BRAINWARE UNIVERSITY

Annual SDG-2 Report
2023-24

SDG 2: Zero Hunger

SDG 2: *Zero Hunger*

Understanding SDG 2

SDG 2 aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture. It focuses on ensuring everyone has access to safe, nutritious, and sufficient food all year round, particularly the poor and vulnerable populations. The goal also emphasizes doubling agricultural productivity, supporting small-scale farmers, and promoting resilient food production systems in the face of climate change and biodiversity loss.

For an agrarian nation like India, where agriculture sustains nearly half the population, universities play a crucial role in innovation, training, and research that improve productivity and resilience. Brainware University contributes to this goal through agricultural research, biotechnology, food science, rural training, and entrepreneurship programs that connect learning with livelihood.

Institutional Commitment and Policy Alignment

The School of Agriculture and School of Allied Health Sciences at Brainware University are key drivers of SDG 2-related work.

The University's mission aligns with national and global priorities under *SDG 2, 3, 12,* and *13* through projects promoting sustainable food production, soil conservation, organic farming, and nutrition awareness.

Key policy focus areas (2023–24):

Focus Area	Objective	University Unit Involved
Sustainable Agriculture	Promote eco-friendly and resource-efficient farming systems	School of Agriculture
Food Security	Research on crop yield, pest control, and biofertilizers	Department of Biotechnology & Agriculture
Nutrition Awareness	Community outreach on balanced diets and micronutrient needs	Department of Food & Nutrition
Rural Entrepreneurship	Skill development in post-harvest management, value addition	IIC-BWU

Research and Innovation for Food Security

Brainware University's researchers have produced a series of peer-reviewed papers and patents that directly contribute to SDG 2 outcomes — from biofertilizers and nanonutrients to climate-resilient crops.

Selected Publications (2023–24)

Title	Authors	Source
Endophytes: The Treasure House of Bioactive Compounds with Potential Applications in Sustainable Agriculture and Other Sectors	Hazra S., Das D., Moulick D., Hossain A.	*Biocontrol Agents for Improved Agriculture* (Elsevier, ISBN 978-0-443-15199-6)
Use of Nutrient-Enriched Compost in Soil–Crop Management	De P., Bhabai B., Paramanik B., Chatterjee D., Choudhury A., Kundu A.	*Waste Management for Sustainable and Restored Agricultural Soil* (Elsevier, ISBN 978-0-443-18486-4)
Impact of Conservation Agriculture in Rural Sectors	Pramanik M., Bachaspati S., Mondal B. P., Duary S., Banik S., Roy S.	*Futuristic Trends in Social Sciences* (ISBN 978-93-5747-378-1)
Lead, Cadmium, and Chromium Contamination in Soil–Plant Systems: Global Situation, Impact, and Dietary Risk Delineation	Bhattacharya P., Banerjee P., Hazra S., Sengupta S., Dey S.	*Environmental Contaminants: Impact, Assessment, and Remediation* (CRC Press, ISBN 9781003412236-3)
Reports of Actinomycetes to Degrade Microplastics	Ria Mukherjee, Koushik Biswas	*Microplastic Pollution* (Springer, ISBN 978-981-99-8357-5)

Insights:

These studies advance understanding of soil health, crop productivity, pollution-free agriculture, and food system sustainability. The integration of biotechnology, AI, and remote sensing (as in "Digital Soil Mapping") positions Brainware University among institutions contributing to modern agritech and precision farming.

Patents and Designs Supporting Agricultural Sustainability

The University has filed several national and international patents aligned with SDG 2, focusing on sustainable crop production, biofertilization, water efficiency, and smart agri-devices.

Selected Patents and Designs (2023–24)

Patent Title	Type	Domain
Design and Development of Manually Operated Spring-Tooth Weeder for Horticultural Crops	Process Patent (India, 202331075376 A)	Agriculture
Dose Optimization of Seaweed Extracts as Bio-Stimulant for Growth and Yield Augmentation of Summer Rice	Process Patent (India, 202331075373 A)	Agriculture
Optimization of Storage Condition for Lentil (Lens Culinaris L.)	Process Patent (India, 202331075381 A)	Agriculture
Dose Optimization Using Gamma Irradiation for Different Crop Species	Process Patent (India, 202331058279 A)	Agriculture
Production of Potassium Nanoparticles from Coriandrum Sativum — A Potent Nano-Biofertilizer	Process Patent (India, 202331075386 A)	Biotechnology
Comprehensive RNA Extraction Protocol for Pigeonpea Varieties	Process Patent (India, 202431005367 A)	Agriculture

Impact:

These inventions focus on *reducing input costs, enhancing soil fertility, minimizing pesticide use,* and *improving crop resilience*, ensuring higher yield for small and marginal farmers.

Community Outreach and Rural Engagement

Brainware University's Department of Agriculture and Institution Innovation Council regularly conduct field-based training and awareness programs in North 24 Parganas districts.

Education and Skill Development Initiatives

The School of Agriculture runs an undergraduate integrating fieldwork, precision agriculture, and data analytics. Cross-disciplinary courses in *Sustainable Agriculture, Plant Biotechnology, and Food Safety* are offered, aligning with NEP 2020 emphasis on experiential learning.

Research-to-Impact: Linking Academia to Farmers

Through the Agriculture Technology Information, agricultural research connects farmers with real-world agri-challenges.

Projects include:

- Predictive analytics for crop disease detection.
- Development of IoT-enabled soil-moisture sensors (Patent 202331049755 A).
- Use of machine learning for climate and irrigation forecasting (CSE department).

Future Goals (2024–25):

- Publish *AgriTech Innovation Handbook* under Brainware University Press.
- Expand collaboration with NABARD and ICAR-KVKs for technology transfer.

Brainware University's work under SDG 2 represents a strong bridge between classroom knowledge and community transformation. From laboratory discoveries and student startups to field-based interventions and international patents, the University demonstrates how academic innovation can drive hunger-free, sustainable futures for India's rural heartlands.

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