

ACADEMIC YEAR
2024-25

Annual Report on SDG-2

2 ZERO
HUNGER



BRAINWARE UNIVERSITY
ACADEMIC YEAR 2024-25



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Annual Report for Academic Year 2024-25

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Executive Summary

Brainware University's SDG 2 framework links research and innovation with food access, nutrition, responsible campus food services, food-waste monitoring, sustainable agriculture and community engagement. The evidence supplied for this report documents institutional policies for student and staff food security, healthy and affordable campus food, sustainable food choices, food-waste measurement, farmer knowledge exchange, university-farmer resource sharing and sustainable procurement.

The report records 34 research-publication entries (Table 2) and 08 patent/technology entries (Table 3) mapped to SDG 2. The 2025 food-waste table records 36,440 kg wet waste and 8,834 kg dry waste, or 45,274 kg (approximately 45.27 mt) in total across the canteen and food court. Six farmer/agriculture knowledge-exchange activities are documented between August 2024 and April 2025. The procurement report records purchases from the University Agriculture Department amounting to ₹10,260 during January-December 2025 and describes two agriculture-related MoUs as complementary knowledge-transfer evidence.

The report distinguishes evidence of policy, implementation records and measurable outputs. Future reporting can be strengthened by consolidating actual student/staff food-assistance beneficiary data, meals served, food-waste intensity per meal/campus population, food-procurement, local-supplier data, and post-event impact measures in a single verified register.

1. About Brainware University and SDG-2 Integration

Brainware University, located in Barasat, Kolkata, West Bengal, India, is committed to contributing to the **United Nations Sustainable Development Goals (SDGs)** through its academic, research, student-support, community-engagement and institutional sustainability initiatives. **SDG 2 - Zero Hunger** focuses on ending hunger, achieving food security and improved nutrition, and promoting sustainable agriculture.

Brainware University integrates **SDG 2** principles into its institutional activities by addressing **food security, nutrition awareness, student welfare, community outreach, responsible food consumption and sustainability**. These initiatives are implemented through a combination of institutional support, awareness programmes, extension activities, research and community engagement.

Brainware University's **SDG 2 (Zero Hunger)** initiatives are organised around **four key areas**:

A. Food Security and Access to Food



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Brainware University promotes food security by supporting access to adequate, safe and nutritious food for students and staff. Institutional welfare measures, food-support initiatives and interventions for vulnerable members of the University community contribute to reducing food insecurity and supporting the wellbeing of the campus community.

B. Nutrition, Awareness and Education

The University conducts awareness and educational activities related to **nutrition, healthy eating, balanced diets, food security and healthy lifestyles**. Seminars, workshops, training programmes and student engagement activities help develop awareness of the relationship between nutrition, health and academic wellbeing.

C. Sustainable Food Systems and Responsible Consumption

Brainware University promotes responsible food consumption through initiatives related to **food-waste reduction, sustainable food choices, responsible campus food services and resource-efficient practices**. These efforts support the broader objective of developing sustainable and environmentally responsible food systems.

D. Community Engagement, Research and Outreach

The University extends its SDG 2 commitment beyond the campus through **community outreach, extension activities, research, student projects and collaborations** addressing hunger, food security, nutrition and sustainable development. Such initiatives enable students and faculty to contribute their knowledge and skills to local community needs.

2. Objective of the Report

The objective of this report is to document and demonstrate **Brainware University's institutional commitment and contribution to Sustainable Development Goal 2 (SDG 2) – Zero Hunger**. The report presents the University's initiatives, policies, programmes and measurable outcomes related to **food security, nutrition, hunger alleviation, sustainable food practices and community engagement**.

Specifically, the report aims to:

- i. **Document institutional initiatives** undertaken by Brainware University to prevent and alleviate hunger and improve access to adequate and nutritious food.
- ii. **Demonstrate support for food security and nutrition** among students, staff and members of the wider community through appropriate welfare, awareness and support programmes.



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- iii. **Present evidence of interventions addressing hunger**, including food assistance, community outreach, awareness programmes and other relevant institutional initiatives.
- iv. **Highlight programmes promoting healthy and sustainable food choices**, responsible food consumption and reduction of food waste.
- v. **Showcase the University's academic, research and extension activities** that contribute to addressing food security, nutrition and sustainable food systems.
- vi. **Demonstrate community impact and stakeholder participation** through outreach programmes, collaborations and student engagement related to SDG 2.
- vii. **Strengthen institutional monitoring and continuous improvement** by documenting achievements, beneficiaries, outcomes and future priorities related to Zero Hunger.

3. Key Reporting Areas

SDG 2 - Zero Hunger is assessed across five major reporting areas covering hunger-related research, campus food waste, student food security, graduates in food-sustainability-related fields, and national hunger. These areas are examined through four broad dimensions: research, stewardship, outreach, and teaching, reflecting the institution's contributions to food security, sustainable food systems, nutrition, and hunger alleviation.

Table 1: University Reporting Areas and Key Focus Areas for SDG 2 – Zero Hunger

Sl. No.	Reporting Area	SDG 2 Focus
1	Research Related to Hunger	Research publications addressing hunger, food security, nutrition, sustainable agriculture, food systems and related challenges.
2	Campus Food Waste	Measurement and reduction of food waste generated through campus catering and food-service operations; systematic tracking of total food waste and food waste per campus population.
3	Student Hunger / Food Security	Programmes addressing student food insecurity, interventions to alleviate hunger among students and staff, access to healthy and affordable food, and sustainable food choices on campus.
4	Food Sustainability Education	Academic programmes and graduate output related to agriculture, aquaculture and food sustainability, including sustainable food production and food-system knowledge.
5	National / Community Hunger	Support to local farmers and food producers through food-security and sustainable-agriculture knowledge, skills and technology;



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knowledge-transfer events, access to university facilities and procurement from local/sustainable sources.

Table 2 summarises the key reporting areas covered in the Brainware University Annual Report on UN Sustainable Development Goal 2 (SDG 2): Zero Hunger. It outlines the evidence supplied for each reporting area, including research and innovation, food-waste monitoring, student and staff food security, sustainable campus food practices, farmer knowledge exchange, agricultural partnerships, and local and sustainable procurement. The table also identifies the corresponding report sections and tables, facilitating systematic evidence verification, transparent documentation, and alignment with the relevant UN SDG 2 indicators.

Table 2. Summary of Evidence and Report Sections for UN SDG 2 (Zero Hunger) Annual Reporting

Reporting area	Evidence supplied	Report section
Research and innovation	34 research-paper entries and 8 patent/technology entries in the supplied Word document	Section 4; Tables 3-4
Food-waste monitoring	Food Waste Measurement and Monitoring SOP; 2025 monthly wet/dry waste table	Section 5; Table 5
Student food security	Student Food Security and Hunger Prevention / Alleviation policy documents	Section 6
Healthy and sustainable campus food	Sustainable Food Choices and Responsible Campus Food Service Policy; Healthy, Affordable and Sustainable Campus Food Policy; seasonal and healthy menus	Section 7
Staff food security	Staff Food Security and Hunger Alleviation Policy	Section 8
Farmer knowledge exchange	Six activities listed in the farmer-events report for 2024–25	Section 9
Facilities and agricultural partnerships	University–Farmer Resource Sharing and Sustainable Agriculture Support Policy; Knowledge Transfer and Capacity Building Policy	Section 10
Local and sustainable procurement	Purchases from University Agriculture Department; MoUs with Matribhumi Agriculture India Pvt. Ltd. and Krishibandhu Crop Science Pvt. Ltd.	Section 11



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4. Research on SDG 2 - Zero Hunger

Brainware University promotes and supports research aligned with **SDG 2 - Zero Hunger**, focusing on issues related to **food security, nutrition, sustainable agriculture, responsible food systems and poverty-related food insecurity**. Faculty members and students undertake interdisciplinary research addressing challenges associated with access to nutritious food, sustainable food production, agricultural innovation, community food security and improved livelihoods.

The University's research ecosystem encourages the application of **technology, engineering, management, social sciences and other interdisciplinary approaches** to develop practical solutions for hunger and food-security challenges. Research outcomes, including scholarly publications, projects, student research and innovations, contribute to knowledge generation and support evidence-based approaches to achieving **zero hunger, improved nutrition and sustainable food systems**.

4.1 Research Publications on SDG-2 Hunger

Table 3. Research Publications from the university on SDG-2 hunger

Sl. No.	Title of Research Paper	Authors	Year	Relevance to SDG 2 – Zero Hunger
1	Artificial Intelligence Integration with Nanotechnology: A New Frontier for Sustainable and Precision Agriculture	Ashique, S.; Raikar, A.; Jamil, S.; Lakshminarayana, L.; Gajbhiye, S.A.; De, S.; Kumar, S.	2025	Supports SDG 2 through AI-enabled precision and sustainable agriculture, potentially improving crop productivity and resource-use efficiency.
2	Technological advancement in sustainable production of biosurfactant using agro-industrial wastes: A review of enhanced bioprocessing and computational optimization techniques	Paul, S.; Nayak, J.; Paul, I.; Kumar, R.; Jeon, B.-H.	2025	Promotes agricultural and food-system sustainability by converting agro-industrial wastes into useful bioproducts and improving resource efficiency.
3	Breeding 4.0 vis-à-vis application of artificial intelligence (AI) in crop improvement: an overview	Ansari, R.; Manna, A.; Hazra, S.; Bose, S.; Chatterjee, A.; Sen, P.	2025	Directly contributes to SDG 2 by applying AI to crop improvement, supporting higher productivity, resilient crops and sustainable food production.



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4	The PROMETHEE-GAIA: A multi-criteria decision-making method for identifying best conservation agricultural practices	Biswas, T.; Ishizaka, A.; Majumder, A.; Mandal, B.; Dey, S.; Mukherjee, S.; Baishya, A.; Kanthal, S.; Ghosh, S.; Mandal, A.; Chatterjee, R.; Ray, S.; Bhunia, S.; Duary, S.; Bhattacharjee, S.; Mishra, P.; Acharya, S.K.	2025	Supports SDG 2 through identification and adoption of conservation agriculture practices that enhance sustainable food production and agricultural resilience.
5	Microplastics as emerging stressors in plants: biochemical and metabolic responses	Pal, S.; Dutta Gupta, S.; Guha, P.S.; Saha, N.	2025	Addresses threats to crop health and productivity from microplastic stress, contributing to safer and more resilient agricultural systems.
6	Evaluating the bioactivity of <i>Trichoderma asperellum</i> against <i>Colletotrichum siamense</i> and its growth-promoting effects on <i>Aloe vera</i> (<i>Aloe barbadensis</i> Mill.)	Mukhopadhyay, A.; Mukherjee, S.; Dutta, S.; Kanthal, S.; Mondal, G.	2025	Supports sustainable crop production through biological disease control and plant-growth promotion, reducing dependence on chemical inputs.
7	Application of Genetic Engineering and Marker-Assisted Breeding Programs for Improving Seed Quality Traits	Ray, J.; Ghosh, P.K.	2025	Contributes to SDG 2 through improved seed quality, crop performance and development of productive agricultural varieties.
8	Genetic control of important yield and disease resistance characters predicted through artificial intelligence in cucumber (<i>Cucumis sativus</i> L.)	Bose, S.; Hazra, A.; Basfore, S.; Mollick, S.; Roy, S.; Hazra, P.; Hazra, S.	2025	Enhances food production by using AI to identify genetic traits associated with crop yield and disease resistance.
9	Entomopathogenic nematodes in pest management: Mechanisms, efficacy, and future prospects	Roy, S.D.; Mukhopadhyay, A.K.	2025	Promotes sustainable pest management, protecting crops from losses and supporting stable agricultural productivity and food availability.
10	Genetic control of important characters determining yield, downy	Bose, S.; Basfore, S.; Sikder, S.; Sen, P.; Mollick, S.	2025	Directly supports SDG 2 through improvement of crop yield, disease



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	mildew resistance and nutraceutical content predicted through machine learning in cucumber (<i>Cucumis sativus</i> L.)	Chatterjee, A.; Roy, S.; Hazra, P.; Hazra, S.		resistance and nutritional/nutraceutical quality.
11	Impact of entrepreneurial orientation, digital technology, social media, Artificial Intelligence and AI accounting tools on the quality of financial reporting among women artisans as entrepreneurs in the handicraft industry	Yadav, U.S.; Yadav, A.K.; Rena, R.; Ghosal, I.; Gupta, S.; Vyas, S.; Kumar, A.	2025	Indirect relevance to SDG 2 through strengthening livelihoods and economic opportunities for women entrepreneurs, potentially supporting household food security.
12	Bioplastic from renewable biomass: Environmental pollution and remediation	De, S.; Ghosh, A.; Verma, S.K.; Chattopadhyay, D.; Das, D.	2025	Supports sustainable agricultural and food systems by promoting renewable biomass utilization and reducing environmental pollution affecting food-production ecosystems.
13	Impact of sustainable management, and ESG performance on small and community performance in India in the current scenario	Yadav, U.S.; Yadav, A.K.; Ghosal, I.; Yadav, S.K.; Verma, A.K.	2025	Indirect relevance through sustainable management and community development, contributing to resilient local economic and food systems.
14	Harnessing Mycorrhizal Symbiosis: Exploring Its Impact on Medicinal Crops	Mohanta, R.; Roy, S.D.; De, P.; Maiti, P.; Ghorai, S.; Samanta, A.	2025	Supports sustainable crop production by improving plant nutrient uptake, growth and resilience through mycorrhizal symbiosis.
15	Breaking down microplastics: insights into the role of actinomycetes in biotic degradation pathways	Mukhopadhyay, R.; Biswas, K.; Roy, S.; De, P.	2025	Contributes to healthier agricultural ecosystems by exploring biological degradation of microplastics that can threaten soil and food-production systems.
16	In-vitro evaluation of <i>Trichoderma</i> spp. and plant extracts for biological	Mukherjee, S.; Mukhopadhyay, A.; Singh, S.; Oraon, S.; Mondal, G.	2025	Supports sustainable agriculture through biological disease management, reducing crop losses



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	control of Indian Basil diseases			and dependence on synthetic pesticides.
17	Interactions of entomopathogenic fungi with insect predators and parasitoids	Roy, S.D.; Mukhopadhyay, A.K.; Pramanik, A.	2025	Supports integrated and ecological pest management, helping protect crops and sustain food production.
18	Comparative assessment of PCR based DNA markers in molecular diversity analysis among Indian cashew (<i>Anacardium occidentale</i> L.) germplasm	Das, S.; Ali, M.N.; Chatterjee, A.; Poduval, M.	2025	Supports conservation and utilization of crop genetic diversity, which is important for resilient and sustainable food production.
19	Enhancing Agricultural Decision-Making Using Machine Learning: Variety Selection and Yield Prediction for Agriculture Culture Improvement	Upadhyay, S.; Indumathi, N.; Balamurugan, M.; Kumar, B.; Mandal, S.; Prakash, S.	2025	Directly contributes to SDG 2 through data-driven variety selection and yield prediction to improve agricultural productivity.
20	Advancement in sustainable food packaging systems derived from sustainable agriculture and food	Datta, D.; Biswas, S.; Sarkar, S.; Kumari, N.; Das, B.	2025	Supports sustainable food systems by reducing food-related environmental impacts and potentially improving food preservation and reducing waste.
21	Genetic engineering to enhance the oilseed crops yield	Dutta, B.; Bhattacharjee, S.; Biswas, K.; Singh, B.K.; Bhowmick, R.; Das, C.; Singh, P.K.; Paul, K.	2025	Directly supports SDG 2 through genetic improvement of oilseed crops for enhanced yield and sustainable food and nutritional production.
22	Advanced genetic technologies to improve crop abiotic stress resilience	Chowdhury, S.; Kar, K.; Chakraborty, P.; Ganguly, S.C.; Jit, T.; Majumder, R.	2025	Supports climate-resilient agriculture by developing crops capable of tolerating drought, salinity, temperature and other environmental stresses.
23	Boosted Query Expansion for Agricultural Decision Support: A Hybrid Framework Combining Case-Based Reasoning,	Solanki, S.; Srivastav, V.; Bhattacharya, A.; Roy, P.; Laha, S.R.; Kumar, S.; Nayak, D.S.K.	2025	Contributes to SDG 2 through digital agricultural decision-support systems that can improve farm management and productivity.



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Fuzzification, and Machine Learning

24	Genetic control of fruit quality characters in the segregating generations of interspecific crosses and metabolic profiling of the fruits of promising segregants of tomato	Acharya, B.; Hazra, S.; Gorai, S.; Bose, S.; Hazra, P.; Chattopadhyay, A.; Pal, H.; Maji, A.	2025	Supports SDG 2 by improving fruit quality through genetic selection and supporting production of nutritious food crops.
25	Nano-fertiliser and its role in sustainable crop production—A review	Duary, S.; Biswas, T.	2025	Directly supports sustainable food production through efficient nutrient delivery, improved crop productivity and potentially reduced fertilizer losses.
26	Analysis of Crop Health for Agricultural Optimization Using Multispectral Images and Machine Learning	Monroy Gonzalez, D.; Vasquez-Iglesias, P.; Zabala-Blanco, D.; Datta, J.; Firoozabadi, A.D.; Flores-Calero, M.	2025	Supports precision agriculture by using remote sensing and machine learning for crop-health assessment and productivity optimization.
27	Development and testing of self-propelled type rotary forage harvester	Mahata, K.S.; Mochary, S.; Roy, S.D.; Mohanta, R.	2025	Supports agricultural mechanization and efficient forage harvesting, contributing to productive and sustainable livestock-feed systems.
28	Pangenomics for developing heavy metal stress-tolerant plants	Sinha, D.; Majgaonkar, A.; Kazi, Z.; Chatterjee, S.; Paul, I.; Paulchoudhury, A.; Das, S.	2025	Supports resilient agriculture by developing plants capable of tolerating heavy-metal stress, helping protect agricultural productivity under contaminated conditions.
29	Selenium in Sustainable Agriculture: Bridging Food Security and Health for Achieving SDG 2 and SDG 3	Sengupta, S.; Hazra, S.; Mukherjee, S.; Mondal, B.; Ghorai, S.; Mukhopadhyay, A.; De, P.; Bose, S.; Majumder, S.; Das, D.; Dey, A.; Roychowdhury, T.	2025	Direct and explicit relevance to SDG 2. Addresses food security and nutritional quality through selenium-based sustainable agriculture, linking food production with improved health.
30	The pivotal role of start-up ecosystems in creating a	Biswas, B.; Saha, R.	2025	Indirect relevance through women's economic empowerment and entrepreneurship, which can



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	level playing field for Indian women		contribute to household livelihood security and food security.
31	Reducing Fertilizer Runoff and Enhancing Crop Yield with Nano-Engineered Nutrients	Lungu, N.; De, U.C.; Dash, B.B.; Barik, L.; Khan, T.; Patra, S.S.	2025
32	A Low-Cost, AI-Assisted Smart Farming Solution for Automated Irrigation and Disease Monitoring	Bera, D.; Biswas, P.; Chakraborty, B.; Chandra, S.; Chakraborty, S.	2025
33	Precision Seeding Robots Revolutionizing Planting Accuracy and Crop Density Control in Row Crops	Senthilkumar, K.P.; Prabha, K.P.R.; Kolukulapalli, A.; Knowles, S.P.; Kumar, V.; Lavanya, R.	2025
34	Optimized Deep Learning Architecture for Maize Disease Detection Using Efficient Channel Attention and Transfer Learning	Dash, L.; Laha, S.R.; Pattanayak, B.K.; Nayak, D.S.K.; Chakraborty, P.; Sarkar, S.	2025

4.2 Research Publications (Patents) on SDG-2 Hunger

The patents (Table 3) developed by faculty members and researchers demonstrate the University's contribution to SDG 2 - Zero Hunger through technological innovations addressing sustainable agriculture, agricultural productivity, food safety, resource efficiency and resilient food systems. The innovations cover smart irrigation, precision farming, agricultural automation, crop-health monitoring, climate adaptation, food-pathogen detection and agricultural market intelligence. Collectively, these technologies have the potential to support sustainable food production, reduce agricultural losses, improve resource utilization and strengthen food and nutrition security.

Table 4. Patents and Technological Innovations Contributing to SDG 2 - Zero Hunger

Year	Published Date	Title of the Patent	Inventors	Granted / Published	SDG Justification
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2025	4-Jul-2025	A SYSTEM AND METHOD FOR BLOCKCHAIN-ENABLED SMART IRRIGATION MANAGEMENT USING SOIL MOISTURE SENSORS	Subhadip Nandi, Dr. Kaushik Chanda, Anudeepa Gon, Dr. Rahul Kumar Ghosh, Gourab Dutta, Sandip Chakraborty, Sudip Samanta	Published	The system supports SDG 2 – Zero Hunger by enabling smart, efficient irrigation based on real-time soil-moisture data. By optimising water application, reducing unnecessary irrigation and supporting better crop management, the technology can improve agricultural resource efficiency and contribute to sustainable agricultural productivity and food security .
2025	4-Aug-2025	AGRICULTURE ROBOT FOR SEED SOWING	Gyanendra Kumar Hansh, Sumit Roy, Sachin Kumar, Pulakesh Roy, Surabhi Solanki, Vaibhav Srivastav	Granted	The agricultural robot supports SDG 2 – Zero Hunger by automating the seed-sowing process and promoting more efficient and consistent agricultural operations. Improved sowing efficiency and precision can support crop establishment, agricultural productivity and the sustainable production of food, thereby contributing to food security and sustainable agriculture .
2025	22-Aug-2025	AI-DRIVEN REAL-TIME CROP PRICING AND MARKET ADVISORY SYSTEM	Dr. Soham Bachaspati, Mr. Rajdeep Mohanta, Mr. Soumik Dey Roy, Mr. Sagar Banik, Dr. Madhusri Pramanik, Dr. Pabitra Kumar Ghosh	Published	The system supports SDG 2 – Zero Hunger by providing AI-based, real-time information on crop prices and market conditions. Improved access to market information can support more informed agricultural decision-making, strengthen the efficiency of food supply chains and potentially improve farmers' ability to market their produce, thereby contributing to



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sustainable and resilient food systems.

2025	17-Oct-2025	IOT-ENABLED CRISPR FOOD SAFETY SCANNER WITH MOBILE SYNC	Dr. Manish Kumar Gupta, Dr. Raj Kumar Joshi, Dr. Biswaranjan Paital, Dr. Sayoni Nag, Dr. Anton Satria Prabuwono, Jhanhabi Ray, Oinam Manganleiba Meetei, Dr. Shamba Chatterjee, Dr. Prakash Pandurangan, Raghul Rajah Santha Moorthi Rajah, Dr. Santanu Koley	Granted	The technology supports SDG 2 – Zero Hunger by enabling rapid detection and monitoring of food-safety-related hazards through an IoT-enabled CRISPR-based scanning approach. Improved identification of food contaminants or pathogens can contribute to safer food systems, improved food quality and better protection of food and nutrition security.
2025	19-Jul-2025	HANDHELD CRISPR BASED FOOD PATHOGEN DETECTOR WITH MODULAR CARTRIDGE SYSTEM	Ipsit Dubey, Dr. Anusuya Debnath, Dr. Manmath Dagaduappa Sontakke, Dr. Ravi Thakur, Kalyani Sudam Thote, Dr. Maske Sachin Vishwanath, Dr. Shrutika Kanad Deo, Muktanand Vitthal Londhe, Dr. Sucheta Das Maji, Dr. Santanu Koley	Granted	The handheld detector supports SDG 2 – Zero Hunger by facilitating rapid and potentially accessible detection of food pathogens. Early identification of foodborne pathogens can help strengthen food safety, reduce risks associated with contaminated food and contribute to safe, nutritious and secure food systems.
2025	21-Nov-2025	PREDICTIVE MICROCLIMATE ADAPTATION SYSTEM FOR CROP PROTECTION AGAINST CLIMATE VARIABILITY	1. Dr. Pradeep Kumar 2. Dr. Kul Bhooshan Anand 3. Dr. Rajeev Kumar 4. Dr. Jayeeta Majumder 5. Dr. Sourav Gangopadhyay 6. Mrs. Sweeti Kumari	Published	The system supports SDG 2 – Zero Hunger by using predictive microclimate information to support crop protection and adaptation to changing climatic conditions. Improved anticipation of microclimatic risks can help reduce crop losses, protect agricultural



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productivity and strengthen the **resilience and sustainability of food production systems**.

2025	3-Oct-2025	IOT ENABLED DRIP IRRIGATION CONTROLLER FOR PRECISION FARMING	Dr. Abhrendy Bhattacharya, Debashis Mohanty, Koushik Adhikary, Dr. Paramita Sarkar, Dr. Bidisha Bhabani, Dr. Vandana Yadav, Dr. Tanya Das, Dr. Tanya Das, Dr. Nazma naskar	Granted	The IoT-enabled irrigation controller supports SDG 2 – Zero Hunger by facilitating precision irrigation and more efficient management of water resources in farming. By enabling controlled and targeted irrigation, the technology can reduce water wastage, support healthier crop growth and contribute to resource-efficient and sustainable agricultural production .
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2025	09-09-2025	AI BASED CROP HEALTH MONITORING DEVICE	Dr. Alkha Mohan, Dr. Jayakrishnan Anandakrishnan, Dr. Vipin Venugopal, Dr. Sayantani Ray, Aditya Kumar Samanta, Dr. Biswapati jana, Dr. syed Hussain, Debdutta Mandal, Sasmit De, Dr. Deepsubhra Guha Roy	NA	The AI-based crop health monitoring device supports SDG 2 – Zero Hunger by enabling early identification and monitoring of crop health conditions. Timely detection of crop problems can facilitate informed agricultural interventions, reduce potential crop losses and support higher, more resilient and sustainable agricultural productivity , contributing to food security.
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5. Campus Food-Waste Measurement and Management

Food waste management is an important component of the University's SDG-2 framework. The University recognises that reducing food waste contributes to responsible food consumption and more sustainable food systems.



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The University's reporting framework specifically identifies:

- measurement of food waste;
- monitoring of food waste generated through campus catering;
- assessment of food waste per campus population;
- reduction of avoidable food waste;
- responsible food-service practices;
- awareness regarding food conservation; and
- promotion of sustainable consumption.

The annual report identifies **Campus Food Waste** as one of the five major SDG-2 reporting areas. Monthly wet and dry Food waste generated from Food Services at Brainware University during 2025 is shown in the table below:

Table 5. Food waste generated from food served within the university in the year 2025

WET WASTE (in kgs)				
Month	Canteen	Skill	Food Court	Total Weight in Kgs
January'25	1325	1529	623	3477
February'25	1630	1109	755	3494
March'25	1640	1072	695	3407
April'25	1795	1015	817	3627
May'25	1575	783	728	3086
June'25	1430	529	635	2594
July'25	1430	612	670	2712
August'25	1900	573	875	3348
September'25	1590	499	758	2847
October'25	1243	364	583	2190
November'25	1558	574	719	2851
December'25	1490	614	703	2807
Total Weight in kgs	18606	9273	8561	36440
DRY WASTE (in kgs)				
Month	Canteen	Skill	Food Court	Total Weight in Kgs
January'25	315	265	72	652
February'25	344	213	83	640
March'25	394	269	79	742
April'25	449	283	100	832
May'25	398	221	90	709



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June'25	340	155	76	571
July'25	371	179	85	635
August'25	522	168	117	807
September'25	487	152	114	753
October'25	406	109	96	611
November'25	616	203	138	957
December'25	585	205	135	925
Total Weight in kgs	5227	2422	1185	8834
Total Food waste in the year 2025 (in kg)				45274
Total Food waste in the year 2025 (in mt)				45.274

5.1 Summary of recorded 2025 waste

Table 6. Summary of Recorded Food Waste by Type and Campus Facility

Measure	Recorded amount	Share of total
Wet food waste	36,440 kg	80.5% (approx.)
Dry food waste	8,834 kg	19.5% (approx.)
Total recorded food waste	45,274 kg / 45.27 mt	100%
Canteen: wet + dry	23,833 kg	52.6% of total (approx.)
Skill facility: wet + dry	11,695 kg	25.8% of total (approx.)
Food court: wet + dry	9,746 kg	21.5% of total (approx.)

The data provide a baseline for monitoring. The supplied material does not provide meals served or campus population for the same period, so food waste per meal and annual food waste per campus population cannot be calculated from the available evidence. These intensity measures should be added once verified denominators are available.

5.2 Monitoring and improvement priorities

- Record the quantity of meals served and campus population alongside waste weights so that intensity indicators can be calculated.
- Separate avoidable edible waste from unavoidable preparation residues and other dry food-service waste wherever feasible.
- Use monthly review to identify unusual increases, high-waste menu items and differences among food-service units.



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- Maintain dated weighing sheets, calibration/verification records, responsible-person sign-off and evidence of recovery or disposal.
- Set a documented reduction baseline and annual target after a complete and verified baseline period is established.

6. Student Food Security and Hunger Alleviation

Brainware University has established the **Student Food Security and Hunger Prevention Policy**, approved by the Vice-Chancellor, to promote equitable access to adequate, safe, nutritious and affordable food for all enrolled students, including day scholars and hostel residents. The policy recognises that food insecurity and hunger can adversely affect students' health, concentration, attendance, academic engagement and overall educational experience. It provides an institutional framework for identifying students experiencing hunger, sudden financial hardship or disrupted access to food and facilitating timely, confidential and dignified assistance.

The policy outlines several support mechanisms to address students' food-related needs. These include access to emergency meals, food vouchers or meal coupons, essential food packages in exceptional circumstances, and appropriate campus or hostel dining arrangements for students experiencing temporary hardship. It also emphasises affordable and nutritious food options, transparent pricing, food safety and hygiene, and student feedback on the accessibility, affordability and nutritional adequacy of available meals.

Students experiencing food insecurity may be identified through confidential referrals from mentors, hostel wardens, counsellors and student-welfare personnel. Where food insecurity is associated with financial hardship, eligible students may be linked to institutional and government scholarship schemes, fee concessions and other financial assistance programmes. Counselling and additional welfare support may also be facilitated according to individual needs.

The Dean of Student Welfare, in coordination with the Scholarship/Finance Cell, Hostel Administration, Counselling Services, food-service providers and the Internal Quality Assurance Cell (IQAC), is responsible for coordinating assistance, managing referrals, monitoring implementation and facilitating periodic policy review. The framework emphasises dignity, confidentiality, non-discrimination, clearly defined responsibilities and institutional accountability.

Through this initiative, Brainware University demonstrates its commitment to **SDG 2: Zero Hunger** by establishing mechanisms to address student food insecurity and improve access to nutritious and affordable meals. The policy supports student welfare, inclusive education and



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the creation of a supportive campus environment in which food-related hardship should not become a barrier to academic participation or successful completion of studies.

7. Nutrition Awareness and Healthy Food Choices

Brainware University is committed to promoting access to healthy, nutritious and affordable food through its **Healthy, Affordable and Sustainable Campus Food Policy** and **Sustainable Food Choices and Responsible Campus Food Service Policy**. These policies establish an institutional framework for encouraging balanced dietary practices, improving the availability of nutritious food, and promoting responsible food consumption across campus dining facilities. The initiatives reflect the University's commitment to SDG 2 - Zero Hunger, particularly the promotion of adequate nutrition and access to affordable, healthy food.

To support informed food choices, the University's policy documents incorporate summer and winter hostel menus, vegetarian and non-vegetarian canteen menus, and designated healthy-menu options. The documented menus include a variety of food items, such as dal, vegetables, soyabean, rajma, fish and egg preparations, along with vegetarian alternatives. Selected menu items are accompanied by indicative calorie values to enhance nutritional awareness and help students make informed dietary choices. Seasonal menus further demonstrate the University's planned approach to providing varied food options across different dining facilities.

The policies also emphasise food affordability, accessibility, food safety and hygiene, the availability of vegetarian and vegan choices, and the promotion of local and seasonal food products wherever feasible. Responsible food-service practices and food-waste minimisation are incorporated into the broader sustainability framework. The University administration, Internal Quality Assurance Cell (IQAC), food-service and canteen management, procurement and stores personnel, students, employees, and outsourced vendors, where applicable, are assigned roles in implementing and monitoring these provisions.

For continuous improvement, the policy framework provides for periodic review, monitoring and annual reporting of campus food-service initiatives. Implementation can be further substantiated through actual menu records, food-price lists, evidence of food availability, vendor-compliance records, student and staff feedback, and food-safety inspection reports. Collectively, these institutional measures demonstrate Brainware University's commitment to promoting healthy, nutritious, accessible and affordable food choices in support of SDG 2. Documented policy provisions establish the institutional framework, while implementation records and monitoring evidence provide the basis for assessing their effectiveness.



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7.1 FSSAI Eat Right Campus Certification

Brainware University has been certified under the Eat Right Campus initiative of the Food Safety and Standards Authority of India (FSSAI), functioning under the Ministry of Health and Family Welfare, Government of India. The certification recognises the University's participation in an initiative aimed at promoting safe, healthy and responsible food practices within the campus environment (Fig. 1). The certification was awarded in accordance with the guidelines established by FSSAI and is valid for the period from 6 December 2023 to 5 December 2025.

This certification strengthens Brainware University's institutional commitment to maintaining a food environment that emphasises food safety, hygiene and healthy eating practices. It complements the University's policies on healthy, affordable and sustainable campus food, nutrition awareness and student food security. These initiatives are relevant to SDG 2: Zero Hunger, particularly the broader objective of promoting access to safe and nutritious food, and also support SDG 3: Good Health and Well-being.



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Brainware University, North Twenty Four Parganas

is certified as



as per guidelines established by
Food Safety and Standards Authority of India
for the period of Dec 6, 2023 to Dec 5, 2025

Implementation Partner

Department of Health and
Family Welfare, North 24
PGS, Govt. of West Bengal

Auditing Partner

MS Certification Services Pvt.
Ltd.

Training Partner

Bright Future.Com

Fig. 1 - FSSAI Eat Right Campus Certification of Brainware University, awarded in accordance with FSSAI guidelines for the period 6 December 2023 to 5 December 2025



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8. Staff Food Security and Hunger Alleviation

The Staff Food Security and Hunger Alleviation Policy, approved by the Vice-Chancellor, establishes an institutional framework for addressing food insecurity among university employees, including contractual and outsourced staff. The policy identifies affordable food facilities, subsidised or supported meals, emergency food assistance, support during financial hardship, and food and nutrition assistance as key intervention areas. It also addresses food provision during university activities, identification of food-insecurity cases, financial and resource allocation, awareness and communication, monitoring, documentation, institutional responsibilities, confidentiality and non-discrimination. Supporting documentation, including anonymised aggregate records of assistance, food-affordability measures, staff communications, referral mechanisms, vendor and contractor arrangements, and periodic review records, would further substantiate implementation and outcomes. In parallel, Brainware University recognises the importance of education in developing future professionals capable of understanding and addressing the challenges of sustainable food systems. Its SDG 2 reporting framework incorporates Food Sustainability Education, encompassing academic programmes and graduate outcomes associated with agriculture, aquaculture, sustainable food production and food-system knowledge. The University promotes interdisciplinary learning that integrates technological, environmental, economic and social perspectives on food security through relevant areas such as sustainable agriculture, agricultural technology, food-system sustainability, environmental management, biotechnology, artificial intelligence, data-driven agriculture, entrepreneurship and livelihoods, and sustainable resource management. These educational and institutional initiatives collectively contribute to the broader objectives of SDG 2 by addressing food security, nutrition, sustainable food systems and capacity building, while systematic documentation of implementation and outcomes can strengthen evidence of their contribution.

9. Community Engagement and National Hunger

Brainware University extends its commitment to **SDG 2 - Zero Hunger** through community-oriented outreach, extension activities, farmer engagement programmes, knowledge-sharing initiatives and technology-enabled agricultural interventions. The University's Department of Agriculture engages directly with farmers, farm workers and other community stakeholders to promote **sustainable agricultural practices, improved productivity, efficient resource utilisation and resilient food production systems**.



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The activities are detailed in **Section 9.1** and demonstrate the University's role in transferring **agricultural knowledge, technological expertise, and practical skills** to the community.

9.1 Events conducted for local farmers

Title of the Event:	Application of Drones in Agriculture (One-Day Demonstration Cum Outreach Programme)
Date:	30-08-2024
Venue:	Babpur village
Beneficiaries:	19 Farmers
Organising unit:	Agriculture

Outcome: The programme enhanced farmers' awareness and practical understanding of drone-based precision agriculture for efficient crop protection and pesticide application. The live demonstration highlighted how drone technology can support timely and uniform application of agricultural inputs, reduce input wastage, and improve crop management. By promoting the adoption of innovative and resource-efficient farming practices, the programme contributed to **SDG 2 - Zero Hunger**, particularly by supporting sustainable agricultural productivity, improved farm efficiency, and resilient food production systems.





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Title of the Event:	Haringhata Firm Visit
Date:	11-09-2024
Venue:	Haringhata
Beneficiaries:	Haringhata firm workers
Organising unit:	Agriculture

Outcome: The Haringhata Farm Visit enhanced farm workers' knowledge and awareness of sustainable livestock and farm management practices, with emphasis on proper animal nutrition, health management, efficient use of feed and water, hygienic farm practices, responsible use of agricultural inputs, and effective waste management. The interaction promoted resource-efficient and sustainable farming practices aimed at improving livestock productivity, farm efficiency, and food production. The programme contributed to UN SDG 2- Zero Hunger by supporting sustainable agricultural practices, enhancing productivity, and strengthening resilient and sustainable food production systems.





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Title of the Event:	Maintaining Soil Quality and Fertility – Current Innovations vis-à-vis Indian Knowledge Systems for Sustainable Agriculture
Date:	04-12-2024
Venue:	(University Building II-303), Brainware University
Participants:	Farmers
Organising unit:	Agriculture

Outcome: The event enhanced farmers' awareness of **soil fertility management, soil conservation, balanced nutrient use, efficient water management, and sustainable agricultural practices** to address challenges affecting crop productivity and food production. The Agriculture Department encouraged the integration of **traditional Indian agricultural knowledge with modern scientific approaches** to promote eco-friendly, resource-efficient, and climate-resilient farming. The initiative supported improved agricultural productivity, sustainable food production, and resilient farming systems, thereby contributing directly to **UN SDG 2 – Zero Hunger**, particularly through the promotion of **sustainable agriculture and enhanced food security**.





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Title of the Event: Honouring Our Annadata: A Tribute to Farmers' Dedication

Date: 23-12-2024

Venue: (University Building II-303), Brainware University

Participants: Agricultural farmers

Organising unit: Agriculture

Outcome: The event sensitized farmers to key challenges affecting **sustainable agricultural productivity and food security**, including rising input costs, efficient use of water and farm resources, soil fertility management, climate-related risks, and crop productivity. The Agriculture Department encouraged the adoption of **sustainable, climate-resilient, and resource-efficient farming practices**, along with crop diversification and appropriate risk-management strategies. The initiative strengthened farmers' awareness of practices that can enhance **agricultural productivity, resilience, and sustainable food production**, thereby contributing directly to **UN SDG 2 – Zero Hunger**, particularly its focus on sustainable agriculture, resilient food production systems, and improved agricultural productivity.





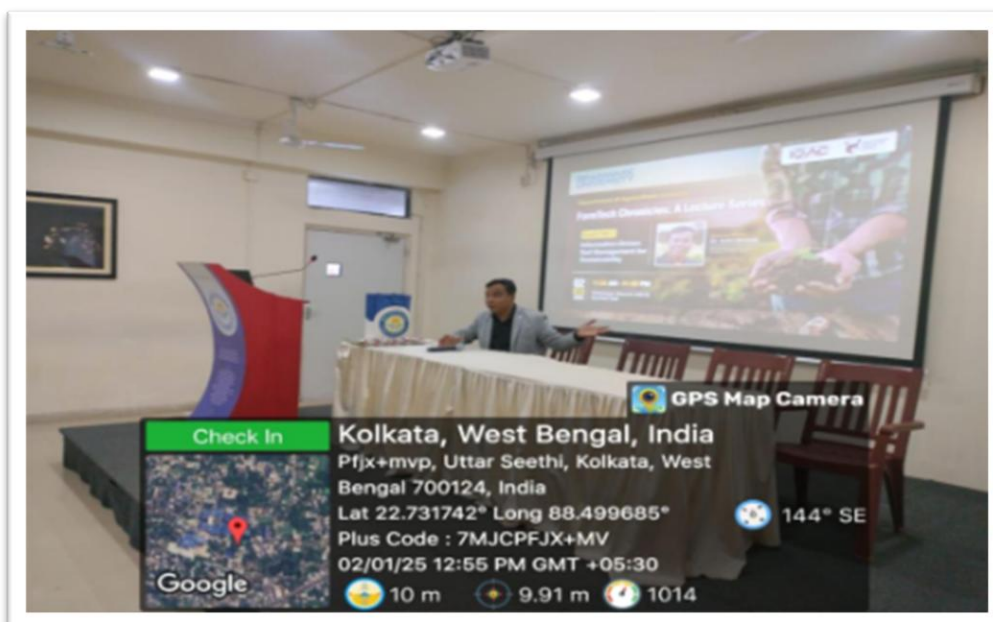
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Title of the Event:	Information-Driven Soil Management for Sustainability
Date:	02-01-2025
Venue:	(University Building II-303), Brainware University
Participants:	Students of UG
Organising unit:	Agriculture

Outcome: The “Farmtech Chronicles – A Lecture Series (Information-Driven Soil Management for Sustainability)” enhanced farmers’ understanding of soil fertility, soil degradation, balanced nutrient management, efficient resource utilization, and data-driven agricultural decision-making. The programme introduced participants to modern, technology-enabled soil management practices that can support informed crop planning, efficient use of fertilizers and water, improved soil health, and enhanced crop productivity. By promoting sustainable and evidence-based farming practices, the initiative contributed to UN SDG 2 – Zero Hunger, **particularly by supporting** sustainable agriculture, improved agricultural productivity, resilient food production systems, and long-term food security.





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Title of the Event:	Lecture Series 2 on Millets: The Magic Seed – Unearthing the Timeless Legacy of the Indian Knowledge System
Date:	24-04-2025
Venue:	(University Building II-303), Brainware University
Participants:	Agricultural farmer
Organising unit:	Agriculture

Outcome: The “Millets: The Magic Seed – Unearthing the Timeless Legacy of the Indian Knowledge System” lecture enhanced farmers’ awareness of the role of millets in sustainable and resilient food production. The Agriculture Department highlighted the traditional knowledge, nutritional value, and agricultural benefits of millets, particularly their suitability for climate-resilient cultivation, efficient use of water and other resources, and diversified cropping systems. The programme encouraged the integration of traditional Indian agricultural knowledge with sustainable farming practices to enhance crop productivity, strengthen food security, and support resilient agricultural systems, thereby contributing directly to UN SDG 2 – Zero Hunger.





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The activities include a drone-based precision agriculture demonstration for 19 farmers at Babpur village, a visit to Haringhata Farm focusing on sustainable livestock and farm management, and programmes on soil fertility, soil conservation, balanced nutrient management, efficient water use and climate-resilient agriculture.

The University's community engagement under SDG 2 particularly addresses the following areas:

- **Support to local farmers and food producers:** Direct engagement with farmers and farm workers through outreach programmes, demonstrations, farm visits and farmer-oriented knowledge-sharing activities.
- **Sustainable agriculture knowledge:** Dissemination of knowledge on soil fertility, soil conservation, balanced nutrient use, efficient water management, sustainable farming, crop diversification and climate-resilient agricultural practices.
- **Food-security knowledge and skills:** Activities emphasise improved agricultural productivity, resilient food production and sustainable farming practices that contribute to strengthening local food security.
- **Technology transfer:** The drone demonstration introduced farmers to precision agriculture and technology-enabled crop protection, including timely and uniform application of agricultural inputs, reduction of input wastage and improved crop management.
- **Knowledge-transfer programmes:** Lecture series and farmer-oriented programmes disseminate contemporary agricultural knowledge as well as traditional Indian agricultural knowledge. The programme on millets, for example, addressed their nutritional and agricultural significance, climate resilience and efficient use of water and other resources.
- **Access to University facilities and expertise:** Farmers and community participants are engaged through programmes conducted at Brainware University, including sessions on soil management, soil fertility and sustainable agriculture.
- **Sustainable and resource-efficient food production:** The University's programmes promote efficient use of water, fertilizers, feed and other agricultural resources, responsible use of agricultural inputs, waste management and sustainable livestock practices.

The documented initiatives collectively demonstrate Brainware University's contribution to community capacity building, sustainable agriculture, agricultural productivity and resilient food systems. The activities therefore provide a practical linkage between the University's academic expertise and community needs, supporting the objectives of **UN SDG 2 - Zero Hunger**, particularly in relation to sustainable agriculture, improved productivity, food security and resilient food production systems.



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10. University Facilities, Capacity Building and Agricultural Partnerships

The University-Farmer Resource Sharing and Sustainable Agriculture Support Policy and the Policy on Knowledge Transfer and Capacity Building in Food Security, Sustainable Agriculture and Aquaculture, both approved by the Vice-Chancellor, establish an institutional framework for supporting local farmers and allied community stakeholders through knowledge exchange, capacity building, technology transfer and, subject to approved procedures and availability, access to relevant University resources and expertise. These policies promote knowledge sharing in sustainable soil and water management, smart and precision agriculture, climate-resilient agriculture, sustainable food production, laboratory and facility utilisation, plant resources, demonstration materials and applied agricultural research. They also encourage structured engagement with farmers, agricultural practitioners, producer groups, self-help groups, food entrepreneurs and other stakeholders through planned activities, partnerships, faculty and student participation, teaching and research linkages, and systematic monitoring and impact assessment. A significant strength of Brainware University's approach to SDG 2 is its interdisciplinary research and educational framework, which encourages collaboration across Engineering and Technology, Life Sciences, agriculture-related research, Biotechnology, Computer Science and Artificial Intelligence, Management, Commerce, Social Sciences and Environmental Studies. By integrating technological innovation with economic, environmental and social perspectives, the University seeks to develop practical and sustainable solutions to challenges related to hunger, food security, agricultural productivity and nutrition. The policies also provide for activity documentation, outcome assessment, funding, ethical practices and annual quality review. While these provisions demonstrate the University's formal commitment to farmer engagement and interdisciplinary problem-solving, claims regarding actual laboratory or facility access, technical services delivered, external beneficiaries reached, and measurable outcomes should be substantiated through dated requests and approvals, facility usage logs, attendance records, partnership documents and outcome reports.

11. Local and Sustainable Food Procurement

The purchases of selected agricultural produce from Brainware University's Agriculture Department for use in the University canteen during January-December 2025. Products listed in the report include green bananas, leafy vegetables, cabbage, brinjal, elephant foot yam (echore), lemons, coconuts, eggs and other seasonal vegetables. Purchase communications were sent by the Canteen Department to the Finance Officer, with corresponding administrative approval records.



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The report records a total value of ₹10,260 for purchases from the Agriculture Department during January-December 2025 (considering the calendar-year 2025 figure). The report supports an identifiable link between agricultural production and campus food-service requirements. However, the supplied report explicitly notes that the records do not independently verify organic certification, all sustainable cultivation methods, or reductions in transport emissions.

Table 7. Summary of Local Agricultural Produce Procurement by Brainware University for Canteen Use

Source	Brainware University Agriculture Department
Use	University canteen
Reported period	January-December 2025
Total reported value	₹10,260
Examples of produce	Green bananas, leafy vegetables, cabbage, brinjal, elephant foot yam (echore), lemons, coconuts, eggs and seasonal vegetables
Administrative evidence	Canteen Department communications and Finance Officer approvals, as described in the source report

11.1 Memoranda of Understanding (MoUs)

Table 8. Memoranda of Understanding (MoUs) with Agricultural Partners for Sustainable Agriculture, Research and Skill Development

Organisation	MoU date	Main areas of cooperation stated in the source
Matribhumi Agriculture India Pvt. Ltd.	17 March 2025	Agriculture and horticulture collaboration, agricultural infrastructure, micro-irrigation, hydroponics, bio-fertilisers, horticultural consultancy, skill development, research and practical training.
Krishibandhu Crop Science Pvt. Ltd.	5 March 2025	Climate-smart agriculture and improved crop productivity, including alternate wetting and drying (AWD), direct-seeded rice (DSR), training, internships, research and awareness activities.



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12. Food Sustainability Education and Interdisciplinary Contribution

Brainware University adopts an interdisciplinary approach to SDG 2 - Zero Hunger, encouraging collaboration across Engineering and Technology, Life Sciences, agriculture-related research, Biotechnology, Computer Science and Artificial Intelligence, Management, Commerce, Social Sciences and Environmental Studies. The University's educational and research framework identifies sustainable agriculture, agricultural technology, food-system sustainability, environmental management, biotechnology, artificial intelligence, data-driven agriculture, entrepreneurship and livelihoods, and sustainable resource management as relevant areas for addressing food security challenges. By integrating technological innovation with agricultural productivity, resource efficiency, food safety, economic livelihoods and community well-being, this approach seeks to develop practical and sustainable solutions to hunger and nutrition-related issues. To demonstrate the effectiveness of these initiatives, further evidence may include the mapping of relevant courses and modules to SDG 2 learning outcomes, student projects, internships, dissertations, research activities and community outreach programmes, supported by participant numbers and assessed learning outcomes wherever available.

13. Conclusion

Brainware University's initiatives during Academic Year 2024-25 demonstrate a multidimensional institutional approach to **United Nations Sustainable Development Goal 2 (SDG 2 - Zero Hunger)**, extending beyond conventional hunger-alleviation measures to encompass research and technological innovation, agricultural development, food safety, nutrition awareness, food-waste reduction, sustainable food systems, student and staff welfare, and community engagement. The University's documented research publications and patent register highlight contributions to sustainable agriculture, crop improvement, precision farming, agricultural artificial intelligence, smart irrigation, agricultural automation, crop-health monitoring, food-pathogen detection, food security and climate-resilient food systems. Its institutional framework is further supported by formal food-security policies, healthy and affordable campus food initiatives, food-waste monitoring, agricultural knowledge exchange, resource-sharing arrangements and local agricultural procurement. The farmer-engagement report records six activities during 2024-25, while the procurement report documents purchase worth ₹10,260 from the University's Agriculture Department for canteen use during January-December 2025. Collectively, these initiatives connect knowledge generation, technological advancement, responsible campus operations and community engagement, providing a structured foundation for advancing Zero Hunger and sustainable



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food systems. To strengthen institutional accountability, the University should complement policy and activity documentation with consistent, verified outcome data, including anonymised student and staff food-assistance records, food-waste intensity indicators, farmer-engagement outcomes, healthy-menu implementation, food-safety inspection records, and the proportion of procurement sourced locally and sustainably. Maintaining clearly defined reporting periods, traceable documentary evidence, verified research metadata, beneficiary records, photographs, programme reports and systematic annual reviews will further enhance the transparency, credibility and effectiveness of Brainware University's SDG 2 reporting.