



K.R. MANGALAM UNIVERSITY
THE COMPLETE WORLD OF EDUCATION

SCHOOL OF AGRICULTURAL SCIENCES

NEWS LETTER OCT-DEC 2024



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FROM THE EDITORIAL TEAM



As we face the pressing challenges of sustainable farming, this newsletter highlights the remarkable work emerging from our School. Our aim is to showcase the diverse and transformative nature of agriculture and its crucial role in shaping a sustainable future. In this newsletter, you'll find a variety of articles exploring cutting-edge research and developments in areas such as the, the role of digital tools in modern agricultural extension, women in in agri-tech.

Dear Readers,

We are delighted to present the latest edition of our Newsletter of School of Agricultural Sciences. This publication serves as an important bridge between our academic community and the evolving world of agriculture, where research, ideas, and innovation come together.

As we face the pressing challenges of sustainable farming, this newsletter highlights the remarkable work emerging from our School. Our aim is to showcase the diverse and transformative nature of agriculture and its crucial role in shaping a sustainable future. In this newsletter, you'll find a variety of articles exploring cutting-edge research and developments in areas such as the, the role of digital tools in modern agricultural extension, women in in agri-tech. We also delve into the protected cultivation of high-value crops, and the role of plant nutrients in better crop production. Additionally, we feature exciting innovations in dairy farming and explore the future of organic farming.

Our dedicated faculty and passionate students have been involved in numerous projects, field experiences, and workshops, all of which contribute to meaningful progress in agriculture. We are also proud to share inspiring stories from our alumni, who continue to make significant strides in the field.

This newsletter is not just a collection of articles, it is a reflection of our collective vision to drive sustainable agricultural practices. We believe that knowledge, creativity, and collaboration are key to advancing agriculture.

Thank you for your continued support. We are excited to bring you more enriching and thought-provoking content in the future.

Warm regards,

Editorial Team

Dr. Anjali Tomar

Editor-in-Chief & Assistant Professor

School of Agricultural Sciences

Dr. Shikha Dutt Sharma

IQAC Coordinator

FROM THE DESK OF IQAC COORDINATOR



This vibrant publication stands as a reflection of the relentless pursuit of academic excellence, innovation, and research that defines our ethos at K.R. Mangalam University. Through this newsletter, we celebrate the remarkable strides taken by our faculty and students in the realm of agricultural sciences.

From pioneering research to impactful industry collaborations and noteworthy student accomplishments, the newsletter encapsulates the dynamic spirit and intellectual vibrancy of our institution.

It is with immense pleasure and pride that I extend my warmest greetings to all readers of *Frontiers in Agricultural Sciences*, the quarterly newsletter of the School of Agricultural Sciences (SOAS). This vibrant publication stands as a reflection of the relentless pursuit of academic excellence, innovation, and research that defines our ethos at K.R. Mangalam University.

Through this newsletter, we celebrate the remarkable strides taken by our faculty and students in the realm of agricultural sciences. From pioneering research to impactful industry collaborations and noteworthy student accomplishments, the newsletter encapsulates the dynamic spirit and intellectual vibrancy of our institution.

At K.R. Mangalam University, we remain steadfast in our commitment to nurturing a culture that values knowledge creation, interdisciplinary learning, and meaningful contributions to the scientific community. This newsletter is not just a publication, it is a chronicle of our journey toward transformative education and sustainable development.

I extend my heartfelt appreciation to the editorial team for their tireless efforts and dedication in bringing this edition to life. I eagerly look forward to the continued evolution and success of this publication in the times ahead.

Warm regards,

Dr. Shikha Dutt Sharma

IQAC Coordinator

WORD FROM LEADERSHIP



This newsletter is a true reflection of the unwavering passion, dedication, and intellectual spirit demonstrated by our faculty members, students, and researchers, individuals who are deeply committed to advancing the field of agriculture for the betterment of society. At K. R. Mangalam University, we are proud to nurture an ecosystem that champions agricultural education and research, with a strong emphasis on sustainability, innovation, and community engagement.

It gives me immense pleasure to extend my warm greetings to all the readers of the newsletter of School of Agricultural Sciences. This newsletter is a true reflection of the unwavering passion, dedication, and intellectual spirit demonstrated by our faculty members, students, and researchers, individuals who are deeply committed to advancing the field of agriculture for the betterment of society.

At K. R. Mangalam University, we are proud to nurture an ecosystem that champions agricultural education and research, with a strong emphasis on sustainability, innovation, and community engagement. The School of Agricultural Sciences leads this mission with distinction - creating, sharing, and applying knowledge for the collective good.

This newsletter serves as a bridge between the university and the broader agricultural community. It brings together the latest research breakthroughs, practical insights, and inspiring narratives that underscore the transformative power of agricultural sciences. The content within these pages echoes the opportunities and challenges we face in a rapidly evolving world, where agriculture must adapt to technological advancements and environmental shifts to secure a sustainable future.

I am confident that the School of Agricultural Sciences will continue to be a torchbearer in developing innovative solutions that support farmers, benefit consumers, and protect our environment. I take this opportunity to express my heartfelt appreciation to all contributors, the editorial team, and everyone involved in curating this remarkable edition. Your efforts in fostering a culture of inquiry, knowledge-sharing, and lifelong learning are truly commendable.

Thank you for your continued support. I hope you find this edition both insightful and inspiring.

With best regards,

Prof. Raghuvir Singh

Vice Chancellor

K. R. Mangalam University

Message from the Dean



Agriculture is more than a subject we teach - it is a way of life we live and promote with purpose. Whether it's through field-based learning, lab innovations, or community engagement, our school is striving every day to build a more sustainable and resilient future. This edition of our newsletter offers a glimpse into the vibrant activities that have taken place across October to December, innovative projects, insightful seminars, field visits, and the voices of our growing agri-professionals.

Dear Readers,

It brings me immense joy to present the latest edition of the newsletter of School of Agricultural Sciences - a reflection of the tireless efforts, creativity, and passion that drive our school forward. Each edition of this newsletter gives us an opportunity to pause, reflect, and celebrate the achievements - big and small - of our students and faculties.

Agriculture is more than a subject we teach - it is a way of life we live and promote with purpose. Whether it's through field-based learning, lab innovations, or community engagement, our school is striving every day to build a more sustainable and resilient future. This edition of our newsletter offers a glimpse into the vibrant activities that have taken place across October to December, innovative projects, insightful seminars, field visits, and the voices of our growing agri-professionals. I encourage you to read through these pages not just as a report of events, but as a source of inspiration and pride.

A heartfelt gratitude to our editorial team and all contributors who brought this issue to life with dedication and creativity.

Happy reading.

Warm wishes,

Dr. Joginder Singh Yadav

Dean, School of Agricultural Sciences
K. R. Mangalam University

ABOUT THE SCHOOL OF AGRICULTURAL SCIENCES

SCHOOL VISION AND MISSION

School of Agricultural Sciences at K. R. Mangalam University is fully equipped with the facilities of laboratories and agriculture farms to carry out the Teaching, Practical and Research work. All the faculty members are well qualified (Ph.D. in their respective fields) and well experienced. The faculty remains in constant touch with various experts in the relevant fields and is willing to experiment with latest ideas in teaching and research.

School of Agricultural Sciences imparts students technical knowledge, enhances their practical skill and ability, motivating them to think creatively, helping them to act independently and take decisions accordingly in all their technical pursuits and other endeavours. It strives to empower its students and faculty members to contribute to the development of society and Nation.

School Vision

To be an internationally recognized Agri-institute for agriculture education, research and innovation, and Agri-entrepreneurship.

School Mission

- Interdisciplinary approach, innovative pedagogy, stimulating research to foster Agri-based employability and entrepreneurship.
- Integrate global needs and expectations through collaborative programs with premier universities, research centers, industries, and professional bodies within India and abroad for global exposure & real-life work experience.
- Practicing cutting-edge-technologies, tools, techniques, practices, and processes in the field of agriculture
- Developing leadership, ethical values, and sensitivity to the environment.

STUDENTS' ACHIEVEMENTS

Students Achievements

A group of final-year B.Sc. (Hons) Agriculture students from K.R. Mangalam University, participated in a comprehensive 5-day training program on "Advanced Beekeeping", held at the Integrated Beekeeping Development Centre (IBDC), Kurukshetra, Haryana, from December 16th - 20th December, 2024.

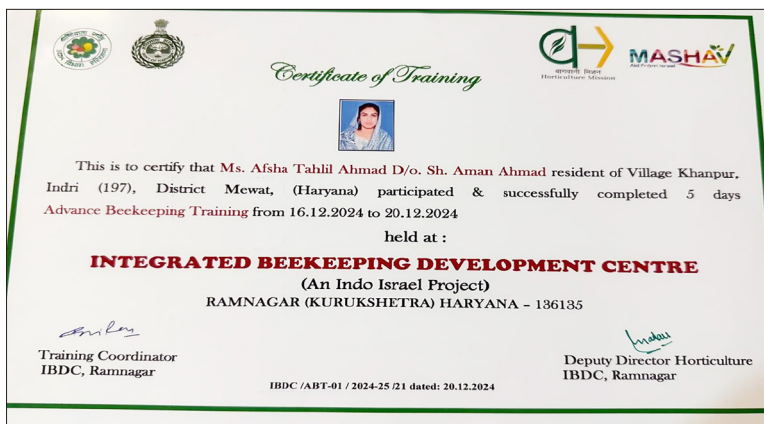
The training, designed to provide students with hands-on knowledge and technical expertise in the field of beekeeping, covered a wide array of topics essential for modern apiculture practices. The curriculum included sessions on the management of bee colonies, hive design, disease control, honey production, pollination services, and the environmental significance of beekeeping.



Mr. Yogesh Sharma
B.Sc. (Hons) Ag. IV Year



Ms. Afsha Tahlil
B.Sc. (Hons) Ag. IV Year



Ms. Jyoti
B.Sc. (Hons) Ag. IV Year

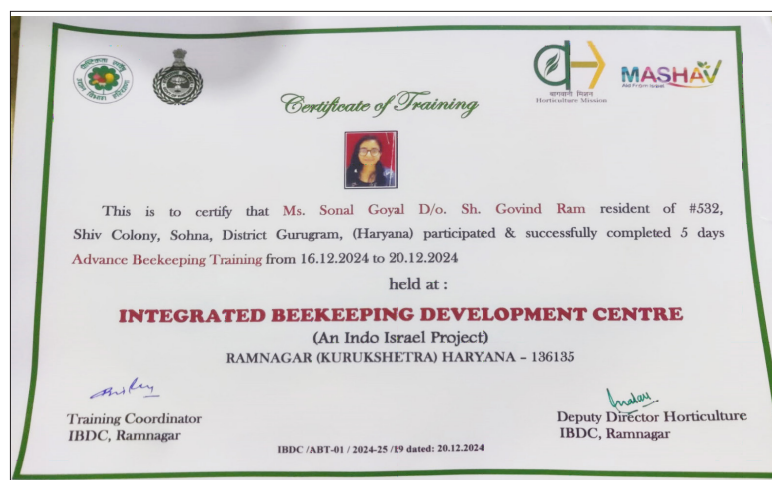




Mr. Riham Khan
B.Sc. (Hons) Ag. IV Year



Ms. Sonal Goyal
B.Sc. (Hons) Ag. IV Year



Ms. Pragati Ratna
B.Sc. (Hons) Ag. IV Year



She participated in a photography contest on Nature and Biodiversity held on 15th October 2024 at K.R. Mangalam University, Gurugram.



Mr. Hilminthang Haokip
B.Sc. (Hons) Ag. I Year



Mr. Hilminthang Haokip recently showcased his skills by participating in two notable events. He took part in a debate competition focused on the pressing issue of "Environment Conservation vs Development," where he engaged in thought-provoking discussions on balancing ecological preservation with economic progress. Additionally, Mr. Haokip participated in a photography contest centered around nature and biodiversity, capturing the beauty and importance of our natural world through his lens. His involvement in both events highlights his passion for environmental issues and his creative approach to raising awareness about sustainability. Mr. Hilminthang Haokip also earned second place in a contest addressing the serious issue of drug abuse. His insightful contribution to the competition reflected his deep understanding of the topic and his commitment to raising awareness about the harmful effects of substance abuse. His success in this contest further underscores his dedication to advocating for important social causes and making a positive impact in his community.



INITIATIVES BY SCHOOL

PROTECTED CULTIVATION OF HIGH-VALUE CROPS AT SCHOOL OF AGRICULTURAL SCIENCES

Our school is proud to announce a new and exciting initiative aimed at boosting agricultural innovation and sustainability. Under the expert guidance of Dr. J. S. Yadav, the esteemed Dean of SOAS, we have embarked on the "Protected Cultivation of High-Value Crops" project. This project focuses on growing high-value crops like capsicum (bell pepper), cherry tomatoes, and chilies in a controlled, protective environment, ensuring optimal growth conditions throughout the year. This innovative approach utilizes modern greenhouse technology, protecting the crops from adverse weather conditions, pests, and diseases. By creating an ideal growing environment, the initiative will

not only increase the yield of these valuable crops but also contribute to sustainability by reducing the need for harmful pesticides and fertilizers. The project offers students an invaluable learning experience, allowing them to gain hands-on knowledge about advanced agricultural practices, crop management, and environmental conservation. It is a significant step forward in the school's commitment to fostering creativity, sustainability, and practical skills among students. We are excited to see how this initiative will thrive, contributing to the school's mission of nurturing future leaders in agriculture and environmental science. Stay tuned for more updates as the project progresses.



Polyhouse and Net House at KRMU Campus.

KRISHI VIKAS

THE ROLE OF DIGITAL TOOLS IN MODERN AGRICULTURE EXTENSION

In today's rapidly evolving world, digital tools are transforming the landscape of agriculture, making farming smarter, more efficient, and more sustainable. Agriculture Extension Education, traditionally grounded in face-to-face interactions, has embraced technology to enhance its outreach, educate farmers, and provide timely advice. Digital tools are now playing a pivotal role in modernizing agricultural practices and extending knowledge to farming communities, especially in rural and remote areas.

One of the most significant advances has been the use of mobile applications that allow farmers to access information anytime, anywhere. These apps provide critical insights on weather forecasts, pest control, crop diseases, and market prices. By using their smartphones, farmers can make informed decisions, reduce losses, and increase their yields. For instance, apps like "AgriApp" or "Plantix" offer diagnostics for plant diseases through photos, making expert advice accessible with a simple click.

Another key development is online extension services. Virtual platforms enable farmers to participate in webinars, virtual training sessions, and online consultations with agricultural experts. These services overcome geographical barriers, bringing expert advice and knowledge to even the most isolated farms. Additionally, online platforms like YouTube and Facebook provide a space for farmers to share experiences and learn from peers, creating a community of knowledge exchange.

Moreover, data analytics and precision farming tools are revolutionizing how farmers approach their crops. Through sensors and satellite technology, farmers can monitor soil health, water levels, and crop performance in real-time. Extension workers are now equipped with these tools to deliver personalized advice based on accurate, real-time



Dr. Anjali Tomar

Assistant Professor (Extension Education)

data, improving productivity and resource management.

However, the adoption of digital tools in agriculture isn't without its challenges. Connectivity issues in rural areas, lack of digital literacy, and access to affordable devices remain significant barriers. But as governments, educational institutions, and private sectors continue to invest in technology, the future of agriculture extension looks promising. In conclusion, digital tools have ushered in a new era of agriculture extension, where information is more accessible, education is more efficient, and farming is more sustainable. With the right support and continued innovation, these tools will empower farmers worldwide to tackle the challenges of the 21st century and thrive in a digitally driven agricultural landscape.

WOMEN IN AGRITECH: REVOLUTIONIZING FARMING WITH INNOVATION

The agricultural sector is undergoing a profound transformation with the integration of technology, and at the forefront of this revolution are women in AgriTech. Historically, agriculture has been seen as a male-dominated industry, with women largely confined to traditional roles like farming and household management. However, in recent years, women have increasingly stepped into leadership roles, using technology to drive innovation and create sustainable solutions for the challenges faced by modern agriculture. From rural women in developing countries to entrepreneurs in urban AgriTech hubs, women are reshaping the future of farming through cutting-edge technologies, bringing fresh perspectives and groundbreaking solutions. One of

the most significant contributions of women in AgriTech is their ability to leverage technology for improving efficiency and sustainability. With the use of Internet of Things (IoT) devices, drones, artificial intelligence (AI), and machine learning, women in agriculture are not only increasing crop yields but also reducing waste and promoting sustainable farming practices. For example, women-led initiatives in precision farming are helping small-scale farmers adopt data-driven approaches that optimize irrigation, monitor soil health, and predict pest infestations with high accuracy. These technologies have revolutionized traditional farming methods, empowering farmers to make more informed decisions, which in turn enhances productivity and

profitability. In countries where traditional farming practices prevail, women are driving a quiet but powerful change. In India, for instance, women entrepreneurs like Neelam Singh of Krishi Star are pioneering the use of technology in rural communities. Krishi Star connects farmers with advanced farming tools and techniques through a mobile app, which helps women farmers access weather forecasts, market prices, and expert advice. Such innovations not only make farming more profitable but also reduce the labor-intensive work traditionally handled by women. By reducing physical strain and enhancing access to resources, women in AgriTech are changing the dynamics of rural economies and improving their quality of life.

AgriTech also offers women the opportunity to enter the entrepreneurial space, particularly in regions where access to capital and business networks has historically been limited. In Africa, women-led ventures like M-Farm are revolutionizing agricultural supply chains. M-Farm, founded by Catherine Muturi, uses mobile technology to enable farmers to access real-time market prices and connect directly with buyers, eliminating intermediaries and increasing profits. The success of such ventures highlights the importance of women in AgriTech, not just as farmers, but as innovators and entrepreneurs who are driving economic growth in their communities.

Moreover, women in AgriTech are actively involved in research and development, creating solutions that address specific challenges faced by women farmers. For instance, in parts of Africa and Southeast Asia, women-led organizations are developing technologies for water conservation, pest management, and crop rotation that cater specifically to the needs of women farmers who often face unique challenges in managing household and agricultural duties. Technologies like affordable irrigation systems, energy-efficient tools, and post-harvest processing innovations are empowering women to be more productive while reducing the physical burden associated with farming. The impact of women in AgriTech goes beyond just the technological advancements; it's about



Dr. Ambika Bhandari
Assistant Professor (Horticulture)

the socio-economic change they bring to their communities. By integrating innovation into agriculture, women are not only increasing food production but also improving their economic standing, contributing to rural development, and fostering sustainability. Their role in the AgriTech ecosystem demonstrates that when women are empowered with the right tools, they become agents of change, leading the way in agricultural innovation.

In conclusion, women in AgriTech are playing an essential role in revolutionizing the agricultural landscape. By embracing technology, women are transforming traditional farming into a more efficient, profitable, and sustainable industry. As these women continue to innovate and lead, they will be critical in addressing global food security challenges, bridging the gender gap in technology, and ensuring that agriculture remains a viable and thriving sector for generations to come. Their contribution is not just changing agriculture but also shaping a more inclusive and sustainable future for all.

EVENTS

VISIT TO IARI KRISHI VIGYAN KENDRA, SHIKOHPUR

On October 28, 2024, Dr. Ambika Bhandari and Dr. Anjali Tomar, Assistant Professor, School of Agricultural Sciences, K.R. Mangalam University organized an enriching visit to the IARI Krishi Vigyan Kendra (KVK) in Shikohpur, Gurugram. The visit aimed at providing students with practical insights into advanced agricultural technologies and sustainable farming practices. The event bridged theoretical knowledge with real-world applications, focusing on climate-resilient agriculture, post-harvest management, and modern farming techniques.

The visit began with a welcome address by Dr. Ambika, Principal Scientist and Head of KVK, who highlighted the center's role in advancing Indian agriculture and its initiatives under the Unnat Bharat Abhiyan (UBA) to integrate higher education with rural communities. Students learned about the KVK's developmental projects, including a ₹1 lakh fund for agricultural innovation in selected villages.

The day's sessions covered diverse topics, including sustainable agriculture practices, zero tillage, climate-smart farming, mulching, post-harvest management, and the impact of digital technologies on farming. Notable speakers included Dr. Rishi Raj, Dr. Vinay Tripathi, Dr. P.K. Sahoo, and Dr. Rabindra Nath Padaria, who shared their expertise on innovative practices and successful case studies of academic-community collaboration.

Students were engaged in interactive discussions and hands-on activities, which deepened their understanding



of sustainable farming methods and the role of technology in enhancing productivity and resilience in agriculture. The visit not only enriched their academic knowledge but also strengthened the connection between academia and industry, promoting awareness of rural sustainability and self-reliance. The visit concluded with students expressing gratitude to the KVK team and coordinators (Dr. Ambika Bhandari and Dr. Anjali Tomar) for their insightful sessions. This visit was a significant step in preparing future agricultural professionals to contribute to the sustainable development of India's rural economy, in line with the vision of Atmanirbhar Bharat.



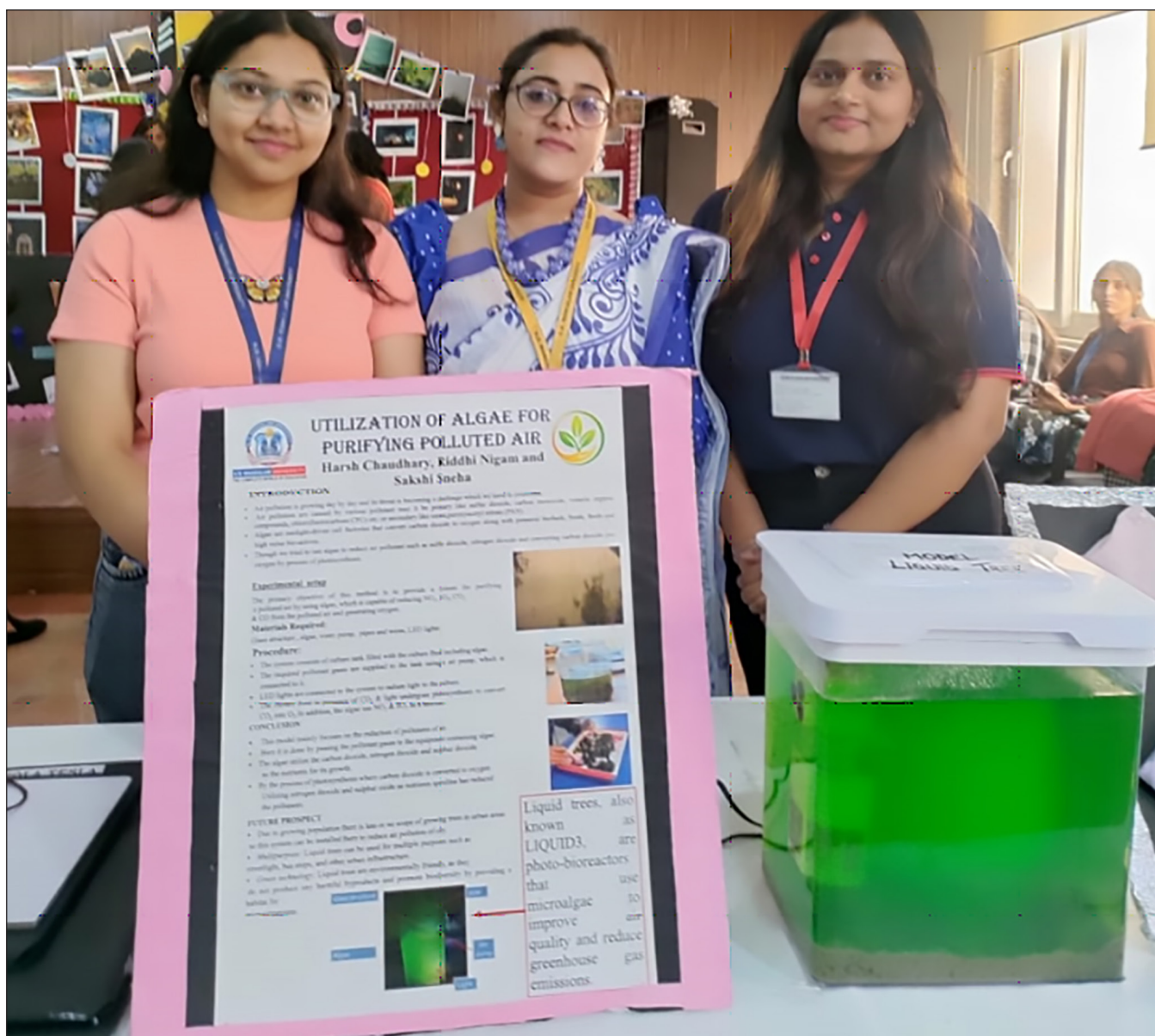
PHOTOGRAPHY CONTEST ON NATURE AND BIODIVERSITY

Photography Contest on Nature and Biodiversity was organized by Dr. Rabiya Basri, event in-charge and member of APJ Abdul Kalam Science Society on October 15, 2024 to celebrate and promote awareness of the natural world and its rich biodiversity. The contest was aimed to encourage the students to explore the beauty of nature through photography while fostering environmental awareness and conservation. Entries were received from participants across various disciplines. Photography is a creative medium, could raise awareness about the fragile balance of ecosystems and the need to protect biodiversity. Each participant was provided with the opportunity to present their photograph and provide a short interpretation, explaining the story or message behind their image. The diversity of entries ranged from close-up shots of insects, flying migratory bird, various other flora and fauna to wide-angle landscapes of forests, each capturing unique aspects of nature. The event not only showcased the students' creativity but also deepened their understanding of biodiversity and the need for its conservation. It was an inspiring event that emphasized the power of visual storytelling in promoting environmental stewardship. Event was coordinated by student from B. Sc. (H) Ag.; Ms. V. Pallavi, Ms. Surabhi Dubey, Ms. Surbhi Kumari, Ms. Harshita and Mr. Albert. Program convenor was Dr. Mehak Ahuja, Co-convenor – Dr. Kanchan Khatreja and Dr. Parakh Bashisht were present in the the event.



LIQUID TREE: A REVOLUTIONARY CARBON CAPTURE TECHNOLOGY – MODEL PRESENTATION

Model named liquid tree was prepared and presented by Ridhi Nigam, Sakshi Sneha, Harsh Chaudhary and Sagar Samerwal under the guidance of Dr. Rabiya Basri. As the world faces the escalating threat of climate change, innovative solutions for mitigating carbon dioxide (CO₂) emissions are becoming increasingly important. One of the most exciting developments in this field is the "Liquid Tree," a groundbreaking technology developed in Japan that utilizes algae cultures to capture CO₂ from the atmosphere. This invention offers a potential game-changer for reducing the global carbon footprint in an efficient and scalable manner.



NATURAL DYE FOR FABRIC AND NATURAL SOURCE FOR FOOD COLOUR

Students of B.Sc. (Hons) Ag. II year have demonstrated the natural dyes, aimed to explore the potential of natural sources for fabric dyeing and food coloring under the guidance of Dr. Rabiya Basri. Natural dyes are derived from plant sources and other organic substances, offering a sustainable and eco-friendly alternative to synthetic dyes. This project focused on using a range of natural ingredients, such as beetroot, roselle flower, turmeric, coffee, hibiscus, spinach, tea leaves, and henna, to prepare dyes for fabric and colors for food. These substances were chosen for their accessibility, vivid pigmentation, and historical use

in various cultures for coloring fabrics and foods. The use of natural sources for fabric dyeing and food coloring proves to be a sustainable and creative way to introduce vibrant, eco-friendly alternatives to everyday products. This project demonstrated the versatility of plants and other natural substances in producing colors that are both beautiful and functional. With continued exploration and improvement in methods, natural dyes and food colorants can become even more prominent in both the textile and food industries, contributing to a healthier and more sustainable future.



AGRICULTURE AND COMMUNITY

EXPERT LECTURE ON - PLANT NUTRIENTS AND THEIR ROLE IN BETTER CROP PRODUCTION AND PRODUCTIVITY AT IFFCO, GURGAON

On 20/11/2024, Dr. J.S. Yadav, Dean of the School of Agricultural Sciences (SOAS) at K.R. Mangalam University, delivered an insightful session at IFFCO, Gurgaon and provided invaluable insights into the crucial topic of plant nutrients and their significant role in improving crop production and productivity. The session, which was attended by numerous farmers, agricultural experts, and industry stakeholders, was an eye-opener on how nutrient management can directly influence the health of crops and the success of farming operations.

Dr. Yadav started the lecture by emphasizing the importance of balanced fertilization for sustainable agriculture. He explained that plants require essential nutrients—macronutrients (nitrogen, phosphorus, potassium) and micronutrients (iron, zinc, copper, manganese)—in specific quantities for optimal growth and development. Without these nutrients, plants face deficiencies that can lead to poor yields, stunted growth, and susceptibility to diseases.

Dr. Yadav explained that nitrogen is vital for plant growth, contributing to protein synthesis and chlorophyll production, which is necessary for photosynthesis. Phosphorus, he noted, is essential for root development and energy transfer, helping crops establish a strong foundation for growth. Potassium supports disease resistance, water retention, and overall plant health. He also emphasized the importance of micronutrients, which, although required in smaller quantities, are just as important for the overall health of crops and their ability to resist stresses such as drought or pests. A key takeaway from the session was Dr. Yadav's discussion on the concept of nutrient synergy. He highlighted how certain nutrients work together to enhance each other's effectiveness. For example, nitrogen and phosphorus work in tandem to boost plant growth, while potassium supports the efficient uptake of both. On the other hand, an imbalance of nutrients can lead to deficiencies, toxicities, or reduced nutrient uptake, thus affecting productivity. Dr. Yadav also delved into the pressing issue of soil health. He stressed that the foundation of high-quality crop production lies in the health of the soil. Farmers must conduct regular soil tests to determine nutrient levels and adjust fertilization strategies accordingly. This approach prevents over-fertilization, which can harm the environment, and under-fertilization, which limits crop growth.

Throughout the lecture, Dr. Yadav encouraged farmers to adopt a more scientific approach to nutrient management by utilizing fertilizer mixtures tailored to the specific needs of different crops and soil types. He explained that fertilizer application timing and methodology are equally important



Dr. J. S. Yadav sharing with Farmers about Role of Macro-nutrients

as the type and amount of nutrients used. For instance, the right timing of nitrogen application can enhance crop uptake while minimizing losses through volatilization or leaching.

The session concluded with a lively Q&A, where farmers shared their experiences and challenges regarding plant nutrition. Dr. Yadav offered practical solutions to their problems, advising on how to integrate modern agricultural practices with traditional knowledge for better yields.

In his closing remarks, Dr. Yadav emphasized that a holistic approach to nutrient management, coupled with ongoing education and access to advanced agricultural tools, is key to boosting productivity and ensuring the long-term sustainability of farming. He encouraged farmers to collaborate with agricultural scientists and extension officers to make informed decisions and adopt the best practices for crop nutrition. The lecture, filled with actionable insights and knowledge, was a significant contribution to the farming community. Dr. Yadav's expertise and clear communication left a lasting impact, equipping farmers with the knowledge they need to optimize their crop production and improve their livelihoods. This session underscores the ongoing need for agricultural education and extension services in empowering farmers with the tools and knowledge to meet the ever-growing demand for food production in the face of challenges like climate change and population growth.



Dr. J. S. Yadav delivering expert lecture to Farmers at Indian Farmers Fertilizer Cooperative Limited, Gurgaon.

FACULTY RESEARCH UPDATES

Book Chapter

Dr. Ambika Bhandari, Assistant Professor, SOAS, KRMU, published a book chapter titled "High-Density Planting and Controlled Environments: A New Era in Horticulture" Featured in the recently released book "Contemporary Trends & Technological Breakthroughs in Indian Agriculture, published by Elite Publishing House, Dr. Bhandari's chapter explores innovative advancements in horticulture, particularly the role of high-density planting and controlled environmental systems. These technologies hold the potential to revolutionize agricultural practices in India, enhancing productivity while addressing challenges posed by land constraints and climate variability. Dr. Bhandari's insights are a valuable contribution to the ongoing conversation on sustainable and efficient agricultural solutions.

High-Density Planting and Controlled Environments: A New Era in Horticulture

¹Ambika Bhandari, ²Akriti Bhandari and ³Yogesh
¹Assistant Professor, KR Mangalam University
²M.Sc. (Botany), H.N.B. Garhwal University
³B.Sc. (Agriculture), KR Mangalam University

9.1 Introduction

The horticulture sector is evolving rapidly, with innovative techniques like **High-Density Planting Systems (HDPS)** and **Controlled Environment Agriculture (CEA)** leading the transformation. These practices aim to optimize space utilization, increase productivity, and address the challenges posed by environmental and climatic factors. This chapter delves into these innovations, exploring their core principles, practical applications, and the transformative role they play in modern horticulture.

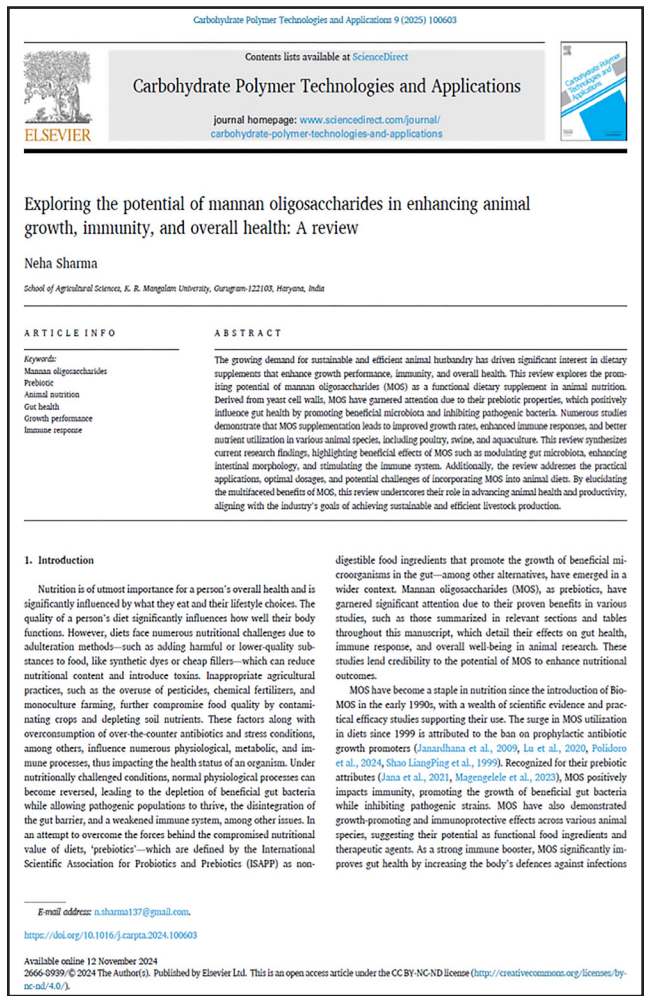
9.2 High-Density Planting Systems (HDPS)

9.2.1 Concept and Objectives

High-Density Planting Systems (HDPS) refer to the practice of planting crops at a higher density than traditional methods, maximizing yield per unit of area. The main objective of HDPS is to achieve higher productivity through efficient use of resources such as land, water, and nutrients while ensuring economic viability for farmers.

9.2.2 Principles of HDPS

1. **Optimal Spacing:** By reducing the inter-plant and intra-row distances, crops can better utilize available light, water, and nutrients. This spacing strategy helps



Dr. Neha Sharma
Assistant Professor

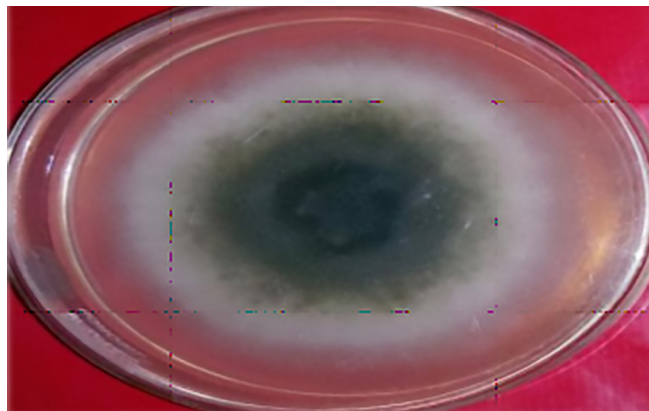
Dr. Neha Sharma, Assistant Professor at SOAS K.R. Mangalam University, recently published a research paper exploring the potential benefits of Mannan Oligosaccharides (MOS) in enhancing animal growth, immunity, and overall well-being. The study highlights how MOS, a prebiotic derived from yeast cell walls, can improve gastrointestinal health by promoting beneficial gut bacteria. This, in turn, strengthens the immune system, aids nutrient absorption, and contributes to better growth rates in livestock. Dr. Sharma's research underscores MOS as a promising supplement for boosting animal health and performance, offering a natural and sustainable approach to animal husbandry.

STUDENTS' PROJECT UPDATES

INNOVATIVE STUDENT PROJECT ON BIO-AGENTS AND BIO-FERTILIZERS



Trichoderma Mother Culture



Culture of Metarhizium On PDA

In the final year of their academic journey, a group of dedicated students from School of Agricultural Sciences have completed an exceptional project on the Production Technology of Bio-Agents and Bio-Fertilizers. This project presents an in-depth exploration into sustainable agricultural practices and innovative bio-technologies, designed to improve crop yield and soil health without harming the environment.

Exploring Bio-Agents for Pest Control

One of the key highlights of this project is the study and mass production of various bio-agents, with a special focus on *Trichoderma* sp., a beneficial fungus. This fungus is widely used as a biological control agent, efficiently combating harmful plant pathogens and fungi. The project covers the entire process—from isolating *Trichoderma* from soil, preparing its culture medium (Potato Dextrose Agar), and cultivating it on grains such as sorghum to create a mass production model. The method used ensures that the fungi can be cultured and stored for commercial use, offering a natural alternative to chemical fungicides.

Metarhizium Anisopliae: A Green Solution for Insect Control

The students also investigated the production of *Metarhizium anisopliae*, a fungus known for its natural insecticidal properties. The process involves the careful cultivation of spores in coconut water-filled glass bottles, which are then used to treat pests naturally, reducing the need for harmful chemical pesticides.

Harnessing the Power of Neem Dust

As part of the project, the team delved into the production of neem dust—a natural pesticide made from dried and powdered neem leaves. Known for its eco-friendly properties, neem dust effectively repels and controls pests, making it

an excellent alternative to synthetic chemical solutions. The students meticulously followed the procedure to ensure optimal potency and storage conditions for the neem dust.

A Complete Cycle of Sustainable Solutions

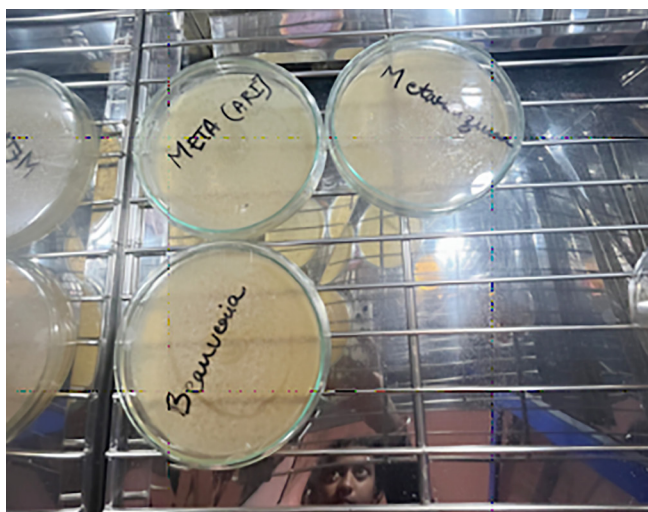
The project also explored the mass production of *Trichogramma*, a parasitoid wasp that naturally controls pest populations by parasitizing the eggs of harmful insects. This process involved creating egg-laying environments for *Corcyra cephalonica* (the host insect), and later using the parasitized eggs to produce *Trichogramma*. The team also made use of *Beauveria bassiana*, another entomopathogenic fungus, for controlling pest populations in a natural and sustainable way.

Educational Impact

This comprehensive final-year project not only offers insights into the various methods of cultivating bio-agents but also emphasizes the importance of sustainability in modern agriculture. Through hands-on experience in cultivating these bio-agents, the students have gained practical knowledge that could potentially revolutionize pest control and bio-fertilization practices. Their work has laid the foundation for more eco-friendly agricultural solutions, helping create a greener, more sustainable future.

Conclusion

With such innovative research and dedication, this project serves as a great example of the potential our students have in contributing to science and technology. Their project on bio-agents and bio-fertilizers not only showcases their skills but also their commitment to developing solutions that benefit both the environment and society. The future of agriculture looks bright with these young minds paving the way for sustainable growth and natural pest control solutions.



Trichoderma Mother Culture



Culture of Metarhizium On PDA

FINAL YEAR STUDENTS' PROJECT ON COMMERCIAL HORTICULTURE: A STUDY ON COLE CROPS IN HARYANA

The students of School of Agricultural Sciences have successfully completed a groundbreaking final-year project focusing on the cultivation of cole crops, specifically cauliflower and broccoli, under varying agricultural treatments. Their research has offered valuable insights into how different farming techniques impact crop growth, yield, and quality in Haryana's climate.

Understanding the Crops: Cauliflower and Broccoli

Cauliflower (White Cauliflower), scientifically known as *Brassica oleracea* var. *botrytis*, belongs to the Brassicaceae family and thrives in cool, moist conditions. It is best grown in well-drained soil with a pH between 6.0 and 7.0, making it a perfect crop for temperate climates.

On the other hand, Broccoli (Lucky), another member of the Brassicaceae family, is a cool-season crop renowned for its high levels of folate, calcium, and sulforaphane—a compound known for its potential cancer-fighting properties.

The Project's Objective

The students' research aimed to evaluate the impact of different treatments on the growth and productivity of cauliflower and broccoli. They tested various organic fertilizers such as Farmyard Manure (FYM), Vermicompost, and their combination. The project also sought to identify the most efficient cultivation methods that optimize crop performance while minimizing resource input.

Methods and Techniques

Nursery Preparation: A well-drained, sunny site was chosen for seed sowing. Seeds of improved varieties were carefully sown in raised beds and watered consistently.

Field Preparation: The soil was ploughed multiple times to ensure a fine tilth, and the seedlings were transplanted into

the field once they were 4-6 weeks old.

Irrigation & Fertilization: Timely irrigation was provided throughout the growth period, with treatments such as FYM, Vermicompost, and a combination of both being applied to evaluate their effects.

Key Findings: Growth, Yield, and Quality

The results were impressive, showcasing the significance of organic treatments:

Control Treatment (No Fertilizer): Plants in this group showed slower growth and smaller leaves.

FYM (Farmyard Manure): This treatment improved plant growth moderately, with larger leaves compared to the control.

Vermicompost: This organic amendment demonstrated rapid development, promoting healthier plants with vibrant foliage. It outperformed FYM in growth metrics.

Combined FYM + Vermicompost: This treatment emerged as the most effective, with plants showing robust growth, superior health, and increased yield.

Conclusion and Practical Insights

The study concluded that FYM + Vermicompost was the most effective combination for boosting plant growth, yield, and overall quality. Vermicompost alone also significantly improved crop performance. Interestingly, the control group, with no fertilizers, displayed the lowest growth, underscoring the essential role of organic amendments in sustainable farming.

The findings offer practical guidance to local farmers on how to enhance soil health and productivity. By utilizing organic treatments, growers can achieve optimal yields while

promoting environmental sustainability.

Beyond the Crops: Post-Harvest Innovation

In addition to their work on cauliflower and broccoli, the students also explored post-harvest products. They experimented with value-added items such as:

Aonla Juice: A refreshing drink made from Indian gooseberries, known for their high vitamin C content.

Chilli Pickle: A tangy and spicy pickle using fresh chilies and mustard oil, perfect for enhancing meals.

Aonla Candy: A sweet treat made from dried Aonla, offering a nutritious and delicious snack option.



Growing of Crops by Students

Future Impact

This project not only highlights the students' technical knowledge and hands-on experience in horticulture but also provides sustainable solutions for local farmers in Haryana. It emphasizes the importance of organic farming practices and their potential to improve crop productivity, soil health, and overall environmental sustainability.

As our students prepare to graduate, their project stands as a testament to their dedication to the future of agriculture, ensuring that their work contributes to healthier, more efficient farming practices for generations to come.



Preparation of Aonla Candy by Students

STUDENTS' CORNER

Digital Poster on “Dairy Farming Innovations” prepared by:

Bhanu Pratap Singh,

Student of B. Sc. (Hons.) Ag. II year



Digital Poster on “4 Ways of Natural Reforestation” prepared by:

Himanshu

Student of B. Sc. (Hons.) Ag. I year



URBAN AGRICULTURE: GROWING FOOD IN THE CITY

Urban agriculture is rapidly evolving into a transformative force, addressing multiple challenges faced by rapidly urbanizing populations around the world. As cities continue to grow, the demand for fresh, nutritious food rises, often outpacing the capacity of traditional agricultural systems. Urban agriculture offers a creative and sustainable way to meet this need by turning cities into productive farming spaces. This shift in how food is produced, distributed, and consumed is not only enhancing food security but also promoting sustainability, improving environmental health, and fostering stronger community connections.

At its core, urban agriculture is about growing food within urban environments. It takes advantage of small, underutilized spaces—such as rooftops, vacant lots, and even indoor spaces like basements and warehouses—to cultivate crops. This method makes use of cutting-edge farming techniques like vertical farming, hydroponics, aquaponics, and aquafarming, which allow for the cultivation of a wide range of crops in small spaces, often with minimal use of soil. Vertical farming involves stacking plants in layers to maximize space, while hydroponics uses water-based nutrient solutions to grow plants without soil. Aquaponics, on the other hand, combines fish farming with plant cultivation, creating a symbiotic relationship between the two that can lead to highly efficient food production systems. These innovative farming methods make it possible to grow food year-round, regardless of weather conditions, while also using fewer resources compared to traditional



Anurag

B. Sc. (Hons.) Ag. I year

farming. One of the primary benefits of urban agriculture is its ability to reduce food transportation costs and the environmental impact associated with conventional food supply chains. Typically, food grown in rural areas must be transported long distances to reach urban centers, which contributes to significant carbon emissions. Urban agriculture helps mitigate this problem by reducing the distance food travels, ensuring that fresh produce is available locally and has a much smaller carbon footprint. In fact, some urban farming systems even harness renewable energy sources, such as solar power, to further reduce their environmental impact.

RESEARCH ON BIO FERTILIZERS: ENHANCING SOIL FERTILITY

Bio fertilizers are eco-friendly microbial inoculants that enhance soil fertility by fixing atmospheric nitrogen, solubilizing phosphorus, and decomposing organic matter. Research on bio fertilizers has gained significant attention due to their role in sustainable agriculture by reducing dependence on chemical fertilizers. Different types of bio fertilizers have been studied, including nitrogen-fixing bacteria such as *Rhizobium*, *Zoraster*, and *AZ spirillum*, phosphate-solubilizing microbes like *Pseudomonas* and *Bacillus* species, potassium-mobilizing bacteria such as *Fraternal aurantia*, and mycorrhizal fungi that improve nutrient absorption. Recent studies indicate that biofertilizers can increase crop yield by 10–30% while maintaining soil health. Research on *Azospirillum* and *Rhizobium* has demonstrated improved root growth, nutrient uptake, and stress tolerance in crops. Additionally, multi-strain biofertilizers combining nitrogen-fixing and phosphate-solubilizing bacteria are being developed for enhanced efficiency. The use of biofertilizers offers multiple benefits, including improved soil structure, reduced fertilizer costs, enhanced plant resistance to diseases, and a sustainable alternative to chemical inputs. Future research is focusing on nano-biofertilizers to improve microbial inoculant



Shivjeet Singh

B. Sc. (Hons.) Ag. I year

efficiency, genetic engineering to enhance nutrient fixation and solubilization, and the integration of biofertilizers with AI-based precision agriculture systems. This research is highly relevant to BSc Agriculture 2nd semester students, as it is directly linked to subjects like Soil Science, Microbiology, and Agronomy. Understanding biofertilizers can open career opportunities in sustainable farming, agribusiness, and agricultural research.

WOMEN IN AGRICULTURE: BRIDGING THE GENDER GAP

Women play a crucial role in agriculture, especially in developing countries, where they make up nearly 50% of the agricultural workforce. Despite their significant contributions, women farmers face persistent challenges, including limited access to land, credit, technology, and education. This gender gap hampers productivity and affects food security globally.

One of the major barriers is the lack of land ownership. In many regions, legal systems and cultural norms prevent women from owning or inheriting land, limiting their ability to invest in farms or access financial services. Women also have less access to credit, making it difficult to purchase seeds, equipment, or inputs that could boost yields.

Education and extension services are often directed toward men, excluding women from vital training and agricultural knowledge. Moreover, women are less likely to have access to modern farming technologies, which could increase productivity by 20-30% if made equally available to them. Closing the gender gap in agriculture is critical. Studies suggest that if women had equal access to resources, global agricultural output could rise by 2.5-4%, significantly

reducing hunger and poverty. Successful initiatives, such as microfinance programs, gender-sensitive extension services, and legal reforms on land rights, have demonstrated that empowering women in agriculture leads to better outcomes for families and communities.



Pragati Ratna

B. Sc. (Hons.) Ag. I year

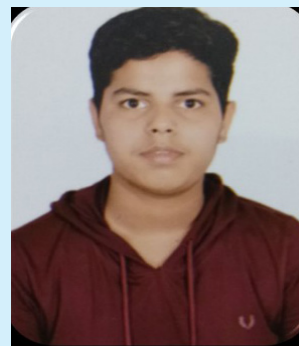
THE FUTURE OF ORGANIC FARMING: TRENDS AND BENEFITS

Organic farming is rapidly growing as consumers demand healthier, environmentally sustainable food. As awareness about the benefits of organic products increases, people are more willing to pay a premium for food that is free of chemicals and produced using sustainable practices. This surge in demand is prompting farmers to embrace organic methods and diversify their crops.



Technological advancements are playing a key role in the future of organic farming. Precision farming, drones, and soil sensors allow farmers to optimize crop production without compromising sustainability. These innovations help monitor plant health, manage resources more efficiently, and increase yields, making organic farming more productive and accessible.

Soil health remains the foundation of organic farming, with regenerative practices like crop rotation and cover cropping helping to restore and maintain fertility. As climate change



Pulkit Jain

B. Sc. (Hons.) Ag. I year

challenges traditional farming methods, regenerative organic practices offer a way to improve soil resilience and support long-term agricultural sustainability. Additionally, the diversification of crops, from ancient grains to plant-based superfoods, is helping meet evolving consumer preferences while also supporting soil health.

However, organic farming still faces challenges, particularly in terms of cost and accessibility. Certification processes can be expensive, and organic products often carry a higher price tag. But with increasing consumer demand and support through grants and subsidies, these barriers are gradually being reduced.



The environmental and health benefits of organic farming are undeniable. By reducing synthetic pesticide use, organic farming helps preserve biodiversity, protect water sources, and combat climate change through carbon sequestration in the soil. As the global population grows, organic farming's role in providing nutritious food while protecting the environment will continue to expand.

In short, the future of organic farming is bright, driven by innovation, consumer demand, and a growing commitment to sustainability. It offers a path toward a healthier food system and a more resilient agricultural future.

SLOGANS WRITTEN BY STUDENTS OF B.Sc. (Hons) Ag. KRMU

" Agriculture is the backbone of civilization; without it,
we are just hunters and gatherers."

" Sow with care, nurture with love, and reap with gratitude "

" खेतों में हरियाली जब लहराती है, तब खुश होता किसान,
मेहनत का फल जब पकता है, तब खिल उठता हहिंदुस्तान"



Shivjeet Singh

B.Sc. (Hons.) Ag. I Year



Harshita

B.Sc. (Hons.) Ag. II Year

"खेती से बढ़ेगा देश, किसान का हर कदम है खास।
धरती माँ की कृपा से, मिलेगा हर घर को आशीर्वाद।"

"Farming grows the nation, every farmer's step is a foundation.
With Mother Earth's grace, blessings fill every space."

"कृषि है भविष्य की राह, हर बीज से खिलती है खुशियों की छांव।
खेती से बढ़ेगा भारत, हर किसान का है साथ।"

"Agriculture paves the future's way, every seed blooms joy's sway.
Through farming, India will rise, with every farmer side by side."



Surabhi Dubey

B.Sc. (Hons.) Ag. II Year

THOUGHTS FROM FACULTIES



Dr. Anjali Tomar
Assistant Professor, SOAS.

I am truly honored to have the opportunity to share my thoughts on the transformative power of agricultural extension and communication in shaping the future of rural communities. Agricultural extension plays a pivotal role in bridging the gap between research institutions and farmers, ensuring that new innovations and sustainable practices are effectively communicated and adopted. As we face growing challenges in agriculture, from climate change to population growth, the role of extension in promoting adaptive strategies becomes even more critical. Through effective communication, we can enhance collaboration and create an environment where farmers are equipped to thrive. The efforts of agricultural extension professionals are not only key to improving productivity but also essential to advancing food security and rural development.



Dr. Ambika Bhandari
Assistant Professor, SOAS.

It gives me immense pleasure to connect with you through this edition of our newsletter. As we continue to advance in the ever-evolving field of agricultural sciences, horticulture stands out as a beacon of opportunity, sustainability, and innovation.

In today's world, where climate change and food security are pressing concerns, horticulture offers practical solutions—from enhancing nutritional diversity to promoting eco-friendly farming practices. At the School of Agricultural Sciences, we are committed to equipping our students with the knowledge, skills, and mindset needed to address these challenges head-on.

Through hands-on learning, research, and community engagement, we strive to nurture future leaders who are not only well-versed in scientific principles but also passionate about creating a sustainable and resilient agricultural future.

I encourage all readers - students, researchers, and fellow educators, to remain curious, stay connected with nature, and continue exploring the transformative power of horticulture. Together, we can grow more than crops - we can grow ideas, solutions, and a better tomorrow.

PLACEMENT



Poonam
Students of SOAS
(2020-2024)

We are extremely proud to announce the incredible achievement of our talented alumna, Ms. Poonam, who has recently secured a placement at Dehaat, a renowned leader in the agritech sector. Since her graduation, Ms. Poonam has consistently showcased an outstanding combination of technical expertise, strong problem-solving skills, and an unwavering passion for driving innovation in the agricultural space. Her dedication and hard work have earned her this exceptional opportunity. This accomplishment not only highlights her individual perseverance but also reflects the high standards of excellence fostered at our institution. We

congratulate Ms. Poonam on this well-deserved success and wish her continued growth and prosperity in her new role at Dehaat, Gurgaon.

ALUMNI



As an alumna of K.R. Mangalam University, my journey has been nothing short of enriching. The experience I gained at the School of Agricultural Sciences has played a crucial role in shaping my career. The combination of theoretical knowledge and hands-on practical learning provided by the university helped me develop a well-rounded skill set that I apply every day in my professional life.

Today, as I work in the agritech sector, I continue to utilize the problem-solving, leadership, and innovation skills I honed during my time at KRMU. I am deeply grateful for the solid foundation the university gave me, and it has been instrumental in my professional growth. My time at KRMU has truly paved the way for the opportunities I have today, and I will always cherish the experiences that have helped me get to where I am now.

Parul raj

Alumni, SOAS, KRMU



Reflecting on my time at K.R. Mangalam University, I am incredibly grateful for the strong foundation it provided me. The School of Agricultural Sciences played a key role in shaping my career through its unique approach of combining theoretical knowledge with practical learning experiences. The exposure I received has been instrumental in preparing me for the challenges I now face in the agritech industry. As I embark on this exciting journey, I find myself using the skills I developed at KRMU, particularly in problem-solving, leadership, and innovation. The university's focus on nurturing talent and fostering growth has been essential to my professional development. I am thankful for the opportunities and knowledge KRMU has given me, and I look forward to using that to make a meaningful impact in the agricultural sector.

Poonam

Alumni, SOAS, KRMU



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