

PANT RESEARCH NEWS



March–April 2021

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DIRECTORATE OF RESEARCH
GBPUAT, PANTNAGAR

Dean COT Message

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Dr. Alaknanda Ashok, Dean COT

I am extremely happy to learn that the **Directorate of Research** has initiated publishing the Newsletter “**Pant Research News**” to put on records the research achievements of the University.

We are coming out of the greatest challenges ever for the University and the entire world during COVID -19. It had been a very struggling phase for all including the researchers. But the positive part is, we have seen and understood that such difficult situations bring out the best; people helping each other; basic kindness and hardwork to make sure our students, faculty, and staff are safe and healthy;

—Contd on Page 2

Editor's Desk



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

The pandemic wreaked a substantial physical, social, economic and emotional havoc on all the stakeholders of Indian agricultural system. Seizing the crisis as an opportunity, the state announced a raft of measures and long-pending reforms. We have seen various steps taken by government during this pandemic time, many of those were required since decades.

Good news is that Government of India has now increased its focus on nutrition (besides food) - security and raising farmers' income (rather than enhancing farm productivity). Changing the consumer behavior with suitable programs and incentives is already in the agenda.

—Contd

Dean's Message

and a commitment to keep our research and innovation mission strong.

It is extremely important to stay focused on the research, even if we face and deal with unprecedented challenges. Because, the research itself provides an important long run perspective on the issues and challenges that we face on a day-to-day basis. We should keep on doing something innovative, even if the way is unknown. There should be curiosity to know the unknowns. As it was said by Albert Einstein, **“If we knew what it was we were doing, it would not be called research, would it?”**

Through this newsletter one will get to know about some of the diverse and impressive work happening everyday in this University in so many areas.

The initiative taken by the **Directorate of Research** regarding documentation of the research going on in the University and to make it available in public domain through **“Pant Research News”** is highly appreciated. I congratulate and extend my best wishes to all for their contributions and hard work to publish this News Letter.

Editor's Message

Different technologies like Biochar application can bring significant benefits when applied to agricultural soils in combination with some fertilizers. Currently, studies focused on evaluating the potential of BC as a soil amendment and carbon sink have been carried out in order to provide a solution to erosion and greenhouse gases emission problems.

Uttarakhand state dedicated organic commodity board, a nodal state agency to promote organic farming, established in 2003. The board identifies commodity-specific clusters, areas and provides them technical know-how on organic agriculture. The state had 128,000 ha under organic cultivation as on November, 2019, which is around 18 per cent of its net sown area. The plan is to make it a 100 per cent organic state.

“Uttarakhand passed the Organic Agriculture Act, 2019, and declared 10 of its blocks fully organic. These blocks are spread across Dunda, Pratapnagar, Jaihari khal, Jakholi, Augustmuni, Ukhimath, Dewal, Salt, Betalghat and Munsyari. Under this Act, the sale and purchase of chemical fertilisers and pesticides in selected blocks has been declared illegal. The natural farming is not very far from the organic farming and needs validation of technologies.

Research Story

NOVEL TECHNOLOGY FOR EXTENDED-SHELF LIFE PANEER



Dr. Anil Kumar

*Assistant Professor, Food Science & Technology
College of Agriculture*

Paneer is rich in protein and fat, and is also a good source of minerals, soluble salts, vitamins and other components of milk. It is a traditional milk product of India which forms the base and filler of several popular

Indian delicacies namely, Shahi-paneer, Karahi paneer, Matar-paneer. Paneer has a good market value, but is not able to find its rightful place in Indian market due to short shelf life of about a week under refrigeration and a day at room temperature. Therefore, the present invention (Application No. 667DEL/2012) relates to an attempt to increase the shelf life of paneer without adversely affecting the acceptability of the product. Shelf life was evaluated at room temperature and under refrigerated conditions. Study revealed that application of this novel technology can extend the shelf life of paneer effectively in both the conditions.



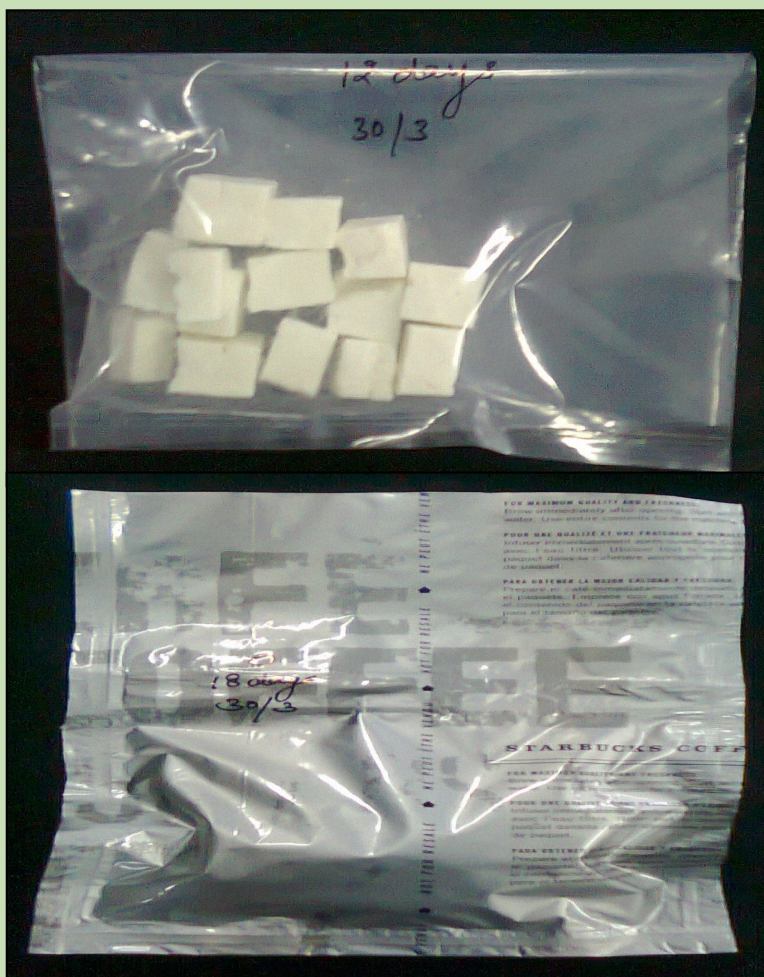
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Research Story

As compared to conventional paneer, it would be possible to keep it for four days (about 4-times) at room temperature (30°C), while for more than twenty-one days (approximately 3-times) at refrigeration temperature (5°C), in good condition. This invention has great potential and scope for commercialization of paneer. The product can be packed in same PP or PE packaging materials as done before, there is no need to go for costly packaging.

This invention has been awarded patent (Indian patent No. 317802). The inventors of this invention are Ms. Reeta, Dr. Anil Kumar, Dr. Gurmukh Singh from Dept. of Food Sci. & Tech. and Dr. B.K. Kumbhar from Dept. of PHPFE. By this technology, paneer would be able to reach consumers in pieces packed in pouches with extended shelf life.



10/09/2019 Intellectual Property India

inPASS (http://ipindia.nic.in/index.htm)

Indian Patent Advanced Search System

Patent Search

Invention Title: "PANEER WITH EXTENDED SHELF-LIFE AND PROCESS FOR PREPARING OF THE SAME"

Publication Number: 45/2014

Publication Date: 07/11/2014

Publication Type: PUA

Application Number: 667/DEL/2012

Application Filing Date: 07/03/2012

Priority Number:

Priority Country:

Priority Date:

Field Of Invention: FOOD

Classification (IPC): A23;

Inventor:

Name	Address	Country	Nat
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Applicant:

Name	Address	Country	Nat
G.B. PANT UNIVERSITY OF AGRICULTURE AND TECHNOLOGY	PANTNAGAR-263145, DISTT. UDHAM SINGH NAGAR, UTTARAKHAND, INDIA	India	India

Abstract:

The present disclosure provides a coating formulation meant for coating of paneer which comprises whey protein concentrate, at least one plasticizer, at least one antioxidant and water. The present disclosure also provides a coated paneer having extended shelf-life and a process for preparing the same.

Complete Specification

FIELD OF THE DISCLOSURE

The present disclosure relates to a coating formulation meant for coating of paneer and a process for preparing the same. The present disclosure also relates to a coated paneer and a process for preparing the same.

BACKGROUND

Paneer is one of the traditional dairy products of India which is analogous to the western cottage cheese. It is mainly produced by local dairies or milk product distributors on cottage scale industries. Milk production in India for the year 2009/2010 was 112.3 million litres. It is estimated that about 35 per cent of the total milk produced in India is processed.

Paneer is not the base or filler for several popular Indian delicacies such as shahi paneer, matar paneer, kharra paneer, paneer sarissa, paneer bhurji, paneer agraathi, paneer makhani and many such culinary dishes and recipes. However, paneer is mostly stored and marketed unpacked which leads to the irreversible and undesirable changes in paneer. Repackaging affects the microbiological quality, sensory attributes, moisture, acidity and texture of paneer. Improper packaging leads to increase in acidity and moisture loss. Usually, shelf life of unpacked or improperly packed paneer under refrigeration (5°C) is six days and at room temperature (30°C) is one day. Further, the freshness of paneer is lost within three days when stored under refrigeration (5°C). It is observed that the short shelf life of paneer is mainly due to surface spoilage. The surface spoilage of paneer is mainly caused by the growth and development of bacterial slimy layer on the surface which result in increase in acidity of paneer. This makes the paneer unmarketable in the market.

[View Application Status](#)

<https://ipdiservices.gov.in/PublicSearch/PublicationSearch/PatentDetails>

india.gov.in

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भारत सरकार
GOVERNMENT OF INDIA
पेटेंट कार्यालय
THE PATENT OFFICE
पेटेंट प्रमाणपत्र
PATENT CERTIFICATE
(Rule 74 of The Patents Rules)

स्लॉक: 011115186
SL No: 011115186

पेटेंट सं. / Patent No. : 317802

आवेदन सं. / Application No. : 667/DEL/2012

फाइल करने की तारीख / Date of Filing : 07/03/2012

पेटेंटर / Patentee : G.B. PANT UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

प्रमाणित किया जाता है कि पेटेंटी को उपरोक्त आवेदन में बकायदस्त "PANEER WITH EXTENDED SHELF-LIFE AND PROCESS FOR PREPARING OF THE SAME" नामक आविष्कार के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख 7th day of March 2012 से बीस वर्ष की अवधि के लिए पेटेंट अनुदान किया गया है।

It is hereby certified that a patent has been granted to the patentee for an invention entitled "PANEER WITH EXTENDED SHELF-LIFE AND PROCESS FOR PREPARING OF THE SAME" as disclosed in the above mentioned application for the term of 20 years from the 7th day of March 2012 in accordance with the provisions of the Patents Act, 1970.

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATION

पेटेंट कार्यालय
Date of Grant: 07/06/2019

पेटेंटर
Controller of Patent

नोट - इस पेटेंट के नवीकरण के लिए बीस वर्ष के बाद तारीख 7th day of March 2014 और उसके पचास वर्ष के बाद तारीख 7th day of March 2014 के अनुसार तारीख 7th day of March 2014 से बीस वर्ष की अवधि के लिए पेटेंट अनुदान किया गया है।
Note - The fees for renewal of this patent, if it is to be maintained will fall / has fallen due on 7th day of March 2014 and on the same day in every year thereafter.

Research Story

CONVERTING CROP WASTE INTO GREEN GOLD



Dr. Sumit Chaturvedi
Associate Professor
Department of Agronomy
College of Agriculture

The farmers usually burn the residue, leading to severe air pollution in winters. In recent years, the air quality of Delhi has plunged to the lowest level, due to smog making it a gas chamber creating public health emergency. The smog is mainly attributed to the burning of agro-waste by farmers in North India. Every year around 15-20 million tonnes of crop stubble (largely rice straw) is burnt in Punjab and Haryana generating large amounts of smoke in a short span. During the peak crop burning period, the air pollution index is 20 times higher than the threshold for safe air as defined by the World Health Organization. The burning of agricultural crop residue results in emission of greenhouse gases, air pollutants, volatile organic compounds, particulate matter and smoke, affecting the air quality. It is a health hazard, leading to diseases beyond affecting respiratory health.

In India, huge amount (501.73 mt) of agricultural residue is generated every year, out of which 140.84 mt is surplus and 92.81 mt, is being subjected to burning. In northern India, biomass burning is a traditional agricultural practice followed by farmers mainly twice a year, first after harvesting paddy crop and then after harvesting the wheat crop. Common reasons include clearing of fields for ease of farm mechanization and management of insect pest and weeds, both by eliminating them directly and altering their natural habitat.

In present state of affairs, a tangible solution to safely dispose these wastes is the need of the hour. It has given rise to present innovation wherein we are working on technology to find a more sustainable way to deal with the agricultural waste by converting it into green gold called “Biochar” and encouraging farmers not to burn stubble anymore.

Our team including Dr V C Dhyani, Associate Professor (Agronomy), Mr Shivendra Singh (SRF) in GBPUAT Pantnagar, along with National Innovations on Climate Smart Agriculture (NICRA), CRIDA Hyderabad is working to covert agricultural waste into green gold “Biochar”,



Contd—

Research Story

and subsequently into the highly valuable input within the same agriculture system viz., controlled release fertilizers. This technology not only reduces direct emissions from burning but also reduces global warming footprints due to reduced GHG emission from the fields and increased C-sequestration. Research output offers an opportunity of utilizing Biochar or PyCCS (Pyrogenic carbon capture and storage) as negative emission technology by IPCC. Therefore, India with huge quantity of unutilized agri-residues (about 91-141 mt/year) has great potential for climate change mitigation by converting agri-residues into biochar and its based products.

Four products, as controlled/slow release nitrogenous fertilizers, were developed under this project; two using rice straw and husk biochar through intercalation/impregnation of urea (20-28% N) and two through encapsulation of urea with biochar + DMO and biochar + chitosan (40-42% N). Biochar based CRFs developed as rice husk biourea, rice straw biourea and DMO+Biochar coated Urea and Chitosan+Biochar coated Urea displayed excellent retention ability by holding nitrogen for more than 30 days and more as release of NH_4^+ and NO_3^- as compared to commercial urea in which they existed only for 9 and 13 days, respectively. Response of biochar based fertilizers under rice-wheat cropping system was significant and they gave higher productivity as compared to commercial urea under 4 years field trials.



Thereby, biochar has great potential in soil amendment and development of slow release nitrogen fertilizers. Enriched biochar fertilizer saves energy, improves soil properties and reduces fertilizer consumption by increasing fertilizer use efficiency and reducing losses. The technology would contribute in effective recycling of agro-residue by utilizing it for biochar production and further as carrier for developing slow release nitrogenous fertilizers by fertilizer industries. Industries can also be benefitted by utilizing bio-gas and bio-oil, produced in the process of pyrolysis, as a source of energy. It also reduced undesirable environment consequences due to increased N use efficiency, reduced N losses and greenhouse gas emission. It resulted in increased carbon sequestration and helps farmers to get additional wealth from agro-residue by utilizing it as input for fertilizer industry.

Research Story

Implementation of Research and development work on “Vriksh Ayurveda” based Herbal KunapaJala at GBPUAT, Pantnagar



Dr. Sunita T. Pandey

*Professor Agronomy
College of Agriculture*

A collaborative, multi locational, multi institutional and multidisciplinary research and development project on “Exploring Livelihood Potential of Wild Growing Stinging Nettle (*Urticadioica*) in Uttarakhand”, funded by Ministry of Environment, Forest & Climate Change, Government of India, New Delhi under National Mission on Himalayan Studies (NMHS), has been implemented at GBPUAT for a study entitled “Exploring the possibilities of Introduction and integration of nettle-based liquid fermented organic Vrikshayurveda concoctions on various selected crops of district Almora”. The project has been implemented for 3 years in the university under the project collaboratorship of Dr. Sunita T Pandey, Professor Agronomy, GBPUAT with a team of scientists since July 2020. The research work on various kinds of Herbal kunapjala viz. agronomical trials on various crops, resource quantification in terms of soil fertility and its microbiological status. Analysis of various kinds of kunapjala, its microbial activities, action against various pathogens, effect of seed priming by kunapajala on crop establishment etc. have been initiated from Rabi 2020. The extension activities for conducting the awareness campaign, training and demonstration for preparation of kunapajala and its application in various crops are being carried out through the scientists of KVK Matela. The project is to be conducted at main centre of KVK, Matela and also at 11 blocks (2 villages per block) of Almora to cover 1000 farmers, including 600 women and 400 youth. Among these 1000 people to be trained, at least 300 people should be from SC & ST.



Pantvarsity in News

बेमौसमी सब्जी उत्पादन के लिए ग्रीन हाउस बेहतर उपाय संरक्षित खेती तकनीक से कम क्षेत्रफल से कमा सकते हैं अधिक आय

संरक्षित खेती तकनीक
संरक्षित खेती तकनीक के अभाव में किसानों को अधिक खर्च करना पड़ता है। इस तकनीक से किसानों को कम खर्च में अधिक आय मिल सकती है।

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नींबू वर्गीय फलों को कीटों से बचाएं किसान जीबी पंत कृषि एवं प्रौद्योगिकी विवि के उद्यान विभाग की वैज्ञानिक डॉ. रश्मि ने दी सलाह

खसखस
खसखस कीट नींबू वर्गीय फलों को नुकसान पहुंचाता है। इस कीट को नियंत्रित करने के लिए किसानों को सलाह दी गई है।

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पंत विवि के वैज्ञानिकों ने ईजाद की सोयाबीन की दो नई किस्में नई किस्में 10-15 फीसदी अधिक उत्पादन देंगी, किसानों की आय में होगी वृद्धि

पंत सोयाबीन-25
पंत सोयाबीन-25 एक नई किस्म है जो 10-15 फीसदी अधिक उत्पादन देगी।

पंत सोयाबीन-26
पंत सोयाबीन-26 एक नई किस्म है जो 10-15 फीसदी अधिक उत्पादन देगी।

पंत सोयाबीन-25
पंत सोयाबीन-25 एक नई किस्म है जो 10-15 फीसदी अधिक उत्पादन देगी।

पौधों की बेहतर नर्सरी व प्रबंधन होगा जलसंधि, पंतनगर में आयोजित कार्यक्रम में भाग लेने वाले

जलसंधि, पंतनगर
जलसंधि, पंतनगर में आयोजित कार्यक्रम में भाग लेने वाले।

जलसंधि, पंतनगर
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