The 24th International Students Summit on Food, Agriculture, and Environment (ISS)

Youth-led Innovations and Community Empowerment towards a Sustainable Future

September 3 - 6, 2025
Bogor, Indonesia

International Students Summit
TOKYO UNIVERSITY OF AGRICULTURE

Hosted by
IPB University

The Twenty-fourth International Students Summit on Food, Agriculture and Environment (ISS)

Youth-led Innovations and Community Empowerment towards a Sustainable Future

Date: September 3 - 6, 2025

Statement

Over the last centuries, the world has gone through remarkable changes in various fields such as agriculture, food and Environment. Some of these changes include climate changes, emerging technologies and rapid population increase. Today, demographers expect the world population to peak by the end of this century. Fueled by climate shocks, many are facing unprecedented food insecurity. We cannot deny that the future of mankind is at a critical crossroads and we need to rise to the challenge of meeting people's immediate food needs, ensuring environmental protection and at the same time, through collaboration, supporting the processes that build long-term resilience. Our communities must take smart and efficient decisions based on our common commitments to reducing to the minimum all emissions of greenhouse gases which impact multiple aspects of our lives. This global situation makes it evident and urgent to draw together the wisdom and vitality of youth, the torchbearers of the future of mankind. There are especially wide-ranging missions for agricultural students, as agricultural science plays a key role in the solution of fundamental problems in food production and safety, environmental conservation, energy, and human health. How the youth can act to bring answers to those challenges is utmost needed and represents an outline of what one can expect in the future innovations to tackle such issues.

Tokyo University of Agriculture (Tokyo NODAI) and IPB University are organizing the "24th International Students Summit on Food, Agriculture and Environment (ISS)" to provide students from our global partner universities with an opportunity to gather and exchange views and ideas on global food, agricultural, and environmental issues, and also to discuss their own roles in sustainable development.

This year, the 24th ISS will take place from September 3 – 6, 2025 around the theme "*Youth-led innovations and community empowerment towards a sustainable future*" which was adopted at the 23rd ISS. We expect the participating students to attend physically and share the activities (actions) undertaken at home university that have a positive impact to the communities during ISS presentations and discussions. These student-led actions can either be ideas or ongoing activities. The framework of student activity as to the rationale, methods, implications (economic, social and cultural), and constraints should be clarified in order to foster their contributions to the solution of global problems for the sustainability of this world. Basically, one oral presentation or poster presentation will be accommodated for each selected participating university in the following fields.

Students' Actions in the field of **agriculture**
Students' Actions in the field of **environment**
Students' Actions in the field of **food**
Students' Actions in the field of **education**
Students' Actions in the field of **nutrition**

- Submitted ISS manuscripts will be reviewed by ISS Committee during the **screening process** following the criteria provided and evaluated to whether the presentation is within the scope of the ISS main theme.
- Each partner university is required to appoint a faculty advisor(s) to support the presenter(s). The advisors are welcome to attend ISS physically if self-sponsored or otherwise supported.

Tokyo University of Agriculture and IPB University

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To the audience of the 24th International Students Summit

Please check the ISS Tokyo NODAI website for the latest information.

https://www.isstokyonodai.net/

24th ISS Participants' List

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Sasha Wilkinson	University of British Columbia	13
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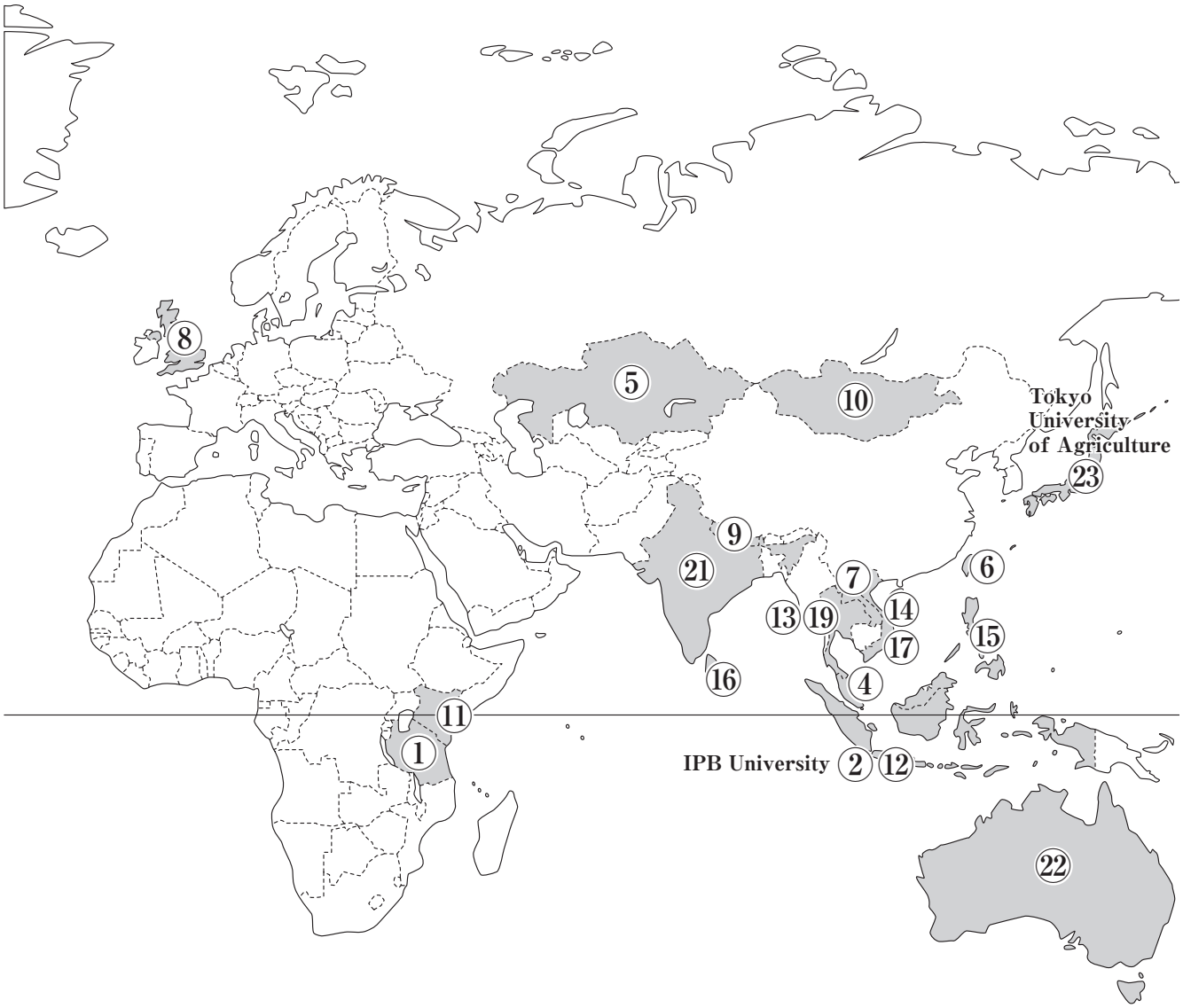
General Chairpersons
Kabuga Norah Gakii
Haruto Sasaki
Putri Amalia Zahra
Shaski Ghina Nurfauziyah

ISS Student Advisors
Adi Aryanto M
Leonardo de Almeida Oliveira
Uego Perez Juan
Prima Gandhi

All the chairpersons and ISS student advisors are students representing Tokyo University of Agriculture and IPB University

The 24th ISS Participating Universities



① Sokoine University of Agriculture
② IPB University
③ University of British Columbia
④ Universiti Putra Malaysia
⑤ National University of Life and Environmental Sciences of Ukraine
⑥ National Chung Hsing University
⑦ National University of Laos
⑧ University of Reading
⑨ Agriculture and Forestry University
⑩ Mongolian University of Life Sciences
⑪ Jomo Kenyatta University of Agriculture and Technology
⑫ University of Al-Azhar Indonesia

⑬ Kasetsart University
⑭ Nong Lam University
⑮ University of the Philippines Los Baños
⑯ University of Peradeniya
⑰ Vietnam National University of Agriculture
⑱ University of São Paulo
⑲ Thammasat University
⑳ Michigan State University
㉑ Chaudhary Charan Singh Haryana Agricultural University, Hisar (Haryana)
㉒ University of Western Australia
㉓ Tokyo University of Agriculture

Program

Venue: IPB University, Main Campus (Dramaga) — Auditorium Andi Hakim Nasoetion, Rectorate Building

Live streaming information will be published on the ISS website at the following link: https://www.isstokyonodai.net/about-1-2

Group A

September 3, Wednesday 11:00 AM (Indonesia time)

【MfumoSense: A Youth-Led Innovation for Empowering Smallholder Farmers through Smart Soil Management in Tanzania】
Ibrahim Meshack Ibrahimu, *Sokoine University of Agriculture*

【VETIVER SEJAHTERA: A Youth-Led Initiative to Disaster Mitigation and Community Empowerment using Vetiver Grass for Village Resilience】
Raden M. D. Y. Pradjasoejatma, *IPB University*

【Sustainable Food Systems: Agora Café】
Sasha Wilkinson, *University of British Columbia*

【The Matcha Project: A Student-Led Initiative for Sustainable Tea Production】
Eari Saji, *Tokyo University of Agriculture*

Group B

September 3, Wednesday 13:50 PM (Indonesia time)

【From Tank to Table: Youth-Driven Red Tilapia Project through Sustainable Aquaponic Systems】
Muhammad Aniq Asyraf Bin Hairuzi, *Universiti Putra Malaysia*

【Activities of Higher Education Institutions for the Development of the Circular Economy: Recommendations for Implementation at NUBiP of Ukraine】
Iryna Kostiuk, *National University of Life and Environmental Sciences of Ukraine*

【Youth-led Innovations in Biological Control: Community Engagement for Sustainable Agriculture】
Yun-Ling Chang, *National Chung Hsing University*

Group C

September 3, Wednesday 15:00 AM (Indonesia time)

【Empowering Communities through Youth-led Environmental Education in Laos】
Konelasy Vilayphon, *National University of Laos*

【Addressing Period Poverty and Advancing Development through Youth-led Innovation.】
Amelia Beau Hasler, *University of Reading*

【Identification, Isolation, and Monitoring of Newcastle Disease Status in Commercial Broilers of Nepal】
Shristi Bhandari, *Agriculture and Forestry University*

【Experimental Breeding of Lenok-*Brachymystax lenok* in the Tengis-Shishged River Basin】
Chinbolor Oktyabri, *Mongolian University of Life Sciences*

Group D

September 4, Thursday 9:00 AM (Indonesia time)

【Quality Characterization of Omena (*Rastrineobola argentea*) and its Utilization in School Feeding Program for Community Empowerment and Sustainable Development】
Nixon Ombima Keya, *Jomo Kenyatta University of Agriculture and Technology*

【Implementation of Sanitary Hygiene, Halal Certification, and Social Media Utilization to Increase the Productivity of Chicken Slaughterhouses in Rural Areas】
Alya Husna, *University of Al-Azhar Indonesia*

【The Power of 20 Yen: Student Actions Bridging Hunger and Overnutrition】
Nana Suzuki, *Tokyo University of Agriculture*

【CAN CAMP: Fostering Sustainable Development and Income Generation through Local Food Innovation in Thailand】
Chotika Prarom, *Kasetsart University*

Group E

September 4, Thursday 10:40 AM (Indonesia time)

【Design, Manufacturing and Testing a Subsoiler − Rotary Tillage】
Nguyen Trieu Dat, *Nong Lam University, Ho Chi Minh City*

【Empowering Smallholder Farmers through Youth-Led Recommendations for Post-Harvest Loss Reduction of Banana】
Bernadette A. SAPICO, *University of the Philippines Los Baños*

【MealBridge | Bridging the Gap between Food Surplus and Need】
Ovini Wijesooriya, *University of Peradeniya*

Group F

September 4, Thursday 13:10 PM (Indonesia time)

【FIT-Triple Action as a Capacity Building Program to Increase Community Preparedness in Local Disaster Management Independence】
Nurul Fauzi, *IPB University, Indonesia*

【Empowering Woman in Disaster Prevention in Vietnam: Lessons Learned from Typhoon Yagi】
Nguyen Thuy Quynh, *Vietnam National University of Agriculture*

【Sustainable Approaches for Pruning Residues Management and Community Empowerment】
Luisa Lopes de Mello, *University of São Paulo*

【Exploring the Potential of Biocontrol Agent Against Root and Stem Rot Disease in Durian (*Durio zibethinus*)】
Ponchanok Datmanee, *Thammasat University*

Group G

September 4, Thursday 14:35 PM (Indonesia time)

【Addressing Food Security through Farmers Market Engagement and Agricultural Research】
Caden Wade, *Michigan State University*

【Community Nutrition Advocacy: Youth-Driven Policies and Actions for Stunting Prevention Through Ecological Balance Perspective and Sustainable Food Security Practices】
Sarah Firjani Hanisah, *IPB University*

【Sustainable Nutrition: Millets As A Measure To Prevent Undernutrition And Community Empowerment】
Kiran, *Chaudhary Charan Singh Haryana Agricultural University, Hisar (Haryana)*

【'Goals' in Mental Health: How sporting clubs can improve mental health and social capital in farming communities.】
Jack Douglas, *University of Western Australia*

Group A

Presenters:

Ibrahim Meshack Ibrahimu, Sokoine University of Agriculture
Raden M. D. Y. Pradjasoejatma, IPB University
Sasha Wilkinson, University of British Columbia
Eari Saji, Tokyo University of Agriculture

Chairpersons:

Haruto Sasaki
Putri Amalia Zahra

MfumoSense: A Youth-Led Innovation for Empowering Smallholder Farmers through Smart Soil Management in Tanzania

Ibrahim Meshack Ibrahimu
AGRIMFUMO COMPANY LTD

Academic Supervisor's name: Dr Kadeghe Fue
Sokoine University of Agriculture, Tanzania.

Abstract

Agriculture forms the foundation of Tanzania's economy, contributing 26.9% to the national GDP and employing more than 65% of the population. Smallholder farmers, who account for 95% of the sector, continue to face significant challenges, particularly in managing soil health due to limited access to affordable and timely soil testing services. This leads to poor fertilizer use, reduced productivity, and substantial economic losses—estimated at over $480 million annually from yield reductions of up to 66%.

To address these challenges, MfumoSense was developed as a youth-led smart soil management system designed to empower smallholder farmers through digital innovation. The system features a low-cost soil testing device that accurately measures seven critical soil parameters: pH, moisture, nitrogen, phosphorus, potassium, salinity, and conductivity. Data collected is transmitted to MfumoCare, a user-friendly mobile application that provides real-time, location-based recommendations and dynamic soil maps in both English and Swahili. These features enable farmers to make informed decisions about fertilizer application and land use based on their actual soil conditions.

The system was field-tested with smallholder farmers in Morogoro, Tanzania, where it demonstrated strong agreement with laboratory-based soil analyses. Farmers reported improved awareness, confidence in soil-related decisions, and increased crop yield efficiency.

MfumoSense directly contributes to the achievement of several Sustainable Development Goals, particularly Zero Hunger (SDG 2), No Poverty (SDG 1), and Life on Land (SDG 15). By making precision agriculture accessible to underserved rural communities, the innovation supports climate-smart farming, economic resilience, and food security.

As a scalable and cost-effective solution, MfumoSense exemplifies the spirit of the International Students Summit 2025, showcasing how youth-led innovations can bring meaningful transformation to agriculture. Its successful implementation in Morogoro provides a promising model for expansion across Tanzania and Sub-Saharan Africa.

Keywords: MfumoSense, MfumoCare, Smallholder farmers, Soil testing, Technology adoption.

VETIVER SEJAHTERA: A YOUTH-LED INITIATIVE TO DISASTER MITIGATION AND COMMUNITY EMPOWERMENT USING VETIVER GRASS FOR VILLAGE RESILIENCE

Raden M. D. Y. Pradjasoejatma
Agrometeorological Student Association

Academic Supervisor: Dr. Ana Turyanti
IPB University, Indonesia

Abstract Vulnerable

Hydrometeorological disasters continue to pose significant threats to vulnerable rural communities, particularly in Indonesia's mountainous regions. Cibunian Village, located in Bogor Regency, is among the most at risk, as evidenced by 24 landslides between 2017 and 2021. This recurring crisis disrupts the livelihoods of the 27% of the population dependent on agriculture, exacerbating issues like soil erosion, reduced agricultural productivity, and socio-economic instability. The urgent need for community-based climate adaptation and mitigation strategies has led to the development of the Vetiver Sejahtera program. This youth-led initiative is designed to foster resilience in disaster-prone rural areas through a nature-based approach, leveraging local knowledge and science-informed strategies. The program is structured around four integrated pillars. Sebunian (Cibunian Climate System), Sewangi (Vetiver Center), Setara (Agricultural School), and Sebaya (Changemaker School), which together address disaster risk reduction, sustainable agriculture, and environmental stewardship. Central to the program's approach is the use of vetiver grass (*Vetiveria zizanioides*), renowned for its deep-rooted ability to stabilize soil and mitigate erosion. Through active community engagement and partnerships with local authorities and educational institutions, the program successfully engaged over 547 residents in four neighborhood units, facilitating activities such as the creation of a weather forecasting website, promotion of disaster preparedness, agroforestry education, and the production of vetiver-based products, thus this action supports economic empowerment by creating new income streams for local farmers through sustainable practices and vetiver product commercialization. The program aligns with multiple Sustainable Development Goals (SDGs), particularly climate action, no poverty, sustainable community, and decent work and economic growth. As a bottom-up initiative led by students, the programme exemplifies how youth can translate scientific knowledge into practical actions that build resilience and promote sustainable development.

Keywords: Agrometeorological Student Association, Community Empowerment, Disaster Mitigation, Vetiver

Sustainable Food Systems: Agora Café

Sasha Wilkinson
Agora Café

Dr. Les Lavkulich, P.Ag
University of British Columbia

Abstract

With student food insecurity rates over three times the national average in Canada, the University of British Columbia (UBC) has faced growing challenges in meeting student needs. Originally launched in 2004 as a hands-on learning café under the Faculty of Land and Food Systems, Agora Café closed during the COVID-19 pandemic, burdened by $20,000 in debt and disorganization.

In 2022, a team of student volunteers began reviving Agora as a sustainable, student-led initiative. Over three years, the team rebuilt the café from the ground up—clearing debt, establishing operational protocols, training over 380 volunteers, and creating a model of food justice rooted in community care. Agora now provides over 22,000 free and low-cost meals annually, with inclusive offerings and twice-weekly community dinners. It serves as both a food provider and a student leadership incubator, fostering collaboration and social impact across campus.

Agora Café demonstrates the ISS 2025 theme of "Youth-led innovations and community empowerment towards a sustainable future," offering a replicable model of grassroots, student-powered food systems reform.

Keywords: Sustainability, Food Security, Community, Systems, Nutrition

The Matcha Project: A Student-Led Initiative for Sustainable Tea Production

Eari Saji
Tokyo University of Agriculture, Faculty of International Agriculture and Food Studies
Department of Agribusiness Management, Japan

Academic Supervisor: Prof. Dr. Nina N. SHIMOGUCHI
Tokyo University of Agriculture, Japan

Abstract

In Japan, the number of abandoned farmlands is increasing due to aging farmers, a declining farming population, and labor shortages. This has led to serious environmental problems. The tea industry is no exception. As the consumption of bottled green tea has increased, farmers' income has decreased significantly, making it difficult for them to continue tea farming.

As students majoring in agribusiness, we realized the importance of facing these challenges through our participation in the "Agribusiness Field Training" organized by KAWANE Matcha Co., Ltd. We believe it is necessary to establish a new business model that can attract new participants by sharing the appeal of tea and its production areas in place of aging farmers.

Therefore, we launched the "Matcha Project" in 2022 in collaboration with KAWANE Matcha Co., Ltd. Through this project, we learn about the problems facing the tea industry and explore possible solutions.

Our current annual activities include harvesting organic matcha, creating product and promotion proposals, finding Original Equipment Manufacturer (OEM) manufacturers, developing products, and selling them both online and in person. Products we have developed so far include matcha yokan (sweet bean jelly), matcha furikake (seasoning), matcha chocolate, and dyed items using non-standard matcha, such as tote bags, pouches, and drawstring bags.

In addition to sharing our activities through social media, we have also been featured in newspapers and on television, which has helped expand our reach.

These efforts reflect our desire as students to make a positive impact on society and contribute to a sustainable future for both the tea industry and Japanese agriculture. Our work also relates closely to the theme of the ISS.

Keywords: Sixth Industrialization, Organic Farming, Labor shortage

Group B

Presenters:

Muhammad Aniq Asyraf Bin Hairuzi, Universiti Putra Malaysia

Iryna Kostiuk, National University of Life and Environmental Sciences of Ukraine

Yun-Ling Chang, National Chung Hsing University

Chairpersons:

Njiva Georges Randriamalala

Safira Aulia Rochim

From Tank to Table: Youth-Driven Red Tilapia Project through Sustainable Aquaponic Systems

Muhammad Aniq Asyraf Bin Hairuzi
Faculty of Agriculture, Universiti Putra Malaysia, Malaysia

Academic Supervisor: Associate Prof. Dr. Juwaidah Sharifuddin
Faculty of Agriculture, Universiti Putra Malaysia, Malaysia

Abstract

This youth-driven initiative explores the integration of sustainable aquaponic systems in tilapia farming, emphasizing innovative methods, interdisciplinary collaboration, and active community engagement to promote food security and environmental stewardship. Conducted under the Aquaculture Club cohort 2023/2024 at Universiti Putra Malaysia, the project utilized a closed-loop aquaponic system provided by the Department of Aquaculture. Eighteen participants collaborated in managing the system, focusing on cultivating and distributing high-quality red tilapia through ethical, eco-conscious, and scientifically informed practices. The fish were priced affordably at RM 15/kg, generating RM 767 from 49 kilograms of sales, highlighting both the commercial feasibility, scalability, and broader social impact of sustainable aquaculture.

The initiative directly addresses critical challenges in Malaysian fisheries such as overfishing, pollution, and climate-induced stressors. In contrast to conventional aquaculture systems, which often contribute to nutrient runoff, water overuse, and disease outbreaks, the aquaponic system demonstrated significant environmental advantages. These include up to 90 percent water conservation, nutrient recycling, and improved fish welfare, aligning closely with SDG 14.1 and 14.7. Participants gained hands-on experience in stocking, feeding, water quality monitoring, and post-harvest processing, reinforcing youth empowerment, technical skill development, and career readiness in the aquaculture sector.

Social media outreach and direct distribution efforts engaged the local community, raising awareness of aquaponic benefits among consumers, educators, and policymakers. The project further identified challenges such as uneven fish size, overcrowding, and labor-intensive water monitoring. Suggested improvements include implementing grading systems, automated feeding, and smart sensor technologies, such as IoT-based water quality monitors and automated data logging systems, to increase operational efficiency.

Overall, the Aquaponic Red Tilapia Sales initiative exemplifies how youth-led innovation can drive sustainable transformation in aquaculture. By fostering collaborative learning and bridging scientific knowledge with entrepreneurial action, the project creates a replicable and scalable blueprint for eco-friendly fish production while amplifying youth voices in global sustainability efforts.

Keywords: Sustainable Tilapia Farming, Community Empowerment, Youth-led Initiative, Aquaponics, Red Tilapia, SDG 14

Activities of Higher Education Institutions for the Development of the Circular Economy: Recommendations for Implementation at NUBiP of Ukraine

Iryna Kostiuk

Academic Supervisor: Dr. Nataliia Kovalenko

National University of Life and Environmental Sciences of Ukraine, Ukraine

Abstract

This paper explores the critical role of higher education institutions in implementing circular economy principles, using the National University of Life and Environmental Sciences of Ukraine (NUBiP of Ukraine) as a case study. This research explores the role of universities in advancing sustainable development amid Ukraine's post-war recovery and EU integration. It focuses on promoting environmental sustainability and resource efficiency within the university setting, using a mixed-methods approach: literature review, surveys of students and faculty, and case studies. Highlighted are three student-led initiatives – "Zero Waste Campus" (waste reduction), "Eco-laboratory" (biodegradable materials from agro-waste), and "Green Swap" (item exchange supporting displaced persons).Research findings demonstrate that higher education institutions play a transformative role in cultivating environmentally responsible thinking among young people. Quantitative results show a 25% reduction in single-use plastics in university cafeterias and a 35% increase in student awareness about circular economy principles following educational interventions. The implementation of circular economy projects and active student involvement in environmental initiatives contribute significantly to sustainable development outcomes. The practical significance of this research lies in developing actionable recommendations for higher education institutions to enhance environmental policies and implement effective circular economy strategies. The proposed measures can guide the preparation of professionals equipped to operate within sustainable development frameworks and minimize negative environmental impacts through innovative approaches to resource management. Educational institutions thus emerge as vital catalysts in ensuring the transition to a circular economy. Future research should focus on expanding collaboration between universities, businesses, and government entities to create comprehensive environmental solutions that address both local and national sustainability challenges.

Keywords: circular economy, sustainable development, student initiatives, environmental projects.

Youth-led Innovations in Biological Control: Community Engagement for Sustainable Agriculture

Yun-Ling Chang

Academic Supervisor: Prof. Shaw-Yhi Hwang

National Chung Hsing University, Republic of China

Abstract

Rising global food prices, climate change, and disruptions from events like the COVID-19 pandemic and the Russia-Ukraine war have revealed the fragility of modern food systems. In Taiwan, where rice is a staple crop, the hot and humid climate presents ongoing challenges for grain storage, particularly due to pests such as the rice weevil (Sitophilus oryzae). Chemical fumigation and synthetic pesticide use are still the dominant control methods, despite environmental and health concerns. This youth-led initiative explores the potential of parasitic wasps (Hymenoptera: Pteromalidae) as eco-friendly biological control agents for post-harvest rice storage, offering a sustainable alternative aligned with organic agricultural practices. Grounded in entomological research, the project extends beyond the laboratory by integrating public outreach and interdisciplinary education. Through workshops designed in collaboration with students from agriculture, education, and environmental sciences, the initiative brings biological control knowledge to schools, afterschool programs, and community farms. Workshop activities include live insect demonstrations, instruction on sustainable grain storage techniques, and student-led inquiry projects such as pest observation. The program is embedded within an interdisciplinary framework, which encourages student collaboration across departments through projects that benefit society. Students participating in this initiative can earn academic credit while gaining experience in science communication and civic engagement. Long-term partnerships are being pursued with the Taiwan Agricultural Research Institute and Local Farmer Associations, both to provide venues and to reach broader networks of farmers and school communities. The goal of this program is to increased public awareness of biological control methods, positive student feedback, and stronger cross-generational dialogue around sustainable agriculture. Youth involvement is central to this project's impact, with university students leading workshops and younger students participating actively. The project's short-term goals include completing pilot workshops and refining materials, while long-term goals aim at scaling the program to reach more communities across Taiwan. By bridging scientific research, educational innovation, and community engagement, this initiative demonstrates how youth-led action can drive sustainable solutions to pressing agricultural challenge advancing both ecological resilience and food system sustainability.

Keywords: Biological Control, Food System Resilience, Youth Engagement, Agri-food Education

Group C

Presenters:

Konelasy Vilayphon, National University of Laos
Amelia Beau Hasler, University of Reading
Shristi Bhandari, Agriculture and Forestry University
Chinbolor Oktyabri, Mongolian University of Life Sciences

Chairpersons:

Anan Nakajima
Kautsar Alatas

Empowering Communities through Youth-led Environmental Education in Laos

Konelasy Vilayphon

Academic Supervisor: Sengvilayvanh Singthavikhoune

National University of Laos, Lao PDR

Abstract

Laos, endowed with diverse ecosystems and rich natural resources, faces intensifying environmental threats such as deforestation, climate change, and pollution issues that directly undermine ecological balance and community livelihoods. Despite the critical role of environmental education (EE) in addressing these challenges, its integration into Laos' formal and informal education systems remains limited and inconsistent. Less than 30% of schools reportedly offer comprehensive EE curricula, and youth participation is further restricted by structural barriers, such as lack of access to resources, insufficient institutional support, and cultural norms that marginalize their voices.

In response, I have led and contributed to several youth-led EE initiatives through the Social Environmental Education and Development (SEED), a volunteer-based student organization under the Faculty of Environmental Sciences at the National University of Laos. SEED's work includes community outreach, educational workshops, and youth leadership training focused on environmental protection, biodiversity conservation, and climate resilience. Between 2022 and 2025, SEED trained over 200 youth leaders across seven provinces and launched a national campaign on illegal wildlife trade and waste management. A major achievement was the co-creation of the "Environmental Education for Youth Leadership" toolkit, now adopted by over 20 schools, NGOs, and CSOs nationwide.

These initiatives have led to measurable impacts. Participating youth demonstrated increased ecological literacy and leadership capacity, while communities reported greater awareness and behavioral changes, such as reduced waste burning and more sustainable consumption practices. The participatory education model centered on peer-to-peer learning, experiential activities, and local knowledge proved especially effective in bridging gaps across rural and urban settings.

Long-term, these efforts contribute to building a resilient generation equipped to tackle environmental challenges through informed action and community engagement. The initiatives also catalyzed collaborations with government ministries (e.g., MONRE, MAF), UN agencies, and local NGOs, creating scalable pathways for institutionalizing youth-led EE.

Aligned with the ISS 2024 theme of "Youth Empowerment for Food, Agriculture, and Environmental Sustainability," this work highlights how empowering youth with practical knowledge, leadership tools, and inclusive platforms can drive systemic change in environmental and food systems, laying the groundwork for a more sustainable, youth-led future in Laos and beyond.

Keywords: Youth-led Environmental Governance, Peer-to-peer Education, Community-based Environmental Education.

Addressing Period Poverty and Advancing Development through Youth-led Innovation.

Amelia Beau Hasler

Academic Supervisor: Sarah Cardey

University of Reading, United Kingdom

Abstract

This paper explores how youth-led action can address challenges by drawing on two projects I have been directly involved in: Once a Month, Reading and a micro-placement with Power for the People Global (PFP). Both initiatives reflect the potential of student leadership in driving solutions that promote sustainability and local empowerment which is core to the 2025 ISS theme: Youth-led innovations and community empowerment towards a sustainable future.

Once a Month, Reading is a student-led project tackling period poverty through volunteer engagement and sustainability. As Events Lead (2024-2025) and President (2025-2026), I have played a central role in organising fundraising events such as second-hand clothing sales, collaborations, and packaging sessions to provide menstrual products to local shelters and charities. These actions have supported more than 90 individuals in one standalone session and aim to alleviate need, reduce stigma, promote circular economy principles, and foster campus-wide action. By empowering students to take practical action, Once a Month bridges sustainability with social justice.

Furthermore, this paper explores my contributions to PFP throughout my 6 month internship. PFP is a non-profit working with communities in extreme, multi-dimensional poverty in East Africa, using clean technology as a foundation for sustainable development. Through this remote placement, I developed practical knowledge of international development, gained insights into the complexities of local contexts, and observed how context-specific, inclusive innovations such as solar power and clean cookstoves can catalyse improvements in health, gender equality, food security and climate resilience. This experienced highlighted the value of youth engagement in development spaces, demonstrating how increasing your individual awareness, knowledge and reflective capabilities leads to more ethical, informed, and impactful contributions to global development practice and overall youth contributions to a better world.

Together, these projects illustrate how young people are not only capable of tackling local and global development issues but are essential to doing so in inclusive and innovative ways. Youth play a very important role in addressing the challenges the world faces. Through applied education, community partnerships and accessible opportunities, students can become powerful drivers of change, building more sustainable futures from the bottom up.

Keywords: Youth empowerment, period poverty, sustainability, community action, development.

Identification, Isolation, and Monitoring of Newcastle Disease Status in Commercial Broilers of Nepal

Shristi Bhandari

Academic Supervisor: Prof. Dr. Hom Bahadur Basnet

Agriculture and Forestry University, Nepal

Abstract

Newcastle Disease (ND) is a major threat to the poultry industry in Nepal, contributing to significant economic losses due to high mortality rates and ineffective vaccination strategies. In response to this critical issue, I, as a veterinary student, led a three-year, DOREX-supported research initiative titled *"Identification, Isolation, and Monitoring of Newcastle Disease Status in Commercial Broilers of Nepal."* The project was rooted in a youth-led, action-oriented framework that aimed not only to generate scientific insights but also to empower poultry farmers with practical, sustainable solutions.

Our study was conducted in four phases. In the first phase, I collaborated with local poultry networks to identify ND-suspected broiler farms and collected cloacal and tracheal swab samples from 100 farms across Chitwan, Kathmandu, Pokhara, and Butwal. These were processed in national laboratories using virus isolation techniques and HA tests, confirming the presence of NDV in several farms. In the second phase, I helped design and execute vaccine trials using both local and imported vaccine strains on broiler chicks under controlled conditions. HI tests were conducted regularly to monitor immune response, and seasonal variation was considered to reflect field conditions.

The third phase translated research findings into action. I co-developed and implemented an optimized vaccination schedule in nine farms and facilitated training for over 30 poultry farmers and workers on vaccine handling, biosecurity, and disease prevention. Educational materials, including video guides and manuals in the local language, were created to ensure long-term community engagement. Finally, we conducted post-intervention surveys and interviews to assess the impact, revealing improved flock health, increased farmer awareness, and reduced ND outbreaks.

This youth-led initiative demonstrates how integrating research with grassroots action can enhance animal health, build farmer capacity, and contribute to sustainable agricultural development. It showcases the power of student innovation and community engagement in solving real-world problems affecting rural livelihoods in Nepal.

Keywords: Newcastle, Broilers, Vaccination, Surveillance, Empowerment

Experimental Breeding of Lenok-*Brachymystax lenok* in the Tengis-Shishged River Basin

Author: Chinbolor Oktyabri

Supervisor: Dr. Oyuntuya Otgon

Institution: Mongolian University of Life Sciences, School of Animal Husbandry and Biotechnology, Mongolia

Abstract

More than 70 species of fish live in our country, and more than 30 of which are useful for hunting or for food. However, a 2005 assessment by the World Conservation Union listed a one quarter of these species are now regionally endangered (Baasanjav, 2001). Therefore, there is an urgent need to create a stable population structure by protecting and breeding game fish.

The Darhad Depression, encompassing the Shishged River basin in Renchinlkhumbe and Tsagaannuur soums of Khuvsgul province in northwestern Mongolia, is a region of stunning nature and rich biodiversity, traversed by fast-flowing rivers that originate from high mountains. The rivers and lakes in this basin have historically been heavily utilized for fishing. The Khogorogt fishing site, established in 1943, was expanded into a fishery plant in 1956, harvesting 120-200 tons of fish annually from 1956 to 1986. However, since the economic transition in the 1990s, overfishing and ecological degradation have led to a sharp decline in fish populations.

On the initiative of the government of Mongolia, a new breeding laboratory for 400-500 thousand salmon-Salmonidae fish was established in 2024 in the Tengis-Shishged Delta of Renchinlkhumbe Soum, Khuvsgul Province (htt). The mother stock of fish was caught under natural conditions and bred artificially, the eggs were cultured in laboratory conditions, and the care of larvae and fry was studied in comparison with environmental conditions. The water temperature during the spawning season for lenok in nature is 6-12<上付>0 <／上付> C, and the laboratory was prepared in advance to simulate the environment in which the eggs would live and monitored regularly. The developmental phase from fertilized egg to fry took 24-37 days depending on water temperature. Our fish breeding experiments and research were 98 percent successful, and on June 27, 2024, more than 197 thousand Lenox-Brachymystax lenok fish fry with a length of 2.4-2.7 cm, capable of living independently, were introduced and naturally restored in the Tengis-Shishged delta of Renchinlkhumbe Soum, Khuvsgul Province. (Otgon, Project Document: Environmental Protection, Fish Propagation, and Tourism Development, 2024)

Keywords: lenok trout, temperature, larvae, fingerlings, juveniles

Group D

Presenters:

Nixon Ombima KEYA, Jomo Kenyatta University of Agriculture and Technology

Alya Husna, University of Al-Azhar Indonesia

Nana SUZUKI, Tokyo University of Agriculture

Chotika PRAROM, Kasetsart University

Chairpersons:

Kentaro Yagyu

Shabrina Afroo

Quality Characterization of Omena (*Rastrineobola argentea*) and its Utilization in School Feeding Program for Community Empowerment and Sustainable Development

Nixon Ombima KEYA

Academic Supervisor: Dr. Florence KYALLO

Jomo Kenyatta University of Agriculture and Technology, Kenya

Abstract

Malnutrition among adolescents remains a critical challenge in Kenya, threatening their physical development, academic performance, and long-term productivity. In response, I initiated the "Omena School Feeding Initiative," a youth led effort to introduce omena. Omena (*Rastrineobola argentea*), is a small pelagic fish native to Lake Victoria, and an important source of **dietary** proteins for consumers in Kenya. The action-based project included awareness campaigns, student surveys, nutritional and microbial safety assessments, cooks training, and ultimately the incorporation of omena into meals. These was conducted in 4 counties in Kenya, namely; Nairobi, Makueni, Homabay, and Murang'a counties. Omena samples were collected from open markets (2), and school kitchens (4). Microbial, and nutritional analysis were performed using standard analytical methods. Microbial results showed that omena consumed in schools were mostly safe for consumption having contamination less than critical limits of log <0 for stewed omena. However, this was not the case for deep-fried samples from markets which showed contamination greater than critical limits from the various market sites. Nutritional results revealed significant variations ($p < 0.05$) in the nutritional composition of omena from different sources. However, it was noted that omena is a valuable safe food source high in essential nutrients required for the growth and development of adolescents i.e. crude protein content in stewed omena ranged from 19.3% to 23.75%, while crude lipid content varied from 5.4% to 14.29%. Mineral analysis indicated significant levels of calcium, iron, and zinc in omena samples. Notably, stewed omena from one sample (i.e., School 3) exhibited the highest calcium content (3669.3 mg/100g). Furthermore, deep-fried omena from Market 2 exhibited the highest iron content 6.481 mg/100g. The initiative empowered school communities with both knowledge and access to a locally available protein source, improved students' nutritional intake, and created a sustainable linkage between local producers and schools. This documents how youth led-innovations, rooted in science and guided by community needs, can advance food security, nutrition, and sustainable development from the grassroots.

Keywords: Omena, Deep-fried, Stewed, Sun-dried, Nutritional composition

Implementation of Sanitary Hygiene, Halal Certification, and Social Media Utilization to Increase the Productivity of Chicken Slaughterhouses in Rural Areas

Alya Husna, Shalwa Destirana

Academic Supervisor: Alina Primasari

University of Al-Azhar Indonesia, Indonesia

Abstract

The increasing demand for halal-certified products in Indonesia presents a major challenge for rural micro-enterprises, particularly chicken slaughterhouses that often lack the infrastructure, knowledge, and resources to comply with halal certification requirements. This community service program aimed to enhance the capacity of "Chicken Slaughterhouses Cari Berkah" in Malingping, Banten, Indonesia through a student-led initiative that integrated sanitation hygiene improvement, halal certification preparation, and digital marketing empowerment. Conducted from June to October 2024, the program was implemented in five stages: orientation and halal certification guidance, training on the Halal Product Guarantee System (SJPH) and halal slaughtering techniques, application of digital tools, documentation assistance, and evaluation.

The program significantly improved hygiene and sanitation practices, with post-program assessments showing nearly 100% compliance in the use of personal protective equipment (PPE) and workplace cleanliness. Knowledge and attitude scores related to sanitation also rose from 20/100 and 60/100 to 80/100 and 100/100 respectively, reflecting successful knowledge transfer. Infrastructure upgrades were completed, including better zoning, water access, and evisceration tools. SJPH compliance increased from 10-50% to full implementation, demonstrating improved halal assurance practices. Additionally, the partner established Instagram and WhatsApp Business accounts, increasing product visibility and digital market access.

Beyond technical improvements, the initiative also contributed to economic resilience, social awareness, and environmental sustainability in the community. Key challenges included low initial awareness of halal standards and limited digital literacy, which were addressed through inclusive training and mentoring. Overall, the program aligns with the ISS 2025 theme, "Youth Innovation and Community Empowerment for a Sustainable Future," by showcasing how student innovation can drive meaningful change in rural settings. The success of this initiative offers a scalable model for other slaughterhouses, with future prospects including the integration of waste processing technologies and broader digital marketing collaborations.

Keywords: Halal Certification, Sanitation Hygiene, Chicken Slaughterhouse, Community Empowerment, Digital Marketing

The Power of 20 Yen: Student Actions Bridging Hunger and Overnutrition

Nana SUZUKI
TFT × nodai

Academic Supervisor: Prof. Kazuo HATTORI
Tokyo University of Agriculture, JAPAN,

Abstract

TFT × nodai is the Tokyo University of Agriculture branch of the non-profit organization Table For Two (TFT), and has been active since 2010. Our activities address the global challenge of the "double burden of malnutrition," where hunger and overnutrition coexist, through accessible food-related actions. This worldwide issue has serious impacts on public health and socio-economic development, requiring immediate and comprehensive responses at both local and international levels. TFT is an international support program through which 20 yen from each designated meal purchased is donated to provide school lunches to children in developing countries. To deepen understanding of this initiative and expand participation, we actively develop collaborative programs beyond campus boundaries, aiming to connect global challenges with local communities. One of our representative initiatives is the vegetable dyeing workshop that utilizes food waste such as onion skins. Held in collaboration with Kawasaki City and corporate partners, the workshops are led by student instructors who clearly explain the relationship between plant pigments and nutrition to children and their guardians, while introducing the concept of "sustainable fashion" through hands-on dyeing activities. The workshops have received highly positive feedback, with many participants reporting increased awareness of sustainability and food waste issues. Furthermore, a portion of the participation fee (20 yen) is donated to school lunch programs, creating an opportunity for participants to enjoy contributing to a sustainable society. These activities provide meaningful educational experiences not only for participating children and families, but also offer students opportunities to actively engage with social issues through planning and managing community-rooted projects. Moving forward, we aim to enhance sustainability education and broaden our impact by strengthening partnerships with local governments and businesses. This presentation will share our outcomes—including the donation of over 2,000 school lunches in fiscal year 2024—challenges faced, and future prospects. We will discuss how student-led, community-based actions can contribute to realizing a more sustainable and equitable society.

Keywords: nutritional disparity, food education, student-led initiative, sustainable fashion

CAN CAMP: Fostering Sustainable Development and Income Generation through Local Food Innovation in Thailand

Chotika PRAROM

Academic Supervisor: Dr. Phurit Ngoenchai
Kasetsart University, Thailand

Abstract

Thailand's agricultural sector, a cornerstone of its economy, has faced many challenges including declining crop prices, rising production costs, and limited market access, leading to agricultural waste and farmer poverty. To address these issues, many local farmers have formed Small and Micro Community Enterprises (SMCEs), aiming to enhance their income through value-added product development. In August 2023, I was given the opportunity to lead the project "35th CAN CAMP" − a voluntary rural development camp run by students in the Faculty of Agro-industry, Kasetsart University, where I proposed shifting the focus from construction-based volunteer work to product development volunteering. To address the aforementioned problems, and leverage students' expertise in food and non-food product innovation.

Through collaboration with a local SMCE in Chanthaburi province, 86 camp participants were organized into three teams: product development, packaging design, and education. The product development team addressed the issue of oversupply and low-value mangosteen produce by developing two innovative, value-added products: mangosteen drinking jelly and mangosteen gummy. The packaging design team supported the initiative by creating appealing and practical packaging, while the education team engaged with local students, sharing knowledge about product innovation from local herbs through interactive workshops. As a result, this camp project gained significant interest from students in the Faculty, receiving 184 applications. Post-camp feedback indicated that participants developed a stronger academic passion. The project successfully provided the SMCE with new product opportunities to help address oversupply and market access challenges, also fostering local students' awareness of the value of local resources.

In November 2024, CAN CAMP continued to focus on community-centered product development and student engagement. However, the future efforts should include collaboration with Kasetsart University, specifically scaling up production via *FoodInnopolis at Kasetsart University* and expanded sales through *The Premium @ KU*. By fostering these connections, CAN CAMP can further strengthen its role as a model for sustainable development through student-community collaboration to address agricultural challenges in Thailand.

Keywords: Product development, innovation, SMCE (Small and Micro Community Enterprise)

Group E

Presenters:

NGUYEN Trieu Dat, Nong Lam University, Ho Chi Minh City
Bernadette A. SAPICO, University of the Philippines Los Baños
Ovini Wijesooriya, University of Peradeniya

Chairpersons:

Ryusei Sato
Shaski Ghina Nurfauziyah

DESIGN, MANUFACTURING AND TESTING A SUBSOILER – ROTARY TILLAGE

NGUYEN Trieu Dat, NGUYEN Huynh Truong Gia, NGUYEN Tran Tinh Khoi, NGUYEN Duc Khuyen

Academic supervisor: Dr. NGUYEN Huynh Truong Gia

Nong Lam University, Ho Chi Minh City, Vietnam

Abstract

This research investigates the comprehensive design, development, and practical applications of an integrated subsoiler-rotary tillage machine, engineered by the Faculty of Mechanical Engineering and Technology at Nong Lam University. This advanced agricultural implement was conceived as a pivotal component of a broader initiative aimed at enhancing the mechanization and modernization of agricultural processes in Vietnam, specifically tailored to meet the escalating demands of sustainable farming within the nation's diverse agricultural landscape.

The study critically focuses on the machine's profound contribution to **agricultural innovation,** specifically addressing crucial operational challenges inherent in traditional farming, such as meticulous **soil preparation**, judicious **resource optimization**, and significant improvements in **labor efficiency**. Conventional methods often necessitate multiple passes for deep soil loosening and subsequent seedbed preparation, leading to increased fuel consumption, the formation of detrimental compacted soil layers, and substantial demands on human labor. Our integrated design seeks to overcome these limitations by combining the deep penetration capabilities of a subsoiler to break up hardpans with the fine pulverization and mixing action of a rotary tiller, thereby streamlining field operations into a single, highly efficient pass.

The machine's manufacturing process involved precision engineering and rigorous material selection, prioritizing durability and performance under demanding field conditions. Extensive field trials were conducted in Tay Ninh, Vietnam, specifically within sugarcane cultivation areas, to thoroughly analyze the machine's operational performance, efficiency, and overall effectiveness. By meticulously analyzing the machine's robust design principles, its observed performance metrics during testing, and invaluable feedback gathered directly from these real-world field applications, this research provides critical insights into the transformative potential of advanced agricultural technologies. This integrated subsoiler-rotary tiller represents a significant leap forward, promising not only enhanced productivity but also a more environmentally conscious approach to farming, directly supporting the principles of **sustainable farming** in sugarcane cultivation and offering a viable pathway towards a more mechanized and efficient agricultural future.

Keywords: Agricultural innovation, Soil preparation, Labor efficiency, Sustainable farming

Empowering Smallholder Farmers through Youth-Led Recommendations for Post-Harvest Loss Reduction of Banana

Bernadette A. SAPICO

Academic Supervisor: Asst. Prof. Charis Mae T. NERIC

University of the Philippines Los Baños

Abstract

Postharvest losses (PHL) of banana (Musa spp.) pose a significant threat to agricultural sustainability and smallholder farmers' income and livelihood, especially in the Philippines, one of the world's top banana producer and exporter. Bananas are highly perishable fruit with farm-level postharvest losses averaging up to 30%, mainly due to improper postharvest handling. This youth-led initiative focuses on empowering smallholder banana farmers though practical recommendations to reduce and minimize postharvest banana losses. The author conducted a farm-level interview of three small-scale banana farms in Sta. Maria, Laguna, complemented by dialogues with local agricultural and extensive literature reviews. Findings revealed that most of the postharvest losses were caused by physical damage such as cuts to fruit itself, improper packaging, and lack of storage facilities. Through collaboration with the local agriculturist in the province and volunteers, youth-led interventions were developed, including adjusting harvest maturity (15-18 months), careful dehanding with proper tools, shaded sorting and hauling areas, and improved packaging using wooden crates lined with banana leaves and newspapers for lesser physical damage before local market transportation. These measures aim to preserve fruit quality, extend shelf-life, and increase market value of bananas. Farmers' feedback showed a general agreement on the practicality and positive impact of these recommendations. It was observed that it is efficient to harvest during the morning as it makes the work easier before the sun reaches its peak and the use of proper tools and incision had good effects on minimizing the cuts on the bananas. Also, pruning was suggested as dried leaves, suckers, and weeds could be seen and causes water and nutrient competition hindering the bananas from better growth. On the other hand, allocating more resources for pruning and packaging (wooden crates) is a challenge for the farmers because of the difficulty in circulating the money hence, a request letter was recommended by the municipal DA office, but such conditions must be met first. Finally, due to higher input costs and not enough market for this, they opposed the idea of turning the bananas into value-added products.

Keywords: postharvest losses, bananas, food security, sustainable agriculture

MealBridge | Bridging the Gap between Food Surplus and Need

Ovini Wijesooriya

Academic Supervisor: Dr. Geeshani Somaratne

University of Peradeniya, Sri Lanka

Abstract

Sri Lanka faces the dual challenge of food waste and food insecurity, with significant portions of edible food discarded while many communities suffer from malnutrition. According to recent data, approximately 30% of the Sri Lankan population experiences food insecurity, while 30-40% of food production is wasted annually. MealBridge addresses these interconnected issues through a web-based platform designed to redistribute surplus food from households, bakeries, hotels and other food distribution organizations to individuals and communities in need. This youth-led innovation implements a structured system involving direct pickups and volunteer delivery to ensure that excess food reaches those who need it most. The platform incorporates user registration for donors, volunteers, and recipients; a food posting system with quality assurance measures; notifications and delivery coordination; an admin dashboard with impact tracking; leaderboard for volunteer participation; and comprehensive safety guidelines. The technical architecture utilizes React, Typescript and Firebase to create a responsive, accessible interface for all stakeholders in the food redistribution chain. Beginning with a pilot program within the university environment itself, MealBridge aims to expand through volunteer networks and NGO partnerships, eventually implementing automated matching between donors and recipients and onboarding logistics partners for broader reach. The initiative directly contributes to multiple Sustainable Development Goals, including Zero Hunger, Responsible Consumption and Production, No Poverty, Sustainable Cities and Communities, and Climate Action. By tackling food waste and food insecurity simultaneously, MealBridge exemplifies how youth-led innovations can empower communities for a sustainable future, promoting a circular food economy that benefits both people and the environment while fostering community involvement and social responsibility among Sri Lankan youth. The project demonstrates how digital solutions can bridge gaps in resource distribution while creating meaningful engagement opportunities for young people committed to positive social change.

Keywords: food redistribution, food waste, food insecurity, community empowerment, youth innovation

Group F

Presenters:

Nurul Fauzi, IPB University, Indonesia
Nguyen Thuy Quynh, Vietnam National University of Agriculture
Luisa Lopes de MELLO, University of São Paulo
Ponchanok DATMANEE, Thammasat University

Chairpersons:

Khom Channa
Edzar Febiandra Nurwahyudi

FIT-Triple Action as a Capacity Building Program to Increase Community Preparedness in Local Disaster Management Independence

Nurul Fauzi

Academic Supervisor's name: Nurul Hidayati, S.E., M.Si.

IPB University, Indonesia

Abstract

Indonesia, situated in the Pacific Ring of Fire, is highly prone to earthquakes due to the convergence of three major tectonic plates. West Java, particularly Sukabumi, is one of the regions with the highest seismic activity on Java Island, attributed to both megathrust zones and shallow crustal faults like the Cimandiri Fault. The 2022 Cianjur earthquake, which caused 268 fatalities and extensive damage, underscores the urgent need for effective community-based disaster mitigation strategies. Unfortunately, many communities, including those in Kelurahan Cikundul, lack sufficient knowledge, skills, and infrastructure to respond adequately to such disasters. this youth-led program applies a Community-Based Management (CBM) approach to build disaster resilience. The program consists of three key actions: FIT-Action T (Training and Capacity Building), FIT-Action I (Infrastructure and Facility), and FIT-Action F (Food Emergency). FIT-Action T enhances local disaster knowledge through education, training, and simulation, resulting in a 13.8% increase in disaster preparedness knowledge and a 90% behavior change rate. FIT-Action I focuses on the creation of a citizen-led disaster response organization, supported by a village decree, and the installation of evacuation signs and a designated gathering point. FIT-Action F empowers communities to produce banana-based food bars as emergency food supplies, utilizing local commodities to meet daily energy needs. These activities not only strengthen disaster response capabilities but also promote women's empowerment and food security. To ensure program sustainability, a Pentahelix collaboration agreement involving academia, business, community, government, and media has been established, officially positioning Kelurahan Cikundul as a disaster-resilient model village. The FIT-Triple Action program demonstrates how student-driven innovation can contribute significantly to the creation of resilient, sustainable communities in disaster-prone areas.

Keywords: Earthquake mitigation, Emergency-food supplies, Disaster resilience

Empowering Woman in Disaster Prevention in Vietnam: Lessons Learned from Typhoon Yagi

Nguyen Thuy Quynh
Tran Minh Tu, Nguyen Duong Xuan Mai, Lê Quốc Khánh

Academic Supervisor; Assoc.Prof. Vo Huu Cong
Vietnam National University of Agriculture, Viet Nam

Abstract

Integrating gender perspectives into disaster risk reduction (DRR) frameworks is increasingly recognized as essential for building effective, equitable, and inclusive disaster response mechanisms. This study critically examines the empowerment and participation of women in DRR activities in Vietnam, using Typhoon Yagi (2024) as a focal case study. Employing a comprehensive mixed-methods approach, the research includes semi-structured interviews with 30 women directly affected by the typhoon, along with 10 interviews with local officials, supplemented by two focus group discussions to triangulate findings. Quantitative and qualitative data reveal that while 78% of women assumed primary caregiving responsibilities during the response phase, only 18% reported active participation in community-level disaster preparedness meetings. These figures were systematically collected from structured interviews and validated through field observations. Major barriers to women's full participation in DRR included entrenched cultural norms around traditional gender roles, the heavy burden of caregiving responsibilities, and limited access to formal decision-making spaces. Additionally, some women cited psychological barriers such as fear of public speaking, lack of formal invitations, and childcare duties.

Despite their limited formal representation, women's informal social networks played a critical role in disseminating information and providing mutual support, as confirmed through focus groups and fieldwork. To amplify this vital voice, our student research group conducted life-history interviews, organized community capacity-building workshops, and developed multimedia storytelling initiatives to elevate women's roles in disaster governance. Moreover, we utilized authoritative sources, including reports from the Vietnam Disaster Management Authority and the World Bank, to ensure the accuracy and reliability of research data. Findings underscore that empowering women in DRR is not only a matter of gender justice but also a practical necessity to enhance community resilience. Consequently, the study proposes policy-level and grassroots interventions to promote gender-responsive DRR in Vietnam. By centering marginalized voices—especially women—this project contributes meaningfully to the ISS 2025 theme of Community Empowerment and Social Inclusion.

Keywords: Women's Empowerment, Disaster Prevention, Typhoon Yagi,
Gender Mainstreaming, Lessons Learned, Disaster Risk Reduction, Vietnam.

Sustainable Approaches for Pruning Residues Management and Community Empowerment

Luisa Lopes de MELLO
USP Recicla

Academic Supervisor: Adriana Maria NOLASCO
University of São Paulo, Brazil

Abstract

Urban forests provide essential ecosystem services but generate large volumes of pruning residues, therefore posing management challenges mainly due to their heterogeneity and disposal costs. At Luiz de Queiroz College of Agriculture of the University of São Paulo (ESALQ/USP), pruning residues were historically discarded in open-air sites without a defined utilization strategy. The *Ybirá Project*, currently integrated into the USP Recicla program, was established in 2021 to promote circular economy solutions for this waste. It promotes a comprehensive approach to pruning waste management led by students actions, integrating social, economic, and environmental benefits while fostering academic engagement and awareness of responsible waste handling. Since its creation, the project has involved six internship students to drive innovative repurposing strategies to promote the valorization of pruning waste. In August 2024, the author assumed sole leadership of the project and expanded its scope to include waste use quantification, sawdust composting, and educational environmental activities that repurpose pruning waste as a resource, among other initiatives. Overall results include the production of benches from removed trees - enhancing campus leisure areas while preventing carbon emissions - and the production of wood products such as keychains and educational toys, often integrated into environmental education initiatives. The project has also supported local agriculture by providing mulched pruning residues for soil coverage, contributing to agroecological practices. Another significant outcome is the impact beyond ESALQ/USP, engaging local municipalities and the local population in sustainable organic waste management discussions, especially in the city of Piracicaba. By preventing open-air burning, reducing landfill disposal, capturing carbon in durable products, and strengthening local agricultural systems, these actions align with sustainable development goals and serve as a replicable model for other institutions and municipalities. These findings highlight the potential of pruning residues as valuable resources, reinforcing the importance of innovative strategies for transitioning toward a low-carbon, circular economy.

Keywords: Pruning waste, Circular economy, Sustainability, Environmental education

Exploring the Potential of Biocontrol Agent Against Root and Stem Rot Disease in Durian (*Durio zibethinus*)

Ponchanok DATMANEE

Academic Supervisor: Asst.prof.Dr. Wilawan CHUABOON

Thammasat University, Thailand

Abstract

Durian Root and Stem Rot Disease (DRSRD), caused by *Phytophthora palmivora*, is a major concern affecting durian production in Thailand, especially during the rainy season when humidity levels are high. Although chemical fungicides are commonly used, their limited effectiveness, environmental impact, and safety concerns have led to increasing interest in sustainable alternatives. This study aimed to isolate and evaluate bacterial strains with potential for biological control of *P. palmivora*. A total of 30 samples including leaves, rhizosphere soil, and organic matter beneath infected durian trees were collected from orchards in Chanthaburi Province. Seventeen fungal isolates were obtained, with the MNP13 strain demonstrating the highest pathogenicity. Concurrently, 196 bacterial isolates were recovered from the same sample sources and grouped into eight categories based on colony morphology on Nutrient Glucose Agar (NGA). Selected isolates were screened for antagonistic activity against *P. palmivora* MNP13 using the dual culture method under a Completely Randomized Design (CRD) with five replications. The results showed that isolates NJTU05, NJTU10, and NJTU13 significantly inhibited fungal growth, with NJTU05 achieving the highest inhibition rate at 76.66%, surpassing the efficacy of the chemical fungicide metalaxyl 80% WP. Molecular identification through 16S rRNA gene sequencing revealed that NJTU05 shared 99.70% similarity with *Brevibacillus formosus*. These findings indicate that local bacterial strains, particularly NJTU05, hold promise as effective and environmentally friendly biocontrol agents for managing durian root and stem rot disease. Their application in real cultivation systems offers a viable alternative to chemical methods, contributing to improved crop sustainability, reduced chemical dependency, and enhanced resilience of durian farming systems in Thailand.

Keywords: Beneficial Bacteria, Root and Stem Rot, Durian, *Phytophthora palmivora*

Group G

Presenters:

Caden Wade, Michigan State University

Sarah Firjani Hanisah, IPB University

Kiran, Chaudhary Charan Singh Haryana Agricultural University, Hisar (Haryana)

Jack Douglas, University of Western Australia

Chairpersons:

Michael Ryan

Andi Kavi Satyagir

Addressing Food Security through Farmers Market Engagement and Agricultural Research

Caden Wade

Academic Supervisor; Rhonda Crackel

Michigan State University, United States of America

Abstract

This manuscript examines the urgent agricultural and food security challenges faced by both rural Wyoming and urban Michigan and highlights issues including food apartheids, inefficient irrigation practices, and the overapplication of commercial fertilizers. These challenges demand innovative solutions with an eye towards sustainability to improve food access and environmental stewardship. My involvement with the Westside Lansing Farmers Market (Lansing Urban Food Project, 2023), and research at Michigan State University has been dedicated to addressing these inequities practically and scientifically.

I actively volunteer at the Westside Lansing Farmers Market, which provides locally grown food to lower-income communities, working to expand vendor participation and enhance social media presence. Through this service, many people without easy access to grocery stores have received local goods and food from trusted farmers without the need for excessive transportation.

Research in agricultural management and resource conservation has been my core focus, with projects centered on optimizing irrigation methods, reducing disease abundance in soybean crops, and improving fertilizer efficiency through solubility analyses. My findings indicate that daytime irrigation increases disease pressure in soybeans compared to nighttime watering, emphasizing the importance of strategic water management and the opportunity to save money on electrical pump utility costs. Additionally, studies on leaf wetness sensors demonstrate that low-cost humidity sensors can provide nearly the same accuracy, offering a cheaper alternative for farmers with constricting resources.

Despite challenges such as a reduction in research funding and available finances, competition with other farmers' markets, and the difficulties of holding student participation and donor funding, my efforts contribute to a larger goal of agricultural sustainability and regeneration. By combining education, community, and research, I work towards supporting a future where farming is both responsible and economically viable, ensuring the longevity of food systems and natural resources.

Keywords: Experimentation, Sustainability, Teaching, Volunteering

Community Nutrition Advocacy: Youth-Driven Policies and Actions for Stunting Prevention Through Ecological Balance Perspective and Sustainable Food Security Practices

Sarah Firjani Hanisah

Academic Supervisor: Resa Ana Dina, S. KM, M. Epid

IPB University, Indonesia

Abstract

Despite significant global advancements in child survival rates, stunting continues to be a serious nutrition issue in Indonesia, with 19.8% of children under five affected as of 2024, surpassing the threshold set by the 2029 Indonesia's National Medium-Term Development Plan. The effects of stunting are severe, linking to cognitive impairments, diminished lifetime earning potential, and considerable economic impacts for the country. In response to this challenge, a student-led project has been established to integrate ecological frameworks and sustainable food security practices into a community-based nutrition advocacy initiative in the Dramaga Sub-District, Bogor Regency, West Java, Indonesia. During September and October 2023, a multidisciplinary group of young researchers used a participatory approach to conduct field assessments that involved local cadres, stakeholders, and community members. These assessments revealed significant obstacles within three key areas of food security: availability, accessibility, and utilization. The findings directly informed the development of a detailed policy brief, as the youth team analyzed the primary data to identify specific gaps and needs within the community. This evidence-based approach allowed for the formulation of targeted, context-sensitive recommendations addressing the root causes of stunting. The policy brief, grounded in local realities and community insights, was then presented at the 2023 UNESCO－Tanoto Foundation Knowledge Summit, which convened more than 300 stakeholders from academia, policymaking, and community organizations. The presentation aimed to raise awareness of stunting and promote youth-led, data-driven solutions that uphold sustainability and equity. By incorporating ecological principles, it aligns with the goals of environmental sustainability while enhancing food and nutrition outcomes. This initiative reflects the overarching theme of the 24th International Students Summit (ISS), "Youth-led innovations and community empowerment towards a sustainable future", and serves as a model that can be replicated in other regions seeking to develop integrated, youth-driven strategies to combat malnutrition and foster healthier, more resilient communities.

Keywords: community nutrition, ecological approach, food security, policy brief, stunting prevention

Sustainable Nutrition: Millets As A Measure To Prevent Undernutrition And Community Empowerment

Kiran

Academic Supervisor: Dr. Manjunath S. Hurakadli

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Abstract

Despite being one of the world's fastest-growing economies, India continues to face significant challenges in combating undernutrition, a deep rooted public health concern. Undernutrition, particularly among women of reproductive age (15-49 years), has far-reaching consequences not only on the health of individuals but also on societal well-being, national development and the health of future generations. Poor nutritional status in women directly impacts maternal health and increases the risk of delivering undernourished children, thereby perpetuating the cycle of malnutrition across generations. Additionally, the economic repercussions of undernutrition are profound with reduced productivity, cognitive deficits, and learning impairments hinder economic development, while escalating healthcare costs further burden the economy. Millets often referred to as "nutri-cereals" due to their rich composition of macro and micronutrients, dietary fibre, as well as bioactive compounds, offer a promising solution to this issue. These grains are easily digestible, low in acidity, and pose minimal allergy risks, making them an ideal dietary intervention to combat malnutrition. In response, I have initiated several community-based awareness programs in rural areas of Haryana, focusing on the reintroduction and promotion of millet-based diets. These programs have aimed not only at educating women about the nutritional benefits of millets but also at empowering them with the skills to create nutritious recipes. Moreover, these initiatives have encouraged the entrepreneurial spirit among rural women, inspiring them to start small-scale millet-based businesses, thus generating income and promoting economic empowerment. By educating women, I have spread awareness not only in families but in communities and societies about the health risks of undernutrition. Increased millet cultivation, coupled with these nutritional interventions, holds the potential to shift agricultural practices from intensive farming towards more sustainable, ecologically friendly methods. By addressing both nutrition and economic empowerment, these efforts contribute to improving health outcomes while fostering sustainability at the grassroots level.

Keywords: Undernutrition, Millets, Sustainable Diets, Women empowerment, Community Nutrition Education.

‘Goals’ in Mental Health: How sporting clubs can improve mental health and social capital in farming communities.

Jack Douglas

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Abstract

Australia already has a strong reputation as a country of farmers that leads in sustainability practices from the agricultural industry. However, there is a significant issue in the depopulation and erosion of rural communities, which are critical for the mental health of farmers and other members of the farming community, with consequences such as suicide rates for those in rural communities being twice as high as those in major cities. This essay looks at sporting clubs as builders of community in rural towns and as structures to strengthen mental health of players and supporters. Through both qualitative and quantitative data analysis, the reports studied show how the large majority of rural communities support rural sporting clubs and use it as a rallying point to build community relationships and social structures around. Further, it has definite mental health values for players but sees limited implementation initiatives throughout clubs. Moreover, despite considerable desire for further mental health initiatives in rural clubs, there are still major fears of condemnation and outcasting, due to speaking out about problems with mental health is still considered taboo. Solutions to these issues likely include further investment from sport or government initiatives into rural clubs, which already work under tight budgets and often don’t have the funds to pursue community and health initiatives, as well beginning the conversation with people who are known in the sporting or rural community, as opposed to typical seminar speakers. Overall, this essay presents sporting clubs as viable solutions to help battle the dying rural communities and improve upon the mental health crisis facing Australian farmers today.

Keywords: Mental Health, Sporting Clubs, Rural Australia, Social Capital

24th ISS Poster Presentations

SERUNI: SOCIOPRENEURSHIP-BASED COMMUNITY EMPOWERMENT TO STRENGTHEN SUSTAINABLE FOOD SECURITY IN TEGAL WARU VILLAGE

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Abstract

Tegal Waru Village, Ciampea District, Bogor Regency, has great potential in tuber-based agriculture. However, suboptimal cultivation practices, limited post-harvest processing, and unstable market prices, which can even drop to IDR700/kg, have hampered farmers' welfare. To answer these challenges, the Semarak Bumi Tani (SERUNI) program was initiated by the Student Executive Board of the IPB Student Family (BEM KM IPB) through the Division of Agriculture and Villages, to empower farmers, increase productivity, and creating added value to local products through a sustainable sociopreneurship approach, in line with Sustainable Development Goals (SDGs) point 1: No Poverty, and point 2: No Hunger. This program consists of two main activities, namely the Opening Ceremony & Agritalks as a multi-stakeholder forum to identify field problems and formulate applicable solutions, and GEMPARAN (Community Movement to Eat Healthy and Environmentally Friendly Food), which includes the distribution of IPB 3S rice seeds, agricultural medicines, and promotion of cassava processed food diversification. These activities encourage collaboration between farmers, students, and scholars, generate strategies to improve farming practices, and encourage product diversification to stabilize farmers' income. By integrating participatory approaches and sociopreneurship principles, SERUNI has strengthened the resilience of village agriculture, empowered the community, and improved the livelihood of farmers.

Keywords: empowerment, SDGs, sociopreneurship, Tegal Waru, tubers.

THE BUTTERFLY EFFECT OF YOUTH CLIMATE ACTION: LESSONS FROM THE CARBON VLOGGER WORKSHOP AND CHALLENGE

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Abstract

Carbon Vlogger Workshop & Challenge 2025 is an educational and digital campaign program designed to raise awareness and promote real climate action among youth, particularly by reducing individual carbon footprints. The initiative featured an online workshop covering climate change issues and low-carbon lifestyles, followed by a video challenge where participants created educational content for social media. A total of 30 participants from across Indonesia participated in the workshop, with evaluation results showing an average increase in understanding of 23.5% based on pre- and post-tests. The program produced 13 real-action videos, showcasing activities such as sustainable lifestyle, reducing plastic use, and reducing their carbon footprint. These videos were shared online and reached over 20,000 viewers. To attract and motivate youth participation, IDR1.4 million was awarded to the best video creators. Using the AIDA model (Attention, Interest, Desire, Action), the program successfully encouraged active engagement and behavioural shifts toward environmental issues. More than just a one-time event, the workshop and challenge were designed as a butterfly effect initiative where small individual actions spark broader awareness and inspire peers to participate in climate solutions, creating a long-term effect. This project demonstrates how digital media and community-based learning can foster youth climate leadership. Through the @mycarbonsteps community, it continues as a platform for inclusive and sustainable climate action.

Keywords: climate education, digital campaign, environmental communication, low-carbon lifestyle, youth engagement.

EFFECTIVENESS OF MANGROVE CONSERVATION STRATEGIES THROUGH THE LEVEL OF COMMUNITY PARTICIPATION IN MUNDU PESISIR VILLAGE

Gilang Satrio, Amanda Putri Auliansyah, Choirunnisa Syahra Nabila, Eben Haezer Lemuel, Pitoyo, Evlin Yesika Tanjung, Nadia Putri Dani

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Abstract

Konservasi dan Survey Lapang Kelautan (KONSURV) 2025 aimed at preserving and protecting mangrove, identifying surrounding environmental issues, and increasing local community enthusiasm and awareness in maintaining the mangrove ecosystem in Mundu Pesisir Village, Mundu District, Cirebon Regency. KONSURV 2025 was conducted on 25-26 July 2025, and included various activities, such as an educational seminar, mangrove workshop, mangrove planting, and coastal cleanup. The results of the academic seminar showed a 76.7% increase in participants' scores from the pre- and post-seminar tests, with the remaining participants (23.3%) maintaining their scores and no decrease in scores. These results indicate an improvement in students' understanding of mangrove characteristics and their role in protecting coastal environments. The mangrove workshop discussed collaborative mangrove management among stakeholders and strengthening community roles in conservation efforts. The workshop was attended by 40 participants, including village officials, sponsors, teachers, scout volunteers, and students. Mangrove planting was carried out using a local method, providing a spacing of 1 meter for each seedling. KONSURV 2025 successfully planted 1,000 Rhizophora mucronata seedlings over 2,000 square meters. KONSURV 2025 collected 192.4 kg of waste, divided into plastic (98.5%), glass (0.3%), and fabric (1.2%) during the coastal cleanup activity. The results of the KONSURV 2025 activities can serve as a reference for the sustainable development of coastal environmental conservation programs and coastal tourism sectors based on the local wisdom of the Mundu Pesisir village community.

Keywords: conservation, environmental, mangrove, Mundu Pesisir

DEVELOPMENT OF DIMSUM FROM TILAPIA (*Oreochromis niloticus*) AS A SUPPLEMENTARY FEEDING PRODUCT TO HELP REDUCE STUNTING IN BUBULAK SUBDISTRICT, BOGOR, WEST JAVA, INDONESIA

Nain Azizah, Dwi Harianto, Mumtaziya Saliha, Nasrul Hidayat, Ning Ayu Zukhruf, Putri Fitria, Salma Prameswari Nursaadah, Salma Rana

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Abstract

Stunting remains a significant public health issue in various regions of Indonesia, including Bubulak Subdistrict, Bogor City, West Java. One contributing factor is the limited access to nutritious, affordable supplementary foods that align with local dietary habits. Tilapia (*Oreochromis niloticus*) is a potential and economical source of animal protein that can be processed into nutritious products. This activity focused on empowering members of the Bubulak Subdistrict PKK (Family Welfare Empowerment Team) to produce tilapia fish dimsum as an alternative supplementary food for children at risk of stunting. The program began with a presentation session, followed by a hands-on demonstration of dimsum preparation using ingredients such as tilapia, chicken, tapioca flour, cornstarch, salt, broth powder, sesame oil, soy sauce, oyster sauce, carrots, scallions, garlic, ground pepper, and dimsum wrappers. The resulting dimsum was designed to be appealing to children, easy to prepare, and suited to local tastes. Beyond offering a healthy snack option, this program fostered community engagement and strengthened the role of residents in stunting prevention efforts. This approach demonstrates that utilizing local food resources, combined with community-based empowerment, can serve as a sustainable strategy to address stunting in Bubulak Subdistrict, Bogor City.

Key words: complementary feeding, stunting, tilapia dimsum

SEMBADA: NURTURING CHARACTER AND KNOWLEDGE TO BUILD AN EMPOWERED SUKAWENING VILLAGE

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Abstract

Character education plays a vital role in national development. Sukawening Village, in Dramaga Subdistrict, Bogor Regency, with a population of 9,233 people (2,944 households), faces challenges such as passive economic growth, waste management issues, and poor sanitation. However, the village (holds considerable potential in local commodities, agriculture, freshwater fish farming, and community resources. To address these challenges, PPK Ormawa BEM FEMA 2024 (empowerment program by Student Board of Faculty of Human Ecology) launched the SEMBADA program, establishing seven literacy corners to engage all community groups. The program promotes character education based on the 9 Character Pillars and K4 principles (cleanliness, neatness, health, and safety), aligning with the SDGs: Goals 1 and 2 by enhancing skills and managing MSMEs using local commodities; Goal 3 through education on balanced nutrition, cultivation of medicinal plants (TOGA), freshwater catfish farming, and organic- inorganic waste management; and Goal 14 via environmental conservation education for children and adults. Activities were conducted offline through socialization, workshops, fun learning, and hands-on practice, guided by four empowerment stages: enhance, enable, engage, and empower. Key outputs include curricula and learning modules for each literacy corner, MSME products such as shredded catfish, cassava chips, and cassava brownies, as well as draft village decrees and regulations on waste management. The program improved community knowledge and skills, established local institutions, and initiated empowerment programs. SEMBADA represents a tangible effort to create a prosperous, sustainable, and character-based Sukawening Village by leveraging local potential to address social, economic, and environmental challenges.

Keywords: character education, community empowerment, literacy corners, local potential, SDGs

PANCA LUCTA UTILIZATION OF HOUSEHOLD WASTE BASED ON "ZERO WASTE" IN INCREASING ENVIRONMENTAL AWARENESS THROUGH PARTICIPATORY LEARNING AND ACTION

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Abstract

Household waste is a significant environmental problem that impacts the quality of the environment and public health. Poor management leads to soil, water, and air pollution, ultimately decreasing the quality of life. Through the Participatory Learning and Action approach, Panca Lucta aims to improve skills, knowledge, and environmental awareness by emphasizing experiential, group discussions, and hands-on learning with target groups. This approach helps develop solutions that can be applied across different parts of society. Panca Lucta seeks to enhance the target group's skills, knowledge, and environmental awareness by converting household waste into economically valuable products through participatory processing. Panca Lucta is carried out in five stages: 1) Find the Ambition, which aims to build enthusiasm and awareness through activities like making organic fertilizer from banana peels and sugarcane pulp; 2) Upskilling Step, which nurtures creativity in waste management via the production of aromatherapy candles from used cooking oil; 3) Autonomy Step, which promotes independent decision-making through Focus Group Discussions (FGD) to determine which products to develop; 4) Execution Step, which guides from FGD outcomes in the production process to finished products, such as plant pots; 5) Enforce the Step, which strengthens entrepreneurial skills, labeling, and product marketing through e-commerce. According to the Likert analysis results from pre-test and post-test, there was a significant increase in household waste management knowledge by 59.12%, attitude by 67.74%, and skills by 68.82%. Panca Lucta has demonstrated its effectiveness in sustainably empowering community groups using the quadrahelix sustainability model.

Keywords: community empowerment, environmental conservation, household waste management, participatory learning and action

RAPID ASSESSMENT OF SEA TURTLE DISTRIBUTION AND ANALYSIS OF VILLAGE-BASED COMMUNITY CONSERVATION OPPORTUNITIES IN SUPPORT OF THE MEASURED FISHING POLICY (PIT) IN BURU ISLAND

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Abstract

The Himiteka IX Expedition was conducted in Buru Island, Maluku, to assess sea turtle distribution and community-based conservation opportunities supporting the Measured Fishing Policy (*Penangkapan Ikan Terukur*, PIT). The study took place in Fena Leisela and Kepala Madan sub-districts from 30 September to 11 October 2024, involving field observations, nesting habitat mapping, and socio-economic surveys. Four sea turtle species were recorded: leatherback (*Dermochelys coriacea*), olive ridley (*Lepidochelys olivacea*), hawksbill (*Eretmochelys imbricata*), and green turtle (*Chelonia mydas*). Habitat characteristics revealed gently sloping beaches, dominance of medium–fine sand sediment (>90%), and coastal vegetation that supports nest temperature stability. Community understanding of conservation varied, with Fena Leisela showing generally higher awareness than Kepala Madan. Major threats included egg collection, habitat degradation, and coastal pollution. This study recommends strengthening community roles, establishing Marine Protected Areas (MPAs), and integrating environmental education to ensure the sustainability of sea turtle populations and coastal ecosystems in Buru Island.

Keywords: community-based conservation, measured fishing policy, sea turtle conservation

EDUCOTTAGE: EDUCATION COMMUNITY-BASED VILLAGE AS A MODEL FOR SUSTAINABLE AQUACULTURE AND AGRO-EDUTOURISM EMPOWERMENT

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Abstract

Since 2022, HIMAKUA (Student Board of Aquaculture Study Program) has continuously implemented youth-led community empowerment through the JARINGKU (*Jaringan Kemitraan Akuakultur*) program in Purwasari and Sukajadi Villages. In 2024, this initiative evolved into *Educottage: Education Community-Based Village,* integrating aquaculture, agriculture, and local culture into a sustainable agrotourism model. Activities focused on optimizing upstream-downstream value chains for Nile tilapia farming through the *mina padi* system, producing 5,344 kg/ha rice and 985 kg/ha fish, generating double income for farmers. Downstream, zero-waste innovations produced value-added products such as *KuaciKu, AbonKu, DimsumsKu,* and *KrupukKu*. The program successfully fostered 12 independent entrepreneurs, three business groups, and increased community income by 66%. The implementation method involved community surveys, *Focus Group Discussions,* field observations, and in-depth interviews to identify challenges, needs, and local potential. Findings informed the design of a tailored program and a long-term development roadmap. Informal discussion sessions, branded as "*Ngopi: Ngobrolin Orientasi Perikanan Sukajadi",* fostered trust, inclusivity, and participatory design-making. In 2025, the program expanded to develop Sukajadi as a community-based agrotourism village, introducing integrated packages combining *mina padi, mina sayur,* aquaponic strawberries, and cultural attractions. Volunteer regeneration became a key strategy, engaging students and local youth to sustain knowledge transfer and business continuity. This approach strengthened local human resources, preserved cultural heritage, and secured a village food security budget of IDR 100 million for a 4-hectare *padi* area. The *Educottage* model demonstrates how youth-led, participatory innovation can achieve triple income (agriculture, aquaculture, tourism) and triple impact sustainability (economic, ecological, social), providing a scalable blueprint for rural community resilience.

Keywords: aquaculture, community-based village, sustainable development, youth empowerment

MARINE CAMPAIGN 2025: MANGROVE ECOSYSTEM RESTORATION IN MEKAR VILLAGE BEACH, MUARAGEMBONG

Asykorini Shabrina, Nicola Valentino, Bagus Kamal Risuni, Sherlieta Aulia, Syifa Azzahra, Kevin Bayu Pratama, Abednego Hotma Basana Pandeangan, Nadia Izzatan Nufus, Fachry Firdaus Saefulloh, Muhammad Iqbal, Dondy Arafat

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Abstract

Mekar Village Beach, Muaragembong, Bekasi Regency, has experienced significant mangrove ecosystem degradation due to land conversion and erosion, resulting in a decrease in mangrove forest area and threatening the sustainability of coastal ecosystems. This situation has increased erosion risks, deteriorating environmental quality, and the loss of mangrove's functions as carbon sinks (blue carbon) and climate buffers. The Marine Campaign 2025 initiative, launched by the Association of Marine Science and Technology Students at IPB University, aims to restore mangrove ecosystems, support Nationally Determined Contributions (NDC) targets, raise public awareness, and strengthen multi-stakeholder collaboration. Implementation methods include planting 1,000 mangrove seedlings, coastal cleanup activities resulting in collecting 310 kg of waste, and mangrove education workshops involving students, local communities, and various environmental organizations. The results of the activity demonstrated active participation from all stakeholders, including junior high school and vocational school students, village officials, and environmental organizations, with the creation of new planting areas for mangroves and increased public understanding of the ecological and economic functions of mangroves. This activity concluded that collaboration-based restoration effectively accelerates the recovery of coastal ecosystems while strengthening environmental resilience and sustainable community well-being.

Keywords: abrasion, blue carbon, coastal clean-up, coastal ecosystem, environmental educatio

INTEGRATING EXPERIENTIAL LEARNING INTO ENVIRONMENTAL EDUCATION: THE PRAKASA AKSARA YOUTH MOVEMENT TOWARD SUSTAINABLE COMMUNITY DEVELOPMENT IN KEDIRI

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Abstract

Climate change has become a critical global challenge, threatening ecosystem resilience and biodiversity protection. Low environmental awareness and literacy among the younger generation, especially primary school students in rural areas, remain barriers to building a sustainability-focused society. This study seeks to improve environmental literacy among students at SDN Pagung 2 in Kediri, promote understanding and concern for biodiversity conservation, and incorporate active learning strategies into environmental education through the Prakasa Aksara program. The program used two experiential learning methods: Nature Expeditions and Conservation Workshops. Nature Expeditions included direct observation of local flora and fauna, followed by guided discussions on ecological roles. At the same time, Conservation Workshops offered hands-on training in simple conservation practices, such as composting and tree planting. The program resulted in measurable improvements in students' understanding of environmental concepts and conservation principles, alongside increased participation in both observational and practical conservation activities. It also improved collaboration between the school and the local community, creating a foundation for the program's future continuation. These results demonstrate that the Prakasa Aksara experiential learning model is an effective approach to promoting environmental literacy and fostering environmentally responsible behavior among students. This model holds strong potential for replication in similar contexts as a strategy to build the capacity of young generations to address the climate crisis and contribute to achieving sustainable development goals.

Keywords: climate change, education, environment, sustainable development

TOWARD A SUSTAINABLE MARITIME VILLAGE IN MEKAR BEACH: INTEGRATING MANGROVE ECONOMY, ENVIRONMENTAL EDUCATION, AND PUBLIC HEALTH

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Abstract

Mekar Village Beach is a flood-prone fishing village on Java's north coast. This research action synthesizes four community-based programs designed to transform Mekar Beach into a "Desa Maritim Mandiri (Independent Maritime Village)". This research action implement participatory action research to: (1) diversified household income by training women's groups to process mangrove fruit (pidada) into chips, dodol, and syrup; (2) rebuilt coastal resilience by establishing a nursery and planting 5,000 Rhizophora mucronata seedlings along erosion hotspots; (3) embedded mangrove literacy in three local primary schools through story modules and field practice for 120 fisher children; and (4) improved environmental health through waste segregation campaigns and workshops on preventing diarrhoea and skin diseases, the area's most common illnesses. Baseline surveys of 41 households revealed that fishing fathers were the sole earners, children recognized mangroves but not their value, and preventive health practices were minimal. After implementation, net profits of IDR595,000 boosted family incomes, pupil interest and knowledge rose by 45 %, and community awareness of coastal and mangrove habitats increased markedly. These findings demonstrate that combining blue micro enterprises, ecosystem engineering, and social learning can simultaneously strengthen natural sea walls, raise environmental consciousness, and create alternative livelihoods, offering a scalable model for other Indonesian coastal villages.

Keywords: coastal resilience, environmental health, mangrove utilization, participatory action research

NACOPACK: ACTIVE PACKAGING SHEET ECO-FRIENDLY BASED ON RICE STRAW AND ACTIVATED CARBON TO OPTIMIZE THE CAVENDISH BANANA SUPPLY CHAIN

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Abstract

Threats to food security in Indonesia arise from high levels of post-harvest food loss during supply chain distribution, especially for climacteric fruits such as bananas. Bananas are a fruit that rots quickly after harvest due to spikes in respiration and ethylene, impacting their short shelf life. Cavendish bananas are one of the most widely grown banana varieties for export and the domestic market, making shelf life extension crucial. One approach to addressing this problem is active packaging, a packaging technology designed to maintain and extend the shelf life of products while maintaining quality. The NacoPack product is designed to extend the shelf life of Cavendish bananas by absorbing ethylene with activated carbon. The implementation method begins with a literature study and market survey to analyze needs. Next, the primary raw material is procured, namely rice straw that has been delignified with NaOH. The pulped straw is mixed with activated carbon and molded with a deckle to make paper. The final stage is the formation of a honeycomb structure on the paper for air circulation and reducing impact during shipping. The main marketing target focuses on Cavendish banana producers and distributors with a Business-to-Business (B2B) strategy. The result of this research is NacoPack's success in extending the shelf life of Cavendish bananas from three days to six. NacoPack is an innovative, environmentally friendly active packaging made from rice straw and equipped with activated carbon, contributing to food independence by reducing food loss throughout the distribution chain. The implementation of NacoPack will focus on a pilot program involving cooperative partners, banana farmer associations, and banana distributors. In the future, this initiative is expected to create a more resilient supply chain ecosystem, reduce crop losses, and sustainably improve farmer welfare.

Keywords: activated carbon, active packaging, cavendish bananas, ethylene, rice straw

BebiBites: HIGH-FIBER SNACK INNOVATION BASED ON LOCAL FOOD INGREDIENTS FOR INDIVIDUALS WITH OBESITY

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Abstract

Obesity is an escalating nutritional challenge in Indonesia, primarily driven by the frequent consumption of high-calorie yet low-fiber foods. BebiBites was developed as a functional snack bar utilizing locally sourced ingredients to provide a healthier alternative. The formulation consists of purple sweet potato, red bean flour, banana, egg, skim milk, oats, cocoa powder, margarine, brown sugar, and water. Nutritional analysis using the Indonesian Food Composition Table (TKPI) revealed that each serving provides 224 kcal, 6.8 g total fat, 1.7 g saturated fat, 0.0 g trans-fat, 12.9 g protein, 32.4 g carbohydrates, 24.2 g sodium, 15.5 g cholesterol, and 5.8 g dietary fiber. In accordance with BPOM Regulation No. 1/2022, BebiBites is eligible to be claimed as a source of dietary fiber, high in protein, trans fat-free, and low in sodium. In its future application, BebiBites is planned to be piloted in school canteens and community health centers (puskesmas) as a practical alternative to conventional snacks. Product development strategies will emphasize the diversification of flavor variants to enhance consumer acceptance, while retaining the fundamental nutritional composition and health claims of the product. This approach ensures that the innovation remains both appealing and scientifically substantiated. BebiBites represents a youth-led initiative that not only contributes to obesity management and the promotion of healthy dietary practices but also supports the utilization of local agricultural resources and the advancement of sustainable food security.

Keywords: obesity, purple sweet potato, product development, snack bar

OPTIMIZATION OF TEXTILE INDUSTRY LIQUID WASTE PURIFICATION THROUGH A CHEMICAL REACTOR BASED ON CARBON DOTS FROM RUBBER LEAVES (*Hevea brasiliensis*)

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Abstract

The number of textile industries in Indonesia in 2022 reached 2,027 units with a contribution of >92 million tonnes/year. Therefore, strategic efforts are needed to address the hazards of textile industry waste, including carbon dots (Cdots) based on rubber tree leaves (Hevea brasiliensis). This condition is based on the expansion of rubber plantations to 3.83 million hectares, supported by the underutilised potential of rubber tree leaves. One waste treatment method involves integrated downflow filtration with Cdots derived from rubber leaf. This scientific paper aims to analyse the potential of rubber leaves as a precursor for Cdots, develop a chemical reactor for purifying textile industry liquid waste, and test the effectiveness of rubber leaf Cdots in purifying textile industry liquid waste. This research was conducted starting from synthesizing Cdots from rubber leaves, chemical reactor set up, the liquid waste purification, physical testing of the purified results, and data processing. The effectiveness of Cdots was tested through pH level, colour change, total dissolved solids (TDS), and electrical conductivity (EC). Optimal purification using Cdots was carried out for 20 hours and achieved results close to standard water quality. Purification over 20 hours yielded an EC value of 710 μs/cm, a TDS value of 357 ppm, a brown color approaching standard water quality, and an acidity level of 6.42. Wastewater purification using Cdots and a chemical reactor can reduce water pollution and support the government in achieving access to clean water and adequate sanitation. The implementation process of carbon dot-based chemical reactors can be carried out over a period of one year, including optimization and further validation to ensure that the results of liquid waste purification comply with standards. After that, trials will be conducted in the textile industry, implementation will be developed, and policy advocacy will be carried out.

Keywords: carbon dots, liquid waste, rubber leaves, textile industry

PROFILE OF THE BEACH TOURISM SUITABILITY INDEX ON UNTUNG JAWA ISLAND, KEPULAUAN SERIBU DISTRICT, JAKARTA

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Abstract

Untung Jawa island is one of the most visited tourist destinations in the Thousand Islands, Jakarta. The status as a tourist area needs to be developed in a directed manner by evaluating the level of suitability of the coastal environment in supporting tourism. This research provides evaluation results using the Tourism Suitability Index (IKW) for the beach recreation category. Data for each IKW parameter were obtained from two stations, namely at Pasir Putih Beach and Arsa Beach, and supported by data from interviews with residents. The results of the parameter measurements were then weighted and resulted in a value of 2.42 for Pasir Putih Beach and 2.19 for Arsa Beach. Both values fall into the appropriate level as a beach tourism area. The lower value of Arsa Beach is due to its location close to the port and the inadequate width of the beach (3.78 meters). The results of the evaluation of the suitability of beach tourism on Untung Jawa Island show that it is still included in the suitable level, but is approaching the limit of unsuitable. This result needs to be a concern in developing tourist areas, especially beach recreation on Untung Jawa Island. The Coastal IKW studies in small island areas are planned to be completed in 6 months, including survey to implementation, and require the cooperation of the local government.

Keywords: beach recreation, suitability, Untung Jawa island

Voices from Next Generation

High School Students' Poster Presentations

1 **【Utilization of Pickled Plum Seeds for a Nutritious Drink − Inspired by Coffee Roasting −】**
Aoi Kawaguchi
Senior High School at Sakado, University of Tsukuba

2 **【Effects of Farm Recreation on Children's Food Education**
− Learning from Collaborative Events between Local Farmers and High School Students −】
Kenta Fujita, Yuzuto Miyashita, Shinji Mizuno, Tomoe Yamami
Senior High School at Sakado, University of Tsukuba

3 **【Utilisation of Biological Resources on Arachnida − How to Make Spider Silk as a Fiber −】**
Hikaru Kitazawa, Yuzuka Kantou, Maho Kimura
Yamawaki Gakuen Senior High School

4 **【Evolving Seismic Technology: The Power of Octopus Suction Cups】**
Mari Noguchi, Remi Mezaki
Yamawaki Gakuen Senior High School

5 **【The Future of Urban Agriculture】**
Amane Fujita, Kikka Okamoto, Riko Nagami, Sakura Matsunaga
The First High School, Tokyo University of Agriculture

6 **【The Novel Rice Trade Plan in Japan】**
Momo Sato, Tamaki Hato, Shiori Iijima
The First High School, Tokyo University of Agriculture

7 **【How to Solve Garbage Problem !!!】**
Warita Natsuki, Ichikawa Hideto, Jin Keita
The Second High School, Tokyo University of Agriculture

8 **【Water Purification Methods using Structures】**
Orihara Rio, Kaneko Soshi, Sakurai Go, Kinomoto Taichi
The Second High School, Tokyo University of Agriculture

9 **【Questioning the Future of AI and Warfare:**
Challenges for Peace Diplomacy in the Age of the SDGs】
So Saito, Yurina Hattori, Sara Minowa
The Third High School, Tokyo University of Agriculture

10 **【POJOK GIZI DESA: Interactive Education to Raise Awareness of Healthy and Sustainable Food】**
Jingga Khayyirah Cisa Sitompul
State High School 65 Jakarta, Indonesia

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Utilization of Pickled Plum Seeds for a Nutritious Drink
− Inspired by Coffee Roasting −

Aoi Kawaguchi
Senior High School at Sakado, University of Tsukuba

There is growing concern that climate change will significantly reduce the number of coffee bean-producing regions by 2050, leading to unstable coffee supplies. As a result, alternative coffee products have drawn increasing attention, and fruit seeds such as date seeds are now used as substitutes.

This study explores the potential of using pickled plum seeds as an alternative coffee source. During the production of pickled plum paste, the seeds are discarded. Converting these seeds into a beverage may help reduce food waste and provide a sustainable alternative in response to declining coffee supplies. Moreover, the resulting drink may offer potential health benefits.

The objective of this research is to find a suitable processing method for creating a coffee alternative from pickled plum seeds. Several combinations of pre-processing, roasting, and extraction techniques are tested. The resulting sample beverages are evaluated using two approaches. First, in an objective taste evaluation, taste-related parameters including sugar content and acidity are measured. Second, a sensory test is conducted to assess the taste through a participant survey. In both analyses, the taste profile of real coffee is used as a benchmark. The processing method that produces the sample most similar to coffee is identified as the most promising.

Effects of Farm Recreation on Children's Food Education − Learning from Collaborative Events between Local Farmers and High School Students −

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Senior High School at Sakado, University of Tsukuba

This project aims to foster interest in farming among young children by offering enjoyable, hands-on agricultural experiences. Through these activities, children not only learn where their food comes from but also come to understand the importance of agriculture and the vital role farmers play in their local community. By creating fun and engaging opportunities for children to interact with farming, the project aspires to cultivate a positive image of agriculture and encourage more of the younger generation to join a sustainable local farming community. Moreover, we expect this change in children's attitudes to lead to more responsible consumer behavior among adults.

This initiative is grounded in the principles of MeaDRI (Measures for achievement of Decarbonization and Resilience with Innovation), promoted by Japan's Ministry of Agriculture, Forestry and Fisheries. It supports the national goal of fostering resilient, sustainable food systems through innovation and youth engagement.

We have already collaborated with local farmers to hold several recreational-type events on their farmland. Participant feedback has been collected to assess enjoyment and learning outcomes. Moving forward, the project will analyze this data to evaluate the effectiveness of the activities and further refine them, with the long-term goal of contributing to a more sustainable and agriculturally engaged society.

Utilisation of Biological Resources on Arachnida
− How to Make Spider Silk as a Fiber −

Hikaru Kitazawa, Yuzuka Kantou, Maho Kimura
Yamawaki Gakuen Senior High School

Gossamer is known for its great strength.

Nevertheless, this property can be easily changed by factors in the natural environment, such as UV and water. We expected that we could make stronger silk when gossamer is combined with other materials.

Our research aim is to make a strong fiber by the natural spider silk.

Therefore,we are trying to ease phenomenons which changes gossamer's character ease and going to use Titanium oxide and Cross-linking for it.

Titanium oxide is one of the ultraviolet absorbing agent which Titanium oxide can interrupt sun UV. On the other hand, Cross-rinking is the chemical reaction. However, according to previous researches, it has already been found by other researchers that UV light also makes spider silk stronger.

These study shows that this is caused by Cross-linking on Sun UV. Based on this research, we study the relation between Cross-linking and UV light.

We have observed the surface construction of spider silk and other fibers, and compared it. We expect that spider silk is easier to utilize as fibers than other materials.

Therefore, we are doing experiment of Cross-linking and the relation between UV light and Cross-linking's function on spider silk.

Evolving Seismic Technology: The Power of Octopus Suction Cups

Mari Noguchi, Remi Mezaki
Yamawaki Gakuen Senior High School

Japan experiences many earthquakes at any time and in any place. Now many kinds of earthquake resistant goods are introduced. However, we found few products focus on protecting daily necessities. So, this study explores how the structure of octopus suction cups can be applied to enhance earthquake-resistant systems.

We investigated suction cups' adsorptive power by different materials surfaces. Apart from that, we examined suction cups volume by using water and oil. We did it because they have surface tension.

These experiments show that suction cups stuck better to smooth glass surfaces than to rough stone. Also, suction force is affected not just by the diameter of the suction cup, but also by its depth and suction force correlates more strongly with diameter than with volume.

Our experiments showed that while the volume of the suction cup doesn't increase significantly with diameter, suction power with diameter up to 4 cm, then decreased. In the next phase, we plan to test this further by increasing the number of suction cups to confirm whether 4 cm consistently yields the strongest force. If the results support this, future research will focus on 4 cm suction cups to develop effective earthquake-resistant applications.

The Future of Urban Agriculture

Amane Fujita, Kikka Okamoto, Riko Nagami, Sakura Matsunaga
The First High School, Tokyo University of Agriculture

Our group investigated urban agriculture initiatives around the world and then considered the current state and potential of urban agriculture in Japan.

First, we explored some efforts in urban agriculture in other countries. We picked 9 countries randomly. Among those countries, Canada and Australia have very high food self-sufficiency rates, while Singapore's is extremely low. The former don't have much trouble with food, but the latter and other countries are struggling with some agricultural problems. All the countries are undertaking various urban agriculture initiatives to enhance their sustainability.

In addition, we discussed urban agriculture in Tokyo ? ——especially in the Setagaya district − and came up with some ideas for the future.

In Setagaya, farmers aim for local production for local consumption. They have a logo for locally produced crops, and provide residents with opportunities to experience farming through various projects. We considered that it is important for students in urban areas to increase their interest in agriculture and be aware of the issue of Japanese agriculture. For instance, we need classes for growing crops and communicating with local farmers, to make use of school space for farmland, and to join agricultural volunteer activities regularly. We believe that if we take some actions on urban agriculture, the future of Japanese agriculture will be much better.

The Novel Rice Trade Plan in Japan

Momo Sato, Tamaki Hato, Shiori Iijima
The First High School, Tokyo University of Agriculture

Currently, rice farming in Japan faces numerous challenges that threaten its sustainability. These include water shortages caused by climate change, crop losses from flooding, rising costs of fertilizer, fuel, and labor, worker shortages, a weak yen that harms exports, and export restrictions and tariffs imposed by other countries.

At the same time, global demand for rice is growing, driven by its popularity as a gluten-free food and the worldwide boom in Japanese cuisine. However, supply has not kept pace. Even in Japan, rice shortages have led to rising prices and forced the country to import foreign rice.

Although the government has introduced policies to boost rice exports, the top priority now should be securing a stable domestic supply. Two key actions are needed.

First, foreign student volunteers should be recruited to help address the labor shortage.

Second, the government should offer subsidies to rice farmers, especially those with low incomes. Support should also be directed toward reusing abandoned farmland and expanding rice paddies. Improving soil to reduce dependence on imported fertilizer and lower long-term costs is also essential.

By implementing these measures, Japan can improve self-sufficiency, reduce reliance on imports, and export surplus rice. This would strengthen Japan's agricultural sector and contribute to the global rice market.

How to Solve Garbage Problem !!!

Warita Natsuki, Ichikawa Hideto, Jin Keita
The Second High School, Tokyo University of Agriculture

What is the garbage problem?

The amount of garbage is increasing. It is polluting the natural environment and our society. Disposing of garbage costs a lot of money——in Japan, about two trillion yen.

Why does the garbage problem occur?

People throw away a lot of garbage, especially in America. According to the Global Waste Index 2025, Americans produce about 900 kg of garbage per person annually. A company's graph indicates that this increased by 100 kg over three years. This trend is driven by the convenience of online shopping and the rise of fast fashion, which is now one of the world's biggest problems.

Solution to the garbage problem

Use large or compacting trash bins. By compacting garbage in big bins, volume is reduced, which decreases the frequency of garbage collection and lowers costs.

Conclusion

Throwing trash contributes to the garbage problem, but the root issue is its massive quantity. By using large or compacting trash bins, we can help minimize the problem.

Water Purification Methods using Structures

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The Second High School, Tokyo University of Agriculture

In Japan, tap water is managed under strict safety regulations. More than 98% of people in Japan have access to safe tap water. This figure is remarkably high compared to other countries.

However, in countries such as India, Indonesia, and Brazil, water infrastructure is not well developed. Rivers and seas are often polluted, and more than 90% of wastewater is released without treatment. In many parts of Asia and Africa, wastewater treatment is inadequate. As a result, access to clean drinking water is difficult.

In these countries, many people fall ill due to contaminated water. Approximately 3.5 million people die each year from water-related diseases.

To address this problem, we have developed a new type of home water purifier. It can treat the wastewater generated in your house so you can reuse it, which reduces both water consumption and your water bill.

This purifier is environmentally friendly and effectively cleans water. We hope our water purifier will be adopted in countries with contaminated water, helping people gain access to safe and clean drinking water.

Questioning the Future of AI and Warfare: Challenges for Peace Diplomacy in the Age of the SDGs

So Saito, Yurina Hattori, Sara Minowa
The Third High School, Tokyo University of Agriculture

We are preparing for the high school Model United Nations by researching the future of AI and warfare from the perspectives of Pakistan and Russia. Pakistan sends people to advanced countries to acquire military knowledge, while Russia strengthens ties with China against the US and NATO. Although AI military use might not be inevitable, "who should take responsibility?" remains key. This experience has made us realize the importance of understanding other countries' perspectives. As wars continue even after WWII, we want to question why wars do not end, and engage in discussions with focus and curiosity. This relates to SDG 16 (Peace), SDG 9 (Innovation), and SDG 17 (Partnerships).

POJOK GIZI DESA: Interactive Education to Raise Awareness of Healthy and Sustainable Food

Jingga Khayyirah Cisa Sitompul
State High School 65 Jakarta, Indonesia

Abstract

The availability of sufficient food does not always go hand in hand with community understanding of balanced nutrition and safe food processing. According to the Food and Agriculture Organization (FAO), low nutrition literacy is one of the key factors behind the high rates of malnutrition and non-communicable diseases in many developing countries, including Indonesia. The lack of education drives the consumption of instant foods and reduces the use of nutrient-rich local ingredients. Pojok Gizi Desa (Village Nutrition Corner) innovation emerges as a community-based solution to raise awareness of healthy food through interactive education methods. This initiative combines workshops on local food processing, simulations of balanced-nutrition menus, and simple digital media accessible to rural communities. Beyond providing knowledge about nutritional content and food safety, the program also encourages active participation from villagers in creating healthy recipes using easily available local ingredients. By involving village youth as facilitators, the program strengthens the role of the younger generation as agents of change in building food security and community health. Pojok Gizi Desa (Village Nutrition Corner) is expected to serve as a sustainable education model that can be replicated across various regions to realize a healthier and more food-resilient future.

Keywords: ommunity participation, food security, local food, nutrition education.

River Expedition for Ciliwung Preservation: Youth Action to Promote Environmental Awareness

Anisa Shifa Khairunnisa
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Abstract

The Ciliwung River is a vital water source for the Jakarta–Bogor region, yet its quality continues to decline due to household waste, plastic pollution, and low environmental awareness. To address this issue, an expedition organized by the Bogor Ciliwung Community brought together diverse participants, ranging from adults to school students. The initiative aimed to identify pollution sources, collect waste, and empower local communities in river ecosystem conservation. Held on 26 July 2025, the activity included direct observation along the riverbanks, waste collection and categorization, and short interviews with participants regarding their waste disposal habits. During the expedition, participants collaborated with environmental activists, including Giri Marhara and the Mayor of Bogor, Dedi A. Rachim, who provided guidance, shared best practices, and inspired volunteers to continue conservation efforts. The program also placed mentors at each river point to teach waste separation techniques and explain the environmental consequences of neglecting waste management, with a focus on the role of youth in driving change. The results showed that more than 100 kg of waste was removed from the targeted river section, along with increased community participation in clean-up activities. This initiative demonstrates that youth engagement, supported by experienced activists, can significantly influence public awareness and collective action in environmental protection. Such collaborative actions have strong potential to foster a cleaner and more sustainable future for the Ciliwung River and other vital ecosystems.

Keywords: Ciliwung river, environmental awareness, river conservation, waste management, youth action.

Sea Tradition in New Brew

Aisyha Hurin Syaira Ayu, Daariin Haaniya
Ihsanul Fikri Islamic Senior High School, Magelang, Central Java, Indonesia

Abstract

Indonesia has enormous biodiversity potential, but it has not been optimally utilized, especially in the agricultural and maritime sectors, such as coffee husks and brown algae, which are still considered waste materials with no direct economic value. The presence of this product aims to open a new perspective that waste materials can be processed into something valuable. This product presents fermented kombucha processed with a combination of coffee husks and brown algae, offering nutritional value. This activity began in early January 2025, starting with raw material research, fermentation trials, flavor formulations, and testimonials to school residents. The result of this activity is a fermented beverage product called Selaut Kopi, which reduces organic waste while introducing healthy beverage alternatives made from local ingredients. This program demonstrates that teenagers can also be pioneers of sustainable food innovations in response to environmental issues around them.

Keyword : brown algae, coffee husk, fermented beverage, sustainable food innovation, waste utilization.

Fridge or Bin: An Educational Game to Raise Awareness about Food Waste among Students

Edeiweiss Azhumi Liemiuthie, Gabriela Giacinta Utomo, Leticia Reta Kesava, Gwen Kaylin Kurniawan

Sang Timur Senior High School, Jakarta, Indonesia

Abstract

Food waste is a significant issue, with about 1 billion tons discarded each year, causing 8–10% of global greenhouse gas emissions. Many people, especially younger individuals, waste food without understanding the impact. To help educate them on food preservation and waste reduction, an educational game-based website called "Fridge or Bin" was created. This project was published on March 31, 2025, and aims to engage children in learning about reducing food waste in a fun and interactive way. The gameplay involves players choosing to keep or discard foods by expiry dates, earning points for correct choices and losing lives for mistakes, with tips on reducing waste provided alongside a more info page that explains more about food waste. The objectives are to increase food waste awareness, educate on safe food handling, promote good habits, and use engaging gameplay. After developing the Fridge or Bin, a Zoom meeting was held on May 5, 2025, to present the game to the school community, with 25 attendees. It included a talk on food waste and a 20-minute gameplay session. In addition, in-person trials were conducted with 3rd–5th graders at Sang Timur Tomang School. During the Zoom ice-breaking session, participants learned to identify good versus spoiled food and received storage tips. Moreover, the game helped 3rd–5th graders at Sang Timur Tomang School check food carefully, think before discarding, and improve their understanding of food safety, effectively educating them on food waste. In summary, Fridge or Bin highlights unintentional food waste, emphasizing its environmental impact. Through gameplay, it educates all ages on food edibility, fostering discussions and changing perceptions about waste in enjoyable ways.

Keywords: educational game, food-waste awareness, sustainability, youth-led innovation

Cultural Revitalization and Environmental Recycling: Sustainable Products and A Circular Economy Based on Ecoprint Aromatherapy

Sandra Cecilia Maura, Siti Aziza Suryamiharja, Deandra Putri Denaya

Al Muttaqin High School, Tasikmalaya, West Java, Indonesia

Abstract

The rapid development of the fast fashion industry over the past few decades has significantly contributed to environmental damage. The clothing industry is the second-largest environmental polluter in the world due to the use of synthetic materials and mass production, which generates textile waste. One eco-friendly concept and material is ecoprint, which involves creating ecoprint-patterned fabric using 100% natural, biodegradable materials such as leaves and flowers. Indonesia's diverse flora offers attractive shapes, enabling the creation of patterns, and natural dye-producing plants. Ecoprint products can be a business opportunity due to their high artistic and commercial value. The activity aims to develop creativity and recycling, producing environmentally friendly products. The primary outcome is ecoprint clothing. The clothing production process involves mordanting, rust recycling (attaching rusted wire to damp fabric sprayed with saltwater to create a rustic motif), "nyatekan" technique (attaching leaves and flowers to the fabric surface), boiling new fabric with natural dyes (Secang and Tageran), transferring the dye to fabric that has undergone initial processing, followed by steaming to create patterns. Heat transfer printing techniques are added (featuring cultural motifs such as Sundanese script and wayang golek puppets). The final stage involves meratus (smoking the fabric to impart a natural aroma, enhance durability, and protect it from insects or microbes). Fabric scraps are recycled into book covers, while flower and leaf waste is turned into fertilizer. This activity supports the zero-waste concept. Our various products have high market potential. This activity concludes that the combination of ecoprinting and ratus techniques can enhance the appeal and market value of various sustainable products.

Keywords: business opportunities, ecoprint, environmentally friendly products, ratus, waste

GEL-GROW: Sustainable Organic Gel Fertilizer Innovation from Indonesian Agricultural Waste

Aulia Prasetia, Dewi Puspita Sari
State Islamic Senior High School 2 Tasikmalaya, West Java, Indonesia

Abstract

The use of chemical fertilizers in agriculture is increasing, which has a detrimental effect on the environment, including declines in soil fertility, water pollution, and ecosystem damage. GelGrow is an innovative, environmentally friendly alternative fertilizer that maintains land productivity while gradually retaining soil moisture, making it efficient for use on various types of plants, such as chili peppers, tomatoes, and other household plants. This project was implemented from late 2024 to mid-2025, involving field testing in school gardens and local farms in Tasikmalaya. GelGrow's formulation utilizes a combination of productivity through gradual formulation while preserving nutrients, such as cassava starch as a thickener and gel former, lamtoro leaves as a nitrogen source, aloe vera to maintain moisture and enhance nutrient availability, rice husk ash as a source of potassium and silica, and guava leaf extract as a natural preservative that inhibits the growth of harmful microorganisms. The production process involves heating ingredients, gradually mixing the active ingredients, filtering, and molding, resulting in a dense gel that does not easily melt at room temperature and has a stable texture. Based on initial observations, GelGrow can remain in solid form for over two months under sealed storage conditions and potentially maintain soil moisture longer than conventional solid fertilizer. With its biodegradable characteristics, environmental safety, and potential to reduce reliance on chemical fertilizers, GelGrow has become one of the innovations supporting sustainable agriculture.

Keywords: organic gel fertilizer, slow-release plant food, waste-based fertilizer

RESATERA: From Waste to Wonder, Transforming Used Cooking Oil and CNSL (Cashew Nut Shell Liquid) into Clean Energy Through Blower Stove Innovation

-Nizar Nurzaman Gunawan, Asti Bunga Azzahra

Al Muttaqin High School, Tasikmalaya, West Java, Indonesia

Abstract

The household energy crisis caused by dependence on LPG with fluctuating prices and a high risk of fire hazards has become a serious challenge in indonesia. At the same time, waste cooking oil and Cashew Nut Shell Liquid (CNSL) continue accumulating, posing environmental pollution and health risks. RESATERA emerges as an integrated solution by processing 90% filtered waste cooking oil and 10% CNSL extract into liquid fuel for a hybrid blower stove with pressurized air technology. This system utilizes a low-power electric blower to enhance fuel oxidation, producing a stable flame, higher heat efficiency, and shorter cooking times. The development stage was conducted from July to August 2025 at Al Muttaqin High School, Tasikmalaya. This phase included CNSL extraction and filtration, fuel blending, fabrication of a heat-resistant combustion chamber, and standardized performance and emission testing. Based on technical calculations and preliminary trials, the system is projected to achieve up to 40% cost savings compared to LPG, reduce approximately 30 liters of waste cooking oil per household per year, and lower carbon emissions. Community implementation will follow a detailed plan, targeting households and small-scale culinary businesses in the partner village with following activities: (1) conducting training workshops for local operators and users; (2) partnering with the village-owned enterprise (BUMDES) for local-scale production and distribution; and (3) monitoring adoption, fuel supply, cost savings, and emissions over three months as part of the evaluation process. In conclusion, RESATERA provides a safe, affordable, and sustainable energy alternative while transforming waste into a high-value resource, supporting a more sustainable future.

Keywords: alternative energy, cnsl, community empowerment, hybrid blower stove, waste cooking oil

MATERIALS

Tokyo Declaration

International Students Summit Action Plan

Establishing International Students Forum

Establishing Global Network for Environment,
Food and Agriculture

Mission Statement of International Students Forum（ISF）

Profile: IPB University

Acknowledgement

TOKYO DECLARATION

International Students Summit on Food, Agriculture and Environment
Date: November 19 - 20, 2001
Venue: Tokyo University of Agriculture, Tokyo, Japan

In commemoration of 110th Anniversary of the Founding of Tokyo University of Agriculture, an International Students Summit on Food, Agriculture and Environment in the New Century is held. Students from twelve countries and area in the world participated and discussed about present conditions and future issues on food, agriculture and environment. With this opportunity, we air our opinions and views raised in this Summit documented in this Tokyo Declaration, which we propose to the world.

1. Agriculture carries an important role of producing food for mankind to live. With the remarkable population increase since the 1950s, food production has been greatly increased through the Green Revolution, but negative effects to the environment and health occurred due to the intensive use of chemical fertilizers and agricultural pesticides. For now and the coming years, global food production increase and poverty alleviation are vital and agriculture plays an important role. "Therefore, we aim at sustainable development in the New Century through the recognition of the value of agriculture as a life industry, and the respect of the unique ecosystem and wisdom of each region. Through the collaboration between traditional agriculture knowledge and wisdom, and modern science and technology, we endeavor to develop environment-friendly technologies and production systems. Eventually, we hope to develop and promote a new form of organic agriculture which will meet social, economic and environmental requirements."

2. Based on science and technology development, various new technologies are being developed and spread in the agricultural field. Among them, biotechnology, especially Genetically Modified Organisms (GMO) is considered the mainstream technology. Consumers also have strong concerns regarding GM crops and foods. "Therefore, we recognize the potentials of biotechnology including GMO based on judgment with right knowledge. At the same time, we, as agricultural students, need to study and research more about the safety of biotechnology especially GMO in relation to human health and environment, and we have a role of disseminating result-related information to consumers."

3. In each region, history gave birth to food culture and molded people. By definition, food should be consistently safe from production to consumption. "Therefore, we create a new system wherein we can continuously be supplied and be able to consume safe foods. Each actor in the system, based on the social infrastructure provided and improved by the government, should consider the importance of safety issues such as pesticide residues at the production level, and post harvest and food additive usage problems at the processing and distribution levels. At the same time, we, as consumers, must think better of healthy regional food culture and are urged to cooperate and understand the added costs for commodities that are produced in a safe and environmentally friendly way."

4. Nowadays, although trade liberalization is progressing under the WTO system, all countries and areas do not have access to fair food distribution because economic infrastructure and social infrastructure gaps still exist. "Therefore, we promote Regional Self-sufficiency mainly for staple foods by making use of the unique ecosystems and regional individuality from the local point of view. Then, in the global point of view, food self-sufficiency in the whole of Asia can be achieved if food self-sufficiency is promoted in each area."

5. In the years to come, we, the students have a huge role to play. More international cooperation is encouraged through human resource exchange and sharing knowledge to overcome barriers such as academic disciplines and geographic borders. "Therefore, we, as the core group consisting of students from thirteen (13) countries and areas, aim to create an International Students Network. Also, we share a new and same value, wherein we need to create a new social system where an environmentally benefiting and safe food production, distribution, processing and consumption exist."

In realization of this *Tokyo Declaration*, we take an oath to make an *International Students Summit Action Plan* for each country and area.

November 20, 2001
Tokyo

International Students Summit Action Plan

In line with the Tokyo Declaration adopted during the 1st International Students Summit organized by the Tokyo University of Agriculture held last November 19-20, 2001, the action plan has been drawn up in this 2nd International Students Summit. As part of the future generation, we students commit ourselves to the following actions.

General Actions

- ✧ We shall study issues of food, agriculture and environment in holistic manners. We shall serve as a bridge between producers, consumers and professionals for the betterment of the society.
- ✧ We shall not limit ourselves to studying; we shall raise our own awareness and put our ideas into practice.
- ✧ We shall reconsider and emphasize the cultural aspect of agriculture.
- ✧ We shall appreciate and conserve our respective traditional technologies and institutions.

Specific Actions

Environmental Conservation

- ✧ We shall study and make public the roles and values of agriculture and environment, by participating in farm training and the like in rural areas.
- ✧ We shall conduct various campaigns and promotions of the present condition and prospects of agriculture and agricultural communities; and deepen consumers' understanding and interest on agriculture and environment.
- ✧ We shall vigorously promote environmentally friendly agriculture such as organic agriculture for establishing the system of stable supply of safe food.

Biotechnology

- ✧ We shall encourage unbiased research and undertaking. We shall publicize scientific information and research results about biotechnology.
- ✧ We shall vigilantly investigate food biotechnology such as GMO and inform the public about the results.

Food Safety

- ✧ We shall review our respective dietary life, conduct surveys and research on food from farm to table, and update the public about recent findings.
- ✧ We shall encourage strict labeling of food. We shall charge appropriate social responsibilities to any company found to have committed food safety violation.

Food Security

- ✧ We shall reduce food wastes. We shall avoid over consumption to conserve resources and promote health.
- ✧ We shall consume what is needed rather than what is demanded, on the basis of energy-saving local production and local consumption framework.
- ✧ We shall promote home production of food using any available space.

Students Network

- ✧ We shall establish the "International Students Forum," on food, agriculture and environment.
- ✧ As a body, we shall actively lobby and take actions on relevant issues, and represent youth in national and international conferences.

The above action plan shall serve as the basis for the country or area level action plans to be made by students of the respective participating university. Thus, we urge the participating universities to make their respective action plan as soon as possible.

November 17, 2002
Tokyo, Japan

Establishing International Students Forum (ISF)

Agricultural science plays a vital role in solving the fundamental problems of human beings in relation to food, environment, human health, and natural resources and energy. Because food production and consumption systems are closely related to the condition of the natural environment, the stage of economic development and food culture in each country and area, their patterns and problems reflect regional characteristics, requiring a multiple region-oriented approach.

Tokyo University of Agriculture organized the International Students Summit on Food, Agriculture and Environment in the New Century in 2001 and adopted the "Tokyo Declaration".

In line with the action plan adopted at the 2nd International Students Summit in 2002, we hereby agree to organize the International Students Forum (ISF), a students' network for the betterment of food, agriculture, and environment problems.

1. Objective

International Students Forum (ISF) promotes information exchange and discussion among the students of agricultural and other related sciences, in order to solve the problems common to human beings, such as environmental conservation, development of harmonious food production and establishment of food safety.

2. Organization

- ISF consists of Committees of International Students Forum set up in the participating universities.
- Members of the respective ISF Committees play an active part while in school and resign from ISF automatically at their graduation.
- Each ISF Committee decides the matters on the management respectively in each country and area.

3. Role

- ISF Members constantly make effort toward solutions of the problems common to human beings such as world environmental conservation, promotion of sustainable food production and establishment of food safety.
- ISF Members exchange information and opinions via the Internet. (Internet International Conference)
- Representatives of ISF committees in the respective universities get together on a regular basis and hold an international conference to present the results of research and study. (International Students Summit, ISS)

4. Activities

- ISF Members play an active role as students for solutions of food, agriculture and environment problems.
- ISF Members work in accordance with the common theme agreed upon at the International Students Summit for the whole year.
- ISF Members are expected to present the results of the previous year's activity and decide on the common theme for the following year.

5. Participating Universities

○ Universidade de São Paulo, Brazil
○ China Agricultural University, China
○ Tokyo University of Agriculture, Japan
○ University Autonoma Chapingo, Mexico
○ Wageningen University, Holland
○ University of the Philippines Los Baños, Philippines
○ Kasetsart University, Thailand
○ Hanoi Agricultural University, Vietnam
○ The University of British Columbia, Canada
○ Bogor Agricultural University, Indonesia
○ Kyungpook National University, Korea
○ Mongolian State University of Agriculture, Mongolia
○ The State Agriculture University of La Molina, Peru
○ National Chung-Hsing University, Taiwan
○ Michigan State University, USA

6. Secretariat

Secretariat of International Students Forum is set up at NODAI Center for International Programs, Tokyo University of Agriculture to take care of related administrative matters.

November 17, 2002
Tokyo, Japan

Establishing Global Network for Environment, Food and Agriculture (Global NEFA)

Since 2001, the International Students Summit (ISS) has been the venue for student discussions on relevant global issues on food, agriculture and environment. Due to the call for a students' network as documented in the adopted "Tokyo Declaration" and "Action Plan", the International Students Forum (ISF) was established in 2002. In total, there have been more than 400 student-participants from around the world. Most of us have already graduated and are now part of the working society. Using the knowledge and experience we gained in the ISS, we are now playing an active role in different fields in various countries. However, there have been limited opportunities to meet and exchange information among ourselves. Therefore, we have established the "Global Network for Environment, Food and Agriculture (Global NEFA)" as an alumni association of ISS/ISF.

Objective

Based on the adopted "Tokyo Declaration" and "Action Plan", the organization aims to contribute to the sustainable development of the international society.

Membership

Membership is initially open to all past ISF members or ISS participants who agree to the objectives of the organization. Other interested persons can join the organization through a recommendation of members.

Activities

- Manage the website and mailing list
- Provide information related to employment and graduate study opportunities for students
- Organize study meetings, symposiums, and similar activities
- Promote information exchange
- Hold annual general meeting

November 25, 2005
Tokyo, Japan

Mission Statement of International Students Forum（ISF）

ISF is an international network of students which encourages cooperation, discussion and research to aid in the sustainable development of food, agriculture and environment into the future. ISF allows students to use their knowledge and expertise in their field of study to promote collective action, which will result in the unity of our global food system and our environment.

We have recognized that in order to implement the objectives of the ISF within our respective countries and area, we must consider the following plans of action:

1. The ISF joint communique and mission statement must be translated into the language of the participants' countries of origin.
2. A clear explanation of the objectives and mission of ISF must be placed online.
3. A pamphlet including the objectives and mission statement of ISF should be circulated to the members of ISF, in the language of the participant's countries of origin.
4. A newsletter should be delivered regularly to past and present ISS participants. This newsletter would include updates from alumni and the ISF.

We have recognized that in order to improve the current structure of the ISS, the following ideas must be implemented:

1. Establish the ISF in each partner university.
2. Support of the ISS student presenters must be maintained, both through the partner universities and ISF-Japan.
3. Create new partnerships with universities, in order to represent population distribution around the world.
4. Promote ISS earlier in the school year, in order to generate a new participant base.

Through the implementation of these suggestions, we believe that the promotion of the sustainability of food, agriculture and environment will be improved.

November 30, 2007
International Students Summit
Tokyo University of Agriculture, Japan

Profile: IPB University

IPB University (Institut Pertanian Bogor) is one of Indonesia's leading universities, located in Bogor, West Java. It is widely recognized as a center of excellence in agriculture, food, marine sciences, tropical biosciences, and environmental studies. In the QS World University Rankings 2026, IPB University is ranked 399 in the world, affirming its growing international reputation. Additionally, in the 2025 QS World University Rankings by Subject, IPB ranked 49th globally, 10th in Asia, and 1st in ASEAN in the field of Agriculture and Forestry.

With a student population of over 33,000, IPB hosts undergraduate and postgraduate programs as well as international students from across the world. Its main campus is situated in Dramaga, with additional facilities in Baranangsiang, Gunung Gede, Cilibende, and Sukabumi, including research and innovation stations such as the Science Techno Park, Jonggol Innovation Valley, and Tinjil Island for non-human primate conservation.

IPB University comprises nine faculties and five schools offering a broad spectrum of programs from agriculture, fisheries, and forestry to engineering, veterinary medicine, data science, business, human ecology, and economics. The university also offers international programs, including International Undergraduate Programs, Summer Courses, and Credit Transfer Programs in partnership with top universities in Japan, the Netherlands, Australia, Germany, South Korea, and more.

As a research-driven institution, IPB operates more than 24 research centers and five International Research Institutes that focus on strategic issues such as marine and fisheries, advanced technology, climate change, health and nutrition, and regional development. Between 2020 and 2022, IPB produced over 5,400 international publications, 2,100 books, and carried out thousands of community service activities.

IPB is also known for its commitment to innovation and entrepreneurship. Through the IPB Science Techno Park, the university has nurtured more than 300 startups since 1994, many of which have developed globally recognized products such as Calina Papaya, PalmOFeed, and Tempe Azaki, exported to multiple countries.

The university's flagship community empowerment program, such as *One Village One CEO (OVOC)*, connects innovation with rural entrepreneurship across thousands of villages in Indonesia, enabling farmers to access modern and international markets. IPB also pioneers smart agriculture initiatives such as *Rice Field 4.0*, *Oil Palm 4.0*, and *Smart Fisheries*, applying AI, IoT, drones, and precision farming technologies to solve real-world problems.

With more than 600 international partnerships spanning five continents, IPB University continues to expand its global footprint, bridging local wisdom with cutting-edge science to respond to global challenges as a world-class institution.

Acknowledgment

Since its inception in 2001, the International Student Summit on Food, Agriculture, and Environment (ISS) has seen remarkable growth and evolution. Over the years, the ISS has attracted more diversified participants, reflecting a broader spectrum of backgrounds, perspectives, and experiences. Additionally, the diversified ISS Advisors has brought in a wealth of expertise and insights, ensuring that the ISS continues to innovate and address the needs of its increasingly varied audience.

It would be wonderful if students could share their activities and ideas and discover new perspectives that they cannot attain from their original ground. We hope that awareness and relationships gained through the ISS will contribute to a new path of global agricultural and environmental innovation for achieving a sustainable society.

Our grateful thanks go to all those who have helped us put together the 24th ISS. To mention a few, we are deeply obliged to the ISS Advisors Committee members who have not only evaluated and reviewed the 24th ISS manuscripts, but also provided guidance, suggestions, and ideas to ensure the efficiency and effectiveness of the 24th ISS. We are also indebted to presenters who have provided superb content in their areas of study, including the Technical Advisors of each presenter. Furthermore, we would like to thank the Tokyo NODAI Committee for Global Education (国際教育専門委員会) for giving valuable academic guidance to ISS participants. We extend our sincere appreciation to the IPB University Committee, the International Education Office, for their dedicated support in hosting, organizing, and implementing the 24th ISS 2025 in Bogor Indonesia.

We would also particularly like to thank the chairpersons, general chairpersons, student advisors, and all IPB University and Tokyo NODAI students and student groups who have tirelessly dedicated themselves to preparing for the 24th ISS. We would also like to recognize the Youth Action Exhibition (YAE) participants, who showcased their posters and shared their brilliant initiatives, adding further value and inspiration to the 24th ISS 2025.

Lastly, we would like to express our sincere gratitude to the valuable audience for making this event a fruitful and enriching experience for all.

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