2022 IFOAM-Goesan International Organic Expo *industry fair

2022.9.30. ~ 10.16.
Expo Plaza Goesan County, Chungbuk Province

“
Come and enjoy the Organic Expo and learn how organic can change your life.
”

“Organic is the future”

Expo Organizing Committee Co-chairperson, Korea's reknowned Dr. Lee Si Hyung.

충청북도 CHUNGCHONGBUK-DO
괴산군 GOE SAN GUN
IFOAM ORGANICS INTERNATIONAL

5th Organic Asia Congress & IFOAM Asia 10th Anniversary

5th Organic Asia Congress & IFOAM Asia 10th Anniversary

“Transcending Borders and Generations for an Organic Asia”

Date: October 13th ~ 15th, 2022 (3 days)
Co-organized by: IFOAM-Organics Asia, Expo Organizing Committee
In partnership with: ALGOA, INOFO & GAOD

CHUNGBUK
괴산군 GOE SAN GUN
2022 IFOAM-Goesan International Organic EXPO *Industry Fair
IFOAM asia

2022 IFOAM-Goesan
International Organic EXPO + Industry Fair

IFOAM asia

ASIA Organic

Proceedings

5th Organic Asia Congress & IFOAM Asia 10th Anniversary

"Transcending Borders and Generations for an Organic Asia"

In Celebration of

YEAR OF ORGANICS 2022

충청북도
CHUNGCHEONGBUK-DO

괴산군
GOE SAN GUN

With Strategic Partners

Contents

Special Dedication

The proceedings of the 5th Organic Asia Congress & 10th IFOAM Asia Anniversary under the theme "Transcending Borders and Generations for an Organic Asia" is dedicated to the memory of the late Prof. Dr. Suh, Chong Hyuk, the Founding President of IFOAM-Organics Asia.

Prof Dr Suh, Chong Hyuk (1947 ~ 2020)

Prof Dr Suh, Chong-hyuk, the first President of IFOAM Asia, passed on April 22nd, 2020, after struggling with a chronic disease. He is survived by his wife and three children. He has been a prominent figure in the organic movements in South Korea for many years and contributed greatly to the establishment of IFOAM Asia and went on to serve as its first President.

Dr Suh also served as the Executive Director-General for the Korea Organizing Committee for the 2011 IFOAM Organic World Congress and was the key person who linked up IFOAM-Organics International and the hosting local governments to make the OWC and related events a great success. Upon, his retirement as the Deputy Director of the Korea Rural Economic Institute (KREI), Dr Suh utilized his numerous years of foreign experience in assisting with organic agriculture project developments in Asia and Africa.

IFOAM-Organics Asia will continue the work started by Dr Suh and his memory will live on in the organic movements in Asia.

(Dr Suh, on the right, with the Founding Board Members of IFOAM Asia, in Sichuan Province China, 2014)

Conference Program

5th Organic Asia Congress & IFOAM Asia 10th Anniversary

- Transcending Borders and Generations for an Organic Asia -

1. Basic Information

- Date: October 13th ~ 15th, 2022 (3 days)
- Co-organized by: IFOAM-Organics Asia, Expo Organizing Committee
- In partnership with: ALGOA, INOFO & GAOD
- No of Attendees: 150 (including 70 foreign participants)

2. Background Information of the Event

- Biennial gathering of the IFOAM membership and the organic sector in Asia
- Special VIPs, ALGOA & GAOD members are also invited

3. Components of the Event

- Opening Ceremony

  - Special Keynote Speakers, foreign and local VIPs

- Plenaries, parallel conferences & breakout sessions
- Celebrating the 10th Anniversary of IFOAM Asia
- Closing Ceremony

  - Handover ceremony to the next hosts of the OAC

4. Expected VIPs

- Government Representatives from Asia & Europe
- Current and former IFOAM Asia Board Members
- Representatives of IFOAM Asia Strategic Partners
- Representatives of ALGOA, INOFO & GAOD

5. Summary of Events

Date	Contents	Remarks
Oct 12th (Wed)	Arrival of Foreigners	
Oct 13th (Thurs)	**Day 1** (Morning) - Opening ceremony - Plenary (Keynote Speeches) (Afternoon) Sessions	
Oct 14th (Fri)	**Day 2** Sessions	Parallel sessions
Oct 15th (Sat)	**Day 3** - IFOAM Asia 10th Anniversary - Official Closing Ceremony (with Adoption of Declaration) - Official Anniversary Party	
Oct 16th (Sun)	**(Morning)** Transfer to Seoul (overnight stay)	speakers
	(Afternoon) Official Expo Closing Ceremony Transfer to Seoul (overnight stay)	VIPs
Oct 17th (Mon)	**Departure for Home country**	

6. Details of Conference

Oct 13th, 2022 / Part 1 (Opening Ceremony) **Moderators: Moon Ji Young (Vice-President, IFOAM-Organics Asia)** **Jang Sang Jun (Director of Projects, IFOAM-Organics Asia)**		
Time	**Details**	**Remarks**
09:30	Opening Remarks & Introduction of VIPs	
09:35	**Message of Greetings** - Mathew John (President, IFOAM-Organics Asia)	
09:40	**Message of Welcome** **-** Kim Young Hwan (Governor, Chungbuk Province) **Message of Congratulations** **-** Song In-hern (Mayor, Goesan County) - Shin Song-giu (President, Goesan Local Assembly) - Ju Hyungro (Director, Korea Checkoff Board) - H.E. Maria Theresa B. Dizon-De Vega (Philippines Ambassador to the	

	Republic of Korea)	
10:00	**IFOAM Asia Recognitions**	
10:30	Group Photo & Break	
Part 2 Keynote Speeches **Moderators: Yumiko Fukui (Board Member of IFOAM-Organics Asia)**		
11:00	**Keynote Speech** **"Looking Back at the Past 10 Years & Looking Forward into the Future of IFOAM Asia"** By Zhou Zejiang (Former President of IFOAM-Organics Asia)	
11:20	**Main Presentation 1** **"Transcending Borders for an Organic Asia"** By Salvatore Basile (Co-President of the Global Alliance of Organic Districts)	
11:40	**Main Presentation 2** **"Transcending Generations for an Organic Asia"** By Ryan Bestre (Asian Organic Youth Forum)	
12.00	**Special Presentation** "Voices of Organic Farmers in Asia" By Shamika Mone (President of INOFO)	
12:30	Lunch Break	

(Congress Session 1) Climate Change and Adaptation **Moderator: Dr. Wahyudi David (Universitas Barkie, Indonesia)**	
14:00	1."Urban Organic Agriculture: Addressing Food Security and Climate Change" By Prof. Dr. Abul Faiz Md Jamal Uddin (Bangladesh) 2. "BAYANIHAN and MASIPAG's Climate Change Resiliency Approach" By Rodolfo Cortez (Philippines) 3. "Certified organic analogue forestry model for climate change impact mitigation and adaptation: A case study at Maho region, dry zone in Sri Lanka" By V.M.B.Athula Priynatha (Sri Lanka) 4. "Organic farming in forest and farm area, landscape and diversification approach to climate resilience" By Vu Le Yvoan (Vietnam)
16:00	Break

<table>
<tr><th colspan="3">(Congress Session 2) Farm Productivity Session (1)
Moderator: Sundeep Kamath (General secretary, Biodynamic Association of India)</th></tr>
<tr><td>16:30</td><td colspan="2">1.“Organic management fosters yield, income, quality and soil health: Eighteen years of evidence in tropical tuber crops” by Dr G. Suja (India)
2. “The impact of compost, bio and liquid fertilizer locally manufactured on the productive characteristics of palm trees in Sidra Station / Iraq” By Dr. Jwad Enad Mahdi Al-Kalaby (Iraq)
3. “Management of insect pest in rice seedbed using a novel rectangular hand net (RHN) for insecticide free rice seedbed” By Mir Md Moniruzzaman Kabir (Bangladesh)</td></tr>
<tr><td>18:00</td><td colspan="2">Conference wrapup</td></tr>
<tr><td>18:30</td><td colspan="2">Dinner</td></tr>
<tr><th colspan="3">Oct 14th, 2022 / Congress Sessions (Parallel)</th></tr>
<tr><th colspan="2">Farm Productivity Session (2)
Moderator: Justinus Indro Surono (Board Member, Indonesia Organic Alliance)</th><th>(Congress Session 3) Market Access Session
Moderator: Manoj Menon (Executive Director, International Competence Center for Organic Agriculture, India)</th></tr>
<tr><td>09:00</td><td>4. “Innovative Organic Certification System using Satellite” By Md Reaid Alam, Founder & CEO, GreenEO UG, Germany

5: “The Plantito-Plantita Subculture in Mega Manila, Philippines: Insights on Quarantine Home-gardening During the COVID-19 Pandemic” by Justin Paolo D. Interno (Philippines)

6. “Conservation tillage and diversified nutrient sources impacts on soil properties and farm productivity of maize-pea system under organic management in the Indian Himalayas” by Dr. Raghavendra Singh (India)</td><td>1. “Vetiver Women Micro-entrepreneurship: Building resilience through mutually benefited interaction between nature and local community” by Jacob Jose (India)

2: “Transcending Borders and Generations for Organics via New Media: A Maldives Case Study” by Mohamed Hoodh Ibrahim (Maldives)

3: “PGS Organic Vegetable Production Practices in Luong Son district, Hoa Binh Province, Vietnam” by Nguyen Thi Ai Nghia (Vietnam)</td></tr>
<tr><td>10:30</td><td colspan="2">Break</td></tr>
</table>

11:00	7. “Connection of Pacific/Indian Ocean Sea Surface Temperature Variability and Rice Production in Indonesia” By Rizaldi Boer (Indonesia) 8. “Inter-row cultivation with wheel hoe weeder for organic weed management in okra (Abelmoschus esculentus L.) and finger millet (Eleusine coracana L.)” by Dr Sheeja K. Raj (India)	4: “Beyond Organic Farm to Table: Fresh Start Organic experience” by Ramon Uy Jr (Philippines) 5: “Six Star Value-Added Agriculture in Tribal Communities“ by Miao-Fei Lin (Taiwan) 6: “Growing from a single CSA farm to a regional economic system in solidarity” by Christoph Simpfendörfer (Germany)
12:30	Lunch Break	
(Congress Session 4) Sector Development for Social Inclusivity Moderator: Victoriano Ihong Tagupa (ALGOA Ambassador)		
14:00	1. “Building Youth Entrepreneurship by Using Digital Organic Farming Resources” By Dr. Paul Van Mele, International Director, Access Agriculture, Belgium 2. “The Value of Traditional Ecological Knowledge and Contribution of Contemporary Innovation Practices in Organic Agriculture” by Jia-Xin Yang (Taiwan) 3. “Making of Indigenous Microorganisms (IMO): A grade 7 Biology Pandemic Remote Learning Homebased Activity – A thrust in integrating Organic Farming Advocacy Activity to enrich Social and Emotional Learning through Collaborative Investigation” By Myla Fe Pinuela (Philippines)	
15:30	Break	
16:00	4. “New pattern for organic agriculture to boost local economy” by Sangam Sherpa (Nepal) 5. “Indonesian Indigenous food facing climate change” By Bibong Widyarti (Indonesia) 6. “Addressing Malnutrition among Underprivileged school children from developing economics supplementing with organic vegetables applying biodynamically enriched municipal compost” By D. Thangapandian (India)	
17:30	Conference Wrapup	
18:30	Dinner	

Oct 15th, 2022 (IFOAM Asia 10th Anniversary Celebrations) **Moderators: Sabastian Saragih (Auditor, IFOAM-Organics Asia, Indonesia)** **& Jennifer Chang (Executive Director, IFOAM-Organics Asia)**	
09:00	**The Road Taken "The Growth & Progress of an IFOAM Regional Body"** By Andre Leu (Former President, IFOAM-Organics International / International Director, Regeneration International) **-video message**
09:20	**Birth of IFOAM Asia and Consolidation** By Zhou Zejiang (President, IFOAM-Organics Asia Advisory Board, China)
09:40	**Sharing of Memories of IFOAM Asia (1)** By Manoj Menon (India), Patrick Belisario (Philippines), Ashish Gupta (India) & Rasdi Wangsa (Indonesia)
10:10	**Sharing of Memories of IFOAM Asia (2)** By the Founding Members of the Asian Organic Youth Forum: Miyoshi Satoko (Japan), Zhang Tingting (China), Li Feng (China) & George Kwak (South Korea)
10:40	Break
11:00	**Ways Forward (1)** By Indro Surono (Indonesia), Sundeep Kamath (India), Yumiko Fukui (Japan), Asan Alymkulov (Kyrgyzstan)
11:30	**Ways Forward (2) "Voices from Organic Women in Asia"** Akali Sema (India), Emilia Setyowati (Indonesia), Selina Gan (Malaysia), Kesang Tshomo (Bhutan – video presentation)
Special Session- Launching of the Organic Youth Initiative Award (aka Dr Suh Memorial Scholarship) **Jang Sang Jun (Director of Projects, IFOAM-Organics Asia)**	
12:00	Photo Slide Show of the late Dr Suh, Chong Hyuk Introduction of the Award & Operations By Mathew John (President, IFOAM-Organics Asia)
12:30	Wrapup & Lunch
Special Session: Launching of the International Committee on School Meals & Public Procurement **"Leave No Child Behind"** **Moderator: Jostein Hertwig (Executive Director, Global Alliance of Organic Districts)**	
14:00	**Report from the 1st International Conference on School Meals**

	By Sara Seing (Head of the Diet Unit, Södertälje Municipality, Sweden) – video presentation
14:15	**Introduction to the International Committee on School Meals & Public Procurement** By Salvatore Basile (Co-President, Global Alliance of Global Districts, Italy)
Closing Ceremony of the 5th Organic Asia Congress Moderators: Vic Anthony Joseph Fabre Tagupa (Chief Operating Officer, IFOAM-Organics Asia) & Shamika Mone (President, INOFO)	
14:25	**Closing Ceremony** **1. Report from the Congress Sessions** By Shaikh Tanveer Hossain (Director of Strategy, IFOAM-Organics Asia) **2. Report from the Organizers of the 4th Organic Asia Congress** By Emilia Setyowati (President, Indonesian Organic Alliance Former Host of the OAC) **3. Handover Ceremony to the next hosts of the OAC** Mayor Song, in-hern (Goesan County, 5th OAC hosts), Mathew John (President, IFOAM-Organics Asia), Mayor Rommel Arnado (Municipality of Kauswagan, Philippines), Emilia Setyowati (President, Indonesian Organic Alliance Former Host of the OAC) **4. Video Presentation of Kauswagan & Acceptance Speech** By Mayor Rommel Arnado (Municipality of Kauswagan, Philippines) **5. Adoption of the Congress Declaration** Karen Gerson & Members of the Asian Organic Youth Forum **6. Closing Speech** Mathew John (President, IFOAM-Organics Asia)
15:30	Return to hotel
17:00	Official Banquet

Oct 16th, 2022 **Official Expo Closing Ceremony**	
10:00	Departure for Seoul (Speakers)
10:00	Solidarity Networking Meeting (VIPs)
Official Expo Closing Ceremony (For VIPs Only)	
15:00	**Start of Closing Ceremony** -Speeches -Recognitions

	- Adoption of the “Organic Governors & Mayors Declaration” -Official Closing of the Expo
16:30	Departure for Seoul (VIPs)

Oct 17th, 2022 Departure for Home Country

Message of Greetings

Mathew John (President, IFOAM-Organics Asia)

Your Excellencies, Distinguished Guests, Ladies and Gentlemen,

Welcome to the 5th Organic Asia Congress. Once again, the organic sector and the movement meets in Goesan County, Korea, for the opening of another great organic event. I do not have enough words to express how good it will be to meet all the participants around the world.

The theme "Transcending Borders and Generations for an Organic Asia" expresses the thought process that is an underlying discussion now. A constant effort to reach new ears and geographies need to be undertaken while also going deeper into cooperation with countries that have already made a start in the organic world. Another critical part is also the transition to a new generation of young people who need to carry the organic flag forward.

Bringing the young generation into the organic sector is of absolute importance for the progress of organic agriculture. New policies of support, capacity-building, market access, etc are all necessary to attract the younger generation to return to farming and build their future in rural communities.

Life continues to be a challenge for all of us. Covid continues to be a grim reality and it is a reminder of the environmental damage that is still wreaking around the world. Nothing is more important than the health of the people, animals, plants, and other living things that inhabit our Mother Earth.

The time is NOW – to take actions to go organic and to reach zero carbon that is being pursued by many governments in Asia as an alternative to the escalating climate crisis.

Organic agriculture has considerable potential for reducing emissions of greenhouse gases and increases soil fertility, leading to sequestration of carbon dioxide into the soil. Organic production methods emphasizing soil carbon retention are most likely to withstand climatic challenges particularly in those countries most vulnerable to increased climate change. Furthermore, organic systems are highly adaptive to climate change due to the application of traditional skills and farmers' knowledge, soil fertility-building techniques and focus on building up biodiversity.

We need to go organic to save the Planet and we need to come up with concrete action plans to achieve our goals.

We have just finished the celebration of 50 years of IFOAM-Organics International. This Congress celebrates 10 years of IFOAM Asia.

The 10 years is just a number – the very roots of organic agriculture are embedded in our soils and farmers. As all of us continue to work, build, and strengthen societies, let us remember that the earth needs to heal, and organic agriculture is a big part of that solution.

Let’s Celebrate the Year of Organics!

Message of Welcome

The Honorable Kim Young-Hwan, Governor of Chungbuk Province

Distinguished Guests and Speakers from all over the World, Citizens of Chungbuk Province, ladies and gentlemen,

On behalf of the citizens of Chungbuk Province and Goesan County, I would like to express my warmest welcome to the participants from all over the world, especially Asia. It is a wonderful opportunity to have the 5th Organic Asia Congress as part of the many events of the 2022 IFOAM-Goesan International Organic Expo and to welcome the many delegates who can also enjoy the diverse events and programs of the Expo.

And my deepest congratulations also go to IFOAM-Organics Asia on the celebration of its 10th Anniversary!

Since 2015, IFOAM-Organics Asia has its Secretariat based in Goesan County and from 2020, the International Network of Organic Farming Organizations (INOFO) has registered legally in the county. Such bases have certainly led to the increase in the status of Goesan as the organic hub in Asia and as the home of the Organic 3.0 Goesan Declaration.

I look forward to more ways of cooperation and networking in the development of the organic sector and I hope you have a successful discussion with outcomes that can be implemented into policies and models for emulation.

May You and Your Families be Blessed with Good Health and Happiness!

Gamsahamnida!

Message of Congratulations

The Honorable Song, In-hern, Mayor of Goesan County

Welcome to Goesan County, the home of the International Organic Expo!

The 1st Organic Asia Congress was held here in Goesan in 2016 and now it is my pleasure to congratulate the opening of the 5th Organic Asia Congress, again in my hometown of Goesan! And I would also like to congratulate IFOAM-Organics Asia on the celebration of its 10th anniversary!

The theme of "Transcending borders and Generations" is quite opportune as Goesan County has worked with IFOAM-Organics Asia in building up international alliances that have crossed borders. International networking has been one of the core work areas that has culminated in the consolidation of international organizations, putting Goesan on the map as the hub of organics in Asia.

The capacity-building of the younger generations to become more involved in the organic sector is more important than ever. Awareness by young people on the importance of organic agriculture as one of the solutions to achieving carbon neutrality and as a sustainable way of living is crucial as they are the stewards of Nature and the leaders to take the organic sector forward.

I hope you will enjoy the Conference and the 10th Anniversary Celebrations as well as the many events of the International Organic Expo.

I wish you success in your Conference!

Gamsahamnida!

Message of Congratulations

The Honorable Shin, Song Giu, President of the Goesan Local Council

Distinguished Guests from all over the World, Ladies and Gentlemen,

Welcome to the International Organic Expo and to Goesan County!

It is a pleasure once again to open the 5th Organic Asia Congress, first initiated in 2016 in Goesan County. This year is special as the Congress coincides with the last phase of the International Organic Expo and culminates with the official Expo Closing Ceremony.

I also would like to give my words of congratulations to IFOAM-Organics Asia on the celebration of its 10th Anniversary. May it flourish and spread its influence for many years to come!

Like the theme of the Expo “Organics for a Healthy World” emphasizing on the health of the world and ecosystems as One and Indivisible, the theme of the Organic Asia Congress also highlights the theme of going together with the younger generations to bring about the changes needed to save Mother Earth from environmental destruction.

Goesan County, as the hub of organics in Asia, will continue to support the participation of the younger generations in organic agriculture as they are our present and the future.

I hope you have a fruitful Congress!

May Good Health and Fortune Shine on You and Your Families!

Gamsahamnida.

Keynote Speech

"Looking Back at the Past 10 Years & Looking Forward into the Future of IFOAM Asia"

Zhou Zejiang - Former President

When I reflect on the past ten years of IFOAM Asia, I am amazed at the progress that has been made. With a small core group of dedicated staff and a small operations budget, we have made great strides into consolidation as an organization and growing from a regional body into an organization that works with likeminded organizations all over the world.

Harnessing Our Strengths into Actions to Our Fullest Capacity

With almost no budget and one full-time staff member, IFOAM Asia took stock of what could be done during its early stages of formation. All were passionate and dedicated to the ideals and Principles of Organic Agriculture and all determined to make IFOAM Asia a success.

We had an energetic Board which by coincidence, were all working with their respective local governments on organic projects. The idea came about linking bio-villages into a group in Asia and this initiative was enthusiastically taken up by the local governments in South Korea, Philippines, and India. This laid the foundation for the start of the Asian Local Governments for Organic Agriculture (ALGOA). This initiative was quite opportune as our Executive Director of IFOAM Asia had some years of working with central and local governments at international organizations.

The Board Members actively pursued funding for conferences, meetings, and fairs to publicize the name of IFOAM Asia and to meet with the organic stakeholders in Asia. We traveled extensively for meetings with local governments, IFOAM members and other relevant stakeholders. We needed to make known the name of IFOAM Asia – we needed to raise awareness of what IFOAM-Organics International has already achieved and understand what IFOAM Asia has to undertake to mature.

IFOAM Asia membership grew steadily from 88 members in 2013 to over 200 by 2021.

Listening, Listening….and Understanding the Needs of our Members and Relevant Stakeholders

We listened and listened to what our members and other relevant stakeholders were telling us. We bonded with our members and tried to understand their needs and to find ways of support. And due to such efforts, ideas developed on a capacity-building program for local government officials as we discovered that these officials were often the bulwark in the implementation of the necessary policies to support our farmers.

ALGOA Organic Foundation Course-more than 270 government officers trained

This is perhaps the most soul-enriching work – we saw people being influenced by the 7-day residential training in South Korea and in other countries in Asia. The training was joined with visits to organic sites and personal meetings with local organic farmers and pioneers. We began to see an increased understanding and passion for organic development among the government officers and this gradually culminated into good governance and policies.

Wonder of Wonders – Spontaneous Formation of the Asian Organic Youth Forum

Perhaps the wonder of wonders was the spontaneous grouping of the young people who were trained under the Organic Foundation Course! It still delights me when I see the younger generation taking the initiative to create something so original and take things forward to the next steps.

The first graduates of the Organic Foundation Course put their heads together after the usual rounds of alcohol!! and camaraderie and they came up with what they could do best – talking with other young people like them.

Until today, our young people have organized their Organic Youth Forums in China, Philippines, Taiwan, and India to great success. They have reached out to other young people in Europe and in 2020, founded the Young Organics-Global Network and then went on to organize the 1st World Organic Youth Summit in 2021.

Organic Sisterhood – WOAA

I am proud of be an “honorary sister” – a title bestowed upon me by the energetic and passionate organic women of Asia. The Women in Organic Agriculture in Asia (WOAA) is a happy group of women who meet regularly to do what women do best….chat, share, and inspire each other!

They carry out regular meetings, invite experts and exchange their stories. And take things forward!

Vision for the Future

The foremost role of IFOAM Asia lies in its representation of organic farmers in Asia. All programs, strategies and policies should reflect the single fact that our farmers are the backbone of our society – the providers of our food and the caretakers of our health. We must do all we can to work with our organic farmers.

IFOAM Asia should continue to work with governments and other public agencies. Its work with ALGOA and the Global Alliance of Organic Districts (GAOD) have brought about changes within the local governments especially with the launch of the professional ALGOA Centers (ALGOA Center for Organic Learning, ALGOA Center for Public Procurement, ALGOA Center for Organic Governance).

Finally, I cannot stress more on the importance of capacitating our younger generations to become more involved in organic agriculture. Without our younger generations, there will be no progress and no future. Let us create all opportunities for our younger generations and assist them on their organic journey.

Main Presentation

“Transcending Generations for an Organic Asia”

Ryan Bestre – ALGOA Organic Foundation Course Masterclass Alumni 2022

The average age of farmers globally is about 60. There seems to be low interest among the youth in farming, agriculture, and the food system in general. The Food and Agriculture Organization of the United Nations identified key challenges for youth and agriculture. This includes insufficient access to knowledge, information, and education; limited access to land; inadequate access to financial services; limited access to markets; and limited involvement in policy dialogue.

Despite these challenges, there are opportunities in expanding the organic movement further. Nielsen’s report in 2015 reveals that 73% of millennials are willing to pay more in the name of sustainability. An emerging market for Generation Z shares the same preference of buying from sustainable brands. Young people are resigning from their jobs and are ditching corporate or city life for a simpler one that prioritizes wellbeing. Some of them engage in farming and embrace alternative living.

As the youth begin to take the helm from organic pioneers in working towards an organic future, how can the sector deal with both the challenges and opportunities?

PRESENTATIONS FROM THE CONGRESS SESSIONS

(Congress Session 1) Climate Change and Adaptation

“Urban Organic Agriculture: Addressing Food Security and Climate Change” By Prof. Dr. Abul Faiz Md Jamal Uddin (Bangladesh)

Prof. Jamal Uddin was born in Cumilla, Bangladesh on 31 December 1965. He graduated in 1987 in Agriculture and subsequently obtained Master of Science degree in Horticulture from Bangladesh Agricultural University, Mymensingh in 1989. He started his professional career at Crop Diversification Project of the Department of Agriculture Extension as a ‘Horticulturist’ in1991.

He conducted higher research studies on ornamental horticulture and obtained Ph.D. degree from Kagoshima University, Japan in 2003. Since 2004, he has been a faculty member at the Department of Horticulture, Sher-e-Bangla Agricultural University and have published more than 300 scientific research work in national and international journals in his own field of research and studies.

Urban organic agriculture: addressing food security and climate change

Prof. Dr. AFM Jamal Uddin

Department of Horticulture, Sher-e-Bangla Agricultural University

Dhaka, Bangladesh

Climate change, a glaring global health threat of the 21st century, has become a matter of great issue around the world. As a result of changes in climatic variables brought on by climate change, agriculture has become a vulnerable sector in recent years. On the other hand, due to the increase in global population, the consequent urbanization, and the accompanying industrialization, the amount of available agricultural land is also rapidly dwindling. The effect of climate change and its ramifications can also be seen in Dhaka, the capital of Bangladesh which is the 11th megacity in the world.

The current metro area population of Dhaka in 2022 is almost 22.5 million according to macrotrends. Water bodies and wetlands around Dhaka are facing destruction as they are being filled up to construct multi-storied buildings and other real estate developments which threatens to destroy much of the regional biodiversity in Dhaka city (The Daily Star, March 2007).

As in the rest of the world, urban agriculture can be used as a tool to combat the risk of diminishing agricultural land and subsequent decreased agricultural production, which threatens food security and leads to environmental damage.

Prospect in Bangladesh

Bangladesh has made numerous advancements in urban agriculture. In 2015, the United Nations declared that it's aiming to achieve "zero hunger," "food security," "improved nutrition," and "sustainable agriculture," and wants to meet all the criteria, especially that of "food security," meaning people at all times will have physical, social, and economic access to sufficient, safe, and nutritious food irrespective of class, gender, or region (World Food Conference, 1974). And so, the Bangladesh Ministry of Agriculture places a strong emphasis on urban farming, as it can be the ultimate logical solution. NGOs and different research institutions have carried out various projects on urban farming.

Urban agriculture in Bangladesh

In Bangladesh, the most popular form of urban agriculture is rooftop gardening. In Dhaka,

approximately 36.4 percent of roofs are used for urban farming. It is estimated that 10,000 ha of space in Dhaka city can be brought under rooftop farming, and residents will be able to taste fresh vegetables, with rooftop farming meeting more than 10% of demand (Wardard, 2014). Another form of urban agriculture, hydroponics, is also gaining popularity among city farmers in recent times.

Challenges in Rooftop Farming

When it comes to dangers associated with the hygienic quality of food produced, the heavy metal content of polluted soils and/or the atmosphere, as well as the bacteriological load of irrigation or washing water, are the two main difficulties. Increased biodiversity and favorable conditions, such as standing water, may promote pest dissemination and disease transmission via a rise in the mosquito population in Bangladesh. On the contrary, water scarcity in some locations may result in competition for available water between human and agricultural needs. Urban farmers in Bangladesh are adopting drip irrigation along with timer technology as a solution to these issues in recent times.

Methods and Measures for Popularizing and Supporting Urban Farming in Bangladesh:

Green Dhaka

Urban organic agriculture has a big impact on the upcoming "Green Dhaka" program and can be applied broadly to reduce pollution. This initiative by Dhaka City Corporation aims to create a greener Dhaka. This project's primary goal is to lower the city's temperature, but it will also try to increase production. Scientists predict that by planting trees, the city's heat will be decreased by at least 5 degrees over three years. For this reason, it was decided to cover 60–70% of the city's building rooftops with rooftop gardens. The proposal also calls for planting various shrubs to spruce up the footbridge and the area by the road.

Broadcasting Media

Mass media are broadcasting agriculture-related TV and radio programs like Mati o Manush, Dipto Krishi, etc., and newspapers are publishing different types of articles to increase public awareness.

Social Media

Social media has been able to contribute significantly to this field by creating community and sharing knowledge regarding urban agriculture. Different types of groups are formed on a regional basis to promote and encourage urban dwellers. 90 Minutes Schooling and Green Bangladesh are among them.

90 minutes Schooling:

Like any other gardener, urban farmers also face several issues due to their lack of knowledge and access to proper resources. The 90-minute school program concept focuses on this critical area of knowledge flow and provides a pathway to ensure urban gardeners receive the best possible information under the supervision of Professor Dr. A.F.M. Jamal Uddin.

This program encourages urban people to ask about anything regarding their rooftop garden and urban environment quarries. Information about soil preparation, planting techniques, symptom identification, disease remedies, ecological improvement tips, etc., is shared in an easy, friendly, and interactive way so that people can understand and incorporate them into their daily lives. The school also provides various training facilities regarding plant health, propagation, and management practices such as organic farming, t-budding, cutting, grafting, hydroponics, soil preparation, pest control, harvesting and post-harvesting techniques, etc., and also lifestyle training to mitigate the effects of urban environment disasters.

The 90 minutes schooling is held every alternate Friday at Sher-e-Bangla Agriculture University in front of enthusiastic urban gardeners. The Facebook group 90 Minute Schooling and the YouTube channel of the same name is serving this purpose. These classes are live broadcast through these social media platforms. The 90-minute schooling even stayed active virtually during the pandemic lockdowns through online classes conducted to provide solutions for urban farmers.

This program is completely free to attend, and it also encourages creating a mutual social bond between the attendees, which also serves a humanitarian purpose. It also works on the development of training modules/booklets/leaflets/handbooks on rooftop gardening.

The activities of 90-minute schooling are not only limited to Dhaka city. The classes have also been conducted in other major cities of Bangladesh like Cumilla, Rajshahi, etc. It also has plans to expand its activities throughout the country in the near future, ensuring the flow of information among people of all walks throughout the country.

The activities that take place during the 90 minutes are; motivational activities workshops and seminars for urban dwellers. Raising awareness and ensuring the flow of effective, easily understandable, and applicable knowledge among the urban population is the motto of the 90-minute schooling program. The 90-minute schooling also provides a Green Captain’s Award to the most dedicated urban farmer to encourage them and others.

The 90-minute school concept is relentlessly working towards achieving its objectives, which are: mitigation of the Urban Heat Island effect; reduction of air pollution; raising awareness about environmental conservation among urban people; promotion of the rooftop gardening and green sharing concept. "Green sharing" is the concept of exchanging greens such as rare plants, seeds, and other propagating materials. Green Minds is a concept that can be introduced to Dhaka to raise environmental and pollution awareness through 90-minute schooling.

For instance, air pollution and UHI are now the death threats for Dhaka city's dwellers, and they will be more crucial in the near future. In order to solve these problems, Plants or rooftop gardens can be another solution for mitigating these problems and enhancing urban living standards, functionality, and resilience. Green Minds will work with the WHO, UNDP, ADB, the Ministry of Agriculture (MoA), agriculturists, the Department of Environment, architects, and journalists, among others, to organize a discussion to address these issues in Dhaka.

Every month, Green Minds will publish a single-page newsletter to forecast the current and next issues of environmental and pollution policy for Dhaka city. The 90-minute school is a digital revolution that resonates with the "Digital Bangladesh: Vision-2021". This program will use the internet to distribute high-quality, short, and easy-to-understand video clips of various important and effective agricultural and environmental content throughout the country, with a focus on urban society. In conclusion, 90 Minutes Schooling is an initiative to provide a hands-on solution to tackle urban agricultural and environmental challenges.

Green Bangladesh:

Green Bangladesh-A Society for Agriculture and Environmental Innovation is a non-political, non-profit voluntary organization. Its main goal is to develop and expand the technology of sustainable agriculture by increasing the awareness of people across the country to protect the natural environment. To promote rooftop agriculture, especially in urban areas, and provide training for rooftop gardeners to increase their agricultural knowledge. Green Bangladesh has so far distributed seasonal seeds and seedlings among its members through many events.

These events are concentrated on sapling distribution with a free consultation from expert members. Members can exchange their own seeds, seedlings, cuttings, etc., free of charge to get their desired plants. It encourages green exchanges. Through its Facebook group, which has close to 8000 members, it delegated its activities. Focused on the free consultation program for the distribution of saplings, group members can exchange questions and images of their trees, fruits, and flowers to discuss their

experiences in agriculture. They can publish articles about agricultural studies as well. This contributes to the expansion of urban greenery on a much larger and quicker scale, as well as the enrichment of their collections.

Additional Activities

- A research team from Sher-e-Bangla Agricultural University has spent the last ten years examining the effects of rooftop gardening and organic urban agricultural methods on the urban area.

- Urbanites and young individuals are increasingly embracing spirulina, a superfood. The production of spirulina in Bangladesh has the potential to both meet the nutritional needs of the family and develop a market. SAU has taken steps to educate interested parties about spirulina processing and production.

- The research team at Sher-e-Bangla Agricultural University has been concentrating on the usage of vermicompost and Clybio as organic biostimulator for urban farming in cities. In addition, they are aiming to develop business opportunities for contemporary farmers through the production and promotion of these products. They recently introduced Krishi Shawpna, a venture and blockchain-based urban agriculture technology platform. Through direct connections between farmers and consumers, this platform fosters micro-entrepreneurship while ensuring fair pricing, food safety, and food traceability on both sides. To meet the demands of city farmers, urban agriculture-based businesses and organizations are growing there. Urban farmers can access fast information through a variety of smartphone apps.

Conclusion

Bangladeshi city dwellers are increasingly becoming more environmentally conscious, and their level of participation in this cause is rising daily. This revitalizes the green movement and helps to lower the food shortfall and maintain food security while enhancing environmental standards. The government and non-government organizations, along with private individuals, are collaborating to make urban agriculture sustainable. This method will assist us in producing more food on a reduced amount of land, thereby providing food security, and maintaining food safety for Bangladesh's fast-expanding population. Additionally, it will assist in maintaining environmental stability, which will enable us to counteract the consequences of climate change.

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‘BAYANIHAN and MASIPAG’s Climate Change Resiliency Approach” By Rodolfo Cortez (Philippines)

Rodolfo “Don-Don” Cortez Jr**.** is a rice farmer leader and farmer-trainer in Kabankalan City, Negros Occcidental. He is an active leader in his Peoples Organization (PO) BAKAS.

Don-Don has a long experience in land rights campaign and agroecology both in theory and in practice. For more than a decade, Don-don gained expertise in Farmers Training on Farmer-Led Breeding, Soil Fertility Management and Alternative Pest Management and Livestock Integration, Organizational Development and Advocacy capacities. Don-don is also a PGS peer-reviewer and the National Chairperson of MASIPAG’s Farmers Guarantee System (MFGS).

He is presently the Chairperson of the Regional Management team in the Visayas of Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura (MASIPAG)- a national network of farmers, scientists and NGOs that promotes sustainable use and management of biodiversity through farmers control of genetic and biological resources, production, and knowledge.

Bayanihan and MASIPAG's climate change resiliency approach

Rodolfo Cortez

Kabankalan City, Negros Occidental, Philippines

Magsasaka at Siyentipiko para sa Pag-unlad ng Agrikultura or simply MASIPAG is a farmer-led network of People's Organizations (POs), Non-Government Organizations (NGOs) and Scientists upholding farmers rights to traditional seeds, farmers technology and appropriate knowledge, that started in 1985 as a unity of the first *Bigas Conference* in the Philippines.

MASIPAG promotes sustainable, organic farming to achieve sufficient, safe, accessible and affordable food for all. MASIPAG's programs, in its entirety, aim to build self-reliant and resilient communities. It is undeniable that the condition of the world is serious due to high levels of carbon gas thus rising temperatures. With this, MASIPAG programs aims to develop and enhance farmers' and communities' capacity in addressing challenges brought by climate change.

Small farmers, experience extreme effect and impact of the changing climate. It has intense effect on agriculture, production and livelihood. The Philippines, which is composed of more than 7,000 islands, is considered one of the biggest archipelagos in the world. Aside from agricultural production and cultivation, a considerable percentage of Filipinos belong to fishing communities. Both farmers and fisher folks experience grave impact of climate change and continuously face challenges that come with it.

The Philippines is located at the western side of the Pacific Ocean and within what we call the Ring of Fire; this location contributes to the rising temperature which is exacerbated by climate change. According to World Risk Report in 2018, Philippines ranked third in terms of disaster risk.

On the average, 20 typhoons visit the Philippines annually where calamities like typhoon cause serious economic problems. In fact, in 2010-2019, calamities caused the country an estimated Php463 B loss from agricultural produce and 12,097 lives.

Farmers experience different sorts of climate change impact. Some of these are: Rising sea water level which causes saltwater intrusion prolonged drought which means less water for crop production like rice as well as for animal husbandry.

In 2019, farming communities experienced one of the worst droughts ever recorded in the country's history. Local agriculture authority reported Php643 Million production loss due to drought with rice production being affected the most.

Despite the intensifying effects of the changing climate, MASIPAG farmers are ever so persistent in strengthening organizations and developing sustainable practices and skills to respond to various climate change-related challenges.

In facing and addressing challenges like corporate capture of agriculture, anti-farmer government policies and climate change, the key is having strong and united farmers organizations Likewise, *Bayanihan* or the traditional practice of mutual assistance and solidarity in rural communities is key As they say, there is no task that cannot be done faster and made easier if *Bayanihan* is practiced.

Through *Bayanihan,* the value of sharing, cooperation and unity is strengthened and, in the process, capacitates farmers in addressing climate change and think of ways to improve their production and economic condition.

Additionally, *Bayanihan* is an important tradition or culture which is proven appropriate and effective in achieving local, safe food for the family and the community. In MASIPAG, we have close coordination among the farmers, NGOs, and scientists. There is active partnership and support mechanism among the 3 sectors to ensure organizing, capacity building, technology development and research, and alliance building which results to farmer empowerment and would ultimately result to community resiliency and rural development.

What has been achieved by MASIPAG?

MASIPAG is successful in the conservation and improvement of traditional, MASIPAG-rice and Farmer-bred rice Currently, MASIPAG conserves and maintains different rice varieties, vegetables, root crops, forage and native poultry and livestock

At the MASIPAG National Back-up Farm, 747 Traditional rice, 1,205 MASIPAG-rice, and 180 Farmer-bred rice are maintained through in-situ conservation. These rice varieties are distributed among MASIPAG members using the Trial Farm Strategy. These thousands of rice variety in the MASIPAG collection and in farmers' trial farms, are collectively being improved, farmers are able to identify varieties that are appropriate in their local condition, climate, needs and ecosystem based on keen and thorough care and observation.

MASIPAG farmers are able to identify drought resistant, flood resistant, and salt water resistant as well as pest and disease resistant rice varieties. In having own seeds, MASIPAG farmers are free from agro corporations' control over seeds and technology.

Aside from issues on rice, where MASIPAG sprouted, farm crops and livestock diversification is central issue among MASIPAG farmers. Integration of different farm components is key in enriching biodiversity and enhancing sustainable food production. The effort in strengthening environment's resiliency would result to resilient communities.

During the government-imposed community quarantine or lockdowns, people's resilience around the world was tested. In the Philippines, intensely affected are the vulnerable sectors in the peasant communities and urban settlers.

Problems and challenges in the current food system that is existing even before the pandemic only exposed these flaws and worsened the situation. Due to the pandemic's effect on movement and transportation, distribution and access to food was also affected.

In the spirit of *bayanihan*, MASIPAG farmers share their harvest with the community through pantries and barter system. Moreover, MASIPAG recognizes and values active participation of the youth sector in production with exceptional care for the environment and health Additionally, MASIPAG recognizes the energy and creativity of the youth in highlighting campaigns and upholding farmers rights.

What are the aspects or points for improvement for MASIPAG?

Efficient and significant implementation of MASIPAG programs as well as its continuity relies on strong and united farmers organizations. It is important for relatively advanced POs to express their support to POs with organizational strengthening needs in order to embrace and practice MASIPAG's vision, mission, and goal. The dominant agriculture policies and the pandemic brought to us severe challenges.

Despite this, MASIPAG continues to carry out its roles; members and partners' consolidation, educational discussions and sharing, enhancing technical, socio-cultural, economical, and political awareness of the network members especially farmers. In order to bravely face and withstand environmental, political, and economical challenges, it is necessary to continue to overcome doubts and rely on the strong and united stand of the MASIPAG network.

The united and firm stand, the collective voice and action of the people – led by the farmers – has the power to influence national and even international policies Although MASIPAG's practice and

campaign for farmers' rights to land, seeds, and technology, among others, have gained considerable victories, MASIPAG still has a long way to go to fully achieve its vision, mission, and goal; a just and humane society that is sustainable and where there is holistic development for the people by improving the quality of lives of resource-poor farmers. In every goal, and in all aspect of it, unity and solidarity is fundamental and is key in the development among small farmers and communities.

When there's genuine development especially among small farmers, we can say that it's a major step towards genuine rural development.

“Certified organic analogue forestry model for climate change impact mitigation and adaptation: A case study at Maho region, dry zone in Sri Lanka” By V.M.B. Athula Priyantha (Sri Lanka)

V.M.B Athula Priynatha, BSc Agriculture (Sp), MSc (NRM), was born in Central hills of Sri Lanka.

In 1991, Analogue forestry technology was introduced as an Agro-forestry model at Maho region in dry zone of Sri Lanka and at Welimada region in central hill of Sri Lanka through National Cooperative Council (NCC) of Sri Lanka with financial support of Canadian Cooperative Association (CCA) .

In 1995, joined to Lanka Organics (Pvt) Ltd which is pioneering company in growing, processing, and exporting organic products in Sri Lanka as extension officer and small scale organically certified farmer groups were developed with small scale farmers who have implemented agroforestry model with national cooperative council in 1991. The first Sri Lankan group certification was started in this project area and it was expended to others areas of the county.

In 2009, joined to *Seethavelley* Biodynamics (Pvt) as a senior manager and developed small scale certified farmers groups in many areas of the county and contribute to develop the Marginalized Organic Farmers Association (MOFA) as fair- trade farmer organization.

In 2011, incorporated *Mihimandla* products (Pvt) Ltd for market the organic products produced by small scale famers and in 2013, marketing organically certified organic products was started with collaboration of *SriCert* Certification body through Sri Lankan Leading Super Market Chains.

Since 2000, served as an executive committee member of Lanka Organic Agriculture Movement (LOAM) and currently serving as the secretary of LOAM.

Certified organic analogue forestry model for climate change impact mitigation and adaptation: A case study at Maho region, dry zone in Sri Lanka

V.M.B.Athula Priynatha

Secretary, Lanka Organic Agriculture Movement (LOAM) – Sri Lanka

Sri Lanka is an Island situated off the south-eastern tip of India, covering an area of 6.54 million hectares. Its population exceeds 21 million, about 82 % of whom are rural residents. Rainfall is uneven and broadly divides the country into three main climatic zones: Wet Zone (Mean Annual Rainfall (MAR) is over 2500mm), Dry Zone (MAR is1200-1800mm), and Intermediate Zone (MAR 1800-2500mm.)

Agricultural land covers in Sri Lanka approximately 2.6 million hectares, or roughly 42% of total land area. With average landholdings less than 2 hectares, smallholder farmers are in charge of almost 80% of Sri Lanka's total annual crop production. Agriculture accounts for 25.1% of the country's total greenhouse gas (GHG) emissions.

Sri Lanka is vulnerable to climate-related natural disasters that have major economic impacts. Long-term, annual losses for housing, infrastructure, agriculture, and relief from natural disasters are estimated at LKR 50 billion (US$327 million),

Hotspot areas are the most vulnerable to climatic events**.** These areas are predominantly agriculture based and therefore the livelihoods of smallholder farmers are at risk.

Analogue forestry models were developed for soil water conservation, biodiversity improvement, improvement of microclimate, mitigating climate change impacts and adapting to climate change impacts while improving income of the small-scale rain fed famers in *Maho* region in Sri Lanka. *Maho* region is situated in dry zone of Sri Lanka and this region is in a hotspot area which is most vulnerable to climate events.

Analog Forestry is an approach to ecological restoration which uses natural forests as guides to create ecologically stable and socio-economically productive landscapes**.** Analog Forestry values not only ecological sustainability, but recognizes local rural communities' social and economic needs, which can be met through the production of a diversity of useful and marketable goods and services, ranging from food to pharmaceuticals and fuel to fodder.

In addition, Analog Forestry is one of the best Climate smart agriculture technologies which is initiatives sustainably increase agriculture productivity, enhance resilience of agro-systems, and reduce/remove greenhouse gases (GHGs) from agriculture production.

Over 60% of the land areas in dry zone of Sri Lanka is rain fed high land crops cultivation areas and most prominent cultivation pattern is in these lands is cultivation of monoculture short term crops such as maze, green gram, black gram, sesame, cowpea and cte, after slashed and burned existed vegetation cover twice a year (with two raining seasons) without applying proper soil and water conservation practices and highly using agrochemical. This farming system is not adapted to the climate change impact and it induces climate change impact due to burning of existed vegetation cover and over use of agrochemical specially nitrogen fertilizers.

Analogue forestry models were developed in this land use type by National Cooperative Council (NCC) of Sri Lanka which is the apex cooperative organization in Sri Lanka with collaboration primary cooperative societies of the area (Thief and Credit Cooperative society and Multipurpose Cooperative society) with financial support of Canadian Cooperative Association (CCA) in1991

At first, suitable soil and water conservation practices such as soil contour bunds, biological hedge rows and lock and spilt drain were established at each and every farmland (one to two ac in lands extent) and live fences were developed around the each and very land as source of green manure. Mango, Cashew nut, Wood Apple Coconut, Jack fruit were cultivated as high canopy trees while Orange, Lime, Pomegranate, Guava, Cherimoya were planted as second canopy trees. Banana and Papaya also intercrops to develop shade and to conserve the soil moisture. Short term crops such as green gram, black gram and sesame were also intercropped at the beginning which give short term income for farmers

At the early-stage, famers had to brought water from out site the area for maintain the planted trees at dry season of the year. The project provides common agro wells and some private dug wells for watering planted trees. Meanwhile rainwater tanks and pitchers' irrigation for the planted trees were intruded by the other project funded by GTZ implemented in the area. Planted trees were maintained by watering from constructed wells and water collected at rain-water tanks using pilcher irrigation system

Introducing multiple cropping system with crop diversification, application of green manure and other organic manure, using suitable crops and tree species for climate of the area, application of rainwater harvesting technologies are some CSA practices used in this project.

In 1996, these lands were grown well and famers were introduced shade tolerance crops such as Ginger, turmeric, Sri Lankan Traditional Jams, Gotukoa as under growth crops

These lands were maintained as per the international organic standers and these lands were certified by international certification body called National Association of Sustainable Agriculture Australia (NASAA) for Lanka Organics (Pvt) Ltd since 1997 as group certification which is first time in Sri Lanka. In 2000, Lanka Organics (Pvt) Ltd started a processing center within the project area to process products produced by these analogue forestry lands. Cashew nut, Mango, Lemon grass, Guava, Coconuts and Gotukola were processed and packed for the export by adding value for the organic certified products produced by famers. In addition, this processing center provided employment opportunities for the farmers as well as their family members.

High value spices such as Pepper, Cinnamon, Fruit crops such as Rambutan which are grown in wet zone of Sri Lanka were also cultivated with these lands as microclimatic condition of these garden became cooler and soil moisture condition were improved as these lands had high crop diversity with different canopy layers.

These analogue forestry lands can mitigate the climate change impact by reducing GHG through high density photosynthesis biomass and by cooling microclimate. As these lands have high soil moisture retention capacity at topsoil and high level of ground water, (dug wells presented at within these lands consist over two-meter water level even at dry spill of the year) and crop diversity the perennial crops presented within the system, these lands can adopt to climate change impacts.

Before establishment of analogue forestry model in these lands, farmers received income only from short term crops cultivated as rain fed cultivation and it was less than 500 kg of crops harvest per year per AC and value of the harvest was SLRS 17500 per year. Presently over 5000 kg are harvest from over 10 types of different crops received by same AC of land per year and value of this harvest is over SLRS 250000 per year per AC and it is being received though out the year.

Hence, analogue forestry technology with organic certification and value addition facilities is one of the best CSA technologies which can adopt to climate change impact and mitigate climate change impact while increasing productivity of the lands which help to improve the socio-economic condition of the small-scale famers who are engaging agriculture at rain fed high lands in dry zone of Sri Lanka, especially in hotspot areas which are highly vulnerable to climate change impacts.

(Congress Session 2) Farm Productivity Session 1

“Organic management fosters yield, income, quality and soil health: Eighteen years of evidence in tropical tuber crops” by Dr G. Suja (India)

Dr. Suja G., Principal Scientist (Agronomy), ICAR-Central Tuber Crops Research Institute, Kerala, India, and Principal Investigator, All India Network Programme on Organic Farming (AINPOF) has 29 years’ experience on research of agronomy of tropical tubers with special reference to organic farming (last 18 years), cropping systems research and sustainable resource management of tropical tuber crops.

The 14 on-station and 97 on-farm trials done by her has enabled the development of organic farming technology for all tuber crops and eight organic production packages, which find a place in the Kerala state POP and other reputed publications. She has added infrastructure to ICAR-CTCRI by establishing the Dairy Unit, Integrated Organic Farming System model and Agronomy Laboratory with state-of-art facilities. She has carried out geo-tagged characterisation of 161 organic growers. As Course Director, Model Training Course on Organic Farming (2019), she was instrumental in imparting up-to-date knowledge and skill on organic farming to the participants.

The quality of her research outcome is evidenced from 312 publications (out of these 105 are on organic farming), including 77 research papers in high NAAS rated international and national journals. She is a recipient of 17 awards, including the prestigious Jawaharlal Nehru Award, Netherlands Fellowship, ISA Fellow Award and AINPOF Best Centre Award.

Organic management fosters yield, income, quality, and soil health: Eighteen years of evidence in tropical tuber crops

By G. Suja, S.J. Harishma, G. Byju, A.R. Seena Radhakrishnan, S.S. Veena, J. Sreekumar, A.N. J yothi, S. Sunitha, D. Jaganathan and M.N. Sheela / ICAR-Central Tuber Crops Research Insti tute, Thiruvananthapuram, Kerala, India

Introduction

The growing demand for safe foods and concerns regarding environmental degradation and human health, resulted in a rapid expansion of alternative environmentally benign agricultural strategies like organic farming. Tropical tuber crops viz., cassava, elephant foot yam, yams, (*Dioscorea* spp.), taro, etc., are climate smart and food security crops. These are high energy ethnic tuberous vegetables with good taste, nutritive and medicinal values. As these crops respond well to organic manures there is ample scope for organic production and export. The objectives were to compare varietal response, yield, yield stability index, economics, tuber quality, soil quality and energy efficiency under organic vs conventional management in these crops based on a total of 107 experiments (on-station and on-farm experiments) done over 18 years.

Material and methods

Ten separate field experiments were conducted at ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, India, for 18 years (2004-2022) to compare organic vs conventional farming in cassava, elephant foot yam, yams, taro, Chinese potato, and arrowroot in an acid Ultisol (pH: 4.3-5.0). In cassava, the experiment was laid out in split plot design to study the response of three varieties, H-165 (industrial variety), Sree Vijaya and Vellayani Hraswa (domestic varieties) under five production systems, traditional, conventional, integrated and two types of organic in sub plots. The impact of conventional, traditional, organic and biofertilizer farming was evaluated in RBD in elephant foot yam.

Comparative response of five varieties of elephant foot yam (Gajendra, Sree Padma, Sree Athira and two locals) under organic and conventional farming was also evaluated in another experiment. Likewise, the response of three varieties of taro (Sree Kiran, Sree Rashmi and local) to the various production systems was studied. All the three trailing genotypes of edible *Dioscorea* (white yam*: D. rotundata* (var. Sree Priya), greater yam: *D. alata* (var. Sree Keerthi) and lesser yam: *D. esculenta* (var. Sree Latha)) were evaluated under conventional, traditional, and organic systems in split plot design.

The dwarf genotype of white yam (var. Sree Dhanya), Chinese potato (var. Sree Dhara) and arrowroot were also evaluated in three separate experiments under conventional, traditional, organic, and integrated systems in RBD. Twelve varieties of cassava were evaluated under organic mode in RBD in another experiment. Four cropping systems, cassava-vegetable cowpea, cassava-groundnut, taro-green gram and taro-black gram were evaluated under six management options, 100% organic, 75% organic, 100% inorganic, state recommendation (POP), 50% organic + 50% inorganic, 75% organic + 25% inorganic in strip plot design. The on-station developed organic farming technologies for cassava, elephant foot yam, yams and taro were on-farm validated in 97 different locations across the county.

Results and discussion

Varietal response

The industrial as well as edible varieties of cassava, the elite and local varieties of elephant foot yam and taro and all the three species of *Dioscorea* responded similarly to both the systems (Suja et al., 2012; 2013). However, the industrial variety of cassava, Gajendra variety of elephant foot yam and the trailing genotypes of *Dioscorea* yielded more under organic farming than conventional practice. Out of 12 cassava varieties evaluated under organic mode, the cassava mosaic disease (CMD) resistant variety, Sree Reksha, proved to be the most responsive to organic management with stable yields (37 t ha^{-1}) and high profit (₹ 4,67,086 ha^{-1}) over five years. Sree Pavithra and Sree Vijaya were also good and stable yielders.

Yield and economics

Organic farming resulted in 10-20% higher yield in elephant foot yam, white yam, greater yam, lesser yam, dwarf white yam and Chinese potato ie., 20, 9, 11, 7, 9 and 10.5% respectively (Suja et al., 2012; Suja et al., 2013; Suja and Sreekumar, 2014; Suja et al., 2021). In cassava, tuber yield under organic was slightly higher than conventional (+2.4%) (Seena Radhakrishnan et al., 2021). Taro preferred chemical-based farming as slight yield reduction was noticed under organic farming (-5%). This was because taro leaf blight could not be controlled by organic measures (Suja et al., 2017).

In arrowroot, yield under organic practice was slightly lower than conventional practice (-2%). Yield stability index indicated that organic system was equally stable as conventional. The results of on-farm trials confirmed the superiority of organic management over existing POP by yielding 30-35% higher, on an average. Cost-benefit analysis indicated that the net profit under organic farming was 20-40% higher over chemical farming (Suja et al., 2016).

Cropping systems vs management options: Cropping systems differed significantly for tuber yield, grain yield and tuber equivalent yield (TEY). Cassava-groundnut and cassava-vegetable cowpea performed equally with respect to tuber yield, grain yield and TEY. Among the management options, 75% organic + innovative practices resulted in the highest equivalent energy and production efficiency.

Economic analysis of the system indicated that of the four systems, cassava-groundnut was the most remunerative. In cassava-groundnut, 75% organic was the most profitable with and without premium price. The innovative practices of foliar spraying with liquid organic manures, *Panchagavya* 3% and vermiwash 10% helped to reduce the quantity of organic resources to the extent of 25%.

Tuber quality

In general, the tuber quality was improved in these crops under organic management with higher dry matter (+2-7%), starch (+4-13%), crude protein (+6-12%), K (+2-10%), Ca (+6-26%) and Mg (+3-41%) contents. The anti-nutritional factors, oxalate content in elephant foot yam and cyanogenic glucoside content in cassava were lowered by 21 and 19.6% respectively under organic farming (Suja, 2013; Suja et al., 2014; Seena Radhakrishnan and Suja, 2017).

Soil quality indicators

a. Physico-chemical

The water holding capacity (WHC) was improved significantly by 8-28% in the organic system. There was significant improvement in pH in organic system (1.15, 0.77, 0.46, 1.20, 1.14 and 0.45 unit increase over conventional system) in cassava, elephant foot yam, yams, taro, Chinese potato and arrowroot. The soil organic matter (SOM) increased by 14-40% in organic plots over conventional plots in these crops. In cassava, the cation exchange capacity (CEC) of the soil in organic plots was significantly higher (+27.32%) over the conventional plots.

Available N and available P (in Chinese potato) and exchangeable Ca (in cassava and arrowroot) increased significantly under organic management. Organic plots showed significantly higher available K (by 34%) in yams and available P in taro. In elephant foot yam, exchangeable Mg, available Cu, Mn and Fe contents were significantly higher in organic plots.

b. Biological

The population of bacteria was considerably higher in organic plots than in conventional plots; 41% and 23% higher in elephant foot yam and yams respectively. Organic farming also favoured the fungal population by 17-20%. While the N fixers showed an upper hand in organically managed soils by 10% over conventional management under elephant foot yam, P solubilizers remained more conspicuous under organic management of yams (22% higher than conventional management). The count of actinomycetes was favoured by 13.5% in taro.

In cassava, the activity of dehydrogenase, acid phosphatase and urease enzymes under organic, especially organic (with biofertilizers) treatment, was higher by 17.01%, 20.29% and 16.78% over conventional system. (Seena Radhakrishnan et al., 2021). The dehydrogenase enzyme activity was higher by 23% and 14% in organic plots in elephant foot yam and yams (Suja et al., 2015).

Soil quality index (SQI)

In cassava, both the organic practices (without and with biofertilizers) scored higher SQI over the rest, but similarly (0.98 and 0.94 respectively). The soil pH, exchangeable Ca, dehydrogenase enzyme activity and porosity were the decisive factors that governed SQI in cassava (Seena Radhakrishnan et al., 2021).

In elephant foot yam, the organic system scored significantly higher SQI (1.93), closely followed by the traditional system (1.91). SQI of conventional (1.47) and biofertilizer systems (1.58) were significantly lower (Suja et al., 2012). The SQI was driven by water holding capacity, pH and available Zn followed by SOM (Suja et al., 2013).

Energy efficiency

Organic management proved to be the most energy efficient in cassava, as revealed from the highest energy output, net energy, energy use efficiency and energy productivity. This is certainly due to lower energy input by avoiding synthetic fertilizers and higher energy output on account of slightly higher tuber yield in the organic practice. The energy input in the organic practice was lower by 42.62% when compared to conventional practice; whereas the energy output was slightly higher by 2.38% (Seena Radhakrishnan et al., 2021).

The Package

Use of organically produced seed materials, seed treatment in cow-dung, neem cake, bio-inoculant slurry, farmyard manure incubated with bio-inoculants, green manuring, use of neem cake, bio-fertilizers, ash and liquid organic manures, *Panchagavya* 3% and vermiwash 10% formed the components of organic package.

Conclusion

Long-term research over 18 years in tuber crops indicated that organic farming is an eco-friendly strategy that enables 10-20% higher yield of quality tubers, 20-40% higher profit besides maintenance of soil health.

“The impact of compost, bio and liquid fertilizer locally manufactured on the productive characteristics of palm trees in Sidra Station / Iraq” By Dr. Jwad Enad Mahdi Al-Kalaby (Iraq)

- Director of the National Center for Organic Farming in AL- Najaf from 2020 until now.
- Member of the Australian Biologists Association.
- Member of the International Federation of Inventors.
- Member of the Iraqi Innovation and Creativity Center.

Academic achievement

- Bachelor of Plant Protection/ College of Agriculture/ University of Baghdad / 1991-1995
- Master of Soil Science (Microbiology) / University of Western Australia 2010-2013
- Ph.D. Soil Science (Soil Fertility)/ College of Agriculture/ University of Baghdad/ 2015-2017
- Head of Prevention Department / Najaf Agriculture Directorate / 2001-2003
- Director of AL- Hurea Agriculture Department / Najaf / 2003-2009
- Engineer at the National Center for Organic Agriculture/ Baghdad/ 2013 - until 2020

The impact of compost, bio and liquid fertilizer locally manufactured on the productive characteristics of palm trees in Sidra Station / Iraq By Dr. Jwad Enad Mahdi

Researcher, National Center of Organic Agriculture, Ministry of Agriculture, Iraq

This research supports the global trend towards sustainable agriculture systems and producing alternatives to chemical fertilizers. The experiment was carried out in two stages: the first one has been implemented during the period 2014-2017 in order to benefit from the wastes of palm residues (fronds, anguish and old trunks) in the manufacture of compost, liquid compost, and bio fertilizer, and extract organic acids (humic and fulvic acids), so during implementation the work plan, a two machines was manufactured and gained patents numbered (4578 in 2014) and (4754 in 2016) owned to researcher (Dr. Jawad Al-Kalaby), whereas the second stage was conducted in months from January to August of the year 2020 at Sidra Station, which is located in the Babil Governorate, for evaluation the effect of these fertilizers on some productive traits of palm trees.

The palm orchard was divided into five experimental plots: P1: the first one was fertilized by compost in December at a rate of 30 kg/tree, P2: in the same month 100 g Bio-fertilizer loaded on the compost was added, P3: the trees irrigated by 3 litter liquid fertilizer manufactured locally, P4: in the fourth plot trees irrigated with bio fertilizer suspended with water at the rate of 3 liter per tree/ one run, P5: in the control plot trees were given 2 kg NPK /tree at the end of autumn.

This experiment designed as completely randomized block, three replicates were used (replicate= 5 tees), and Least Significant Difference was calculated at 5% to compare averages, by using program GenStat 16th edition.

The indicators: total number of palm fronds, length, and number of the frond close to the center (m), number of fronds rows, number of spikes in fruit bunch, and the average fruits weight in spike (g) were studied in all treatments.

The chemical analysis showed good physical and chemical properties for compost and liquid fertilizers, and high value of fungal count in bio fertilizer.

The results demonstrated an improvement in all studied indicators by using organic fertilizers in compare with chemical one, the fronds number increased in all organic fertilizers but there were no significant differences between them except the bio fertilizer which exceeded the other treatments, regarding the length of frond close to center they were high at treatments P4, P2, P3 (4.2, 4 , 4 m)

following by P1 (3.6 m) whereas the chemical one was the lowest (2,7m), the treatment of liquid fertilizer gave the highest number of central fronds and exceeded significantly the chemical one, but the differences between other plots were insignificant, the fronds rows was at high value in p4 plots following by P3, P2 (14) then P1 and P5 (13, 12 respectively), number of spikes in fruit bunch and the average fruits weight in spike were lowest in compost and chemical plots, and highest in plot of compost plodded with bio stimulant.

It was found that adding bio-fertilizer to compost increased its effectiveness, this result is of great importance in the recycling waste of palm orchard, the research idea was applied at a commercial level, which had positive effect on the agricultural sector in Iraq, by mitigating the negative impact of random and harmful disposal of farm waste.

Key words: local manufacture, compost, bio and liquid fertilizer, palm trees, productivity indicators.

Introduction:

The palm is a strategic sector in many Arab countries including Iraq, its orchards produce a lot of waste which consist of organic substances that results from the harvesting and processing of crops (Alhassany *et al*., 2022).

It was found that one palm tree generates an average of 40 kg of waste annually (Faiad *et al*., 2022), the number of date palms in Iraq is estimated at 17.3 million (Home-Central Statistical Organization, 2022), this results in 690 thousand tons of palm tree waste annually.

Organic fertilization has been proposed as alternative nutrients sources to plants, which most advantages of use is the enhancement of beneficial soil microorganisms and decrease greenhouse gas emissions and deterioration of soil fertility that resulted from the excessive use of inorganic fertilizers, so it could be used in environmentally friendly farming system (Elkholy *et al*., 2010; Chatzistathis *et al*., 2021)

The Ministry of Agriculture in Iraq adopted an approach of using organic alternatives to fertilizers and pesticide and established a project in each governorate. The project was developed in the Najaf Agriculture Directorate by treating waste through composting with the addition of some biological stimulants, especially that the air composting process is one of the most efficient biological processes used to treat organic waste, it eliminates pathogens and weed seeds during the aerobic fermentation process, in addition to reducing the volume of waste.

There are many attempts to produce high quality fertilizer in large scale using parts of palm trees as leaves, trunks and roots mixed with fresh farmyard manure as nitrogen resources, and they were evaluated at three ratio w/w (compost to manure), then it was found that mixtures of ratios 2:1 and 3:1 were the best and all mixtures improved the soil traits and its content of nutrients (Sadik *et al*., 2012), even in compare to chemical or poultry manure and it consequently increase plant yield (Benabderrahim *et al.,* 2018).

A blend of various fertilizer's type in appropriate proportions can be used to reach the best yield and qualitative characteristics for palm tree, it turned out that the productivity of the palm tree and the number of branches increased by using a mixture of (75% ammonium nitrate, 12.5% compost and 12.5% bio fertilizer) (El-Merghany *et al*., 2014).

The research objectives:

- Utilizing palm farm waste in the manufacture of organic fertilizer as an alternative to chemicals.
- Inventing a new method for preparing liquid fertilizer and extracting humic and fulvic acids.
- Evaluation of the effect of using local fertilizers on some productivity characteristics of palm trees.

Material and Methods:

- The date and site of research: This research was conducted in two periods: the first one was between 2014 and 2017, which aimed to prepare some organic fertilizer types (compost, liquid compost, bio fertilizer), and develop two machines for preparing liquid fertilizer and extracting organic acids (humic and fulvic acids).

  In the second period (January - August of the year 2020), the effect of the prepared fertilizers was evaluated at Sidra Station, which is in the Babil Governorate, at an altitude of 35 m, in a desert climate characterized by low annual rainfall of about 133 mm, The temperature rises in summer, sometimes reach 50o C and a warm weather dominant in winter, station planted with 12-year-old palm trees var. Al Sultani. The soil is clay, and flood irrigation is implemented 24 times at a rate of 200 liters per tree/season.

Table. (1). the chemical and physical traits for soil of Sidra Station before starting the experiment.

The indicator		The value
EC 1:1 ds.m-1		2.20
pH 1:1		7.21
ECE cmol c kg-1		24.45
Organic matter g.kg-1 soil		8.92
Carbonate mineral g.kg-1soil		163
CaSO4.2H20 g.kg-1 soil		0.41
Dissolved positive ions (millimole. Liter-1)	Ca2+	4.08
	Mg2+	3.20
	Na+	3.37
	K+	0.81
Dissolved negative ions (millimole. Liter-1)	HCO3-	1.01
	SO42-	2.62
	Cl-	7.24
	CO32-	Nil
(NH4++NO3-) available nitrogen mg. kg-1 soil		61
Available P mg. kg-1 soil		61
Available K mg. kg-1 soil		11.1
Available Cu mg. kg-1 soil		220
Total Cu mg. kg-1 soil		2.0
Soil texture (g. kg-1 soil)	Sand	141
	Salt	502
	clay	351
Tissue type		Celtic clay
Available water %		18.1%
Bulk density µg.m3		1.33

Methodology:

• Compost preparation: The compost heap was formed from one ton of palm orchards waste, 100 kg of animal waste and poultry litter, 100 kg of fertile soil. The palm residues were cut by a special machine and soaked in water to moisten them for 3-5 days, and the poultry litter was washed with water to get rid of the salts.

The heap consists of several layers, a layer of crushed palm trunks is placed at a height of 15 cm and sprinkled with water, followed by a layer of poultry litter, the soil dissolved in water to spray the heap during mixing, the process is repeated until the height of the pile becomes desired (The dimensions: 20 x 2 x 2 m). It is placed in a dedicated place equipped with a ground channel through which water is filtered from the heap and used to moisten it again, it stirred every 10 days to mix the components, speed up the decomposition process, and ventilate the center of the pile, whose temperature is (60-70 o C). The fermentation process continues for two to three months, and after that, it is ground, sieved and packed in bags.

Liquid fertilizer**:** the locally compost is placed with water (100 kg compost: up to 500 kg water) in the extraction device at a temperature reached 222 ^{O}C and pressure of 8 bar.

Bio fertilizer manufacture**:** The bio fertilizer was prepared by propagation fungal agent (Mycorrihiza sp., Trichoderma sp.) isolated from orchards in Khanaqin in Diyala governorate, as method mentioned by (Phillip and Hayman, 1970).

The fertilization treatments of palm trees**:** The palm orchard was divided into five experimental plots as shown in table (2).

Table (2). The studied treatments of fertilizers in palm orchard.

Treatments code	Fertilization type	Additive amount	date
P1	Solid compost	30 kg/tree	December
P2	Bio-fertilizer loaded on the compost	100 g/tree	December
P3	liquid fertilizer	3 litter/tree / one run	
P4	bio fertilizer suspended with water	3 litter /tree/ one run	
P5	chemical fertilizer (NPK) /tree	2 kg/ tree	at the end of autumn.

The studied parameters:

The total number of palm fronds, length and number of the frond close to the center (m), number of fronds rows, number of spikes in fruit bunch, and the average fruits weight in spike (g) were calculated in all treatments.

Statistical analysis:

This experiment designed as completely randomized block, three replicates were used (replicate= 5 tees), and Least Significant Difference was calculated at 5% to compare averages, by using program GenStat 16th edition.

The results:

The properties of local manufactured fertilizers:

1- The solid compost:

The chemical analysis that was carried out in the laboratory of the National Center for Organic Agriculture, showed some properties of compost as shown in table (3).

Table (3). Physical and chemical properties of local compost.

pH 1:5	EC 1:1 ds.m-1	N%	P%	K%	C%	Organic matter%	C/N
7.43	5.23	1.51%	1.01	1.4	44.5	56.2	20.5

As shown in table (3), the local compost is good fertility for soil and plants, and will provide many essential nutrients for enhancing plants growth and productivity, especially the organic matter content is high in compare with other compost blend (Khaing *et al*., 2019).

2-The liquid fertilizer:

The variation of waste inputs causes a wide range of nutrients contents of compost in both its final form solid and liquid (Ahmad Sanadi *et al*., 2019)

Table (4). Physical and chemical properties of local liquid compost

pH 1:1	EC 1:1 ds.m^{-1}	N%	P%	K%	C%	Organic matter%	Humic acid%	Fulvic acid%
7.43	3.04	1.12	1.01	0.61	44.5	56.2	14.2	7.1

The humic substances (Humic and fulvic acids) have significant impact on soil structure since they attract positive ions, form chelates with micronutrients and release them slowly (Kadam et al., 2010) , so they prevent fixation, leaching, and oxidation of micronutrients in soil as well as they enhance plant and roots growth.

3-Bio fertilizer: the bio fertilizer is used to enhance biological composition or maintain inhabitant of soil, which increases the efficient distribution of nutrients to plants.

Table (5). The fungal count of locally bio fertilizer.

The average fungal count	1×10^{7}

The tow machines fabricated locally, and gain patents Numbered (4578 in 2014) and (4754 in 2016) issued by the Central Organization for Standardization and Quality Control, the Iraqi Ministry of Planning:

a. Liquid fertilizer extractor: The device consists of an air pump with a capacity of (100) gallons per minute, through the pipe connections, 50 gallons are pumped to each water tank. The device consists of two (2) tanks that one tank can accommodate (1000) liters of water containing a thermal system. The idea of manufacturing the device is to use oxygen at a certain temperature. Thus, it helps to obtain two benefits: The first is to extract the soluble elements found in solid organic fertilizer into a liquid organic extract, and the second one is to activate microorganisms by pumping oxygen to them for a period of (20-24) hours depending on the water temperature.

b. For extraction of fulvic and humic acids: a supplement apparatus was added to liquid fertilizer extractor: it consists of a large tank with capacity of 5000 liters, the liquid fertilizer is placed in it and there are condensers to separate water from acids at a temperature of 100 OC and an extraction time of 6 hours.

Figure (1). The obtained patents for two extraction devices.

The productivity indicators for all used fertilizers in palm orchard:

The results confirm the positive role of using organic treatment in palm orchard , as demonstrated in table (6): the fronds number increased in all organic fertilizers but there were no significant differences between them except the bio fertilizer which exceeded the other treatments, regarding the length of frond close to center they were high at treatments P4, P2, P3 (4.2, 4 , 4 m) following by P1 (3.6 m) whereas the chemical one was the lowest (2,7m), the treatment of liquid fertilizer gave the highest number of central fronds and exceeded significantly the chemical one, but the differences between other plots were insignificant, the fronds rows was at high value in p4 plots following by P3, P2 (14) then P1 and P5 (13, 12 respectively), number of spikes in fruit bunch and the average fruits weight in spike were lowest in compost and chemical plots, and highest in plot of compost plodded with bio stimulant, this results attribute to that compost gradually decompose and its effect will appear more clearly in the next season while bio stimulant make its decomposing faster.

Table (6). The productivity traits according to the treatment of used fertilizer.

Treatments	The productive traits					
	Total No. of fronds	Length of frond close to center (m)	No. of central fronds	No. of fronds rows	No. of spikes in fruit bunch	average fruits weight in spike (g)
P1	40 ^{ab}	3.6 ^{b}	7 ^{ab}	13 ^{b}	40 ^{b}	161 ^{c}
P2	42 ^{ab}	4 ^{a}	8 ^{ab}	14 ^{ab}	50 ^{a}	185 ^{a}
P3	41 ^{ab}	4 ^{a}	9 ^{a}	14 ^{ab}	47 ^{ab}	166 ^{bc}
P4	43 ^{a}	4.2 ^{a}	7.5 ^{ab}	15 ^{a}	47 ^{ab}	172 ^{b}
P5	35 ^{ab}	2.7 ^{c}	6 ^{b}	12 ^{b}	46 ^{1b}	154 c
$LSD_{0.05}$	6.57	0.351	2.382	1.756	6.57	10.9
CV%	5.8	3.4	11.4	4.7	5.1	2.3

These results are consistent with what was reached by Leksono and Yanuwiadi (2014), who explained

that the liquid fertilizer fermented by adding microorganisms gave good results in increasing production, sugar content, vitamin C and calcium in apple fruits.

Conclusion:

It was found that adding bio-fertilizer to compost increased its effectiveness, this result is of great importance in the recycling waste of palm orchard and the use of organic fertilizers as an alternative to chemical one. Because it not only provides nutrients to the plant, but also improving the properties of the soil, especially the sandy one that are most prevalent in the governorates of Iraq, so its fertility, ability to retain water and stability against the erosion will increase.

This idea was adopted at a productive level, which had positive effect on the agricultural sector in Iraq, by mitigating the negative impact of random and harmful disposal of farm waste, which were destroyed by burning, causing environmental pollution, add to that the availability of these row martials and a large number of sunny days most of the year, will facilitate the fermentation process and reduce the costs.

The practical results are that these fertilizers were applied in the orchards converted into an organic system, which opens the way for marketing palms in international markets and achieving a greater profit margin.

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“Management of insect pest in rice seedbed using a novel rectangular hand net (RHN) for insecticide free rice seedbed” By Mir Md Moniruzzaman Kabir (Bangladesh)

He completed his Bachelor of Science in Agriculture (GPA 3.64 out of 4) and Master’s program from the Department Agronomy (GPA 3.50 out of 4) at the University of Sher-e-Bangla Agricultural in Bangladesh. Now, he is working as a Senior Scientific Officer at Entomology Division, Bangladesh Rice Research Institute (BRRI), regional station Barishal. Appointed 6 January, 2013 as a Scientific Officer on the same organization.

Conducted many research activities for insecticide reduces, insect and natural enemy survey, insect resistant breeding and develop for sustainable eco-friendly technology for more than nine years. Farmers generally uses one or two times insecticides in rice seedbed for control green leafhopper, thrips, yellow stem borer, leaf roller etc. To alleviate this problem, he developed an organic tool rectangular hand net for insecticides free rice seedlings cultivation in seedbeds. RHN performance found well than existing round hand net in three trials (Boro, Aus and Aman, 2022 seasons) in BRRI, R/S Barishal which is ninety-five (95) acres rice research farm.

He visited China for training about hybrid rice. More than 20 Scientific Papers, Book, Abstract, and Proceedings published in different renowned national and international impact factor journals. He completed more than twelve (12) professional training in different organizations of Bangladesh. Organic and sustainable agriculture related more than fifty (50) popular articles were published in different newspapers. He also worked Asian Food and Agriculture Cooperation Initiative (AFACI) as a co principle investigator in brown planthopper (BPH) programme. Organic agriculture is one of his passion and research thrust. Google Scholar ID link: https://scholar.google.com/citations?user=BBArV-oAAAAJ&hl=en

Management of insect pests in rice seedbed using a novel rectangular hand net (RHN) for insecticide free seedlings

by M M Moniruzzaman Kabir[1]; Dr. Md. Alamgir Hossain[2]

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Rice is the main food for more than half of the world population but seriously yield losses due to insects and diseases (Ali et al., 2017). Bangladesh agriculture was totally organic before 1950, when pesticides were introduced in farmer's field. In 1950, Bangladesh population were 43.6 million which has been exceeded 165 million by 2022. After 1960s Green Revolution pesticides uses rapidly increased to meet up food demand and growing populations cereal food security, as a result emergence of new pests and increased incidence of some pest started to appear (Islam et al., 2009).

Due to the climate change and intensive cultivation, insect pest like yellow stem borer (YSB), thrips, brown planthopper (BPH), green leafhopper (GLH), rice hispa (RH), leaf folder (LF), grasshoppers (GH) etc attacks increasing day by day in rice seedbed (BRRI, 2021). Farmers rely on solely insecticides to control insect pest in seedbed as well as main rice field. Bangladeshi rice farmers generally used 3-4 times insecticides in single season without judging the insect pest's infestation level (Ali et al., 2017). Farmer's spend up to 1,000 BDT/- acre for spraying chemical to protect rice seedlings from pest in seedbeds, consequently yearly national estimated aggregated cost 50 crore BDT (equals to more than 5 million USD) (Dhaka Tribune).

Bangladeshi farmers used 37,563 tons of chemicals in 2020 for crop production, where 12,428.71 tons to manage insect pest only (BPCA, 2021). Heavy uses of chemical insecticides reduce natural enemy and promote pest outbreaks in rice ecosystem (Heong et al., 2015). Pesticides pass away into rivers, drinking water, and agricultural products thus damaging natural ecosystem, threatening food safety, and human health (Ali et al., 2020).

Insect pests first attack rice in seedbed generally 7-9 days after sprouted seed sowing. At this early sensitive stage, traditional sweep net (round hand net) is not suitable to collect insects because it injured tender rice seedlings and its insect catching efficiency is also lower than rectangular hand net (Fig.02). To alleviate this problem, developed a novel rectangular hand net and evaluated the efficacy for managing insect pests in rice seedbeds.

The newly developed hand net consists of a rectangular frame that includes 4 mm GI wire, and the frame length and width 50 cm and 20 cm, respectively. It also consists of a plastic pipe that length 100 cm, radious 0.75 inch, and market available white colour mosquito net, which length from the frame is 80 cm. Methods of application is rapidly walking with RHN (Figure, 02) around the seedbed (model seedbed one-meter width and length depends on land condition). After sweeping full seedbed harmful insect has been destroyed and beneficial insect released back in the same field.

To test the performance of this novel sweep net we conducted experiments in Boro, 2021-22 rice growing season at Charbadna farm of Bangladesh Rice Research Institute (BRRI) regional station, Barishal. Fifteen square meter ($15m^2$) seedbeds, RCBD with 3 replications followed at high yielding variety BRRI dhan29, BRRI dhan88, and BRRI dhan89. After each sweeping individual rice insect pest and natural enemy counted and recorded manually. RHN performance (48.33) significantly better than round hand net (26.67)

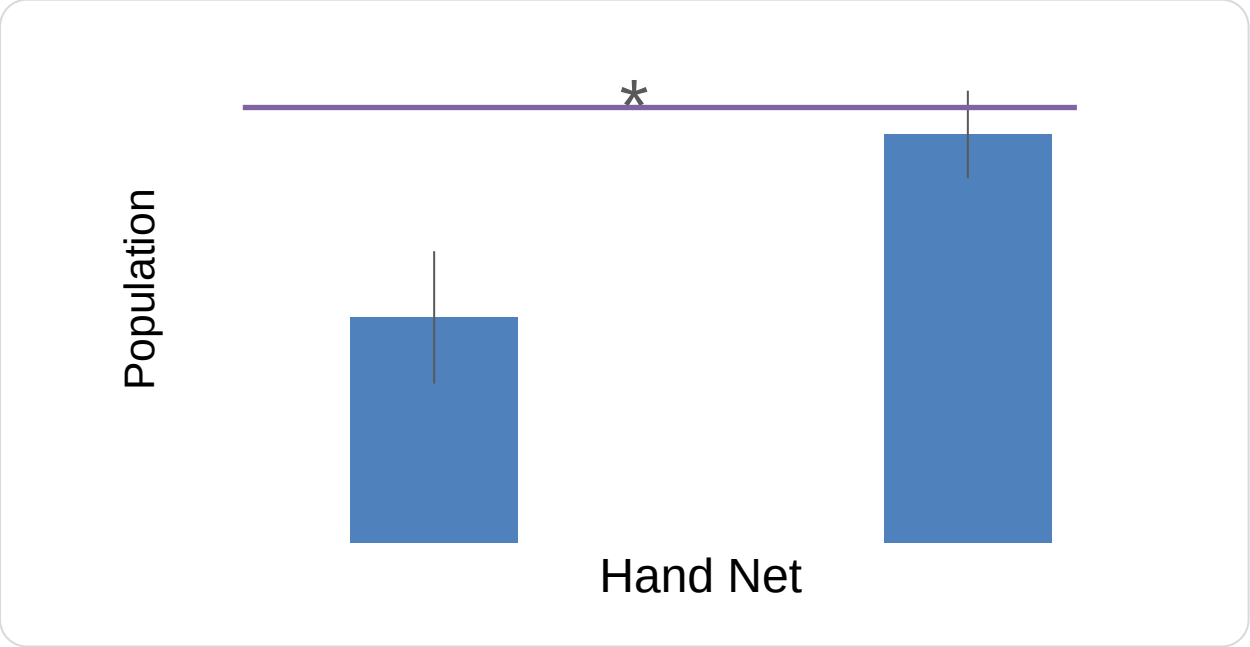

FIGURE 01. Round and Rectangular hand net insect caught performance in rice seedbeds. *Significantly different at 5% level (Students t-test)

In Aus season (2022), 15 m^2 seedbed, BRRI dhan48, BRRI dhan85, and BRRI dhan98 with three treatments, T_1= seven days' interval sweeping, T_2= two times sweeping once in 12 days after sowing and another 25 days after sowing, T_3= control seedbed with three replications at BRRI, Charbadna farm in BRRI, Barishal. Green leafhopper (GLH) major pest causes of rice tungro disease in Bangladesh. Finally, the experiment showed control plot higher no. of GLH but in treated plot GLH (T_1=67, T_2=20.33)

was controlled and reduced than control plot.

Minute pest thrips is the most destructive pest in the rice seedbed (BRRI, 2022) due to this insect seedbed become yellowish. In Aman season, 2022 high yielding variety BRRI dhan52 and BRRI dhan76, 25 m^2 seedbed with three treatments and replications, T_1= seven days' interval sweeping, T_2= two times sweeping once in 12 days after sowing and another 25 days after sowing, T_3= control seedbed at BRRI, Sagordi farm. After every full seedbed sweeping counted manually insect pest and natural enemy, harmful insect pest destroyed, and natural enemy released back in the same field. Control plots was affected by thrips and ETL crossed, and leaves become yellowish and some needle shapes but treated plot reduced thrips (T_1=76 and T_2 =53.67), remain green and no symptom shown. T_1 treatment shows significantly higher thrips control than others treatment.

RHN caught the maximum number of major population YSB, rice hispa, BPH, rice leaf folder, GH etc and remained under control.

RHN caught beneficial insect (19.60 %) compared to harmful insect pest (80.39 %). In Aus season 2022, 20 m^2 area BRRI dhan48, BRRI dhan98, BRRI dhan85 seedbed tenure caught insect pest (87.78 %) and natural enemy (12.22 %). Same year Aman season BRRI dhan76 and BRRI dhan52 seedbed period insect pest caught (71.18%) and natural enemy (28.82 %). Both seasons conducted these experiment at BRRI, Barishal Charbadna and Sagordi farm.

The abundance of predators, parasitoids and parasitism rates increased significantly in insecticides untreated plot than treated plot (Ali et al., 2019) so, this technology is also benefitted for beneficial insect.

This technology reduced 100% use of insecticides. The materials to make RHN are widely available and cheap, therefore farmers can easily make it locally. Farmers' rice production cost will be reduced and other family members of the farmer will be able to operate rectangular hand net. As a sustainable technology it may be redundant insecticides spray in rice producing countries (Dhaka Tribune, 2022).

FIGURE 02. Rectangular hand net (prototype) and its application mode in rice seedbed in BRRI, Charbadna farm

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(Congress Session 2) Farm Productivity Session 2

“Innovative Organic Certification using Satellite” By Md Reaid Alam, Founder & CEO, GreenEO UG, (Germany)

He is the founder and CEO of the GreenEO UG. Prior to GreenEO, he was the Geo-informatics Engineer at e.Ray Europa GmbH and the Research Associate at the Technical University of Darmstadt, Germany. During his tenure at e.Ray, Mr. Alam helped the company (eRay) as a technical lead for managing the European Space Agency projects on climate services.

Mr. Alam was selected as one of the young business leaders from Germany below 40 for the AGYLE - African German Young Leaders in Business 2021 program. This year, he was invited as a guest speaker at the BIOFACH 2022 Congress in a session titled 'Rationalizing administration and controls through data, GIS, Sat, Webapp'.

Mr. Alam did his graduation in Photogrammetry and Geo-informatics from Stuttgart University of Applied Sciences, Germany. He has more than 8 years of experience to process and analyze optical satellite imagery, SAR satellite imagery, UAV imagery, and terrestrial and areal laser scanner data. Under his leadership, the Agrotrace team was the winner of Climathon 2018 in Darmstadt, Germany for their innovative satellite-based traceability solution in organic agriculture. Mr. Alam published research papers at Living Planet Symposium and Applied Geo-informatics for Society and Environment conference in 2019.

Innovative Organic Certification using Satellite

Md Reaid Alam, Founder & CEO, GreenEO UG

The future of the organic business is at danger. The organic sector is now a quickly growing business sector rather than a little business niche. As the sector grows, more scammers are attracted to it. The integrity of the sector is compromised, and administrative costs rise, when outdated organic control techniques and paper-based certificates are used. If there is no attempt to lower these costs using modern technology along the entire supply chain, the cost have to be added to consumer pricing, which will eventually deter customers from buying organic. If the organic sector wants to grow sustainably and maintain its reputation, digitalization in the organic certification process is very crucial.

The Digitalization in the organic certification process is composed of three essential elements and they are following:

1. Digital data collection system
2. Digital data transfer system
3. Digital data verification system

The first important element is the digital data collection system. All the field data during the organic field inspection will be collected using a web application. The organic field inspectors only need a smart phone with stable internet connection. They do not need to carry checklist papers and pens/pencils. They should not measure the field area through measuring tapes. The field inspector will open his mobile phone browser and start the data collection web application. In the data collection web application, they will simply type all the field information through their fingers and submit it by one click when the field information is complete.

The second important element is the digital data transfer system. Currently, the organic field inspectors are working on their checklist papers using pens and pencils and after completing the checklist papers either they send the checklist papers through post or scan the checklist papers as a pdf document and send it to the organic control bodies through email. The checklist pdf documents from the organic field inspectors are useable to the organic control bodies as documentation purpose only. Because the pdf documents are not workable to handle and analyze the field inspection data directly. To make the pdf documents workable, the people from organic control bodies should convert it in other digital format for example in MS Excel. Only then the organic control bodies can use the field inspection data for

further analysis. So, organic control bodies should put lots of effort to make the field inspection data usable for their analysis. In the digital data transfer system, all the data submitted by the organic field inspector will be transferred to the organic control bodies automatically and the organic control bodies can decide in which format they want to have this data with no extra effort. In this case the field inspection data will be of better quality because the digital data transfer system removes the human typing error as there is no typing repetition needed.

The third important element is the digital data verification system. The digital data verification system will remove unwanted human errors and biasness during the organic field inspections. Humans are always prone to error and bias. So, the digital verification system should be independent to human. The crops and fields data are very important data for organic certification. Using satellite imagery, it is possible to verify the crops, and field data all over the world.

There are different satellite data providers in all over the world. The National Aeronautics and Space Administration (NASA), European Space Agency (ESA), Digital Globes, Planets are the few names of them. Among them the NASA and ESA are publicly available free of cost satellite data providers. Digital Globes and Planets are commercial satellite data providers. Using these satellite data as well as ground truth data, different Artificial Intelligence (AI) models can be trained to accurately verify the crops and fields data. The basic intuitions in this method are the followings:

1. The different crops and fields will have different spectral reflectance for a single spectral wavelength

2. Different spectral wavelengths can capture a unique identity for each crop based on their spectral reflectance characteristics.

The accuracy of the Artificial Intelligence models will depend on the quantity and quality of the satellite data and ground truth data. At the same time, it is important to know that satellite data has a limitation. Satellite data can verify the crop and field data under the open sky. So, the greenhouse crops and fields cannot be verified using satellite data.

Although, many organic field inspectors think that the digitalization in the organic certification process will make them unemployed. Digitalization will take over the on-site organic field inspection roles but this is not true at all. Because in the organic certification policy and regulation, it is mandatory to do on-site field inspection in a regular basis and the digitalization tools cannot replace the need of on-site organic field inspection. But the digitalization tools will reduce the field inspection preparation time

and remove the paper-work during the field visit.

However, the digitalization in the organic certification process is really hard to implement. Because it needs software development expertise, earth observation expertise, industry knowledge as well as expert team for regular system update and maintenance. So for an organic control body to set up own digitalization tools will be a luxury. Because one organic control body cannot sale their digitalization tools to other organic control bodies due to their internal competition. So, the good idea will be to find a service provider who understands the organic certification sector and has all the necessary expertise to develop and maintain a digitalization tools for the organic certification process.

The GreenEO UG, a start-up company registered in Darmstadt, Germany along with Organic Services did a feasibility study project under European Space Agency (ESA) funding on how to prevent organic food fraud using satellite imagery. Under the same project, GreenEO has already designed and developed the Digitalization tools covering the all three digitalization components mentioned earlier. The name of this digitalization tool developed by GreenEO is Organic Plausibility Checker. The main goals of the Organic Plausibility Checker are the increasing organic field inspector's capacity during the field visit and reducing the administration cost of the organic control bodies. For more information, please visit: https://greeneo.net/organic-plausibility-checker/

So, the necessity of digitalization in the organic certification process is well understood and a service provider is ready in the market with a right solution. So, what makes you wait?

“The Plantito-Plantita Subculture in Mega Manila, Philippines: Insights on Quarantine Home-gardening During the COVID-19 Pandemic” By Justin Paolo D. Interno (Philippines)

Justin Paolo D. Interno is an Agriculturist II from the Agricultural Training Institute-Partnerships and Accreditation Division, a Filipino youth advocate for sustainable agriculture and youth involvement for agricultural development. Currently, I am pursuing my Master’s Degree in Extension Education at the UP Los Banos, as well as the Executive Director of *Alyansa Para sa Nayon at Agrikultura, Hawak-kamay sa Kinabukasan ng Laguna* (ANAHAW Laguna), a youth-led CSO that aims to deliver data-driven and pressing advocacies and initiatives in ecological agriculture and environmentalism in Laguna.

During the 2016 Presidential elections, I joined the I Am HampasLupa Ecological Agriculture Movement, Inc. (HL) and co-convened a national campaign on the Youth 10-point agenda for food security and sovereignty and ecological agriculture. Currently thriving a youth-serving volunteer organization, the HL lobby advocacies and implement initiatives related to climate-smart agriculture, climate action, and responsible consumption.

In ATI, I serve as the National Alternate Focal of the National Urban and Peri-urban Agriculture Program (NUPAP). We focus on the accreditation and establishment, development, and M&E of community-based urban agriculture gardens in the metropolitan areas, especially in Quezon City and Caloocan City. I co-formulate policies and co-implement training and extension interventions which will improve the relative advantage of the Filipino urban farmers. I was also tasked to assume the focal person position at the ATI counterpart of the Enhanced Partnership Against Hunger and Poverty (EPAHP), in collaboration with the various government institutions and Implementing Agencies. The Institute provides cultivation resources and cost-efficient training to deserving communities.

The *Plantito-Plantita* Subculture in Mega Manila, Philippines: Insights on Quarantine Homegardening During the COVID-19 Pandemic

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The Philippine version of COVID-19-induced quarantine home gardening, known as the *plantito-plantita* sub-culture has boomed in 2020, as part of the adaptation of some Filipinos who are ordered to stay at home—as a security measure enforced by the COVID-19 Inter-Agency Task Force for the Management of Emerging Infectious Diseases. Taking care of plants at home has become a main errand and a source of life for some. It may not be an original concept because as early as the 1960s, for instance, as a way to recuperate the greenery in the newly infrastructured UP Diliman campus, the UP Garden club pushed through with garden and flower shows in the metro, along with community beautification competitions, nor a blow-up solely attributed to the Philippine quarantine

But then, it showed that the local reemergence of this hype in plant parenting is something that has changed some *kababayans'* sedentary new normal lifestyles—"more than a hobby"—while undergoing existential crises, 'rebuilding meaning', juggling their interpersonal and professional lives under a life-threatening global health situation.

Manifestations of emergence of *plantito-plantita* social networks and communities are also found in social media, reflecting major cities in the metro, dispersed in Luzon, Visayas, and Mindanao—the three major islands in the Philippine archipelago. Just by simply searching for a Facebook group with keyword "plantita" or "plantito", it can be observed that in 2021, at least one hundred ten (110) active Public groups with at least twenty (20) members exist.

Moreso, there was an active emergence of several social media influencers and content creators in Youtube, Tiktok, and whose passionate insights about home-based plant care, plant identification, and plant collection among other themes were followed by the Filipino audience. Given this situation, there's something interesting happening with how people learned to integrate plant parenting and home gardening with their lives at the moment. As a novel phenomenon that has many angles to

explore from, there has been a spring of curiosity in the academic community, including the field of social and cultural change. This study attempts to contribute to this conversation.

As a potential sub-culture study concerning plant-loving urban dwellers, this exploration aimed to establish baseline information on the perceptions of *plantitos* and *plantitas* based in selected cities in Mega Manila (e.g. National Capital Region, Bulacan, Rizal, Laguna, and Cavite)—as an area with remarkable concentration of "plant parents" in Luzon—on quarantine home gardening during the COVID-19 Pandemic. Specifically, this study aimed to (1) elicit definition of the term *plantito/ plantita* from the respondents; (2) determine *plantitos/plantitas'* reasons for pursuing home gardening during the pandemic; (3) determine perceptions of the *plantitos and plantitas* about before-pandemic and during-pandemic, and after-pandemic situations relevant to home gardening; and (4) relate a social and cultural change perspective on the *plantito/plantita* phenomenon.

There was a total of two hundred one (201) respondents from Mega Manila who participated in this study, which were involved through convenience sampling. A structured survey plotted in Google Forms was disseminated to several Facebook groups catering to the *plantitos* and *plantitas* in Mega Manila. Online networks that have direct and indirect involvement with these local homegardeners were tapped to pool survey respondents.

Demographic information including respondents' location, age, gender, job sector, years of being a *plantito/plantita,* and types of plants propagated at home were some of the basic information asked. Questions related to respondents' perceptions on statements related to home gardening before, during, and after the pandemic are situated in a 5-point Likert Scale. There were also open-ended questions which were sorted and analyzed using the principles of thematic analysis.

In the advent of neoliberalism where individuality matters more than the structural economic collective, a picture of inequality among classes is highlighted in a sense that those who are more economically capable of taking their needs and wants are more "powerful" and prioritized. That is where the conflict began—not only among people or the community, but also against the environment it directly affects.

The case of the demand-side surge of *plantitos* and *plantitas* and sporadic multiplication of counterpart businesses in major cities in the Philippines projects a type of enterprise that somehow finds ways to supply for unlimited wants and needs of the middle- upper- class (or those who want to cross over the class ladder) over the pandemic; and as socio-ecological repercussions of the Filipinos' heavy obsession on plant collection, *plantitos* and *plantitas* resort to plant poaching,

hoarding, resource exploitation, and lack of ecological conscience. Biodiversity and ecological balance of rainforests and natural vegetation all over the Philippines are threatened by this subculture. Moreover, there are literatures which can attest of the cases of massive poaching activities—compromising endemic and indigenous plant species—on a daily basis; and remains as a struggle against achieving sustainability.

Subsequently, struggles experienced by some low-income, poor Filipinos in this pandemic pushed others to recklessly find any means to survive. In an article, it was highlighted that with the demand established in the Philippine plant economy during the pandemic, and the lack of quick and accessible source of employment and livelihood opportunities for some of the Filipinos, some resort to plant poaching, profiteering, and scamming, among others. Even when others know these socio-ecological irregularities, people remain tiptoed about it, enabling its proliferation.

Above all these conflict-based issues in plant poaching and irresponsible plant acquisition, it was advocated that there should be an attitude of a 'caretaker of life', not some kind of dominant being that sees plants [as] another thing to abuse.

Given these contexts, the *Plantito/Plantita* subculture during the pandemic in the Philippines has unfolded deeper dimensions of survival, exploitation, and dynamics among people, plants and environment, and the bigger capitalist-oriented local economy. Prior exposure of some *Plantitos/Plantitas* on home gardening even before the pandemic may have been critical to their current viewpoints under this theme, especially on their current identity, societal expectations and future directions.

The *Plantito/Plantita* subculture, as established in this study should put more prime in environmental consciousness and social responsibility, likewise in addressing inadequacies in the plant-selling industry (e.g. doing business, value chain, etc.). It should thrive as an industry of fairness and "holistic" sustainability.

“Conservation tillage and diversified nutrient sources impacts on soil properties and farm productivity of maize-pea system under organic management in the Indian Himalayas” By Dr. Raghavendra Singh (India)

He was born on 10th September 1973 at Jaunpur in Uttar Pradesh, India. He reached B.Sc. Agri. (1994) with the first position from Purvanchal University, Jaunpur; M.Sc. (Ag) in Agronomy (1996) with a first rank from CSAUA&T, Kanpur; and Ph.D. (2000) from Institute of Agricultural Sciences, BHU, Varanasi.

He served as Assistant Professor (2001-2012) at Udai Pratap College, Varanasi; Senior Scientist (2012-2018) and Principal Scientist (2018-2020) at ICAR RC for NEH Region Sikkim Centre, Gangtok (Sikkim). Presently working as a Principal Scientist at ICAR-IIPR, Kanpur. Made outstanding research contributions in the field of sustainable intensification under organic farming and conservation agricultural systems. He designed several integrated organic farming systems models for the food and nutritional security of hill farmers.

Furthermore, he also played an instrumental role in popularizing the resource-efficient and environmentally friendly agro-technologies among the farming community of the Eastern Himalayas. He published > 95 research articles, 30 review articles in peer reviewed International and National Journals several book chapters, 20 popular articles, 8 books, and technical bulletins/manuals.

Conservation tillage and diversified nutrient sources impacts on soil properties and farm productivity of maize-pea system under organic management in the Indian Himalayas

Raghavendra Singh

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Introduction

Land degradation for sustainable agriculture and moderation of climate variability are the most serious threats for achieving the sustainable development goals (SDGs) sets by the United Nations in 2015. Globally, approximately 33% of the land is degraded directly impacting the livelihoods of billions (Singh et al., 2021). Thus, to reverse the global ecosystem degradation and achieve neutrality in land degradation the United Nations General Assembly has declared 2021–2030 the "UN Decade on Ecosystem Restoration" on 1 March 2019.

Despite, the essentiality of soil quality for sustainable agriculture and human wellbeing (Lal 2015), policymakers of the globe overlooked the management of this precious finite resource. Excessive tillage, indiscriminate and intensive chemicals use without adequate organic inputs lead to poor soil quality and a significant ravage to ecosystems (Singh et al., 2021). Among the range of crop management practices, tillage is most vital which greatly influences the soil properties and crop growth.

Nevertheless, there is enough evidence that excessive tillage leads to poor soil physical chemical, and biological properties (Babu et al., 2020). Continued repeated tilling and residue clean/less cultivation aggravates the soil organic carbon (SOC) oxidation and causes ~20-67% SOC loss that leads to soil quality deterioration (Yang et al., 2019).

The present study's findings will guide the policy planners to formulate sustainable land use planning to arrest land degradation and improve current food production without compromising ecosystem sustainability. Hence, the present research aims (i) To study the effect of tillage practices and intensified systems on soil physicochemical and biological properties; and (ii) their effect on farm productivity and profitability. Thus, the study delivers realistic elucidations to arrest the soil dilapidation as anticipated in UN-DER, Bonn Challenge & UN-SDGs initiatives, besides addressing some SDGs.

Methodology

The experiment was conducted for six consecutive years in a fixed plot from 2013 to 2019 at the Research Farm of ICAR Research Complex for NEH Region Sikkim Centre, Gangtok, Sikkim, India. The experimental site is situated at 27°32' N latitude and 88°60' E longitude at an altitude of 1350 meters above mean sea level. The majority of soils are acidic and prone to degradation. The diverse ecology and altitudinal gradient rages from 300-8000 m and represent great diversity in flora and fauna present. The soil of the site was a sandy loam and classified as Haplumbrepts soil.

The treatments comprises three tillage practices (TP) *viz*., conventional tillage (CT), reduced till (RT), and no-till (NT) were assigned to main plots; whereas four different organic N/residue management *viz*., farmers' practice of organic nutrient management (FP) *i.e.* farmyard manure application @ 8 Mg ha^{-1} FYM_1;)], N 100% of the recommended dose of N through organic manures FYM_2; N 75% of recommended dose through organic manures + maize/vegetable pea stover in either of the crop FYM_3; and N 50% of recommended dose through organic manures + maize/vegetable pea stover in either of the crops FYM_4.

The recommended dose of N for maize (60 kg ha^{-1}), and vegetable pea (30 kg N ha^{-1}) was applied through mixed compost-MC (fully well-decomposed mixture of cow dung and finely chopped leaves of *Alnus nepalensis, Artemisia vulgaris*, and *Eupatorium odoratum*,), vermicompost (VC) and neem cake (NC) for organic nutrient management as per the treatments. All the data were statistically analyzed with help of SAS 9.4 using the GLM procedure for analysis of variance (ANOVA) and test of significance.

Result

The physical properties of soil *viz.,* ρb, soil penetration resistance (SPR) and WHC were varied response to tillage and organic nutrient practices after harvest of the vegetable pea. The soil pH (1:2.5) did not differ significantly with the tillage practices at any of the soil depths after six cropping cycles of the maize-vegetable pea system. However, SOC, available N, P, and K were significantly affected by tillage and organic nutrient management after six cropping cycles.

Despite the lack of statistical differences, the highest soil pH was noticed under NT (5.84, 5.76, and 5.73) while the lowest was under CT (5.76, 5.67, and 5.65) at 0-10 cm, 10-20 cm, and 20-40 cm depths, respectively. The TP had a significant effect on SOC concentration at 0-10 cm and 10-20 cm depths. The NT had a significantly higher SOC (16.49 and 15.16 g kg^{-1}) concentration at 0-10 cm and 10-20 cm

as compared to CT (15.26 and 14.90 g kg^{-1}), respectively. The SOC under NT had increased by 8.1% and 4.7% over CT and RT at 0-10 cm depth after six cropping. ONM practices significantly influenced the SOC concentration at all the soil depths. The SOC concentration at 0-10 cm, 10-20 cm, 20-40 cm depths were higher by 5.32%, 4.14%, and 2.03% under FYM_3 over FYM_1, respectively.

The TP had a significant effect on system productivity (MEY) and SPE (mean of six years). The MEY was significantly higher under NT (11.4 Mg ha^{-1}) than RT (11.2 Mg ha^{-1}) and CT (10.4 Mg ha^{-1}). SPE was about 9.86% and 1.96% higher under NT over CT and RT, respectively. The SGR, SNR, B: C ratio, and SP under NT were higher by 9.36, 23.2, 23.3, and 23.3% over CT, respectively. Among the different organic nutrient management practices, significantly higher MEY was obtained under FYM_2 (12.5 Mg ha^{-1}) than other management practices but remained at par with FYM_3 (12.1 Mg $ha^{-1)}$.

Organic nutrient practices had a significant effect on SGR, SNR, B: C ratio, and SP. ONM_2 practice gave significantly higher SPE (34.3 kg $ha^{-1}day^{-1}$), SGR (3708.2 US $ ha^{-1}), SNR (2447.3 US $ ha^{-1}), and SP (6.70 US $ ha^{-1} day^{-1}) when compared to the rest of the nutrient practices. Significantly higher B: C ratio (3.04) was registered under ONM_3 as compared to others but remained statistically similar with FYM_2 (2.96).

Conclusion

The results of this six-year study proved the hypothesis that conservation tillage (RT/NT) and organic nutrient management improved the soil properties, stabilized the yield, and improved the system productivity of maize-vegetable pea cropping system as compared to the existing CT system. Based on the data NT/RT system increased the system productivity besides improving the soil quality than that of CT. The MEY and SPE were 9.6% and 9.9% higher under NT over CT, respectively.

The ONM_2 had 35.9% while ONM_3 had 31.5% higher MEY over ONM_1. Significantly higher B: C ratio (3.04) was observed under ONM_3 as compared to others. The NT with FYM_3 improved soil physical properties [reduced ρb (0-20 cm), and soil penetration resistance (0-15 cm)]. Soils under NT/RT registered higher SOC, plant-available N, P, and K than the CT. ONM_3 had higher pH, SOC, and available N, SMBC, and DHA than the rest of the ONM practices.

Thus, the study suggests that the adoption of the NT/RT along with FYM_3/FYM_2 could arrest the land degradation and enhance the productivity and profitability of maize-vegetable pea in the Indian Himalayan Region of India and other similar eco-systems elsewhere.

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Connection of Pacific/Indian Ocean Sea Surface Temperature Variability and Rice production in Indonesia

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Rice is the main food crop commodity cultivated by Indonesian farmers. The variability of rice production is found to be closely correlated with the rainfall variability. While rainfall variability of most of Indonesian region is significantly influenced by the variability of sea surface temperature (SST) in Pacific (called as ENSO) and Indian Ocean (called as IOD). Several studies indicate that crop failure due to drought and flood are often associated with the condition of sea surface temperature in these oceans.

This study further assess relationship between sea surface temperature index covering Pacific and Indian Ocean and rice production variability and evaluate its potential use for predicting anomalies of rice production in Indonesia. The study used Empirical Orthogonal Function (EOF) to represent SST index in the two Oceans. The study found that the use of the EOF (1) as predictor for estimating the anomaly of rice production is not superior to the one that only used the anomaly of SST Pacific Ocean.

This suggests that the use of the anomaly SST in Pacific Ocean as a predictor for the estimation of anomaly of rice production in Indonesia is preferable, as there is no need to process of SST data using the EOF to get SST index for the two oceans. The increase of global temperature due to the increase of GHG concentration in the atmosphere may affect the ENSO phenomena.

Several studies indicate that as the tropic warm up in response to increasing greenhouse gases (GHGs), the ENSO is going to be more intense with a wide range of responses from weaker to stronger. This result suggests that several adaptation measures deserve careful consideration to manage the risk.

. “Inter-row cultivation with wheel hoe weeder for organic weed management in okra (*Abelmoschus esculentus L.*) and finger millet (*Eleusine coracana L.*)” by Dr Sheeja K. Raj (India)

She is an Assistant Professor of Agronomy at Kerala Agricultural University in the Department of Organic Agriculture, College of Agriculture, Vellayani. The main area of her research is integrated weed management with primary focus on weed management in organic crop production systems. She had developed four technologies for benefit of Kerala farmers, that were included in Kerala State Package of Practice Recommendations for crops.

She has fourteen years of Extension and eleven years of research experience. Under her guidance, five M.Sc. students had submitted the thesis and currently three Ph.D. students and two M.Sc. students are doing research under her guidance. She received the 2016 Best Agronomist Award in recognition of her contributions. Her design of wheel hoe weeder was granted patent (Design No. 346280-001 dated 14/07/2021) by Indian Patent Office, Kolkata. Her publications include 54 research papers in peer reviewed NAAS rated journals, two booklets, one training manual and numerous research and extension leaf lets.

She currently handles two research projects. She had attended more than 15 National and International Seminars. She is member of the Project Co-ordination group of Kerala Agricultural University. She was co-ordinator of numerous training programs for farmers, agricultural officers and vocational higher secondary school students. She had established a soil and plant analysis laboratory at Coconut Research Station, Balaramapuram during her tenure at that research station.

She is a life member of Indian Society of Agronomy, Indian Society of Weed Science and Journal of Crop and Weed. She had reviewed numerous research articles for Indian Journal of Weed Science.

Inter-row cultivation with wheel hoe weeder for organic weed management in okra (*Abelmoschus esculentus* L.) and finger millet (*Eleusine coracana* L.)

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Introduction

Organic crop production largely excludes the use of synthetic herbicides. Organic herbicide products have not gained wide use in Asian region. Farmers in many Asian regions have recently shifted to organic crop production systems. However, weeds are recognized as one of the major biological constraints in these systems since they substantially reduce yield. Hand-weeding is becoming less popular due to labour shortages at critical times and rising labour expenses. Since mechanical weeders are easy to use and save labour, they can effectively replace hand-weeding.

Mechanical weeders can be used in conjunction with various other weed management strategies to achieve effective and long-lasting weed control. In this backdrop, a research project has been initiated at the Department of Agronomy, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala, India, with an objective to develop a wheel hoe weeder that is user-friendly for women to use for weeding row-planted crops. To test the efficacy of the wheel hoe weeder thus developed, field experiment was conducted in okra (*Abelmoschus esculentus* L.) and Finger millet (*Eleusine coracana* L.) planted in wide-row and close-row spacing, respectively.

Materials and Methods

The field experiment was conducted during the *rabi* season of 2020–21 and 2021–22 at Coconut Research Station, Balaramapuram (8° 22’ 52’’ N and 77° 1’ 47’’ E, at an elevation of 9 m above mean sea level). The climate of the experiment site is warm humid tropics. The test crops comprised of okra variety, ‘Anjitha’ planted at 60 x 45 cm during 2020-21 and finger millet variety, ‘PPR 2700 (Vakula)’ planted at 25 x 15 cm during 2021-22. The sandy loam textured soil of the experimental site was acidic in reaction, low in organic carbon, low in available N, and medium in P and K.

Crops were fertilized following the package of practices recommendations for crop production in Kerala. The experiment adequately replicated was arranged in a randomised block design. Okra with wide-row spacing 60 x 45 cm was administered the three weed control treatments comprised of wheel hoe weeding thrice at 15, 30 and 45 DAS, hand weeding thrice at 15, 30 and 45 DAS, and weedy check.

The three weed control treatments assigned to finger millet with close-row spacing 25 x 15 cm were wheel hoe weeding twice at 15 and 30 DAS, hand weeding twice at 15 and 30 DAS and weedy check.

Observations on total weed density and weed dry weight were recorded at 30 and 60 DAS. Data on weed density were recorded from an area enclosed in the quadrate of 0.5 m^2 randomly selected at two places within each plot. Weeds collected from 0.5 m^2 area at two places were first sun dried for 2-3 days and then oven dried at 70^0C till the constant weight was recorded. Weed control efficiency was computed at 15, 30 and 60 DAS. The crop was harvested and yield per hectare of the crop was determined. The prevailing market prices of inputs and outputs were used in calculating the economics of each treatment.

Distinguishing features of Wheel Hoe Weeder

Wheel Hoe Weeder (WHW) is a manually operated push-type machinery with a wheel and weeding blade for weeding. The machinery can be operated by a single woman for weeding in inter row spaces of row planted crops. The long handle lets the operator to avoid bending over to pull out the weeds. An operator using the machinery with weeding blade of sweep size 20 cm attached to it can weed an area of 0.015 ha in an hour in loamy soil. The machinery is operated by pushing action through force exerted by operator on the handle bar with grips, which allows the soil working part of the machinery i.e., weeding blade to penetrate into the soil, skim below the ground surface and cut or uproot the weeds in between the crop rows. Soil mass to a depth of 1.5 cm is manipulated by the machinery during operation.

Weeding blade is attached to headpiece such that the weeding blade is slanted to an angle of 15^0 to the horizontal while the headpiece remains vertically attached to chassis. This design is incorporated so that weeding blade can easily penetrate soil with least resistance. Handle bar with grips is attached to the handle stay at an angle of 20^0 to the horizontal. This design provides the operator with more direct and accurate control over the soil working part of the machinery i.e., weeding blade.

The square tubed chassis is a distinctive feature which acts as the main body of the machinery to which three important parts of the machinery viz. handle bar, ground wheel and weeding blade are attached using handle stay, fork and headpiece, respectively. The chassis has provision to attach weeding blades of varying sweep sizes 10, 15, 20, 25 and 30 cm as per crop inter row space requirement. Design of the wheel hoe weeder (Design No.: 346280-001, Date: 14/07/2021) is patented under Indian Designs Act, 2000 and Design Rule 2001.

Results

Grassy weeds mainly *Setaria barbata* (Lam.) Kunth and *Digitaria sanguinalis* (L.) Scop. contributed to 81.20 percent of total weed density and thus dominated the weed flora in okra. However, floristic composition of broad leaved weeds in okra was more diverse mainly due to presence of *Synedrella nodiflora* (L.) Gaertn, *Phyllanthus niruri* L., *Boerhavia diffusa* L., *Mimosa pudica* L., and *Tridax procumbens* L. Density of sedges in okra was quite low with just *Cyperus rotundus* L. being the only sedge present. Wheel hoe weeding in inter rows of okra significantly lowered total weed density (121 and 27 no. m^{-2}) and total weed dry weight (2.48 and 2.54 g m^{-2}) at 30 and 60 DAS respectively. Hand weeding recorded total weed density of 147 and 30 no. m^{-2}, and total weed dry weight of 3.57 and 3.99 g m^{-2}, at 30 and 60 DAS respectively.

Weed control efficiency recorded at 30 and 60 DAS in wheel hoe weeding was 92.28 and 93.36 per cent as against a weed control efficiency of 91.38 and 90.37 per cent respectively in hand weeding treatment. The yield enhancement in okra due to wheel hoe weeding was 138 per cent compared to hand weeding and resulted in net return of Rs 97804 ha^{-1} as against Rs 21663 ha^{-1} in hand weeding treatment. The benefit:cost ratio of 2.24 recorded in wheel hoe weeding was double that of hand weeding.

Results from weeding finger millet inter-rows with wheel hoe weeder also revealed that wheel hoe weeding effectively controlled weeds than hand weeding, which lead to higher yield and economic returns. Grassy weeds mainly *Panicum maximum* Jacq., *Setaria barbata* (Lam.) Kunth and *Digitaria sanguinalis* (L.) Scop. dominated the weed flora in finger millet. *Phyllanthus niruri* L., *Boerhavia diffusa* L. *Mimosa pudica* L., and *Synedrella nodiflora.* were the major broadleaved weeds present. At both 30 and 60 DAS, wheel hoe weeding resulted in significantly lower total weed density of 13 no. m^{-2}, with a weed dry weight of 3.03 and 55 g m^{-2} respectively.

However, hand weeding resulted in higher weed density of 20 no. m^{-2} at both 30 and 60 DAS, with a weed dry weight of 0.97 and 321 g m^{-2} respectively. Higher weed control efficiency of 96.6 and 85.9 percent at 30 and 60 DAS respectively were recorded in wheel hoe weeding. This resulted in finger millet grain yield of 1459 kg ha^{-1} in wheel hoe weeding with a yield enhancement of 12 per cent over hand weeding. Higher net return of Rs 13821 ha^{-1} and benefit:cost ratio 1.31 were obtained when inter rows of finger millet were intercultivated with wheel hoe weeder as compared with hand weeding. Net returns under hand weeding were lower at Rs 5071 ha^{-1} with benefit:cost ratio 1.11, which revealed that wheel hoe weeding is economically beneficial for farmers.

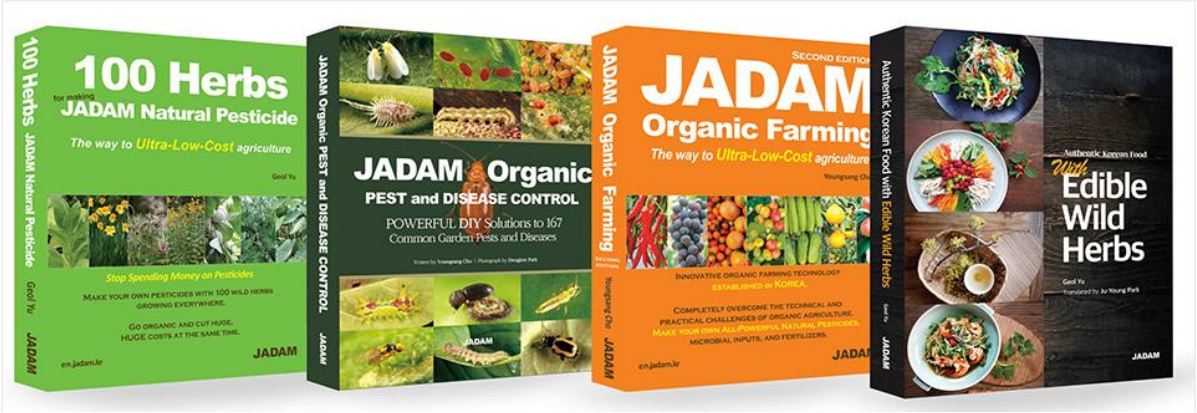
Wheel hoe weeding needed only 7.8 labour man-days in contrast to 15 labour man-days for hand weeding. Higher yield obtained by wheel hoe weeding of crop inter rows may be attributed to better cutting and uprooting of weeds, which led to a considerable decrease in weed density and weed dry weight compared to hand weeding. Soil manipulation by wheel hoe weeder during inter cultivation contributed to improved soil aeration, root development, availability and uptake of nutrients which favoured crop growth, photosynthesis and assimilate partitioning from source to sink, which lead to higher yield in okra and finger millet.

Conclusion

Thus, it could be concluded that wheel hoe weeding effectively controlled the weeds in both wide-row and close-row-spaced crop. With an increase in net return and benefit: cost ratio, it also decreased cultivation costs. Hence, wheel hoe weeding might be recommended as an efficient and affordable weed management strategy in organic crop production.

Low-cost pest control in organic farming By Rabi Cho (South Korea)

Rabi Cho comes from three generations of organic farmers. He is currently working at JADAM which is very popular in Korea for promoting homemade organic materials. JADAM organizes organic related trainings for farmers and also trains farmers to make their own organic materials from farm wastage and by products.



Low-cost pest control in organic farming

Rabi Cho

JADAM, South Korea

ULTRA Powerful Pest and Disease Control Solution Make all-Natural Pesticide. Farm at $100 per acre a year. Everything you need to know to: Go completely organic Boost quality and yield Save huge, huge, HUGE costs Make all-natural fertilizer, pesticide and microorganism inputs yourself. JADAM's ultimate objective is to bring farming back to farmers. Through JADAM's method, farming can become ultra-low-cost, completely organic, and farmers can once again become the masters of farming. Farmers will possess the knowledge, method and technology of farming. When organic farming becomes easy, effective and inexpensive, it can finally become a practical alternative.

Farmers, consumers and Mother Nature will all rejoice in this splendid new world we wish to open. Many useful methods are introduced including increasing microbial diversity and population, boosting soil minerals, tackling soil compaction, reducing salt level, raising soil fertility and more. Natural pesticides can replace chemical ones. "Jadam Organic Farming" promotes organic farming system through low cost methods of making needed organic inputs by the farmers themselves. Many technologies have been developed including natural pesticides which are not patented but freely disseminated through books and websites. "Natural Pesticide Workshops" teaches the essence of ultra-low-cost Jadam organic farming. Lectures, too, are disclosed on Jadam website(en.jadam.kr).

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(Congress Session 3) Market Access Session

“Vetiver Women Micro-entrepreneurship: Building resilience through mutually benefited interaction between nature and local community” by Jacob Jose (India)

He is working as the Manager-Business Development with PDS Organic Spices, Kerala, India. He completed his post-graduate studies in Business Administration at Mahatma Gandhi University in Kerala, India.

Since 2015, he has been working as Manager-Business Development with PDS Organic Spices, the pioneer producer and exporter of organic spices from India. PDS Organic Spices is a unit of Peermade Development Society (PDS), an NGO operating from the Western Ghats part of Idukki district, Kerala, India. PDS Organic Spices is operating with a mission of developing self-reliant, empowered rural communities through sustainable farming activities in the remote agrarian district of Idukki.

He completed the Organic Foundation Course Master Class from Goesan county, Korea, in July 2022, which is organized by the IFOAM Organic Asia. He actively participated in many trainings offered by several national and international agencies on organic farming, food safety and hygiene policy, biodiversity conservation, climate smart agriculture and green economy. In addition, he is also a member of FAO's Global Alliance for Climate Smart Agriculture (GACSA) and CII India's national level alliance for sustainable agriculture.

Prior to joining PDS Organic Spices, he worked with the Kerala government's responsible tourism initiative, where they able to win the United Nations World Tourism Organization's (UNWTO) Ulysses Award for 'Innovation in Public Policy and Governance.

He also participated in the IFOAM Organic World Congress online, and #IGrowYourFood campaign and its launching program by IFOAM Organics International.

Vetiver Women Micro-entrepreneurship: Building resilience through mutually benefited interaction between nature and local community

Jacob Jose

PDS Organic Spices, Kerala, India

Idukki district of Kerala, India, is located in the Western Ghats, which is one of the major biodiversity hotspots in the world. Its sloping terrain, combined with highly fluctuating weather pattern like unpredicted high intensity rainfall, disruption in rainfall pattern, storms, droughts etc., has often leads to flash floods, soil erosion, landslides, and consequent crop loss for the small and marginal spices farmers of the region. Around 75 percent of the farmers have landholding of one hectare or less and climate change has taken a heavy toll on them. Since spices are one of the major crops in the region and the life of the spices completely depended on the climatic conditions, the changes in the climate pattern have an accelerated impact in the agro-ecological system of the region. Also, the soil erosion has led to the topsoil run off and loss of fertility.

Soil health is the foundation of agriculture, it boosts the resilience of farms and the supply chain to the effects of increased climate variability and healthy soils have a critical role as carbon sinks. Soil health has a cyclic effect on climate change. A well-managed soil can reduce global warming by reducing the GHG emission and increasing the carbon sequestration and it also can mitigate the adverse impacts of climate changes. Soil management practices like soil restoration, multi cropping system, no-till farming, cover crops, nutrient management, manuring and sludge application, improved grazing, water conservation and harvesting, efficient irrigation, agroforestry practices etc. are beneficial to improve the soil organic carbon content and reduce carbon loss from the soil.

Peermade Development Society (PDS), a Non-governmental Organization based in Peermade, Idukki, Kerala has been intervening in the local agro-ecosystems, and encouraging the small and marginal farmers to adapt regenerative agriculture practices since 1980. PDS is engaged in organic farming, biodiversity conservation and enhancement, research and development, organic products processing and marketing for the empowerment of small and marginal farmers and to create a resilient value chain, in rural areas of Western Ghats region of Idukki district. PDS has a well-established farm extension, organic spices processing and quality assurance system.

PDS has always capacitated and encouraged the farmers to adopt soil managing practices which are focused on regenerating the soil biodiversity rather than managing soil fertility. Farmers in the region

have used Vetiver (Chrysopogon zizanioides), in the past, for both its ecological service in binding the soil and to supply its roots for Ayurvedic medicinal market. But with time, this traditional bio-engineering system lost its sheen.

PDS has revived the age-old technique of planting Vetiver grass (native to the Western Ghats), to address the soil erosion and nutrient loss problem of the hilly tract of Idukki district. PDS has integrated this as part of its regenerative agriculture practices and Vetiver slips has been developed in their own nursery to be supplied to the spices farmers, in order to plant it throughout the contours.

Vetiver is a perennial grass of the family *Poaceae*. Vetiver grass, due to its very deep and fibrous root system has the capacity to provide a natural means of soil conservation. Its roots grow up to 13 feet deep, aid in binding the soil and preventing landslides. This grass has the capacity to slow water runoff, tap sediments, filter out nutrients and retain soil. When planted in rows, the shoots and the strong and deeply growing roots of Vetiver plants forms a hedge, a living porous barrier which slows and spreads runoff water and traps sediment. As water flow is slowed down, its erosive power is reduced allowing more time for water to infiltrate the soil, and any eroded material is trapped by the hedges.

Therefore, this effective hedge reduces soil erosion, conserves soil moisture and traps sediment on site. Increasing the soil organic carbon pool is an important objective of regenerative method of soil health building. The Vetiver root system plays an important role in this regard.

In addition to its aromatic and oil extraction purpose, the Vetiver roots has been using in Indian traditional system of medicinal known as Ayurveda for making many medicinal formulations. It is mainly used as antiseptic, detoxifying and cooling agent. When applied on the skin, Vetiver has anti-oxidant, tonic, and anti-aging properties. PDS buys back the roots of Vetiver for using in its own Ayurvedic unit for making traditional medicines.

PDS always believe that, an ecological conservation activity will be sustainable only if it has some direct positive socio-economic impacts in the life and livelihood of the small and marginal farmers, since they are the custodians and guardians of the local agro-ecology. True resilience and regeneration of the agro-ecosystem of the Western Ghats region can be attained only through a mutually benefited interaction between nature and local community.

By considering this fact, and the socio-economic situation prevailing the agriculture value chain in the region, PDS has decided to start a micro-entrepreneurship using Vetiver and integrate it to the value chain as a Women empowerment initiative. It has been noticed that the leaves of Vetiver grow

profusely but are left unutilized. So, PDS has conceived the idea of developing a sustainable packing material (gift basket) for the organic spices, using the Vetiver leaves which is sourced from the farming community.

PDS has trained a group of home makers to make gift boxes using the leaves of the Vetiver plant, and formed a self-help group (SHG). PDS helped them in research and development for identifying the best suited varieties of Vetiver grass to use as raw material for the baskets, development of ideas for new crafts which can be used in the organic spices value chain, branding, and linking their crafts with potential markets etc. Also expert training on governance, financial management and debt management has been given to the group members.

At present, the women group is collecting Vetiver grass from different farmer fields, processing and crafting various kinds of baskets. PDS is buying it from them and marketing it as their organic spices gift box. This is one example of the Peermade Development Society's objective to ensure resilience by transforming actions towards conservations to economic activity, a phase of Ecolo-Economisation. Here an ecological activity of planting Vetiver for mitigating the impacts of climate change is converted to an economic activity through women entrepreneurship whereby additional family income is generated and ensured its sustainability.

“Transcending Borders and Generations for Organics via New Media: A Maldives Case Study”

By Mohamed Hoodh Ibrahim (Maldives)

Hoodh is a public relations manager, researcher, and political scientist experienced in providing tailor made communications, and marketing services. Hoodh has served in government, corporate sector and civil society in various capacities. Hoodh pioneered the founding of the youth-led NGO Dhi Youth Movement (DYM). In 2012, Hoodh represented the Maldives in the Training for Trusteeship regional conference on water conservation in Sri Lanka organized by UNESCO and Weeramantry International Center for Peace Education and Research.

In 2013, Hoodh co-founded the ‘Youth to Leaders’ (Y2L) Forum for ministerial and policy level engagement for youth. Hoodh was selected by UNFPA Asia to participate in United Nations Security Council Resolution 2250 mandated Asia Pacific Regional Consultation on Youth, Peace, and Security 2017. He led the team on mechanisms and implementation for increased youth participation in policy and decision making in the 2030 agenda. In 2018, Hoodh won the Asia Inspiration Award from the International Youth Committee. Additionally, in 2018 Hoodh was selected by the London based charity One Young World (OYW) to be an Ambassador at the OYW Summit 2018 in The Hague, Netherlands.

Further, Hoodh was a researcher for UNESCO Youth as Researchers Small Island Developing States Team studying “Young people’s perception regarding the abrupt changes in education during the COVID-19 pandemic in SIDS”. Today, Hoodh is the Public Relations Manager at the world class specialized tertiary health care provider Tree Top Hospital. Additionally, serving as Board Director of the Maldives Island Conservation Project working to develop conservation nature parks, Executive Director at Huvadhoo Association for Tourism working to create sustainable social business tourism in the Maldives.

Transcending Borders and Generations for Organics via New Media: A Maldives Case Study

Mohamed Hoodh Ibrahim

Board Director of the Maldives Island Conservation Project, Maldives

Due to emerging environmental, geopolitical and public health challenges there has been an increase in the disruptions to the food systems around the world. This is a time that is greatly important for all nations small and large to look into the continued sustainability of local food production, consumer consumption habits in comparison to national economies, creating and investing in organics as a local alternative to high-cost import of foodstuffs. Considering disruptions to the supply chain due to Covid-19 and the Russia-Ukraine war has caused Small Island Developing State to evaluate the food supply systems. Especially in order to work towards national food security and resilience.

The Maldives is a Small Island Developing State, the Maldivian archipelago is a string of almost 1200 islands that first encountered new ideas and practices via trade and travel as benefiting from its unique geographic position in the Indian ocean. The Maldivian society has placed a historical emphasis on peaceful coexistence. Historically the legal system of the Maldives also clearly exhibits the special consideration given to the social harmony rather than deferring to Islamic punishment as will be demonstrated in this essay. (Shaheed & Upton, n.d.)

There are examples of private sector businesses working the organic farming space. Such as the Seagull Maldives Maafahi agriculture island, high end farms that are part of the operations for high end luxury resort hotels in the Maldives such as Al Fresco Organic Farm Restaurant on Vaakaru Maldives Resort (Vaakaru Maldives, 2022)

While these represent positive steps towards organic in the service market especially in the tourism sector. However, nothing as compelling, inspiring and accessible to the common young person as the young "*Zuvaan Dhanduveriya*" who has taken the Maldives by storm through the creative and dynamic use of new media (ZuvanDhaduveria, 2022). Particularly through the use of social media platforms such Twitter and TikTok new young farmers are finding an educational, farming popularisation and food security avenues to reach the minds of average consumers to change behaviors through innovative and creative communication.

Among the various highlights of this young farmer include creating sugar cane fields and building a machine for juicing sugar cane to create a pulp free juice and farming diverse breeds of food such as which Noni has traditionally been used for colds, flu, diabetes, anxiety, and high blood pressure, as well as for depression and anxiety. All plant parts are used for a variety of illnesses in Samoan culture,

plant medicines (ZuvanDhaduveria, 2022).

Social media platforms provide agricultural institutions the ability to communicate directly to the farmers and consumers, informing them about various aspects of agriculture (Saravanan and Suchiradipta, 2016).

The Maldives is making government investments in securing land and investing in organic farming through the state owned enterprise Agro National Corporation. Agro National Corporation (AgroNAT) was founded as a State-Owned Enterprise with the overall mandate to assist in developing the agricultural sector. AgroNAT works toward enforcing objectives such as enabling an efficient supply-chain for agriculture, providing technical expertise and training to farmers, expanding the role of women in farming, and facilitating access to quality fertilizers across islands (AgroNat, 2022).

While the role of social media in various industries has been broadly studied the idea of promoting organics in Small Island Developing States for food security and resilience particularly driven by young people for young people is a compelling idea and has diverse potential for scalability. Social media offers a more broadly sourced, grassroots, depiction of farming life and take a look at how farmers assemble a range of sources including traditional and modern methods and sharing the beauty and reality of the rural farming, and revealing the nature of farm work.

This paper aims at noting how social media can enable farmers to reveal the usually hidden aspects of farm work, share and document practices as well as express and reflect their perspectives in communicating to and with farming and non-farming audiences, and how such communicative practices might serve to reframe their farming identities as relatable and replicable activities even in urban settings (Riley & Robertson, 2021).

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“PGS Organic Vegetable Production Practices in Luong Son district, Hoa Binh Province, Vietnam”
by Nguyen Thi Ai Nghia (Vietnam)

She is a professor of Faculty of Agronomy, Vietnam National University of Agriculture, Hanoi, Vietnam. She was an assistant lecturer at Vietnam National University of Agriculture since 2006, then she studied Master degree about organic agriculture in Witzenhausen campus of Kassel university, Germany in 2009-2011 and continued PhD about Agricultural Science, focus on ecological studies, in Kyushu University, Japan from 2012 to 2015.

After graduate, she came back her university and joined the teaching and researching activities. She participated in writing textbook of Organic agriculture and now teaching this subject for faculty’s students.

Dr. Nguyen’s research focuses on practices in organic agriculture and organic fertilizer. She has supervised for many undergraduate and graduate students and published papers in this field. She is a member of Center of Organic Agriculture Promotion and Studies, Vietnam National University of Agriculture and member of Center of Research and Development of Organic Agriculture, Vietnam Organic Agriculture Association.

She has given several training about organic practices for local agriculturalists, extensionists and farmers in Vietnam and works as technical consultants for many organic farms. She has participated several projects in organic agriculture. The development of organic agriculture in Vietnam has become her desire and professional motivation.

PGS Organic Vegetable Production Practices in Luong Son district, Hoa Binh province, Vietnam

Nguyen Thi Ai Nghia
Professor, Faculty of Agronomy, Vietnam National University of Agriculture
Hanoi, Vietnam

In recent years, organic production is increasingly interested by Vietnamese consumers due to the harmful health and environment effects of conventional agriculture production. PGS is a participatory guarantee system has been practiced in Vietnam since 2008 in a project with the support of the International Federation of Organic Agriculture Movements (IFOAM) for the first farmer groups in Soc Son district, Hanoi and Luong Son district, Hoa Binh province. The PGS small holder farmers in Luong Son district has many years of experience in vegetable growing and have achieved certain results. However, the area of organic agricultural production is still very limited, accounting for 0.27% of the district's agricultural land area (survey, 2019).

In organic farming, cultivation technique is fundamental to ensure the success of organic production. Our study aims to find out the limiting factors, especially in farming techniques, can help to improve and ensure the success of PGS organic vegetable production in this area, thereby contributing to expanding the production area and increasing incomes for farmers. Our survey used PRA method (Participatory Rural Appraisal) to collected data about organic production practices of 78 PGS farmers in 4 communes in the area.

The results showed that the area of PGS organic vegetable production in Luong Son had increased about 15 times from 1.86 ha (2009) to 27.4 ha (2019), with the rapid increment in recent years, to be the key area for organic vegetable growing in Hoa Binh province. However, the yield of organic vegetable remained unchanged during 10 years, ranging from 305.2 to 321.7quintals/ha/year, which shows that it is necessary to have studies on technical practices of PGS farmers to improve the yield of organic vegetables in the area.

Along with the rapid increase in the production area, the production of organic vegetables also increased 14 times over a 10-year period, which is a good sign for the organic vegetable production of Luong Son but also poses a problem to solve the consumption of vegetable products of the farmers.

Survey of PGS organic vegetable distribution system in Luong Son district showed that there were many companies and retail shops participating in the consumption of organic vegetables. Additionally, organic vegetables were also sold to local markets in Luong Son when companies could not sell all

products. Companies and retail shops sold products at the price of organic vegetables, while the vegetables sold at the local market had the price of normal vegetables or even lower. The distribution channels was still quite simple and depended a lot on the consumption capacity of companies, which made difficulties for PGS producers to negotiate prices and other conditions in consumption cooperation.

The organic production management showed the low level of mechanization in the tillage and watering in organic production, mainly done by hand, that required a lot of labours with high costs and reflected the small-scale of producing organic vegetables in the area. For irrigation techniques, some production groups had invested in automatic sprinkler irrigation systems but it had difficulties in maintenance the system. Therefore, farmers still continued to use the old method, which was more convenient like using self-flowing water or watering by manual methods (using pots, buckets...). Most of the farmers (87%) used organic mulching materials (rice husk, straw, grass ...) to cover soil in organic vegetable production. Sometimes, to promote the decomposition of the mulch, animal manure would be spread to the top of the mulch to supply more nitrogen for crops.

There were a total of 46 types of vegetables grown, divided into 3 main seasons: Spring-Summer season (from January to April) and Summer-Autumn season (from May to August) and Winter season (from September to December). Organic vegetable production in Luong Son depended entirely on natural conditions, so the chosen variety of vegetables often were adaptable, highly indigenous and planted in the right season, very few organically produced vegetables were grown off-season. The rotation of vegetables ensured that on the same field, the different families with different harvesting parts were arranged. However, legume crops were limited arrangement in the copping patterns by the PGS Luong Son groups. The intercropping with short-term and pest repellent vegetables (lettuce, herbs, green onions, garlic, spinach…) was commonly practiced by the farmers.

According to the survey, the most common fertilizer source were manure (buffalo manure, cow dung, chicken manure) along with some crop production by-products (straw, rice husk, grass, legumes). ..) after composting for 2-4 months before using. To speed up the composting process and minimize the smell of manure composting, households had used microbial products (EM, Emuniv...) which were sold on the market. It was very difficult for farmers to access commercial organic fertilizers, partly due to limited knowledge of farmers, and other due to restrictions in fertilizer inputs of the PGS standard. Microbial products such as *Rhizobium, Azotobacter, Mycorrhizal, Azospirillum, Trichoderma* ... could only be accessed by farmers through projects, the farmers had not yet had access to this kind of products in the market. The quantity and quality of microbial products was a limitation for the use of

organic fertilizers for organic vegetables in the area. Regarding the amount of organic fertilizer, the majority of people used estimated amount, often less than the nutritional requirements of the crops due to scarcity of manure (the main nutrients source) in the area, which causing nutritional deficiency for some exhausted vegetables, results in reduce yield, quality and bad external appearance of products.

The farmers used crop rotation, cover crops to create habitats to encourage the presence of natural enemies. Practices such as pruning, field hygiene, colour sticky traps, hand picking, plant extracts, and companion plants provided the basis for good management practices. Some direct control techniques used when the interventions were needed such as Bt bio pesticide, Boocdo… however it was difficult to access in market for regular use. Some effective bio-pesticides were restricted by the PGS standard. It could be seen that the pest control practices in Luong Son had basically been done in compliance with the organic prevention principles. However, pest management still faced many difficulties in early symptoms recognition or pest control. Therefore, this was also the factor that reduced yield in organic vegetable production.

Carrying out the survey in 04 groups of organic vegetable production, the harvested vegetable reached 1,277 kg/360 m^2/month or 34.5 tons/ha/month. With the above harvested vegetables, the producer earned a total income of 17.2 million VND/360m^2/year, equivalent to over 1.4 million VND/360m^2/month. The above income was acceptable because it was 5 times higher than that of rice farming (average income 300 thousand VND/360m^2/month).

It is suggested that there is need to extend the approved organic fertilizers and biological products used in organic vegetable cultivation in PGS standard. The farmers should enhance biodiversity (planting hedges, cover crops, attractive crops, green manures...), encourage rotation with legume crops, integrate animal in the system. The farmers should enhance the control of pests by bio-control and cultivation methods: promote natural enemies, good soil preparation, appropriate vegetable cultivars. The application of science and technology as well as supporting distribution system of organic products is necessary to promote the expanding of PGS organic vegetables production area in this region.

“Beyond Organic Farm to Table: Fresh Start Organic experience” by Ramon Uy Jr, (Philippines)

Ramon Uy Jr or Chinchin is passionate organic farmer, social entrepreneur, and leader of the organic movement. A strong advocate of organic agriculture, fair trade, Slow Food, and Non - Timber Forest Products. A promoter of appropriate and renewable energy technologies, environmental preservation, sustainable tourism and green economy development.

He co-founded Fresh Start Organics in 2005 with his wife Francine, producing organic fertilizer and high value organic crop. The company expanded to marketing certified organic products and established its exclusive organic food and natural personal care manufacturing facility, and, recently, a farm-to-table restaurant. He is a leader and strong advocate of organic agriculture, involved in working to make Negros the country’s organic food capital. He is part of the group that spurred the growth of the organic movement in Negros, in partnership with the provincial government. As well as one of founding members and president of ONOPRA for eight years.

He is president of the EcoAgri Development Foundation Inc. and and vice president of RU Foundry, both working directly and partnering with different small organic farming communities and other marginalized sector in the country in installing community-based livelihood projects such as organic fertilizer production, organic farming, organic seeds, post-harvest support facilities, beekeeping, renewable water system projects, biogas system, food processing, marketing support, capability building, land redemption, essential oil production and watershed protection and conservation.

A member of the Board of Trustee of Non-Timber Forest Product Exchange Program and an adviser to IFOAM-Asia Philippines Office. A volunteer and representative at different organizations, associations, and federations that work with Government, Civil Society, Schools and Multi sectoral groups and Industries. He is also a co-founder of Slow Food Community of Negros Island.

Beyond Organic Farm to Table: Fresh Start Organic experience

Ramon Uy, Jr

Co-Founder, Fresh Start Organics, Philippines

Fresh Start is a staunch supporter of the organic movement. We firmly believe in the importance of good health, fair trade and environmental conservation.

Good health is hard to come by in a world riddled with new developments that include harmful, toxic chemicals. A lot of chemicals are used in the production of food and personal care products. Unknown to most consumers, these chemicals often contribute to the development of chronic diseases and conditions. Fresh Start understands how important it is for consumers to purchase healthy and delicious food.

Fair trade should be the modus operandi of all agricultural farms and businesses everywhere. However, this is often not the case. Small farmers often receive unjust compensation and are forced to go into debt or live simply. Fresh Start believes in equality and fairness and demonstrates that their farmers get their rightful due.

Environmental Conservation has recently become an important issue, with more and more people realizing that we should take care of our world. We only have one world and it is a world that we are passing onto future generations. If we don't take care of it, we're going to lose the resources, beauty, and variety that the world offers today. Fresh Start supports this movement to care for the environment, moving to protect the environment and the wildlife, by returning to the natural, chemical-free methods of farming. Fresh Start also wants to serve as an advocate for the importance of joining the movement to save the environment.

The goal of the company is to create a positive impact in the food system, offering an alternative to the conventional system of producing food. Fresh Start Organic group of companies is involved in the entire organic supply chain in Negros with a niche market since 2005.

Fresh start produces Bokashi and Vermicastings organic fertilizer and soil conditioners, respectively. We believe that with today's prices of chemical fertilizers it only shows that it is an unsustainable input for agriculture. When prices of oil in the world market go up so do chemical fertilizers. Unlike production of organic fertilizers which only comes from waste materials is the most sustainable input for agriculture.

For example, in Negros we have all the biodegradable waste coming from sugar mills, poultry, pig farms to produce organic fertilizer that can fertilize the entire province and produce a surplus to supply regions.

Fresh Start also runs a 3-hectare organic farm located in Hacienda Maquina, Silay City. It specializes in growing organic salad greens, organic vegetables, and organic herbs. Fresh Start uses its own produced organic fertilizers - bokashi and vermi to grow the crops. We rely on building healthy soils to grow our crops. Putting back the compost back in the soils we have seen how our farm's soil improved over the years after decades of using chemical fertilizer from previous owners of the farm.

We use certified organic seeds and untreated seeds in growing the crops.

In our farm, we believe that food grown with the use of chemicals, pesticides, herbicides, fungicides, growth hormones, antibiotics, and other conventional inputs, are not only harmful to our farmers and consumers but also to the environment.

Instead we encourage biodiversity and rely on building and maintaining healthy rich and fertile soils to grow our crops. We use our certified organic fertilizer, compost, vermi-tea, vermicasting, and indigenous beneficial microorganisms to enrich the soil and increase organic matter. We also use natural farming botanicals and attractants for pest control as well as incorporating the practices of crop rotation, green manuring, companion planting and cover crops.

We believe that natural, sustainable methods can produce healthy, rich and fertile soil. This soil, in turn, will produce nutrient-filled, healthy crops, which in turn leads to healthy animals and healthy people. Furthermore, our farm practices are beyond sustainability. We are focusing on regenerative farming supporting Climate Change while addressing productivity.

Aside from growing its own organic crops, Fresh Start created a company dedicated to consolidating organic products grown by organic farmers around Negros Island who at that time were being organized by the Provincial government for the Organic Agriculture programs.

After struggling with marketing in its early stage due to middlemen buying the organic products at a very cheap price then selling it higher. It was from then on that we decided to sell directly to consumers. Consolidation is also a way to help and provide a fair market as well as market access for organic growers.

Today with much awareness from different sectors and consumers we have increased market access. The company now consolidates organic vegetables, fruits, rice, sugar, coffee, and more all organically grown following Philippines national standard on organic production. With the new PGS law authored by senator Cynthia Villar, which we lobbied together with IFOAM, we see a very bright and promising future for the organic industry.

In order to utilize and add value to organic products grown by fresh start and its partner farmers we created established our own food & personal care processing facility. No organic produce will ever go to waste. Fresh Start is present in local supermarkets, selected retail shops and institutional companies and households in the region offering the local population with access to organic produce.

Fresh start completes the entire supply chain from organic fertilizer production, organic farming, organic food processing, consolidation, distribution and marketing, retail and running its own organic cafe and farm to table restaurant. Fresh start believes that everyone has access to fresh healthy organic produce, while organic farmers deserve fair trade prices for the hard work they put into growing organic produce that is good for the environment and the local community.

To complete the supply chain, we established our restaurant called Lanai to serve organic farm to table menu from the food, drinks and cocktails using fresh produce and ark of Taste ingredients following the Organic Principle of Good Fair and Clean. Everything is prepared from scratch without any artificial ingredients. We based the menu on what is available in season and whatever produce available in our farm and our partner farmers.

Fresh start fully believes that organic farming is the way to move forward it is not going back it is moving forward to a more regenerative approach to agriculture. It is a game changer in agriculture, we fully believe this will provide livelihood for people living and working in urban areas this would bring them back to the rural areas because there is already an opportunity for them unlike before in conventional agriculture and eventually more growers would grow organic and eventually organic would be more accessible and affordable to every Filipino, that is what a future we see.

“Six Star Value-Added Agriculture in Tribal Communities“ By Miao-Fei Lin (Taiwan)

She is currently working at Tse-Xin Organic Agriculture Foundation on an initiative called, “Six Star Value-Added Agriculture” in Hualien, a county on the east coast of Taiwan. The majority of people in the country grew up in cities, including her. She was raised in Taichung, studied in Kaohsiung, and worked in Taipei. When she lived in cities, she thought of having an organic lifestyle was merely about protecting the environment, shopping in organic stores, dining in sustainable restaurants, or attending events on topics related to organic food and farming.

It was not until she got tired of life in the concrete jungle and moved to Hualien that I learned many other aspects of “Organic”. It was an amazing moment when she first stepped on the soil of a soybean field, and realized the organic beans inside the pods that I picked could actually be added to her dinner! Later on, as she got more involved in the initiative, she discovered that the socio-economic impacts of organic production systems were wider than she thought. It could help slow down the problem of rural depopulation and revive the countryside of Hualien.

With the experience of life in both rural and urban areas, she would like to share her experience with others and learn from her fellow organic advocates.

Six Star Value-Added Agriculture in Tribal Communities

Miao-Fei Lin

Tse-Xin Organic Agriculture Foundation, Taiwan

Introduction

One of the common challenges facing indigenous peoples in Taiwan is that although they have sufficient land, farming is not enough to support a family. To increase their income and improve their living conditions, indigenous farmers are abandoning farming for off-farm employment opportunities. Elderly people and children are left behind in the countryside. The out-migration of men to towns has forced many elderly people to undertake the rearing of children alone, weakening family stability. Most family members disperse and live far away from each other, reducing the chances of providing support for each other as characteristic of the traditional family structure.

The extent to which families rely on remittances from members working in urban areas adversely affected the integrity, unity, values, and traditions of indigenous families. To enhance the capacities of farmers to generate income and improve the livelihoods of indigenous communities, Tse-Xin Organic Agriculture Foundation launched the Six Star Value-Added Agriculture initiative to tap the potential of organic agriculture fully so that communities would benefit from targeted support for strengthening the value chain from planning and producing to processing and marketing. “Six Star” refers to the integration in the primary level of production with the secondary level of processing and the tertiary level of service to form six levels of coordination in the value chain.

The Six Star Value-Added Agriculture is an initiative commissioned by the country’s National Development Council for farmers in four tribal communities, notably Cilamitay, Kaadaadaan, Kiwit, and Taromak. The initiative is based on the entire value chain from producing, processing, distributing, and marketing to retailing in enhancing the economic advantage of the farm family by helping make organic agriculture more sustainable for farmers. The aim is to promote smallholders in organic farming and their innovations, provide alternative employment opportunities in communities, stimulate local development, and protect the natural environment.

Research Context

This paper explores an innovative mix of value-adding initiatives to re-establish organic agriculture in rapidly depopulating and economically marginalized areas of Taiwan. The network of activities can

provide opportunities for local development, enhance the role of family farming, create new jobs for young people, improve the social and economic infrastructure in the communities, and promote biodiversity conservation. For example, indigenous farmers increase farm production sustainably and diversify their livelihoods by engaging in non-farm activities such as marketing of local products.

To achieve the objectives, a team of staff reviewed the geographical and demographic profile of 2 the areas, the socio-economic conditions, the existing livelihood patterns, the prevalent difficulties faced by the communities, and the constraints to development initiatives. The staff evaluated the conditions of the indigenous settlements, their preferences with regards to livelihood options, cultural and social aspects of their lives, their aspirations and suggestions on what they believe to be their urgent requirements and needs, and planned their development.

Based on the discussion and feedback received from the communities, staff prepared an action plan for an integrated development of each community. The initiative was put before the National Development Council and given the details of the intervention, the government in turn extended full support for the implementation. Then, staff visited the settlements, called community meetings, and carried out group discussions, primarily with the aim of involving the community members in the development process through a bottom-up approach.

An objective of the initiative is to transfer technological know-how to promote sustainable means of harvest and processing along with development of social organization towards bringing a collective integrated approach to livelihood in the regions. In the initial year, staff carried out demonstration activities in organic agriculture.

Organic Agriculture

The Six Star Value-Added Agriculture initiative is committed to organic farming as a way of life and a means to maintain particular landscapes and ecosystems. The goal is therefore to preserve both a natural environment and smallholders that is linked to it and intrinsically valuable. Since the Six-Star Value-Added Agriculture initiative, the total number of farm households practicing environmentally friendly agriculture and organic agriculture have grown steadily.

Specialist Food Products

To establish a trading platform to collect their produce and sell it collectively to consumers, organic farmers receive assistance on product development and marketing with consumers paying fair prices to help preserve small-scale structures in producing and processing. The initiative creates employment

for indigenous members in processing organic products as well as packaging and labelling them with a brand. The farmers sell the value-added products under the brand name to people who travel through the area, and in the local and regional markets.

The combined efforts of the Foundation and communities, with the support of experts and consultants, have assisted farmers in improving the quality and quantity of their produce by organizing training and demonstration workshops on organic production, grading, processing, and packaging. These interventions have also increased the confidence and capabilities of small farmers, with tangible results. As a result of new marketing strategies, farmers' income increased threefold. Based on these successful experiences, indigenous communities have already diversified its production to dozens of local products.

Direct Marketing

Marketing directly to consumers can be done in a variety of ways. Options include sales directly to restaurants and local institutions, as well as mail order and Internet sales. Distributing products through direct marketing channels provide small farms with the flexibility and stability they need to stay in business. Using high technology, farms promote online through social media and e-commerce such as Facebook and online marketplaces. Engaging with consumers through social media can bring economic benefits to the farm, as well as build customer or brand loyalty.

Many communities tap the market by developing and implementing outlets to sell their products such as setting up a business website. Some farms also have a business Facebook page which allows more people to access information about the farm. Online stores can increase customer base and lead to greater economic viability. The Internet provides access to more markets and better revenue to the producers. For example, several tribal communities conduct e-commerce through the largest online marketplaces in Asia like Books (www.books.com.tw) and Eslite (www.eslite.com) that drives income closer to the actual providers of products by deconstructing the value chain. It also strengthens communities, 3 locally owned businesses, and indigenous populations which include extra demand from consumers and the opportunities for increased connectivity with buyers or industry members.

Taiwan's indigenous farmers traditionally have small plots and grow mixed crops. Visitors provide a market for specialty products sold through local restaurants and shops. Growers with a diversity of crops can supply local restaurants that want to feature specialty cuisine or dishes using fresh organic produce. Selling to restaurants improves economic viability for farmers by capturing a greater percentage of the food dollar and shorter shipping distances.

One tribal community in the initiative has collaborated with five restaurants and nine farmers. Orders from local restaurants increase visibility and sales for farm products. Restaurants provide a steady market throughout the production season and help create brand recognition for farmers by mentioning the name of farm suppliers on their menus. Other benefits include the opportunities for personal connections with consumers by providing healthier food and support of local economic development.

Discussion

The establishment of the initiative enabled the communities to sell their produce for a secured price and also resulted in the aggregation of produce, and the critical volumes thus generated could be processed and packed to meet market demand. Production diversification also helped the community to realize the economic value of such products that were usually not considered to have commercial value. The demand for the products was gauged in advance and appropriate channels were set up for its sale.

The intervention of establishing value-added activities together with scientific inputs on the process has positively impacted the four indigenous settlements of Cilamitay, Kaadaadaan, Kiwit, and Taromak. This initiative resulted in better price realization of local crops. The settlements have been doing well in production, processing, packaging, branding, and selling of the various agricultural products made in the area as financial sustainability is being established. The ownership of the community is in the sale of the produce and the accountability of the community towards the environment remains high by virtue of the mechanism of the profits generated from the sale of the agricultural products which is collected and sold to the market by the settlements.

Conclusion

In many ways, this paper illustrates a success in finding innovative ways to integrate organic agriculture for smallholders and environmental protection by reaching out to markets well beyond production. Local farms have developed an interrelated group of activities of farming, food processing, retailing through shops and restaurants, and direct sales, which reinforce each other to maximize the value added to produce without threatening environmental or social sustainability.

Farmers joined the initiative because of respect for the environment and a desire to support organic farming. Members enjoyed the sense of belonging to a unique form of food production that operates on a small scale and protects both the physical environment and animals. Supported by the Six Star

Value-Added Agriculture initiative, these efforts to promote organic agriculture have become a way to help revitalize rural regions by aiding the survival of organic farming in marginal areas, increasing farm income, creating new jobs in rural communities, adding value to regional agricultural products, and conserving biodiversity in underserved communities of Taiwan.

“Growing from a single CSA farm to a regional economic system in solidarity”

By Christoph Simpfendörfer (Germany)

Born on 27 January 1959 in Stuttgart, Germany

Married since 3 May 1985 to Dorothea Reyer-Simpfendörfer.

2 foster children. Grew up in Germany and Geneva, Switzerland.

Languages: English and French (business fluent), Spanish (fluent)

1979: Civilian service on a youth farm in Stuttgart (first encounter with anthroposophy).

1981: Internship in agriculture in Zambia, Southern Africa

1982-1986: Agricultural Studies at Nürtingen University of Applied Sciences, graduating as Dipl.Agr.Ing (FH)

1986-2019: Responsible farm manager at the Reyerhof in Stuttgart Möhringen

Diversified biodynamic farm since 1955 with 45 ha.

Since 2016 first General Secretary of Demeter-International, now Biodynamic Federation Demeter International. Since 1991 voluntary involvement in the Demeter Association in Germany. From 1994 to 2014 in board functions: 1994 board member of the Demeter Association; 2001 board member of the Demeter Market Forum; 2007 - 2014 chairman of the supervisory board of Demeter eV; many years on the board of a certification body; 2004 to 2014 member of the board of Demeter International

Teaching at Nürtingen/Geislingen University from 2016 to 2021 in Social Farming, lectures on Solidarity Farming

Generation change on a German biodynamic farm: a learning path

Christoph Simpfendörfer

General Secretary, Biodynamic Federation Demeter International, Germany

All over the world, it is a challenge to find young people willing to take over a farm. The challenges of farming today require good vocational training of the farmer and an economic perspective for the farm.

Biodynamic since 1955

Our farm is located in the outskirts of Stuttgart, a city with 600 000 inhabitants, in the South of Germany. The farm has 45 ha of land. Since 1955, it is cultivated biodynamically, Demeter certified. 12 dairy cows give milk, meat and dung. Wheat, potatoes and vegetables are sold to the clients in a farm shop that has a full assortment of organic products, mainly with the Demeter brand.

New ownership

During the previous generation change in 1986, the farm was transformed from a family-owned farm in a community/company owned farm. My yearly business report as responsible farmer to the other shareholders, mainly client families interested in supporting the farm, created a trustful relationship to the clients. The shareholders decided not to take any interest for their investment. They said that the existence of the farm that is guaranteeing their nutrition is sufficient as profit. Over many years, we could re-invest the profit we made. Today the farm has a good economic base with buildings and modern machinery.

During the period in which European milk producer had to have a quota for selling milk, we developed a system that we called “rent-a-cow”. The families bought our cows and paid us for caring for them. The milk was handed out to the families. There was no selling of milk. This led to an intense relationship between the families and the farm.

Community supported agriculture

In 2013, a group of young people initiated the building of a community supported agriculture system on our farm. This has grown up to 600 members in the year 2022, financing 420 000 € or 70% of our budget. 25% of our income comes from the sales in the shop.

This solid economic situation attracted two young farmers interested in taking responsibility for the

farm as the next generation. Both have good biodynamic vocational training. The legal form of the ownership of the farm made the handing over of the responsibility very easy. As the young farmers do not own the farm, they do not need to buy it. They just must take the responsibility.

From a farm designer to an advisor of the young generation

As a farmer, it is not easy to hand over to someone else. Although I did not grow up in agriculture, I was deeply connected with every square meter and every animal. As I started a new task as general secretary of Demeter International, this was challenging for me as well. I was happy about all responsibility that the young farmers took over. I experienced that it was good for me to travel and not to see daily what is changing on the farm. The young farmers need to make their own mistakes, their own experiences.

The most important change of my role was to accept that I have to wait to be asked for advice before commenting on anything on the farm. As a first exercise in handing over, we agreed that I am asked before a new decision is taken. I can share my experience and my opinion, but then the young generation must be free to take the decision even if it is different to what I would have done. In a second step, I was only asked if they thought that they needed advice.

Sufficient pension for the old farmer

Important for the good transition was that my wife and myself, we have a pension that is sufficient and independent from the farm. We do not depend on the success of the farm. That makes it much easier to let go and to accept that there will be failures.

Development of vocational training by our young generation

We have seen that good vocational training is essential for the success of the farm. As we have a good economic situation due to the CSA system, one of the young farmers has engaged in creating a biodynamic vocational training activity in our region. 3 apprentices are on the farm. The apprenticeship lasts 3 years. Some stay several years, some only one year and change to other farms. Each month, there is a 4-days workshop. Each month on another farm. Besides agricultural theory, there are artistic and social activities.

Integration of seed selection and production

As another important future oriented activity, the young farmers have started to produce vegetable

seeds. The willingness of the consumers to eat what the farm delivers even if there are deficiencies in the outer shape, makes it possible to experiment with different varieties and to support breeding initiatives.

Sustainability analysis

To support the transition, different tools of sustainability analysis (SMART from FIBL, Gemeinwohl (Economy of Common Goods), Performance Calculator (Regionalwert) have been used. This helped us to have a common understanding on where the farm has still potential to improve.

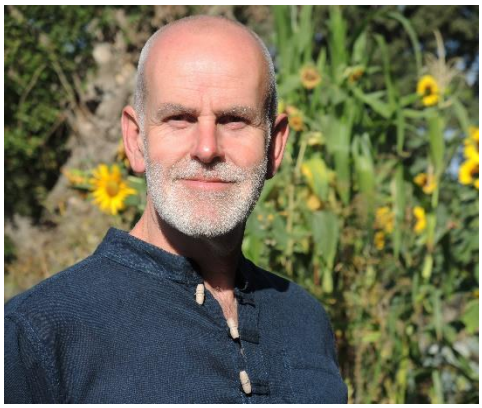
Outlook

The next challenge is the question of how to grow from a single CSA model to a regional economic system in solidarity. How can we organize the cooperation between different farms in a new way?

(Congress Session 4) Sector Development for Social Inclusivity Session

"Building Youth Entrepreneurship by Using Digital Organic Farming Resources"

By Dr. Paul Van Mele, International Director, Access Agriculture, Belgium



He is the Director International Development at Access Agriculture, a non-profit organisation which he co-founded in 2012. He oversees the strategic visioning, partnership building and fundraising activities of the organisation. He maintains close relationships with numerous international, national and grassroots organisations that support agroecological transformation.

Dr. Van Mele published extensively in peer reviewed journals. He wrote Ants as Friends (2003) and co-authored and edited various books, such as Way out of the Woods (2003), Innovations in Rural Extension (2005), and African Seed Enterprises (2010). His work with farmer-to-farmer video earned him the 2009 CGIAR Science Award for outstanding communications.

For the past 20 years, Dr. Van Mele spearheaded video-mediated farmer-to-farmer learning as a cost-effective method to support South-South learning and create impact at scale. With his vast experience managing agricultural R&D projects dealing with sustainable agriculture across the Global South, he is convinced that impact at scale can be achieved when quality videos in local languages is combined with appropriate digital technology and strategic partnerships.

Dr. Van Mele studied tropical agriculture (1992, University of Ghent, Belgium) and obtained his PhD in 2000 from Wageningen University, the Netherlands.

Using videos as a catalyst to engage youth and women in the organic sector

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Extended abstract prepared for presentation at the 5th Organic Asia Congress, "Transcending Borders and Generations for an Organic Asia", which will be held in Goesan County, South Korea, from October 13- 15, 2022.

For many years, few young people have shown interest in taking up farming as a business, partly because they see it as hard work, unprofitable, and risky. Furthermore, young people have limited access to land, finance and advisory services. Fortunately, new evidence suggests that this trend is changing. In this paper, we will present some drivers of change, with a focus on the role of quality farmer-training videos.

Enterprises that require little or no land and capital generally have a higher appeal to rural youth (and women). On the production side, youth and women are more interested in niche markets, such as spices (e.g., chillies), mushrooms, vegetables, and small livestock (e.g., poultry, dairy goats, rabbits and grasscutters) compared to cereals, fruits and cows.

This is reflected in the experience of Access Agriculture, an international non-profit organisation that makes quality farmer-to-farmer training videos available on agroecology and organic farming in international and local languages. Videos that relate to vegetables, small livestock, organic inputs (such as herbal medicines, biofertilizers and organic growth promotors), as well as videos on food processing, have been most popular for the more than one million people who have visited the Access Agriculture video platform (www.accessagriculture.org) over the past decade.

It is crucial to sensitize youth about all possible opportunities in agriculture. In 2021, 37% of the nearly 3,000 people who took a global online survey stated that showing Access Agriculture videos in communities helped to increase youth involvement in farming.

Over the past decade, more than 5,000 organisations from Africa, Asia and Latin America have used

videos from the Access Agriculture platform to train their staff and rural communities. This illustrates the importance of having a user-friendly, open access digital platform where people can download over 230 quality videos in more than 90 local languages, while sensitising as many intermediary organisations as possible to use them.

Strengthening the knowledge and skills of young rural men and women helps make local food systems more resilient in the face of pandemics and climate change. Farmers like to learn from fellow farmers, and young people like to learn from other youngsters, irrespective of the country they live in. On many occasions, youth reported that the content, quality and format of Access Agriculture videos helped them see that agriculture is not old-fashioned, but it can be profitable. They find the videos more convincing than face-to-face extension carried out by extension workers.

Youth are ICT-savvy and entrepreneurial. In a specific effort to reach rural youth, Access Agriculture launched the Young Entrepreneur Challenge Fund in 2018, which encourages youth to develop innovative ideas to start a business, or to expand an existing one, around the dissemination of local language training videos. The winning youths become “Entrepreneurs for Rural Access” (ERAs) and they are equipped with a solar-powered smart projector pre-loaded with the Access Agriculture video library. Access Agriculture trains and coaches these young ERAs to become private e-extension service providers.

Various studies have revealed that tacit knowledge acquired in previous business experiences often enhances the probability of becoming an entrepreneur. This is also the case with the ERAs. While these young digital extension service providers help rural people to transition towards healthier food systems, many ERAs were already active in the organic sector or more broadly in the green economy.

The ERAs combine their advisory services with other businesses, such as selling biogas installations, processing food, selling cassava seed, selling hydroponic fodder or azolla as animal feed, producing mushrooms, or beekeeping. Others are involved in organic food delivery, running a youth club, teaching, reforestation or providing veterinary services.

Some ERAs have started model organic farms in cooperation with community leaders. One bought a small piece of land to practice with the youth what they have learned from the videos shows. Another ERA expanded her weekly delivery system of organic produce for consumers in the capital by building the capacities of other village women. As a group, they sell vegetables, herbs, tubers, and eggs. In many countries, creating agroecological markets has increased the demand for high-value, indigenous food crops, opening up new opportunities for young people.

By 2022, about 200 ERAS (33% women) are active in 11 countries in Africa and in India. They earn a revenue from organising video screenings, from renting the smart projector to training organizations, from running workshops (from a few hours up to 3 days) and from selling videos. Some ERAs charge individuals per video being shown, others have contracts to screen videos to groups of people on a weekly or monthly basis.

While a limited number screen videos for free at the initial stage, most ERAs charge between 10 and 20 Euro per session and make net profits between 40 and 100 Euro per month. Some have managed to get contracts worth net up to 1,500 Euro. Through the video screening service, some ERAs have enhanced the sales of their core businesses by 40% through product awareness (e.g. honey, mushrooms, hydroponic fodder). Or they were able to cut down marketing costs by 30%. Clients include individual farmers, cooperatives, schools, universities, NGOs, youth clubs, and government extension services.

While many ERAs have started fairly recently, they have already reached some 73,000 rural people (56% female). Most of their audience is young: 19% are under 15 years old and 47% are between 15 and 35 years old. ERAs thus bring technical training and knowledge to the new generation of farmers. Since ERAs are young, building trust between them and the rural communities they serve is often a challenge.

The ERAs deploy many creative strategies to reach women and youth, such as using social media to organise meetings with other youths. In West Africa, for example, ERAs established contracts with agricultural technical colleges or approached local authorities to get introduction to communities, including the youth. Some established “Agricultural Sundays”: after worship, youth are invited to watch videos on agriculture.

In Egypt, ERAs screen videos in homes and streets, and also show them to their neighbours. Those who graduated from agricultural schools, screen videos during agricultural and home economics classes, while ERAs who work with local NGOs liaise with other organisations, as well as churches and mosques.

In Malawi, ERAs reach young people through youth clubs. Some organise weekly video shows at antenatal clinics or health care centres to reach pregnant women and mothers of small children. In Kenya and Uganda, ERAs use video halls to target youth who go to watch football. During the holidays they show training videos through youth associations in churches, through church women organisations and Village Savings and Loan Associations, made up largely of women.

In Uganda and Tanzania, the ERAs reach out to residents of refugee settlements where they promote sustainable agricultural practices to youth.

ERAs in India tap into well-established grassroot organisations, such as women's self-help groups particularly in tribal areas. As these examples show, young e-extension service providers can liaise with local organisations, to motivate many young people to play a role in their local food systems.

Besides access to knowledge, engagement in the organic sector also requires some organisational skills and networks to establish or tap into organic or agroecological markets. In international export markets, often large companies are involved and farmers are required to be organised in producer groups. Despite the premiums being paid, many struggle to get a fair price from their produce. Youth, can earn more rewards and local respect by engaging in short food chains and domestic markets.

Recent research revealed that when youth are exposed to agricultural studies at secondary and higher education, they are more likely to take up opportunities within agriculture. So, Access Agriculture also engages with schools, colleges and universities to have its videos embedded in school curricula, reference books and e-academies.

The many examples show how video can inspire young people with new ideas from across the globe. Empowering the young ERAs to share knowledge and to link farmers to organic markets ensures that more youths and women take up opportunities in local food systems.

“The Value of Traditional Ecological Knowledge and Contribution of Contemporary Innovation Practices in Organic Agriculture“ By Jia-Xin Yang, Taiwan

Over the past two years, Jia-Xin has been working for indigenous development and advancement as a project coordinator at Tse-Xin Organic Agriculture Foundation (TOAF). She currently assists indigenous communities in eastern Taiwan with the sustainable development of the organic farming sector and in promoting economic solidarity.

Before joining TOAF in 2020, Jia-Xin spent most of her time living in the city and used to do design or marketing, and occasionally, she would visit her grandparents in the country. After Jia-Xin started working for TOAF, she moved to eastern Taiwan to join an existing project in Nanan to promote traditional ecological knowledge of indigenous peoples and conduct fieldwork in local communities.

These last two years have transformed her life. From working with Taiwan’s Bunun tribe, she became a more empathetic person. It has given her the opportunity to see how a mindset of openness, trust, tolerance, patience, generosity, and kindness promotes behaviours that have beneficial effects on others, in ways both subtle and profound. In addition, Jia-Xin became aware that the vast and pristine wilderness is a critical habitat for threatened and endangered species. She discovered that nature is always teaching people about interconnection, selflessness, and impermanence.

Instead of going through life, she is growing through life, growing on the job, and fostering a closer connection with the land.

The Value of Traditional Ecological Knowledge and Contribution of Contemporary Innovation Practices in Organic Agriculture

Jia-xin Yang

Project coordinator at Tse-Xin Organic Agriculture Foundation (TOAF), Taiwan

This paper explores an integrated development plan by Tse-Xin Organic Agriculture Foundation to re-establish organic agriculture in rapidly depopulating and economically marginalized areas of Taiwan inhabited by the Bunun tribe. The indigenous settlement of Nanan's customary use of biological resources, are respected, fully integrated and reflected in the implementation of the plan with the full and effective participation of community members, at all relevant levels to provide opportunities for the sustainable development of the organic farming sector and promote biodiversity conservation. The collective integrated approach in indigenous settlements helped to revitalize rural regions by aiding the survival of organic farming in marginal areas, increasing farm income, creating new jobs in rural communities, adding value to regional agricultural products, and conserving biodiversity in underserved communities of Taiwan.

The Foundation developed, adopted as a policy instrument, and implemented an effective, participatory and updated biodiversity strategy and action plan with the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity, indigenous farmers prevented the extinction of known threatened species and their conservation status, particularly of those most in decline, has been improved and sustained. For example, the Moltrecht's Minnow is a rare freshwater fish endemic to western Taiwan. Populations of native species are highly dependent upon local habitat and pollution conditions. Threatened by degradation of habitat, only a few small populations now survive in several streams of Nantou County. Through participatory planning, knowledge management and capacity building, the organization assisted farmers successfully adapt to their surrounding natural environment based on ecological practices that protected natural ecosystems and helped sustain populations of threatened species.

As small-scale indigenous farmers apply best practices for environmental and agronomic management, it addressed many sustainability issues in production such as the depletion or contamination of natural water bodies. By monitoring river water quality and prohibiting the application of agrochemicals, farmers not only grew healthy and safer crops, but also protected local water sources. In addition, the

Foundation promoted multi-stakeholder initiatives to collaborate on solutions that serve local communities, ecosystems and small businesses such as branding and processing in the settlement as one way to improve the regional economy and connect local food producers and buyers. The genetic diversity of cultivated plants and wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity. The organization supported farmers to save and exchange the seed of their traditional crops. Many producers also started growing traditional bean varieties for selling, to preserve the native seeds forever by popularizing them and generating consumer demand. The Bunun tribe now grows over 10 traditional varieties of beans and continue to collect more.

With ongoing use of these practices in an integrated approach, farmers have noticed improved soil health; reduced pest pressure and regeneration of natural enemies to pests; and high-quality produce from their fields. This has attracted other farmers into the system to enjoy the benefits of these sustainable practices. Inhabitants of Nanan became aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. Since the initiative, the total number of farm households practicing eco-friendly farming and organic agriculture have grown steadily. When ecosystems that provide essential services and contribute to health, livelihoods, and well-being, are restored and safeguarded, they enhance the benefits to all taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Rather than trying to change their traditional agricultural practices, one of the aims is to allow indigenous farmers to work with nature and develop their own solutions to problems. For example, farming in a more nature-friendly and biodiversity-supporting way, limiting the use of inputs and replacing monoculture with polyculture farming practices. To date, it has helped farmers more sustainably manage their land. Farmers share their stories of hope, conservation and leaving a legacy, including use of cover crops, no till and other practices to protect soil and water.

“Making of Indigenous Microorganisms (IMO): A grade 7 Biology Pandemic Remote Learning Homebased Activity – A thrust in integrating Organic Farming Advocacy Activity to enrich Social and Emotional Learning through Collaborative Investigation” By Myla Fe Pinuela (Philippines)

She is a full time Assistant Professor I in University of the Philippines High School in Iloilo(UPHSI) teaching junior high school biology from grade seven to grade ten. A faculty in the Master of Education Biology Program in the Division of Professional Education, University of the Philippines (UP) Visayas. A graduate of BS Biology (UP Baguio 2006), Master of Education Biology (UP Visayas) , and PhD Science Education Biology (West Visayas State University 2019).

Member of #IAmHampasLupa National Youth Movement for Food and Ecological Agriculture since 2015. In 2016-2020 she managed the 2-hectare rice farm of her mother Engr. Mina Papillero Gallego inspired by the principles of Integrated Diversified Organic Farming System (IDOFS) a school of thought and practice shared by Farmer Jon B. Sarmiento through trainings conducted by Department of agriculture Agricultural training Institute (DA-ATI). The author has also attended seminars and trainings since 2009 and took national certificate (NC II) on Organic Crop Production in 2017. She has also training certificates on “Organic Inspector’s Training on Processing” in November – December 2011 and” Inspector’s Training for Organic Crop Production conducted by Organic Certification Center of the Philippines(OCCP) in October 2011.

Her trainings, learnings and advocacies in organic agriculture enriched her way of teaching pedagogy in biology education. During the pandemic academic years 2020-2021, and 2021-2022 where remote learning mode was employed by teachers for learners of UPHSI, the author crafted her Course Packs for Biology 7 and Biology 8 integrated with selected organic farming advocacy activities.

Making of Indigenous Microorganisms (IMO): A grade 7 Biology Pandemic Remote Learning Homebased Activity – A thrust in integrating Organic Farming Advocacy activity to enrich Social and Emotional Learning through Collaborative Investigation

Myla Fe Gallego Pinuela
Assistant Professor I, University of the Philippines High School, Iloilo, Philippines

Crafting Biology 7 Course Packs for pandemic years 2020-2021 to 2021-2022 involved challenges in delivering remote learning to junior high school students. Taking into account activities that will cater the social and emotional learning through collaborative investigations within the learners' respective context and locality enabled the integration of introducing IMO making as part of the homebased activity equivalent to "laboratory activity" in the normal school setting.

In the remote learning mode adopted by the school (University of the Philippines High School in Iloilo), an online learning management system (LMS) is where learners can view their course, download weekly lesson guides, submit outputs and be "officially present" and "officially participating" in the course (subject). Due to varying internet accessibility and gadget capacity, a learning support system through the use of facebook messenger is also used both by teachers and learners to enhance and facilitate learning and communication. Learner outputs may be in the form of individual or group activity, audio-visual video documentations, encoded exams (objective, essays), and other forms that can be communicated remotely.

The Course Pack consist of Course Guide(topic outline), weekly Lesson or Study Guide(topic, activities, assignments and references) and Course Syllabus(topic outline and weekly schedule) to develop collaborative investigation skills of biology 7 learners, the activity guide section of a weekly learning guide on the topic Kingdom Fungi was identified by the Professor as a chance to introduce learners to one of the activities advocated by organic rice farmer practitioners and in effect a local contextualization of the lesson to enhance social and emotional learning in the scientific and organic farming thrust of society and local community.

Biology lessons for grade 7 include the following contents: History of Biology, Branches of Biology, the Scientific Method, Characteristics of Living things, Theories on the Origin of Life, Diversity of Life (Prokaryotes vs Eukaryotes) a. Kindom Archaebacteria, b. Kingdom Bacteria, Kingdom

Learners were tasked to research online about IMO making and interview a local / municipal agriculturist / organic farmer on how to conduct the experiment. Learners' output were in the form of an information, education and communication (IEC) material (could be video output, powerpoint output or written report incorporating protocol, importance and use of IMO for organic agriculture. 80% of students learned how to make or harvest indigenous microorganisms through online research via facebook, youtube and google on uploads by the Department of Agriculture (DA), DA -agricultural training institute (DA -ATI), farmer bloggers, featured online vlogs or programs.

20% of students said that they personally asked or look for local agriculture personnel, agriculture technicians, organic practitioners, organic farmers to teach them how to do harvesting or making of indigenous microorganism concoction. 65% used powerpoint presentation for the recorded indigenous microorganism activity or experiment and reporting while 35% used video presentations. The students were also asked to convert their output into a formal scientific laboratory report format which will be equivalent to their third long exam. Student or learner feedbacks include several themes such as level of interest in the topic indigenous microorganisms (IMO), the activity as an eye opener, usefulness of the product and social relevance or social importance especially to the youth.

95% of students declared that the activity was very interesting as it is one way to break their daily routines of pandemic life, a hands on experiment done at home using only materials that are found in the kitchen, garden and surroundings enabled them to easily prepare materials without spending too much or go out and buy because alternative materials can easily be produced. Students also felt excited knowing that rice or sweet potato or corn can be used as food source for microorganisms, even one student asked help from her father who is actually a Jadam practitioner who taught her how to harvest leafmolds as source of indigenous microorganisms. 85% of students expressed that this activity was an eye opener that not all bacteria or fungi (molds) are bad, in fact, they were amazed that soil microorganisms can be harvested through IMO making and turn it into a low cost homemade fertilizer or soil fertility promoter as an alternative to commercially available synthetic fertilizers that cost very high or very expensive during pandemic.

Learners also appreciate how the final product can be turned into an input for maintaining good soil health and provide plants with healthy environment. 83% of students used their output to help their parents garden plants, others gave their output to their neighbors for their backyard poultry or backyard pigpen, and others stored their product for future vegetable garden use. 95% of students feedback say that they highly recommend this activity, the indigenous microorganism making, to other students or youth especially in their own community as a practical, simple, easy and climate friendly

activity for sustainable community vegetable and fruit gardens in their respective localities. With this type of integration of organic farming activity into the course learning or study guide of grade 7 junior high school learners age 12(late), 13, 14(early), this shows that it is feasible for biology teachers or high school educators as a whole to introduce awareness and love of organic farming to the youth to open up and increase the sense of responsibility to answer the call for mitigating climate change through simple and modified home based laboratory activity or experiment during the time of remote learning this pandemic academic year 2020-2021, 2021-2022.

The teacher-researcher and at the same time organic rice farming advocate and practitioner has successfully imparted knowledge to the youth in her institution to be part of the global call for activities that caters organic farming movement and advocacy at the same time small and collective way in the local community to be part and mitigate climate. Philippine education should level up secondary science competencies that caters towards answering the global call for climate change mitigation through organic farming and organic farming activities.

In conclusion, in order to make way for involving young minds to the thrusts and advocacies in organic farming, teachers who craft lesson guides or lesson plans should integrate contextualized and localized activities into levelled up science (biology) activities especially in the remote learning mode of education.

“New pattern for organic agriculture to boost local economy” By Dr. Pemba Sherpa (Nepal)

He is a very dynamic young entrepreneur in the field of tourism and organic farming from eastern Nepal. In 2009 he designed the development concept for Organic Agro Tourism. This farm stay is successfully being operated in such a beautiful location so close to big city like Kathmandu since 2010. Since the beginning, they have been growing organic fruits, vegetables, herbs, and cereals. This is the first model of Farm Stay with organic chickens for meats and eggs, similarly, cows and goats for milk, bio-gas and also for compost.

This place is also very popular for all visitors who visit to enjoy organic food and rest, trainings, farm excursion for research and students. He is currently working with various sectors of Nepal to convert farms to Organic farm stay through his trekking company the Himalayan Legend Trek Pvt Ltd too. He has got much experience in this sector, for example, he has completed international permaculture design course, international organic farming and certification training in India, Community supported agriculture CSA excursion in the USA, many short organic farming and marketing trainings is the Netherlands.

Before designing his concept, he has completed trekking all parts of Nepal, so he is very familiar to the most fascinating parts to establish farm stays. He wants to travel worldwide to bring prosperities to local villages and towns then increase organic farms in the world, control environmental pollution and work against climate change.

New pattern for organic agriculture to boost local economy

Dr. Pemba Sherpa

Director, Original Organic Farm Pvt. Ltd., Nepal

Introduction

Newly applied concept is Organic Agro tourism development worldwide. If you search for famous farms and people, you will definitely see the farm stay concept is being applied. In the past, farm houses used to be only for royal and wealthy families. But now many second generations are also willing to have it albeit many challenges.

My idea is for many people of this age also to run wonderful farm houses in the most beautiful parts of their areas. At the same time, people can grow organic products and sell them at very good value.

How is it possible then? With a very simple method, anyone can install their farms as farm stays with a very small investment. And immediately they can start to gain extra income from their farm stays because many people from your local region are looking for new and healthy food destinations.

This pattern could also be an opportunity for those farmers to sell their organic products if they don't have beautiful locations to start farm stays. Structural adjustments to promote organic agriculture

combining with the natural tourism prospects within such remotely located and isolated communities can create an opportunity for sustainable portfolio diversification and increased income for such farmers.

Another beautiful side of this concept is to eat and enjoy the foods which are grown locally, meaning that we will be able to stop food being transported from one part of the world to other parts. “No Food Miles” means no plastics bags and food cans in the mountains and rivers. This is one of the most effective ideas that protects the soil, nature, human health and is a unique solution to global warming.

Sustainability of the concept

There are no self-sustaining farms anywhere in the world. As they must sell their goods on monopolistic markets rather than at farmer-value prices, they are constantly in need of government assistance. The primary cause of this issue is that farmers must sell their goods as raw materials rather than finished goods.

The best option is the Organic Agro Tourism Development Concept. All our farmers are free to sell their goods in the same farm to reputable customers every day. With organic herbs, farmers could make omelets out of eggs, and bread out of wheat every day. They may turn the farmhouse into a lovely edible organic garden for guests. Many new visitors and trainees will visit every day and pay for your hard work. With this concept, we can reduce dependence on other countries for food products and become a self-sufficient country. Not only the concept will sustain but it gives sustainability to a farmer, tourism, local economy, and nature.

Economic value

The economic value of this concept is immense. Agriculture is still a major industry, employing about half of the population and generating a large part of GDP, so it has the potential to offer great opportunities for prosperity for agricultural countries. Local youngsters do not need to travel abroad for work or find business opportunities to pursue their dreams. If you have a bigger project to invest in, you can always choose to build a bigger farm stay and start a family farm stay. In fact, this concept creates an economic ecology for the local community. When a group of visitors pays a certain amount for a farm stay, this amount is split equally among all those who produce local products such as organic rice, chicken, fruit, dairy products, and among the local workers.

The development concept of ecological organic agro tourism could be a great opportunity for young people in these countries who migrate to find work abroad. These migrant youths cause many problems in poor societies. Family separation affects both the migrants themselves and their family members. This can lead to many undesirable situations in families and societies. It also affects the education and welfare of children. Migration creates an unimaginable level of dependency. Countries like Tonga (37.7 percent of GDP) as well as Somalia (35.3 percent of GDP) and Lebanon (32.9 percent of GDP) Nepal (30 percent of GDP) are heavily dependent on foreign remittances. Remittance flows reduce agricultural output, increase consumption, and leave investment unchanged, leading to a decline in GDP per capita. This dependence on remittances leads to the underutilization of available natural resources, including farming the land and investing in inefficient sectors.

This is the main reason fertile soil is abandoned. The continued growth pattern of food is severely disturbed. Capable and competent people of production age can devote their time, creativity, and efforts in their own country instead of getting engaged in 3D jobs (difficult, dirty, dangerous) with this concept. Let's unite families, bring harmony to society and build a better future for the world.

Opportunities

- Support poor communities for local area development. “Act locally think globally” is our primary goal to achieve that many local peoples will work unknowingly to preserve soil, water and plants organically will give so many positive effects in long term.

- Contribute to world hunger. According to the future food scarcity forecast there will be huge foods demands in the near future so we most increase organic farms in the world is very important.

- To create new sectors for youth employment and investment. There are so many countries and investors looking for new ideas to invest and solve the problems of unemployment so this concept could be a unique platform to do so.

- To create a self-sustaining society. If someone will start own farm stay somewhere, that they definitely become entrepreneur after that there will be job opportunities for other local job seekers too.

- Preserve bio diversity and natural beauty. Healthy farming and sustainable development of local areas will create outstanding results for nature preservation and control climate change.

“Indonesian Indigenous food facing climate changes” By Bibong Widyawarti (Indonesia)

A graduate of the Bogor Agricultural Institute, she has been working in the fields of organic agriculture and agroecology for more than 25 years. She explored everything from being a consumer, an activist, to an organic farmer. The author of the book "Hidup Organik Panduan Ringkas Hidup Selaras Alam" or “Organic Living, A Brief Guide to Behaving in Harmony with Nature” published by the Indonesian Organic Alliance (AOI) in 2010 wrote about her experience of how organic behavior is applied in her daily life. Then she became the Advisory Board for the book “Panduan Pamor Indonesia”.

In 2021, Bibong and her team have written 7 (seven) handbooks Participatory Guarantee System (PGS) as General guidebooks for producers with seven specific commodities (Palm Sugar, Sea Salt, Coffee, Rice, Tengkawang Butter, Sago, and Forest Haney) published by the Consortium Pangan Bijak Nusantara (Local Harvest). The motto “Make Difference with Simplicity” makes it steadfast and consistent in Organic Agriculture and Agroecology. Her knowledge, experience and love for organics spur her to continue working for the agricultural movement as a resource person, trainer and farmer assistant covering the topics of ICS and PGS specially for organic food and agroecology.

This tiny mother of two children continues to actively work in various local or international organizations including the Indonesian National Committee for Family Agriculture (KNPK), the Panen Raya NusantaRa Consortium (Panen Raya Nusantara), the Indonesian Organic Alliance, Slow Food Convivium Leader Jakarta Urban area, and INOFO as Convenor.

Indonesian Indigenous Food Facing Climate Change

Bibong Widyarti

Board member, Indonesian Organic Alliance, Indonesia

As a country with the no. 2 biodiversity wealth in the world, it will be related to indigenous food with many indigenous peoples in Indonesia as a country consisting of various islands. the number of indigenous peoples is estimated around 70 million people, belonging to more than 1,100 tribes. Those who gather in AMAN (Alliance of Indigenous Peoples of the Archipelago) are around 15 million people.

When talking about real food, of course, it will relate to various aspects that include the conditions of origin of the food consumed. There has been a lot of talk that targets the important role of indigenous groups in efforts to address their food independence as a result of climate change and how the next generation remains familiar with their native food. We know that the diversity of food that exists today certainly cannot be separated from the historical journey of the food ingredients themselves.

The maintenance of forests with biodiversity is one of the efforts to reduce gas emissions into the atmosphere and indigenous peoples are an important group and play a role in it. "Indigenous peoples are a group of people who have inhabited this archipelago for a long time. Even before the Indonesian state existed and before modern religion and culture came." (Nababan, Abdon 2019).

The occurrence of various crises at the global level, starting with crises in various fields during the Covid-19 Pandemic, and continuing with ranging from food crises, social to the impacts of climate change, turned out to be a blessing for the existence of local food that is easy to obtain and has known flavour. Often, we just look down on our eyes and under estimate and even have abandoned the wisdom of indigenous peoples which turns out to be a contributor to solutions in overcoming these various problems.

Local wisdom is also stated in Law No.32 of 2009 concerning Environmental Protection and Management - local wisdom is a noble value that applies in the community's living system to, among other things, protect and manage the environment sustainably.

Speaking of food, we will certainly talk about how the smallest element in society, namely, the family that can meet the basic needs of food independently. In the various areas visited, it can be seen how farmers try to get familiar with the conditions and impacts of the pandemic and climate change can

be a mirror and even learning about food.

Each region has a lot of local wisdom that is still being carried out and is very related to food. All levels of the original life cycle come from the sequence of rituals or ceremonies and customs connected there in.

Many authentic Indonesian foods also have a long history of meaning and are related to their location, seasons, and processing procedures. Many foods can no longer be served because raw materials are scarce and even no longer exist.

In addition, there is an additional challenge in this era is how we can dig back a lot related to local wisdom in all sides ranging from cultivation, processing food stuffs with local recipes, as well as its practical presentation and of course liked by millennials.

This can be seen from the 2019 SPOI data that the need for healthy and local food, especially during the pandemic and followed by the direction of movement to increase the need for healthy food and produced organically.

Now on, the need for local herbal ingredients is increasing, especially organic ones for daily consumption in an effort to increase the body's immunity. Herbal ingredients with natural ingredients are spread throughout Indonesia with various recipes that have existed for generations. One of them is seen in the Indigenous Peoples of the *Sasak* tribe in *Montong Ba'an, Lombok, West Nusa Tenggara* where they use the plants around them for potions or as food that is functional food to maintain stamina during a pandemic or uncertain weather conditions as a result of climate change, besides reducing the carbon foot print by using raw materials around them. With more and more reusing local medicinal plants, it will certainly trigger re-digging of medicinal plants and trying to be re-cultivated, especially those that are already scarce and do such documentation.

In the field of food, in our journey of making the Indigenous Peoples Organic Food Map, carried out during May – August 2022, there are many experiences and concrete actions that have been carried out by indigenous peoples in maintaining the sustainability of their food needs.

The local wisdom that has been carried out by indigenous peoples for generations to continue to store harvested products produced for food needs both as a source of carbohydrates, sources of crude fibber and vegetable protein - animal has been carried out in a declining manner until now between the instantaneous era.

Rice granaries or food barns are still found in indigenous communities in the *Ciherang Banten Indigenous Community*, called *Leuit*, with local types of rice with a planting period of 6 months or once a year planted, same in Jambi, Sumatra. This type of rice that is planted for 6 months or old rice / *kolot* and this type of rice that can withstand storage in rice granaries can even be stored for decades.

The existing types of grain rice also affect the existence of local food that will be served at certain events.

Unfortunately, the type of rice grown for 5-6 months in some areas has begun to decrease due to the type of hybrid rice grown. And it has been proven by the replanting of local food sources. In addition, Indonesia is also rich in types of grains and types of tubers that are resistant when stored for a long time so that they are expected to be maintained.

Types of bananas, sago plants can also adapt and of course in addition to the diversification of food stuffs according to local circumstances.

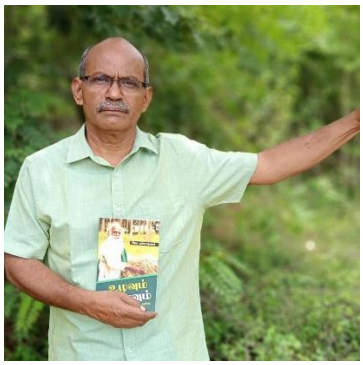
Food sources from forests have decreased mainly due to the narrower roaming areas in the forest to obtain food raw materials for processing.

For example, in some areas such as the *Honitetu Community, Seram Island* has begun to find it more difficult to obtain hunted animals such as forest deer for their protein source. Although there are already customary rules such as SASI, there are certain times it is not allowed to hunt, harvest, collect certain types of foodstuffs that have been mutually agreed upon and there are customary sanctions in it.

Existing climate change certainly directly or indirectly affects the production or existence of native food which will later reduce the diversity of native food.

So, what can we do with organic and agroecology?

“Addressing Malnutrition among Underprivileged school children from developing economics supplementing with organic vegetables applying biodynamically enriched municipal compost” By D. Thangapandian (India)



Education: Diploma Engineer in Ceramic Technology

Working Experience:

- More than 30 Years of experience in Research & Development of Magnetic Materials
- Since 2000, wide exposure in the field of Agricultural Implements and Irrigation Equipment
- An Organic Farmer since 1994.
- Training experience in the area of Communication Skill & Personality Development and Farm Equipment & Irrigation Management to the senior high school and college students.
- Associated with Inba Seva Sangam since 1998 as volunteer and since 2007 as Executive Committee Member.
- Lead Worker, Farm India, an NGO working in Organic Sustainable Agriculture, Women Empowerment & Quality Education to the under privileged school children
- Organic and Biodynamic Adviser – working for projects in India and abroad

Major achievements in the career:

- Conducted many awareness programs and trainings in the field of Renewable Energy, particularly Solar Photovoltaic and Solid Waste Management.
- Co-Presented a paper on The School of Biodynamic Farming A Global Model in Goetheanum, Dornach “Biodynamic Teachers and Trainers Conference” held in November, 2019
- Presented a Paper titled “Emancipating Marginal Farmers Through Collective Organic Farming within a Water Commune” at the 4th Organic Asia Congress – 2021 held in Jakarta

Addressing Malnutrition among Underprivileged school children from developing economics supplementing with organic vegetables applying biodynamically enriched municipal compost

D. Thangapandian, Lead worker, Farm India, Tamilnadu, India
Ms. Anthoniselvi, Joyful Agriclinic, Sevapur, Tamilnadu, India

"Undi Koduthor……. Uyir Koduthore….." Manimegalai, some 1600 years ancient Tamil Epic says "If you give good food to some people, then it is equivalent to giving them life".

Young people, particularly school going kids need nutritious meals so that they stay energetic during school hours. And this paves a good base for their entire life. In actual terms, this does not happen.

This paper addresses this issue and also recommends a methodology on how to overcome malnutrition among the school kids by the way of supplementing with Organic Vegetables. Further, it also showcases a novel idea of enriching Municipal Compost with Biodynamic interventions such as Cow Pat Pit (CPP) and Liquid Manures.

Introduction

Tamil Nadu, one among thirty-six Indian states from where the author of this paper comes from, is considered to be the top-ranking state in India in most of the socio-economic standards such as Education, Social Security, Health Care, Agricultural Production, Industrial Growth, etc.

There are 46,000 plus state run schools in TN where 8.3 million students are studying, out of them are 1.3 million Primary School kids in the age group of 5 to 12.

Even much before Independence, the Government of Tamil Nadu was focusing on Primary Education. Keeping in mind poverty, The Mid-Day Meals Scheme was introduced and it is being continued till date with few improvements from time to time. However, a recent UNICEF survey says that almost 27% of the primary school kids are found with malnutrition (undernourishment).

On the other hand, Tamil Nadu on a geographical area of 130,058 square kilo meters with a population of 72 million, generates roughly 14,228 metric tons of Solid Waste daily excluding Bio-Medical Waste, E-Waste and Construction & Demolition Waste. Out of this 14000 and odd tons, some 6650 tons of compostable waste is being treated via Vermi-Composting, Bio-Methanization & In-situ Composting and disposed / utilized.

“WASTE” refers to lack of use or ‘useless remains’. It’s a biproduct of human activity. Physically, it contains the same materials as are found in useful products. Hence, there is nothing like a “WASTE”. What we need here is to find a Methodology to effectively convert these “useless remains” into a “useful manure” and use it in the production of Organic Vegetables and Millets.

In this project, we developed a model to manufacture “CPP (Biodynamic) Enriched Vermi-Compost” in Micro Compost Centres and apply in the Organic Vegetable Garden to produce highly nutritious vegetables. These vegetables are supplied to the nearby government school children (Vaiyampatti Primary School) on a weekly basis.

“Solid Waste Collection → Segregation → Composting → CPP Impregnation”

“Applying CPP compost & Liquid Manure → Growing Nutritious Biodynamic / Organic Vegetables → Supplying to School Kids”

Unique approach

- Two major issues of the Community (Solid Waste & Malnutrition) are connected by Scientifically proven Organic Practices. Importantly this is a practically proven methodology, already started yielding good results.
- Major problem in composting Municipal waste is lack of Nitrogen compounds like cow dung which plays a vital role in the decomposition process (Reduction in Carbon - Nitrogen Ratio)
- Here we address this problem by spraying WDC (Waste De-Composer) solution, EM (Effective Micro Organism) solution and by adding food and vegetable waste slurry.
- In addition to the process of composting, we also introduce an extraordinary Agricultural input, Cow Pat Pit (CPP) a Biodynamic Preparation which not only helps to improve nutrition of vegetables but also enhances the taste.
- Our model contributes positively to Climate Change, as we harvest Methane (used for cooking) from the food and vegetable waste.
- Organic and Biodynamic Vegetables and Millets which are rich in nutrients and with improved taste are fed to the underprivileged school children for their better health which ultimately brings Peace, Strength, Love and Harmony to society.

Project implementation

Once we identified the issues (waste disposal and malnutrition) we created a Core-Team comprising of NGO Personnel, School Teacher, Agricultural Expert and Local Body Representative and started discussing to obtain a cost effective, environmentally friendly and a replicable methodology. We have signed an MOU with the Village President for operating in the MCC unit (Micro Composting Centre) located in Vaiyampatti, Tamil Nadu.

An orientation program was conducted in April 2022 for the MCC workers and the local volunteers who are responsible for all practical activities viz. waste segregation, spraying of WDC & EM solutions, Vermi composting, CPP production and maintaining the Vegetable Garden. Composting process started in the month of May, 2022.

The following short notes will be useful to understand the functionalities of various stimulants we are using in composting.

1. Waste De-Composer (WDC): It's a consortium of micro-organisms extracted from Desi cow dung. It contains bacteria, fungi, protozoa and other microbial components such as Humicola and Tricoderma. It is used for quick composting. The composting process is triggered by converting cellulose into lignocellulosic biomass. Indian Research Institutions NCOF and ICAR jointly developed this wonder-inoculant.

   30 grams WDC inoculant is mixed with 200 litres clean water (non- chlorinated) and 2 kilograms jaggery and kept for 5 days. For regular use, 1 litre of the stock solution is diluted with another 20 litres water and sprayed on the compost heaps for making quick compost.

2. EM (Effective Micro-Organisms): EM is a sustainable microbial inoculant that achieves synergistic effects by combining beneficial micro-organisms (naturally coexisting) and contains Lactic Acid bacteria, Photosynthesis bacteria and Yeast. This was developed by the Japanese Professor Teruo Higa.

   1 litre Original EM is mixed with 20 litres water and 2 kilogram jaggery, kept for 5 days. Then 1 litre is diluted to 20 litres and sprayed on composts, plants and garbage yards. EM improves microbial activities of the soil and controls odour and flies.

3. CPP (Cow Pat Pit): 60 kgs Cow Dung is treated with 3 grams each BD502 to BD 507 and 200 grams eggshell powder + 300 grams borewell soil, kept under shade for 12 weeks (to be turned

periodically). 500 grams CPP is stirred well in 20 litres water and applied on compost and plants. CPP improves the microbial behaviour of the soil and helps the plants growing healthy.

We developed a Vegetable Garden in the MCC and many vegetables such as tomato, brinjal, sweet potato, beans and banana are being grown. ITKs (Indigenous Technical Knowledge) like Jeevamirtham, Fish Amino Acid, Panchakawya, etc are also applied to both soil and plants. Vegetables are harvested once a week and supplied to the nearest school.

Conclusion

By making Biodynamically Enriched Compost utilizing Municipal Waste to grow Organic Vegetables, we are able to address both malnutrition and waste disposal issues effectively. This model is functional and can be replicated in any part of the globe adopting local conditions.

Acknowledgements:

Mr. Surya Subramaniyan, President, Vaiyampatti Panchayat

Dr. Nagalakshmi, Correspondent, Surya Memorial Foundation

Mr. Tamilselvan, Enathu Kanvu Gramam, Nadupatti

Ms. Rinu Thangapandian, Social Worker, Christian Medical College, Vellore

IFOAM Asia 10th Anniversary Celebrations

Message of Congratulations (Former Board Members)

Zhou Zejiang (China) - Former President

I am so happy and proud to have worked and served for my dearest Asian organic colleagues for 10 years in IFOAM Asia since its establishment in 2012.

In the past 10 years, the world has experienced extremely complicated political and economic situation, while the Asia organic sector has kept its pace towards a better future. IFOAM Asia is a harmonized growing organization served by a dedicated board and a devoted and effective working team. With the efforts of the board, the staff and all the members, IFOAM Asia has become one of the most active and effective regional bodies of IFOAM Organics International and has also worked very well with our sister organizations in the world.

In the era of organic 3.0, innovation is one of the key features in promoting the development of world organic movement. Within the past ten years IFOAM Asia initiated and actively developed ALGOA, Organic Youth Forum, etc., organized Organic Asia Congresses, workshops, forums, and meetings, conducted Organic Foundation Courses and Organic Leadership Courses, and worked closely with Asian local governments such as Goesan, Xichong, NTC, Bislig, Dumingag, Kizarazu, etc.

IFOAM Asia has also worked closely with LOAMCP, GAOD and other sister or likeminded organizations. IFOAM Asia is also very proud of the milestone moment that the Organic 3.0 Declaration was announced in 2015 in Goesan, and I am so honored to be one of the readers of the Declaration.

My warmest thanks go to all my colleagues on the board, in the office and to the members of IFOAM Asia for your long time supports to my work when I served IFOAM Asia as vice president of the 1st term and president of the 2nd, 3rd and 4th terms. I will never retire from Asian organic movement and will be

with IFOAM Asia whenever it enjoys successes or experiences difficulties, as I firmly believe that the future of Asian organic movement is bright and the mainstreaming of organic agriculture in the world is not questionable.

Ashish Gupta (India) – Former Vice President

As one of the youngest founding board members of IFOAM-Asia, back in 2013, I still remember the great diversity and warm acceptance of people from around the Asian continent. It still fills me with a deep sense of gratitude to be elected as one of the initial board members in this wonderful organization. The openness by which we all connected in our hearts and minds still resonates in my mind. Asia connects deeply with the idea of 'Rice' and this is well reflected in the logo of IFOAM-Asia. This panicle of paddy on the logo is no ordinary symbol but binds us as individual seeds on the same plant. All of us are rooted in oriental traditions and deep histories, culminating as the 'culture' of Agriculture.

Looking back, it is etched in my memory on how we came together and connected on the vernacular word for 'Organic' in our diverse and rich languages. They all sound different and yet convey the meaning as 'Life'. This is well explained in the pathways of Organic 3.0 as well. It is this aspect which is now firmly ingrained in not just the Working Methods of the organisation but also in each of our memories. I can easily say that we perhaps met as strangers, but we continue on as friends.

I look forward to cherished engagements with IFOAM-Asia in future and also wish for its long fruitful association in advancing the organic movement across the word. Here is a poem from India, by the well know poet Saint Kabir, dedicated to the purpose of IFOAM-Asia, the ocean of drops, at the 10th year of its well being –

बूंद समानी समंद में, जानत है हर कोई।
समंद समाना बूंद में, बुझे बिरला कोई॥

(Boond Samaani Samnd mein, Jaanat Hai Har Koi,
Samnd Samaana Boond mein, Bujhe Birla Koi.)
- Saint Kabir

Drop merges in Ocean, knowing this is not new,
The Ocean merges in the drop, this is known to few.
(Translated by Ashish Gupta-jee)

Manoj Kumar Menon (India) – Former Vice President

I have been fortunate to have made great friends in Asia's organic movement through my association with IFOAM Asia, luminaries like Dr. Zhou (our ZZ, China), our beloved late Dr Suh (South Korea), Dr. Tanveer (Bangladesh/Japan), Patrick (Philippines), Rasdi (Indonesia), the dynamic ED Jennifer, and many others. I spent years working with them and with Dr. Andre Leu and other leaders of the organic movement. In 2015-2017, I was also the Vice President of this prestigious organization and I loved contributing with my experiences and expertise.

My relationship with the Asia sector actually started with the 'Organic Asia Conference on Harmonization and Equivalence in Organic standards *(by UNCTAD, IFOAM, ITF)* in 2008. The core team met several times, e.g. in Malaysia, 2008, Shanghai 2009, Mumbai 2010, Seoul 2011 and Germany 2012, and finally again in South Korea in 2013.

I wish to say special thanks to all of them, including the current dynamic team of IFOAM Asia and its daughter organizations. It's been a wonderful journey with 'IFOAM Asia's mission to nurture and represent "Life Agriculture" or the Organic Movement in Asia in its full diverse cultural, economic, and ecological context; upholding the principle of "Organic" or "Life Agriculture" to support both human life and ecology.

At the end my deepest condolences for the loss of Dr Suh, our dear Founding President.

And my special wishes to Ms. Jennifer Chang for the dynamic stewardship of this young 10-year-old organization ever since its inception. I wish IFOAM Asia many more years of successful leadership of Asia's organic movement.

Shaikh Tanveer Hossain (Bangladesh) – Former Vice President (and Current Director of Strategy & Policy)

It was a fantastic experience to connect and involve with the excellent colleagues at the initiation of forming IFOAM-Asia in 2012 while attending a program in the Rural Development Administration (RDA), South Korea. Of course, it was a follow-up program of the Organic Farming Innovation Award (OFIA), where I was awarded the Grand Prize at the 17th Organic World Congress in 2011 in Korea.

The initial journey led by our founder President the late Dr. Suh was indeed amazing and memorable! From preparing the organizational by-laws and structure to coordinating with sponsors to organizing events!!

What a journey it has been!!

Starting as a founding board member over the years, I served as Vice-President, a short time as an auditor, and currently, as a staff member of the organization. Looking back, there has been many sweet memories and fun with colleagues, such as sharing rooms during events, roaming the city, and exploring newer places. It was also a great memory to lead the Xichong Organic Innovation Committee and produce the "Innovative Cases of Organic Agriculture in Asia" Book.

I wish that IFOAM-Organics Asia will remain active for many more years and contribute to the organic agriculture movement activities in the region and beyond. The journey we started a decade ago, I hope to continue till my last day in life towards the betterment of humans, society, and the environment.

Long live IFOAM -Organics Asia and be an organic hub for Asia.

Patrick Belisario (Philippines) – Former Vice President

Congratulations to IFOAM Organics Asia for celebrating its 10th Year Anniversary!

I was fortunate to have joined, contributed, and witnessed the establishment and growth of IFOAM Asia as the regional umbrella organization of the organic movement for the past 10 years.

As representative of the Organic Producers Trade Association Philippines, it was our desire to contribute as much as we can in terms of supporting the establishment of IFOAM Asia to the point of hosting the second leg of the organizational meeting in Manila, Philippines in October 2012 after the first meeting in South Korea which also allowed the Interim Board and Members to share their insights during the First International Organic Marketing Conference at the Agrilink in October 2012.

The growth of IFOAM Asia is not just expressed in terms of number of members but also in terms of willingness of countries like India, China, Japan, Philippines, Indonesia, and others to host the General Assembly and Regional Organic Congress and other conferences which has become the tradition that provided excellent venue to continue the exchange of knowledge and practices on organic and related sectors.

Indeed, IFOAM Asia has demonstrated its capacity to further lead the organic movement by facilitating the formation of groups on localizing organic agriculture policy with ALGOA and training of future leaders through organic youth forum.

Mabuhay! Long live IFOAM Organics Asia!

Indro Surono (Indonesia) – Former Vice President

I feel very honored and proud to be a part of the IFOAM Asia Board. There are three highly relevant and strategic IFOAM Asia programs, namely the Organic Asia Congress (OAC) to update organic developments, ALGOA to engage local governments to build organic in Asia and the Organic Youth Forum as a vehicle for education and cadre of future organic leaders.

My appreciation also goes to the executive body (Jennifer and teams) who work hard and effectively to carry out all activities well. Their hard work has made IFOAM Asia a very advanced and influential regional body of IFOAM in the global organic farming movement nowadays.

At IFOAM Asia, we not only met and executed activities well, more than that it has become a home and family for all members, boards and executives. Organic farming is not just about development, business, and lobbying, but also how to build brotherhood, to support and understand each other. In the end, IFOAM Asia became a vehicle for loving fellow human beings, creation, and life. Truly, being a part of IFOAM Asia is a beautiful and unforgettable memory in my life.

May IFOAM Asia continue to grow and inspire agricultural actions and a better sustainable world.

Miyoshi Satoko (Japan) – Former Vice President

Happy 10th Anniversary for IFOAM Asia!

I feel this past 10 years with IFOAM Asia was long, and very short at the same time. IFOAM Asia is almost like a home for the family. I always feel very comfortable to be with my friends in IFOAM Asia.

For that, I am grateful to meet everyone in this network who teaches me a lot, and also gives me so much energy.

Asia is an energetic and diverse region. We have a rich nature and climate: high Himalaya to deep tropical forest. Asia is a mixture of unique cultures with a long history. Turning that great diversity into our strength, IFOAM Asia has expanded its activities.

Its success in creating youth and women's networks, as well as the network of local governments, are the work of a collaboration of people with a shared identity with strong passion. Based on this resource, I have no doubt that Asia will continue to lead the world in the coming decades. Asia possesses high potential with a big population and wide landscape and wisdom. It is our responsibility for the future generations to transform our society sustainably.

Congratulations to everyone who is involved in this movement!

Let us work together for the next 10 years.

Sundeep Kamath (India)

My two terms as Board Member of IFOAM Organics Asia, have been one of the most memorable times in my organic journey. Taking over on the strong foundation built by the founder member board and being a part of the tremendous growth of this representative body of our movement in our region was extremely enriching.

ALGOA going global (GAOD) along with our youth (YOGN) demonstrated our commitment to the worldwide organic movement. Not only was this inspirational to our movement, especially in the global south, it gave an impetus for imagining possibilities to further strengthen our movement. Some examples of this were the recognition of PGS by the Federal government of the Philippines, opening of offices in the Philippines & China and supporting the organisational development of INOFO.

I strongly believe that all this was only possible by the leadership and wisdom, from his lengthy experience, of our much-loved President and (equally loved) Executive Director tireless and ever present efforts. It was amazing to see her manage all these achievements on often shoestring budgets and seamlessly integrate our youth in the executive team.

My wish and hope for the future is that the current and future leadership of IFOAM Organics Asia, taking the learnings gained from these fruitful meetings of the past into projects on the ground to assist in the development of our movement wherever needed in our region.

Rasdi Wangsa (Indonesia)

One of the nicest and good moments during the start of the IFOAM Asia movement was when I was elected as a Board of Member in 2013. I am coming from Indonesia which has limited English language but all my friends and all IFOAM members supported me to become more active in this movement.

I think one of our important points of this movement is how we should be respected with our cultural diversity and limited language with our members and colleagues. I think it is a mirror of how we can build the inclusive movement in IFOAM Asia where there are so many organic small farmers in the continent where they have a limited language to communicate their need, skill, knowledge, dream and all about organic future.

For me, our diversity is our strength to build our future. Organic for all!

Jung Manchul (South Korea)

My term in IFOAM Asia was interesting for me as it broadened my scope in understanding the global organic sector. It was very heartening to be connected to leaders and meet new friends in the organic world. I was particularly impressed with how IFOAM Asia grew into its specific areas of work such as the Asian Local Governments for Organic Agriculture and the relevant training, the Organic Foundation Course (OFC).

The OFC is perhaps the most successful among the work of IFOAM Asia as more than 260 representatives from local governments and IFOAM members were trained under the 7-day residential program. Nothing is more than the capacity-building of the younger generation and preparing them for the leadership roles they will hold in the future.

I wish to see IFOAM Asia grow into an organization that goes beyond Asia to work together with other organizations in the world. Its experience in organizational consolidation is an example to other developing IFOAM regional bodies and its work with the different sector platforms especially youth and women can be replicated other areas around the world.

It has been a great honor and pleasure serving IFOAM Asia among the best of the organic leaders and staff. I will treasure the memories of this journey.

Selina Gan (Malaysia)

My one term (2018 -2020) as Board Member of IFOAM Organic Asia, has been a memorable journey in my organic career. The early Board founders of IFOAM ASIA, has patiently and passionately nurtured the movement from seed to become a big tree, despite going through many challenges and hurdles. It is an admirable task and the result of their hard work has produced a movement in the region which transcends into ALGOA, YOGN, WOAA, and the PGS, winning recognition and admiration from many countries.

I was fortunate to be under the shades of the tree built by the IFOAM Board and especially Executive Director, Jennifer Chang, who has passionately dedicated so much time and effort towards the growth of the movement. I remember our long conversation about setting up WOAA and the MARKETING platform, unfortunately the pandemic has set us back going forward. At least, Jennifer was able to push through the formation of WOAA.

I strongly believe the IFOAM ASIA will continue to grow and morph into a movement admired and emulated worldwide. Through the wisdom and guidance of the past and current Presidents and Board Members, IFOAM Asia will continue to do great and mighty thing.

I wish and hope the future leadership will continue to guide, lead, and direct the path of this movement to the next level. And let the vision shine brightly in this decade.


Inaugural General Assembly of IFOAM Asia


ome Delegates to the 2nd IFOAM asia General Assembly!


IFOAM asia

Message of Congratulations (Current Board Members)

Mathew John (India) - President

IFOAM Asia has such a rich mix of members that keeps you excited all the time. It has the capacity to surprise. Its creation, after the successful hosting of the IFOAM World Organic Congress in 2011 is a testament to the growing influence and leadership that many of the members have exhibited over the years.

Today, it has created a wonderful set of initiatives that are inclusive and allow members to dialogue, exchange and share experiences. Bringing the Asian community together to celebrate organic has been no mean feat without diluting various cultures, ethnicities, traditions, and languages.

It is my sincere hope that as the movement expands, there will be more of a space and facilitation of a south-south dialogue. That it will allow small farmers and gatherers to become part of the market without losing their uniqueness – that there is a continuous appreciation and celebration of the diversity of Asia.

Hoping that more young folks will become stakeholders and leaders.

Wishing all the best for the organic movement's growth in Asia – that the Principle of Care will allow each individual to be a steward of this planet.

Edgardo Uychiat (Philippines) – Vice President

What I love most about IFOAM is its diverse membership. People from all walks of life share one dream. A dream of a sustainable world, a world where basic necessities such as clean air, water, and affordable nutritious food are abundant and easily accessible. IA honor small family farmers and fishermen who work hard daily to provide food for their family and consumers.

Healthy soil yields healthy food. It is a systemic cycle of sustenance where land that is well cared for provides an abundance of quality crop that sustains its communities. We believe that there must be co-habitation between people and our flora and fauna – we must create livable spaces for them to thrive.

Here in IFOAM, we want to continue to show that there are better ways to live - where conserving nature is a foundation for our movement.

Collaboration between our members and our farmers is highly prioritized, so those new ideas are shared and learned. Members teach farmers new approaches to organic farming and others mentor trainers despite limited resources. The current circumstances in our world today prove to be a challenge for organic producers as we face conditions such as climate change which affect access to markets, farm-to-market roads, and logistics for transportation.

ALGOA will be one of the key players in supporting rural development. I am confident that as long as we come together and hold a steadfast belief that we may overcome these challenges - that organic farmers will feed the world. God Bless IFOAM and its members.

Ji Young Moon (South Korea) – Vice President

Congratulations on the 10th anniversary of IFOAM-Organics Asia.

I remember the day of IFOAM-Organics Asia's inaugural meeting. It was held in Seoul, Korea and I was a simple participant at the time. And 10 years later, I'm elected as the Vice President of IFOAM-Organics Asia now. As much as I have changed over the past 10 years, the change and growth of IFOAM-Organics Asia is also dazzling.

It communicated the value of Organic 3.0 to more people and connected and strengthened many people in Asia who sympathize with the value of organic agriculture.

It drew the attention of local governments and nurtured the younger generation. It has made it possible for more people to understand the importance of organic agriculture and to recognize the need for organic agriculture as an alternative for a better world. It has been proved through various connections and events that the value of organic agriculture shines when people know and relate to each other. I also grew up in such passionate activities of IFOAM-Organics Asia.rm Asia.

It is now time for IFOAM-Organics Asia to prepare for maturity after 10 years of growth. It's time to share more experiences and models and to suggest strategies for thriving organic agriculture amid more connections and relationships.

Celebrating the thrilling moment, we gathered together after a long time after the COVID-19 pandemic, I congratulate us once again on the 10th anniversary of IFOAM-Organics Asia.

Qiao Yuhui (China)

It is a great pity that I cannot attend the celebration conference in South Korea, but I can still feel the very lively atmosphere for the well-organized 10th Anniversary of IFOAM ASIA and the 5th OAC,and I would like to offer my sincere congratulations.

This also reminds me of the “Xichong Asian Organic Industry Innovation and Development Summit”held in Xichong, Sichuan Province, China last year. Despite the impact of the epidemic, more than 300 guests from 11 countries, including China, South Korea, Japan, and the Philippines, participated in the conference offline and online.

In particular, the selection and award activities of organic medals of honor impressed me deeply that all candidates are carrying out the best organic practice, they provide excellent practice cases in Asia. Organic agriculture provides a scientific and feasible development pathway for the green and sustainable agriculture. I believe that with the efforts of everyone, the organic industry will play an important leading role in achieving the great goal of rural revitalization.

Zhang Tingting (China)

15 years ago, when I first met Mr. ZZ at a booth of one exhibition, he introduced me to IFOAM Asia and graciously shared organic ginger candy with me. Since then, I have known that IFOAM Asia is such an authoritative and open-minded organization.

Today, young people in China like to devote themselves to organic food, not only because it is delicious and safe, but also good for soil, animals, people and all actors in the food chain. IFOAM Asia is the umbrella for organic people. IFOAM Asia has been working hard for many years. As a member of IFOAM Asia, I am honored and always encouraged.

Congratulations to IFOAM Asia on its 10th anniversary.

May the IFOAM Asia umbrella support more and more organic people!

Asan Alymkulov, Kyrgyzstan (Board Member)

I am overwhelmed with joy to congratulate IFOAM Asia with the 10th Anniversary.

The main reason behind all the success and fruitful outcome of IFOAM Asia is the work determination and the creative projects of yours.

The amount of toil and hard work that all of IFOAM Asia staff, friends and partners together have put in to see this company grow is just indescribable. All the ups and downs we have faced as an organic family, you have led us till here. All the efforts and patience have now finally grown fruits and we are extremely happy and proud to be a part of an enormous organic family.

Jennifer, without no doubt, has been a backbone of IFOAM Asia and Asian Organic Movement all these years.

An anniversary is a good occasion to look back on what you have done.

All the work IFOAM Asia has done and peaks she has reached, are the evidence of tremendous IFOAM Asia achievements.

Yumiko Fukui (Japan)

Congratulations on the 10th anniversary of IFOAM Asia!

We would like to respect and learn from our organic leaders and pass the baton from the past to the future. As one of the board members, I would like to make a bridge between Asia and Japan for now on.
Let’s unite! Thank you everyone in the IFOAM ASIA network.

Special Memories

The Early Days

(Historic Meeting on the formation of IFOAM Asia, May 31st 2012, with representatives from 12 countries in Asia)

(Newly-elected Board, June 28, 2013)

(Newly-elected Board Members in June 2013 with the Former Minister of Agriculture, Kim Sung Hoon)

(Visit to Hansalim, June 2013)

(Ashish Gupta from India with Katsu Murayama from Japan)


Korean traditional food
& Cultural Theme park


서울 도시 농업

(Biofach Nuremberg 2015)

(With Mayor Jun Pacalioga, 2015 / Goesan County)

(Ceremony for 1st Foreigner for Honorary Citizenship of Goesan County)

(IFOAM Asia Lifetime Achievement Award, 2016 / Tomoko and Yoshinori Kaneko)

(Visit to Timbaktu, November 2017)

(Xichong China 2017)

(Xichong China 2017)

(Asia Organic Youth Forum, Nagaland India, 2018)

(3rd Organic Asia Congress, Bislig City, 2018)

(Appointment as ALGOA Ambassador, 2019)

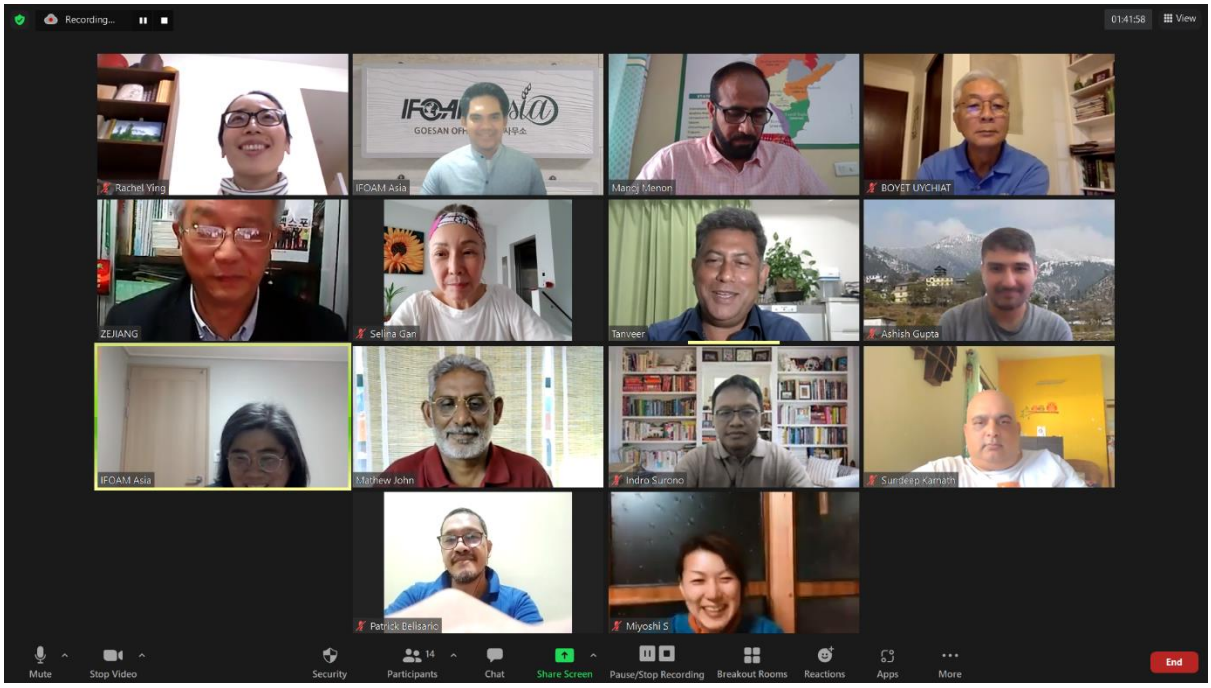
(Happy People outside the IFOAM Asia Office 2019)

(Biofach Nuremberg, 2020)

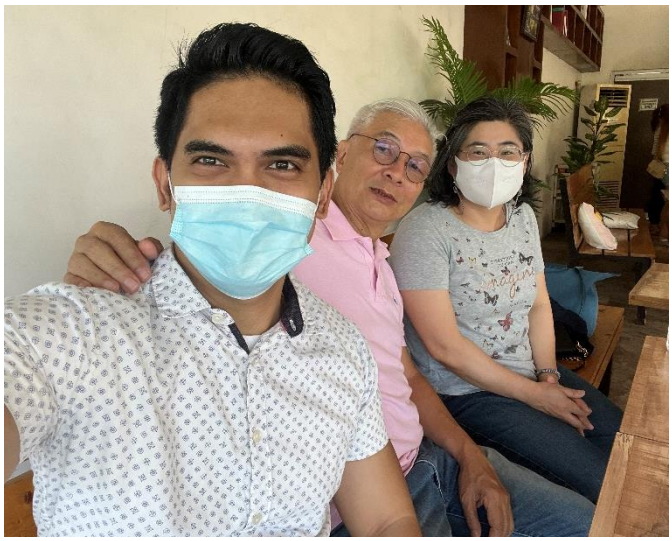
(Finalizing the Official Registration of IFOAM Asia Inc, Dec 6, 2019)

(Visit to Governor Eugenio Jose Lacson, Dec 2019)

(Board Meeting March 2022)



(March 2022, Zoom Meeting)



(Meeting Physically after 26 months of Zoom Meetings, April 2022)

(July 2022, Goesan County)

(Aug 2022 / OAC Contract Discussion , Manila)


IFOAM
ORGANICS
INTERNATIONAL
WELCOME
MS. JENNIFER CHANG
Executive Director, IFOAM Asia
MR. EDGARDO TYCHEAT
HON. RONNEL ARNADO


BIOFACH SAUDI ARABIA
into organic
NEW

(Biofach Nuremberg, Celebration of the Year of Organics, Aug 2022)

The IFOAM Asia Team


Zoom Meeting
Li Feng (IFOAM Asia)
IFOAM asia
괴산군
GOE SAN GUN
Asian Local Gr
Galaxy A8+ (2018)

(2019 ALGOA+4 Summit)

(Organic Sisters in Chengdu China 2019)

(With IFOAM Members, Nanjing, 2016)

(In Bishkek Kyrgyzstan, 2017)

(IFOAM World Board Members, 2017-2021)

(ALGOA Summit, 2020)

(IFOAM Asia Office, Goesan County, Oct 2022)

“Producer protects Consumer’s Life and Consumer ensures Producer’s Livelihood.”

Hansalim practices life-saving agriculture to save the Earth with producers and consumers together.

Hansalim believes that people and nature, urban and rural
are connected by the string of Life.
With a heart of producers to protect nature and to save life,
Hansalim product can have value in it.
And with consumers who understand, believe, and use those products,
Hansalim works as a cooperative.

Hansalim started as a small rice shop in 1986.
As of 2022, with 800,000 consumer members in 26 regional co-ops nationwide and 2,300 households of producers who engage in life-saving agriculture make direct transaction as a movement.
Based on the world view of Life, Hansalim develops Table Salim, Agriculture Salim, Region Salim to create a world where people can live a happy life.

IFOAM ORGANICS INTERNATIONAL

50 years

Congratulations on the 50th anniversary of IFOAM - Organics International

31년 이어온 흙살림의 신뢰를 담아
소비자들께 더 가까이 다가갑니다.

흙살림 마켓투유
새단장 오픈

검색창에 "흙살림 마켓투유"로 검색하세요.

흙살림 마켓투유

1544-1092

흙, 농업, 환경을 지키는 실천. 흙살림

사단법인 한국친환경농업협회
친환경농산물자조금관리위원회
Korea Organic Checkoff Board

Farmers
who Protect the Earth

IFOAM
ORGANICS
INTERNATIONAL

50
years

YEAR OF
ORGANICS
2022

Doing Our Best for Mother Earth!

We Thank Our Farmers
for Saving Mother Earth!

2022 IFOAM-Goesan Organic World Congress
2022 괴산 세계유기농산업엑스포

YEAR OF ORGANICS 2022

Warmest Congratulations

To

IFOAM-Organics International on its 50th Anniversary!

IFOAM-Organics Asia on its 10th Anniversary!

"To forget how to dig the earth and to tend the soil is to forget ourselves."

Mahatma Gandhi

사단법인 환경농업단체연합회

사단법인 한국친환경농업협회 친환경농산물자조금관리위원회

밥상살림·농업살림·생명살림 한살림

흙살림 HEUKSALIM

iN 자연드림

푸른들영농조합법인 PRUNDLE AGRICULTURE ASSOCIATION CORPORATION

CAFE Da ORGANIC COFFEE

괴산군조합공동사업법인

괴산잡곡

JOYSHOES Entertainment

(주)세영토탈

괴산군 GOE SAN GUN

충청북도 CHUNGCHEONGBUK-DO

ALGOA Asian Local Governments for Organic Agriculture

유기농 커피 전문

카페다

ORGANIC COFFEE CAFEDA

유기농을 소비하는 것은 범 지구적 차원에서 인류의 건강과 희망적인 미래를 지지하는 '환경운동에 동참함을 의미합니다'

I believe that purchasing organic is the action of supporting and participating in the future of our environment and the hope of the health of humanity.

우리의 참여가 나와 내 가족은 물론 우리 이웃과 소규모로 농사를 짓는 대다수의 농민과 그의 가족까지 도와 배려가 넘치는 세상을 만듭니다.

Our participation will combine to make an Earth that care that not only supports small production farmers and their families which make up the majority of farms but our families as well as ourselves.

이 아름다운 자연을 다음세대에 물려주고 싶은 마음. 유기농을 소비함으로 그 뜻을 실천하려는 여러분을 진심으로 존경하며, 카페다가 유기농을 고집하는 이유입니다.

I want to give this beautiful nature to our future generation. I appreciate all of your support in doing the same by buying organic, and for this reason, we at CafeDa are resolute about organics.

유기가공식품 (ORGANIC) 농림축산식품부

2016 WORLD SUPER BARISTA CHAMPIONSHIP 공식커피

FLAVOR INJECTION

cafeda.co.kr 031-275-2508