K.R. MANGALAM UNIVERSITY

THE COMPLETE WORLD OF EDUCATION

SCHOOL OF AGRICULTURAL SCIENCES

NEWSLETTER JULY–SEP 2024

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FROM THE EDITORIAL TEAM

Dear Readers,

It brings us great joy to unveil the latest edition of our Agricultural Sciences Magazine and Newsletter. This publication serves as a vital link between our academic community and the dynamic world of agriculture, where ideas and innovation intersect.

As we confront the urgent challenges of sustainable farming, this magazine aims to illuminate the exceptional work emerging from our School of Agricultural Sciences. Our goal is to celebrate the multifaceted nature of agriculture and its pivotal role in shaping a sustainable future.

In this issue, you'll find a range of articles that explore cutting-edge research in areas like Use of Drones in agriculture, precision farming innovative pest control strategies, soil conservation, and advancements in agri-tech. Our talented faculty and enthusiastic students have engaged in several projects, field experiences, and workshops, all contributing to meaningful agricultural advancements. We also share inspiring narratives from our alumni, highlighting their efforts in the field.

We believe that knowledge and creativity are essential to driving progress in agriculture. This magazine is more than just a compilation of articles; it embodies our shared vision of fostering a sustainable agricultural landscape. We encourage you to dive into the content, share your insights, and engage with this vibrant community.

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

WORD FROM LEADERSHIP

Prof. Raghuvir Singh
Vice Chancellor

It is with great pleasure that I greet each one of the readers of the School of Agricultural Sciences' Newsletter. The commitment and enthusiasm that our professors, students, and researchers have for agriculture is so essential to the health and prosperity of our society and is demonstrated in this journal.

Agriculture is the backbone of our nation, and its importance in maintaining food security, sustainable development, and economic expansion cannot be emphasized. Our university is dedicated to promoting agricultural research and education, emphasizing sustainability, innovation, and community involvement. This goal has been directed by the School of Agricultural Sciences, which promotes an atmosphere where information is not only created but also disseminated and used for the greater good.

The university and the larger agricultural community are connected through this newsletter. It compiles the most recent studies, useful advice, and inspirational tales that highlight the revolutionary potential of agricultural science.

The comments in these pages address the opportunities and problems that lie ahead, reflecting the dynamic and changing nature of agriculture. In a time of swift technological development and shifting environmental conditions, agriculture's contribution to a sustainable future is becoming more and more important. I have no doubt that our School of Agricultural Sciences' efforts will continue to set the standard for creating cutting-edge solutions that benefit farmers, consumers, and the environment in equal measures. I want to take this time to express my gratitude to the contributors, editing team, and everyone else who helped make this publication a reality. You deserve a great deal of praise for your efforts to spread information and encourage a culture of inquiry and learning.

Thank you for your continued support, and I wish you all an enlightening and enjoyable reading experience.

With best regards.

MESSAGE FROM THE DEAN

Dr. Joginder Singh Yadav
Dean, School of Agricultural Sciences

As the dean, my vision would encompass several key elements namely, Innovation and Technology Integration (precision agriculture, biotechnology and digital farming to enhance productivity, sustainability, and resilience in agriculture). Sustainable Agriculture, Biodiversity Preservation, Entrepreneurship, and Agribusiness, Foster an entrepreneurial mindset among students and faculty, encouraging them to develop innovative solutions and create value in the agricultural sector, Research and Development, Collaboration and Partnerships with industry, government, and international organizations. Education and Training, and Community Engagement. The school is blessed with admirable faculty members having trained at different national and international institutions and excellent infrastructure facilities for teaching, research, and outreach activities including RAWE/READY programme as per ICAR guidelines. "Students First" is always at the top of the list of priorities set at KR. Mangalam University. A special focus is placed on agro-based skill-oriented activities such as organic farming, sustainable agriculture, beekeeping, mushroom cultivation, vermicomposting, dairying and horticulture. We look forward to seeing you grow, thrive and make a difference in the world.

SCHOOL VISION AND MISSION

About the School of Agricultural Sciences

School of Agricultural Sciences at K. R. Mangalam University is fully equipped with the facilities of laboratories 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 with technical knowledge, enhances their practical skill and ability, motivating them to think creatively, helping them to act independently and make decisions accordingly in all their technical pursuits and other endeavors. 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.

FACULTY ACHIEVEMENTS

FDP attended by the faculty member

FDP attended by the faculty member

Dr. Ambika Bhandari Asst. Professor (Horticulture) – attended a 7- Day International Faculty Development Program on Research Methodology & publication Strategies for Faculty Advancement" Organized by Afghanistan National Agricultural Sciences & Technology University and Jharkhand Rai university (JRU) with association Meadow Agriculture, Society for Ecological Sustainability (SES) Odisha & Society for Agriculture, Allied Sciences & Technology SAAST) Odisha. The Program took place from 06/08/2024 to 12/08/2024.

Issue Date -20/08/2024 Certificate No- -MD-FDP-24-54

JHARKHAND Rai University RANCHI — MEADOW AGRICULTURE Create A Big Think With Us

CERTIFICATE OF PARTICIPATION

This is certified That

AMBIKA BHANDARI

Assistant Professor

Department of Horticulture

K.R. Mangalam University

has Succesfully participated in the 7-Day International Faculty Development Program on "Research Methodology & Publication Strategies For Faculty Advancement", collaboratively organized By Afghanistan National Agricultural Science and Technology University & ,Jharkhand Rai University (JRU) with Association Meadow Agriculture , Society for Ecological Sustainability (SES) Odisha & Society for Agriculture, Allied Sciences & Technology (SAAST)Odisha

This program took place from 06/08/2024 to 12/08/2024, providing valuable insights and fostering development in research methodologies and publication strategies.

We acknowledge and appreciate your commitment to professional growth.

Dr. Neeta Shweta Kerketta
Associate Professor/ Convenor
JRU, Ranchi

GAJENDRA PAL
DIRECTOR
MEADOW AGRICULTURE PVT.LTD

Lecture Delivered in FDP by the faculty member invited as a speaker

Dr. Deepak Kumar has delivered a lecture on 'Participatory Agriculture Approaches for Sustainable Development" on September 05, 2024 during one week Faculty Development Programme on "Agripreneurship: Opportunities and Challenges" Organized by institute of Agriculture Sciences & Technology, Shri Ramswaroop Memorial University

SRMU

Institute of Agricultural Sciences & Technology
SHRI RAMSWAROOP MEMORIAL UNIVERSITY

ONE WEEK FACULTY DEVELPMENT PROGRAMME

Agripreneurship: Opportunities & Challenges

Certificate of Appreciation

This is to certify that

Dr. Deepak Kumar, Assistant Professor, School of Agricultural Sciences, K R Mangalam University, Gurugram has delivered lecture on "Participatory agriculture approaches for sustainable development" on September 05, 2024 during one week Faculty Development Programme on "Agripreneurship: Opportunities and Challenges" organized by Institute of Agriculture Sciences & Technology from September 01-07, 2024.

Prof (Dr.) Prachi Bhargava
CONVENER

Prof (Dr.) Vikas Misra
VICE CHANCELLOR

Life Membership of the Society

Dr. Deepak Loura, Asst. Professor (Agronomy) has become a lifetime member of the Indian Society of Agronomy, Division of Agronomy, ICAR- Indian Agricultural Research Institute, New Delhi.

THE INDIAN SOCIETY OF AGRONOMY

CERTIFICATE

This is to certify that Dr. Deepak Loura, Assistant Professor presently Department of Agronomy School of Agricultural Sciences, K. R. Mangalam University, Sohna Road, Gurugram, Haryana has been admitted as Life Member of The Indian Society of Agronomy, Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110 012.

Sanjay Singh Rathore
Secretary
The Indian Society of Agronomy

No.: H/2024/8609
Date: 22-07-2024

Shanti Kumar Sharma
President
The Indian Society of Agronomy

STUDENTS ACHIEVEMENTS

B. Sc. (Hons.) II year students has participated in a certificate course "KRISHI MANTHAN: 30 Days summer School International Training Programme" which was organized by Sri Konda Laxman Telangana State Horticultural University-Hyderabad. The main aim of this 30 Days Summer School International Training Programme was to develop the competence of the researchers/ scholars/scientists/ subject matter specialists in advanced tools and techniques of agriculture. The training program helped to enrich the technical knowledge of the participants on Smart Farming & Agri-preneurship. Training also delivered the knowledge and information of Hydroponics, Bio floc Fish Farming, Piggery & Poultry Farming, Dry Flower Processing, Drone Technology, Organic Farming, Agripreneurship, Startups, Artificial Intelligence, IoT, SaaS, Blockchain Technology, Entrepreneurship development to make it useful for the stakeholders.

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

Certificate

IS PRESENTED TO

Harshita

has successfully attended the **30 Days Summer School International Training Programme** organized by **Sri Konda Laxman Telangana State Horticultural University (SKLTSHU), Telangana** in collaboration with **UTKARSH- PDKV, Akola, Just Agriculture Education Group, ISASTR, Noida** during 15th July to 15th August, 2024.

Krishi Manthan: 30 Days Summer School International Training Programme

The Training Program consisted of topics viz., Saffron Farming, Fish Farming, Poultry, Microgreens, Rooftop Farming Artificial Intelligence, Agribots, Drone Technology, SaaS, IoT, Block Chain Technology, Agripreneurship, Natural Farming, Organic Farming, Sericulture, Apiculture, Mushroom Production, Hydroponics.

Dr. B. NEERAJA PRABHAKAR, Vice-Chancellor, SKLTSHU, Telangana
Dr. SANTOSH J. GAHUNKAR, CEO, AIC, Maharashtra
Dr. SUSHILA HOODA, President, ISASTR, Noida
Certificate No. KM/815

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

Certificate

IS PRESENTED TO

Surabhi Dubey

has successfully attended the **30 Days Summer School International Training Programme** organized by **Sri Konda Laxman Telangana State Horticultural University (SKLTSHU), Telangana** in collaboration with **UTKARSH- PDKV, Akola, Just Agriculture Education Group, ISASTR, Noida** during 15th July to 15th August, 2024.

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Dr. B. NEERAJA PRABHAKAR, Vice-Chancellor, SKLTSHU, Telangana
Dr. SANTOSH J. GAHUNKAR, CEO, AIC, Maharashtra
Dr. SUSHILA HOODA, President, ISASTR, Noida
Certificate No. KM/1453

STUDENTS PARTICIPATION IN HANDS-ON DEMONSTRATION ON EXTRACTION AND APPLICATION OF NATURAL DYE

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

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Certificate of Appreciation

THIS IS TO CERTIFY THAT

Ms./Mr. V. Pallavi of
B.Sc (Hons.) Ag III rd sem Coordinated/participated in
Hands-On Demonstration on Extraction and Application of Natural Dye
held on 17th Sept. 2024 at K.R. Mangalam University, Gurugram and secured ✗ position.

Event In-charge Convenor Registrar

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

K.R. MANGALAM UNIVERSITY
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Certificate of Appreciation

THIS IS TO CERTIFY THAT

Ms./Mr. Harshita of
B.Sc (Hons.) Ag III sem Coordinated/participated in
Hands-On Demonstration on Extraction and Application of Natural Dye
held on 17th Sept. 2024 at K.R. Mangalam University, Gurugram and secured ✗ position.

Event In-charge Convenor Registrar

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

K.R. MANGALAM UNIVERSITY
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Certificate of Appreciation

THIS IS TO CERTIFY THAT

Ms./Mr. Albert of
B.Sc (Hons.) Ag III sem Coordinated/participated in
Hands-On Demonstration on Extraction and Application of Natural Dye
held on 17th Sept. 2024 at K.R. Mangalam University, Gurugram and secured ✗ position.

Event In-charge Convenor Registrar

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


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Certificate of Appreciation

THIS IS TO CERTIFY THAT

Ms./Mr. Surabhi Dubey of

B.Sc (Hons.) Ag III sem Coordinated/participated in

Hands-On Demonstration on Extraction and Application of Natural Dye

held on 17th Sept. 2024 at K.R. Mangalam University, Gurugram and secured ✱ position.

Event In-charge Mehak Convenor Registrar

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


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Certificate of Appreciation

THIS IS TO CERTIFY THAT

Ms./Mr. Surabhi Kumari of

B.Sc (Hons.) Ag III sem Coordinated/participated in

Hands-On Demonstration on Extraction and Application of Natural Dye

held on 17th Sept. 2024 at K.R. Mangalam University, Gurugram and secured ✱ position.

Event In-charge Mehak Convenor Registrar

INITIATIVES BY SCHOOL

Bio-efficacy of different pre- and post-emergence herbicides on weed control and performance of summer mung bean [Vigna radiata (L.) Wilczek]

The school has strengthened its research capabilities and initiated promotion of urban agriculture in NCR.Dr. Deepak Loura, Assistant Professor (Agronomy) at School of Agricultural Sciences, recently led a comprehensive field trial during the Kharif season of 2024 at the Agriculture Farm of the School of Agricultural Sciences, K.R. Mangalam University. The study, titled "Bio-efficacy of different pre- and post-emergence herbicides on weed control and performance of summer mung bean [Vigna radiata (L.) Wilczek]," aimed to evaluate the impact of various herbicides on the weed population and the overall yield of mung bean, a crop that plays a crucial role in India's agricultural landscape.

Supported by Dr. Anjali Tomar and Dr. Parita, Dr. Deepak Loura was the lead researcher responsible for conceptualizing, executing, and managing the trial. His primary responsibilities included layout design, herbicide application, management of agronomic operations, and data collection throughout the experiment.

Introduction to Mung Bean and the Need for Weed Management

Pulses, including mung bean (Vigna radiata), belong to the Fabaceae family and are cultivated worldwide due to their high protein content, ranging between 20-40%. Mung bean is a crucial short-duration pulse crop primarily grown in the rainy season. In India, it holds a prominent position among pulses because of its short growth period, high nutritional value, and versatile use as food, feed, and forage. A 100-gram portion of mung bean provides 75 mg of calcium, 24.5 grams of protein, and 348 kilocalories, making it a rich source of vitamins and minerals. Mung bean is also known for its ability to restore soil fertility due to its nitrogen-fixing properties.

Despite its importance, mung bean production in India faces challenges, particularly in weed management. Weeds significantly affect mung bean crops, with studies showing potential yield losses of 40-68% due to weed competition. Managing these weeds, especially during the early growth stages of the crop (30-45 days after sowing), is critical for achieving optimal yields. This trial aimed to address these challenges by evaluating various herbicides for their effectiveness in controlling weed populations and improving crop yield.

Objective of the Study

The primary objective of research was to assess the bio-efficacy of different pre- and post-emergence herbicides for weed control in mung bean and their impact on crop growth, yield, and economic viability. The research also aimed to observe any phytotoxicity of herbicides on mung bean and to provide recommendations for effective weed management practices for farmers.

Land Preparation for Research Trial

Methodology: Execution of the Trial

The experiment was conducted at the Agriculture Farm of K.R. Mangalam University during the Kharif season of 2024 the trial involved the eight treatments. Meticulously laid out experimental plots, ensuring proper replication and random treatments, also oversaw the timely application of herbicides, adhering to the exact doses and application timings as per the treatment protocol.

Herbicide Application and Agronomic Operations

The herbicide spraying during both pre-emergence and post-emergence stages were conducted. The pre-emergence herbicides were applied immediately after sowing, while the post-emergence treatments were applied 20-25 days after sowing, targeting weeds that had already germinated.

The team faced the challenge of managing diverse weed species, including broadleaf weeds like Amaranthus viridis and Trianthema portulacastrum, as well as grassy weeds like Digitaria sanguinalis and Echinochloa colona.

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Research Expt. Title: Bio-efficacy of different pre- and post-emergence herbicides on weed control and performance of summer mung bean [*Vigna radiata* (L.) Wilczek]

Dr. Deepak Loura, DrParita & Dr. AnjaliTomar (Assistant Professor), School of Agricultural Sciences, K. R. Mangalam University, Gurgaon

Design: Randomized Block Design (RBD)
Number of Replications: 3
Treatments: 8
Plot size: 3 m x 4 m
Seasons: One (*Rabi* 2024-25)
Crop: Mung bean
Variety: MH-421

Experimental Layout

Replication 1	Replication 2	Replication 3
T_1	T_4	T_2
T_2	T_5	T_4
T_3	T_7	T_6
T_4	T_6	T_1
T_5	T_8	T_3
T_6	T_3	T_5
T_7	T_2	T_8
T_8	T_1	T_7

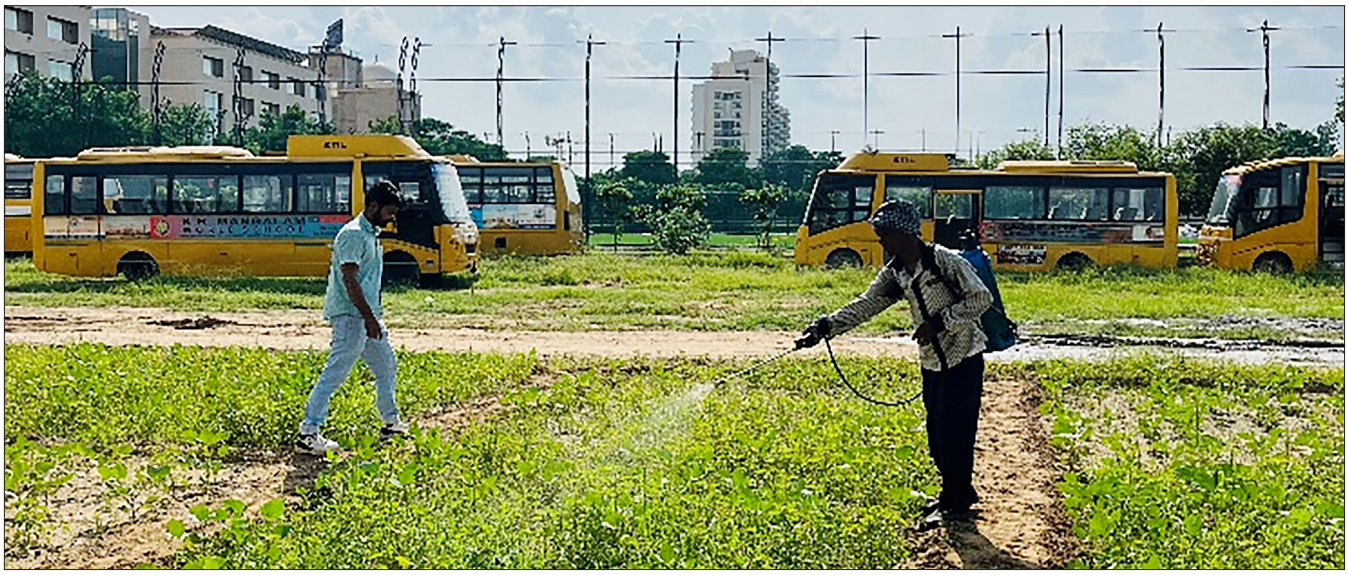
Treatment Details		Dose (g/ha)	Time (DAS)
T_1	Pendimethalin	750	PRE
T_2	Imazethapyr	60	PRE
T_3	Pendimethalin + imazethapyr (TM)	1000	PRE
T_4	Imazethapyr	60	PoE
T_5	Imazethapyr + imazamox	60	PoE
T_6	Clodinafop propargyl + aciflourfen- sodium	122.5	PoE
T_7	Weed free	-	Hoeing at 20 and 40 DAS
T_8	Weedy check	-	-

These weeds, if not controlled, could have caused significant yield losses. Dr. Deepak Loura ensured that all agronomic operations, including weeding and herbicide application, were executed in a timely manner, maximizing the potential for weed control and crop growth.

Data Collection and Observations

Throughout the trial, Dr. Deepak Loura, Dr. Anjali Tomar & Dr. Parita meticulously collected data on various parameters, including weed density, crop growth stages, and yield. The data collection was carried out at multiple stages, starting from 15 days after snowing and continuing until harvest. This

involved measuring plant height, leaf area, number of pods per plant, and overall yield. One of the critical aspects of the study was monitoring the phytotoxicity of herbicides on the mung bean crop. It was ensured that any potential adverse effects of the herbicides, such as leaf yellowing or stunted growth, were recorded and analyzed. Fortunately, no significant phytotoxicity was observed in any of the treatments, indicating that the herbicides used were safe for the crop when applied at the recommended doses.



Weed Control Treatment at Field

Conclusion

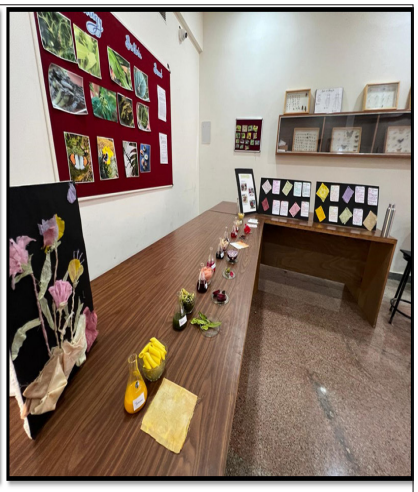
Trial on the bio-efficacy of herbicides in mung bean was a significant contribution to the field of agronomic research, addressing a critical issue in pulse cultivation. The trial's design, execution, and data collection was instrumental in ensuring the success of the experiment. The trial demonstrated the effectiveness of herbicide use in improving mung bean productivity by controlling weed populations efficiently.

HANDS-ON DEMONSTRATION ON EXTRACTION AND APPLICATION OF NATURAL DYE

"Hands on Demonstration on Extraction and Application of Natural Dye" has been organized on 17th September 2024 by Dr. Rabiya Basri, event in-charge and member of Dr. APJ Abdul Kalam Science Society KRMU. This has proven an insightful session volunteered by the B. Sc. (Hons.) II year students of SOAS, which revealed the significance of natural dye and demonstrated color obtained from different natural resources for fabric and food color by the hues obtained. Students have discussed about the use of hibiscus, turmeric, beetroot, purple cabbage and spinach to produce food color. On the other hand, turmeric, beetroot, purple cabbage, spinach, coffee, bougainvillea, henna, tea leaves, jaggery, red sand and roselle flower were used to obtain fabric dye.

Students have demonstrated the method of obtaining color and their use for dyeing fabric and as food color

Session was concluded by Dr. Rabiya Basri



Source of natural dye and it's application on fabric and food has been demonstrated with description

Students V. Pallavi and Surabhi Dubey stated the significance of natural dye as they are derived from plant, animal, or mineral sources, making them safer and healthier alternatives to synthetic dyes, which may pose health risks. Natural dyes promote sustainability, support traditional practices, and reduce chemical pollution in textile production. They have unique hues and variations, contributing to the aesthetic and cultural value of dyed products. Their use in industries such as fashion, cosmetics, and food is gaining popularity due to growing environmental awareness. V. Pallavi, Surabhi Dubey, Sneha, Harshita, Surbhi Kumari and Albert have explained the method of preparation of colors. Students have also identified magenta and blue color hues produced by adding vinegar and baking soda in the color obtained from purple cabbage respectively. Albert, Student of SOAS has demonstrated the method of obtaining the scarlet or cochineal dye from an insect scientifically known as Dactylopius coccus used to feed upon prickly pear cacti. This bright red dye is also known as carmine. Indigenous peoples, such as the Aztecs and Mayans, were among the first to cultivate cochineal for dye production in Pre-columbian era. Later, Harshita has elucidated the limitations to the dye obtained from natural resources such as color consistency, reproducibility, limited color range compared to synthetic dyes, time-consuming, labor-intensive process and cost efficacy. Dr. Mehak Ahuja (Convenor), Dr. Kanchan Khatreja and Dr. Parakh Basist were present during the event. The session was concluded by Dr. Rabiya Basri and the event was successfully conducted and attended by the students of various schools.

KRISHI VIKAS

"AI and Agriculture: Cultivating a Technological Revolution"

Dr. Anjali Tomar

Assistant Professor
(Extension Education)

Introduction

Agriculture serves as the backbone of India's economy, providing the primary source of livelihood for over 58% of rural households. However, it grapples with formidable challenges throughout the agricultural cycle, from sowing to harvest. To address these challenges effectively, there is a pressing need for the modernization of agriculture. In the realm of agriculture, rapid strides are being made in the integration of Artificial Intelligence (AI) into various farming techniques. AI has emerged as a focal point in computer science research due to its swift technological advancement and wide-ranging applications. Its relevance in agriculture is escalating, given its robust applicability in addressing problems that are not easily solvable by humans. Agriculture, which engages approximately 80% of the population across 159.7 million hectares of agricultural land, requires efficient solutions. AI-powered farming solutions empower farmers to achieve more with fewer resources, elevating the overall quality of agricultural practices. The term 'artificial' in AI signifies its non-biological nature, while 'intelligence' denotes the capability to accomplish intricate goals or tasks. AI involves analytical processes a kin to human thinking, encompassing areas such as speech recognition, natural language understanding and translation, knowledge management, image analysis, decision-making and learning. The application of AI technology extends across various facets of agriculture, contributing to increased productivity and efficiency.

Applications of Artificial Intelligence in Agriculture

Embracing Artificial Intelligence (AI) technologies has become pivotal in enhancing crop quality, pest control, soil and growing condition monitoring, data organization for farmers, workload management and overall optimization of tasks throughout the entire food supply chain.

Conclusion

The road ahead for Artificial Intelligence (AI) stands as a transformative force, empowering farmers to amplify production capacity while minimizing production costs and labour-intensive tasks. The widespread integration of AI across diverse application domains is poised to revolutionize the landscape of agricultural research and development. As AI progresses, it gravitates towards increased automation with heightened accuracy, facilitating real-time management and steering traditional agriculture towards precision farming at a reduced cost. To expedite adoption and cultivate broader understanding among farmers, AI solutions should adopt an open-source platform, ensuring affordability and inclusivity.

ORGANIC FARMING IN HORTICULTURE CROPS: BENEFITS AND CHALLENGES

Dr. Ambika Bhandari

Assistant Professor
(Horticulture)

Organic farming is an agricultural system that prioritizes natural inputs and processes to boost soil fertility and crop health without synthetic chemicals or genetically modified organisms. Its popularity has surged as a sustainable alternative to conventional methods, particularly in horticulture, which includes fruits, vegetables, and herbs. The global area dedicated to organic horticulture increased from 0.6 million hectares in 2000 to 1.9 million hectares in 2018, according to the Food and Agriculture Organization (FAO). However, organic farming faces challenges like lower yields, higher costs, and pest management issues. This article explores the benefits and challenges of organic farming in horticulture and offers recommendations for its growth.

Benefits of Organic Farming

Organic horticulture provides numerous advantages for the environment, farmers, and consumers.

Environmental Benefits: It minimizes synthetic chemical use, reducing pollution and enhancing soil quality, biodiversity, and ecosystem services. This approach also supports local crop varieties, fostering genetic diversity.

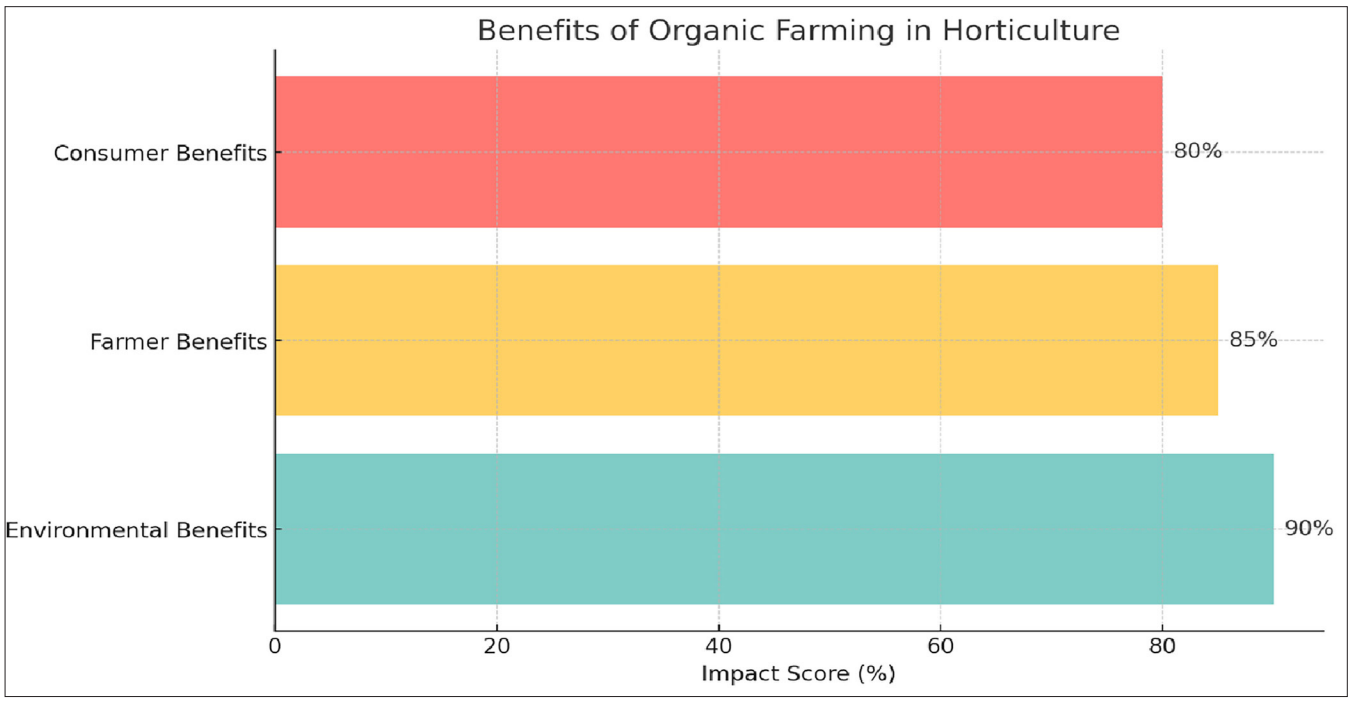
Farmers' Benefits: Organic farming can improve incomes for smallholders by decreasing reliance on external inputs and opening access to premium markets. Additionally, it enhances farmer health by reducing exposure to harmful chemicals.

Consumers' Benefits: Organic products are often higher in quality and nutrition, appealing to consumers seeking safe, ethical food options while supporting local producers.

Challenges of Organic Farming

Despite its benefits, organic farming encounters significant challenges:

- **Yield Gap:** Organic yields tend to be lower due to less efficient input availability and higher vulnerability to pests and diseases.
- **Cost Gap:** The higher costs associated with organic farming, from labor to certification, can limit accessibility for both farmers and consumers.
- **Pest Management:** Organic methods often struggle against pests and diseases, necessitating more research and innovation.
- **Certification and Marketing:** The complex certification process can hinder smallholder farmers, while varying standards across regions create market confusion.
- **Consumer Awareness:** Low consumer awareness and variable willingness to pay for organic products can limit demand.



Recommendations

To enhance organic farming's impact in horticulture, several strategies are recommended:

1. Increase Productivity: Focus on improving organic input efficiency and resilience to stressors.

2. Reduce Costs: Implement subsidies and simplify certification processes to lower barriers for farmers.

3. Enhance Research: Invest in innovative pest management and conservation practices.

4 Strengthen Education: Provide farmers with training on organic standards and market access.

5. Boost Consumer Awareness: Promote the health and environmental benefits of organic products to increase demand.

By addressing these challenges, organic farming in horticulture can contribute significantly to sustainable development goals.

UNLOCKING THE POWER OF MICROBES IN AGRICULTURE: NEW FRONTIERS AND APPLICATIONS

Dr. Neha Sharma
Assistant Professor
(Microbiology)

Agricultural microbiology continues to transform how we understand and manage crop health, soil fertility, and sustainable farming. From enhancing nutrient uptake to improving disease resistance, the latest innovations highlight the pivotal role microbes play in sustainable agriculture. Here's a roundup of exciting developments in agricultural microbiology that are shaping the future of farming.

1. Plant-Microbiome Interactions for Sustainable Crop Yields

Researchers are uncovering the complex relationships between plants and soil microbes, which are vital for nutrient exchange and growth. Recent studies show how fine-tuning these interactions can enhance crop resilience to stress factors such as drought and soil salinity. These insights are now being applied to develop microbial-based biofertilizers that promote nutrient-rich, sustainable crop production without heavy reliance on chemical inputs.

2. Advances in Biocontrol Agents to Combat Crop Diseases

As pathogens become more resistant to traditional chemical pesticides, biocontrol agents—natural predators, antagonists, or competitors of crop pathogens—are gaining attention. New biocontrol strategies involve using beneficial microbes, like certain bacteria and fungi, to outcompete harmful pathogens. These biocontrol agents reduce the need for chemical pesticides, minimizing environmental impact and promoting healthier ecosystems.

3. Microbial Inoculants: Enhancing Soil Health and Fertility

Microbial inoculants have become a major focus in agricultural microbiology. These products, often including bacteria, fungi, or other beneficial organisms, can be introduced into the soil to improve soil structure, increase nutrient availability, and support crop growth. Recent advancements have resulted in highly effective inoculants tailored to specific crop needs, such as nitrogen-fixing bacteria for legumes or phosphorus-solubilizing bacteria for a range of crops, aiding in the restoration of depleted soils.

4. Microbiome Engineering in Precision Agriculture

Precision agriculture and microbiome engineering are converging to provide tailored microbial solutions for specific crop and soil conditions. Researchers are experimenting with microbial consortia—customized blends of beneficial microbes—designed to maximize plant health and productivity under specific environmental conditions. This personalized approach reduces resource input while optimizing yield, presenting a viable model for the future of agriculture.

5. Phytoremediation and Microbes: Tackling

Soil Pollution

With the rise in soil contamination, microbes are proving effective allies in phytoremediation efforts. Certain bacteria and fungi have the ability to detoxify pollutants, assisting plants in absorbing or transforming heavy metals and other contaminants. These microbial-assisted phytoremediation strategies hold promise for reclaiming agricultural land compromised by industrial waste or pesticide overuse, potentially making polluted soils arable once again.

6. Exploring Microbial Solutions to Climate-Resilient Crops

The changing climate poses unique challenges to global agriculture, from erratic rainfall to rising temperatures. Microbial treatments are emerging as a natural way to support crop resilience. Heat-tolerant and drought-resistant microbial strains are being developed to aid plant survival in extreme weather conditions. These microbial solutions offer farmers adaptable, environmentally friendly options to cope with climate volatility.

THE ROLE OF ORGANIC FARMING IN SUSTAINABLE AGRICULTURE

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

In today's world, where environmental concerns are at the forefront, the agricultural sector plays a pivotal role in ensuring food security while maintaining ecological balance. One of the most important trends shaping the future of farming is organic agriculture. Organic farming has become a key component of sustainable agriculture, offering numerous benefits for the environment, farmers, and consumers alike.

Organic farming is a method of cultivation that avoids the use of synthetic chemicals, such as fertilizers and pesticides, and instead focuses on natural processes and biodiversity to enhance soil health and crop productivity. Crop rotation, intercropping, and the use of cover crops are some other practices that help in maintaining soil fertility and reducing pest populations without relying on harmful chemicals.

One of the significant benefits of organic farming is its positive impact on soil health. Unlike conventional farming, which often depletes soil nutrients through excessive use of chemical inputs, organic farming emphasizes the rejuvenation of the soil. Organic matter such as compost and manure not only improves soil structure but also enhances its ability to retain moisture.. By preserving soil fertility, organic farming ensures that future generations will be able to cultivate the land productively.

Moreover, organic farming has been shown to promote biodiversity. By avoiding chemical inputs, organic farms provide a safe habitat for beneficial insects, birds, and other wildlife. Organic farms often feature a diversity of crops, which further supports a wider range of organisms and strengthens the resilience of the ecosystem. In contrast, monoculture practices in conventional farming can lead to pest outbreaks and soil degradation, requiring even more chemical inputs over time.

From an environmental perspective, organic farming also reduces pollution. Chemical pesticides and fertilizers used in conventional farming often leach into nearby water bodies, leading to the contamination of rivers, lakes, and groundwater. Organic farming, by using natural inputs, minimizes such pollution, helping to protect both local ecosystems and water quality.

For farmers, organic farming presents an opportunity to produce healthier, chemical-free crops, which are in increasing demand from consumers. The growing awareness about the negative effects of synthetic chemicals on health has led to a rise in demand for organic products. Farmers who adopt organic methods often receive premium prices for their produce, which can improve their income and livelihood. However, organic farming does come with its challenges. The transition from conventional to organic practices can be difficult for farmers, as it requires a deep understanding of soil health, pest management, and crop rotation. Organic farming can also be more labor-intensive, particularly in the early years, and

yields may be lower compared to conventional methods. In conclusion, organic farming offers a promising path towards sustainable agriculture by protecting the environment, improving soil health, promoting biodiversity, and supporting farmers' livelihoods. As we look to the future, it is clear that organic farming will play an essential role in feeding the world while safeguarding our natural resources for generations to come.

PRECISION AGRICULTURE: THE ROLE OF TECHNOLOGY IN FARMING

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

The agriculture industry is undergoing a revolution with the integration of precision agriculture, which leverages technology to enhance productivity, efficiency, and sustainability. This method allows farmers to manage their fields with pinpoint accuracy, optimizing resources like water, fertilizer, and labour while minimizing waste and environmental impact.

One of the most impressive innovations is the use of drones. These flying machines help monitor crop health by capturing aerial images that reveal areas of disease, pest infestation, or nutrient deficiency. This allows farmers to take action swiftly, targeting only the affected areas rather than the entire field.

GPS-guided tractors are another technological advancement that ensures accurate ploughing, seeding, and harvesting. These machines reduce overlap and missed sections, saving time and resources. They are particularly useful on large farms, where precision is essential for maximizing output.

Smart irrigation systems use sensors to determine soil moisture levels, automatically adjusting water

flow as needed. This leads to significant water savings, especially in regions facing drought conditions. In fact, studies show that precision irrigation can reduce water usage by up to 30%, while still maintaining healthy crops.

Moreover, data analytics allows farmers to make informed decisions by tracking historical and real-time data related to weather patterns, soil health, and market trends.

By combining traditional farming wisdom with modern technology, precision agriculture is creating a new future for farming—one that is more efficient, sustainable, and capable of feeding a growing global population.

EVENTS

Visit to IFFCO (Indian Farmers Fertilizer Cooperative Limited)

On September 25, 2024, students from SOAS had the unique opportunity to visit the FMDI (Fertilizer and Marketing Development Institute) centres of IFFCO (Indian Farmers Fertilizer Cooperative). The visit was coordinated by Dr. Neha Sharma, who ensured a seamless experience for all participants.

The day began with insightful sessions led by Dr. R.P.S. Yadav, Head of the FMDI unit, alongside Mr. Rajneesh, Marketing Head, and Mr. Shubham Bais.

They presented a comprehensive overview of IFFCO's history, emphasizing its evolution as a farmer-friendly cooperative organization.

The sessions highlighted various products and innovative technologies developed by IFFCO, showcasing their significance in supporting farmers and enhancing agricultural practices. A key takeaway was IFFCO's commitment to ensuring that each farmer is insured with every product they purchase, reinforcing the cooperative's dedication to farmer welfare.

Students also had the chance to explore IFFCO's museum, where they gained immense knowledge about the cooperative's contributions to agriculture and rural development in India. The hospitality extended by the IFFCO team was commendable, making the visit both enjoyable and educational.

A special thanks to Dr. J. S. Yadav, Dean SOAS, for his invaluable support in making this event a resounding success. The experience left a lasting impression on the students, fostering a deeper understanding of cooperative farming and its impact on rural livelihoods.

DEEKSHARAMBH

From August 27th to August 31st, 2024, School of Agricultural Sciences hosted Deeksharambh, an exciting and engaging event aimed at introducing our new students to the vibrant campus life, academic culture, and endless opportunities that await them here. This week-long celebration provided a platform for the newcomers to connect, explore, and get a taste of what their university journey will look like. The event kicked off with an energetic welcome session that set the tone for the upcoming days, making the new students feel at home. The sessions throughout the week were carefully designed to introduce them to the various aspects of university life, from academics to extracurricular activities, ensuring that everyone could find their niche and start their journey on a positive note.

Training on Code of Conduct & Professional Ethics for Students

School of Agricultural Sciences, KRMU, organized a Training session on "Code of Conduct and Professional Ethics" for students of B.Sc. (Hons.) Agriculture at K.R. Mangalam University, Gurgaon on 27th August, 2024. The proposed training aims to provide our students with a comprehensive understanding of the university's code of conduct and professional ethics, ensuring they are well-informed about the expectations and responsibilities that come with being a part of our academic community. This initiative is particularly important for new students as it will set the foundation for a respectful, disciplined, and productive academic and professional journey.

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The training session was started with a warm welcome of all the newly joined students of KRMU by Dr. Anjali Tomar, she started her presentation by giving a brief introduction of K.R. Mangalam University and School of Agricultural Sciences to all the students, later she provided information about what code of conduct is, and how university is expecting from all of its students to maintain it. Further, in the event Dr. Parita (Resource person) gave presentation describing various written code of conduct of KRMU, she asked students to must adhere to the university's rules and regulations and maintain a high standard of discipline, showing respect to faculty, staff, and fellow students,

Training on Code of Conduct by Dr. Parita

ensuring a harmonious campus environment, be regular in all academic activities and to maintain cleanliness in campus and adhere to a professional dress code. Later, in the event Dr. Ambika (Resource person) gave presentation describing 10 golden rules for being ethical professionally which includes: always strive for excellence, be trustworthy, be accountable, be courteous and respectful, be honest, be competent and improve continually, always be ethical, always be honorable and act with integrity, be respectful of confidentiality and set good examples. At the end of the session, Dr. Deepak Loura concluded the event by explaining various rules and behaviors of academic and professional life, he gave his heartfelt vote of thanks to both the resource persons of the event Dr. Parita and Dr. Ambika for their wonderful presentations. The training session on the Code of Conduct and professional ethics was a significant step in guiding new students toward a successful

Training on Professional Ethics by Dr. Ambika

and disciplined life at KRMU and ahead. The clear and comprehensive presentation by Dr. Parita, Dr. Ambika, Dr. Anjali Tomar and Dr. Deepak Loura ensured that students are well-informed and ready to contribute positively to the university community.

VISIT TO ARAWALI BIODIVERSITY PARK

Students and Faculties of SOAS at Sunset Point, Arawali Biodiversity Park

School of Agriculture Sciences, K.R Mangalam University, Gurugram conducted a one-day visit to the Aravali Biodiversity Park during their induction program. The purpose of this visit was to explore the park's abundant flora and fauna, allowing first year students to gain a deeper appreciation for the region's ecological richness. This experience provided valuable insights into the unique biodiversity of the Aravalli region, fostering an understanding of its environmental significance. The park serves as a sanctuary for the native flora of the Aravalli region, medicinal herbs, and several endangered plant species. Spanning approximately 380 acres, the park plays a critical role in preserving the biodiversity of the region and provides a natural habitat for various species of plants and animals. Mr. Vijay Dhasmana, eco-restoration practitioner and a key figure in the environmental conservation community, shared his insights during the visit. His contributions to the restoration and conservation efforts at the Aravali Biodiversity Park are noteworthy.

During the exploration of the Aravali Biodiversity Park, several key plants were identified that play crucial roles in the park's ecosystem. The park is also home to Cenchrus setigerus, a grass species commonly found in arid regions. This drought-tolerant grass is used as fodder for livestock and plays an important role in preventing soil erosion by stabilizing sandy soils. It also provides habitat for small wildlife.

Vajradanti (Barleria prionitis) is a medicinal herb found in the park. Commonly used in Ayurveda for dental care and other health benefits, Vajradanti possesses anti-inflammatory and antimicrobial properties and helps maintain the biodiversity of the park's herbaceous layers. The Ghost Tree (Sterculia urens), known for its pale, ghostly appearance, is a prominent feature in the park. This tree produces gum and is used in traditional medicine, providing habitat for various insects and birds, thereby contributing to the park's biodiversity. The Flame of the Forest (Butea monosperma) is famous for

Students & Faculties of SOAS at Entrance, Arawali Biodiversity Park

its bright orange-red flowers that bloom in spring, earning it the name "Flame of the Forest." This tree has cultural and medicinal significance, attracting a variety of pollinators, including bees and birds, and playing a crucial role in the park's ecosystem.

Lastly, Velaris (Celastrus paniculatus), also known as the Intellect Tree, is used in traditional medicine, particularly in Ayurvedic treatments for enhancing cognitive function. This plant supports the park's biodiversity by contributing to the diversity of medicinal plants.

During the exploration, Mr. Vijay Dhasmana, an expert in biodiversity and ecological restoration, provided valuable insights into the conservation and ecological significance of these plants. He emphasized the importance of preserving native species, which are crucial for maintaining the ecological balance of the region. Mr. Dhasmana's extensive work in environmental conservation, including his roles as a Member of the State Biodiversity Council, Delhi, and his involvement

Students & Faculties of SOAS at Entrance, Arawali Biodiversity Park

in various national committees, underscores his commitment to protecting and restoring India's natural heritage. The event was successfully conducted with the active involvement of Dean Dr. J.S. Yadav and faculty members Dr. Ambika, Dr. Anjali Tomar, and Dr. Rabiya of SOAS. The session, attended by 25 participants, provided an enriching and educational experience for all involved.

TEACHER'S DAY CELEBRATION

The Teachers' Day celebration held by the School of Agricultural Sciences was a heartwarming tribute to the dedication and efforts of our esteemed faculty. The event was marked by engaging performances, inspiring speeches, and exciting games, creating a festive atmosphere that celebrated the invaluable role of teachers.

Highlights of the Celebration

Dance Performances: The celebration kicked off with vibrant dance performances by both students and faculty members. Students showcased their talent with energetic group dances that captivated the audience. Faculty members also participated, bringing joy and laughter to the event with their enthusiastic routines. The camaraderie and unity displayed on stage highlighted the close-knit community within the department.

Happy Faces of SOAS, KRMU

Games and Competitions: Various games were organized for faculty members, fostering friendly competition and laughter. The highlight was a spirited contest in which Dr. Deepak Kumar emerged as the winner, showcasing his competitive spirit and enthusiasm. The games not only provided entertainment but also strengthened the bonds between faculty and students.

Talent Shown by student of SOAS

Motivational Speeches: Inspirational speeches were delivered by Dr. Deepak Loura and Dr. Gajraj, emphasizing the importance of education and the impact of teachers on students' lives. They shared personal anecdotes, encouraging students to pursue their dreams and remain committed to their studies. The messages resonated deeply, motivating attendees to appreciate their educational journey.

Tokens of respect and appreciation received by Faculties from Students of SOAS.

Acknowledgments: The event concluded with a heartfelt acknowledgment of all faculty members, expressing gratitude for their unwavering support and guidance. Students presented small tokens of appreciation, symbolizing their respect and admiration for their teachers. The Teachers' Day celebration was a resounding success, filled with joy, inspiration, and appreciation. It provided an opportunity for students to express their gratitude and for faculty members to witness the positive impact they have on their students' lives. The event not only celebrated teaching but also strengthened the sense of community within the Agricultural Sciences department.

AGRICULTURE AND COMMUNITY

Expert Lecture on Agronomic Management of Kharif Crops Held at Village Lakhuwas

On 14th August 2024, Dr. J. S. Yadav, the esteemed Dean of the School of Agricultural Sciences at K.R. Mangalam University, delivered an insightful expert lecture at Village Lakhuwas on the topic "Agronomic Management of Kharif Crops for Higher Productivity and Profitability." The lecture aimed to educate local farmers on advanced agricultural practices that can significantly improve crop yields and overall farm profitability. Dr. Yadav shared his extensive knowledge on the importance of optimal soil management, crop rotation, irrigation techniques, and the effective use of fertilizers and pest control. He emphasized the role of modern agronomic strategies in enhancing the productivity of Kharif crops, such as paddy, maize, and soybean, while also ensuring sustainable farming practices. The event was attended by a large number of farmers, agricultural enthusiasts, who actively participated in the interactive session. Dr. Yadav's practical insights were well-received, with many participants expressing their appreciation for the valuable information shared. The lecture underscored K.R. Mangalam University's commitment to promoting agricultural awareness and empowering local farming communities with the knowledge necessary to achieve higher productivity and profitability in their farming ventures.

Dr. J. S. Yadav, Dean, SOAS, KRMU with Farmers at Village Lakhuwas

FACULTY RESEARCH UPDATES

Research Publication

Tufail Ahmad, Mohd. Amir, Zainab Fatima and Rabiya Basri (2024) Study of Population Dynamics of Syrphis Fly (Order- Diptera, Family- Syrphidae) in ITM University Gwalior, India. Asian Research Journal of Agriculture 17(3): 10-16.

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Study of Population Dynamics of Syrphid Fly (Order- Diptera, Family- Syrphidae) in ITM University Gwalior, India

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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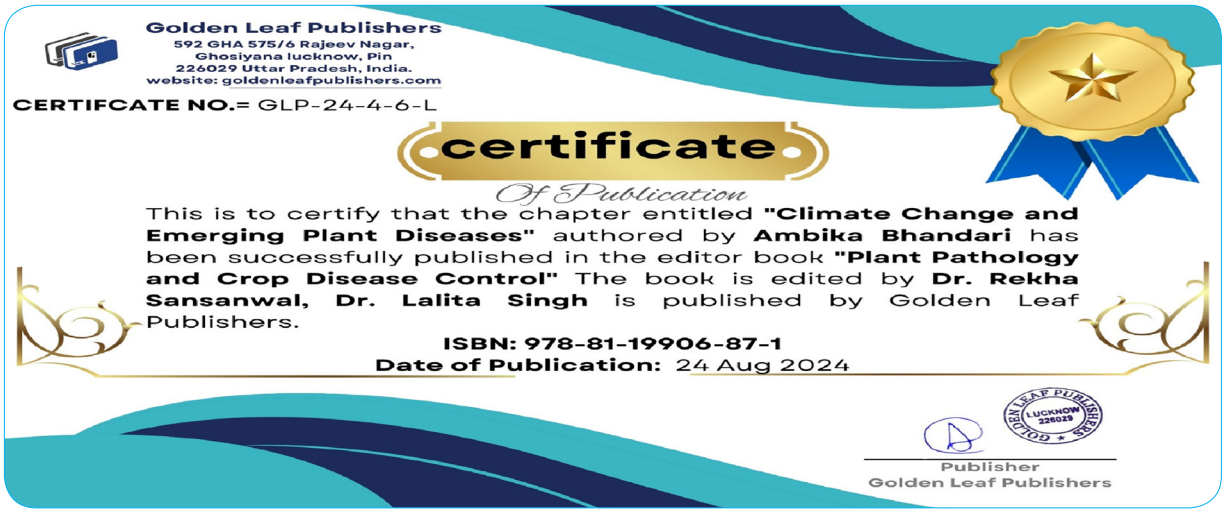
Book Chapter

Ambika Bhandari (2024) Climate Change and Emerging Plant Diseases, Dr. Rekha Sansanwal and Dr. Lalita Singh (ed.) Plant Pathology and Crop Disease Control. Pp 284-312. Golden Leaf Publishers (24th August 2024)



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This is to certify that the chapter entitled **"Climate Change and Emerging Plant Diseases"** authored by **Ambika Bhandari** has been successfully published in the editor book **"Plant Pathology and Crop Disease Control"** The book is edited by **Dr. Rekha Sansanwal, Dr. Lalita Singh** is published by Golden Leaf Publishers.

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STUDENT PROJECT UPDATES

Prerequisites of Button Mushroom

Compost Preparation by Students

Layering of Compost by Students

Sonal Goyal & Yogesh Sharma (B.Sc. (Agri.) IV Year)

Button mushrooms (Agaricus bisporus) are one of the most popular and widely grown mushrooms in the world. Their demand is driven by their mild flavor, nutritional benefits, and versatility in various culinary dishes. For successful button mushroom cultivation, it's essential to understand and establish the right conditions and follow specific procedures to create a thriving environment. In India many states produce button mushroom which are Bihar ,Himachal Pradesh , Haryana, Uttar Pradesh , Punjab , Andhra Pradesh and Tamil Nadu.

Prerequisites of Button Mushroom

1. Suitable Growing Environment

Temperature

Ideal temperature for spawn run is around 20 –24 degree C while fruitning require a cooler temperature about 14 –18 degree C for adjusting temperature in winters by using halogen lamp.

Humidity

High humidity is crucial, particularly during the fruiting phase, where levels around 85–95% are ideal. High humidity prevents mushrooms from drying out and promotes healthy growth.

Ventilation

Proper air circulation is necessary to expel CO_2 and bring in fresh oxygen. This is vital because mushrooms produce CO_2 as they grow, and an excess can inhibit growth. Ventilation systems or controlled air exchange mechanisms are recommended in larger growing setups.

2. Compost Preparation

Compost preparation is a very crucial part of button mushroom as it provides the nutrients needed for the mushrooms to grow effectively. They thrive in specially prepared compost which is typically prepared through organic matter that decomposes to produce a substrate rich in nutrients. Compost preparation has mainly two methods – long method and short method. We have used long methods for the preparation of button mushroom.

Steps :

19 sept – Soaked wheat straw in water for 4 days

23 sept – All the components were mixed (chicken

Mixing of Compost

manure , urea , and wheat chokar) (gypsum was added on 3rd turning). Three pipes were clamp on the compost so that amino gas can be released . Then it was covered to protect it from rain and insect.

Components:

Wheat straw – 10 kg

Chicken manure – 4 kg

Urea – 0.5 kg

Gypsum – 1 kg

Wheat chokar – 1 kg

Mixing of compost:

• 27 sept – 1st turning of compost was done .

• 30 sept – 2nd turning was done and irrigation was also given.

• 3 oct – 3rd turning was done (gypsum was added)

• 7 oct – 4th turning was done and irrigation was given

• 9 oct – 5 th turning was done

• 11 oct – 6 th turning was done

• 16 oct - final turning was done

• It was kept for a week as it is after that compost was ready .

3. Hut renovation:

To make use of the temporary structure for mushroom cultivation, we first need to clean it thoroughly, as it has been closed for several months. Inside the hut, there is a bamboo structure on which mushroom bags will be placed. This bamboo structure has also been painted. The hut itself was damaged in several areas, so cardboard sheets were attached to the walls to help regulate the temperature for the mushrooms and to improve the appearance. Additionally, a few new light bulbs have been installed.

4. Sanitation :

Sanitizing Mushrooms unit by : Fumigation with

Prerequisites of Button Mushroom

Formaldehyde.

To prevent contamination from other fungi or bacteria, sanitize the mushroom unit using formaldehyde at a rate of 4 milliliters per liter of water.

CONCLUSION

To grow button mushrooms successfully, certain prerequisites are essential. First, prepare a controlled growing environment, ideally a dark, cool, and humid space, such as a hut. The temperature should remain around 14-20°C (53-68°F) for optimal growth.

Next, ensure you have high-quality compost or a manure-based substrate, which provides essential nutrients. Sterilizing the substrate can help prevent contamination. Spores or spawn, which act as the "seeds" for mushroom growth, should be from a reputable supplier to ensure healthy development.

Ventilation is also crucial, as mushrooms require fresh air to release carbon dioxide and take in oxygen. Regular misting keeps humidity levels high, but avoid overwatering, as this can lead to mold or rot.

In summary, the essential requirements for growing button mushrooms include a cool, dark, and humid space, nutrient-rich substrate, quality spores, good ventilation, and consistent humidity. Meeting these basic needs will set up a successful foundation for cultivating button mushrooms.

Preparation of Rhizobium Media

Biofertilizers are natural substances that contain living microorganisms, which help enhance soil fertility and promote plant growth. They work by improving nutrient availability, enhancing soil structure, and increasing microbial activity. Common types of biofertilizers include:

1. Rhizobium: Nitrogen-fixing bacteria that form symbiotic relationships with leguminous plants

2. Mycorrhizal fungi: These fungi associate with plant roots, aiding in nutrient absorption, especially phosphorus.

3. Azospirillum: A bacterium that can enhance growth and nutrient uptake in various crops.

4. Blue-green algae: Cyanobacteria that can fix atmospheric nitrogen, especially in rice fields.

Using biofertilizers can lead to sustainable agriculture by reducing the need for chemical fertilizers, improving soil health, and increasing crop yields. They are often used in organic farming and can contribute to environmentally friendly farming practices.

Preparation of Rhizobium media: -

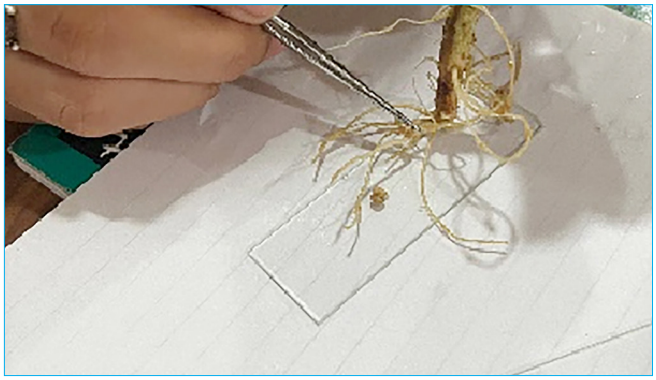
On 13th sept.

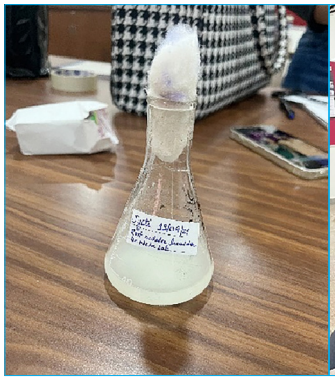
- Wash (8 petri dishes+ 1 beaker) with disinfectant.
- Wash autoclave and filled with water just above the gauge.
- 8g of rhizobium media (have agar) added in 2ml water in a beaker.
- Petri dishes and beaker covered with paper.
- Placed petri dishes and beaker in autoclave for sterilization.
- After sterilization done, Leave autoclave for a while.

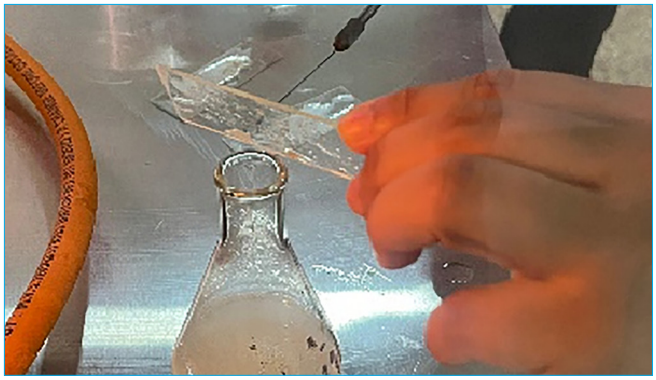
- Turn on Laminar air flow 15min before putting beaker and petri dishes.
- Pour media from beaker to petri dishes inside laminar air flow.
- Let the media in petri dishes solidify at room temperature. Once solid, place them inverted in B.O.D (set temperature 37).

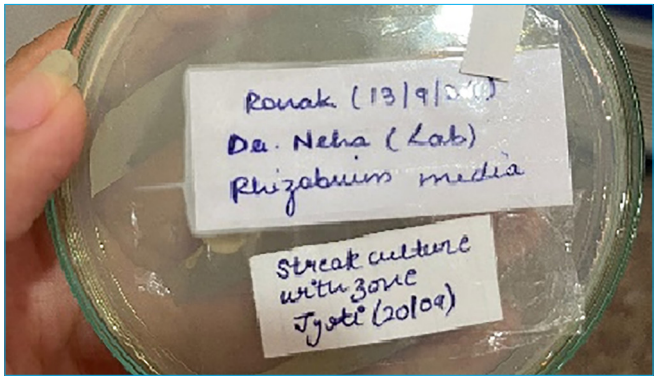
INOCULATION OF ROOT NODULES IN YEAST MANNITOL FLASK

- Root Nodules from legume crop (Moon bean) removed on slides then crushed with the help of needle.
- Inoculated in Laminar air flow.
- Pour crushed root nodules from slide in flask









with inoculating loop

- Kept in B.O.D @ 37 temperature.

On 16th sept.

- Clean refrigerator
- Place petri dishes and flasks in the refrigerator from B.O.D (to decrease overgrowth of microorganisms).

On 20th sept.

- Turn on Laminar for 10min.
- Streaking on petri dishes with inoculating loop inside the laminar air flow.

On 21st sept.

- Colonies formation on petri dishes.

On 1st oct.

- Biofertilizer poured in uninoculated flask (yeast mannitol).
- Kept flask @ 37 in B.O.D.

On 18th oct

Pot experiments begin in field by sowing chilli seeds with different methods.

STUDENT'S CORNER

Digital Poster on "5 Problems that Farmers Face in 2024" prepared by:

Bhanu Pratap Singh

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

Digital Poster on "Precision Agriculture" prepared by:

V.Pallavi

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

Digital poster on “Smart Farming for The Future” prepared by :

Himanshu Chauhan

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

EXPLORATION OF NEW TECHNOLOGIES BY THE STUDENTS

Mr. Sagar

Student of B.Sc.(Hons.) Ag,

III year

Hydroponics is a method of growing plants without soil. Instead of soil, the plants are grown in water mixed with nutrients. These nutrients provide the plants with everything they need to grow, just like they would get from soil. The roots of the plants are either placed directly in the nutrient-rich water or in a growing medium like sand, gravel, or coconut fiber to hold them up. One big advantage of hydroponics is that it uses less water than traditional farming because the water is recycled. It also allows plants to grow faster, and because it can be done indoors, it is not dependent on weather or seasons. This method is especially useful in places where soil quality is poor or there is limited space, such as urban areas. Hydroponic systems can vary from simple setups to complex ones with pumps and timers. Overall, hydroponics is a sustainable way to grow crops in a controlled environment, ensuring efficient use of resources.

PROTECTED CULTIVATION : REVOLUTIONIZING HORTICULTURE

Protected Cultivation Model Prepared by 3rd Year Students under the Guidance of Dr. Ambika Bhandari

In recent years, protected cultivation, particularly through greenhouse systems, has emerged as a vital method for enhancing agricultural productivity and sustainability. This innovative approach not only optimizes plant growth conditions but also addresses many challenges faced by conventional farming.

Advantages of Greenhouse Cultivation

1. Increased Productivity: Greenhouses create a controlled environment where temperature, humidity, light, and carbon dioxide levels can be finely tuned. This results in higher yields and improved crop quality, making greenhouses ideal for high-value crops such as vegetables, flowers, and exotic fruits.

2. Year-Round Growing Seasons: One of the most significant benefits of greenhouse cultivation is the ability to grow crops throughout the year, irrespective of external weather conditions. This extended growing season allows farmers to maximize their output and meet market demands consistently.

3. Pest and Disease Control: The enclosed nature of greenhouses minimizes exposure to pests and diseases. This leads to a reduced reliance on chemical pesticides, promoting healthier ecosystems and more sustainable agricultural practices.

4. Water Efficiency: Greenhouses commonly utilize advanced irrigation systems like drip or micro-irrigation. These methods target water directly to the plants, significantly reducing evaporation and conserving water—an essential resource in agriculture.

5. Optimized Land Use: Greenhouses support

higher-density planting, which is particularly beneficial in areas with limited agricultural space. This efficient land use enables farmers to produce more with less.

Key Principles of Protected Cultivation

To ensure successful greenhouse management, several principles must be followed:

- **Environmental Control:** Maintaining optimal conditions is crucial. Effective ventilation is necessary to prevent humidity buildup and regulate temperature, thereby reducing disease risks.
- **Irrigation and Fertigation Techniques:** Providing the precise amount of water and nutrients is essential for optimal plant growth. Efficient irrigation methods ensure that plants receive what they need without waste.

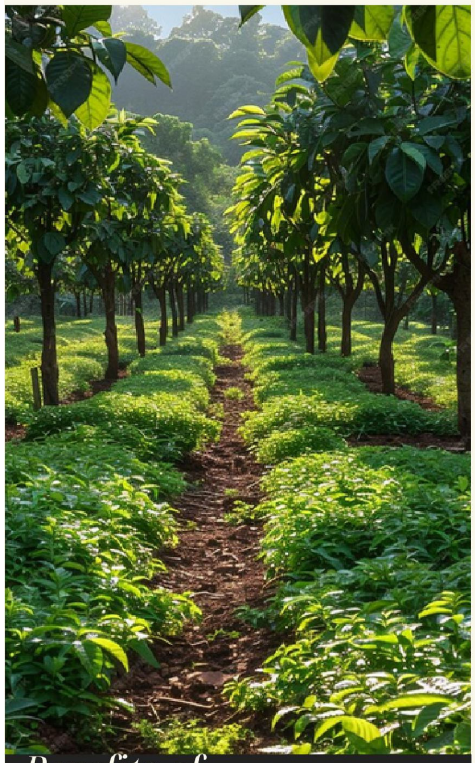
• **Crop Selection:** Choosing high-value crops suited for greenhouse environments is key to maximizing profitability. Careful selection ensures that the crops thrive under controlled conditions.

• **Integrated Pest Management (IPM):** IPM strategies combine physical, biological, and minimal chemical controls to manage pests effectively while minimizing environmental impact.

• **Quality Materials:** Using durable structures and appropriate covering materials is essential to withstand varying climatic conditions and to maintain the desired environment. Protected cultivation, particularly through greenhouses, plays a transformative role in modern horticulture. By creating optimal growing conditions, reducing resource waste, and enhancing productivity, greenhouses enable sustainable agricultural practices. Under the guidance of Dr. Ambika, we, the third-year horticulture students, are excited to delve deeper into this field and contribute to the future of agriculture. As we explore the benefits and principles of protected cultivation, we invite you to join us in our journey toward innovative solutions that support sustainable food production and address the challenges of climate change. Together, we can cultivate a brighter future for horticulture.

KHUSHI
Roll no.2413820004
Course-B.SC Agriculture(2024-28)

AEMBRACING AGROFORESTRY: A SUSTAINABLE FUTURE FOR AGRICULTURE



What is Agroforestry?

Agroforestry is the practice of integrating trees and shrubs into agricultural landscapes. This innovative approach combines traditional farming practices with tree cultivation, creating a diversified ecosystem that enhances both productivity and biodiversity. The essence of agroforestry lies in its ability to mimic natural ecosystems, where various species coexist and support each other.

As the global population continues to rise, the demand for food, fiber, and fuel intensifies, placing immense pressure on our agricultural systems. In this context, agroforestry emerges as a beacon of hope, offering sustainable solutions that harmonize agricultural productivity with environmental stewardship.

Benefits of Agroforestry...

- Enhanced Biodiversity: By incorporating trees and other vegetation, agroforestry systems provide habitats for wildlife, leading to increased biodiversity. This, in turn, can help control pests and diseases naturally, reducing the need for chemical interventions.
- Soil Health Improvement: Trees contribute to soil fertility through leaf litter, which enriches the soil with organic matter. Their roots also prevent soil erosion and improve water retention, promoting healthier crops.
- Climate Resilience: Agroforestry systems are more resilient to climate change. The presence of trees helps regulate microclimates, protecting crops from extreme weather events, such as droughts and heavy rainfall.
- Carbon Sequestration: Trees absorb carbon dioxide from the atmosphere, making agroforestry a valuable tool in the fight against climate change. By sequestering carbon, these systems can mitigate greenhouse gas emissions and contribute to climate stability.
- Economic Diversification: Farmers can diversify their income by producing timber, fruits, nuts, and other non-timber forest products alongside traditional crops. This diversification can enhance food security and stabilize farmer incomes.

Challenges and Considerations.

While agroforestry offers numerous benefits, its implementation can be challenging. Farmers may face initial costs, a lack of knowledge about tree management, and potential competition between crops and trees for resources. Education and access to resources are essential to overcoming these barriers.

Conclusion.

In a world where the interconnectedness of agriculture and ecology becomes increasingly apparent, agroforestry stands out as a holistic solution that benefits both farmers and the environment. As we move forward, it is crucial to support and invest in agroforestry initiatives to ensure a thriving, sustainable agricultural landscape for generations to come.

SLOGANS WRITTEN BY STUDENTS OF B. SC. (HONS.) AG. KRMU

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

"A rolling stone gathers no moss, but a busy farmer's field never grows barren."

"Farming isn't just a profession, it's a way of life that sustains communities, cultures, and the world as a whole"

धरती मां की गोद में खेती करना सबसे बड़ा सम्मान है, और उसका हर पफल हमारी कड़ी मेहनत का पुरस्कार

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

"Even the tallest tree starts with a single seed planted in the soil"

"It's the farmer who plants in faith and harvests in hope, trusting nature for the rest"

हर बीज में एक नया जीवन छिपा होता है, और हर किसान उस जीवन का सच्चा संरक्षक होता है

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

If agriculture goes wrong, nothing else will have a chance to go right.

"Innovate, cultivate, and regenerate—because modern farming is the solution to feeding a growing world sustainably"

THOUGHTS FROM FACULTIES

Dr. Anjali Tomar

Assistant Professor, SOAS

I am extremely overwhelmed to take this opportunity to share my thoughts on the vital role of agricultural extension and communication in enhancing the livelihoods of rural communities. Agricultural extension serves as a critical link, facilitating the transfer of knowledge and technology to farmers, empowering them to adopt sustainable practices and improve productivity. Effective communication is essential in this process, as it fosters trust, encourages collaboration, and ensures that information reaches those who need it most. Ultimately, our work in extension education not only supports agricultural development but also contributes to food security and the well-being of society as a whole. For students in this field, I encourage you to immerse yourselves in community engagement and research. Your fresh perspectives and enthusiasm are invaluable in driving change. By actively participating in agricultural extension initiatives, you can make a meaningful impact while developing essential skills that will serve you throughout your careers. Together, we can build a brighter future for rural communities and the agricultural sector as a whole.

Dr. Ambika Bhandari

Assistant Professor, SOAS

As a faculty member, I am passionate about horticulture and dedicated to advancing sustainable agricultural practices. In my role as an Assistant Professor, I focus on equipping students with both the knowledge and practical skills they need to succeed in this vital field. My expertise includes horticulture plant cultivation, genetic diversity, organic farming, and post-harvest management of horticultural crops. I am committed to fostering innovative research and practices that enhance food security and promote environmental sustainability. My goal is to inspire the next generation of agricultural professionals to recognize the essential role of horticulture in building resilient and thriving communities.

I encourage each of you to tap into your creativity and curiosity. Horticulture goes beyond plants; it involves addressing real-world challenges that affect our communities and the environment. Embrace innovation, ask questions, and collaborate with your peers. Together, we can work towards a sustainable future and make significant contributions to food security and environmental health. Remember, your ideas and actions have the power to inspire change and create a flourishing world for generations to come.

INTERNSHIP

Internship

Anushka Rawat
B.s.c Agricultural IV Year

Anushka Rawat, a dedicated student from School of Agricultural Sciences, KRMU, undergone an internship at Mother Dairy Fruit & Vegetable Private Limited, one of the leading companies in the dairy and food processing industry. From 24th July 2024 to 23rd September 2024. During this period, Anushka gained valuable hands-on experience, working alongside industry professionals and contributing to various aspects of operations, quality control, and product development. This internship allowed her to apply her academic knowledge in a real-world setting while learning from some of the best in the business. We congratulate Anushka on her successful internship and are excited for the skills and insights she has gained, which will undoubtedly benefit her future career and our community.

PLACEMENT

We are thrilled to announce the remarkable achievement of our alumni, Praney Surha, who has recently secured a prestigious position at Hexxagram Infrastructure Pvt. Ltd. After graduating with distinction, Praney Surha demonstrated an exceptional blend of technical skills, leadership potential, and a passion for innovation- qualities that have paved the way for this exciting new chapter in his career. This placement is not only a testament to his hard work and dedication but also a proud moment for our institution, reflecting the high caliber of talent.

Praney Surha
Alumni, SOAS, KRMU

Pinki Kumari
Alumni, SOAS, KRMU

We are delighted to share the success of our accomplished alumni, Pinki Kumari, who has recently been hired by IGT Solutions Private Limited, a leader in the global outsourcing and technology solutions sector. Since graduating, Pinki Kumari has consistently demonstrated exceptional problem-solving abilities, a keen eye for innovation, and strong interpersonal skills, all of which have led to this impressive opportunity. This achievement not only reflects her hard work and perseverance but also highlights the quality of education and talent nurtured at our institution. We extend our heartfelt congratulations to Pinki Kumari and wish them continued growth and success in their new role at IGT Solutions.

We are excited to share that our esteemed alumni, Aamir Khan, has been appointed as the Farm Manager at K.R. Mangalam University. Aamir's dedication, expertise in agricultural management, and strong leadership skills have led him to this remarkable position. Throughout his academic journey, Aamir displayed a deep passion for sustainable farming practices and a commitment to improving agricultural processes, which has now paved the way for his success. In his new role, Aamir will be responsible for overseeing the university's farming operations and contributing to innovative agricultural practices. This achievement not only highlights his hard work and knowledge but also underscores the value of the education he received here. We congratulate Aamir on this significant accomplishment and look forward to the positive impact he will make in his field.

Aamir Khan
Alumni, SOAS, KRMU

ALUMNI

Praney Surha
Alumni, SOAS, KRMU

My journey at the School of Agricultural Sciences, K.R. Mangalam University, was truly enriching. The faculty's unwavering support and the practical knowledge gained during my studies have been invaluable in shaping my career. Today, as I work at Hexxagram Infrastructure Pvt. Ltd., I find myself applying the skills I developed at the university to real-world challenges. I am immensely grateful for the foundation that K.R. Mangalam University provided, and I look forward to further contributing to the field of infrastructure with the knowledge and skills I gained during my time there."

Being an alumnus of the School of Agricultural Sciences has been a rewarding journey. The practical approach towards agricultural education, along with a strong focus on innovation and research, has opened many doors for me. As a farm manager now, I continue to utilize the problem-solving and leadership skills I honed at K.R. Mangalam University in my daily work.

Aamir Khan
Alumni, SOAS, KRMU

Pinki Kumari
Alumni, SOAS, KRMU

I am extremely grateful for the education and opportunities I received at the School of Agricultural Sciences, K.R. Mangalam University. The comprehensive learning experience, combining both theory and hands-on practice, has been essential in shaping my career. I find that the skills and knowledge I gained during my time at the university are invaluable in the work I do. My time at KRMU has played a pivotal role in my professional growth, and I will always be thankful for the experiences that helped me get where I am today."

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