PANT RESEARCH NEWS

DIRECTORATE OF RESEARCH
GBPUAT, PANTNAGAR

2 Sep 2020

VOLUME 1 ISSUE 2

Inside this issue:

Director Research Message

Country has witnessed rolling out of New Education Policy 2020 by government of India on 29th July 2020. NEP has pitched for development of an enlightened, socially conscious, knowledgeable, and skilled nation at the societal level through higher education that can find and implement robust solutions to its own problems. Higher education must form the basis for knowledge creation and innovation thereby contributing to a growing national economy. NEP has promulgated the idea of MERUs (Multidisciplinary Education and Research Universities) and research based four-year Undergraduate programme leading to a degree 'with Research' if the student completes a rigorous research project in their major area(s) of study.

This new pattern of education adopted by Education Ministry has many similarities with Agriculture education in India initiated way back in the year 1960 with the establishment of the first Agriculture University "GB Pant University of Agriculture & Technology, Pantnagar". However, research based 4 years degree programme is going to herald a new era in the country and will create a right ecosystem for research. The focus of NEP has also been put on to setting up start-up incubation centres; technology development centres; centres in frontier areas of research; greater industry-academic linkages; and interdisciplinary research. Pantnagar University has already taken initiative in this direction by setting up Pant Business Park (PBP). Another feature of NEP is setting up of NRF (National Research Foundation), which will function to help enable and support a vibrant research and innovation culture across HEIs, research labs, and other research organizations. The NRF will competitively fund research in all disciplines. Successful research will be recognized, and where relevant, implemented through close linkages with governmental agencies. The role of ICAR is also going to change as it will be Standard Setting Agency rather than regulating agency, however it will keep on supporting research through different schemes. Therefore, Agricultural scientists will have dual opportunities of funding from NRF and ICAR. Those who will understand NRF and will strike a balance between NRF and ICAR will be the winner. Pantvarsity has always proved that it know how to cope up with changing conditions. The prestigious ICAR Best Institutions Award-2020 is the testimony of its excellence. I congratulate entire family of Pantnagar and its chief of family Honourable Vice-Chancellor for this unique achievement.

Editorial Desk

Honourable Prime Minister Shri Narendra Modi Ji has rightly underlined the importance of agriculture sector in Indian economy. He mentioned and I quote that "The agriculture sector has a very important role to play in making India a five trillion-dollar economy. If we consider the GDP data of the Quarter-1 of current fiscal year, it profoundly justified what honourable Prime Minister said. The GDP of Q-1 was worst hit by covid-19 pandemic as it shrunk by 23.9 %, while that of agriculture increased by 3.4%. Government of India through states and different agencies is focusing on formulating a cash crop and export centric farming system.

On other hand, the agriculture-driven growth, poverty reduction, and food security are at risk. Climate change is already impacting crop yields, especially in the world's most food-insecure regions. In 2020, shocks related to climate change, conflict, pests and emerging infectious diseases are hurting food production, disrupting supply chains and stressing people's ability to access nutritious and affordable food. Around 821 million people on our planet are going hungry while 1.9 billion are suffering from the ill effects of overweight and obesity. The things are not all negative, India's last five decades data reveals that agricultural production is increasing by 3.7 times, whereas, our population is increasing by 2.55 times that means still 45 % increase in per person food production which makes India not only food self sufficient but exporter too. The contribution of agriculture to the GVA has decreased from 18.2% in 2014-15 to 16.5% in 2019-20. The decline was mainly due to a decrease in share of GVA of crops from 11.2% in 2014-15 to 10% in 2017-18. The share has been declining on account of relatively higher growth performance of non-agricultural sectors. There is chance to go ahead with innovations which will certainly pay in coming days not as production but hike in farmers income and share in national GDP. India can easily become a global power in food industry, if suitable ecosystem of food processing is created. Sensible efforts in food production and processing will greatly help country in realizing the dream of Prime Minister.

The problems of pathogens, electronic waste and plastics are going to be upcoming threats not to our society only but agriculture sector too. The patents obtained, in different fields, by scientists of the University are really going to prove a landmark for future research and development.

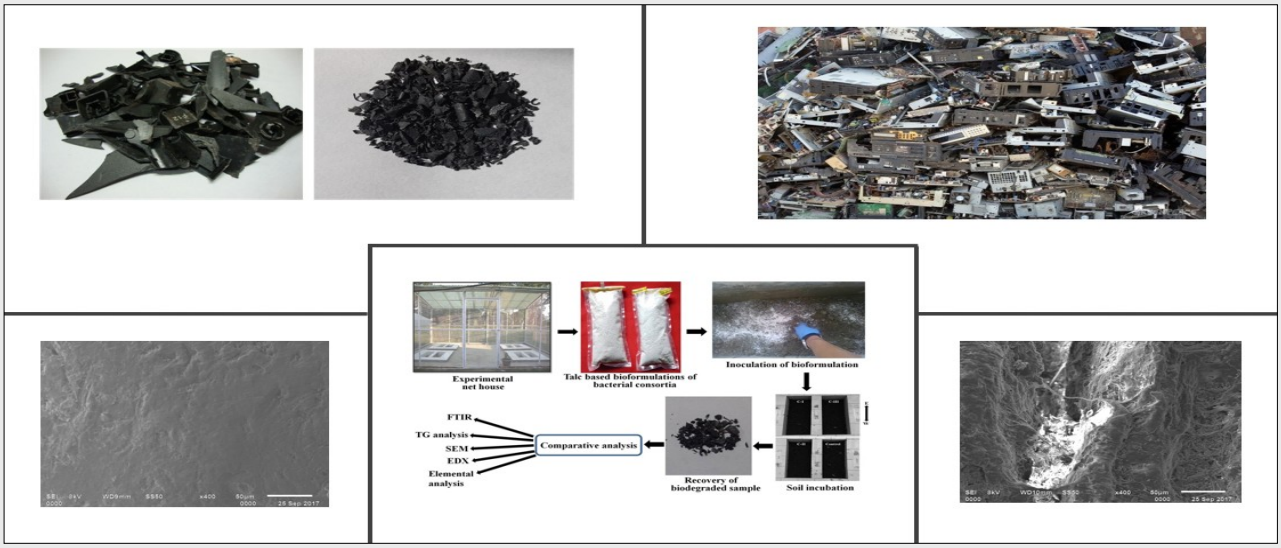
.....Editor-in-Chief.....

Research Story

The story of e-waste management through microorganisms: A Patent

Publishing a patent for e-waste management by using bacterial consortium was a long journey which was started in early 2002 by constructing artificial soil beds at adjacent Net House facility of Microbiology Department, CBSH, GBPUAT, Pantnagar. The team started working on polymer biodegradation using indigenous microorganisms with special reference to plastic polymers since then. It was until 2005, after 3 years of rigorous hard work, first financial support was granted from Department of Biotechnology, New Delhi to the research team leader Dr. Reeta Goel (Prof. & former Head, Dept. of Microbiology, GBPUAT, Pantnagar). Thereafter, there was no looking back. Research team has already published more than 20 research papers in various reputed international journals along with 3 Indian and 1 US patent related to biodegradation of polymers. Later during the process, e-waste has also get attention due to its harmful impacts on human as well as on environment and thus initiated in-depth exploration of indigenous microorganisms for e-waste biodegradation and management.

In recent decades, the world has witnessed a technological development fueled by continuous demand for latest gadgets and devices. In no case, this revolution will decline, thus making electronic waste; a major global issue. Recently estimated data



In picture: E-waste, its granules, overview of biodegradation strategy and SEM micrographs of non-degraded and degraded e-waste

Contd—-

shows that in 2019, the worldwide generation of e-waste was approximately 53.6Mt, of which only about 17.4% of e-waste was collected and recycled and other 82.6% was not even documented. Therefore, the main target of the project was to find an eco-friendly, cost effective and sustainable approach to deal with e-waste while conventional methods does not offer the same. Since, e-waste contains heterogeneous and complex blends of many polymers, in this patent (Process of e-waste biodegradation in presence of bacterial consortium Patent Application no. 201811049946), indigenous potential bacterial strains and their predefined bacterial consortium (Patent No. US 9,057,058 B2) was used to degrade e-waste plastics particularly granulated computer keyboards and the biodegradation study was conducted in soil ecosystem under natural conditions at experimental net house in presence of bacterial consortium.

Under laboratory condition, it was found that the bacterial consortium was started to biodegrade e-waste after 24 hrs. of incubation. While the biodegradation in soil pit was kept for 9 months under natural condition. Thereafter, recovered biodegraded e-waste has been analyzed through diversified techniques including Fourier Transform-Infrared Spectroscopy (FT-IR); Thermogravimetric-Derivative Thermogravimetry-Differential Thermal Analysis (TG-DTG-DTA); Scanning Electron Microscopy- Energy Dispersive X-ray (SEM-EDX) and Elemental analysis, respectively. The result obtained was clearly indicated that the physico-chemical changes in e-waste polymers backbone suggesting the successful bio-degradation of the century's biggest threat. Therefore, this invention provides direct and standardized process for e-waste biodegradation in presence of bacterial consortium, unlikely, to existing conventional practices.

Beside patent, other major significance/achievements during this project are summarized below:

1. Five potential bacteria namely *Achromobacterinsolitus* strain PE2 (MF943156), *Acinetobacter nosocomialis* strain PE5 (MF943157), *Pseudomonas* sp. strain PE8 (MF943158/CP043311), *Pseudomonas aeruginosa* strain PE10 (MF943159) and *Stenotrophomonas pavanii* strain PE15 (MF943160) are also identified as e-waste degraders.

Contd—

2. Their 16S rDNA sequences have been deposited in NCBI Gen Bank database for their easy accessibility to scientific community.

3. *Pseudomonas* sp. strain PE8 (CP043311) was significantly found to be novel culture and its complete genome sequencing has been done. Genome sequence can be accessed to NCBI Gen Bank with accession no: CP043311 (Kirdat,K., Debbarma,P., Narawade,N., Suyal,D., Thorat,V., Shouche,Y., Goel,R. and Yadav,A. (2019). Whole-genome Sequencing of e-waste polymer degrading bacterium *Pseudomonas* sp. strain PE8).

4. The team also received Uttarakhand Governor's Best Research Award – 2019 in Science and Technology for publishing research paper from this project in *Waste Management* journal (Impact Factor: 5.448) (Debbarma, P., Zaidi, M. G. H., Kumar, S., Raghuwanshi, S., Yadav, A., Souche, Y. & Goel, R. (2018). Selection of potential bacterial strains to develop bacterial consortia for the remediation of e-waste and its*in situ* implications. *Waste Management*. 79(2018), 526-536).

Conclusively, the findings from this research work could be explored for large scale biodegradation of synthetic polymeric e-waste subsequently. Therefore, this patent provides degradation and/or fermentation platform for biological recycling of e-waste under natural conditions. Further, it will enrich the e-waste degrading bacteria database and this will provide the directive for development of e-waste degrading bacterial consortia for sustainable strategies.

Research Story

No More Sterilization of Plastic Equipments

All plastic equipments such as surgical syringes, food processing and packaging items are to be sterilized again and again but no more. After un-wearying research of 11 years of scientists Dr. M. G. H. Zaidi and Dr Rita Goel, university had developed antibacterial plastic.

The research was conducted under DBT Nano Task Project which was sanctioned in September 2008 amounting Rs 36.7 Lakh. The antibacterial plastic developed retained antibacterial properties even after 72 hrs of water immersion. The patent was applied in 2013 which was given in February 2020. Under Patent Co-operation Treaty it has been accepted in 147 countries. The technique will be shared for industrial production. The product formed will be collaboration of Pantnagar University and DBT.

Dr M. G. H. Zaidi informed that the sterilized plastics are usually manufactured in presence of harmful carbonic components. The plastic so developed by selecting biodegaradable nano-particles and liquid carbon dioxide can be widely used in home and medical production and can prove a boon.

A Pcr Based Detection & Diagnostic Kit And Processes Thereof For Identification Of Blast Disease And Its Pathogen

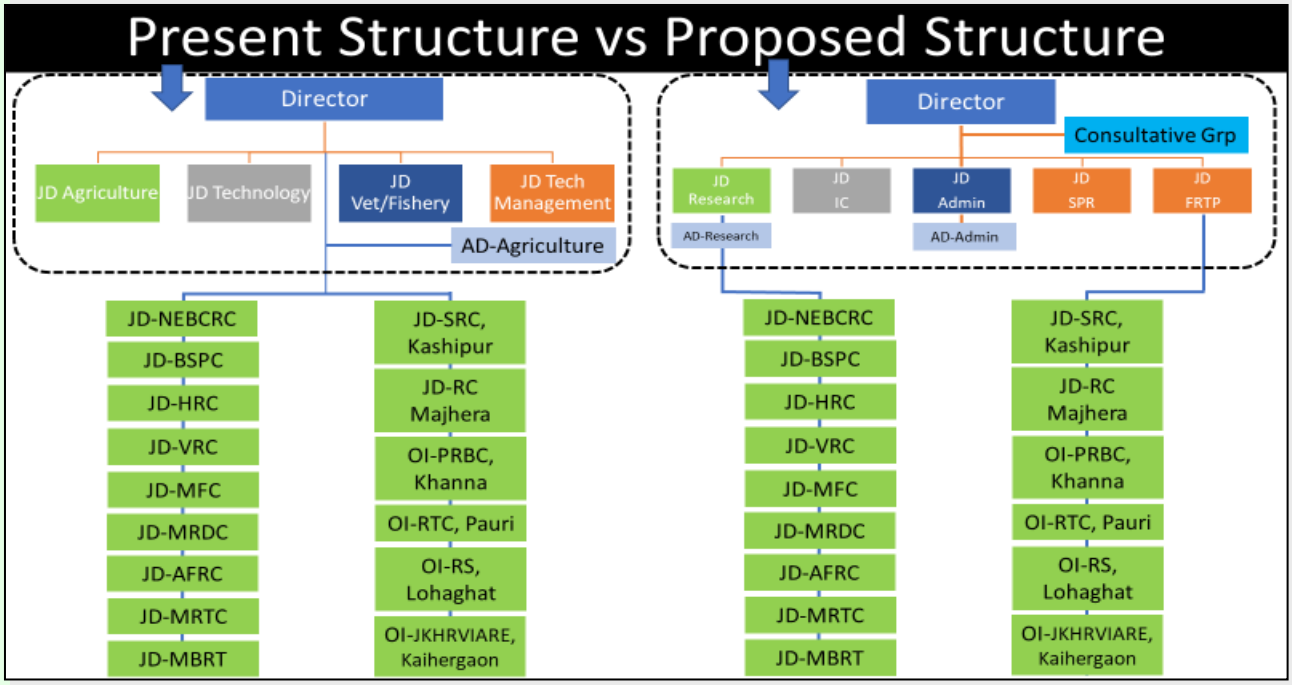
Inventors: Rekha Balodi and J.Kumar

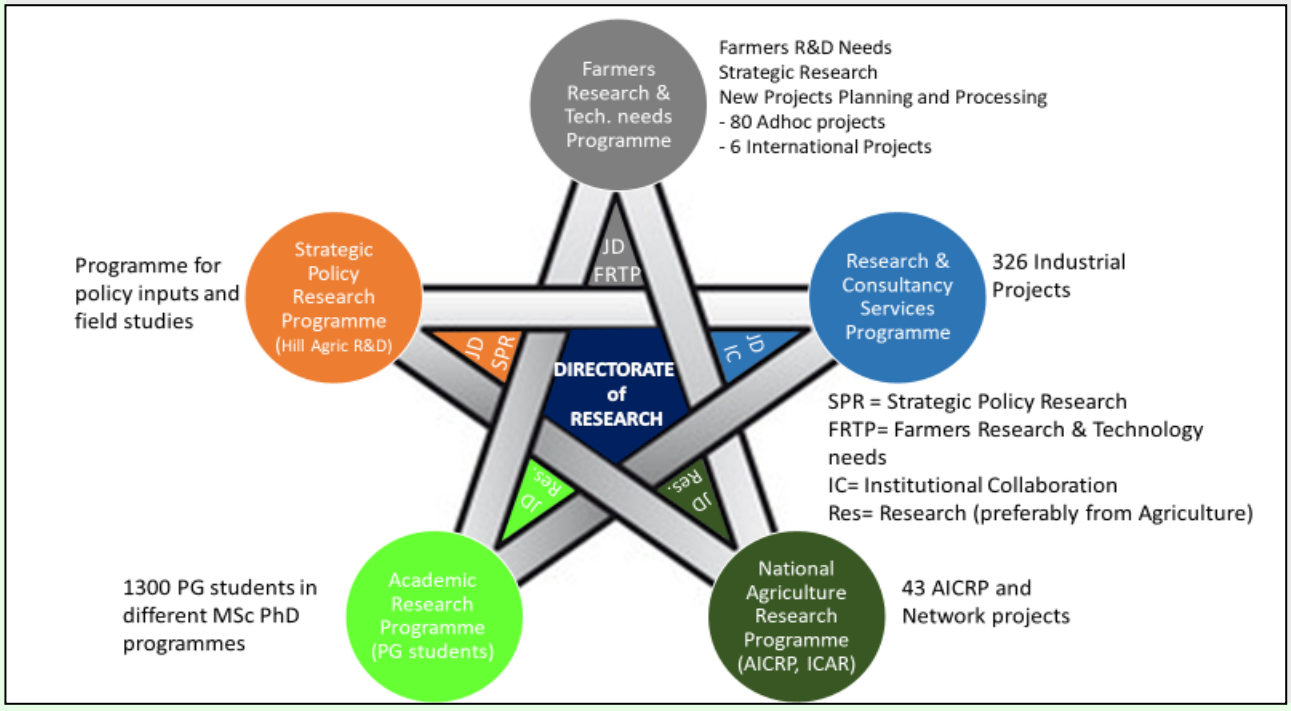
Production of rice is hampered by many biotic stresses, one of the important being 'Blast' disease of rice caused by *Magnaporthe oryzae*. The pathogen survives in the seed, which may serve as the source of primary inoculum and means of transmission of the pathogen to previously uninvaded areas. Considering the above facts, a PCR based assay was designed for the detection of *M .oryzae* directly from the infected seeds. The primer designed is specific to a pathogenicity gene, PWL2 gene (GenBank: U26313.1) specific to *Magnaporthe* and provides for very high specificity. PWL2 gene is a pathogenicity gene and is widely present in pathogen population, thus can be utilized for detection of the pathogen from diverse hosts. In conclusion, present invention provides for a rapid, reliable, sensitive and specific detection assay for *Magnaporthe* form rice or other hosts. This assay can be used for detection of the pathogen in early stages, which will further facilitate risk assessment for introduction of seeds in a new production area where the pathogen is not previously reported and help in designing management strategy for the pathogen.

Research Story

Structure and Functioning of Directorate of Research

Directorate of Experiment Station now known as Directorate of Research is being re-structured considering the present needs of competitive environment, increasing demand of society and farming community, enhancing linkages with government & funding agencies and establishing University as the hub of innovations.





Research Story

UP 2903: A new variety of wheat will help combating malnutrition

Team Members—

Dr. J.P. Jaiswal, Professor G. P. B
Dr. Swati, S.R.O. G. P. B
Dr. Anil Kumar, S.R.O G. P. B
Dr. R.S. Rawat, Retd. Prof. G. P. B
Sri K.V. Singh, Retd. Sr. Tech Asstt.
Supporting staff:
Sri Bijendra Singh and Sri U.B. Yadav

Deficiency of two micronutrients, zinc (Zn) and iron (Fe) in food items is main reason of prevailing malnutrition in human being. Deficiency of zinc affects immune system of body on one hand and deficiency of iron causes anemia on the other. Anemia is serious problem in women. Recently, State Variety Release Committee, Uttarakhand released UP 2903 variety of wheat developed by G.B. Pant University of Agriculture & Technology, Pantnagar. This variety is suitable for its sowing in the month of November (Timely sown condition) in irrigated conditions of plains of Uttarakhand. It has average yield of 55 qtls per hectare and its yield potential is 70 qtls per hectare. Protein content in UP 2903 is 12.68 per cent and it also possesses high content of zinc and iron. Average zinc and iron content is 39.2ppm and 39.8ppm, respectively. In national testing at some testing centres zinc and iron content was reported up to 49ppm and 47ppm, respectively.

The above team led by Dr. J.P. Jaiswal, informed that our efforts are now for the development of protein and micronutrient rich varieties in addition to high yield potential and resistance to major diseases like rusts, powdery mildew and Karnal Bunt. Wheat is a staple food crop and its flour is being used for preparing many food items like Chapati, bread, biscuits and many other bakery products including fast foods, and hence high protein, zinc and iron content together will help combating prevailing malnutrition in the society. There is important role of germplasm received from International Centre for Maize and Wheat Improvement (CIMMYT), Mexico in the development of such varieties. UP 2903 has been developed under All India Coordinated Wheat and Barley Improvement Project with funding support of ICAR-Indian Institute of Wheat & Barley Research, Karnal.

Contd—-

Research Story

Director, Research Dr Ajeet Singh Nain told that suitable arrangements will be made to ensure a large scale production of UP 2903 so that its seed reaches to many farmers. Memorandum of Understanding could be signed with private seed growers to boost its seed production. When the society is fighting with Covid19 (Corona virus) and increasing body immunity has become prime objective, such variety can play significant role in enhancing the immunity.

15th Parthenium Awareness Week- 2020

The 15th Parthenium Awareness Week was organized during August 16-22, 2020 with the collaboration of **Directorate of Weed Research (DWR)**, Jabalpur (MP) and **Directorate of Experiment Station,** Pantnagar at weed control section of Department of Agronomy, College of Agriculture, G.B.P.U.A. & T., Pantnagar. All the Staff of weed control group; Dr. V. P. Singh (PI), Dr. Tej Pratap (SRO), Dr. S. P. Singh (SRO), Dr. Abnish Kumar (PDF), Dr. Neeta Tripathi (SRF), Dr. Soniya Saini (SRF), Mr. R. P. Singh (SRF), Mr. Vishal Vikram Singh (SRF), Mr. Nadeem Idrisi (Project Assistant), Mrs. Aditi Bisht (Project Fellow), Ms. Shilpa Patel (Project Assistant), Ms. Anita Bisht, Mr. Rajeev (DPA), Mr. Hansraj (Lab. Attd.) and other staff working in the project and research centres of University actively participated in the awareness campaign.

Mexican beetles were collected and reared by the centre for their release and distribution at various places during the week. Poster and leaflets in Hindi (contained detailed description of the weed, its hazardous effects, management options and utilization) were prepared and distributed for a widespread awareness campaign. The poster and leaflets published by DWR during this year were used to aware the people about the ill effect, its uses and management of Parthenium.

Contd—-

Research Story

Research Activities/Monitoring/Achievements: (HRC, Patharchatta)

Dr. A.S. Nain, Director Research, Dr S.P. Singh, ADR with his team, Dr. D.C. Dimri, Head Horticulture along with 11 scientists of department of horticulture and other staff visited the Horticulture Research Centre, Patharchtta on 10th August 2020 and participated in evaluation of matured fruit samples of various mango hybrids by using different organoleptic characteristics on 9 point hedonic scale. On the basis of evaluation it was observed that some of the mango hybrids namely Mallika, Arunika, Pusa Shreshta, Sonpari etc. may have greater scope for commercialization in future. The evaluation of different mango hybrids and selection is being done at HRC under AICRP on fruits with the objectives to ascertain the performance of released mango hybrids in relation to local commercial cultivars and to identify suitable varieties for commercial cultivation in Uttarakhand and surrounding states. During the visit, Dr A. K. Singh, PC-AICRP on fruits and Joint Director, HRC has also informed the gathering that in totality 263 mango varieties are being maintained in germplasm block at the centre for conducting the different research programmes.

Contd—

Research Story

On 10th August 2020 the team has also visited the research trial site where evaluation of different banana cultivars (collected from National Research Centre on banana, Thriturapalli) is being done with the objective to identify the climate resilience potential of commercial banana cultivars. It was informed by PC, AICRP on fruits that banana cultivars namely Basrai Dwarf, Grande Naine (G-9) and Poovan are performing well with respect to yield and quality. It was also noted by the team that the performance of banana in field is better in those plants which were transplanted in month of May.

Indian Council of Agricultural Research

ICAR

Certificate

SARDAR PATEL OUTSTANDING ICAR INSTITUTION AWARD–2019

(For SAU/DU/CAU category)

is presented to

Govind Ballabh Pant University of Agriculture and Technology

Pantnagar, Uttarakhand

16 July, 2020
New Delhi

(T. Mohapatra)
Secretary (DARE) &
Director General (ICAR)

(Narendra Singh Tomar)
Agriculture & Farmers Welfare Minister, GoI
& President, ICAR Society

Congratulations Pantnagar University for again proving the excellence by receiving coveted ICAR Best Institutions Award -2020

Research Story

The programme was started on 16th August at backyard of Mushroom Research Centre, Pantnagar. Inaugurating the actitivities of the awareness week on August 17, 2020, at Meteorological Observatory, Norman E Borlaug, Crop Reearch Centre, Pantnagar, Director experiment station, Dr. A.S. Nain gave emphasis on complete control of gajar ghas on cultivated and waste land and requested about for the active participation of farmers, academic, organizations and the state government in the awareness Campaign. Programme Co-ordinator, Dr. V. Pratap Singh told about the hazardous effect of parthenium on animal, human beings and environment. Weed Scientist, Dr. Tej Pratap informed the growing of chakod (*Cassia tora* or *Cassia cerasia*), latjeera and marrigold as competitive plants against parthenium for reducing the growth and population of this weed. Weed Scientist, Dr. S.P. Singh and Plant physiolist Dr. S.K. Guru make aware about chemical control of this noxious weed. The inaugural session was coordinated by Dr. S.P. Singh, Senior Research Officer AICRP on WM.

The various problems caused by this weed on human, animal health and environment were highlighted and demonstrated with the help of audio-visual display, posters, leaflet & beetles. The scientists were also explained in detail regarding management of this weed. Controlling this weed by mechanical, chemical and biological means in heavily infested areas was demonstrated to the public at different places.

At all these locations, staff members and management committees actively participated in the awareness programmes. Lectures and live demonstrations on Parthenium and its management were conducted.

The valedictory function was held in the Conference Hall, College of Agriculture, GBPUA & T, Pantnagar on 22 August, 2020 in the presence of Dr. A.S. Nain, Director Experiment Station, Dr. S. K. Kashyap, Dean Agriculture and all faculty staff and students were present.

Pantvarsity in News

प्लास्टिक उपकरणों को बार-बार स्टरलाइजिंग से मिलेगी मुक्ति

सुरेंद्र कुमार वर्मा (संवाद)

पंतनगर। सर्जिकल सिरिंज सहित, फूड प्रोसेसिंग और पैकेजिंग आदि में प्रयुक्त होने वाले प्लास्टिक उपकरणों के संक्रमित हो जाने की वजह से उन्हें बार-बार की जाने वाली स्टरलाइजिंग से अब छुटकारा मिल सकेगा।

जीबी पंत कृषि एवं प्रौद्योगिकी विश्वविद्यालय के वैज्ञानिकों ने 11 वर्षों के अथक प्रयास से एक ऐसा प्लास्टिक बनाने में सफलता हासिल की है, जो कि जीवाणुरोधी होगा। विश्वविद्यालय के रसायन विज्ञान विभाग में प्राध्यापक डॉ. एमजीएच जैदी एवं सूक्ष्म जीव विज्ञान विभाग की पूर्व प्रमुख डॉ. रीता गोयल ने बताया कि सर्जिकल सिरिंज, उपकरण एवं फूड प्रोसेसिंग में प्रयुक्त होने वाले प्लास्टिक पदार्थों को संक्रमित होने के चलते बार-बार स्टरलाइज करना पड़ता है। भारत सरकार के डिपार्टमेंट ऑफ बायो टेक्नोलॉजी (डीबीटी) के नैनो टेक्नोलॉजी टास्क फोर्स से सितंबर 2008 में स्वीकृत 36.7 लाख रुपये की परियोजना के विवि के वैज्ञानिकों ने एक ऐसे प्लास्टिक को बनाने में सफलता हासिल की जो जीवाणुरोधी था।

पंत विवि के वैज्ञानिकों ने बनाया जीवाणुरोधी प्लास्टिक

नैनो सबमिश्रण के निर्माण में जो भी प्लास्टिक पदार्थ व नैनो पार्टिकल्स प्रयोग किए गए, वह मानव हितैषी हैं। इसमें किसी भी प्रकार के कार्बनिक विलायकों का प्रयोग न करते हुए हरित विलायकों का प्रयोग किया गया है। **-डॉ. एमजीएच जैदी,** प्राध्यापक रसायन विज्ञान, जीबी पंत विवि।

ऐसे बनाया गया जीवाणुरोधी प्लास्टिक

प्राध्यापक डॉ. एमजीएच जैदी ने बताया कि सबसे पहले हमने ऐसे प्लास्टिक पदार्थ चुने, जो मानवीय प्रयोग में हानिकारक न हों और जिनका जैव विघटन संभव हो। इन प्लास्टिक पदार्थों में जीवाणु नाशक नैनो पार्टिकल्स को मिलाया और तरल कार्बन डाई ऑक्साइड (हरित रसायन तकनीक) द्वारा जीवाणुरोधक नैनो पार्टिकल्स को अविषाक्त प्लास्टिक पदार्थों में संयोजित कर दिया। इससे जो नैनो सबमिश्रण प्राप्त हुए, उसका उपयोग एंटी माइक्रोबियल (जीवाणुरोधी) प्लास्टिक बनाने में किया गया। विकसित नैनो सबमिश्रित प्लास्टिक विभिन्न प्रकार के घरेलू तथा चिकित्सीय उत्पादों के निर्माण और संरक्षण में वरदान साबित होंगे।

अब घर की बनी रोटी बढ़ाएगी प्रतिरोधक क्षमता

पंतनगर विवि के वैज्ञानिकों ने विकसित की 65% अधिक जस्ते और आयरन युक्त गेहूं की प्रजाति

सुरेंद्र कुमार वर्मा

पंतनगर। भोज्य पदार्थों में मुख्य रूप से जिंक और आयरन की कमी कुपोषण का मुख्य कारण है। जिंक की कमी से जहां शरीर की प्रतिरोधक क्षमता प्रभावित होती है, वहीं लौह तत्व की कमी से एनीमिया जैसी बीमारियां को न्योता मिलता है। पंतनगर कृषि एवं प्रौद्योगिकी विश्वविद्यालय के वैज्ञानिकों ने सामान्य गेहूं के मुकाबले 65 फीसदी अधिक जस्ते और आयरन युक्त गेहूं की प्रजाति विकसित करने में सफलता हासिल की है। दावा है कि इस गेहूं के आटे की बनी रोटी खाने से लोगों का इम्यून सिस्टम मजबूत बनेगा, जो कोरोना जैसी घातक बीमारी से बचाव में सहायक साबित होगा।

यूपी-2903 जैसी किस्मों का इम्यूनिटी बढ़ाने में विशेष योगदान हो सकता है। इसके बीज का उत्पादन प्रचुर मात्रा में हो सके इसकी व्यवस्था की जाएगी। निजी कंपनियों से भी इसके बीज उत्पादन का करार किया जा सकता है। **-डॉ. अजित सिंह नैन, निदेशक शोध- पंतनगर विवि**

राज्य प्रजाति विमोचन समिति ने पंतनगर विवि से विकसित गेहूं की यूपी-2903 प्रजाति का हाल में विमोचन किया था। यह प्रजाति उत्तराखंड के सिंचित क्षेत्रों में (नवंबर में) बुआई के लिए उपयुक्त है। इस प्रजाति की औसत उत्पादकता 55 क्विंटल प्रति हेक्टेयर और उपज क्षमता 70 क्विंटल प्रति हेक्टेयर पाई गई है। इस प्रजाति में प्रोटीन की मात्रा जहां 12.68% पाई गई है, वहीं जस्ते व लौह तत्व की मात्रा लगभग 65% अधिक है। यह प्रायः सामान्य प्रजातियों में नहीं पाई जाती। राष्ट्रीय परीक्षणों में जहां इसमें जस्ते की मात्रा 49 पीपीएम (पार्ट पर मिलियन) से अधिक पाई गई है, वहीं लौह तत्व की मात्रा 47 पीपीएम तक पाई गई है।

गेहूं की यूपी-2903 प्रजाति विकसित करने वाले पंतनगर विवि के प्राध्यापक डॉ. जेपी जायसवाल ने बताया, हमारी टीम (गेहूं प्रजनक डॉ. अनिल कुमार एवं डॉ. स्मृति) का प्रयास है कि भविष्य में जो भी किस्में विकसित हों, वह उच्च उत्पादन क्षमता के साथ रोग एवं कीटों के प्रति असरोधी होने सहित प्रोटीन, जस्ता और लौह तत्व की प्रचुर मात्रा से युक्त हों।

बुआई से पूर्व धान में झोंका रोग का पता लगाएगी पीसीआर तकनीक

सुरेंद्र कुमार वर्मा

पंतनगर विवि के वैज्ञानिकों ने दस वर्षों की मेहनत में पाई सफलता, पेटेंट भी हासिल

प्रतीक रोग से ग्रसित धान की पत्तियां।

डॉ. ने कुमार।

धान में कंगल सड़न के चलते होता है झोंका रोग

2014 में पेटेंट के लिए आवेदन, 2018 में हुआ रजिस्टर

पर्यावरण को क्षति पहुंचाए बिना होगा ई-वेस्ट का निस्तारण

पंत विश्वविद्यालय के वैज्ञानिकों ने 18 वर्षों में खोजी बायोडिग्रेडेशन तकनीक, चार अगस्त को पेटेंट भी हासिल किया

सुरेंद्र कुमार वर्मा (संवाद)

डॉ. रीता गोयल डॉ. एमजीएच जैदी

यह है ई-वेस्ट बायो डिग्रेडेशन की तकनीक

>> शेषांश पेज 5 पर

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details

APPLICATION NUMBER	201811049946
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	31/12/2018
APPLICANT NAME	G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY, PANTNAGAR
TITLE OF INVENTION	PROCESS OF E-WASTE BIODEGRADATION IN PRESENCE OF BACTERIAL CONSORTIUM
FIELD OF INVENTION	POLYMER TECHNOLOGY
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	jpmishra.jpm@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	03/07/2020

पंतनगर विवि के वैज्ञानिकों ने खोजी नई तकनीक, पर्यावरण को क्षति पहुंचाए बिना होगा ई-वेस्ट का निस्तारण

सुरेंद्र कुमार वर्मा, अमर उजाला, पंतनगर Updated Thu, 06 Aug 2020 10:17 AM IST

सार

- पंत विवि के वैज्ञानिकों ने 18 वर्षों में खोजी बायोडिग्रेडेशन तकनीक
- चार अगस्त को पेटेंट भी हासिल, कुलपति ने दी वैज्ञानिकों को बधाई

विस्तार

वैश्विक समस्या बन चुके ई-वेस्ट के निस्तारण की वैज्ञानिकों ने अब तकनीक खोज ली है। मिट्टी में इसका विघटन होता है और जलाने पर इससे निकलने वाली विषाक्त गैसें पर्यावरण सहित मानव जीवन को हानि पहुंचाती हैं। लेकिन, अब जीबी पंत कृषि एवं प्रौद्योगिकी विश्वविद्यालय के वैज्ञानिकों ने 18 सालों की अथक मेहनत के बाद ई-वेस्ट के निस्तारण की बायोडिग्रेडेशन (जैव विघटन) तकनीक खोज निकाली है। गत मंगलवार को इसका पेटेंट भी इन वैज्ञानिकों को हासिल हो गया है। इससे विश्वविद्यालय में खुशी का माहौल है।

मृदा में विघटन न होने के कारण वर्तमान में ई-वेस्ट (बेकार कंप्यूटर, लैपटॉप, मोबाइल, टीवी, रेडियो आदि) का उपयोग रिसाइकिल से दोयम दर्जे का प्लास्टिक बनाने में किया जाता है। इससे सस्ते एवं घटिया मानकों के घरेलू एवं इलेक्ट्रॉनिक उत्पाद बनाए जाते हैं। ई-वेस्ट की रिसाइकिलिंग से उत्सर्जित होने वाली विषाक्त गैसें पर्यावरण को प्रदूषित करती हैं।

ई-वेस्ट को जमा करके रखना तथा उनका रिसाइकिलिंग से दैनिक जीवन में उपयोगी वस्तुओं के निर्माण के लिए उत्पादों में परिवर्तित करना पर्यावरण हितैषी नहीं होता है। समस्या के समाधान के लिए पंतनगर विवि के वैज्ञानिक बीते 18 वर्षों से विभिन्न प्लास्टिक पदार्थों के बैक्टीरिया द्वारा जैविक विघटन की विधि एवं तकनीक विकसित करने में लगे थे।

भारत सरकार ने दिया पेटेंट

Pantvarsity in News

प्लास्टिक उपकरणों को बार-बार स्टरलाइजिंग से मिलेगी मुक्ति

पंत विवि के वैज्ञानिकों ने बनाया जीवाणुरोधी प्लास्टिक

ऐसे बनाया गया जीवाणुरोधी प्लास्टिक

अब प्लास्टिक उपकरणों को बार-बार स्टरलाइजिंग से मिलेगी मुक्ति

ऐसे बनाया गया जीवाणुरोधी प्लास्टिक

पंतनगर में गाजर घास उन्मूलन सप्ताह शुरु

पंतनगर। जीबी पंत कृषि विवि स्थित कृषि महाविद्यालय के सस्य विज्ञान विभाग में अखिल भारतीय समन्वित खरपतवार प्रबंधन शोध परियोजना के तहत गाजर घास (पार्थेनियम हिस्टेरोफोरस) उन्मूलन को लेकर जागरूकता सप्ताह का शुभारंभ किया गया।

वैज्ञानिकों डॉ. वीपी सिंह, डॉ. तेज प्रताप व डॉ. एसपी सिंह ने किसानों, कर्मचारियों और श्रमिकों को गाजर घास से फसलों, मनुष्यों, पशुओं एवं वातावरण को होने वाले नुकसान और उनके उन्मूलन के बारे में जागरूक किया। कहा कि इससे मनुष्यों में त्वचा व श्वांस संबधी रोग उत्पन्न होते हैं। गाजर घास के प्रति किसानों में जागरूकता लाने के लिए समय-समय पर अभियान चलाया जाना चाहिए। गाजर घास के नियंत्रण के लिए यांत्रिक, जैविक व रासायनिक विधि से नियंत्रण करने पर चर्चा की गई। परिसर को गाजर घास से मुक्त करने का संकल्प भी लिया। संवाद

hindustantimes
Scientists find eco-friendly method to dispose e-waste

गाजर घास के उन्मूलन की दी जानकारी

अर्जुन भूमि समाचार

फसलों को जानकारी देते वैज्ञानिक।

...द्वानी, 20 अगस्त, 2020 दैनिक जागरण 5

गाजर घास के उन्मूलन की वैज्ञानिकों ने दी जानकारी

संसू, पंतनगर : पं. गोविंद बल्लभ पंत कृषि एवं प्रौद्योगिक विवि की अखिल भारतीय समन्वित खरपतवार प्रबंधन शोध परियोजना के तहत गाजर घास जागरूकता व उन्मूलन कार्यक्रम में गाजर घास उन्मूलन की जानकारी दी।

वैज्ञानिकों ने बुधवार को केंद्र में आयोजित कार्यक्रम में कहा कि यह अभियान राष्ट्रीय स्तर पर प्रत्येक वर्ष साप्ताहिक रूप में मनाया जाता है। इसे सफल बनाने को प्रत्यक्ष एवं अप्रत्यक्ष रूप से हिस्सा लेने की जरूरत है। विभागाध्यक्ष सस्य विज्ञान डॉ. केएस शेखर, प्रभारी व्यावहारिक फसल अनुसंधान केंद्र, डॉ. सुनीता टी. पांडे एवं आदि ने विचार प्रस्तुत किए। आदर्श पुष्प विज्ञान केंद्र में गाजर घास जागरूकता एवं उन्मूलन कार्यक्रम में संयुक्त निदेशक, फसल अनुसंधान केंद्र डॉ. वीपी सिंह ने कहा कि गाजर घास कृषि के क्षेत्र में एक वैश्विक समस्या है। इसके प्रति आमजन को जागरूक करने के लिए प्रत्येक वर्ष जागरूकता एवं उन्मूलन अभियान चलाया जाता है। उन्होंने इसके प्रतियोगी पौधे चकौड़ा, लटजीरा एवं गेंदे के पौधों के बारे में भी बताया। डॉ. सिंह ने कहा कि गाजर घास का उपयोग कंपोस्ट एवं वर्मी कंपोस्ट बनाने के साथ कीटनाशी, शाकनाशी एवं औषधियों के रूप में भी कर सकते हैं। इस मौके पर डॉ. एसपी सिंह, एसके चौधरी आदि मौजूद थे।

गाजर घास को मिटाना है, देश को बचाना है

पार्थेनियम जागरूकता सप्ताह शुरू

				
Chief Patron	Patron	Editor-in-Chief	Associate Editor	Programmer
Dr. Tej Partap **Vice-Chancellor**	**Dr. A.S. Nain** **Director Research**	**Dr. S.P. Singh** **AD-Research**	**Dr. Jyotsana Yadav** **Research Editor**	**Mr. Brijesh Dumka** **YP-II**

Directorate of Research
G.B.P.U.A & T, Pantnagar
US Nagar, Uttarakhand

Contact details
Phone: +91 5944233363
Email: desgbpuat@gmail.com