuous activity followed by ironing and brushing amongst all the laundry activities. Collection of clothes to and fro to the place of washing was also found to be heavy and tiring. Respondents were mainly facing back pain, joints pain, itching and irritation in skin. Environmental conditions and harmful laundry material aggravated this negative impact on the health of the respondents. Therefore to resolve this problem, ergonomic solutions were given to laundry workers. An adjustable chair was designed thorough Auto CAD to avoid prolonged standing and joints pain for ironing activity. Trolley was suggested to reduce extra movements for carrying the clothes by hand or bucket.



Specifications

Seat diameter- 250mm

Adjustable roads

r₁- 500mm

r₂-400mm

Base diameter- 200mm

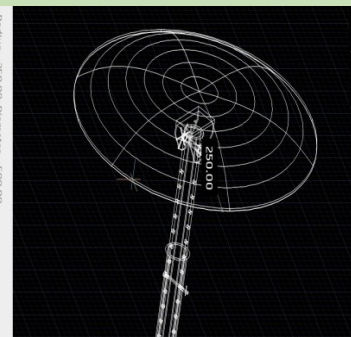
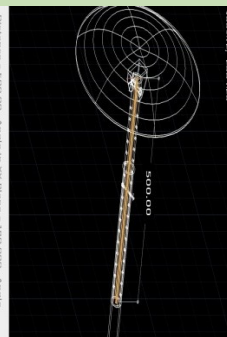


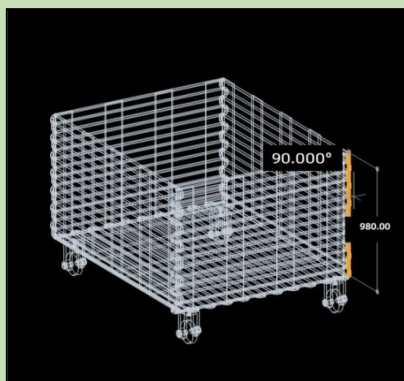
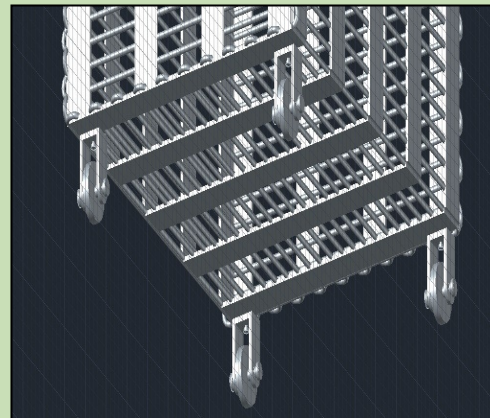
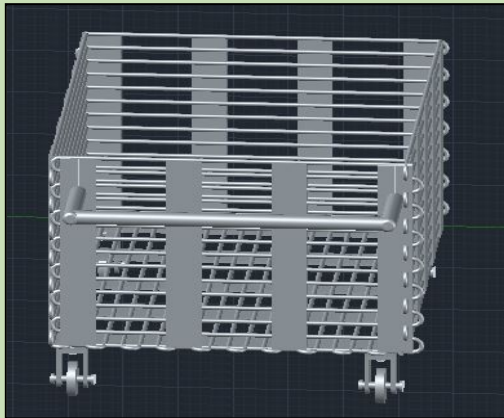
Diagram 1- Adjustable chair for ironing Purpose

Research Story

The chair and trolley designed for reducing the burden of persons working in laundry are being given below with their benefits

Chair

1. In the traditional ironing activity, respondent work in a standing position for prolonged hours that caused pain in leg and lower back muscles. The adjustable chair has been designed as per anthropometric measurements of the respondents.
2. CAD drawing (Auto CAD 2014 version) of adjustable chair has been suggested for the respondents to support lower back and avoid prolonged standing stature for doing the ironing activity.



Specifications

Length – 1750 mm
Width- 1400 mm
Height- 980 mm
Wheel diameter- 140 mm
Handle -600 mm

Trolley

Clothes are generally carried by hand bags or buckets to and fro from place of washing.

This puts a back breaking load on the respondents. The designed (CAD) trolley will prove to be beneficial to reduce the load on back muscles and ease the work of carrying clothes.

Events to Recall

MOU WITH COROMANDAL INTERNATIONAL LTD

An MOU between GBPUAT, Pantnagar and Coromandal International Ltd was signed for the benefit of teaching, research and extension for three years. Dr A.S. Nain, Director Research, Pantnagar and Dr Rajul Adoliya, Executive Vice-President, Coromandal International Ltd signed the MOU for respective organizations. According to MOU following activities will be carried out by the respective partners.

GBPUA&T will carry out the following activities:

1. Mobilization of agricultural university students/scientists by GBPUA&T Pantnagar for the training on safe use of crop protection chemicals by Coromandel experts.
2. Conduct bio-efficacy trials sponsored by Coromandel for regulatory purpose.
3. Engagement of Coromandel experts on bio-efficacy trials conducted by GBPUA&T scientists.
4. The research papers that are the outcome of the collaborative research would have joint and equal rights, facilitating for publishing in a higher NAAS rate research journals.
5. Conduct demonstration/adaptive trials of new molecules/products of Coromandel at University farms/Farmer's field and will consider inclusion of the findings (active ingredient only) into package of practices
6. Participation of agricultural university scientists/subject matter experts from GBPUA&T in farmers training programs organized by Coromandel.
7. Engagement of visit of progressive farmers on adaptive or demonstration plots conducted by GBPUA&T.
8. Publications of events organized by Coromandel in university/external press release.

Coromandel will carry out the following activities:

1. Coromandel will provide Product Stewardship training and certification to students without any charge.
2. Distribute personal protective equipment to students for safe use of crop protection products.
3. Coromandel experts will interact with the university scientists and students on topics of mutual interest. Eg, Azadirachtin based technology

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Events to Recall

4. Coromandel will participate and sponsor the conference/farmer days organized by GBPUA&T, based on selective objectives and priorities of Coromandel
5. Coromandel to conduct / participate in the campus interviews for the placement purpose
6. Coromandel will consider increasing the number of bio-efficacy projects at GBPUA&T. GBPUAT will extend the reduced pricing policy to Coromandel as per existing provisions.
7. Coromandel will consider initiating projects with new technologies.
8. Coromandel will entertain students of GBPUAT for internship at different sites/ locations.
9. Coromandel will initiate fellowship/scholarship/Research Project Sponsorship for the PG students of GBPUAT, Pantnagar as per the objectives and research priorities of Coromandel.
10. Coromandel and GBPUAT will strive for developing a high-end analytical lab at Pantnagar in the name of Coromandel.

At this event Dr. Tej Partap, Vice—Chancellor GBPUA&T, Pantnagar emphasized on the Integrated Drug Program, saying that it is essential to use the chemicals judiciously but the excessive use of these chemical can be harmful to the environment. He also emphasized on the use of micro-organisms in agriculture and said that research on micro-organisms is needed to increase soil fertility especially that of hilly areas.

Director Research, Dr. Ajeet Singh Nain, Pantnagar University, highlighting the joint partnership between Pantnagar University and Coromandal International, said that there will be joint programs in several subjects between two organizations, which will help in the research activities of the university. Dean Agriculture, Dr. Shivendra Kashyap highlighted the possibility of training and skill development out of the partnership between Coromandel International and students of Pantnagar University.

Dr. Rajul Edoliya, Vice President, Coromandel International, emphasized on the responsible use of pesticides for crop safety .

Events to Recall

DEVELOPMENT AND EMPLOYMENT THROUGH INNOVATIONS IN TRADITIONAL METHODS

GBPUAT and KB Systems Haldwani signs MOU

The traditional systems of food preparation and eating habits, have been better, most of the times, in terms of preservation of nutrients and retention of taste, aroma and textural quality. Modern systems are efficient but have some limitations as well. If the traditional methods are complimented with small innovations, they can lead to a great change, not only in product characteristics, but also in development of the state and employment generation.

One of such examples is the re-establishment of traditional flour milling systems with modern tools for food safety, packaging and licensing. M/s KB Systems Pvt., Haldwani, under the technical guidance and scientific support from GB Pant University of Agriculture and Technology has taken up this innovative business of milling all kinds of grains such as wheat, ragi maize, pulses, millets etc. through traditional flour mills / gharats. This has not only reopened doors of the traditional businesses through gharats but also has shown a way ahead for employment generation and reducing migration from the state.

Mr NK Bhatt, one of the Directors of M/s KB Systems Pvt., Haldwani, came in contact with Dr SK Sharma, Professor and Head, Deptt of Food Science and Technology, who guided him throughout the business set-up with his technical know-how and scientific support. GBPUAT-STRIEDES as a Nodal agency and Incubator of Startup Uttarakhand under the guidance of Dr AS Nain, Director Research, also mentored KB Systems to win Recognition as a Startup from Uttarakhand Startup Council in the month of December 2020.

Dr AS Nain Director of Research said that GBPUAT has immensely contributed for development of farmers and industry, across the country for the last six decades. This has provided livelihood, growth, prosperity to a several thousands of individuals and their families. However, contributions of the university were never translated into paying back a part of the earning from business. In an era of financial limitations universities are now expected to generate their own financial resources. As a consequence, and to support and recognize the efforts of the university, industry and beneficiaries are also realizing, their role to payback to the university, so that the activities of the university are strengthened and further advanced. And at the same time, the benefits of the scientific knowledge and technology may be taken to masses across the country.

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Events to Recall

Dr SK Sharma, Professor and Head, Deptt of Food Science and Technology, who is also officiating as CEO Pant Business Park GBPUAT STRIEDES explained that Pant Business Park has been established to facilitate the farmers and industry in all areas of agriculture and allied sciences including food processing, mushroom cultivation, honey processing, poultry and animal production, fisheries, vermicomposting, use of artificial intelligence in agriculture, agricultural marketing etc. PBP shall be providing commercial services for technology transfer and commercialization, DPR preparation, facilitate rental services, contract research, contract services, startup and incubation, etc. Such services are highly demanded and sought by industries and entrepreneurs. In years to come GBPUAT Pantnagar is going to collaborate and forge perpetual partnerships with industry, input suppliers, manufacturers of equipment and machinery, marketing agencies, financial institutions through Pant Business Park for overall strengthening of the university and growth of state. Some of such collaborations are already underway with many of the industries and enterprises.

Mr NK Bhatt Director KB Systems Pvt., Ltd., appreciated the technical guidance and all kinds of support provided by Dr SK Sharma and Dr AS Nain, He also thanked Dr Tej Partap, Vice Chancellor for his encouragement and guidance. He told that such help rendered by the university is going to help them in a big way through out their endeavors for creating livelihood and employment opportunities, especially in Hills of Uttarakhand. He further informed the University is going for mass mobilization in the field of entrepreneurial skill development, imparting training to incubates, creating startups and commercialization of technology developed by University. KB System is first step and many more will follow the suit.

An agreement for mutual benefits has been signed on 2nd Jan, 2021 between GB Pant University of Agriculture and Technology and M/s KB Systems Pvt., Ltd., Haldwani, for providing continuous technical guidance and scientific support for the next five years. KB systems, Pvt., Ltd., has committed to share a part of its profit as royalty during the term of this agreement. KB Systems shall also be allowed to mention this association on their packages. The agreement was signed by Dr AS Nain Director Research, GBPUAT and Ms Kavita Bhat, Director KB Systems Pvt., Ltd. In the presence of Dr SK Sharma, Professor and Head, Deptt of Food Science and Technology and CEO Pant Business Part and GBPUAT STRIEDES, Dr Ashutosh Singh, Director Legal, Dr Ajay Srivastava and Dr AP Singh, COO - GBPUAT STRIEDES, Mr NK Bhatt, Mr LM Bhatt and Mr Piyush Bhatt, Directors of KB Systems Pvt, Ltd.

Events to Recall

Training Program under Scheduled Castes Sub Plan (SCSP)



Dr. S.P. Singh
Associate Professor, Agronomy

The scientists of the weed research of Pantnagar University provided training to farmers on 15 December 2020 (in the village Chakarpur, Tehsil Bajpur, District Udham Singh Nagar) and on 18 December 2020 (in the village Jagdishpur, block Gadarpur, District Udham Singh Nagar) on “the methods of weed control and the problems faced by farmers”. This program was conducted to provide special training and distribution of protective kits to scheduled castes and other backward farmers, as per the instructions of the Directorate of weed Research and Indian Council of Agriculture Re-



search, Government of India. Under this program, in addition to safety kits, the seed, fertilizers, agro-chemicals and sprayers were also provided to farmers.

Welcoming all the guests, Dr. Virendra Pratap Singh, Project Coordinator, AICRP Weed Management (Pantnagar), provided a detailed account of the achievements of the project and the losses due to weeds and its management. Dr. Tej Pratap, Senior Research Officer trained the farmers for various methods of weed control. Dr. S. P. Singh, Senior Research Officer trained the farmer for different weed management tools, which can be used to prevent the losses due to weeds in Rabi crops and also provided the information about time of herbicide spraying.

Events to Recall

In the Training program conducted on 15 December 2020, 50 participants from Village Chakarpur, Post Bajpur, District Udham Singh Nagar including Gram Pradhan, Ashok Kumar Kamboj (Ex Gram Pradhan) and farmers such as Shobhit Kamboj, Ram Avatar, Vishal Kumar, Sachin, Satish Diwakar, Rakesh, Ravi Kanaujia, Anand Diwakar and Karan Singh were present.

The Chief Guest Dr. Abhay Saxena briefed about various schemes of Agriculture Department, Government of Uttarakhand being implemented in the district of Udham Singh Na-

gar for scheduled caste farmers, and distributed fertilizer, seeds, herbicide and sprayers to the farmers. He wholeheartedly appreciated the contribution of the scientists



of Pantnagar University for helping the farmers to increase their farm income. Dr. SP Singh, Senior Research Officer proposed a vote of thanks.

In the Training program conducted on 18 December 2020, farmers Virendra Mandal, Subrata Kumar, Manjit Dhali, Vishvajeet Mandal, Smt Sundarwati, Chandra Prakash and Virendra and 35-40 more farmers from village Jagdishpur, block Gadarpur, district Udham Singh Nagar were present. Dr. Virendra Pratap Singh, Project Coordinator briefed the audience about various schemes for scheduled caste farmers running in the district and distributed fertilizer, seeds, herbicide and sprayers to the farmers. Dr. Tej Pratap said that as scientist of Pantnagar University, it is our responsibility to give the right training to the farmers about proper selection of herbicide, proper amount of spraying, suitable water for solution, proper time for spraying and moisture in soil etc. so that farmers can get proper benefits of herbicide application in the field.

Events to Recall

Animal Health Camps and Farmers training program organized under AICRP on Cattle-Frieswal



*Dr. C.B. Singh
Professor, College of Veterinary & Animal Sciences*

Two Animal Health camps and two farmers training programs were organized under AICRP on cattle-Frieswal (FPT) on 18 December 2020 at Haripura-Jabran (Bazpur) and on 29 December 2020 at Hayatnagar (Khamaria).

The project is being funded by CIRC Meerut (ICAR, New Delhi) and Implemented in the Department of Animal Genetics & Breeding, College of Veterinary and Animal Sciences. The programs were inaugurated by Dr. Ajeet Singh Nain, Director Research. Dr. Ajeet Singh Nain emphasized the increasing milk production by adopting scientific technology in the rearing and management of crossbred cows.

Principal Investigator Dr. Chandrabhan Singh highlighted the main objectives of the project and the benefits to be given to the farmers registered under the project. The project is running since 2010 in 344 villages linked with 08 Artificial Insemination Centre's of U.S. Nagar and Nainital Distt. of Uttarakhand. The total farmers registered under the project are 7898. A total of 38269 Artificial Inseminations were done at the farmer's field by November 2020. Out of which 7377 female calves were born. The Average conception rate recorded under the project is 55.40 %, which is appreciable. A Total of 1454 heifers reached at Age at first calving with average AFC 35.04 months and among them a total of 1134 heifers have completed their first lactation with an average milk yield of 3104.34 Kg. which is significantly higher than (980.34 Kg.) the average milk production of the base population (2214.00Kg.).



Events to Recall

Dr. S.S. Chauhan retired professor (Animal Nutrition) educated the farmers in regard to the importance of balanced feed for crossbred cows and the method to prepare the balance feed by utilizing the local feed ingredients. Head, Department of Animal Genetics & Breeding, Dr. Chandravir Singh, Dr. Brijesh Singh, Professor Livestock Production and Management and Dr. R.S. Barwal, Professor Animal Genetics & Breeding highlighted the various aspects of breeding and housing management. All the problems related to viral, bacterial and protozoal diseases were addressed by Dr. Shiv Prasad, Professor, Veterinary Gynecology and Obstetrics, and Dr. Sanjay Chaudhary, Professor of Veterinary Extension. A total of 42 heifers were treated in both health camps and a total of 113 farmers participated in the training programs.

Work shop on “Financial Facility Scheme under Agricultural Infrastructure Fund”

One-day workshop on the most important and ambitious scheme of the Government of India "Financial Facility Scheme under Agricultural Infrastructure Fund" was organized on 14 December 2020 in the Gandhi Hall of Pantnagar University under joint auspices of Directorate of Agriculture, Uttarakhand and Pantnagar University.

This workshop was inaugurated by Chief Guest Dr. J. Kumar, Acting Vice Chancellor, Pantnagar University. Dr. Gyanendra Mani, Chief General Manager, NABARD was the guest of honour of this workshop. On behalf of the Government of Uttarakhand Dr. KC Pathak, Director, Agriculture, Government of Uttarakhand participated in the workshop. A large number of farmers (129) were also present in the workshop.

Dr. J Kumar, Chief Guest of the function highlighted the importance of scientific methods and resources to enhance farmers' income. Dr. Kumar pointed out that lack of agricultural resources and circumstantial difficulties are the major hurdles in the development of agriculture and increasing farmers' income. He further elaborated that various financial schemes implemented by the government will prove to be game changer and will create the required resources in Uttarakhand. He praised the contribution of NABARD in the field of agriculture and creating startups ecosystem in the state. The different schemes of NABARD pertaining to agriculture infrastructure and farm loan on minimum interest will prove to be very useful for increasing the income of farmers, he further emphasized. Before the remark of the Chief Guest, the lighting of the lamp by

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Events to Recall

the honorable guests was done. Dr. A. S. Nain Director, Research welcomed all dignitaries and participants. Dr. Gyanendra Mani - Chief General Manager, NABARD informed that bank has started various schemes for farmers, farmers' organizations, banks, agricultural entrepreneurs and other stakeholders. He further informed that during next four years only in Uttarakhand, a target has been set to allocate a loan of Rs 785 crore to farmers and farmers' groups. Director of Agriculture, Dr. K.C. Pathak and Acting Director, Extension Education, Dr. Anuradha



Dutta also briefed about the activities of the Department of Agriculture and Directorate of Extension Education, respectively. Dr Dutta highlighted the role of extension worker in dissemination of the technology. NABARD's representative Mr. Vikas Jain presented detailed information on various schemes on behalf of NABARD. Mr. Jain explained about the Credit Guarantee Scheme and its role in development of agriculture. In the workshop, information on agricultural infrastructure fund was given by Joint Director Agricultural Statistics and Joint

Director Agricultural Planning. Dr. S.K. Sharma Professor and Head Department of Food Science and Technology, gave a detailed presentation on the role of the university in the efficient utilization of agricultural infrastructure funds. Dr. Abhay Saxena, Chief Agricultural Officer, Udham Singh Nagar played a key



role in organizing workshop. The inaugural function of the workshop was successfully coordinated by Dr. Poonam Srivastava, Associate Director, HBRT centre.

Events to Recall

Apart from the farmers' participation, the program was attended by Mr. Amarendra Choudhary, Mr. Vijay Devaradi, Mr. Devendra Rana, Dr. Vikesh Yadav, Gopal Singh Bhandari, Somansh Gupta, Abhilasha, Girish Pant, Rajiv Priyadarshi, Amit Pandey, Vishal Kansal, Dr. Parmaram, Dr. A. K. Sharma, Dr. D.K. Singh and Suresh Kumar. All member contributed significantly and show cased the activities of the Directorate of Agriculture, Uttarakhand. Dr. S. P. Singh Asstt Director Research, Dr. V. K. Rao, JD HRC, Dr. Satish Kumar Sharma, Dr. R. M. Srivastava, Dr. A. P. Singh, Girija Shankar Shukla, Tumul Srivastava, Shailendra Kumar, Sanjay Singh, Ritesh, PG students and staff members of Directorate of Research also contributed significantly in making the program a success.

Joint Training Programme on Responsible use of crop protection products

Dr Ravi Mohan Srivatava, Professor, Entomology, College of Agriculture

A training programme based on “Responsible use of crop protection products” has been organised jointly by Coromandal International Limited and G.B. Pant University of Agriculture and Technology, Pantnagar on 26 December 2020. The theme of the training was “Judicious use of crop protection products for sustainable and eco-friendly management of pests”. Vice chancellor of the University was the chief guest of the training however Vice president of Coromandal International Ltd Dr. Rajul Edolia was guest of honour. Faculty members of various departments and corporate officials from company along with the hundreds of students have participated in the above programme. Vice chancellor Dr Tej Pratap emphasised on the development of microbial formulations suitable for compost making in hilly region of the country. Director Research Dr. Ajeet Nain focused on collaborative multidimensional interactive approaches between Coromandel and University for organising mutually agreed programmes benefiting to the University researchers, students and farmers. Dean Agriculture Dr. Shivendra Kashyap emphasized on the possibilities of future interactive programmes and placement of students in Coromandal International. In technical session Dr. R.M. Srivastava, Professor, Entomology emphasised the adverse effects of pesticide on agroecosystem with management of residue in vegetable crops. Dr. Rajul Edolia elaborated the safe use of plant protection products and also new possibilities of bio-products in pest management. Dr. Narshingha from Coromandal discussed the role of Neem based formulations in pest management. Director Extension Dr. A.K. Sharma revealed the use of microorganism in enhancement of productivity. The programme was coordinated by Dr. Poonam Srivastava, Assoc Professor, Entomology and Dr. Anurag Bhatnagar, Head Registration, Coromandal International. Such interactive programmes jointly organised by corporate and University would be highly beneficial in view of enhancing demand of safe agricultural produces.

