



# 2023

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## From the Vice-Chancellor Desk



Oil seeds are ranked the second most important agricultural economy next to cereals in the country and it is growing at a pace of 4.1 % per annum in the last three decades. The country's oilseed production is 37.70 million tonnes from 29.19 mha acreage with an average productivity of 1292 kg/ha, covering more than 64 % rainfed areas (4<sup>th</sup> estimate, DAC & FW, 2021-22). Among them, soybean (37.42 %) contributing the highest average to total production of oilseeds followed by rapeseed-mustard (27.19%) and groundnut (26.27%) that shows potential of groundnut as a staple oilseed crop even after use as table purpose. (Average of 2015-16 to 2019-20, Souvenir. ICVO, 2023).The domestic production of edible oil in 2021-22 stands at 12.55 million tonnes, while the domestic demand for the same is 26.62 million tonnes, meeting only 52.85% of the total demand for edible oils. To meet this gap between demand and production, India is importing 14.07 million tonnes of edible oil of worth Rs. 1,41,000 Crores. Groundnut (*Arachis hypogaea L.*) is an important global food and oil crop that underpins agriculture-dependent livelihood strategies meeting food, nutrition, and income security therefore, it is also known as “King of Oilseeds” or ‘Wonder Nut” or “Poor Man’s Almond”.

Groundnut is grown over 6.06 mha area with a production and productivity of 10.21 million tonnes and 1676 kg/ha, respectively. In Bundelkhand, groundnut is grown over more than 1.5 lakh hectares with a productivity of 1120 kg/ha which is much lower than the national average.

Low rainfall area are vulnerable due to frequent drought and annual rainfall variability, conventional and these cropping systems are facing threats that lead to sometime complete crop failure. The *Kharif* season, spanning from June to October, plays a critical role in Bundelkhand's agriculture. Climate change-induced alterations in temperature and precipitation patterns pose significant challenges to the region's agricultural productivity and food security during this season. As extreme weather events become more frequent, crop yields are at risk, necessitating the exploration of climate-resilient crops like groundnut. Groundnut is emerging as prominent candidate for low rainfall regions under the climate change scenario due to its capability of better performance under water stress and shifting of rainfall pattern as opposed to the other *Kharif* crops like soybean, urad, mungbean and sesame. Groundnut exhibits unique physiological characteristics that allow it to thrive in semi-arid regions with limited water availability. Its taproot system enables deep soil penetration, accessing water from lower soil layers. Groundnut's resilience to water stress and nitrogen-fixing properties align well with the challenges posed by climate change. Groundnut provides additional benefit for soil health. By embracing groundnut cultivation along with appropriate agronomic practices and water management strategies, farmers can enhance resilience to climate change, ensure food security, and achieve socio-economic development in the region. Looking into huge imports of edible oils, groundnut may be very potential crop as its grain contains about 35 to 50% of oils, one of the highest as compared to other important oil seeds. Government support, research investment, and farmer-centric extension services will play pivotal roles in realizing the full potential of groundnut cultivation as a climate change adaptation strategy.

**Vice-Chancellor**



## Wheat Crop Growth Mechanism using C Band Synthetic Aperture Radar Imagery

Wheat is one of the major crops grown in Bundelkhand region due to its favorable agro-climatic conditions. It is important to obtain reliable wheat acreage to guarantee the food security for the most populous country in the world. This research focuses on assessing the feasibility of in-season wheat mapping and investigating potential classification improvement by using SAR (Synthetic Aperture Radar) images in UP of Bundelkhand region. Farmers in Bundelkhand cultivate wheat during the *Rabi* season, which typically starts around November and extends till April. C-band microwave images captured by the Sentinel-1 satellites were used in this study to monitor wheat crop growth. Multi-temporal Synthetic Aperture Radar Sentinel-1, a Ground range detection data obtained at 14 days interval having both VH-VV polarizations, is considered for this study. This data is presumed to be suitable for crop monitoring in tropical monsoon climates, *i.e.* Bundelkhand region of UP for seven districts (Fig. 1).

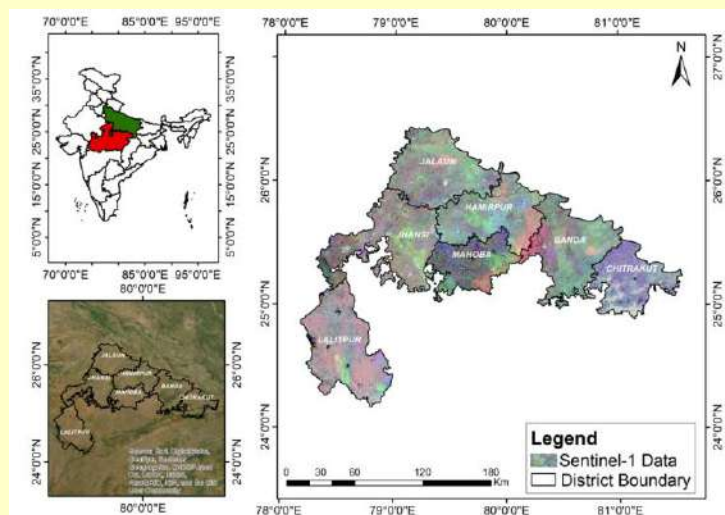


Fig. 1: Study area location

The hierarchical decision rule based supervised classification method was implemented to identify the wheat area with sample segments at 10 m resolution (Fig. 2). The wheat signatures (Fig. 3) are based on the backscatter profile (Fig. 4), which is generated based on DB values

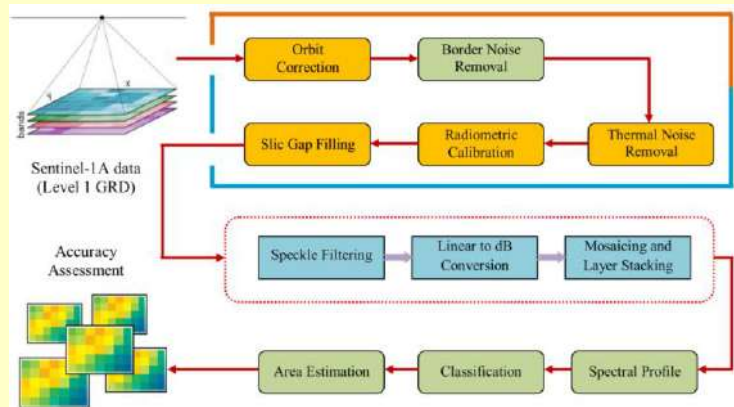


Fig. 2: Decision rule based supervised classification

Remote sensing-derived wheat acreage statistics were compared with DES statistics computed based on the three years average for the period 2019 to 2021 (Table 1). This study indicated that Jhansi district has more wheat growing area and Mahoba and Chitrakoot has less wheat growing area in this region (Fig. 5).

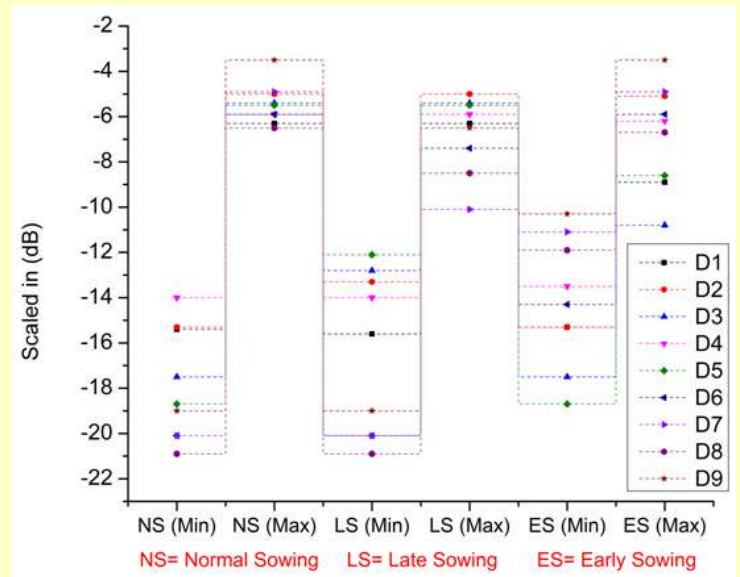


Fig. 3: Wheat spectral signatures

Study indicated that maximum transplanting during wheat growing season in this region is observed to be in the second fortnight of February. Accuracy assessment was carried out using the 123 ground truth points collected during the cropping period. Overall accuracy is 83.4%, and the Kappa coefficient is 0.73. It may be concluded that C-band SAR data can be used to identify optimal harvesting time by obtaining grain filling conditions.

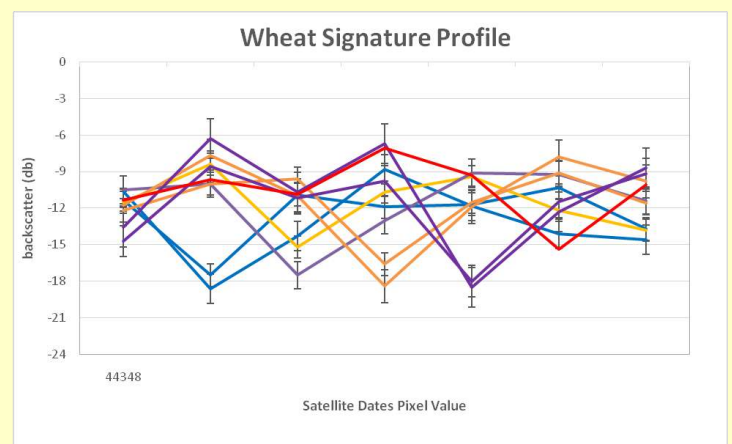
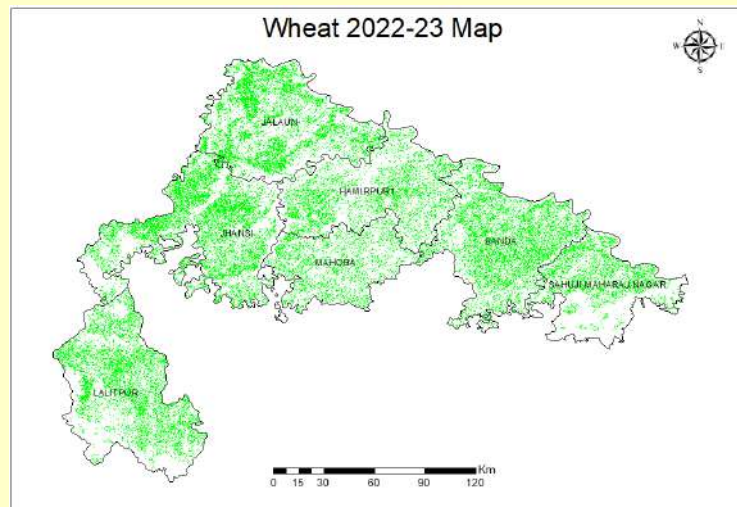


Fig. 4: Kharif rice scaled backscattering profile of Jhansi

The findings proved that Sentinel-1 SAR data could produce accurate spatial maps of wheat. The frequency of observations made by Sentinel-1 makes it possible to keep a careful eye on the dynamics of crop area, including its presence and start and end dates. The Bundelkhand region was represented in its entirety by the three strips. Wheat was classified based on seven different dates processed between

November 2022 and April 2023. The training polygons were utilised in the creation of wheat signatures. The threshold dB values were analysed so the wheat pixels could be grouped into categories.



**Fig. 5:** Area classification map

**Table 1:** Relative comparison of remote sensing-based rice crop area statistics with reference to DES estimates

| Study Districts | Wheat Area (ha) |                           | R.D. (%)    |
|-----------------|-----------------|---------------------------|-------------|
|                 | Wheat Area      | DES Average of Three Year |             |
| Banda           | 105.27          | 160.2                     | -0.8        |
| Jalaun          | 103.01          | 151.1                     | -12.6       |
| Lalitpur        | 120.9           | 170.7                     | -7.8        |
| Hamirpur        | 96.6            | 112.7                     | 2.1         |
| Jhansi          | 158             | 160.5                     | -2          |
| Chitrakoot      | 66.13           | 51.1                      | 6           |
| Mahoba          | 62.3            | 71.5                      | -0.5        |
| <b>Total</b>    | <b>712.21</b>   | <b>877.8</b>              | <b>-3.2</b> |

On the Sentinel-1 data from the 6<sup>th</sup> of January 2023, low backscatter values were seen, which suggested starting of the crop sowing stage (field preparation for wheat planting). There was a rise in backscatter values in the subsequent collection of SAR data due to the development of the wheat crop. The overall relative deviation (R.D.) for the seven primary wheat growing districts in the Bundelkhand region is 3.2 %, which is a negative value. In addition, it was found that both historical and current microwave C band SAR data have demonstrated the ability to accurately identify wheat (Pavan Kumar).

### Resource Conservation Technologies for Higher Resource use Efficiency, Profitability and Sustainability of Emerging Cropping Systems

An experiment entitled “Resource conservation technologies for higher resource use efficiency, profitability and sustainability of emerging cropping systems” has been initiated in the year 2020-21 at RLBCAU, Jhansi (Fig. 6) to

the best tillage treatments and weed management practices in Bundelkhand region. Two experiments were conducted in randomized block design. One cropping system was Groundnut-Wheat and another was Maize-Mustard-Moong. Application of residue of groundnut shows beneficial effects in second year of experiment.

Effect of tillage regimes showing good results in zero tillage with residue in both the cropping system. In maize-mustard-moong cropping system, conservation tillage (zero tillage with residue) performed better. Significant difference was found in mustard, effect of herbicides was good in pre+post emergence herbicide treatment. Application of pre emergence along with post-emergence herbicide over pre emergence herbicide alone shows better crop performance. Microbial activity slight increase due to incorporation of residue. Conservation agriculture (zero tillage with residue) in groundnut-wheat cropping system and Conservation agriculture (zero tillage with residue) and pre+post emergence herbicide application found more economic and energy efficient as compare to conventional agriculture. (Gunjan Guleria, Sushil Kumar Singh, Anusuiya Panda and Rajiv Nandan).



**Fig. 6:** Area classification map

## World Environment Day

World Environment Day was celebrated enthusiastically on 5<sup>th</sup> June 2023 under the aegis of RLBCAU, Jhansi, and the Forest Division, Jhansi. On this occasion, saplings of various species, including Maulshri, Sahajan, *etc.*, were planted on the university campus under the guidance of Hon'ble Vice Chancellor Ashok Kumar Singh. District Magistrate Ravindra Kumar planted saplings of Molashree to inaugurate the plantation drive. M.J. Dobriyal inaugurated the program by warmly welcoming the guests and reiterating the Vice Chancellor's commitment to making the university campus as environment-friendly and pollution-free as possible (Fig. 7). M. P. Gautam highlighted the contribution of trees to environmental protection and mentioned the activities and department plan for tree plantation in the current year. In the program, B.P. Singh, explained about the protection of the environment and the adverse effects of plastic pollution. More than 400 million tons of plastic is produced every year worldwide, of which less than 10 percent is recycled. While talking to the children, Ravindra Kumar emphasized the importance of highlighting the need for tree plantation and conservation to protect the environment. He said trees contribute to their environment by providing oxygen, improving air quality, conserving water, preserving soil, and supporting wildlife (M. J. Dobriyal, R.P. Yadav, Prabhat Tiwari, Pankaj Lavania, Garima Gupta, Pavan Kumar, Pavithra).



Fig. 7: District Magistrate planting a sapling

## Mission Life Events

Rani Lakshmi Bai Central Agriculture University Jhansi organized a two-week program under the theme of mission life events from May 22 to June 5, 2023. Hon'ble Vice-Chancellor A.K. Singh inaugurated the event on 22nd May on World Biodiversity Day and instructed the students and staff to massive awareness of the environment. S.K. Chaturvedi, M.J. Dobriyal inspire students and urge colossal participation (Fig. 8). As a part of the event, articles on environmental conservation were published in local newspapers. Quiz, photography, elocution, and poster

competitions were organized. Students' participation showed tremendous enthusiasm (Prabhat Tiwari, B.S. Pavithra, Rumana Khan)



Fig. 8: The inaugural session of mission life events

## Educational Visit

Students of B.Sc. Forestry and Horticulture VI semester students visited the Sericulture Development Department on May 25, 2023 (Fig. 9). During the visit, students were taken for field exposure at Rajkiya Tassar Resham Farm, Jhansi, located at Ghisauli, Babina Development Block, Jhansi, UP. Anil Rao, Assistant Director, Sericulture Department, briefed the students about the activities and mandates of the Directorate of Sericulture, Govt. of Uttar Pradesh, and details on the status of sericulture and silk production in UP and India. He further emphasized the economic importance of silkworms and how the business of rearing silkworms is helping farmers earn extra income. India is the only country blessed with all four types of silk, viz., Mulberry, Tasar, Eri, and Muga. Among these, Muga silk is unique to India. Indian silks are broadly categorized into Mulberry and non-mulberry (Vanya) silks. Mulberry silk is the most popular and technically equipped as a viable enterprise and contributes to 79% of total raw silk production (A.S. Kale and Vinod Kumar).



Fig. 9: Field visit at Rajkiya Tassar Resham Farm, Ghisauli, Jhansi

## 11<sup>th</sup> Brain Storming Session: Vice Chancellors of Agricultural Universities

In view of the natural resource degradation issues and further emerging challenges as well as the opportunities, the 11<sup>th</sup> Brain Storming Session on “*Innovation in Sustainable National Resource Management*” was held at the Rani Lakshmi Bai Central Agricultural University, Jhansi during April 7-8, 2023 (Fig. 10).



Fig. 10: Inaugural speech by Hon'ble VC

The program was organized under the aegis of Indian Association of Agricultural Universities, New Delhi, and attended by the Vice Chancellors of Agricultural Universities, DDG of the ICAR, Deans and Directors of research and academic institutions (Fig. 11).



Fig. 11: Lamp lighting by dignitaries

Technical sessions were held on sustainable management of soil and water resources; animal and fish resources; plant resources including biodiversity; climate resilient practices; introducing innovations including AI, IoTs, block chain,

Agri-drone, blended learning, etc. The inaugural session was graced by the presence of Chief Guest, R.S. Paroda; special guests, Panjab Singh, P.L. Gautam, Rameshwar Singh; Guest of Honors, A.K. Singh, P. Das, J.K. Jena, S.K. Chaudhari; along with N.P. Dakshinkar, Secretary General, IAUA and A.K. Singh, Vice Chancellor, RLBCAU on the dais. A. R. Sharma was Convener of the Inaugural session (Fig. 12).



Fig. 12: Discussion panel during 11<sup>th</sup> brain storming session

## 24<sup>th</sup> Atal Jai Vigyan Lecture Series 2023

To boost up the knowledge of our students and faculties, an “Atal Jai Vigyan” lecture series has been initiated at our University. In order to maintain continuity in the lecture series 24<sup>th</sup> AJV lectures were organised in the University on 19<sup>th</sup> June, 2023 by inviting the renowned personalities. The lecture was delivered by Uma Shankar Singh, Advisor, ASIA and Africa for Research and Partnership, IRRI, New Delhi. The title of the lecture was “Targeting Rice as A Food, Nutritional, Health and Income Security and Climate Resilient Crop” on 19<sup>th</sup> June, 2023. During the talk Singh highlighted the significance of Rice for nutritional and food security and reduction in green house gas emission. He also confabulated that there is a need to include innovative technologies such as Direct Seeded Rice (DSR) globally (Fig. 13). (Shubha Trivedi, Nishant Bhanu, Vaibhav Singh, Tanuj Misra, Shrawan Shukla).



Fig. 13: 24<sup>th</sup> Atal Jai Vigyan Lecture

**Farm Advisory Published**

| दिनांक    | सलाह   | लेखक                          |
|-----------|--|-------------------------------|
| 13 अप्रैल | खाली पड़े खेतों में करें गहरी जुताई  | अनिल कुमार राय, योगेश्वर सिंह |
| 25 अप्रैल | किसान छह से आठ दिन में मूंग की करें सिंचाई   | अनिल कुमार राय, योगेश्वर सिंह |
| 26 अप्रैल | बुंदेलखण्ड में अनाजों का करें वैज्ञानिक तरीके से करें भण्डारण                      | मनोज कुमार सिंह               |
| 02 मई     | गर्मी मौसम में मधुमक्खियों का प्रबंधन  | हरीचन्द्र                     |
| 03 मई     | मौसम है अनुकूल खरीफ के लिए तैयार कर लें खेत  | एस एस सिंह                    |
| 04 मई     | सन्तुलित पोषक आहार से दुधारू पशुओं को बाँझपन रोग से बचाएं                          | प्रमोद सोनी, वी पी सिंह       |
| 06 मई     | मिट्टी की उर्वरा शक्ति बढ़ाने हेतु करें ढेंचा की बुवाई                             | अनिल कुमार राय, योगेश्वर सिंह |
| 07 मई     | गुणवत्ता बीजों की व्यवस्था कर खरीफ की तैयारी करें                                  | मनोज कुमार सिंह               |
| 12 मई     | गर्मी में अपनी पौधशालाओं का शिशु की तरह रखें ख्याल                                 | पंकज लावानिया, गरिमा गुप्ता   |
| 15 मई     | बेकार पड़ी ऊसर भूमि का उचित प्रबंधन करके उपजाऊ बनाएं                               | पंकज उमेश, पीयूष बबले         |
| 17 मई     | गर्मी में भूमि उपचार कर खेत की मिट्टी स्वस्थ बनाएं                                 | वैभव सिंह, प्रशांत जाम्भुलकर  |
| 29 मई     | पराली जलाए नहीं गलाकर खाद बनाएं किसान  | अनिल कुमार राय, योगेश्वर सिंह |
| 01 जून    | बारिश से पहले वैज्ञानिक विधि से तैयार करे खेत                                      | वैभव सिंह, प्रशांत जाम्भुलकर  |
| 02 जून    | भेड़ दूध के अद्भुत स्वास्थ्य लाभ और भेड़ पालकों की आर्थिक उन्नति का वैकल्पिक स्रोत | प्रमोद सोनी, वी पी सिंह       |
| 15 जून    | सीमित सिंचाई के क्षेत्रों में एरोबिक धान की खेती                                   | गुंजन गुलेरिया, योगेश्वर सिंह |
| 16 जून    | किसान धान की नर्सरी में करें रोगों की निगरानी                                      | अनिल कुमार राय, योगेश्वर सिंह |
| 21 जून    | लेमन घास से होगा फायदा लगाएं और पैपे कमाएं   | पंकज उमेश, विनोद कुमार        |
| 26 जून    | बुंदेलखण्ड में बढ़ रहा मूंगफली का उत्पादन  | राकेश चौधरी, आशुतोष शर्मा     |

| Radio Talk                                   | Date      | Speaker           |
|--|-----------|-------------------|
| बुन्देलखण्ड में कृषक संघों की प्रासंगिकता    | 9 जून     | संजीव कुमार       |
| पोषक अनाजों की महत्ता और उन्नत खेती की तकनीक | 9 जून     | अखीरी निशांत भानु |
| ग्रीष्म कालीन मूंग के लिए खेत की तैयारी      | 11 अप्रैल | संदीप उपाध्याय    |

**Publications**

- ❖ Poonia, M. K., Kumar, A., Kumar, V., Bhanu, A. N., & Kumar, S. (2023). Genetic Variability and Character Association Analysis for Seed Yield and its Attributes in Wheat (*Triticum aestivum* L.). International Journal of Plant & Soil Science, 35(9), 123-131.
- ❖ P. Sundar., Singh, A., Arya, M., Bhanu, A.N., Suryavanshi, A., Kumar, S., Sharma, A., Lal, B., Rai, A.K., Chaturvedi, S.K. and Singh, S.S. (2023). On Farm Evaluation of Urd Bean and Mung Bean for Climate

Change Adoption in Bundelkhand. International Journal of Environment and Climate Change, 13(8): 572-580.

- ❖ Ola, A. L.; Sundarpal, Singh, S.; Tiwari, D. (2023). Assessment of impact demonstration on vegetable crops in Bundelkhand. Jnl. of Agri Search, 2023; 10(1):76-79.
- ❖ S. Trivedi, P.P. Jambhulkar, S. Kumar & P. Niranjana (2023). A modified and effective stem inoculation technique for artificial screening against Sclerotinia sclerotiorum in mustard. Journal of Phytopathology. 2013171:258-264.

**Book**

- ❖ V. David Chella Baskar, K.S. Kumaravel, Sandeep Jain, Anil Kumar (2023). “Agri Startup- A Sustainopreneurship Approach” International Books and Periodicals Supply Services; 978-93-94023-51-2.

**Book Chapters**

- ❖ Appasmandri and Sundar Pal (2023). Govt Policy Implication on Startups. Eds. “Agri Startu A Sustainopreneurship Approach. International Book & Periodical Supply Service, New Delhi, 103-106.
- ❖ Shubha Trivedi, M. Srivastava S. Pandey and S.K. Dwibedi (2023). Bio-inoculants the potential microbes for restoration of degraded land. In a book entitled “Microbial based Land Restoration” published by CRC press, Taylor & Francis Group, London (pp 274-283).

**Popular Articles**

- ❖ V. D. C. Baskar and S. Pal (2023) Spatial and Temporal Dimension of Agro Tourism In Post Independent India, June, 2023. The Science World, 3(06), 1216-1221.

**Invited Lectures/Training**

- ❖ V. David Chella Baskar, delivered a lecture on “Carbon Market with special reference on climate change” on May 17, 2023 conducted by ICAR-CAFRI in collaboration with MANAGE Hyderabad.
- ❖ V. David Chella Baskar, Assistant Professor (Agrl. Economics), College of Agriculture, delivered a lecture on “Empowering Marginal and Small Farmers Under FPO Ecosystem” on 25/06/2023 during the 21 Days International Training Cum Certificate Course on Technology Innovation in Agriculture, Horticulture, Animal Husbandry, Fisheries, Sericulture and Allied Sectors for Sustainable Entrepreneurship (June 16 to July 06, 2023) Hybrid Mode.
- ❖ Y. Bijilaxmi Devi delivered a lecture on “Organic Farming and Soil Health” on June 16, 2023 under 5 days Value Added Course on Organic Farming and Sustainable Agriculture organized by Amity University, Noida, Uttar Pradesh, India.

## Front Line Demonstrations

❖ Under FLD Millets, improved millet seeds (Bajra and Kodo) and NPK Fertilizers were distributed at village Dhawakar of Jhansi on June 20, 2023 among 50 farmers. Farmers' training and sensitization about the health implication of millets and their government promotion was also discussed (Fig. 14). (Rumana Khan, Sanjeev Kumar, Bharat Lal).



Fig. 14: Kisan goshti & distribution of millet seeds

❖ Under FLD Millets (श्रीअन्न), an improved variety of seeds of Sawa and Nano urea were distributed among 50 farmers of Hasri Village in the Lalitpur District of UP on June 26, 2023. The scientists also advised farmers on the primary methods for growing other *Kharif* crops along with plant protection techniques (Fig. 15). (Sundarpal, Ashutosh Sharma).



Fig. 15: Distribution of millet seed in Lalitpur district

❖ Under the Outreach project entitled "Dissemination of quality seed for sustainable livelihood security of farmers of Scheduled Caste community of Bundelkhand region," funded by ICAR, New Delhi, quality seed groundnut (170 demonstrations) were distributed to the farmers of Lalitpur, Jhansi, and Datia on June 27, 2023. Along with quality seeds of high-yielding varieties, promotion of sulphur in oilseed crops was done by distributing the single super phosphate (100 kg/ farmer). Nano urea was provided as the source of nitrogen to the farmers (Fig. 16). (Rakesh Chaudhary, Anita Puyam, Shravan Shukla, M. Soniya Devi, Rajiv Nandan).



Fig. 16: Distribution of inputs to the farmers

❖ Under the ICAR-IARI-CATAT Extension Programme, an improved variety of seeds of Brinjal (*Pusa Vaibhav*) and Okra (A-5) were distributed among 7 beneficiaries of the Birguwan and Padri villages of Jhansi district on June 7, 2023 (Fig. 17). (Ashutosh, Sanjeev Kumar, A. Nishant Bhanu, M. Soniya Devi).



Fig. 17: Improved variety of vegetable seeds under CATAT

## Training

❖ Five day training on vegetables funded by RKVY was organized by RLBCAU on the campus from 17 to April 21, 2023, among 50 farmers to boost *kharif* vegetable production in the Bundelkhand region. Farmers were trained in nursery and nutrient management, advanced cultivation technology, and techniques for maintaining soil health and fertility status. Certificates and kits were also distributed (Fig. 18). (Arjun Lal Ola, Gaurav Sharma, Saurabh Singh, Devesh Tiwari).



Fig. 18: Members of vegetables training

❖ Three-Day Training Programme on "दलहनी फसलों के उत्पादन की उन्नत तकनीक तथा बीजोत्पादन" was conducted on 26 to June 28 2023 at the university campus where 25 farmers from Jhansi district participated. Training was organized under the SCSP-ICAR-IASRI, Pusa, New Delhi. Sixteen lectures on different aspects, such as pulses, *Kharif* crop, mushroom production, beekeeping, etc., were emphasized along with IPM. These farmers also learned about other advanced techniques like pulses and oil mills installed on the campus so that they could steer towards value addition (Fig. 19). (Meenakshi Arya, Anshuman Singh, Ashish Kr. Gupta, Nishant Bhanu, Sanjeev Kumar, Arpit Suryavanshi)



Fig. 19: Distribution of battery-operated Sprayers

❖ Five day training program was organized on "Emerging Technology: Robotics Process Automation" during 22 to May 26, 2023 at the University in collaboration with Agri and Environmental Electronics (AEE) Group of C-DAC, Kolkata. The training emphasized image processing, robotics & IoT, biosensors in agricultural technologies, etc. The participants were scientists, BIT, Jhansi, Bundelkhand University, Jhansi, Bansathali University, Rajasthan, and Ph.D. students (Fig. 20). (B. K. Behera, Tanuj Misra, Arun Jana, Tapas Sutradhar, Alokesh Ghosh)



Fig. 20: Inauguration of training programme

Under ICAR-DRMR, Bharatpur-SCSP-Mustard Plan, Solar Street light installation was achieved. A total of 25 solar street lights were purchased and distributed in the Baajana and Banka Pahadi villages of Jhansi district, Durgapur village of Datia district on June 14, and at Mahughat village of Tikamgarh district on June 16, 2023. All the beneficiaries highly benefitted from the solar light establishment in their villages (Fig. 21). (Artika Singh, Rakesh Choudhary, Vaibhav Singh, V.K. Mishra, Sanjeev Kumar).



Fig. 21: Installation of Street Solar Light

### Participation in Exhibition

❖ RLBCAU participated in the Exhibition organized by ICAR-IGFRI on the theme of "International Year of Millets & Natural Farming- किसान गोष्ठी एवं कार्य शाला" on April 1, 2023. Hon'ble State Agriculture Minister, U.P. Sri Surya Pratap Shahi, and more than 500 farmers visited the stall and appreciated the efforts for millet progress in the Bundelkhand region (Fig. 22). (Sanjeev Kumar, Devesh Tiwari, Govind Vishvakarma, Rumana Khan, Rajiv Nandan, Piyush Baballe Ashwini Kumar, Sandeep K. Upadhyay).



Fig. 22: University participation in stall at ICAR-IGFRI

❖ RLBCAU participated in a One-day Farmer Meet and Exhibition at ICAR-CAFRI, Jhansi, on May 8, 2023, celebrating the Foundation Day of ICAR- Central Agroforestry Research Institute, Jhansi, where the technologies related to agriculture, horticulture, and agroforestry were showcased. Hon'ble Vice-Chancellor A. K. Singh, A. Arunachalam, Director, ICAR-CAFRI, Rajbir Singh, ADG (AA & CC) ICAR HQ graced the occasion. (Sanjeev Kumar, Ashish Gupta, Devesh Tiwari, A. Nishant Bhanu).

❖ The University participated in One-day "Millet Awareness Road Show" organized by Madhya Pradesh State Tourism Development Corporation Limited at Orchha, Madhya Pradesh, on May 31, 2023, where millet-based products, like cookies, muffins, kheer, bhujia, etc. prepared



by the Department of Post Harvest Technology were displayed at the event and were also distributed among the participants (Fig. 23). (Ashwani Kumar, Rumana Khan, A. Nishant Bhanu).



Fig. 23: Participation in millet show at Orcha, Niwari,

### University-FPO Interface Meet

❖ Scientist-FPOs Interface was organized at the University on May 18, 2023, attended by all the CEOs and directors of Farmer Producers Organizations (FPOs) of Jhansi district. The meeting aimed to establish strong link between the University and FPOs. Important aspects like linking their products to the market through the newly developed *Bundeli Krishi Vipnan* Mobile App, consultancy through ICT tools, and technical assistance regarding production and value addition process were discussed. More than 45 FPOs participated in the Interface (Fig. 24). (Tanuj Mishra, Sanjeev Kumar, Ashutosh Sharma)



Fig. 24: University and FPOs interface

❖ An interaction meeting on "Plant Protection in *Kharif* Crops" was jointly organized by the University & Dhanuka Agritech Limited on June 7, 2023. This program aimed at providing a bridge between FPOs and Input dealers. Hon'ble Vice-Chancellor A K Singh chaired this meeting. Chairman Dhanuka Group, R.G. Agrawal, addressed the gathering and gave his critical suggestions to FPOs. S.K. Chaturvedi, Dean, CoA, Prashant Singh, Dhanuka Group, G.P. Dixit Director, ICAR-IIPR, Kanpur, Saidas, Former Director, DMR and members of FPOs and other progressive farmers were present during the meeting (Fig. 25).



Fig. 25: Meeting of FPOs (Jhansi) and Dhanuka group

### Exposure Visit

❖ Twenty farm women members of *Amroach* Self Help Group (SHGs) visited the apiary unit of the University from the villages of Karari and Jhansi. These farm women expressed their preference for adopting bee-keeping practices as an additional source of income (Fig. 26). (Sunder Pal).



Fig. 26: Farm women visiting the apiary of the university

❖ A visit to the progressive fish farmer's hatchery at Rev village of Moth, Jhansi, was made on June 18, 2023. Mr. Gulab Singh Raikwar and his colleague established the fish hatchery in the village to cater to the local fish farmers' need for fingerlings and seedlings (Fig. 27). (B. K. Behera, Sanjeev Kumar).



Fig. 27: Fish hatchery facility in Rev village

❖ 100<sup>th</sup> Man ki Baat was broadcast live on April 30, 2023, at the University Boardroom, and all the faculty and staff of the University were present to hear the address of Hon'ble Prime Minister Shree Narendra Modi (Fig. 28). (Yogeshwar Singh, Sahil, Tanuj Mishra, Sourabh Singh).



Fig. 28: University participation in the mann ki baat programme

❖ A Dal mill at Nawali Badegoan village of Morena was installed for the benefit of underprivileged beneficiaries farmer sunder SCSP-ICAR-IIPR, Kanpur, on June 28, 2023. It will help in the processing of pulses at the local level along with value addition of the pulses.

### University Initiatives Causing a surge in Zaid in the Bundelkhand Region

Bundelkhand region is a significant pulse-growing area in India and is appropriately referred to as the "Mini Pulse Bowl of India". It has been observed in the past few years that due to unfavorable climatic conditions, there has been a decrease in the production of pulses in the *Kharif* season. The establishment of "farmer-managed seed hubs" at the village level for seed production and processing with requisite certification and buyback procedures effectively contributes to a greater rate of seed replenishment at the farm level in areas with pockets of pulse production.

With the inception of Seed Hub on Pulses in 2018 at RLBCAU, Jhansi, the university initiated the participatory seed production programme with several farmers under the Seed Hub on Pulses for the *kharif* and *rabi* seasons which showed positive results. However, the participatory seed production programme for Zaid/summer season was initiated on a short scale by the university with 2-3 farmers in 2022 in an area of 5 hectares where they were trained by the university regarding the improved packages and practices of mungbean cultivation. Shri Suraj Singh and Shri Jitendra Singh of Village Hardua, Jalaun district are examples of farmers who got additional income by cultivating *Virat* during the summer of 2022. Seeing, the positive results in the Summer 2022, the area under the participatory seed production programme was increased

from 5 ha to 20 ha in Summer 2023, which yielded a total production of around 180 quintals. In the Kisan Mela 2023 organized by the university, the Uttar Pradesh Agriculture Minister Hon'ble Surya Pratap Shahi ji also emphasised increasing the area under the Zaid season in the Bundelkhand region. To make it effective, in the summer 2023, a front-line demonstration programme of Summer Mung was also taken up to demonstrate crop production and



protection technologies and their management practices in the farmer's field under the micro-farming situation. In this demonstration, a control plot was also kept where farmers' practices were carried out (use of non-descriptive varieties, broadcasting sowing method, imbalanced use of fertilizer, one-hand weeding and indiscriminate use of plant protection measures). The demonstrations on farmers' fields were monitored by scientists right from sowing to harvesting and made to guide them. Productivity of 8 qt/ha was observed after the introduction of *Virat* (short-duration variety, Maturity: 55-60 days) in comparison to 4 qt/ha (local variety). (Seed Production Team: Anshuman Singh, Nishant Bhanu, Sushil Singh, Yogeshwar Singh, S. K. Chaturvedi, A. R. Sharma; Front Line Demonstration Team: Anshuman Singh, Nishant Bhanu, Meenakshi Arya, Arpit Suryawanshi, Sanjeev Kumar, Sunder Pal, S. S. Singh).

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