



Strengthening Resilience and Sustainability in
Food Systems for Environmental and Socioeconomic Development

1st Eastern Africa Agroecology Conference: Transforming Food Systems for Responsible Production, Consumption and Social Wellbeing



CONFERENCE PROCEEDINGS REPORT 2023

Date: 21st - 24th March 2023,

Venue: Safari Park Hotel and Casino

Nairobi - Kenya

Report Prepared by: Nyando Violet, Chief Rapporteur

Report Edited by: Biovision Africa Trust, EOA Secretariat of Dr. David Amudavi (Executive Director), Ms. Venancia Wambua (Senior Project Manager, EOA-I), and Mr. Alex Mutungi (Continental Secretariat Coordinator, EOA-I)



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ACKNOWLEDGEMENTS

The inaugural hybrid Eastern African Agroecology Conference was a huge success, thanks to the dedication of all the partners who worked tirelessly around the clock either individually or through their organizations. The Conference Organizing Committee (COC) is indebted to all who contributed to making the conference a success. The COC extends special gratitude to Swiss Agency for Development and Cooperation (SDC), Biovision Foundation of Switzerland, Swedish Society for Nature Conservation (SSNC), GIZ Kisumu Kenya, NCBA Bank Kenya, United States Mission to African Union (USAU), for providing financial support to the agroecology conference. Very special thanks to Hon. Fred Bwino Kyakulaga, Minister of State for Agriculture, Uganda for officially opening and closing the conference and sharing the practical experiences from Uganda on what the government is doing to promote agroecology adoption.

The COC also acknowledges the people of Kenya for being excellent hosts and a special thank you to the Government of Kenya through the Ministry of Agriculture and Livestock Development and County Governments through the Council of Governors for their contribution in shaping the conference programme and for participating in the conference sessions. Indeed, this was a solid confirmation that the Government of Kenya is committed to the transformation of the agricultural and food systems in the Country. The COC is indebted to all the distinguished speakers who brought a wealth of knowledge from research and practice to enrich discussions during the main plenary sessions, breakout sessions, side events and even during the one-on-one consultations. The speakers provoked delegates to delve deeper into the different themes and promote the sharing of real-time cases and data for reference and evidence sharing. This made the conference more relevant and practical.

Special thanks go to all the exhibitors for showcasing the latest innovations and technologies and for sharing knowledge and skills when delegates visited their stands. The exhibitors were drawn from the region and with some having international affiliations thereby giving the conference an international outlook.

To more than 600 delegates (in-person and online) who graced the conference, the COC will forever be indebted because without their participation the conference would not have taken place. Not only did they make the event a success, but they also made it become the largest inaugural Eastern Africa agroecology conference.

The COC is indebted to the Safari Park Hotel and Casino for excellent conference planning and facilities working closely with the COC to organize entertainment for the delegates through their Kayamba Entertainment Team. Special gratitude goes to the management team of Best House events company for excellent service from registration to the management of public address system, to management of sound systems in both the main plenary hall and the breakout rooms and the management of online presentations. By extension, gratitude is also





extended to the other excellent service providers for their exemplary and timely delivery of services that saw the seamless delivery of the conference.

We would also like to send a special thank you to the hosts of the conference field visits, Mr. Charles Mawia (farmer in Machakos), Taste the Forests Kenya Ltd (farm in Limuru) and Grow Biointensive Agriculture Centre of Kenya (G-BLACK) in Kiambu.

Last but not least, to all the delegates, friends, partners, and advocators of Agroecology from within and beyond the African continent who by their participation, individually and or collectively contributed to a great and successful conference that sparked off the anticipated series of Eastern Africa Agroecology Conference.

May the Almighty God bless you richly.

The COC looks forward to the next great conference in 2025!





CONFERENCE ORGANIZERS





CONFERENCE SPONSORS



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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**Swiss Agency for Development
and Cooperation SDC**



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for Nature Conservation**



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giz Deutsche Gesellschaft
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Zusammenarbeit (GIZ) GmbH





CONFERENCE PARTNERS





CONFERENCE EXHIBITORS

1. Biovision Africa Trust
2. Pelum Association
3. Knowledge Hub for East Africa (KHEA) with support from GIZ/BMZ
4. GIZ Kenya
5. SNV
6. Slow Food
7. Interact
8. Eastern and Southern Africa Small-Scale Farmers' Forum
9. African Centre for Agroecology and Livelihood Systems (Acalise)
10. KAPI Ltd
11. Practical Action
12. Center For Food and Adequate
13. Living Rights
14. CUC and Inspections Kenya Limited
15. World Animal Protection





CONFERENCE POSTERS

Sub-Theme 1

1. Efficacy of eucalyptus ash (eucalyptus globules l) on the tomatoes' (solanum lycoperscum) shelf life under room temperature Storage Conditions in Central Uganda - *Mr. Tumwizere Collin, Mr. Kalanzi Keefa & Dr. Marius Murongo.*
2. Soil Carbon, Nitrogen, Phosphorus, and Ph Impacts from a Two-Year Trial of Agroecological Practices Conducted with a Farmer Researcher Network in Western Kenya - *Dr. Steven Vanek, Mr. Gabriel Chege, Dr. John Ojiem, Dr. Beth Medvecky & Mr. Daniel Nyambok.*
3. Farmer Research Network Tests the Effects of Soil Health Interventions on Striga Hermonthica and Maize Productivity in The Lake Zone of Kenya - *Dr. Beth Medvecky, Dr. John Ojiem, Mr. Daniel Nyambok & Dr. Steven Vanek.*
4. The Kenya Agroecology Hub's Experiences with a Farmer Research Network Approach - *Dr. Beth Medvecky, Mr. Kevin Wanjare, Dr. Elizabeth Dyck & Dr. David Stern.*
5. Intensified Agroecological-Based Cropping Systems to Enhance Food Security, Environmental Safety, and Income of Smallholder Vegetable Producers in East Africa - *Dr. Daniel Mutyambai, Ms. Fathiya Khamis, Mr. Solveig Haukeland, Dr. Thomas Dubois, Dr. Saliou Niassy & Mr. Komivi Akutse.*
6. Evaluation of Potential Repellent Plants for Developing Vegetable Push-Pull Cropping System Against Cabbage Aphids (Brevicoryne Brassicae) in Smallholder Kale Production Systems - *Mr. Bretor Mutua, Mr. Komivi Akutse, Ms. Fathiya Khamis, Mr. Solveig Haukeland, Dr. Thomas Dubois, Dr. Saliou Niassy & Dr. Daniel Mutyambai.*

Sub-Theme 2

1. Testing The Efficacy of Biofertilizers - *Dr. Elizabeth Dyck, Dr. Beth Medvecky, Ms. Prisca Cherono, Mr. Patrick Shiundu, Mr. Andrew Simotwo & Mr. Evans Wesonga.*
2. Effect of Sisal (Agave Sisalana) and Sweet Thorn (Acacia Karroo) Ethno-Medicinal Extracts on Prevalence of Selected Pests and Diseases in Assila F1 Tomato Variety - *Mr. Maganda Faruk, Ms. Acero Miria, Dr. Byalebeka John, Dr. Joseph Ssekandi & Dr. Marius Murongo.*
3. Contribution of Different Farming Systems to Soil and Ecological Health in Trans Nzoia County, Kenya - *Dr. Janeth Chepkemoi, Prof. Richard Onwonga, Mr. Noel Templer, Mr. Elkana Kipkoech & Ms. Angela Gitau.*





Sub-Theme 5

1. Policy Recommendations on Agroecology Approaches for Sustainable Agriculture and Food Systems That Enhance Food Security and Nutrition in Vihiga County-Kenya - *Mr. Reuben Chumba K. B., Ms. Olimba Lillian Aluso, Dr. Caroline Wambui, Mrs. Ennia Bosshard & Mr. Harrison Carter.*
2. Trench Gardening: An Agroecological Means to Improve Access to Food and Nutrition in Arid and Semi-Arid Areas of Ethiopian Rift Valley - *Dr. Hailu A. Tedla.*
3. Herbs Made in Africa! Bringing Health & Food to People, Crops & Animals. Exploring Herbs as Medicine, Food, Spices, Essential Oils and Cosmetics - *Ms. Bakirya Judith.*
4. Strengthening the Farmer Managed Seed System for Sustainable Food Systems and Biodiversity Conservation, a Case of Lindi and Mtwara Regions in Tanzania - *Mr. Daud Manongi.*





CONFERENCE PROGRAMME

Conference Outcomes

1. Overall food systems transformation agenda in Eastern Africa in line with agroecological principles and practices embraced.
2. The ecosystem of organizations and initiatives working towards food systems transformation based on agroecology strengthened.
3. Strategies and joint initiatives on key levers for food systems transformation (knowledge generation & dissemination, policy reform, market systems development, investments) advanced.
4. Support and implementation of agroecology-oriented policies from government institutions and other key stakeholders in the region enhanced.

DAY ONE: 21 ST MARCH 2023	
Timings	Activity
7.00am – 8.30am	Registration and Cultural Entertainment
8.30am – 10.30am	<p>PLENARY SESSION 1</p> <p>Keynote Speech: Scaling up Agroecology Initiatives: Lessons learnt, successes, aspirations, and opportunities: <i>Dr. Emma Siliprandi, Agricultural Officer-Plant Production and Protection Division (NSP), FAO</i></p> <p>Speaker: Can farmer- centered research drive food systems transformation? <i>Dr. Sara Namirembe - McKnight Collaborative Crop Research Program (CCRP) – East & Southern Africa (ESAf) Region</i></p> <p>Panel Discussion: <i>Dr. Emma Siliprandi-FAO, Dr. Sara Namirembe McKnight Foundation, Dr. Dismas Mwikali - East Africa Community</i></p> <p>Moderator: Dr. David Amudavi</p>
10.30am - 11.00am	HEALTH BREAK AND EXHIBITIONS GUEST OF HONOUR – VISIT THE EXHIBITIONS





<p>11.00am – 12:30pm</p>	<p>OFFICIAL OPENING CEREMONY</p> <p>Entertainment Kenya National Anthem and EAC National Anthem</p> <p>Opening Prayers Welcome Remarks - Chair of the Conference Organizing Committee: <i>Dr. David Amudavi, Executive Director, Biovision Africa Trust (BvAT)</i></p> <p>Remarks by Representative from the African Union Commission (AUC) - Sarah Ashanut Ossiya, Animal Production Expert at AU-IBAR, representing Dr. Godfrey Bahigwa, Director of Agriculture and Rural Development for the African Union Commission</p> <p>Official Opening of the Conference by: Minister of State for Agriculture, Uganda -Hon. Fred Bwino Kyakulaga, Minister of State for Agriculture, Uganda</p> <p>Keynote Speech: Pathways to Food Systems Transformation towards Resilience and Sustainability in Africa: Dr. Hans R. Herren, President and CEO, Millennium Institute, Co-Founder and President Biovision Foundation, Recipient of the World Food Prize, Recipient of the Alternative Nobel Prize, Washington, DC.</p> <p>Panelists: Dr. Hans Herren, Dr. Sarah, Osia and Hon. Fred Bwino Kyakulaga</p> <p>Master of Ceremony – Johnson Mwakazi, Director, The Royal Voice International</p>
<p>12.30pm- 1.00pm</p>	<p>OFFICIAL TOUR OF EXHIBITIONS AND POSTERS</p>
<p>1.00pm – 2.00pm</p>	<p>LUNCH BREAK & EXHIBITIONS</p>
<p>2:00pm – 4:00pm</p>	<p>PLENARY SESSION 2</p> <p>Keynote Speech: Taking Agroecological, Scientific Innovations and Breakthroughs to Scale in Africa: Prof Zeyaur Khan, Thomas Odhiambo Distinguished Research Fellow, Leader, Push-Pull Programme, International Centre of Insect Physiology and Ecology</p> <p>Speaker 1: Demystifying the Myth: Can Organic Agriculture Feed the World? Dr. Noah Adamtey, Senior Research Scientist in the Department of International Cooperation at the Research Institute of Organic Agriculture in Switzerland</p> <p>Roundtable Discussion:</p>





	<p>Panelists: <i>Prof Zeyaur Khan, Dr Noah Adamtey, Bo Lager, Hakim Belaraine and Prof Simplice Vodouhe</i></p>
	<p>Moderator: <i>Prof Charles Ssekyewa</i></p>
	<p><i>BREAKOUT SESSIONS/PARALLEL SESSIONS</i></p> <p>Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.</p> <ol style="list-style-type: none"> 1. Differential Responses of <i>Bactrocera Dorsalis</i> and its Parasitoids to Headspace of Different Varieties of Tree-Attached Mango Fruits and the Associated Chemical Profiles - <i>Mr. Raphael Njurai Miano Dr. Samira A. Mohamed, Dr. Xavier Cheseto, Dr. Shepard Ndlela, Dr. Tibebe Dejene Biasazin, Prof. Abdullahi Ahmed Yusuf, Prof. Egmont Rohwer & Prof. Teun Dekker.</i> 2. The Role of Agroforestry Systems in Improving Farmlands and Livelihoods in Agroecological Highlands Zones of Buberuka-Rwanda - <i>Mr. Isaac Mubashakwaya.</i> 3. Outcomes of A Multi-Year Agroecology Research and Advocacy Project in Tanzania – Focus on Maize Production - <i>Dr. Angelika Hilbeck & Ms. Gladness Brush.</i> 4. Evaluating the Effect of Different Organic Manures on The Performance of Black Eye Cowpea Variety b8 - <i>Mr. Richard Oyat & Dr. Marius Murongo.</i> <p>Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.</p> <ol style="list-style-type: none"> 1. The Kenya Agroecology Hub's Experiences with A Farmer Research Network Approach - <i>Dr. Beth Medvecky, Mr. Kevin Wanjare, Dr. Elizabeth Dyck & Dr. David Stern.</i> 2. Aflatoxin As a Factor in The Decline of Agricultural Incomes and impacts on Food Security in Meru and Tharaka Nithi Counties in The Eastern Region of Kenya - <i>Prof. Linda Ethangatta, Prof. Renson Muchiri, Dr. Bonface Ileri Ngari, Dr. Kendi Muchungi, Dr. Kimani Gichuhi & Mr. Kagwathi Githii.</i> 3. From Agroecology to Organic Farming: A Review of Best Practices and Lessons Learned - <i>Mr. Rakoto Rakotondramanana & Mr. Tahina Raharison.</i> 4. From Organic Farming to Agroecological Farming, What Challenges Do Organic Farmers Face in Central Uganda? - <i>Mr. Bienvenu Dagoudo Akowedaho, Prof. Charles Ssekyewa, Dr. Joseph Ssekandi, Ms. Khady Ngom & Prof. Ismail M. Moumouni.</i>





Theme 2: Best practices towards food security, nutrition, consumption, and health: Soil health and farmer managed seed systems.

1. Farmer-Centred Interventions: A Key Approach for Agroecological Transition in Meru and Laikipia - *Mr. Sam Njogo, Ms. Nadège Kippeurt & Mr. Joses Muthamia.*
2. Evaluation of Biopesticides for Traditional African Vegetables in Kenya - *Mr. Martin Barare, Dr. Ralph Roothaert & Dr. Paola Sotelo.*
3. Soil Health Interventions in The Central Highlands of Ethiopia - *Mr. Amha Besufkad, Dr. Wubetu Bihon Legesse & Mr. Gemechis Jaleta.*
4. Organic Farming System Enhances Below Ground Biodiversity Than Conventional Farming System in The Tropics - *Dr. Edward Karanja, Dr. Noah Adamtey, Mr. David Bautze, Dr. Hans-Martin Krause, Dr. John Anyango, Ms. Janet Atandi, Mr. Felix Matheri, Mr. Nderitu Mwangi, Ms. Nancy Mwendé Munyoki, Dr. Ruegg Johanna, Dr. Akansha Singh & Dr. Thomas Dubois.*

Theme 2: Best practices towards food security, nutrition, consumption, and health: Soil health and farmer managed seed systems

1. Cereal-Legume-Based Cropping Systems Under Conventional and Organic Management in Malawi: Insights from A Demonstration Trial- *Mr. Andrew Thadzi, Mr. Mike Ching'amba, Mr. Shaibu Kananji, Dr. Kadzere Irene, Ms. Anastazia Pemba, Ms. Stefanie Zeiss, Ms. Alexandra Farrington-Schomburg, Ms. Wendy Zavala Escobar, Dr. Pasani Kumambala & Dr. Noah Adamtey.*
2. The Struggle to Scale Up Agroecology in Constrained Areas: The Case of Agro-Ecological Technical Center of The South (Ctas) In Southern Madagascar - *Ms. Tolotra Henintsoa Ranaivoharimanana.*

Moderators: FiBL, Pelum Kenya, Biovision Africa Trust, Pelum Uganda & Seed Savers Network, TOAM and ROAM

4:30 pm – 5:00 pm
HEALTH BREAK & EXHIBITIONS

5:00 pm – 6:00 pm
BREAK OUT SESSIONS/PARALLEL SESSIONS

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Elements of Agroecological Pest and Disease Management- *Dr. Angela Mkindi, Ms. Yolice Tembo, Prof. Philip Stevenson & Prof. Steven Belmain.*
2. Cocoa Versus Rubber Tree Landscapes: Are Tree-Based Commodity Hotspots of Soil Biodiversity? Evidence From Côte D'ivoire- *Ms. Léontine*





Adahé, Dr. Martinez Guej, Dr. Julien N'dri, Prof. Jérôme Tondoh & Prof. Constant Yves Adou Yao.

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Impacts and Drivers to Wonder Multistorey Gardens for Crop Production Among Urban Households: Evidence from Nairobi City, Kenya - Mr. Andrew Abiya, Dr. Saliou Niassy, Dr. David Kupesa, Mr. Evanson Omuse & Dr. Menale Kassie.
2. The Effects in Crop Yield: Observation from Farmer-Led Research of Agro-Ecological Practices - Ms. Luambano Kihoma, Dr. Ayubu Churi, Prof. Camilius Sanga & Dr. Eugenio Tisselli.

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Soil Carbon, Nitrogen, Phosphorus, and Ph Impacts from A Two-Year Trial of Agroecological Practices Conducted with A Farmer Researcher Network in Western Kenya - Dr. Steven Vanek, Mr. Gabriel Chege, Dr. John Ojiem, Dr. Beth Medvecky & Mr. Daniel Nyambok.
2. Soil Quality Change Following Compost and Farmyard Manure Application in Maize and Cassava Based Agro-Ecosystems of Mvomero and Masasi - Tanzania - Mr. John Constantine, Dr. Mawazo Shitindi, Prof. Kallunde Sibuga & Dr. Angelika Hilbeck.

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Agricultural Biotechnology in Transforming Food Systems for Responsible Production, Consumption and Social Wellbeing- Dr. Tadessa Bedada.
2. The Efficiency of Rabbit Urine as An Ecological Friendly Bio-Pesticide for Controlling Pest of Ethiopian Mustard (Brassica Carinata)- Dr. Naza Mmbaga, Mr. Julius Missanga & Dr. Kelvin Ngongolo.

Moderators: FiBL, Pelum Kenya, and Biovision Africa Trust





DAY TWO: 22ND MARCH 2023	
Timing	Activity
8.30am – 10:30am	<p>PLENARY SESSION 3</p> <p>Reflections on Day 1</p> <p>Keynote Speech: Role of Farmers' Movements in Promoting Agroecology in Africa: <i>Ms. Shamika Mone, President of Intercontinental Network of Organic Farmers Organisations (INOFO)</i></p> <p>Speaker 1: Strengthening Organic Trade in Africa – <i>Bert-Jan Ottens, Owner & Senior Adviser, ProFound - Advisers in Development, Den Haag, Zuid-Holland, Netherlands.</i></p> <p>Speaker 2: Prioritizing Sanitary and Phytosanitary Measures in Ecological Organic Agriculture Marketing and Trade in Africa - <i>Diana Akullo Ogwal - Principal Officer, SPS Department of Trade in Goods and Competition - AfCFTA Secretariat.</i></p> <p>Speaker 3: Making Agroecology Attractive to the Youth for Contributing to Resilient and Sustainability Food Systems in Africa: <i>Richard Mugisha, Regional Coordinator-Youth Track - Rwanda Kenya Ethiopia.</i></p> <p>ROUNDTABLE DISCUSSIONS</p> <p>Panelists: Shakima Mone, Diana Akullo Ogwal, Richard Mugisha, Lise Chantal Dusabe and Eustace Kiarri</p> <p>Moderator: Wanjiru Kamau</p>
10.30am– 11.00am	HEALTH BREAK & EXHIBITIONS
11.00am – 1.00pm	<p>BREAK OUT SESSIONS/PARALLEL SESSIONS</p> <p>Theme 2: Best practices towards food security, nutrition, consumption, and health: Soil health and farmer managed seed systems.</p> <ol style="list-style-type: none"> 1. Farmer Research Network Tests the Effects of Soil Health Interventions on Striga Hermonthica and Maize Productivity in The Lake Zone of Kenya- <i>Dr. Beth Medvecky, Dr. John Ojiem, Mr. Daniel Nyambok & Dr. Steven Vanek.</i> 2. Digital Training Enhances Organic Smallholder Farming Practices in Africa- <i>Ms. Selina Ulmann, Ms. Faith Maiyo, Mr. Benjamin, Ms. Lise Chantal Dusabe & Mr. Dieudonne Sindikubwabo.</i> 3. Adoption Of Agroecological Approaches in Traditional African Vegetables in Kenya: Motivations, Barriers and Opportunities for Scaling Up - <i>Ms. Anne Mwatha, Dr. Rosina Wanyama & Dr. Ralph Roothaert.</i>





Theme 2: Best practices towards food security, nutrition, consumption, and health: Soil health and farmer-managed seed systems.

1. Swiss Ngo Alliance Sufosec Tackling the Global Food and Nutrition Crisis Through Agroecological Transformation - *Ms. Veronica Massawe, Ms. Melanie Rantschen, Mr. Volker Eick, Dr. Thomas Gass, Prof. Johanna Jacobi, Prof. Stephan Rist, Ms. Nicole Stolz & Dr. Maurice Tschopp.*
2. Infonet-Biovision: An Online Farmer Information Platform for Promoting Sustainable Development and Organic Agriculture in Africa - *Mr. Charei Waweru & Ms. Monique Hunziker.*
3. The Impact of Post-Harvest Response on Sustainable Consumption - *Dr. Jonas Yawovi Dzinekou, Ms. Susan Mwangi & Dr. David Kirimi.*

Theme 3: Women and Youth in Agroecology

1. Women Involvement in Use of Ethnomedicinal Products in Masaka and Mpigi Districts, Uganda - *Prof. Grace Njeri Njoroge, Mr. Godfrey Vianney Bwogi & Dr. Marius Murongo.*
2. Organic Lifestyle Influencer Approach (Olia): Promoting Awareness and Consumption of Sustainable Food Through Social Media Campaigns- *Mr. Martin Njoroge, Ms. Selina Ulmann, Dr. Thomas Bernet, Ms. Lilian Mbithe, Mr. Benjamin & Mr. Mike Otieno.*
3. Herbs Made in Africa! Bringing Health & Food to People, Crops & Animals. Exploring Herbs as Medicine, Food, Spices, Essential Oils and Cosmetics - *Ms. Bakirya Judith.*
4. Roles Of Women and Youth in Agroecology to Increase Food Production and Reduce Income Poverty in Dodoma Semi-Arid, Tanzania - *Dr. Leopody Gayo.*

Theme 4: Ecological Organic Trade, Markets, and Economy

1. Testing The Efficacy of Biofertilizers.-. *Dr. Elizabeth Dyck, Dr. Beth Medvecky, Ms. Prisca Cheron, Mr. Patrick Shiundu, Mr. Andrew Simotwo & Mr. Evans Wesonga.*
2. Addressing Challenges in Access to Ecological Inputs at The Smallholder Level in Ethiopia: The Case of Veggies 4 Planet and People Project- *Mr. Gemechis Jaleta, Mrs. Leah Mwaura, Dr. Ralph Roothaert*
3. Working With Micro and Small Agroecological Enterprises in Lake Victoria Zone, Uganda. - *Mr. Patrick Delba Kiirya.*

Roundtable Discussion: *ARSO, Private Organic Companies, Certification companies, ProFound, NOAMs, etc*





	<p>Moderators: Pelum Uganda, Seed Savers, YALTA, TOAM, ROAM, KOAN and ProFound</p>
1.00pm – 2.00pm	<p>LUNCH BREAK & EXHIBITIONS</p>
2.00pm – 4:00pm	<p>PLENARY SESSION 4</p> <p>Keynote Speech: Why social movements are crucial to the agroecological transition - Dr Million Belay General Coordinator, Alliance for Food Sovereignty in Africa (AFSA)</p> <p>Speaker 1: The Agroecology Coalition: an opportunity to accelerate the necessary food system transformation: Emile Frison, Interim Coordinators, Agroecology Coalition</p> <p>Panelists: Dr Million Belay, Emile Frison, Dr Martin Oulu, Gabor Figeczky, Josephine Akia, Hannington Owegi SG PELUM Association</p> <p>Moderator: Dr. David Amudavi</p> <p>BREAK OUT SESSIONS/PARALLEL SESSIONS</p> <p>Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.</p> <ol style="list-style-type: none"> 1. Enhancing Crop Yields and Biodiversity Conservation with Agroecological Approaches: Evidence from Kenya - <i>Dr. Noah Adamtey, Mr. Felix Matheri, Ms. Nancy Mwendu Munyoki, Mr. Nderitu Mwangi, Dr. Edward Karanja & Mr. David Bautze.</i> 2. Farmer Participatory Piloting of Agro-Ecological Approaches for Sustainable Production of Traditional African Vegetables in Smallholder Farms in Kenya - <i>Dr. Srinivasan Ramasamy, Ms. Carolyne Wangungu, Dr. Ralph Roothaert, Dr. Wubetu Bihon Legesse, Dr. Rosina Wanyama, Ms. Anne Mwatha & Dr. Josiah Ateka.</i> 3. Efficacy Of the Farmer Communication Programme in Promoting Agroecology Among Smallholder Farmers in Kenya – <i>Fredrick Ochieng, Joseph Nyamesegere & Christopher Rwanda.</i> 4. Economics of Agroecology - <i>Innocent Faith, David Kersting – Giz.</i> <p>Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.</p> <ol style="list-style-type: none"> 1. Investigating Factors That Affect the Adoption of Pollinator-Friendly Agricultural Practices Within Smallholder Farms in Vihiga County, Western Kenya. - <i>Ms. Ennia Bosshard, Mr. Harrison Carter, Dr. Ana Nuno, Dr. Christopher Kettle & Dr. Christopher Kaiser-Bunbury.</i>





2. A Waste of Time? Increasing On-Farm Labor Through an Agroecological Transition in Malawi --Ms. Sidney Madsen, Prof. Rachel Bezner Kerr & Mr. Laifolo Dakishoni.
3. Organic Versus Conventional Farmer Crisis Responses: Implications Under Covid and Russia-Ukraine War - Alex Mutungi, Venancia Wambua and David Amudavi
4. Do Organic Farming Initiatives in Sub Saharan Africa Improve the Sustainability of Smallholder Farmers? Evidence From Five Case Studies in Ghana and Kenya - Mr. Johan Blockeel, Dr. Irene Egyir, Dr. Anne Muriuki, Dr. Kadzere Irene, Dr. Joseph Bandanaa, Mr. Joseph Clottey, Dr. John Ndungu, Dr. Chrysanthus Tanga & Dr. Christian Schader.

Theme 2: Best practices towards food security, nutrition, consumption, and health: Soil health and farmer managed seed systems.

1. Striving For Resilient Farming Systems Through Poultry Interventions in Semi-Arid Eastern Kenya- Ms. Carolyn Khalayi Wafula.
2. Investigating Foot and Mouth Disease in Wami Village, Tanzania. A Study of Pastoralists' Awareness, Practices and Vaccination Applicability- Dr. Rajab Awami, Dr. Shaabani Mshamu, Mrs. Janet Maro, Ms. Salma Yassin, Mr. Alex Wostry, Mr. Yohana Haule & Dr. Latifa Mreta.
3. Interact: Promoting Exponential Change to Agroecology- Ms. Liesl Hattingh, Ms. Sumeeta Gawande, Ms. Suzanne Neave & Ms. Claire Bake.
4. Informal Seed Exchange and Own Seed Production by Farmers Are the Key Pillars of Tanzanian Agriculture - Ms. Veronica Massawe, Mr. Simon Degelo, Ms. Rajwinder Riar, Dr. Tanay Joshi, Mr. Alexander Heer, Mr. Rainard Mjunguli, Ms. Betty Malaki, Mr. Etienne Basset, Dr. Monika Messmer & Dr. Amritbir Riar.

Moderators: PELUM Uganda, Seed Savers, TOAM and ROAM

4:30pm -
5.00pm

HEALTH BREAK & EXHIBITIONS





5.00 pm –
6.00 pm

BREAK OUT SESSIONS:

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Farm Resilience Assessment Using FAO's Adapted Sharp+ Tool in Busia County, Kenya- *Ms. Sophie Van Den Berg, Dr. Charles Nwokoro, Ms. Elizabeth Imbo, Ms. Aleksandra Wybieralska, Ms. Marnie Pannatier, Ms. Jimena Monroy, Dr. Cornelia Speich Mrs. Kesso Gabrielle Van Zutphen & Dr. Tanja Barth.*
2. Evaluation of the Global Advocacy Project (GAP) For the Ecological Organic Agriculture Initiative: Focus on Eastern Africa – *Ms. Venancia Wambua, Mr. Alex Mutungi & Dr. David Amudavi.*

Theme 5: Institutional and policy drivers for Agroecological transformations

1. Policy Recommendations on Agroecology Approaches for Sustainable Agriculture and Food Systems That Enhance Food Security and Nutrition in Vihiga County-Kenya- *Mr. Reuben Chumba K. B., Ms. Olimba Lillian Aluso, Dr. Caroline Wambui, Mrs. Ennia Bosshard & Mr. Harrison Carter.*
2. Breaking The Cycle of Debt, Poverty, And Hunger to Build Resilient Agroecological Food Systems - *Dr. Hans R. Herren, Dr. Million Belay, Ms. Li Ching Lim, Dr. Jennifer Clapp, Ms. Shalmali Guttal, Dr. Desmond Mcneill, Ms. Sofia Monsalve Suárez, Dr. Rajeev Patel, Mr. Nicholas Jacobs & Dr. Emile Frison.*

Theme 5: Institutional and policy drivers for Agroecological transformations

1. Mainstreaming Agroecological Policy and Legal Frameworks in Agriculture for Transforming Food Systems: The Case of Muranga and Kiambu Counties – *Ms. Faith Gikunda Mr. Gathuru Mburu.*
2. Agroecology Issues in Agricultural and Allied Policies: Experience from Tanzania - *Dr. Devotha Moshia, Dr. Suzana Nyanda & Prof. Dismas Mwaseba.*

Moderator: Dr. Martin Oulu





DAY THREE: 23RD MARCH 2023	
Timings	Activity
7.00am – 8.30pm	Viewing of posters/ exhibitions
8.30am – 10:30am	<p>PLENARY SESSION 5</p> <p>Reflections on Day 2</p> <p>Keynote Speech: <i>Financing Food Systems for Environmental and Socio-Economic Development in Africa</i> – Dr. Frank Eyhorn, CEO Biovision Foundation.</p> <p>Speaker 1: <i>Indigenous food systems and especially pastoral-based systems</i>- Milka Chepkorir, Coordinator of Community Land Action NOW! CLAN.</p> <p>Speaker 2: <i>Financing Agroecology in Eastern Africa: Emerging Opportunities and Aspirations</i> -Daniel Moss, Co-Director Agroecology Fund.</p> <p>Roundtable Discussion of Development Partners & Donors: (SDC, Biovision Foundation, Agroecology Fund, SSNC, GIZ, SWISSAID Tanzania, ICRAF, AFSA)</p> <p>Moderator: Markus Arbenz, FiBL</p>
11:00am – 1:00pm	<p>BREAK OUT SESSIONS:</p> <p>Theme 3: Women and Youth in Agroecology</p> <ol style="list-style-type: none"> 1. Food Sources and Dietary Diversity Among Conventional and Organic Female Farmers in Murang'a County, Kenya - <i>Dr. Kadzere Irene, Dr. Anne Muriuki, Ms. Marian Kamau, Mr. David Gathuka, Dr. Peter Mokaya, Dr. Noah Adamtey, Ms. Marlene Heeb, Dr. Christian Schader & Prof. Isabelle Herter-Aeberli.</i> 2. Enhancing Research Through Farmers' Research Networks: Opportunities and Challenges – <i>Suzana Nyanda & Dr. Devotha Mosha, Dr. Siwel Nyamba, Dr. Newton Kilasi & Prof. Dismas Mwaseba.</i> 3. Agroecology And Sustainable Livelihoods as A Framework to Empower Women and Youth in East Africa - <i>Ms. Celina Butali & Dr. Monica Nderit.</i> 4. Increasing Productivity and Reducing Poverty Through Regenerative Agriculture and Circular Economy – <i>Ms. Chiara Baiocco.</i>





Theme 5: Institutional and policy drivers for Agroecological transformations

1. Emerging Messages on Viability of Agroecological Practices in Africa -*Mr. Ric Coe*
2. Testing Co-Management as An Option of Sustaining Fishery Resources for An Open Access Water Body: The Case of Lake Malawi in Nkhotakota District-*Ms. Cynthia Vugutsa, Dr. Charity Chanza & Prof. Emmanuel Kaunda.*
3. The Role of African Progressive Cultural Practices and Social Institutions on Sustainable Agri-Food Systems and Improved Nutrition- *Ms. Salome Owuonda & Dr. Sarah Olembo.*

Theme 6: Financing agroecological transformations

1. Prosperous Land, Prosperous People: Scaling Finance for Nature-Based Solutions in Kenya - *Dr. Jeremiah Rogito.*
2. The Agroecology Coalition: An Opportunity to Accelerate the Necessary Food System Transformation- *Dr. Emile Frison & Mr. Oliver Oliveros.*
3. Public Investments in Organic Agriculture in Kenya – *Dr. David Amudavi, Venancia Wambua & Alex Mutungi.*

Theme 1: Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.

1. Effect of Field Margin Vegetation on Natural Pest Regulation in Dolichos Bean (*Lablab Purpureus L.*)- *Janet Obanyi, Prof. Joshua Ogendo Egerton University, Prof. Richard Mulwa, Dr. Jane Nyaanga, Prof. Erick Cheruiyot, Dr. Philip Bett, Prof. Steven Belmain, Prof. Sarah Arnold, Dr. Victoria Woolley & Prof. Philip Stevenson.*
2. Agroecological Practices Strengthen Perceived Ability to Cope with Climate Change - *Dr. Amritbir Riar, Mr. Alexander Heer, Ms. Veronica Massawe, Ms. Rajwinder Riar, Dr. Tanay Joshi, Mr. Rainard Mjunguli, Ms. Sarah Mader, Ms. Betty Malaki, Mr. Etienne Basset & Dr. Monika Messmer.*
3. Integrated Approaches to Supporting Sustainable Livelihoods: Asset-Based and Agency-Based Approaches, Landscape Level Communities of Practice and Citizen Science - *Lisa Fuchs.*

Moderators: ISFAA, ESAFF, Swiss Aid Tanzania, FiBL, Pelum Kenya





2.00pm – 5.30pm	<p>OFFICIAL CLOSING CEREMONY</p> <p>Call 2 Action: Ms. Venancia Wambua, EOA-I Project Manager</p> <p>Official Closing Speech:</p> <ol style="list-style-type: none"> 1. Hon. Frank Tumwebaze- Cabinet Minister of Agriculture, Uganda 2. Hon. Mithika Linturi - Cabinet Secretary, Ministry of Agriculture and Livestock Development, Kenya <p>Closing Remarks: Member of the COC-ISFAA</p> <p>Vote of Thanks: Dr. Sarah Oleambo</p> <p>Vote of Thanks: Mr. Alex Mutungi</p> <p>Master of Ceremony – Ms. Victoria Rubadiri</p> <p>Chief Rapporteur - Ms. Violet V. Nyando</p>
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DAY FOUR: 24 TH MARCH 2023	
7.00am – 4.30pm	<p>EXCURSION: FARM VISITS – Excursion Sub Committee</p> <ul style="list-style-type: none"> ● Machakos: Mr. Charles Mawia’s Farm ● Limuru: Taste the forests Kenya Ltd ● Kiambu: Grow Biointensive Agriculture Centre of Kenya (G-BLACK)

Programme for Side Events

Organizations planning side events:

- The African Union Ecological Organic Agriculture (EOA) Initiative
- Intersectoral Forum on Agrobiodiversity and Agroecology (ISFAA)
- SWISSAID Tanzania
- PELUM Association with specific country representation from PELUM KENYA, PELUM UGANDA, PELUM TANZANIA and PELUM ETHIOPIA
- GIZ ProSilience
- The U.S. Mission to the African Union (USAU)

Day	Time	Title	Room	TIME
21 st March	SWISSAID Tanzania	Seed sovereignty for food and nutrition security, income, and resilience to climate change,	Mount Kenya C	11.00am-1.00 pm





		agroecological transformation and sustainable food systems		
21 ST March	Intersectoral Forum on Agrobiodiversity and Agroecology (ISFAA)	Ongoing policy and legislative initiatives and the role of multi-stakeholder platforms (MSPs) in influencing policy and scaling up Agroecology in East Africa.	Mount Kenya C	2.00pm-4.00pm
22 nd March	The AU Ecological Organic Agriculture (EOA) Initiative)	Best EOA Practices and Successes for scaling up Agroecological Initiatives	Mount Kenya C	11.00am-1.00pm
22 nd March	GIZ ProSilience	Economics of Agroecology	Mount Kenya C	2.00pm - 4.00pm
22 nd March	The U.S. Mission to the African Union (USAU)	Modeling contribution of Agroecology to nutrition and food security	Mount Kenya C	4.00pm - 6.00pm
23 rd March	PELUM Association	Agroecology for resilient food systems	Mount Kenya C	11.00am - 1.00pm





EXECUTIVE SUMMARY

The inaugural hybrid (physical and virtual) Eastern Africa Conference on Agroecology: Transforming Food Systems for Responsible Production, Consumption and Social Wellbeing was convened in Nairobi, Kenya at the Safari Park Hotel and Casino from the 21st – 24th March 2023. Biovision Africa Trust under the Ecological Organic Agriculture Initiative of the African Union jointly convened the conference with the Conference Organizing Committee (COC) of; the Ministry of Agriculture and Livestock Development of Kenya, Pelum Kenya, ISFAA, KOAN and BIBA, Dr. Sarah Olemba of the EOA-I CSC and Ms. Wanjiru Kamau an Organic expert, under the theme: **Strengthening Resilience and Sustainability in Food Systems for Environmental and Social-Economic Development**. In total 600 delegates registered and attended the conference. Over the four days, delegates participated in pre-events, one-on-one breakfast/lunch/dinner side events, seven (7) conference plenary sessions, twenty-two (22) breakout sessions, and six (6) official side events. In addition, there were more than 15 exhibitors who displayed innovative products and technologies, educative posters, and field excursions organized to selected agroecology centers where delegates experienced hands-on with integrated agroecology interventions implemented by individuals and or institutions.

The response by international, regional, national, and local renowned speakers of agroecology gave the Eastern Africa conference an international outlook. Indeed, it was a knowledge-packed experience, thought leadership-focused learning, and solution-oriented conference. Presentations were anchored on best practices, evidence backed revelation that was aimed at eliciting discourse around fundamental issues affecting humans, animals, plants, and the planet in the context of sustainable agriculture and food systems. The conference also provided a platform for a wide spectrum of stakeholders to network and engage socially and intellectually.

The conference was structured with five plenary sessions for discussing the key thematic subjects, namely:

1. *Production, productivity, scaling up, and sustainability of farming systems based on environmentally friendly technologies and methodologies,*
2. *Best practices towards food security, nutrition, consumption, and health: Soil health and farmer-managed seed systems,*
3. *Women, and youth in agroecology,*
4. *Ecological organic trade, markets, and economy,*
5. *Institutional and policy drivers for agroecology transformations, and 6) Financing agroecological transformations.*





The Keynote speaker Dr. Hans Herren, President of Millennium Institute, Co-founder and President of Biovision Foundation, and Co-founder of Biovision Africa Trust set the pace of the conference by delivering a powerful presentation on: Pathways to food system transformation towards resilience and sustainability in Africa. He stressed that when handling the challenge of food system transformation to deliver sustainable production, consumption, and market in Africa there are four fundamental questions that leaders and stakeholders must strive to address: ***Why is a food system transformation needed? What are the options? Why is the implementation so slow? and what's needed to accelerate the transformation?***

The pathway to transformation is possible and there is strong validated evidence of success that agroecology can contribute towards achieving sustainable food systems not only in Africa but also in the world by delivering on the 17 Sustainable Development Goals (SDGs). However, this will have to take an intentional and deliberate collaborative approach that is multi-sectoral, multi-disciplinary, multi-stakeholder, and multi-level within an enabling environment that has coherent policies and legal frameworks. Doing business as usual is not an option he reiterated. He emphasized the need to measure the performance of agroecology and reminded delegates that tools have already been developed and are available for use to demonstrate the business case for agroecology. He further reminded the delegates that the tools and proposed interventions draw their basis from the FAO 10 elements of agroecology and the 13 principles of agroecology by the High-Level Panel of Experts. The five plenary and twenty-two breakout sessions further provided delegates with opportunities to expound on the thematic subject areas coupled with cases that demonstrated best practices in the subject areas.

The Communique captured the call to action and plans that emerged from the agroecology conference. Included in the Communique was the decision of the delegates and partners to hold a biennial Eastern Africa's agroecology conference to maintain the conversation, and momentum, measure progress on agreed-upon action plans, and progressively celebrate milestones.

The key highlights and recommendations from the conference were as follows:

Realities facing the world today:

1. **Population is rapidly increasing:** The increasing population demands food, fuel, fiber, and fodder.





2. **Agricultural sector is overburdened:** The agricultural sector plays a critical role in the food system supply chain unfortunately continues to face serious challenges key among them being climate change (extended periods of droughts), degraded soils, and global crises such as the recent effects of Covid 19 pandemic and Ukraine-Russia war that have shaken the global food supply chain.
3. **Productive land keeps decreasing:** The production and productivity of the already stretched land resources have consistently declined and getting worse unless the trend is reversed (the current generation should not treat land as an inheritance from their ancestors but instead use it as a resource borrowed from their children).
4. **The global food system needs to change:** Business as usual in the food system, particularly agriculture, is no longer an option. The global food system is not functioning effectively. The current systems are reductionist and degenerative in nature.
5. **Transition toward regenerative food systems is a necessity:** We need to reverse the trend and embrace incremental and regenerative food systems.
6. **Embrace agroecology for sustainability:** Agroecology offers solutions that not only will reverse the situation but most importantly will create a balance between social, political, economic, and environmental benefits resulting in sustainable food systems.
7. **Going beyond system semantics:** What is in a name – Is it Climate Smart Agriculture, Conservation Agriculture, Regenerative Agriculture, or Organic farming? Regardless of the name, agroecology must be seen as a process of decision-making and not as a tool or a silver bullet, or a set of interventions. Agroecology should be seen as a process that sets direction and guidance for transformative change guided by the FAO 10 elements of agroecology, the United Nations Food Systems Call to Action and the 13 principles of agroecology as elaborated by the High-Level Panel of Experts (HLPE).
8. **On Food Security and Nutrition of the Committee on World Food Security.**

Where do we have to get guidance?

1. **Sustainable Development Goals (SDGs)** – provides a global framework for promoting sustainability at the Global level and adapted to the local context.
2. **FAO** is already taking the lead in Scaling up the agroecology initiative: The initiative brings on board all the UN outfits and works with countries to build concerted action and cooperation from the grassroots level to the highest echelon of power: Anchored on the 10 elements of agroecology.





3. **AUC:** EOA Continental initiative, The AU has the EOA central steering committee on organic agriculture pushing the agenda for agroecology within its mandate.
4. **Countries:** they are already taking initiatives in the case of Uganda as shared by Hon. Fred Bwino- National organic agriculture policy, Kenya, Malawi, Tanzania, Mali, Bolivia, India, as shared during the presentation – push-pull technology, collaborative crop research program by McKnight Foundation, academic institutions with curriculum on agroecology among others
5. **Organizations** in their forms and sizes (NGOs, academia, research institutions, CSOs, and other development partners) are working with farmers in interventions across the globe.

Key Recommendations

1. **Is there evidence that Agroecology works?** Yes, but fragmented, needs consolidation and harmonization of what already exists. Successes, lessons, and opportunities including challenges need to be documented and shared. Scaling up will require this evidence for the transformation of the agricultural and food systems from degenerative to regenerative agriculture.
2. **Collaborative Research:** Research needs to be multi-dimensional, and multi-sector embracing diversity to provide evidence for decision-making and strengthen the co-creation of solutions. Farmers must be at the center of the co-creation process as key partners in development.
3. **Sustained Conversations and Engagements:** Conversations and engagements must be continuous stemming from the grassroots, country, regional, continental, and global levels to champion and advocate for the adoption of sustainable food systems.
4. **Resource Mobilization and Investment:** Intentional and deliberate allocation of budgets for agriculture and by extension dedicating and ring-fencing funds for agroecology for purposes of enhancing agroecology advisory and extension, research, capacity building, and knowledge sharing, ICT infrastructure development among others.
5. **Sustained Lobby and Advocacy at all Levels:** For supportive and coherent agroecology policies and legislation, demanding responsible governance and provision of institutional arrangements for coordination and implementation of policies, investment in agroecology, and markets for agroecological products.
6. **Agroecology Performance Evaluation:** Quantification of the contribution of agroecology to the economic, social, environmental, and political sectors using Tools like TAPE by FAO and the CAADP framework adoption of agroecology





indicators to build the business case for agroecology that will incentivize public and private sector actors including donor partners to invest in agroecology.

7. **Collaborative Partnerships:** All stakeholders drawn from the public and private sector and development partners should collaborate in a coordinated manner to optimize the gains already made for incremental success in agroecology campaigns and adoption.
8. **Youth and Women:** Appreciate, facilitate, and enable youth and women to participate in the agroecology agenda, leveraging on their numbers and roles and addressing their specific felt needs. The creation of gainful employment along the agroecology supply chain will provide opportunities for youth and women to drive the agroecology agenda. The contribution of women in the agroecology space cannot be over-emphasized.
9. **Areas for Further Research:** Investments to be set aside to provide more evidence in areas such as the efficacy of biopesticides and context-specific innovations and solutions.
10. **Strengthen Organic Markets including promotion of territorial markets:** Standards, Quality Assurance, Metrology Verification, Risk Assessment, Accreditation, Harmonization, Conflict Resolution Systems and Certification, and associated hard and software infrastructure should be put in place to facilitate trade in agroecological products.
11. **Transformation of Food Systems Requires a Holistic and Integrated Approach:** Leaving no one behind and avoiding treating some actors as being empty glasses. Everyone has a contribution to make no matter how small, it matters in the spirit of co-creation. This will deliver and reach objectives associated with political, economic, social, cultural, environmental, climate, and health aspirations when everybody is on board.
12. **Intentional Documentation of Cost-Benefit Analysis:** At all levels, this will encourage incremental investment in agroecology. This aims to provide proof of the concept that agroecology pays off.
13. **Customer Awareness:** Incorporate targeted consumer awareness to create demand for agroecological products. Customers' demand for agroecological products will push producers, processors, transporters, and all players along the food supply chain to create products that meet consumer's demands.
14. **Technical Capacity Enhancement:** Investment in capacity building of all to equip food supply chain actors with the requisite knowledge, skills, and competencies to engage profitably and consciously in agroecology is inevitable. This will involve training, education, coaching, and mentorship including incubation and commercialization of innovative agroecology ideas.





15. **Innovative Financing Models:** Financial institutions and impact financiers need a better understanding of agroecology principles to design suitable financial products and services for the same including appreciating the contribution of social enterprises in agroecology agenda, agroecology enterprise financing including SME financing.
16. **Digitalization:** Leveraging the opportunities offered by digital platforms to create widespread campaigns for agroecology. Social media platforms offer a sure guarantee to capture the attention of the youth. This will incorporate platforms such as blockchain trading.
17. **Exploitation of the Media:** Responsible use of the media with targeted messages for the masses backed with technical support will ensure agroecology messages are widely spread in a manner that will cause the target audience to take action.
18. **Role of Social Movements in AE Advocacy:** The more constructive voices, the louder the message. Agroecology-based social movements have a very important role to play in creating mass movements and revolutions towards the adoption of agroecology principles.





LIST OF ABBREVIATIONS AND ACRONYMS

AfCFTA	Africa's Continental Free Trade Area
AFSA	Alliance for Food Sovereignty in Africa
AR4D	Agricultural Research for Development
AUC	African Union Commission
AU	African Union
AU-EOAI	Africa Union (Heads of State Decision) on Ecological Organic Agriculture Initiative in Africa
BIBA	Biodiversity and Biosafety Association of Kenya
BvAT	Biovision Africa Trust
CAADP	Comprehensive Africa Agriculture Development Programme
EOA	Ecological Organic Agriculture
EOAM	East Africa Organic Agriculture Movement
FAO	Food and Agriculture Organization of the United Nations
GE	Genetic Engineering
GHGs	Greenhouse Gases
GIZ	Deutsche Gesellschaft Fur Internationale Zusammenarbeit (German Society for International Cooperation)
GMOs	Genetically Modified Organisms
HLPE	High-Level Panel of Experts
IAASTD	International Assessment of Agricultural Knowledge, Science and Technology for Development
IFOAM OI	International Federation of Organic Agriculture Movement – Organics International
IPES – Food	International Panel of Experts on Sustainable Food
KCOA	Knowledge Centre for Organic Agriculture in Africa
KOAN	Kenya Organic Agriculture Network
MoALD	Ministry of Agriculture and Livestock Development
NBS	Nature-Based Services
NCDs	Non-Communicable Diseases
PELUM	Participatory Ecological Land Use Management
PGS	Participatory Guarantee Systems
RECs	Regional Economic Communities
SDGs	Sustainable Development Goals
SIDA	Swedish International Development Agency
SSNC	Swedish Society for Nature Conservation





UN	United Nations
USD	United States of America Dollar
USDA	United States Department of Agriculture





1.1 BACKGROUND TO THE CONFERENCE

Global challenges, such as food insecurity, deteriorating health, biodiversity loss, disease and pest resistance which have been exacerbated by climate change continue to be felt with phenomenal consequences especially in Africa. In addition, shocks such as the recent COVID-19 have further negatively impacted key livelihood indices such as the Food Price Index which recorded a 26.8% rise in 2021 relative to 2019. The Russia-Ukraine war and its effects on export capacity, fuel, and fertilizer shortages, as well as landmine contamination, have ravaged agricultural systems and sent shockwaves through global markets. This is despite investments by governments, development partners, and multinational corporations in agriculture in pursuit of industrial optimization and economic short-term gains. World hunger has been on the rise since 2015 and the Food and Agriculture Organization (FAO) reports that the number of food-insecure people rose by 318 million in 2020, 86 million of whom live in Sub-Saharan Africa, the region with the highest prevalence of food insecurity with a staggering 66% of the population being affected.

The Cost of Hunger in Africa (COHA) study, an African Union Commission Initiative, has demonstrated a direct link between poor nutrition and economic development, estimating that countries lose between 2 and 16% of their annual Gross Domestic Product (GDP) because of childhood stunting. Additionally, malnutrition is linked to poverty, low levels of education and poor access to health, including reproductive health services and family planning. For Africa, these challenges threaten the realization of the African Union (AU)'s Agenda 2063 'The Africa We Want'. The AU has thus renewed commitment to actions aimed at strengthening resilience in food and nutrition security on the African continent and to strengthening agri-food systems. As such, the African Heads of State and Government have declared 2022 the Year of Nutrition for Africa. This is in the context of strengthening Resilience in Nutrition and Food Security on the African Continent with the theme: Strengthening Agro-Food Systems, Health, and Social Protection Systems for the Acceleration of Human, Social and Economic Capital Development. This builds on the outcomes of the Year of Action on Nutrition 2021, and the Nutrition for Growth and UN Food Systems Summit, to motivate the global community to step up and match this action.

To develop trust in agroecology as a basis for transitioning food systems, evidence should be assembled and shared. Based on evidence of successful interventions in the field and in trade around the world, the Eastern Africa Agroecology Conference organizers believe that agroecology and ecological organic production systems hold the future for the region's food systems. The health effects of pesticide misuse have become one of the major public health





problems worldwide. In developing countries, frequent exposure to pesticides by farmers and farm workers is a serious concern. This results in both short-term (acute) and long-term (chronic) illnesses. The misuse has been documented most recently in a study by Route to Food Initiative indicating results of pesticide misuse in Murang'a and Kirinyaga counties in Kenya. A major transformation of food systems is needed to achieve food and nutrition security globally in the context of a changing climate. Climate change is now extensively recognized as a phenomenon that has severe negative impacts on livelihoods and food systems worldwide and especially in Sub-Saharan Africa (SSA) (Strohmaier et al., 2016). This has further been highlighted by the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C and the Special Report on Climate Change and Land (IPCC, 2018; IPCC, 2019). The challenges with low soil fertility, erosion, contamination and diminishing agricultural land require long-term and sustainable approaches to resolving. Such approaches include the Ecological Organic Agriculture (EOA)/ agroecological approaches.

There is therefore consensus that the global food system is not delivering good nutrition for all and is causing environmental degradation and loss of biodiversity, such that a profound transformation is needed to meet the challenges of persistent malnutrition and rural poverty, aggravated by the growing consequences of climate change. Agroecological approaches have gained prominence in scientific, agricultural, and political discourse in recent years, suggesting pathways to transform agricultural and food systems that address these issues. Therefore, there is a need to come up with bold actions and pathways that are incremental to transition to more sustainable food systems. As a set of agricultural practices, agroecology seeks ways to improve agricultural systems by harnessing natural processes, creating beneficial biological interactions and synergies amongst the components of agroecosystems, minimizing synthetic and toxic external inputs, and using ecological processes and ecosystem services for the development and implementation of agricultural practices (Wezel, A., Barbara Gemmill, B.H., Bezner, R. K., Barrios, E., Rodrigues, A.L.R.G. & Sinclair, F. 2020).





1.2 CONFERENCE SUMMARY

Biovision Africa Trust jointly with the AU Ecological Organic Agriculture Initiative partners, and Kenya's Ministry of Agriculture and Livestock Development organized the 1st hybrid Eastern Africa Agroecology Conference: Transforming Food Systems for Responsible Production, Consumption themed "**Strengthening Resilience and Sustainability in Food Systems for Environmental and Social-Economic Development**" whose purpose was to invoke consciousness and motivate regional and continental communities to dialogue how to invest in interventions which can ameliorate the negative impacts of the current unsustainable food systems by transitioning towards more environmentally friendly solutions with long-term vision and planning. The conference was held in Nairobi, Kenya at the Safari Park Hotel and Casino from the 21st – 24th of March 2023.

The objectives of the conference were to:

1. Coming after the 1st International Conference on Agroecology: Transforming Agriculture and Food Systems in Africa with Theme: Reducing Synthetic Fertilizers and Pesticides by Scaling up Agroecology and Promoting Ecological Organic Trade held June 2019, Nairobi organized by BvAT, IFOAM Organics International and World Food Preservation Center® LLC., the conference offered an opportunity to share lessons learned and actions taken so far.
2. To share national and regional food systems transformation paths in support of the 2030 Agenda for Sustainable Development (2030 Agenda).
3. To provide a platform for key proponents of Agroecology at which discussions and inspirations for the dynamic transition towards agroecology-based food systems in terms of production, consumption, and markets can be held by diverse actors.
4. To provide opportunity for decision-makers, private and public players to show how food systems can contribute to safe, equitable, resilient, and culturally diverse systems in terms of production, distribution, processing, consumption, farmer organization and markets and demystify the minimalist approach to agroecology.
5. To build a solid role for women and youth in the production of nutritious food by recognizing and engaging them as active partners in sustainable food systems.

The four (4) day conference brought together stakeholders from Farmers and Farmer Organizations, Researchers, Extensionists and Practitioners, Civil Society and NGOs, Traders and Private Companies in the Organic Industry, Consumer Associations, Strategic Partners and Donor Agencies, Policy Makers, Academia, and the Media who engaged in dialogue on sustainable agriculture and food systems. The event attracted more than 20 exhibitors who showcased their technologies and innovations to an audience of over 600 participants (in-person and online) creating a network for business and exchange of ideas. The conference was





organized around six thematic areas (5 plenary sessions, 22 breakout sessions, more than 20 exhibitors, 6 side events, 3 field excursions) that attracted 10 Keynote speakers and more than 50 presenters from across the world.

The thematic areas were:

Sub-theme 1: *Production, productivity, scaling up and sustainability of farming systems based on environmentally friendly technologies and methodologies.*

It is increasingly recognized that food systems in Eastern Africa, as well as Africa in general, are not sustainable in their status; they contribute to carbon emissions and continue to contribute to the loss of biodiversity. Agroecological systems depend on integrated practices and technologies such as crop rotation, cover crops, water harvesting and conservation, and farmer managed seed systems. Broadly agroecology promotes food systems that conserve the environment, soil health and lead to sustainable agricultural efficiency. The agricultural sector is a key economic and social driver of the development goals of most countries and Sustainable Development Goals (SDGs) including direct contribution to the National Gross Domestic Product (GDP), country exports and employment. In Eastern Africa, despite the key role agriculture plays in development, it faces a myriad of challenges including smallholder farmers' inability to control pests and diseases, high cost of inputs as well as aging farmers. This thematic area invited presentations that demonstrated how successful agroecological cases address issues of food systems and how such cases can be promoted and scaled out to reach a significant number of producers and consumers.

Sub-theme 2: *Best practices towards food security, nutrition, consumption, and health: Soil health and farmer managed seed systems*

Best practices in addressing food and nutrition insecurity including policy, systems and environmental change strategies required by diverse stakeholders to implement are urgently needed now more than ever to avert large-scale future shortages. Beyond adequate production to ensure calorie intake, proper nutrition ensures micronutrient availability and healthy diets. Unhealthy diets and lifestyles are closely linked to various non-communicable diseases associated with increased risk of chronic diseases, such as obesity, diabetes, and heart disease, as well as higher health care costs, decreased academic achievement, lower productivity, and widening health disparities. Food and nutrition insecurity came to the forefront of dialogue issues following the COVID-19 pandemic globally. The African Union recently announced the goal of ending hunger and increasing healthy eating by 2025 and declared 2021 the Year of Nutrition so that fewer Africans experience diet-related diseases. This sub-theme invited presentations and opportunities for sessions to discuss best practices





in how to address food and nutrition insecurity to promote optimal health, reduce risk of chronic disease, and eliminate health inequities and disparities.

Sub-theme 3: *Women and Youth in agroecology*

Rural women are the backbone of agriculture and food security in most developing countries. Comprising 43% of the global agricultural labour force, women play a crucial part in all levels of global food production. Consequently, women being left out of agricultural advancement not only prevents them from progressing and achieving their goals, but also this affects their communities and especially in household food security. FAO estimates that if women were to have the same access to resources as men, agricultural yields could increase by as much as 20 – 30%, with the potential to reduce food insecurity for an astounding 100 - 150 million people globally. Presentations sought to prove the contribution of women, their traditional knowledge, consumption patterns and household food security in agroecology and safe and healthy livelihoods. On the other hand, advancement in ICT provides opportunities for the Agroecology sector to contribute to stable and resilient food systems by addressing the information gap. With around 50% of the world's population being youth and more so in the developing countries, the future of the world depends much on what they choose to do in food production. Digital technologies are providing solutions and innovation that is imperative for inclusion of young people. Presentations at the conference demonstrated how the youth are or can unlock the potential of sustainable food systems by innovations geared towards reducing poverty, bridging the rural divide, creating employment, and giving access to information, technology, and market opportunities.

Sub-theme 4: *Ecological organic trade, markets, and economy*

Organic trade is rapidly growing globally. This demonstrates that organic products are moving from the "niche" space to mainstream markets. The total land under certified organic production worldwide has reached over 72.3 million ha and with Africa having about 2.7 million ha (FiBL and IFOAM Organics International, 2022). However, statistics on organic agriculture in Africa in general are extremely limited, illustrating the still relatively nascent status of the sector, despite its potential and a long tradition of the organic movement across the continent. Presentations on this thematic area covered subjects such as regulatory, business, and consumer environments; standards, certification, and accreditation; stimulants and barriers to organic trade amongst others.

Sub-theme 5: *Institutional and policy drivers for agroecology transformations*

Globally, there is an increasing shift to overhaul and integrate policies affecting food by bringing together different actors to build common long-term goals and strategies around





food policies. A key requirement is to review policies with negative consequences for adoption of agroecological practices and those that produce positive effects and stimulate adoption and scale up. Areas such as farmer managed seed systems, organic product identification and marketing, financing and investment environments, and research into organic systems require policy and institutional grounding.

These policies must be based on reliable, timely and locally relevant data and evidence on the multidimensional performance of agroecology. Presentations on this theme demonstrated strategies of bringing together political decision-makers, and other actors involved in the development of policies, strategies and programmes related to food systems and how they contribute to national development goals and SDG goals including food and nutrition security and a healthy environment.

Sub-theme 6: *Financing agroecological transformations*

Agro-ecological transformations require changes in what is produced and how it is produced, processed, transported, and consumed. Since food systems need to be transformed, the current financial architecture also needs to be re-designed and prepared to support such an agroecological transformation. Such changes not only require significant financial resources but also need to compete with conventional agriculture requirements. Presentations under this sub-theme provided options for consideration on the different funding models that contribute towards promoting a switch to agroecological systems. This included Farmer Managed Seed Systems (FMSS), SMEs funding, agroecology enterprise funding models that promote agroecological value chains, public-private and other types of partnerships, inclusive financial services and products, financial technology solutions, and resource mobilization tools and strategies that facilitate redesigning of agroecosystems and trigger food systems change.





1.3 CONFERENCE COMMUNIQUE/CALL TO ACTION

Communique of the 1st Eastern Africa Agroecology Conference: Transforming Food Systems for Responsible Production, Consumption and Social Wellbeing Held from 21st - 24th March 2023 at the Safari Park Hotel and Casino Nairobi – Kenya

Preamble

Biovision Africa Trust jointly with the African Union Ecological Organic Agriculture Initiative and Agroecology partners organized the 1st Eastern Africa Agroecology Conference under the Theme: **Transforming Food Systems for Responsible Production, Consumption and Social wellbeing**. The main goal was to provide a platform to facilitate a conversation on how to transform and establish more truly sustainable food systems in Eastern Africa by invoking dialogue on how to invest in interventions that can ameliorate the negative impacts of the current unsustainable food systems. The goal will be achieved by transitioning towards more environmentally friendly solutions with long-term vision and planning. The conference anchored its discussions on six thematic pillars: 1. Production, productivity, scaling up, and sustainability of farming systems based on environmentally friendly technologies and methodologies, 2. Best practices towards food security, nutrition, consumption, and health: Soil health and farmer-managed seed systems, 3. Women and youth in agroecology, 4. Ecological organic trade, markets, and economy, 5. Institutional and policy drivers for agroecology transformations, and 6. Financing Agro ecological transformations.

In his opening remarks, Dr. David Amudavi, BvAT Executive Director on behalf of the Conference Organizing Committee **WELCOMED** the delegates to the conference and **APPRECIATED** them for honoring the invitations for participation and having come in great numbers. He noted that this was an indication of the importance the conference subject generated not only for Eastern Africa but also for the Continent and the World at large. Dr. Amudavi **ACKNOWLEDGED** and **RECOGNIZED** the support from the Delegates, Speakers, Event Organizers, Donors, Partners, and Exhibitors for giving the regional conference an international outlook and noting that the success of the conference depended on them.

Further, Dr. Amudavi **INFORMED** the delegates that the Conference was building on the success registered after the 1st International Agroecology Conference held in June 2019 at the same venue under the Theme: Transforming Agriculture and Food Systems in Africa, Reducing synthetic fertilizers and pesticides by scaling agroecology and promoting Ecological Organic Trade, and the United Nations Food Systems Summit (UNFSS) held in 2021, to share national and regional food systems transformation paths in support of the 2030 Agenda for Sustainable





Development (2030 Agenda). He EMPHASIZED the need to sustain the conversation on agroecology and its proven contribution towards sustainable agriculture and food systems.

On behalf of the conference, he APPLAUDED the tremendous efforts currently happening on agroecology at the global, continental, regional, county and grassroots levels from research and development, adoption of innovations and technologies, trading in agroecology products, development of policy and regulatory frameworks, education and training including advisory on agroecology to consumption of agroecology products.

Statement by Dr, Sarah Osiya on behalf of the Director of Agriculture and Rural Development AUC (Dr. Godfrey Bahigwa)

In the speech read on behalf of the Director of Agriculture and Rural Development AUC, The Director REAFFIRMED the AUC's commitment to the implementation of The AU Heads of States and Governments' Decision on Ecological Organic Agriculture of 2011. He INFORMED the delegates that this commitment is reflected in the CAADP framework that has adopted ecological agriculture indicators for inclusion and tracking. The indicators measure the extent to which organic agriculture policies are being integrated into Member States' development agenda. He POINTED OUT that one of the indicators relevant to agroecology and that has elicited interest in the conference is the recognition of farmers-managed seed systems indicators.

Chief Guest Minister of State Agriculture Uganda Hon. Fred Bwino Kyakulaga

In his address, he HIGHLIGHTED the challenge the world is facing in feeding a fast-growing global population that has been worsened by climate change and associated exigencies including degradation of soils and biodiversity loss. He STRESSED the need for a sector-wide approach that offers pragmatic solutions that will allow for sustainable supply of food, feed, and fiber for the people. He APPRECIATED the fact that this conference affords the stakeholders an opportunity to share best practices, research, and proven scientific knowledge. He POINTED OUT Uganda's lead in embracing agroecology through the adoption of the *National Organic Agriculture Policy* aimed at harnessing the potential of organic agriculture and enhancing investment in the entire organic agricultural value chain for enhanced livelihoods and environmental sustainability. By extension, the government has enacted the Organic Agricultural Law to operationalize the policy.

Following the presentations, discussions and recommendations at the Conference attended by more than 500 participants from 20 countries largely from Eastern Africa, West Africa, Southeast Asia, Europe, USA and other parts of the world, a Call to Action was made as presented below:





At the Global level:

1. The conference CALLS UPON the United Nations and all its allied Agencies to:
 - a) Sustain and enhance the campaign for continued adoption and implementation of the Sustainable Development Goals (SDGs) which are due in less than 8 years from now. The SDGs form a sound basis for healthy and sustainable food systems.
 - b) Mobilize, target resources and coordinate investments in interventions that promote adoption and scaling out of agroecological principles and practices as core to its strategic pillars for funding and these include collaborative research and development, convening global dialogues on agroecology (knowledge sharing and learning), supporting countries to promote food systems based on agroecology, and dedicating special support towards youth and women in the agroecology supply chain.
 - c) Coordinate serious dialogues on agroecology at various levels from local to global that allow for global support.
 - d) Develop and promote the application of tools for measuring the performance of agroecology-based food systems to provide evidence for decision-making and enhance accountability.
 - e) Sustain agroecology advocacy at the global level by anchoring the FAO's ten (10) elements of agroecology and the High-Level Panel of Experts (HLPE) thirteen (13) principles of agroecology in food systems.

At the Continental Level:

2. The Conference CALLS UPON all African Governments through the African Union to:
 - a) Empower and invest in its established Ecological Organic Agriculture Initiative to sustain its development in Africa.
 - b) Promote coherent and coordinated Mutual Accountability by Member States in aligning with respective commitments and declarations including the Agenda 2063, CAADP framework on Malabo Commitments, United Nations Sustainable Development Goals (SDGs), in addition to the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD) and to implement the AU Heads of States and Governments' Decision on Ecological Organic Agriculture of 2011 as well as the African Common Position on UNFSS outcomes
 - c) Mobilize resources and coordinate investment in pushing for the implementation of interventions and programmes drawing on research and development, convening dialogues from local to continental on agroecology for knowledge sharing and learning, supporting countries and regional blocks targeting agroecology, dedicating special support towards youth and women engaged in the agroecology supply chains.
 - d) Develop, mainstream, and promote additional indicators for measuring the performance of EOA/ agroecology within the CAADP framework to provide evidence for decision making and accountability.





- e) Review National Agricultural Investment Plans (NAIPs) and Regional Agricultural Investment Plans (RAIPs) to integrate into Ecological Organic Agriculture/ Agroecology.
- f) Sustain agroecology advocacy at the continental level by anchoring key messages on The AU's Decision on Ecological Organic Agriculture of 2011.
- g) Enhance co-creation and top-bottom exchange on key issues of agroecology related to responsible production, consumption, and social wellbeing.
- h) Promote and strengthen trade in agroecological products within the opportunity provided by the biggest market in Africa, the AfCFTA, and beyond while promoting mutual recognition of agroecology standards.

At the Eastern Africa Regional Level:

- 3. The Conference CALLS UPON all Governments within the East Africa Community (EAC) to:
 - a) Embrace and institutionalize agency for coordinating the Ecological Organic Agriculture and Agroecology currently hosted by Pelum Kenya.
 - b) Comply with their commitments and in a coherent and coordinated manner align respective policies to the declarations and agreements including East Africa Community Trade Protocols and CAADP framework.
 - c) Sustain dialogue on agroecology at the EAC level.
 - d) Support the development, review, and implementation of existing East Africa Standards for agroecological products.
 - e) Facilitate trade within the region of agroecological products.
 - f) Mobilize resources and coordinate investment in joint agroecology interventions such as collaborative regional research and development, quality assurance and standards, knowledge sharing and learning.
 - g) Develop, review, and implement regional policies and regulations on agroecology.
 - h) Develop and promote the application of tools for measuring the performance of agroecology within the EAC frameworks to provide evidence for decision making.

At the Country Level:

- 4. The Conference CALLS UPON Governments to:
 - a) Comply with their commitments and in a coherent and coordinated manner align respective policies to the declarations and agreements including the global, continental, and regional commitments.
 - b) Allocate budgets to Agroecology programmes and projects including special programmes that targets the youth and women (awareness creation, capacity building, advisory and extension, knowledge sharing and learning).
 - c) Develop, review, and implement coherent policies supported with institutional frameworks for the promotion of adoption of agroecology principles and practices.





- d) Develop and promote the application of tools for measuring the performance of agroecology within the country.
- e) Coordinate stakeholders in the agroecology space to harness synergies and to call for efficient utilization of available resources.
- f) Facilitate the implementation of adoption of standards for agroecology products and by extension facilitate trade in agroecological products.
- g) Support the convening of national dialogues on agroecology responsible production, consumption, and social wellbeing.
- h) Coordinate collaborative research on agroecology particularly in areas that have been identified in this conference: Biopesticides efficacy, Farmer-Research Centered models, and agroecology business models/business cases.
- i) Coordinate the review of curriculum to incorporate agroecology from the elementary school to tertiary levels.
- j) Create an enabling environment for agroecology.

Call to Financial and Lending Institutions:

We call upon development partners, financial institutions, and donors globally to review mechanisms and areas of priorities oriented towards supporting long term sustainable and resilient food systems.

Call to Each one of Us:

- a) Promote the adoption and scaling out of agroecological practices.
- b) Invest at the individual level in agroecological practices.
- c) Promote the production, processing and consumption including advocacy for agroecological products.

All other Stakeholders:

The Conference **URGES** all other Stakeholders to:

- a) Support development of sustainable and resilient food systems at various levels based on agroecology interventions, programmes, and policies.
- b) Support the implementation of the call to action of the 1st Eastern Africa Agroecology Conference.
- c) Commit to hosting biannual Eastern Africa Conference on Agroecology





1.4 HIGHLIGHTS FROM OFFICIAL OPENING CEREMONY

Keynote Speakers

Keynote Speech 1: Pathways to Food Systems Transformation towards Resilience and Sustainability in Africa: Dr. Hans R. Herren, President and CEO, Millennium Institute, Co-Founder and President Biovision Foundation, Recipient of the World Food Prize, Recipient of the Alternative Nobel Prize, Washington, DC.

Keynote Speech 2: Policy Developments towards Mainstreaming Ecological Organic Agriculture into CAADP and their Implications: Dr. Godfrey Bahigwa, Director, Department of Agriculture, Rural Development, Blue Economy, and Sustainable Environment (DARBE), African Union Commission (AUC)

Welcome Remarks from the Biovision Africa Trust (BvAT) Executive Director and Chair of the Conference Organizing Committee, Dr. David Amudavi

Dr. David Amudavi, the Chair of the Conference Organizing Committee (COC), welcomed all to the 1st Eastern Africa agroecology conference and urged the delegates to use the opportunity to discuss, dialogue, talk and envision agroecology and organic agriculture. He stated that the conference was the golden hope for a conversation on how to transform how the region produces, processes, and consumes its food adding that the conference also offers stakeholders an opportunity to network and establish potential collaborative partnerships on agroecology beyond the event that will explore the possibilities of strengthening agroecology agenda at all levels. Further, through presentations, he informed delegates that the conference was a platform to share on the latest research on successful examples and initiatives that demonstrate agroecology works to amplify the evidence on agroecology that would inform the call to action. The inaugural Eastern Africa conference has drawn the interest of more than 20 exhibitors and has attracted the attendance of more than 500 delegates composed of in-person and online audience. Dr. Amudavi ended by introducing to the delegates the team that worked with him in the COC to make the conference a success as follows: Ms. Venancia Wambua (BvAT), Dr. Martin Oulu (ISFAA), Mr. Alex Mutungi (BvAT), Dr. Sarah Olemba (AU led EOA CSC representative), Ms. Wanjiru Kamau (EOA Advocacy Consultant), Mr. Mathew Muendo (PELUM Kenya), Ms. Grace Mugo (MoALD), Mr. Jaika Oberi (ISFAA), Mr.Eustace Gacanja (KOAN) and Ms. Ann Maina (BIBA).

Dr. Sarah Osia, Representing Director of Agriculture and Rural Development AUC

The world is currently facing a triple global crisis: Covid, Russia - Ukraine conflict and climate change which has caused extended periods of drought in the horn of Africa. All these factors have challenged the food systems in Africa and in fact exacerbated the already existing challenge of food and nutrition insecurity. To address this, there is need for multisector





dialogues and contributions that build on complementarity and synergies needed. The African Union calls upon all member states to be engaged including development partners, media, NGOs, and private sector. The AU established the EOA initiative in 2022 with an MoU to have its secretariat hosted by BvAT. It functions through an AU continental steering committee which meets twice a year to steer organic agriculture discourse. CAADP adopted ecological agriculture indicators for inclusion and tracking and is currently preparing for its 4th biannual review cycle. The indicators measure the extent to which policies are being integrated into member state development agenda. It recognizes farmers' own seeds, biodiversity, carbon-neutral approaches and interventions and environmental protection. Agroecology is embedded in all the efforts of EOA. The EOA promotes access to safe and hygienic food, reduction of food loss, pushing for supportive policies, support towards youth, harnessing the potential of the youth in the sustainable food system agenda, appreciating the immense contribution of women, addressing issues around soil degradation, sharing of knowledge and experiences among others. She thanked BvAT for hosting the EOA Initiative secretariat.

Keynote Speech 1: Dr. Hans R. Herren, President and CEO, Millennium Institute, Co-Founder and President Biovision Foundation and Biovision Africa Trust, Recipient of the World Food Prize, Recipient of the Alternative Nobel Prize, Washington, DC.: Pathways to Food Systems Transformation Towards Resilience and Sustainability in Africa

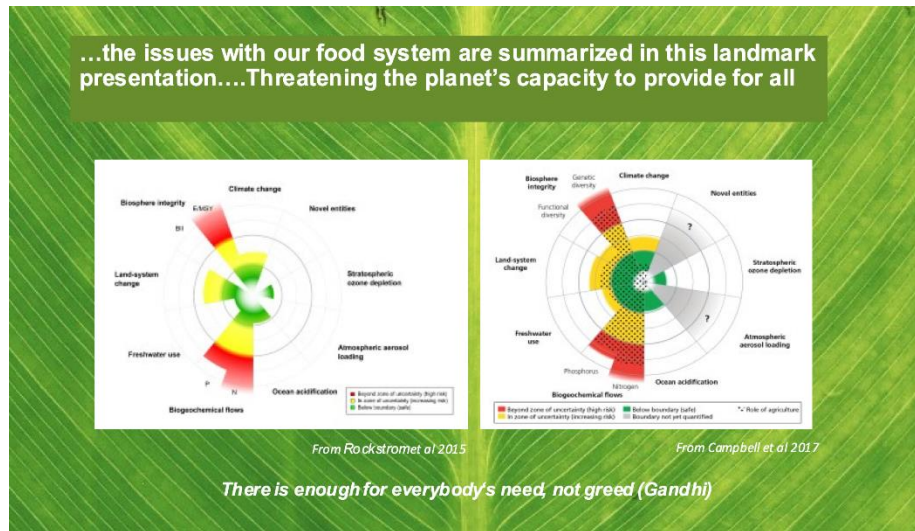
In his presentation, Dr. Hans posed the following questions: Why is a food system transformation needed? What are the options? Why is the implementation so slow? and what's needed to accelerate the transformation?

In his speech, he stated that there is a broad recognition that the global food system is not functioning effectively. While global production is almost double the food world's needs, there is a waste of over 1/3 of the same and still there is a demand to produce biofuels. Current agricultural and food systems face major environmental, climate and health challenges, while responding to the challenges of food security and nutrition. These food systems are increasingly impacted by climate change. They are also at the same time contributors to a third of global greenhouse gas (GHG) emissions. Some of these systems are also contributors to the erosion of biodiversity, environmental pollution, land degradation, and the scarcity of water resources.





The figure below summarizes the issues with the current food systems that are threatening the planet's capacity to provide for all:



“There is enough for everybody's need, not greed (Gandhi)”

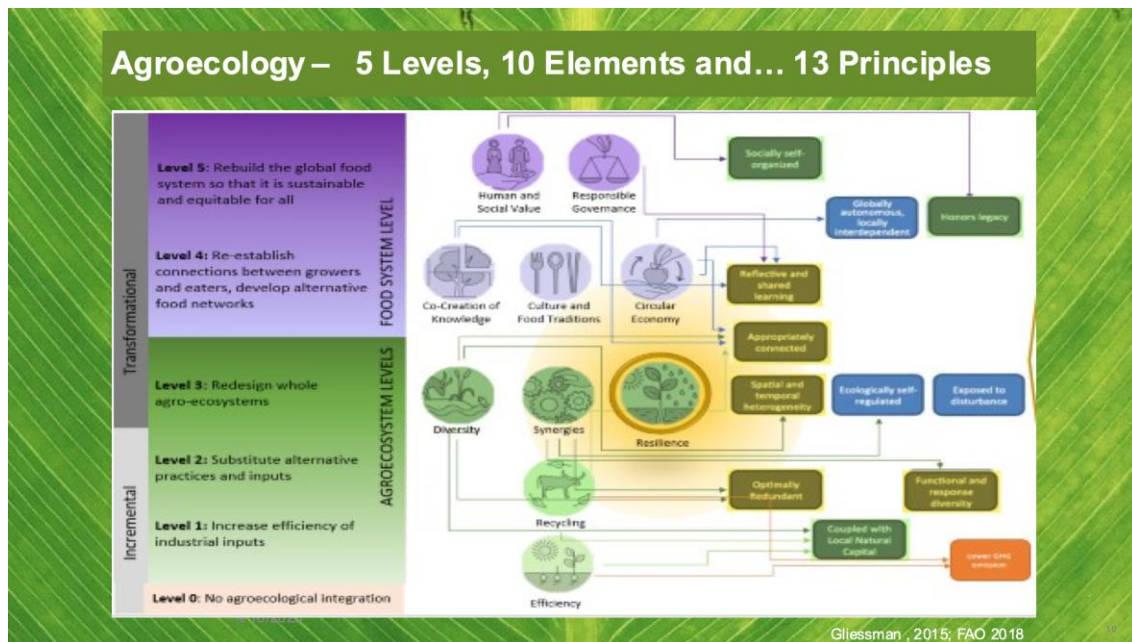
In order to solve the present food system's problems, there is a need to understand how the world got where it is today (the driver has been cheap food and profit above all). To reverse the current situation of reductionism, the food system calls for a transformational attitude that will transition to a regenerative food system. It cannot be business as usual, and all this is well articulated in the *International Assessment of Agricultural Knowledge, Science and Technology for Development of 2019* accessible at www.globalagriculture.org. A transformation is needed from traditional, conventional, and industrial agriculture to Agroecology. Agroecology, including regenerative agriculture that respects the 13 principles of agroecology defined by the High-Level Panel of Experts (HLPE), can be a powerful lever for solving these major challenges and providing sustainable solutions to the issues of food security and nutrition, the fight against poverty and social inequalities, the adaptation to climate change, the preservation of biodiversity and natural resources, and the fight against zoonotic diseases. And all this transformation of agricultural and food systems should be compatible with the Sustainable Development Goals (SDGs), the Paris Climate Agreement, the post-2020 objectives of the Convention on Biological Diversity (CBD) and those of the United Nations Convention to Combat Desertification (UNCCD). The agroecology principles apply to all forms of sustainable agriculture and food production, including crops, livestock and pastoral systems, agroforestry, fisheries, and aquaculture. The application of these principles will also contribute





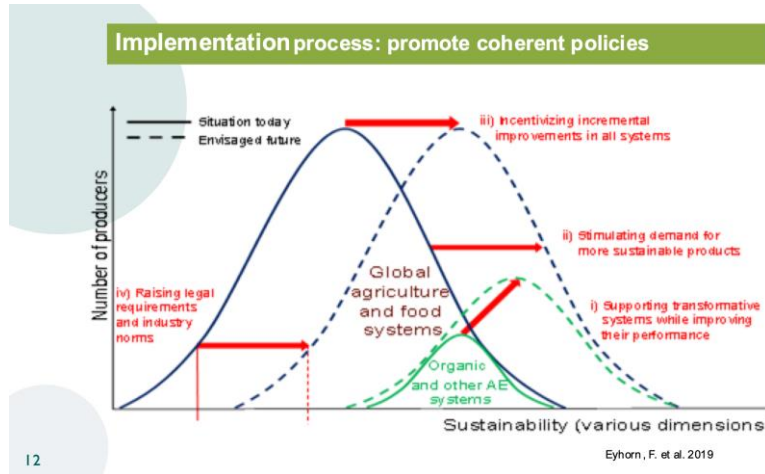
to improving gender equality, making agriculture more attractive for youth, creating dignified income, and living conditions, and contributing to healthy diets through sustainable food systems.

The figure below summarizes well the interactions and the close connectedness of elements of resilience (13 principles from Cabell and Oelofse (2012) as used in SHARP (squares), and the characteristics of Agroecology as described by FAO's 10 elements, all contributing to resilience (circles). On the left, y-axis, Gliessmann describes the levels of food system transformations according to these 5 levels.



To achieve the above desired food systems transformation there is need to have supportive policies and regulatory frameworks that are coherent as described in the figure below.

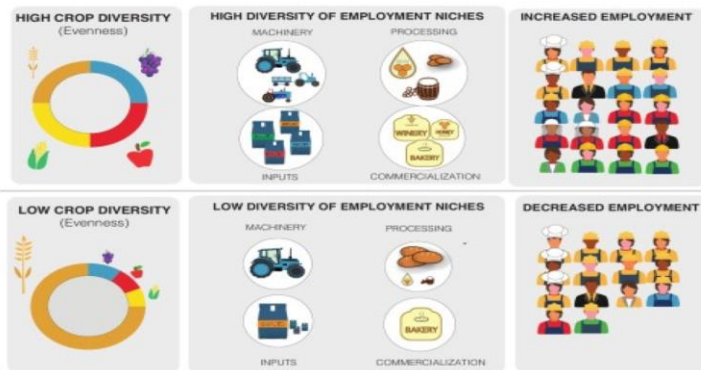




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With such coherence the figure below summarizes the multiple benefits from farm to society to environment that can be accrued through agroecology

Agroecology generates a multitude of benefits, on farm and society at large.....



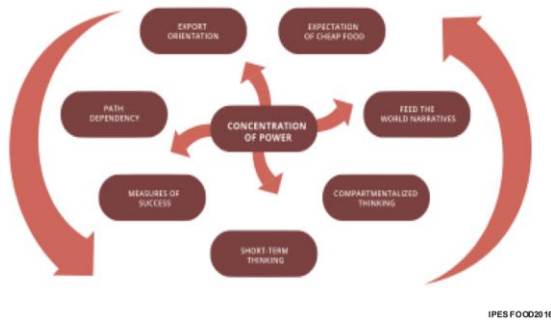
L. Garibaldi, N. Pérez-Méndez, 2019

With the clear pathway to transformation, what stands on the way? The figure below gives some of the key drivers that are standing in the way of transformation.





What / who stands in the transformation's way?



What needs to be done urgently?

- Promote co-creation by deliberately and intentionally strengthening knowledge and evidence base for AE.
- Promote the application of novel AE-compatible technologies.
- Invoke change from the consumer demand side and this must be a movement by all countries.
- Promote collaboration and partnership across discipline/sector/scale and inclusion of different forms of knowledge.
- Strengthen and develop new marketing structures and value chains for agroecological products.
- Access to new and alternative funding sources (e.g., payments for ecosystem services, true cost accounting, and reassignment of subsidies)
- Promote inclusiveness and fairness / prosperity for ALL.
- Apply the 13 AE principles from CFS-HLPE
- Target research and development that strengthens AE application.

Chief Guest: Hon. Fred Bwino Kyakulaga, Minister of State for Agriculture, Uganda: Official Opening of 1st Eastern Africa Conference on Agroecology

In his speech, he thanked BvAT for extending an invitation to the Ugandan government to participate in such an important event. He also thanked the government of Kenya for hosting stakeholders from across the globe. He reiterated that the world is facing the big challenge of feeding a fast-growing global population and the situation has been worsened by climate change and associated exigencies such as degraded soils and biodiversity loss. As such,





reversing the current situation demands a sector-wide approach that brings all stakeholders on board. There is a need for pragmatic solutions that will allow for a sustainable supply of food, feed, fuel and fiber for all people and animals. The conference provided that opportunity to share best practices, research, and proven scientific knowledge to push for potential solutions such as agroecology.

The conference brought together multidisciplinary knowledge and skills through the carefully selected speakers, exhibitors, and delegates. Other challenges facing the world food system include post-harvest losses and malnutrition among others and farmers are the most vulnerable to climate change. Agroecology offers an integrated and holistic approach to achieving sustainable systems related to food production. This will call for the building of functional partnerships and networking within enabling environments by all countries. He recognized that agriculture and Agri-industrialization is still pivotal in the transformation of Africa. He shared that the Ugandan government was committed to improving the livelihoods of its citizens by transforming the agricultural sector to deliver food security and increased incomes for the household. In East Africa production is by default organic, especially in Uganda due to the minimal use of inorganic fertilizers as such that there is already bias towards agroecology. Uganda recognizes the AE contribution towards achieving its vision 2040 and achievement of SDGs (1, 2,3,4, 5, 8,11, 12, 13 and 15). The following list enumerates some of the AE support the Ugandan government has put in place.

- National organic agriculture policy aimed at harnessing the potential of organic agriculture. The government is currently enacting organic agriculture law to operationalize the policy and the process is progressing well.
- Investment in the entire organic Agri-value chain for enhanced livelihoods and environmental sustainability.
- In 2018, Uganda had 211,584 certified organic farmers who increased to 404,226 in 2021. The area under organic farming increased from 264,480 ha in 2018 to 505,308ha in 2021.
- The value of organic export increased from USD 50 million in 2015/2016 to USD 159.8 million in 2021.
- The organic market share has grown from 8% in 2018 to an estimated 12% in 2023.
- There has been registered growth in the organic subsector and agroecology sector in Uganda.
- The Ministry of Agriculture and Fisheries is collaborating with a multi-sectoral AE platform hosted by PELUM and they are implementing the agriculture organic policy.
- Through the AE conferences, the Ugandan government is supporting stakeholders to develop a National AE strategy.
- Promotion of AE to achieve a sustainable food system.
- The Government through the Ministry joined the coalition formed by the UN in 2021 in AE.





- Uganda hosts the Centre of Excellence in Agroecology and food system funded by the World Bank.
- The Ugandan government sponsors agroecology experts in pursuing their PhD and research in sustainable food system transformation.
- Integrated the AE in the updated nationally determined contribution submitted to the UNFCCC ahead of the previous COP 27 about resilience and mitigation in agriculture, forestry, and land use sector.
- Implementing the AU Agroecology initiative mainstreaming in agricultural policies and strategies.
- Co-hosting of the knowledge hub for Africa in the organic agriculture program.
- Including the private sector in the implementation of policies and strategies.
- Other activities include the convening of 3 national agroecology conferences aimed at creating awareness and adoption of AE, sharing experiences and strategies that allow scaling up of AE.

He concluded by emphasizing the need to strengthen AE by focusing on science, technology, innovation development, reduction of post-harvest losses, promotion of Agri-value addition, strengthening markets and trade of agroecological products, trade, and provision of affordable agriculture financing for AE. He further, thanked the COC, partners, the government of Kenya, and other governments that were present at the conference, the conference funders, and all the delegates and wished all resounding success in the conference. He declared the 1st Eastern Africa Agroecology Conference officially opened.





1.5 SUMMARY OF PLENARY PROCEEDINGS

1.5.1 Plenary Session One: **Scaling Up Agroecology Initiatives**

Keynote Speakers:

Keynote Speech: Dr. Emma Siliprandi, Agricultural Officer-Plant Production and Protection Division (NSP), FAO: **Scaling up Agroecology Initiatives: Lessons learnt, successes, aspirations, and opportunities:**

Presentation: Dr. Sara Namirembe - McKnight Collaborative Crop Research Program (CCRP) and Richard Coe, CCRP and CIFOR-ICRAF – East and Southern Africa (ESAF) Regio: **Can farmer-centered research drive food systems transformation?**

Panelists: Dr. Emma Siliprandi-FAO, Dr. Sara Namirembe Mc Night Foundation, Mr. Dismas Mwikila - East Africa Community

Session Moderator: Dr. David Amudavi

Session Key take aways.

1. There exists agroecological elements and principles that provide guidelines for sustainable agricultural and food systems.
2. The United Nations and its associated agencies are taking the lead by coordinating all actors towards advocating for the adoption of agroecology.
3. There exists evidence that agroecology works and can play a very contributory role in achieving sustainable development goals.
4. There is a need to measure the performance of agroecology to build evidence to support its scaling up.
5. Co-creation is at the heart of the transformation of the agricultural and food systems and farmers are important partners in development. Farmer research networks and farmer-centered research systems are a practical and necessary part in co-creation.
6. Transitioning from degenerative agriculture to regenerative agriculture is the ultimate goal for sustainable food systems to be achieved.
7. Agroecology should not be seen as a set of technologies to be adopted but rather as an approach to transition to sustainable agricultural and food systems.





Keynote Speech: Dr. Emma Siliprandi, Agricultural Officer - Plant Production and Protection Division (NSP), FAO: Scaling up Agroecology Initiatives: Lessons learnt, Successes, Aspirations, and Opportunities

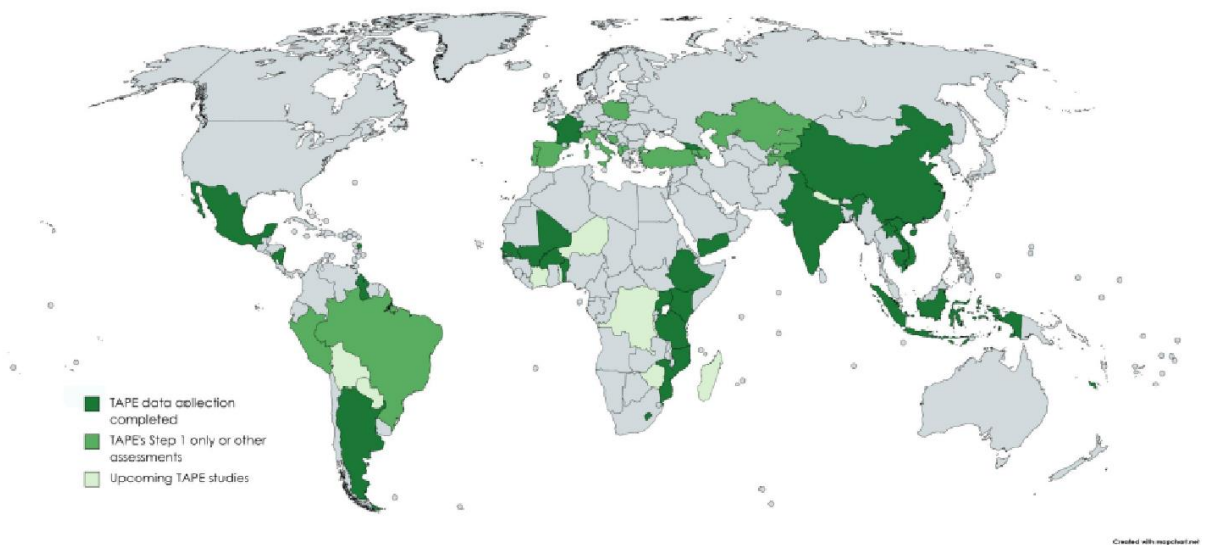
Laying the foundation for the conference and sharing why agroecology is key in improving food systems globally. Agroecological principles and initiatives should be strengthened through knowledge generation and sharing and through market systems development. The principles should be applied at all levels from the local, national, regional, continental, and global levels. Scaling out agroecology initiative was launched in 2018 by several United Nation agencies (IFAD, WFP, WHO, Convention on Biological Diversity, UNDP, UNEP) who worked internally to mainstream agroecology principles in the agencies by promoting cooperation amongst themselves while taking advantage of existing synergies for effective coordination. The agencies are also mobilizing resources to support implementation of their activities in areas such as training and capacity building (internally and externally), engaging in policy processes and knowledge generation and sharing. The sharing of knowledge is based on experiences on what has worked for promoting scaling out of the same. The agencies incorporate other stakeholders such as grassroots organizations, CSOs, farmers' organizations and governments to promote agroecology adoption. In 2019 FAO approved the now what has become to be known as the 10 elements of agroecology (Diversity, Co-creation, and Sharing of Knowledge, Human and Social Values, Efficiency, Synergies, Recycling, Resilience, Culture and Food Traditions, Responsible Governance and Circular and Solidarity economy) that were developed through a global multi-stakeholder consultation and synthesis process. Report on food systems by the High-Level Panel of Experts expounded on the 10 elements to establish 13 principles that are connected and complementary to the FAO 10 elements (namely recycling; input reduction; soil health; animal health; biodiversity; synergy; economic diversification; co-creation of knowledge; social values and diets; fairness; connectivity; land and natural resource governance; and participation).

In her presentation, Dr. Siliprandi reminded delegates that agroecology is a process, and that it provides a viable approach towards transitioning the current systems of production to more sustainable food systems. She acknowledged that evidence that agroecology works is there but remains fragmented and as such there is need for harmonization of data to build a case and evidence for agroecology. The approach should take cognizance of the multi-dimensionality, diversity, and complexity associated with agroecology. The FAO - Animal Production and Health division (NSA) and Plant Production and Protection division (NSP) in collaboration with external partners have developed a tool for measuring agroecology performance dubbed TAPE (Tool for Agroecology Performance Evaluation). TAPE seeks to help





strengthen normative, science and evidence-based work on agroecology by developing metrics, tools, and protocols for measuring agroecology performance. The tool has already been used in 40 countries spanning 5 regions (Sub-Saharan Africa included) covering 5036 households. It has been translated into 24 languages including 6 official United Nations Languages (English, French, Spanish, Chinese, Arabic and Russian). The figure below shows the distribution of regions where the tool has been applied.



Initial Results where TAPE has been Applied.

The tool has been applied in over 800 farms in Lesotho, Mali, Tanzania, and Uganda to generate evidence on the benefits of agroecological systems on environmental, economic, and social dimensions. Results have shown that agroecological farms generate higher economic values, produce more, create more wealth, and generate higher levels of income among households. On the environmental dimension, agroecology was found to improve soil health and biodiversity while on the social dimension there were improved nutrition at the household level and women were more empowered and the youth became more actively engaged. The FAO works with partners in Africa main ones being Agency for Regional Agriculture and Food/ECOWAS (West Africa), Association pour la Recherche et la Formation en Agro-écologie (Burkina Faso), COLEACP (Benin), DanChurchAid (Uganda), Eclasio (Benin, Senegal), ENABEL (Benin), Environment Development Action Pronat (Senegal), Haramaya University (Ethiopia), Ile de Paix (Tanzania), Institute for Research and Promotion of Alternatives in Development (Mali), re-Nature (Kenya), Rural Self-Help Development Association (Lesotho), Trocaire (Rwanda), Université libre de Bruxelles (Congo), Agroscope (Switzerland/Kenya), and Louvain Coopération (Madagascar).





Specific Case from Mali results have shown that: There are:

- More advanced agroecological farms which produce more and generate more income with less use of external resources.
- Existence of local and territorial markets.
- Farms transitioning to agroecology with more healthy soils. The farms have more agrobiodiversity and they have integrated more natural vegetation and pollinators within their agroecosystems.
- More advanced agroecological farms are characterized by a more empowered youth less prone to migration away from home, more family members directly employed on-farm in the agricultural production and improved food and nutrition security at the household level (self-sufficiency and more diversified and healthy diets).

In the Scaling Agroecology Initiative 2019/2022, the following activities and achievements were recorded:

Activities	Achievements
On-demand support to regions & countries on policy and regulatory frameworks, institutional capacity building, governance & policy dialogues, multi-sectoral articulation, and implementation of international instruments.	<ul style="list-style-type: none"> ● Consolidation of AE in focus countries. ● India to scale up Natural Farming nationally. ● Senegal: the creation of territorial committees to implement AE transitions. ● México: transition in 1 million ha -400,000 families – 27 states.
Technical capacity building, development of knowledge products (e-courses, publications, case studies) inclusion of agroecology in projects, knowledge, and innovation platforms Catalyse funding and investments,	<ul style="list-style-type: none"> ● Over 70 online and in-person learning events. ● Region and topic-specific e-courses and platforms. ● 50 projects with AE within UN Agencies (50 countries across all regions)
Catalyse funding and investments, outreach and advocacy, and alliances with initiatives and partners.	<ul style="list-style-type: none"> ● Active engagement in AE Coalition and Transformative Partnership Platform ● Incorporation in GEF projects and FFS ● Articulation with climate change, Biodiversity, and climate change agendas

Important Agroecology Milestones in 2021/2022

1. Establishment of the Committee on World Food Security (CFS) which was a two-year policy convergence process that seeks to build consensus on the need for sustainable transformation of food systems. The Committee has developed policy





recommendations on agroecological and other innovative approaches for sustainable food systems that enhance food and nutrition security.

2. The convening of the United Nations Food Systems Summit where agroecology emerged as a strong concept and approach towards inclusive food systems transformation. During the summit, the agroecology coalition was launched that brought on board 40 countries with more than 70 organizations that have been formally joined. In Africa, the organizations on board are African Union and ECOWAS and 18 countries are enjoined.

Some of the drivers for consideration that can help in scaling agroecology contribution towards resilient and diversified sustainable agriculture and food systems include:

1. Promotion of responsible governance, coherent policies that are supported by institutional frameworks.
2. Customization and application of comprehensive performance measurement and monitoring agroecology frameworks.
3. Re-orientation of research, innovation, advisory services, and education to embrace principles of co-creation.
4. Strengthening of institutions to embrace stakeholder engagement to address inequality.

Opportunities for the Eastern Africa Region in the Global Environment Facility (GEF)

Whereas the GEF has a mandate to deliver Global Environmental Benefits including the financial mechanism of Multilateral Environmental Agreements, GEF adopts a people-centered approach to programming. Through its eight-strategy plan, a healthy planet, healthy people agenda that embraces integrated and transformational approaches, agroecology features strongly. Agri-food systems transformation therefore is at the heart of the strategy, and this will be delivered through global/regional programs as well as national projects. The FAO is the leading GEF Agency in Africa and is well-equipped to support countries with the blending and sequencing of environmental and climate financing.

Way Forward within the Scaling Agroecology Initiative Action Framework 2023 – 2030

1. **Policy support:** The focus will be on strengthening, adapting, and application of existing tools, metrics, and guidelines on agroecology to unlock transformative policy processes for sustainable food systems.
2. **Investment and markets:** Re-directing investments towards agroecological transitioning processes, expanding markets for agroecology, and scaling up agroecological investment programs.





3. **Knowledge and innovations:** Building capacities and catalyzation of scientific evidence to foster co-creation and widespread application of agroecology knowledge and innovations.

Dr. Sara Namirembe - McKnight Collaborative Crop Research Program (CCRP) – East and Southern Africa (ESAf) Region: Can farmer-centered research drive food systems transformation?

Farmer-centered research for agroecological transformation is key to delivering sustainable agriculture and food systems. There is a need to transform from a degenerative to a regenerative agricultural system.

Agroecology is not a goal but a decision-making process that requires both local and global attention and initiative. By combining local research informed by global scientific knowledge and feedback from farmers that address their needs, there is a huge potential in delivering sustainable agriculture and food systems. The figure below clearly depicts the desired transformation that combines local and global knowledge:



Agroecology and agroecological transition processes require:

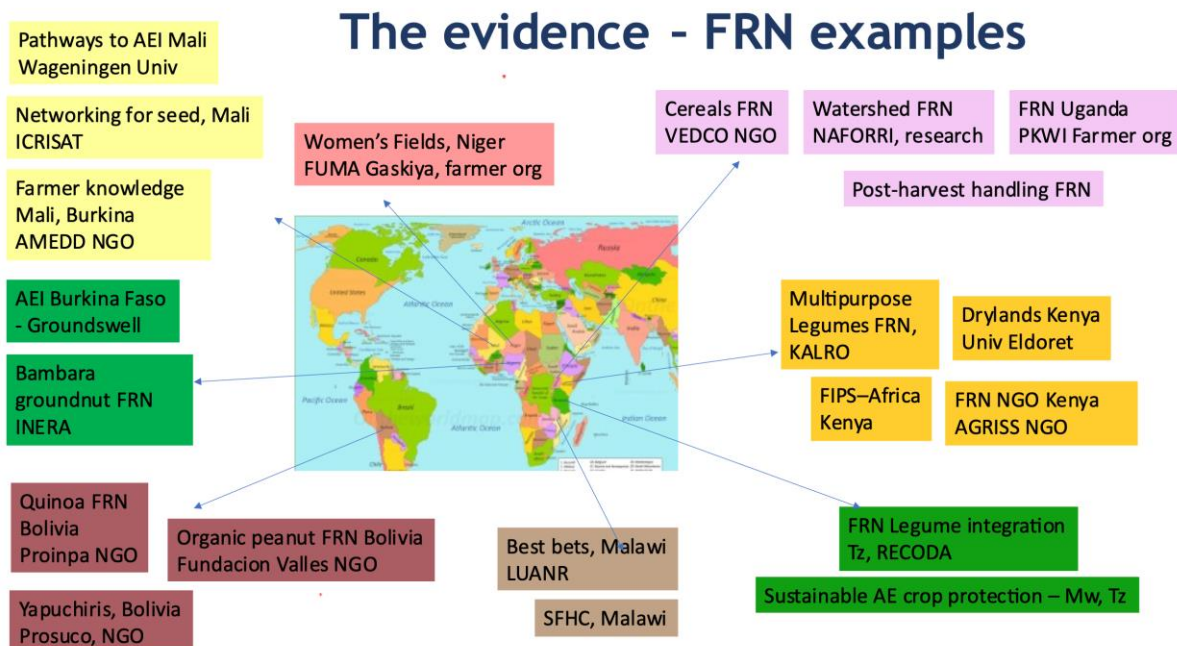
1. Contextualization
2. Co-creation
3. Combination of local and scientific knowledge
4. System coordination that brings all actors (agricultural research, local government, development partners, Civil Societies, and private sector)
5. Holistic approach





6. Empowering

For a long time, there has been a disconnect between scientific research and the actual adoption of innovative technologies by the intended end users (farmers). What can be used to fill this obvious gap? The solution is embracing Farmer Research Networks (FRN) that allow farmer participation while at the same time retaining the scientific rigor of research. FRN allows for networking and collaboration that promotes knowledge sharing and learning. The figure below depicts selected examples and evidence of FRN:



Specific Examples

Kenya

Drylands FRN, Kenya farmers restoring degraded landscape: The University of Eldoret is working with the West Pokot agro-pastoralist communities to restore degraded landscape by promoting soil and water conservation and crop and diet diversification. The University invested 2 years in building trust with community groups and they worked closely with the local government leadership to gain entry and to influence policy decisions.

Uganda

P'KWI FRN, Uganda Farmer organization leading FRN research: Farmer organizations are working with researchers on experiments on cassava disease control. The researchers through





local government mobilize farmers for collective action. The research approach is the whole farm systems approach to help farmers improve their livelihoods.

Malawi

Farmer groups, the university and students, extension service providers, and development NGOs collaborated on research around legumes to promote diversification through niche-specific technologies. They are currently following up with research on seed systems.

Arguments for FRN

1. Farmers are treated as partners in solution development. FRN promotes a shift in mindset where farmers are viewed as co-creators.
2. Promotes meaningful engagement of farmers in all stages of research.
3. Farmers and researchers and all actors involved gain new skills and attitudes.
4. Promotes system approach to food and nutrition initiatives.
5. Promotes platforms for joint learning.
6. Provides an opportunity for inclusivity in the development agenda where even youth and women have space to participate.

However, one must brace themselves to deal with some challenges associated with FRN approach such as:

1. Working with farmers can be a slow process because it requires changing of mindset, building trust, and negotiating on what to focus on.
2. Working with researchers and universities that have ingrained research approaches sometimes poses the challenge of taking over the entire process.
3. There are multiple interests and motivations regarding data at play and this may result in conflicts and sometimes legal implications.
4. Networking has limits.
5. Systems focus and monitoring can seem overwhelming considering limited resources and time.
6. Farmer-centered research for agroecology is different from conventional participatory technology development as it takes time.





1.5.2 Plenary Session Two: Agroecology Research and Development

Keynote Speakers:

Keynote Speech: Prof Zeyaur R. Khan, Thomas Odhiambo Distinguished Research Fellow, Leader, Push-Pull Programme, International Centre of Insect Physiology and Ecology: **Research, Development and Scaling up of Agroecological Innovations: The Case of Push-Pull Technology in Africa**

Presentation: Dr. Noah Adamtey, Senior Research Scientist in the Department of International Cooperation at the Research Institute of Organic Agriculture in Switzerland: **Demystifying the Myth: Can Organic Agriculture Feed the World?**

Panelists: Prof Zeyaur R. Khan, Dr Noah Adamtey, Bo Lager, Hakim Baliraine, Prof Simplicie Vodouhe

Session Moderator: Prof. Charles Ssekyewa

Session Key Takeaways

1. Science for Society: Technological advancement and research should develop technologies and innovations that contribute to sustainable development e.g., push-pull technology.
2. Transformation requires intentional investment in agriculture and even more importantly in agroecology interventions (currently less than 4% of agricultural funds go into agriculture and even much less in agroecology about 10% of the 4%).
3. Agroecology products can feed the world.
4. Solutions to feeding the world are not in more synthetic fertilizers and agrochemicals. The Green Revolution and the Industrial Revolution have failed to feed the world. Options that are environmentally friendly offer better alternatives.
5. Soil health and biodiversity play an important role in the transformation of food systems in the world.
6. Farmers are innovators and researchers and should not be taken for granted.
7. There is a need to facilitate the change of the mindset of the young generation and the entire family. And to ensure the success of agroecology, women must be put at the center. Women are naturally caregivers and can take good care of the environment. Further, they produce most of the food, particularly organic foods. This by extension means that the curriculum in schools needs to change.
8. There is a need to build strong democratic local organizations that can champion agroecology agenda.





Keynote Speech: Prof Zeyaur R. Khan, Thomas Odhiambo Distinguished Research Fellow, Leader, Push-Pull Programme, International Centre of Insect Physiology and Ecology (25 minutes): Research, Development and Scaling up of Agroecological Innovations: The Case of Push-Pull Technology in Africa

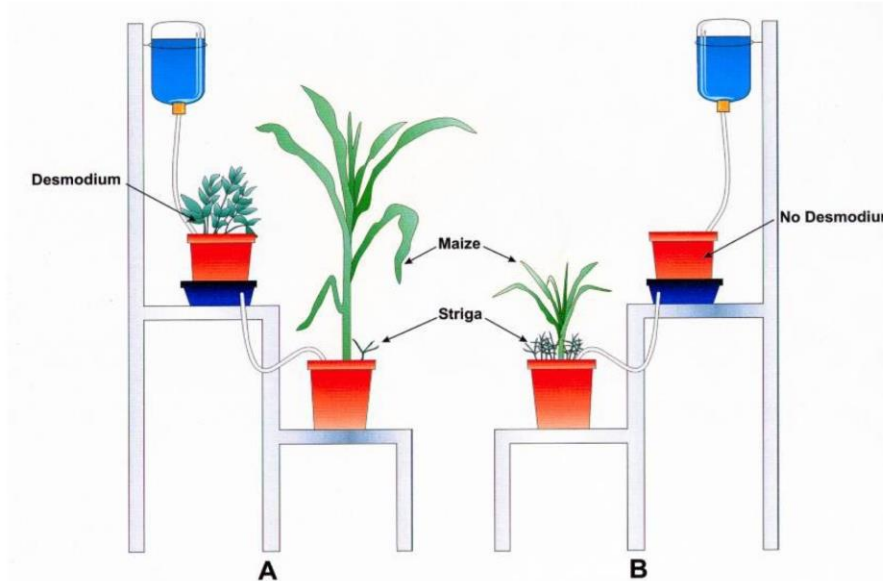
There are more than 30 million farmers in Sub-Saharan Africa who face challenges of a similar nature key among them include: low crop production and productivity, fall armyworm damage, parasitic striga weed damage, stem borers damage, poor soil fertility, high aflatoxin in grains and low fodder and milk production. Specifically, maize faces major constraints with stem borers (economic loss to maize of USD 1.5 billion), Fall Armyworm (economic loss to maize of USD 6 billion), parasitic striga weed (economic loss to maize USD 2.5 billion,) and combined challenge of drought and poor soil fertility. The 'Push-Pull' is a novel approach in the farming system that was developed by understanding the complex mechanisms that govern the chemical ecology of plant-insect interactions and plant signaling. The system uses carefully selected repellent intercrops and attractive trap plants. Insect pests are repelled from the food crop and are attracted to trap crops. The repellent intercrop attracts natural enemies of pests and effectively controls parasitic Striga weed. The intercrop improves soil fertility, both companion plants provide livestock fodder. In Sub-Saharan Africa Napier grass has been used in maize farms as it is preferred by the worms for laying eggs as compared to maize. Napier grass is preferred to maize plants by stem borer moths for egg-laying because it produces approximately 100-fold higher levels of attractive volatiles during early evening hours, than maize or sorghum, the period at which the moths seek host plants for oviposition. However, Napier grass does not allow the development of stem borer larvae to their adulthood thus acting as an excellent crop. Napier is used as a fodder for livestock by African farmers.

Desmodium has also been discovered to have an allelopathic effect on striga weed where it suppresses its growth and development as illustrated in the figure below.





ALLELOPATHIC MECHANISM OF STRIGA SUPPRESSION



Desmodium has been found to contain chemicals in its roots that once exuded into the soil they inhibit the attachment of striga weed onto the maize crop roots and they also cause suicidal germination of striga weed. Both the Napier crop (trap) and Desmodium (repellent plant) used in the push-pull strategy are of economic importance to farmers as livestock fodder and help increase milk production.

Recent Developments with the Push-Pull Technology

With funding from the European Union, push-pull technology has been adapted to the increasingly dry and hot conditions associated with climate change in Africa to ensure its long-term sustainability. The conventional push-pull system had not been extended to such drier areas of sub-Saharan Africa and as such the new research has provided a relevant and effective agricultural innovation for cereal-livestock smallholders living in these areas.

The Third-Generation Push-Pull Technology

Maize/Sorghum with Desmodium and Brachiaria Grass

The intercropping of maize and or sorghum with Desmodium and Brachiaria grass as illustrated in the figure below demonstrates the pull effect of Brachiaria grass where it attracts the stem borers while the Desmodium repels the stem borers and attracts their natural enemies.



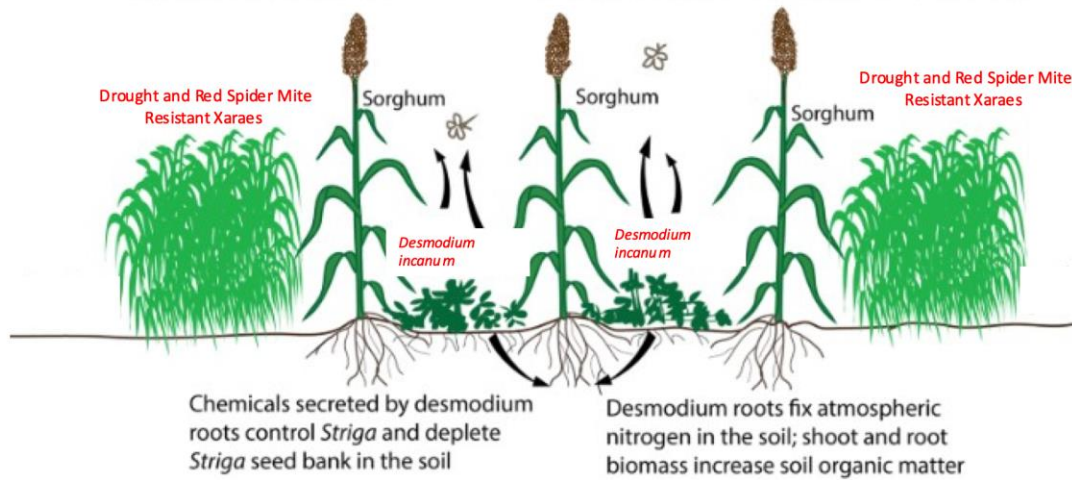


THIRD GENERATION PUSH/PULL

'Pull' [Cheruiyot et al. 2022. Experimental Agriculture](#) **'Push'**
doi: 10.1017/S0014479721000260

'Pull' Volatile chemicals produced by Brachiaria grass attracts stemborer natural enemies.

'Push' Volatile chemicals produced by Desmodium intercrops plants repel stemborer and Fall armyworm larvae and attract their natural enemies.



Push-pull technology on the management of Fall Armyworm (FAW)

Push-pull technology on the management of fall armyworm (FAW) in maize. Research has shown that the technology can be used in management of fall armyworm as illustrated in the figure below:



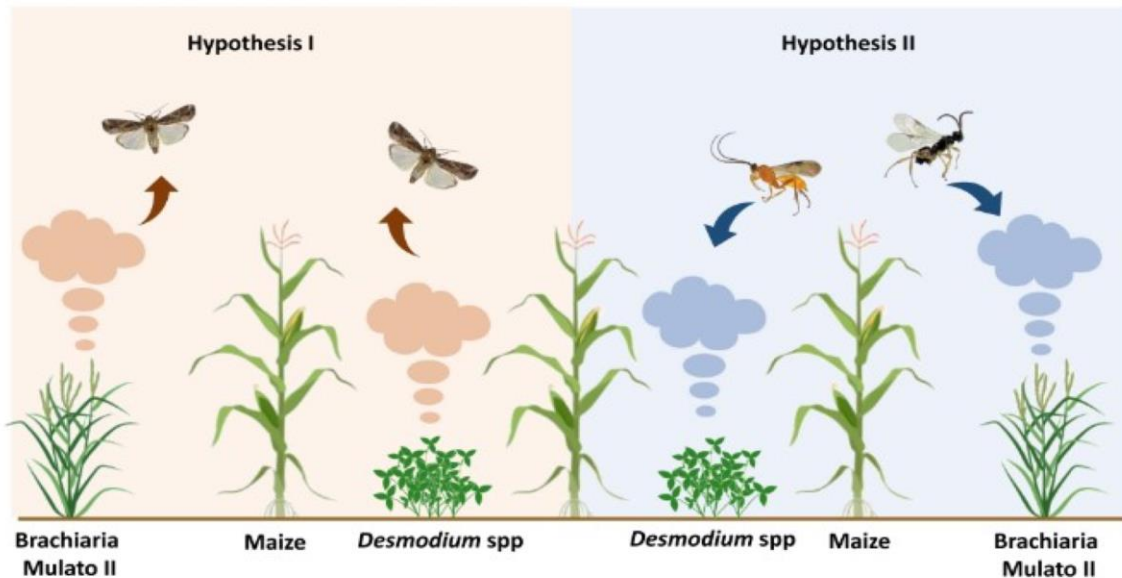


Push-Pull farming system controls FAW

Push-Pull companion cropping can prevent fall armyworm damage to crops

Location	Push-pull (%)	Maize monocrop (%)
Bungoma Kenya	~5	~95
Busia Kenya	~20	~95
Siaya Kenya	~5	~80
Vihiga Kenya	~5	~85
Migori Kenya	~5	~95
Homabay Kenya	~10	~85
Eastern Uganda	~25	~90
Mara Tanzania	~5	~60

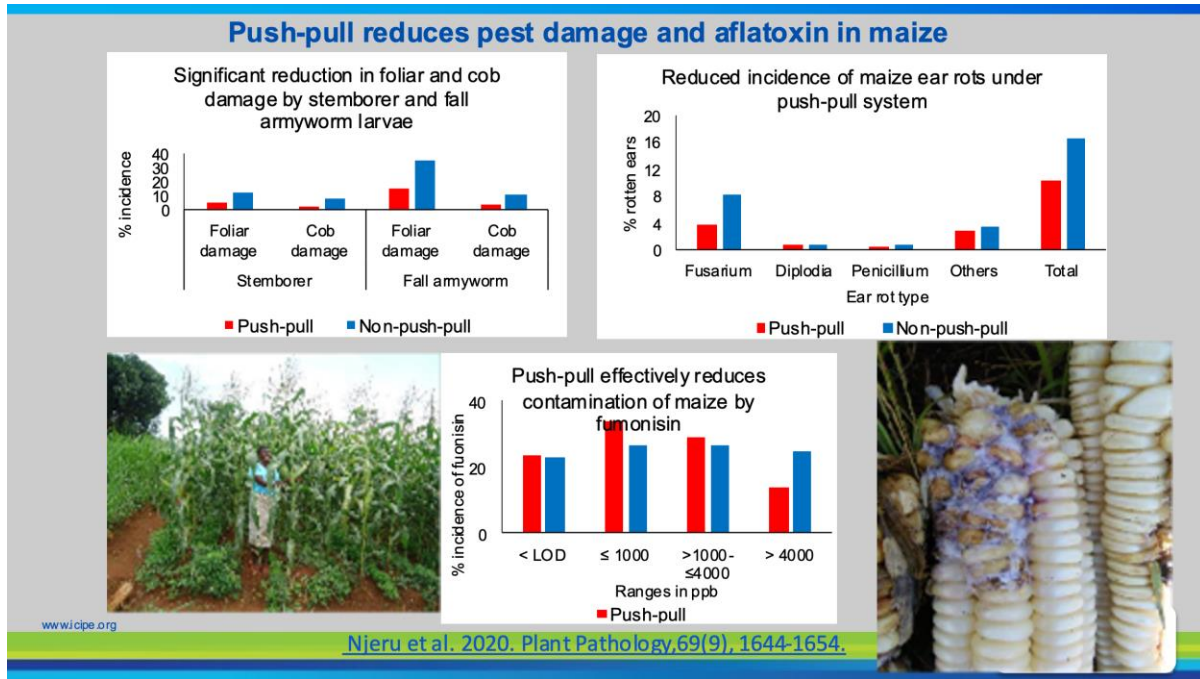
HOW PUSH-PULL FARMING SYSTEM CONTROLS FAW?



Push-Pull reduces Pest Damage and Aflatoxin in Maize

Push-pull reduces pest damage and aflatoxin in maize as illustrated in the figure below:





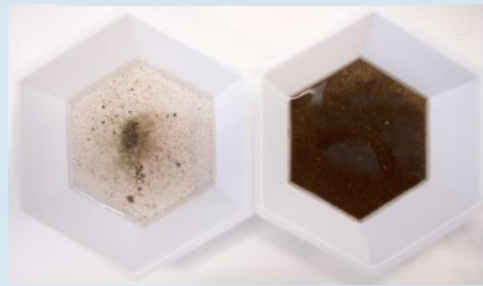
Other 3rd generation push-pull technology applications include:





Soil Health Management

Organic matter in Push-Pull and control fields



Control Field

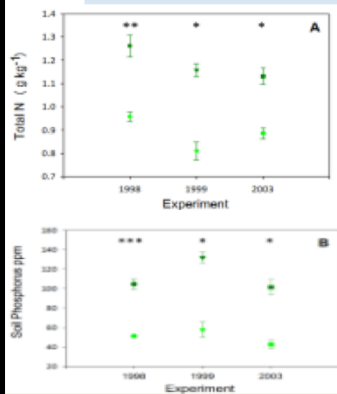
Push-Pull Field

POM plays an important role in giving the soil "crumb structure", so it impacts water infiltration/water holding capacity and is also an important nutrient reservoir that we believe can supply N (and probably P) to crops

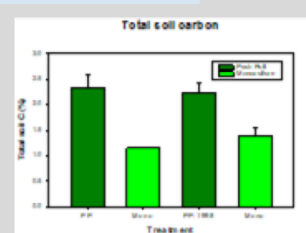
[Drinkwater et al. 2021 Agriculture, Ecosystems and Environment 320 \(2021\) 107566.](#)

Push-pull improves soil health

[Drinkwater et al. 2021 Agriculture, Ecosystems and Environment 320 \(2021\) 107566.](#)



Total soil N and plant available P were significantly greater in soils under push-pull intercropping (dark green) than in maize monoculture (light green)



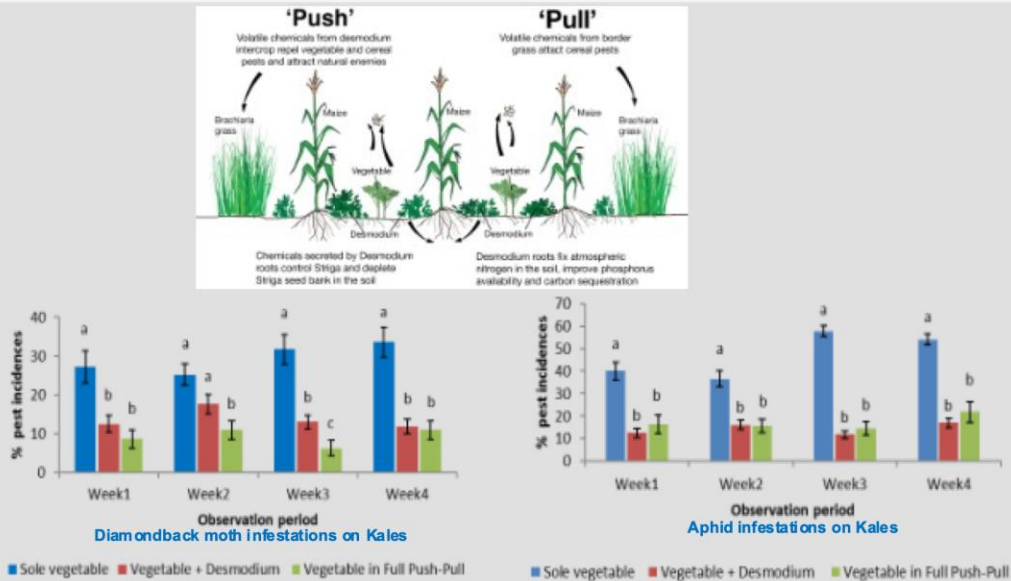
Desmodium improves N, P and C in the soil. It adds to soil organic matter, enhancing the capacity of the soil to sequester carbon. It has a positive effect on plant and insect biodiversity and has been shown to result in soil that is rich in beneficial micro-organisms. Push-Pull farmers use less inorganic fertilizer, reducing greenhouse gas emissions.

Vegetable Integrated Push-Pull Technology

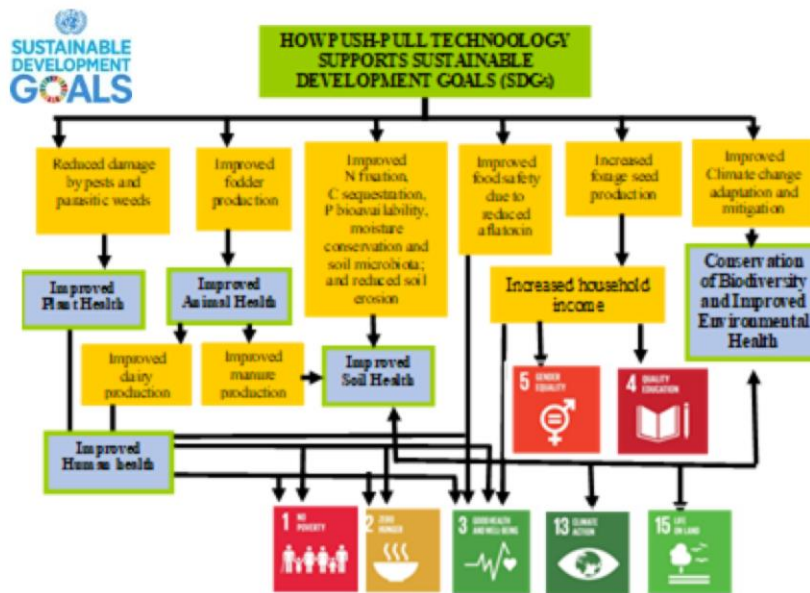




Vegetable –Integrated Push-Pull System (VIPPT)



Push-Pull Technology and Attainment of Sustainable Development Goals





Overall Benefits of Push-Pull Technology

1. Striga control
2. Fodder and milk production
3. Improved yield and nutrition
4. Climate change adaptation and mitigation
5. Soil fertility improvement
6. Aflatoxin control
7. Control of vegetable pests
8. Income and job creation

Push-Pull is just the kind of technology necessary to support the 'green revolution' that Africa needs because it increases productivity without requiring extra resources for hybrid seeds, crop protection and soil improvement. The technology can be adapted to other crops e.g., sugarcane, cotton, rice, vegetables, fruit trees, etc. Integration of vegetables and other high value crops and Black Soldier Fly to intensify the push-pull farming system is making it highly attractive to youth. Increasing on-farm agricultural productivity, job creation and income generation will mitigate youth migration to cities and out of Africa.

Presentation: Dr. Noah Adamtey, Senior Research Scientist in the Department of International Cooperation at the Research Institute of Organic Agriculture in Switzerland: Demystifying the Myth: Can Organic Agriculture Feed the World?

Life begins and ends with the soil and soil providing direct and indirect 90% of calories present in crops. Soils are medium for filtering water, home for medicinal plants and other life forms, however they are currently highly degraded. Some advanced technologies and human activities have contributed to soil degradation with the status being at 25 – 52% due to erosion and chemical contamination. The production systems of the world can feed the world if the soil has been taken care of. Comparison studies conducted in Kenya, India, Bolivia, Uganda, and Ghana comparing the production of conventional and organic systems have shown that there was a highly significant difference between conventional and organic systems and that organic systems are more sustainable in the long term.





1.5.3 Plenary Session Three: Agroecology Markets and Trade, Quality and Standards Requirements and Youth Engagement

Keynote Speakers:

Keynote Speech: Ms. **Shamika Mone**, President of Intercontinental Network of Organic Farmers Organizations (INOFO): **Role of Farmers' Movements in Promoting Agroecology in Africa**

Presentations

Speaker 1: Bert-Jan Ottens, Owner, and Senior Adviser, ProFound -Advisers in Development, Den Haag, Zuid Holland, Netherlands: **Strengthening Organic Trade in Africa.**

Speaker 2: Diana Akullo Ogwal, Principal Officer, SPS Department of Trade in Goods and Competition - AfCFTA Secretariat: **Prioritizing Sanitary and Phytosanitary Measures in Ecological Organic Agriculture Marketing and Trade in Africa**

Speaker 3: Richard Mugisha, Regional Coordinator-Youth Track - Rwanda | Kenya | Ethiopia: **Making Agroecology Attractive to the Youth for Contributing to Resilient and Sustainability Food Systems in Africa**

Panelists: Shamika Mone, Diana Akullo Ogwal, Richard Mugisha, Lise Chantal Dusabe, and Eustace Kiarri

Session Moderator: Ms. **Wanjiru Kamau**

Session Key Takeaways

1. Farmers are the experts on the farm and through their collective and organized actions they can contribute to solutions to manage the effects of climate change and transformation of the agricultural and food systems. Farmers promote local food systems for transparency, low carbon footprint, and sustainable livelihoods in all regions.
2. Farmers have a wealth of knowledge, and they learn from each other through the sharing of knowledge and experiences at the local, regional, and international levels.
3. Farmers are champions in pioneering advocacy in Agroecology, Agroforestry, and organic farming as nature's positive sustainable solutions.
4. Value-addition and product development for organic products have the potential to open markets for farmers at the local, national, regional, continental, and global levels





- if issues of quality assurance and standards, traceability, food safety, buyer requirements, legislative requirements and certification are taken care of
5. The AfCFTA provides legal instruments that can promote ecological organic trade and markets in Africa. There is a need for contextualization of agroecology to speak Africa's continent language.
 6. There will be no future for food systems without the youth as the major drivers in the transition towards sustainable food systems. Therefore, there is a need to connect and involve young people as key drivers of change in achieving a more resilient and sustainable food system in Africa.

Keynote Speaker: Ms. Shamika Mone, President of Intercontinental Network of Organic Farmers Organizations (INOFO) Role of Farmers' Movements in Promoting Agroecology in Africa

The Intercontinental Network of Organic Farmers Organizations (INOFO) is a global network of Organic Farmers Organizations (OFOs) in six regions - Asia, Africa, Latin America, North America, Europe, and Oceania Pacifica with member OFOs in 79 countries. It provides a platform where organic farmers are given an opportunity to be involved in the decision-making at all levels of food systems development towards producing healthy, nutritious food and preservation of Mother Earth. It is a self-organized sector platform within the IFOAM Organics International formed back in 2008 during the 1st General Assembly held in South Korea in 2011. It was officially registered in 2021.

Organic farmers are organized around several values and beliefs including principles of multi-cropping, soil health management, diversification, and traditional seed conservation, on farm Innovations, traditional farming practices that assist in the dilemma of climate change and the cultural significance of traditional seeds.

The current challenges facing organic farming include lack of or limited access to indigenous seed, loss of local varieties, unfavorable seed laws, bio-piracy of farmers varieties and the push for Genetically Modified crops.

Bert-Jan Ottens, Owner, and Senior Advisor, ProFound - Advisers in Development, Den Haag, Zuid-Holland, Netherlands: Strengthening Organic Trade in Africa

ProFound's work on Sustainable Sourcing and Agro-Biodiversity for Global Markets focuses on market analysis, and compliance (quality assurance and standards, traceability, food safety, buyer requirements, legislative requirements, and certification) with the aim of supporting the boosting of organic trade from within and from Africa. Co-creating value is key in opening doors for organic farmers to participate in trade at the local, national, regional, continental,





and international levels. Currently, there is a growing investment in regenerative agriculture by multinational companies such as Unilever, PepsiCo, Walmart, and Nestle.

Some facts about organic farming and products in Africa:

- Organic certified agriculture land: 1,984,104 ha
- Organic certified other areas (wild collection): 2,308,212 ha
- Organic agriculture land in % of total agriculture land: 0.7%
- Organic producers: 788,735
- Main products for interregional export markets: Tropical fruits, (cashew) nuts, coffee, olive oil, shea, cocoa, medical and aromatic plants
- Main products for domestic and regional markets: Vegetables and fruits
- Total volume of the exports EU imports: 332,064 tonnes in 2019, USA imports: 17,719 tones / USD 73 million in 2019
- Total value of the exports: n/a
- Number of operators that are exporting from Africa: 2,892
- Shares of world regions in global organic agricultural land, 2018: 3%
- Limited formal organic trade figures available
- Predominantly exporting of primary produce with limited processing and value addition in countries
- Local markets: exports exceed domestic consumption.
- Local markets: driven by food safety concerns and growing middle-income class; opportunity for products that matter to local populations, including value-added products.
- PGS could offer interesting solutions but lack regulation and harmonization.
- Organic markets with good collaboration between actors pay off.
- Organic markets of regions with donor investments have developed better than regions without

Proposal for Enhancing Organic Trade in Africa

1. Benchmarking national/international standards, formalizing local markets, compliance.
2. Product innovation and value addition.
3. Creation of a supportive enabling environment (regulatory frameworks, PPP's, networks etc.).
4. Capacity building of actors and development and implementation of information systems.
5. Market build-up: accelerating private sector initiatives, trade facilitation and promotion.





Diana Akullo Ogwal - Principal Officer, SPS Department of Trade in Goods and Competition - AfCFTA Secretariat: Prioritizing Sanitary and Phytosanitary Measures in Ecological Organic Agriculture Marketing and Trade in Africa

The Africa Continental Free Trade Area (AfCFTA) is the largest free trade area with a Gross Domestic Product of USD 3.4 trillion and a market of more than 1 billion consumers. In Africa, the youth (15 – 34 years) make up 60% of the population (250 million) and the small and medium enterprises account for more than 90% of businesses. Informal trade constitutes more than 30% of intra-African cross-border trade with 60-70% of informal traders being women. 54 of 55 African countries have signed the AfCFTA Agreement with 46 countries having ratified the Agreement and have deposited their instruments of ratification.

The AfCFTA has nine annexes on the protocol on trade in goods namely:

1. Schedules of Tariff Concessions
2. Rules of Origin
3. Customs and Cooperation and Mutual Administrative Assistance
4. Trade Facilitation
5. Non-Tariff Barriers
6. Technical Barriers to Trade
7. Sanitary and Phytosanitary (SPS) measures
8. Transit
9. Trade Remedies

Key to trade are annexes 5,6 and 7 and their significance are as highlighted in the table below:

Non-Tariff Measures and the Potential Impact on Organic Trade

Non-Tariff Barriers

Implementation of Annex 5 with a view to progressively eliminate NTBs.

NTBs Work Program is in place.

The AfCFTA NTB Online Mechanism for reporting, monitoring and eliminating of NTBs is operational, as a platform for the private sector to report NTBs.

Technical Barriers to Trade

Applies to standards, technical regulations, conformity assessment procedures, Accreditation

Metrology

1. Trade Facilitation through: Cooperation and Elimination of TBTs.

2. International best practice in regulation

3. Use of international standards mutual recognition arrangements

Transparency

4. Working with Pan-African Quality Infrastructure (PAQI) Institutions

Sanitary and Phytosanitary measures

This applies to SPS Measures that directly or indirectly affect trade between State Parties.

1. Facilitate trade while safeguarding human, animal or plant life or health;

2. Enhance cooperation and transparency in the development and implementation of SPS measures

3. Enhance the technical capacity of State Parties to implement and monitor SPS measures and use of international standards

7

The Annex 7 on SPS – Policies and Initiatives provides for:





1. Risk Assessment to determine appropriate level of Sanitary of Phytosanitary Protection. (*Art. 5*)
 - Risk Assessments techniques developed by international organizations.
 - Availability of scientific evidence
2. Adaptation to Regional Conditions, Including Pest or Disease-Free Areas and Areas of Low Pest or Disease Prevalence (*Art. 6*)
 - Principles and guidelines of regionalization and zoning (OIE Terrestrial and Aquatic Animal Health Codes)
 - Use international standards, guidelines, and recommendations.
 - Pest status of an area
 - Scientific evidence
3. Equivalence (*Art. 7*)
 - Measures deemed to be equivalent if science based technical information can be demonstrated.
 - Bilateral and multilateral agreements on recognition
 - Use procedures by WTO SPS Committee, the CAC, OIE, and the IPPC
4. Harmonization (*Art. 8*)
 - Based on international standards, guidelines, and recommendations
 - Scientific justification for anything more stringent
 - Participation in the work of the CAC, OIE, and the IPPC
 - Determination for priority commodities for harmonization
5. Audit Verification (*Art. 9*)
 - An importing State Party may carry an assessment of control programmes of the competent authority of the exporting State Party
 - Use its own resources.
 - Use principles and guidelines by international standards setting bodies.
6. Import or Export Inspections and Fees (*Art. 10*)
 - Fees may not exceed the recovery of the costs.
 - Non-compliance must be dealt with according to international standards.
7. Transparency (*Art. 11*)
 - Comply with procedures.
 - Notify draft, revised, or adopted SPS Measures
 - Provide results of a rejected non-compliant consignment
8. Technical Consultations (*Art. 12*)
 - Consultations may be requested.
 - Response within 30 days





- Matter maybe referred to the SPS Sub-Committee
- 9. Emergency SPS Measures (*Art. 13*)
 - Notify emergency SPS Measures within 48 hours.
 - Technical consultations to be held within 10 days.

AfCFTA Implementation Tools and Instruments include:

- The AfCFTA website www.au-afcfta.org
- The AfCFTA e-Tariff Book <https://etariff.au-afcfta.org/>
- Trading documents - Certificate of Origin, Origin Declaration, Supplier/Producer Declaration
- Rules of Origin Manual
- Non-Tariff Barriers online - <https://au-afcfta.org/operational-instruments/ntbs/>
- Implementation Support – Adjustment Facility and Pan-African Payment and Settlement System (PAPSS)

The AfCFTA Guided Trade Initiative (GTI)

The GTI was launched on October 7, 2022, in Accra, Ghana. During his speech at the launch event, Wamkele Mene, Secretary General of the AfCFTA Secretariat, explained that the objective of the GTI was to kick-start commercially meaningful trading under the AfCFTA while Phase 1 negotiations are still ongoing. The Assembly of AU Head of States had set 1st January 2021 as the 'start of trading and the 3rd year of tariff reduction to start on 1st January 2023.

The objective of the GTI is to:

1. Demonstrate the efficiency of the legal framework of the AfCFTA instruments.
2. Obtain feedback on the effectiveness of the legal and institutional national systems in the participating countries.
3. Test the readiness of the private sector to participate in trade under the AfCFTA.
4. Identify possible future interventions to increase intra-African trade and maximize the benefits of the AfCFTA.

Outcomes of GTI

- Seven (7) Participants State Parties have transacted: Cameroon, Egypt, Ghana, Kenya, Mauritius, Rwanda, and Tanzania
- 93 commercial transactions have taken place.
- The products traded include tea, ceramics, coffee, fertilizers, medicaments, motorcycles, filters, batteries, soaps, processed chicken, processed beef, dried prune, pasta etc.





- Other State Parties are invited to join. The AfCFTA is currently improving systems using lessons from participating parties.

Lessons learnt.

- The trade legal framework of the AfCFTA is ready to support actual trade under the AfCFTA.
- The Central and AfCFTA dedicated Coordination/ implementation Committees on the National level can fast track the benefits of the AfCFTA.
- Logistical arrangements and capabilities can be obstacles to AfCFTA Trade especially in low-scale trades.
- There is a need to promote private sector engagement and creative African-tailored solutions to transportation challenges.
- GTI played an important role in facilitating discussions among State Parties to implement the Agreement.
- State Parties need to mobilize businesses.
- Need for Trade Aggregators for economies of scale.
- Ecological organic trade, markets, and economy pivotal for the agriculture sector in Africa
- Africa's consumption outlook is changing.
- Increased consumer awareness.
- Several GTI products are organic.

Speaker 3: Richard Mugisha, Regional Coordinator-Youth Track - Rwanda | Kenya | Ethiopia: Making Agroecology Attractive to the Youth for Contributing to Resilient and Sustainability Food Systems in Africa

The Youth in Agroecology and Learning Track Africa (YALTA) initiative is the Agroecology and Business learning track for youth (18 -35 years) in Ethiopia, Kenya, Rwanda, and Uganda under the AgriProFocus. The initiative follows a market-based approach and convenes a wide range of stakeholders including agripreneurs, practitioners, policymakers, experts, seed distributors, academia, and farmers to share a wide range of knowledge and experiences to push for collective advancement of agroecology agenda, sustainable food systems and economic development where the youth are recognized as co-creator of solutions. Africa's economic and social development agenda will be fully realized only if youth are mobilized, incentivized, energized, and equipped for transformation because they form most of Africa's population averaging at 71%.

Why engage the youth?





1. In order to secure the future of food systems and planet.
2. They can develop and sustain scalable and replicable business models.
3. Source of employment for the youth
4. Stimulate innovations.
5. Influence change.
6. Sustainability: They are growing and learning.
7. They are the majority in Africa's population.

Why Agroecology?

- A more sustainable solution-nutrition sensitive population.
- Alternative pathway that optimizes socio-economic benefits with less environmental consequences
- Allows innovations.
- Supports resilience and adaptation to climate change.
- Solution to poverty and livelihood challenges

YALTA achievements 2020-2022 include:

1. Built capacity of over 500 Youth to apply AE principles.
2. Supported over 160 youth to develop scalable Agroecological Businesses using 4Ds method (discover, define, develop, and deliver)
3. Over 600 youth linked and connected to business experts and practitioners.
4. Over 300 connected to markets and financial services, AE networks.
5. Cultivated a working relationship with over 1200 AE actors.

Challenges facing youth and their engagement in Agroecology.

1. Lack of functional AE markets
2. Negative attitude towards agriculture
3. Erosion of culture and traditional food systems
4. Limited access to key resources
5. Unfavorable policy environment including public investment.
6. Poor portrayed image of agriculture
7. Gap between ICT and Agriculture
8. Inadequate education system

Recommendations

1. Improve Agriculture's Image
2. Facilitate youth to access land and credit.
3. Empower the Youth to Speak Up
4. Link AE to use of Information, Communication, and Technology
5. Organize AE Learning Exposures/field visits.
6. Agroecology mentorship/coaching Opportunities





7. Integrate AE in Research systems and curricula of learning institutions and education systems.
8. Organize and facilitate youth-led AE markets (both physical and digital)
9. Work with the media
10. Increased public Investment for scaling up AE in the region.

1.5.4 Plenary Session Four: Agroecology Coalitions and Social Movements

Keynote Speakers:

Keynote Speech: Dr Million Belay, General Coordinator, Alliance for Food Sovereignty in Africa (AFSA): **Why social movements are crucial to the agroecological transition.**

Presentation: Mr. Oliver Oliveros, Coordinator, Agroecology Coalition: **The Agroecology Coalition: an opportunity to accelerate the necessary food system transformation representing Emile Frison, Interim Coordinators, Agroecology Coalition**

Roundtable Discussion:

Panelists: Dr Million Belay, Emile Frison, Dr Martin Oulu, Gabor Figeczky, Hannington Owegi

Session Key Takeaways

- There is a need to establish, and operationalize strong, robust, efficient, and impactful coalitions through cooperation to push the agroecology agenda.
- The coalitions are instrumental in the building of evidence for advocacy for sustainable food systems in Africa with structures spanning from the local to international levels.
- Strong coordination is key through solid governance and accountability structures a

Keynote Speech: Why social movements are crucial to the agroecological transition - Dr Million Belay - General Coordinator, Alliance for Food Sovereignty in Africa (AFSA)

About AFSA: this is a broad-based social movement with members drawn and working in 50 countries out of 55 in Africa. It is Africa's largest group with over 200 million constituencies and its mandate are guided by the food sovereignty principle. The purpose of AFSA is to coordinate and deliver on a single and loud voice on issues that matter to Africa's agriculture. SAFSA's theory of change is premised on the belief that to transit to agroecology, there is a need for building a strong multi-stakeholder movement that will advocate for policy change, create consumer awareness, and build evidence for backing up advocacy work.





The agricultural and food systems are faced with a myriad of challenges ranging from population explosion, land, and forest degradation, decrease in biodiversity, cultural erosion, unplanned urbanization, and climate change. The world is faced with the dilemma of producing more food that is more nutritious and healthier, culturally appropriate, and produced in a just way (to humans, animals, and the environment). Thomas Malthus, a 19th century economist, believed that because the population grows geometrically and food production arithmetically famine was inevitable, and countries should find innovative ways to manage population growth. The green revolution on the other hand believed in the premise that agricultural production could be enhanced through adoption of new and improved varieties, the application of new agricultural techniques such as irrigation, mechanization, and use of agrochemicals. The drawback to the greening revolution was that it only focused on few market value crops. It also favored farmers who could afford high yielding varieties, agrochemicals, machines, and irrigation facilities. Those who borrowed loans were left indebted and most farmers lost their properties and migrated to the cities. The new mono crops that were being promoted faced resistance to pests and weeds, resulted in ecological disaster, negated the production of domestic food, resulted in nutrition and health crisis and cultural erosion. On the higher level, it led to overreliance on the private sector who then worked with policy makers and institutions to develop infrastructure and technical support in favor of the private sector. Because of the push for this narrative, it became apparent that proponents considered the indigenous seed system to be inferior and did not have the capacity to feed the world. Other arguments include: land should be given to those who can use it, and these are mostly the large-scale producers, the agriculture sector should produce enough calories in an economically efficient way to achieve food security and therefore must use primarily the highest potential crops, innovation and useful knowledge comes only from science driven by experts and not the Traditional Ecological Knowledge, that technology will always find/come up with the solution to fix any emergent problems and that it is possible to develop standardized one-size-fits-all solutions to be applied and replicated widely.

The Alliance for a Green Revolution in Africa (AGRA) since 2006 has been in the forefront of pushing for the green revolution in Africa with more than USD billion funding, most of which is from the Gates Foundation. Its goal has been to by 2020 double productivity and double incomes, halve food insecurity for 30 million smallholder families. Assessing the progress on AGRA Goals, main findings reveal that there is no evidence of 100% increase in productivity (maize the favored crop has only increased by only 29%), the overall staple yields have increased by only 18%, that the subsidies are expanding land planted to favored crops and not the yields with worrying trends of erosion of local varieties. There is no evidence of incomes doubling as poverty levels are still high and most definitely there is no evidence of improved food security (there is 31% increase in the number of undernourished people in AGRA countries).





The figure below is an illustration of the world agricultural production per capita 1961–2005 (index 1961 = 100) (Hazell & Wood 2008) compared with performance in Sub-Saharan Africa. Overall, Africa's production per capita is declining compared to the world, south Asia and all developing countries combined.

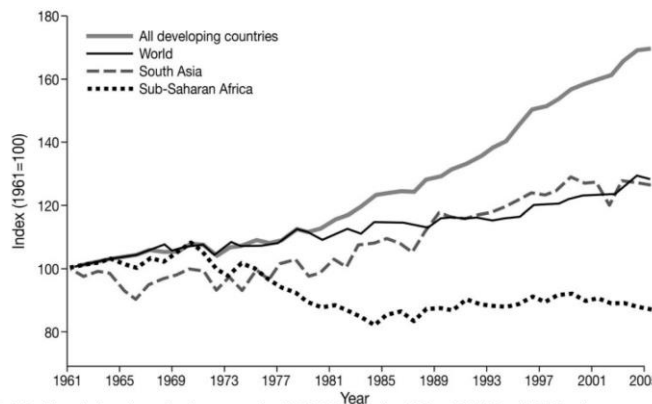


Figure 1. World agricultural production per capita 1961–2005 (index 1961 = 100) (Hazell & Wood, 2008).

There are eight lock-ins that are preventing Africa from achieving the degrees of increased production and productivity. The lock-ins are depicted in the figure below.



Currently, there are few companies that control 50% of the commercial seed market, 7 other companies control nearly 100% of fertilizer sales, 5 companies share 68% of the agrochemical



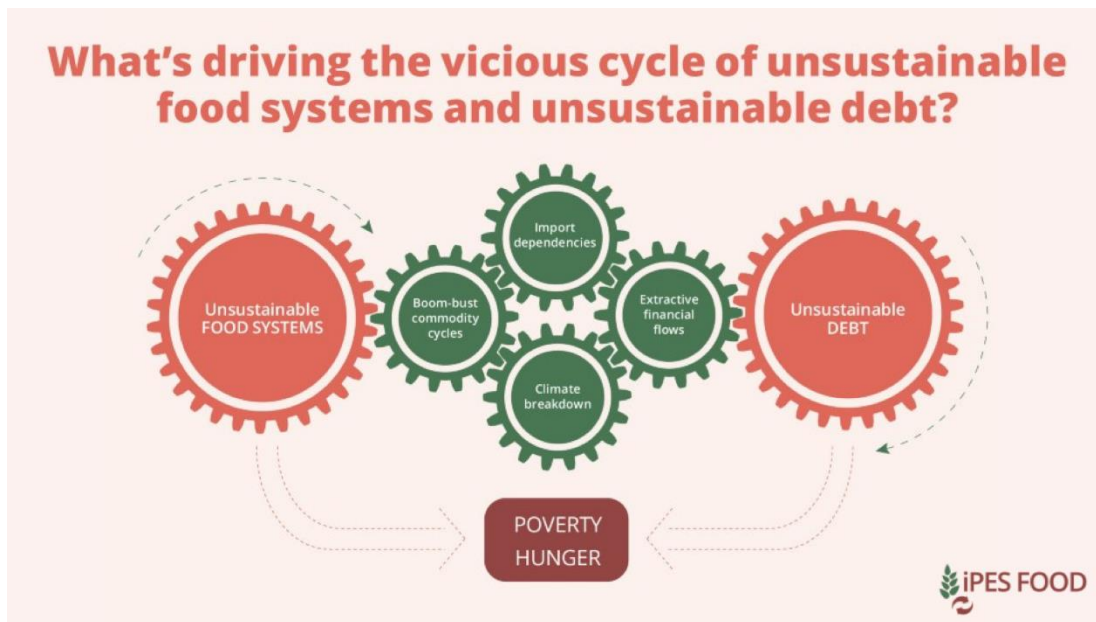


market, 4 firms account for 97% of private research and development agenda in poultry and 4 firms control up to 90% of the global grain trade.





The figure below summarizes the drivers for the unsustainable food systems and debt in Africa.



Some of the misguided solutions include geoengineering, nature-based solutions, GMO, and climate-smart agriculture.

Conclusion

AFSA offers both resistance and solutions to the agroecology movement. Resistance through providing strong statements to policymakers e.g., the recent one to AfDB, supporting country-based advocacy matters like Kenya's lifting ban on GMOs, Tracking AU-EU trade relationships, tracking money flows in the continent and engaging in active communication on matters Africa's agriculture and other economic issues.

On the other hand, AFSA contributes to solutions by promoting farmers-managed seed systems, healthy soil and healthy food, African agroecological entrepreneurship, promotion of territorial markets, integrating agroecology into climate policies, engage in My Food is African Campaign, contribute to African Food Policy and mobilization of stakeholders and creating awareness and education through communication.





Oliver Oliveros Coordinator, Agroecology Coalition: The Agroecology Coalition: an opportunity to accelerate the necessary food system transformation representing Emile Frison, Senior Advisor, Agroecology Coalition

Agroecology Coalition is a network whose purpose is to accelerate the transformation of food systems through agroecology, guided by the 13 principles of agroecology defined by the High-Level Panel of Experts (HLPE) of the Committee on World Food Security (CFS) that are aligned with the 10 Elements of Agroecology adopted by the 197 FAO Members in December 2019.

The coalition supports the implementation of country pathways for food systems transformation by promoting co-creation and exchange of knowledge, advocating for increased investments in agroecology, and pursuing political goodwill for increased commitment to agroecological transformation. The coalition operates through working groups namely:

1. *Research, Innovation, and Education,*
2. *Policy,*
3. *Finance and Investments,*
4. *Communication and Advocacy and*
5. *Implementation.*

The current agricultural and food systems are not sustainable because. They are responsible for 80% of biodiversity losses, pollute the soil, air, and water, they are vulnerable to climate change, do not address the triple burden of malnutrition, they maintain social inequity and the loss of cultural values and produce about 1/3 of greenhouse gasses. There is a need for a transformation that will be anchored on the 13 principles of agroecology to transition to diversified agroecology systems. Through diversified agroecology Africa will achieve its economic, environmental, climate monitoring and assessment, health (animals, planet and humans), social and cultural objectives. Through this paradigm shift agroecology will not be viewed as a set of agricultural practices but rather as an integrated approach/pathway to addressing the entire food system from production to consumption.

Already there are success stories where the approach is being applied as enumerated below:

- Sahel: millions of Ha farmer-managed natural regeneration are re-greening the Sahel.
- Andrah Pradesh: 750 000 farmers, + 20 % productivity, + 50 % net income
- Alliance for agroecology in West Africa: 72 organizations are practicing agroecology.
- ROPPA and AFA adopted agroecology in their strategy.
- More and more national policies supporting agroecology are coming up at country level such as Mexico, Senegal, Nicaragua, India, France, and Denmark among others.





1.5.5 Plenary Session Five: Agroecology Financing

Keynote Speakers:

Keynote Speech: Dr. Frank Eyhorn, – CEO of Biovision Foundation: **Financing Food Systems for Environmental and Socio-Economic Development in Africa**

Presentations

Milka Chepkorir, Coordinator of Community Land Action NOW! CLAN: **Indigenous food systems and especially pastoral-based systems**

Daniel Moss, Co-Director Agroecology Fund: **Financing Agroecology in Eastern Africa: Emerging Opportunities and Aspirations**

Panelists: Dr. Frank Eyhorn, Milka Chepkorir, Daniel Moss, Daniel Valenghi, Bo Lager, Armin Kloeckner

Session Moderator: Markus Arbenz

Session Key Takeaways

1. To achieve sustainable production systems, money matters. Practitioners and proponents of agroecology should advocate for investment in transformative systems that have incremental improvements.
2. SMEs and AE enterprises play a very important role in the transformation agenda as 60% of food consumed and 2/3 of the food supply chain is handled by SMEs.
3. There is a need to establish an accelerator fund for startups in AE.
4. AE pays and as stakeholders, there is a need to build a strong business case for AE.
5. Indigenous communities for a very long time including the pastoral communities have taken care of their natural environment and there is need to have deliberate and intentional research in such systems.
6. Food systems analysis should be all-inclusive (crops, sedentary livestock production and pastoralism systems)





Keynote Speaker: Dr. Frank Eyhorn, CEO Biovision Foundation: Financing Food Systems for Environmental and Socio-Economic Development in Africa

To achieve sustainable production systems, money matters. Practitioners and proponents of agroecology should advocate for investment in transformative systems that have incremental improvements.

Sources and who finances Food Systems Transformation

- Consumers
- Banks
- Farmers' investment in AE
- Funding from multinational development banks
- Funding by governments
- Philanthropic organizations and NGOs
- Through grants, funds, and loans

However, most of the funding is spent on agroecology initiatives. The 13 principles of agroecology provide a basis for developing tools for measuring donor funding portfolios on agroecology. All stakeholders must build a business case for investing in agroecology. The AE intervention must be economically viable to attract investment in them. It is obvious from experience sharing that AE pays off, but people need to have a good understanding of the principles. Funding should also support SMEs because 60% of food consumption and 2/3 of the food supply chain is handled by SMEs. Further, funding should also target supporting AE enterprises through an accelerator program. Examples of successful AE enterprises in East Africa include Tanzania: organic fertilizers and Uganda: collective aggregation and marketing of fruits and herbs by farmers. The reasons behind minimal investment in SMEs and AE enterprises include Investment size (SMEs annual turnover is still small), collateral demands by banks, high-interest rates on loans and small repayment window and the dealing in single commodity.

Conclusion

1. There is a need to establish an AE Accelerator package for small businesses including farmers.
2. There is a need to take a holistic business support approach with suitable capital/package.
3. Provide grants and low interest loans.
4. Develop an Agroecology criteria against which financing can be advanced.
5. Establish a collaborative set-up formed on the basis of true partnerships and co-creation.
6. Pay attention to gender issues.
7. Promote investments by both public and private sector actors.
8. Leverage on available finance and complementary tools
9. AE pays off.





Speaker 1: Indigenous food systems and especially pastoral-based systems: Milka Chepkorir, Coordinator of Community Land Action NOW! CLAN

The Indigenous people have a very special place in food systems in AE discussions. This is because communities have maintained their food systems, and this has helped them maintain their cultural identity from production preservation, preparation, and consumption. The AE proponents should advocate for the dissemination and passing on of IK to all generations. There is limited research on indigenous food systems. Migratory culture is part of environmental stewardship and sustainable use of resources as ecosystems are allowed to regenerate naturally. Pastoral communities select the strongest livestock and dispense the weak ones in a process to preserve the genetic makeup of their breeds. Technologies such as traditional beehives should be investigated and establish what informs the decision by the community to use such and what is the contributory effect on AE. Issues around minimum soil disturbance of the soil in vegetable production has contributed to the management of the soils. Unfortunately, because of pastoral orientation, there is less funding into such indigenous food systems. Compared with monoculture systems, there is less use of synthetic fertilizers and agrochemicals. Agrochemicals have affected the population of beneficial insects such as bees and wasps. Therefore, food systems analysis should be all-inclusive (crops, sedentary livestock production and pastoralism systems). The indigenous communities believe there is a need to nourish the people and the other systems too.

Speaker 2: Daniel Moss, Co-Director Agroecology Fund: Financing Agroecology in Eastern Africa: Emerging Opportunities and Aspirations-. If Grassroots Actors are critical to AE Transitions, why aren't we funding them?

The question is: where is the money coming from and who has rights to it? Grassroot actors are critical to AE transitioning. Only 2.7% of the EU's budget goes into AE and another 80% of green fund supports conventional agricultural systems. There are challenges around land grabbing which should not be ignored. The public spending priorities in Africa are misplaced and funding to AE is insignificant. The Agroecology Fund was established to address some of these challenges by deliberately targeting AE interventions and processes. The Agroecology Fund has already given out 263 grants in 82 countries in 5 continents of over USD 15 million. Currently, there are 45 donors and 13 advisors working with the Agroecology Fund. The AE fund contributed to the development of the tool for measuring the 13 principles of AE. There is a need to consider creating regional collaborative funding. AE is a solution for complex challenges.

Conclusion from plenary

- There is a need to support women and youth.





- There is a need to use conventions to plan for new innovations for AE.
- It is important to secure political support for transformational food systems to cause investment in AE.
- There is a need to strengthen grassroots voices and interventions.
- All stakeholders to support institutional organization and organizational strengthening of grassroots organizations.
- There is a need to build strong and formal organizations.
- Think of how to create awareness about carbon for grassroots communities.
- Knowledge from farmers needs to be appreciated and integrated in the AE agenda.
- There is a need to create platforms and spaces for indigenous people to share indigenous knowledge.
- Wind of change: The donor world also needs to change and push resources into agroecology.
- Role of private sector in financing AE
- Partners support results instead of process? How can we measure and finance AE?
- How can we pair small enterprises with funding?
- There is a need to Invite more politicians into conferences of this nature to reason with them.
- GIZ is currently implementing the transformation of agrifood systems strategy.
- Show that AE works from a business case and farm enterprise point of view.
- There is a need to support coalitions: should play a role in influencing financing into AE.
- Gender lens: women and youth be prioritized in the AE agenda.
- There is a need to match enterprises with donors.
- Allow systems that allow for ITK and local livelihoods systems





1.6 SUMMARY OF THEMATIC BREAKOUT SESSIONS

THEME 1: PRODUCTION, PRODUCTIVITY, SCALING UP, AND SUSTAINABILITY OF FARMING SYSTEMS BASED ON ENVIRONMENTALLY FRIENDLY TECHNOLOGIES AND METHODOLOGIES.

BREAKOUT SESSION 1

Session Moderator: Rosinah Mbenya - PELUM

Speakers:

1. Economics of Agroecology - *Innocent Faith, David Kersting – GIZ*
2. Aflatoxin as a factor in the Decline of Agricultural Incomes and Impacts on Food Security in Meru and Tharaka Nithi Counties in The Eastern Region of Kenya - *Prof. Linda Ethangatta, Prof. Renson Muchiri, Dr. Bonface Ileri Ngari, Dr. Kendi Muchungi, Dr. Kimani Gichuhi, Mr. Kagwathi Githii*
3. From Agroecology to Organic Farming: A Review of Best Practices and Lessons Learnt- *Mr. Rakoto Rakotondramanana, Mr. Tahina Raharison*
4. From Organic Farming to Agroecological Farming, What Challenges do Organic Farmers Face in Central Uganda? - *Mr. Bienvenu Dagoudo Akowedaho, Prof. Charles Ssekya, Dr. Joseph Ssekandi, Ms. Khady Ngom, Prof. Ismail M. Moumoun*

I. Economics of Agroecology - *Innocent Faith and David Kersting – GIZ*

The world has faced shocks in the recent past including global market disruptions, climate change, and Covid -19 pandemic. As a result, the food supply chain has been affected, exposing the vulnerabilities of many populations. This calls for a transformative process that transitions into more resilient and agro-ecologically friendly food systems. However, this transformation is hampered by inadequate scientific evidence on the economic viability of Agro-ecological practices and in-adequate support by policymakers.

GIZ conducted research in Western Kenya on ProSilience 'Enhancing soils and agroecology for resilient agri-food systems in Western Kenya' with the objective of enhancing agroecological transitioning towards sustainable agri-food systems. The project approach was to identify knowledge gaps relevant for large-scale implementation of agroecological innovation measures including research on incentives and approaches for eliminating barriers to scaling of the same.

The project also conducted a Cost Benefit Analysis by comparing conventional farms (CTRL) versus Agro ecological farms (CA). The results showed that there were 2.5-fold higher revenues of CA (KES 152,000) compared to the control group (KES 62,000) from classical farming and 11% of revenues going to variable costs (CA) while for control the percentage was at 30%.





There was also a two-time higher income from farming activities of CA compared to the control group through intensification and the diversification of production.

Some of the economically viable agroecological practices included:

1. Vermicomposting
2. Conventional Composting
3. Conservation Agriculture
4. Value Addition of various cover crops

Some of the reasons for the above-chosen technologies include low initial investment and they have a low labor cost, there was also a strong local market with low entry barriers and the potential for employment for the women and the youth.

Some of the Barriers to Upscaling Agroecology Identified during the Study include:

- High costs and unclear processes of Kenya Bureau of Standards certification for some Agro ecological products
- Limited awareness of the products/their value by the public
- Inadequate policies supporting Agro ecological transformation.

II. Aflatoxin as a factor in the Decline of Agricultural Incomes and Impacts on Food Security in Meru and Tharaka Nithi Counties in the Eastern Region of Kenya. - Prof. Linda Ethangatta, Prof. Renson Muchiri, Dr. Bonface Ileri Ngari, Dr. Kendi Muchungi, Dr. Kimani Gichuhi, Mr. Kagwathi Githii

According to the US Aid approximately 1.3 million Kenyans are food insecure. Beyond food insecurity, access is further strained because a quarter of all global food is destroyed by aflatoxin contamination.

Is there a correlation between stunted growth and Aflatoxin contamination?

Health Implications

Aflatoxins cause acute poisoning that damages the liver. When the liver is damaged, this could lead to jaundice, lethargy, nausea, and death. This is because the liver is involved in blood cleaning, breaking down, balancing, and creating nutrients for the body.

Socio-Economic Implications

Aflatoxin contamination on production affects the trade ability of produce due to risk of rejection and destruction leading to losses. This affects the financial pool for the family. For livestock feed, there is reduced productivity, disease burden, reduced prices, and discarded products.

A study was conducted in Meru and Tharaka Nithi of Kenya to:

1. Determine levels of aflatoxin in commonly consumed staple foods in Meru and Tharaka Nithi Counties of Eastern ecological zones of Kenya.





2. Examine the socio-economic impact of aflatoxin contamination in staple farm and market crops commonly consumed in households in the study counties of Meru and Tharaka Nithi.
3. Investigate the community's knowledge of dangers associated with the consumption of aflatoxin-contaminated staple foods.

The study areas were chosen because evidence shows both counties have high levels of aflatoxin in the soil, and they lie in the ecological zone with demonstrated high humidity after rains making them conducive to aflatoxin contamination of grain (maize, feed, and peanuts). These counties were affected by the toxicity (deaths) of grain during the 2004 and 2005 season and most of its grain were rejected by county cereals markets due to the high aflatoxin levels. The purpose of the study was to determine and respond to the challenge of food contamination by aflatoxin through the development of a technological platform for communication, community sensitization and awareness building to enable households and stakeholders to proactively respond to reduction and gradual control of aflatoxin in foods for human and animals.

Results

If the maximum safe consumption of aflatoxin is 10ppb than Kenya is a world hotspot due to its high acute toxicity. As of 2013, the average aflatoxin contamination was 131.7 ppb. The national average of stunted growth in Kenya is 11.4% however Tharaka Nithi and Meru Counties are significantly higher than the national average at 15% and 49.5% respectively.

The table below is a summary of the levels of education of the households sampled.

Education	Household Head Gender	County		Total	%
		Meru	Tharaka Nithi		
Primary	Female	103	22	125	25.3
	Male	250	120	370	74.7
Secondary	Female	18	7	25	14.5
	Male	86	62	148	85.5
Tertiary	Female	5	3	8	21.1
	Male	18	12	30	78.9
Bachelor's degree	Female	1	0	1	10
	Male	7	2	9	90
Postgraduate	Male	0	1	1	10
	Total	489	229	718	100

It was established that the levels of awareness of aflatoxin dangers were low in the two counties. Most farmers acknowledged that they have been taught about aflatoxin contamination however they forget. as most of them reported having misplaced their notes.





Recommendations

1. There is a need to create awareness about the hermetic bags for storage of maize after it has been dried to reach 13% of moisture content. However, the bags are expensive to purchase based on feedback from households.
2. There is a need to train farmers on how to effectively dry grains to ensure the moisture content is 135 before storage using local methods.
3. Farmers need to be taught that grain should be kept in well-irradiated storage to avoid humidity and the bags of grain should be raised above ground.
4. Training on the use of AFLASAFE (Bio control method). There is a need for a policy to promote its use and the prices to be subsidized to make it affordable for smallholder farmers.
5. There is a need to promote ongoing community learning through multi-faceted methods (Information communication technology, Radios), and extension visitation by agricultural officers to farmers.
6. There is a need to improve funding for research in aflatoxin.

III. From Agroecology to Organic Farming: A Review of Best Practices and Lessons Learnt

- Mr. Rakotondramanana and Mr. Tahina Raharison:

Madagascar is a major consumer of rice at a per capita consumption of 283 kg per person per Year. The paddy fields in the lowlands are currently saturated due to high population growth. As a result of this, the production of rice is happening in all available land including on steep hills. Smallholder production systems can no longer sustain food production and environmental health as such there is a need to transform towards best practices and use biopesticides not only in rice but also in other crops. The study therefore presents the results of the best practices tending towards organic farming.

The Groupement Semis Direct de Madagascar (GSDM) rebranded Professionnels de l'Agroécologie is a group of 15 organizations all involved in Agroecology. The group is responsible for a quarterly publication dubbed [Journal de l'Agroécologie](#) that reviews research results and lessons learned in Agroecology and in particular best practices in matters of restoration of soil fertility and organic matter management, biopesticides to move towards organic farming.

The best practice towards organic farming included: conservation agriculture based on long-term experiment results with maize associated with mucuna in rotation with rice intercropped with *Cajanus cajan*. Farmyard manure mixed with vermicompost was used on rainfed rice while liquid compost with botanical biopesticides was added to market gardening. The rice husk-based biochar was used as an alternative to chemical fertilizers. The best practices to reduce armyworm damage were employed by the use of mucuna in the maize field which acted as a





repellent of the worms and use of Ady Gasy (liquid fertilizer made from biocidal plants such as *Tithonia sp*, *Tephrosia sp*, sisal, neem are added) to control tomato leaf miner and *Tuta absoluta* while basket compost was applied on the cassava to boost yield and to prepare the soil for the next cash crop (vanilla, cloves or coffee). The *Arachis sp* was used as a cover crop for cash crops. The project further undertook the training of Agroecology in schools which has registered impressive outcomes.

Results

In Madagascar, the sector of organic farming has been in existence for 20 years marked by progressive growth, and regular product export especially for cocoa, spices, vanilla, fruits and vegetables, honey and essential oils with an annual turnover estimated at €110 million in 2020 compared to €22.6 million in 2009. There are several certified farmers and operators (LIAGRE L., 2020) with a steady increase in areas under cultivation with organic products. The involvement of GSDM in organic farming as part of the KCOA-KHEA project has helped in boosting organic farming in Madagascar.

IV. From Organic Farming to Agroecological Farming, What Challenges do Organic Farmers Face in Central Uganda? - Mr. Bienvenu Dagoudo Akowedaho, Prof. Charles Ssekyewa, Dr. Joseph Ssekandi, Ms. Khady Ngom, Prof. Ismail M. Moumoun

Agricultural intensification results in the increase of agricultural production per unit of inputs such as labor, land, time, fertilizer, seed, feed, or cash (FAO, 2004). The green revolution was and has highly been dependent on synthetic fertilizers, pesticides, and intensive use of "conventional agriculture" (Zulfiqar et al. 2016; Zulfiqar and Thapa 2016). On the other hand, organic farming standards prescribe regular inputs of organic fertilizers (e.g., manure and composts) and the use of legume crops in rotation (to increase N-levels and balance N:P ratios in the soil) (Rempelos et al., 2021). Agroecological farming systems values principles of diversification, mixed cultivation, intercropping, cultivar mixtures and habitat management techniques for crop-associated biodiversity; biological pest control; improvement of soil structure and health; biological nitrogen fixation; and recycling of nutrients, energy including waste (HLPE, 2019).

Agroecological approaches are premised on the belief that transforming food and agriculture systems requires addressing the root causes of problems and providing holistic and long-term solutions (FAO, 2018a). The study on "from organic farming to agroecological farming, what challenges do organic farmers face in central Uganda?" was conducted in Wakiso, Bukomansimbi, Ssembabule, Kyotera and Masaka Districts of Uganda among 310 organic farmers. Data was collected from individual farmers and was organized around five thematic areas with specific indicators as shown in the table below.



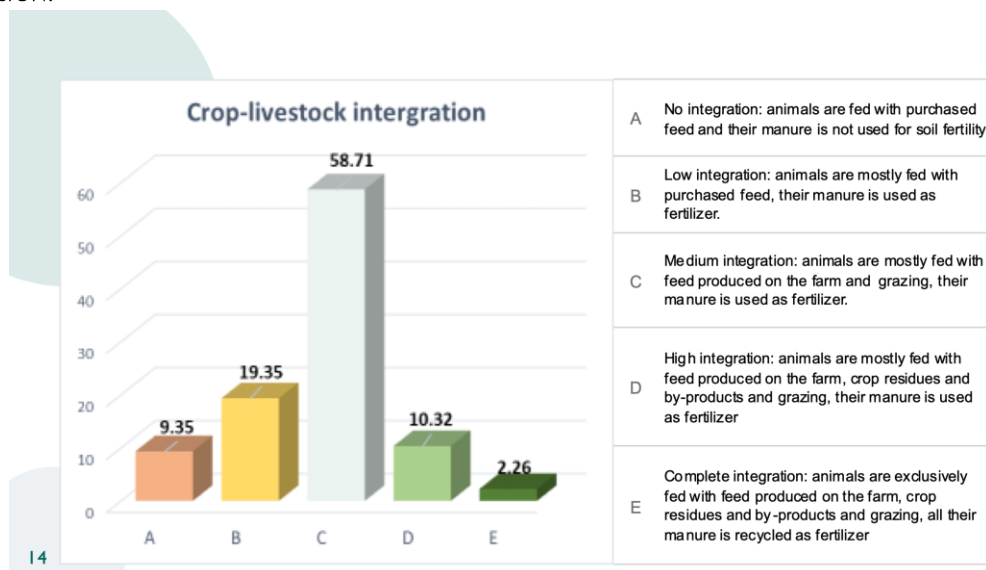


Principle	Indicator	Score
Diversity	Crops	0 to 4
	Animals	
	Activities, products, and services	
Synergies	Crop-livestock integration	0 to 4
	Soil- plants system management	
	Integration with trees (agroforestry, silvopastoralism, agrosilvopastoralism)	
Recycling	Recycling of biomass and nutrients	0 to 4
	Water saving	
	Management of seeds and breeds	
Resilience	Stability of income/production and capacity to recover from perturbations	0 to 4
	Environmental resilience and capacity to adapt to climate change	

The organic systems of interest were organic fruits, spices, vegetables, and food crops.

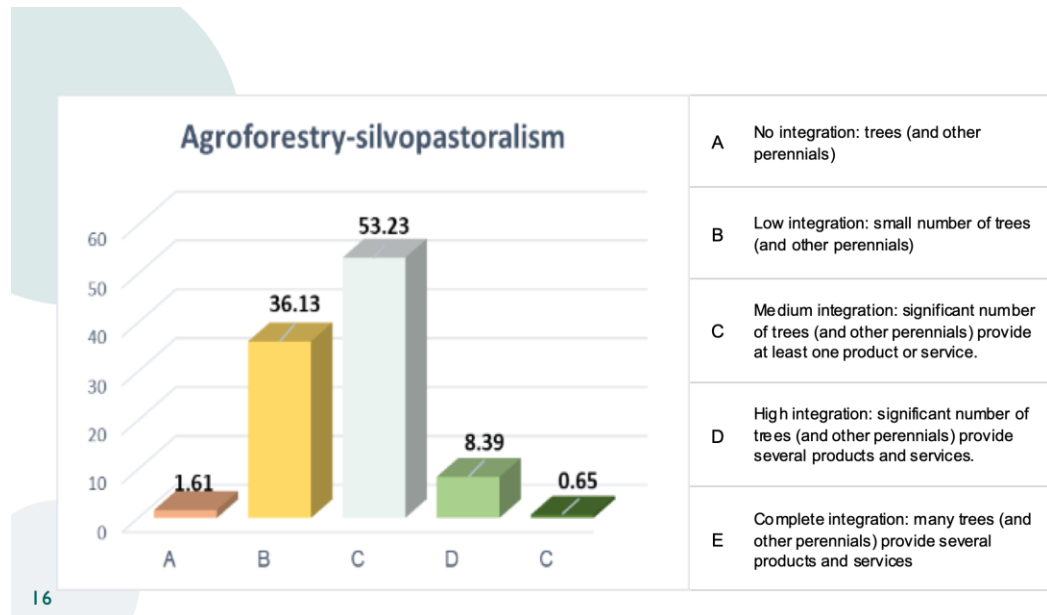
Results

On crops and livestock integration, results indicated that most farmers at 58.7% practice medium integration while 19.3% practiced low integration. The figure below summarizes this observation.





Agroforestry results indicated that, 53,3% of farmers are practicing medium integration where a significant number of trees (and other perennials) provide at least one product or service at the household level. The results are as shown in the figure below.



Other findings include:

1. More than half of the residues and by-products are recycled. e.g., crop residues as animal feed, use of manure as fertilizer, production of compost from manure and household waste, green manure).
2. Farmers use one type of equipment for water harvesting or saving (e.g., drip irrigation, tank).
3. That the majority of seeds/animal genetic resources are self-produced or exchanged. Some specific seeds are purchased from the market.
4. That farmers have overall stable incomes; however, production is variable from year to year (with constant inputs)
5. Majority of farmers acknowledge that the local environment could suffer from climatic shocks, but the system has a good capacity to adapt to climate change.

Conclusions and Recommendations

1. Organic farmers have a good level of crop diversity with several species including animals, however, there is a low level in the diversity of productive activities and services.





2. There are a significant number of trees (and other perennials) that provide at least one product or service.
3. Most of the animals are mostly fed from farm feed and this is combined with grazing. The manure from animals is used as fertilizer (medium integration)
4. Income is in the decreasing trend due to variable production from year to year (with constant inputs) and there is little capacity to recover after shocks/perturbations.

Informed by the above observations.

1. Organic farmers should invest in animals' diversity for organic manure availability for crops production.
2. Organic farmers should consider agroforestry, silvopastoralism for carbon sequestration in vegetation and soils and as this can enhance biological nitrogen fixation and resilience to climate change.
3. The government and the other partners should reinforce the organic farmers' technical capacity for water harvesting and saving and all stakeholders should promote genetic crops and animal diversity.

Session Moderator: **Loredana Sorg (Bio-vision Foundation)/ Dr. Edward Karanja (ICRPE)**

1. Differential Responses of *Bactrocera Dorsalis* and Its Parasitoids to Headspace of Different Varieties of Tree-Attached Mango Fruits and The Associated Chemical Profiles - *Mr. Raphael Njurai Miano Dr. Samira A. Mohamed, Dr. Xavier Cheseto, Dr. Shepard Ndlela, Dr. Tibebe Dejene Biasazin, Prof. Abdullahi Ahmed Yusuf, Prof. Egmont Rohwer, Prof. Teun Dekker*
2. Regenerative Agricultural Technologies for Improved Soil Fertility and Phaseolus Vulgaris Bean Production in Kenya - *Mrs. Mercy Kamau Rewe, Dr. Careena Otieno, Mrs. Judith Libaisi, Prof. Thomas Rewe*
3. Effects of Regenerative Soil Amendment Practices on Yields of Leafy Vegetables in Kenya - *Mr. Sam Koile, Mr. Samuel Akollo, Mrs. Pauline Barasa, Mr. Sam Gatehi, Mrs. Judith Libaisi*
4. Outcomes of A Multi-Year Agroecology Research and Advocacy Project in Tanzania – Focus on Maize Production - *Dr. Angelika Hilbeck, Ms. Gladness Brush*

I. Differential Responses of *Bactrocera Dorsalis* and its Parasitoids to Headspace of Different Varieties of Tree-Attached Mango Fruits and The Associated Chemical Profiles - *Mr. Raphael Njurai Miano Dr. Samira A. Mohamed, Dr. Xavier Cheseto, Dr. Shepard Ndlela, Dr. Tibebe Dejene Biasazin, Prof. Abdullahi Ahmed Yusuf, Prof. Egmont Rohwer, Prof. Teun Dekker*



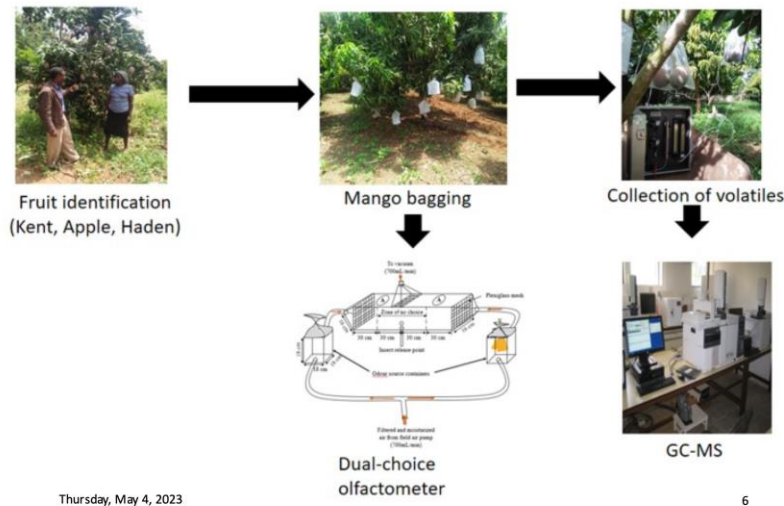


Bactrocera dorsalis (fruit fly) is a quarantine pest that can cause up to 100% loss of mango fruit and its most destructive stage of the fruit fly is the larval stage. In integrated pest management the use of Parasitoids is to target either the egg (*F. arisanus*) or the larva (*D. longicaudata*). *B. dorsalis* and its parasitoids mainly locate their hosts using semiochemicals and the study conducted aimed at mapping out and comparing the olfactomes of parasitoids and their fruit fly host. The specific objectives were to

- To compare the behavioral responses of *B. dorsalis* and its parasitoids (*F. arisanus* and *D. longicaudata*) to different treatments of tree-attached mangoes
- To characterize the headspace volatiles of different treatments of mango varieties (Kent, Apple and Haden)

The approach and method used is as summarized below:

Materials and Methods



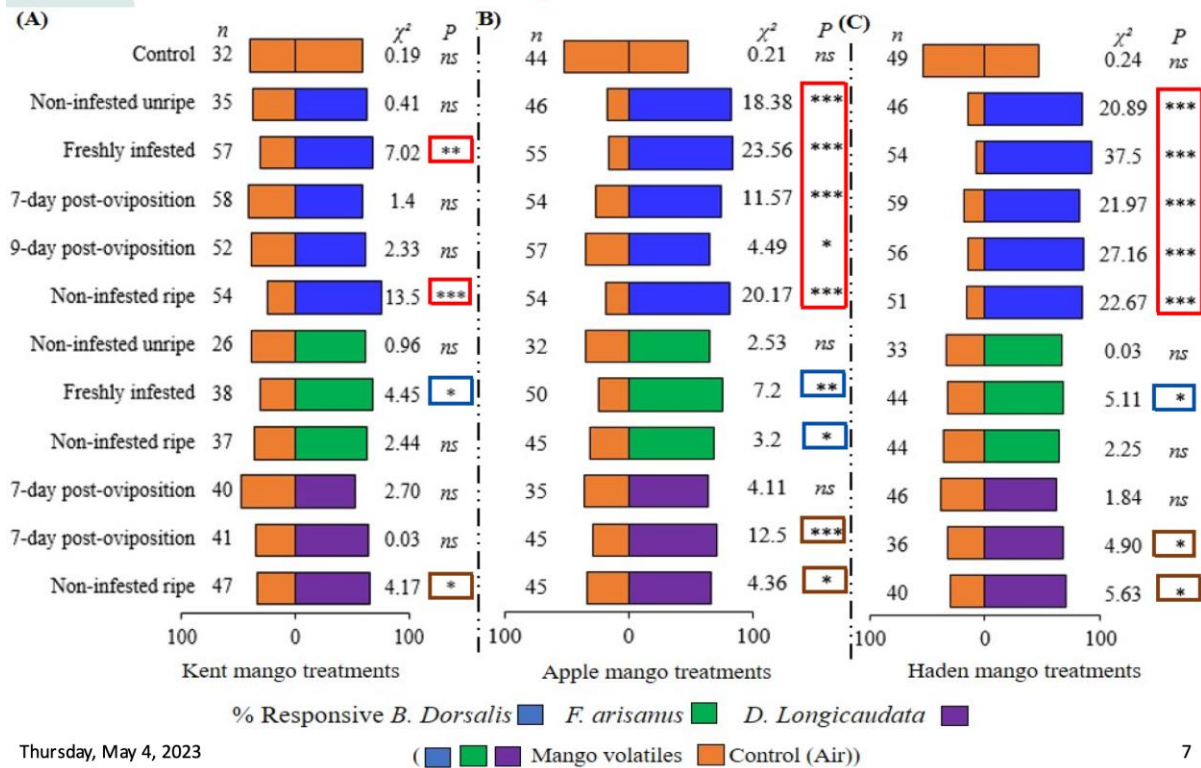
Results

The responses of *B. dorsalis*, *F. arisanus* and *D. longicaudata* are as shown in the figure below:





Responses of *B. dorsalis*, *F. Arisanus*, and *D. Longicaudata*



Thursday, May 4, 2023

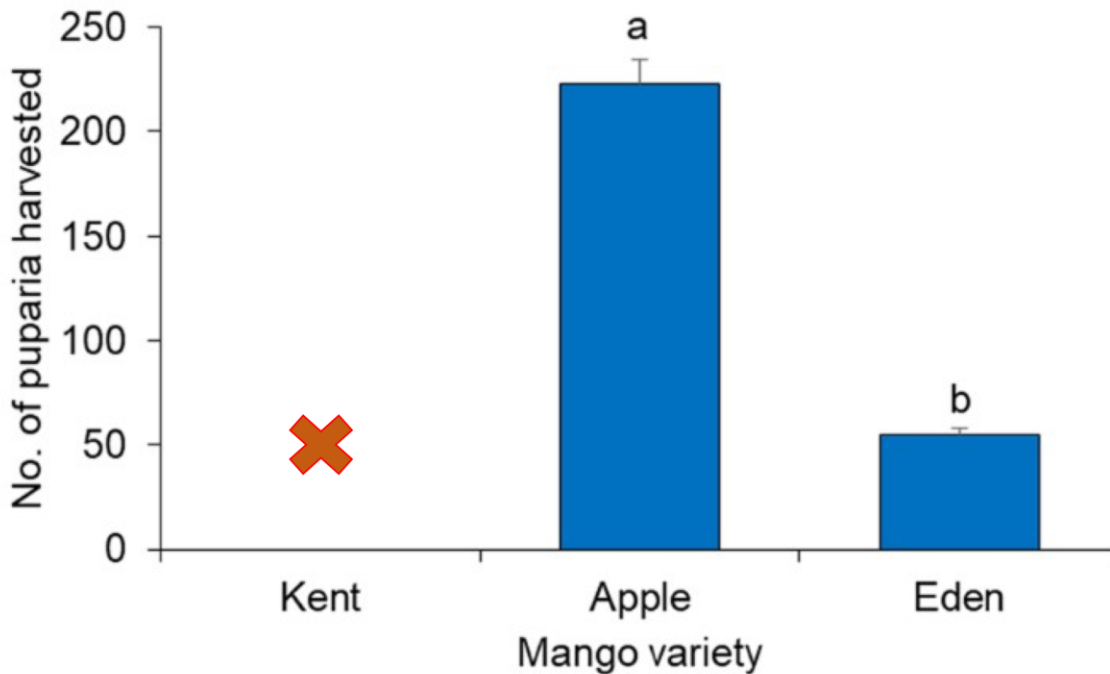
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On variety performance, Kent stood out as a promising variety in withstanding effects of fruit fly as indicated in the table below.





Performances of *B. dorsalis* in the mango varieties



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8

Conclusions

1. The responses of *B. dorsalis* and its parasitoids *F. arisanus* and *D. longicaudata* are highly impacted by odours cues.
2. The study highlighted the susceptibility and tolerance of different mango varieties to *B. dorsalis*, with the Kent variety showing promise in countering the menace of the fruit fly.
3. The results suggest some convergence of the responses among the fruit fly *B. dorsalis* and its parasitoids.
4. The parasitoids may have evolved to detect odour cues similar to those of their host.

Recommendations

1. There is need for sensitization to the farmers on the importance of removal and destruction of fruit fly infested fruits.





2. Further studies of the olfactomes of *B. dorsalis* and the parasitoids and how these can be subjected to novel methods of managing fruit flies should be conducted.

II. Regenerative Agricultural Technologies for Improved Soil Fertility and Phaseolus Vulgaris Bean Production in Kenya - Mrs. Mercy Kamau Rewe, Dr. Careena Otieno, Mrs. Judith Libaisi, Prof. Thomas Rewe

Soil health is a function of the physical, chemical, and biological properties. The chemistry is in the inorganic and organic matter, colloidal properties of soil particles, soil reactions and buffering action and pH. Soils are very dynamic when under agricultural production as soil organic carbon decomposes rapidly, the nutrients reduce as crops mine nutrients and soil structure is disturbed due to tillage. The Agrarian Revolution came with the use of inorganic fertilizers and chemical pesticides that promised bumper harvests and food security. However, due to overuse of these fertilizers and chemicals soils have become very acidic in many parts of Kenya (Kisinyo *et al.*, 2014). The pH is the gatekeeper on nutrients in the soils, and soil physical properties contribute to the optimal uptake of nutrients by plants. Maximization of production has led to depletion and reduction of beans production to average at 471 kg/ha against a possible 5558 kg/ha (KALRO, 2021; Oxfam, 2023). This calls for the urgent need for soil amendment through regenerative processes.

About the REALMS Project

Regenerative Agricultural Practices for Improved Livelihoods and Markets – REALMS is a project funded by IKEA Foundation and Implemented by SNV whose aim is to improve the Livelihoods of Small-Holder Farmers in Rwanda and Kenya through Regenerative Agricultural Practices for Healthy Soils and Sustainable Productivity. Great Lakes University of Kenya conducted research through the establishment of Farmers Field Schools (FFS) as focal points of Regenerative Agriculture (RA) technologies learning and adoption centers. The research was conducted in farmer fields in Kakamega, Bungoma, Kericho, Uasin Gishu and Nakuru and the organic amendments/fertilizers under investigation were Evergrow, Eco Planting and Boom Max compared to NPK. Trials were done through a Randomized Complete Block Design (RCBD) and the parameters evaluated were the soil chemical properties, germination percentage and yield parameters.

The status of the soil in the counties of interest was as follows.

Kakamega: pH extremely acidic (<4.5), and OC low (0.6-1.0%), N, P and K moderate, Ca and Mg low and very low

Kericho: pH moderately acidic (5.0-6.0), and OC very low (0.4-0.6%), N, K and Mg medium, Ca low, P was high.

Nakuru: moderately acidic, and OC low, N and Mg low and P and K and very low in Ca





Bungoma: pH extremely acidic (<4.5), OC moderate (1-1.8%), N, Ca, and Mg low, P and K moderate

Uasin Gishu: pH moderately acidic (5.0-6.0), OC very low (0.4-0.6%), N, K and Mg medium, Ca very low

Results

The chemical composition of the tested RA technologies was as follows.

Parameter	Eco planting	Evergrow	Boom Ma
pH soil: water	5.7	6.1	5.9
Nitrogen (%)	0.5	0.4	0.3
Phosphorous (ppm)	32.2	31.2	21.2
Potassium (Cmol/kg)	0.8	0.8	0.7
Organic carbon (%)	5.4	2.2	1.4
Calcium (Cmol/kg)	2.7	1.3	2.6
Magnesium (Cmol/kg)	1.8	1.0	1.2

Effects of soil amendments

1. pH: there was a general increase across treatments and seasons with greater increase noted in organic fertilizers compared to NPK, except for Kericho season 1. There was also increased SOM and buffering effect.
2. OC: Season 2 registered a higher increase in organic carbon compared to season 1. The current registered higher increase in organic amendments compared to NPK due to residual effect.
3. Organic amendments generally favored germination.

Conclusions

1. Soils did not indicate any significant differences in the measured parameters for RA Techs and NPK
2. Effects on soils take time- seasonal differences observed show potential for residual effects over time.
3. Higher germination percentages were observed on RA Technologies compared to NPK- important in reduced rainfall.
4. Yields from RA Technologies h did not show great significant differences with those from NPK.
5. If RA Technologies can compete favorably with NPK, then research questions on their sustainable use are valid.

Recommendations for Consideration





- Variability in quantities of available nutrients in the tested RA technologies (Ever grow, Boom Max and Eco Planting) is a matter of concern requiring regular research, product improvement and testing to ensure that nutrients are available in sufficient amounts.
- The quantities to be applied are substantial, (6667 kg/ha), posing a challenge in costs and labour. Concentrating nutrients to reduce quantities may have positive impacts on both.
- The tested RA technologies are capable of influencing positive changes in soil chemical properties. The relatively high yields upon application of RA technologies comparable to NPK-front them as useful in improving soil chemical properties and bean production.
- The residual effect noted in season 2 gives insight into the possibilities of continuously replenishing soils and opens doors into longer term research.

III. Outcomes of A Multi-Year Agroecology Research and Advocacy Project in Tanzania – Focus on Maize Production - *Dr. Angelika Hilbeck, Ms. Gladness Brush*

Agroecology is the contextualized application of ecological principles to agriculture, and, therefore, the identification and application of the best locally adapted practices is key for its success. Agroecological farming practices such as soil fertility measured by using compost, manure, mulch or increasing biodiversity through intercropping are rarely systematically implemented by smallholder farmers in Tanzania, with lack of knowledge being a key factor in hindering the widespread adoption of these practices.

Approach to the Study

The study consisted of two complementary research approaches: the scientific research plots that were established at three different Agro ecological zones in Tanzania with different climates where agroecological treatments from three categories of practice namely soil fertility measures, biodiversity, and ecological pest control were conducted. In addition, and complementation, there were farmer-managed satellite experiments that were used to validate the treatments in the farmer's "real world." This method of complementarity is akin to the mother and Baby Trial (MBT) method developed by S. Snapp (Snapp 2002). 'Ugunduzi' farmers chose which treatments they wanted to test on their farms against their usual practice as control. Data collection at the research fields was made possible by use of a smartphone application developed specifically for the purpose of the "AgroEco Research app" tool. The tool systematically collected analyzed data from identical (split plot) field trials set up by scientific researchers. The farmer-led research was supported by a smartphone application called "Ugunduzi," which enabled farmers to collect and store data and share their findings with peers on the open-ended communication platform dubbed "Macho Sauti". The study tested 3 types of agroecological practices namely: soil fertility treatments (composting and





mulching), increasing biodiversity through Intercropping with legumes and biological local pest control. The practices were tested alone and in combination.

Results

1. There were significantly higher maize yields on nutrient-poor soils when grown with added soil amendments.
2. The results also showed that there were highest kernel weights when maize was intercropped with cowpeas on organically amended soil.
3. Compost and mulching consistently positively affected yields at all field stations at varying degrees. The yields exceeded 3 - 4.5 t/ha, with a maximum of up to 7 t/ha indicating the yield potential of the local maize variety used in the trials.
4. Compost and mulching effects were enhanced by cowpea legume intercropping. Legume intercropping without soil amendments showed no effect on maize yields.
5. Organic matter increases phosphorus content which is a precondition for the activity of symbiotic nitrogen-fixing bacteria in soils.
6. All measured parameters varied significantly between seasons due to unpredictable, adverse weather events that occurred at all field stations at different times and in different forms (droughts or floods or both). The unpredictable weather events became a predominating impact factor on yields. Under environmental stress conditions such as floods and drought, highest yield levels per plot were achieved in plots that had received compost and mulch, although at much lower overall levels than in more normal seasons.
7. Compost and mulching helped to mitigate to some degree adverse weather events such as floods but also dry conditions.
8. Compost and mulch, for one, added the much-needed plant nutrients to the soil and the mulch cover also preserved soil moisture including reducing soil erosion in flood situations.

Conclusion

- Best return for the effort regarding yields are soil management practices, like mulching, manure or compost. Regardless of the composition of the compost, mulch or the manure, it always increases the yields of maize. In fact, without soil fertility practices all other practices don't really matter with respect to yield.
- Legumes have a more long-term and contextual effect on yield.
- Labour-intensive and costly pest control practices delivered little if any benefit and they require farmers to have knowledge on the type and ecology of pests. This provides the biggest opportunity for improvement.

Further Research Areas





- There is need for a study on the interaction effect of compost/manure and mulching with legume intercropping.
- There is need for a study on the best legume crops for intercropping with particular types of non-legume crops such as grains, root and oil crops.
- There are huge knowledge gaps on pests and the suitable pest-specific control agroecology control method. There is a need for more research in this area.

IV. Effects of Regenerative Soil Amendment Practices on Yields of Leafy Vegetables in Kenya - *Mr. Sam Koile, Mr. Samuel Akollo, Mrs. Pauline Barasa, Mr. Sam Gatehi, Mrs. Judith Libaisi*

Consumption of African leafy vegetables (ALV) is increasing and smallholder farmers are now fetching higher incomes in Kenya. ALV have diverse nutritional and ecosystem benefits, however, very little information is available regarding their best production and management techniques. All plants require nutrients to grow and produce. Animals provide materials for making manure that is good for the management of acidic soils. In Kenya, animal manure is not available in adequate quantities and most farmers use chemical fertilizers which according to the farmers are still very costly.

Approach

The study on regenerative soil amendment was conducted with farmers in 4 counties of Kakamega, Bungoma, Uasin Gishu, and Nakuru during the short rains of 2022. The experiments were laid out in RCBD with 4 replications. The soil amendments under investigation were manure 10t/ha, bokashi 6t/ha, DAP 100Kg/ha, NPK 100Kg/ha, and DAP 50Kg/ha+ manure 5t/ha. The soil amendments were applied in the prepared furrows through the placement method and mixed thoroughly with the soils before planting.

Chemical Analysis of the Soil

The chemical analysis of the soil and manure used for the experiment was performed to indicate nutrient levels of the soil and manure at KALRO ALUPE soil laboratory. Soil samples were collected from the ploughed land of study at depths of 0-30 cm and 30-60 cm using a soil auger and were air dried, crushed and passed through a 2 mm sieve (Jones JB, 2001). The soils were analyzed for phosphorus, nitrogen, potassium, sodium, magnesium, calcium, organic carbon and pH according to the procedural methods.

Data was collected from plants collected from every plot and this included analysis of fresh leaf yield (all the edible leaves used as food), disease incidence, head weight and plant population. Harvesting of the ALV was done at weekly intervals from the 5th week after emergence till the 5th harvest. The Kales were equally harvested until they reached a time where





no more could be harvested. For cabbages, they were harvested once. The weights were recorded in Kg/plot and later converted to kg/ha.

Conclusion and Recommendation

Regenerative soil amendment practices affect the yield of leafy vegetables. The use of manure, *bokashi*, DAP + Manure can substantially increase leaf yields of leafy vegetables.

BREAKOUT SESSION 2

Session Moderator: Dr. Nehemiah Mihindo (EIPMA)

1. Growth Performance of Spleen Amaranth (*Amaranthus dubius*) Under Different Manure Types and Biological Stresses - Mr. Francis Muzaga, Dr. Naza Mmbaga, Dr. Kelvin Ngongolo
2. Soil Quality Change following Compost and Farmacyard Manure Application in Maize and Cassava Based Agro-Ecosystems of Mvomero and Masasi - Tanzania Mr. John Constantine, Dr. Mawazo Shitindi, Prof. Kallunde Sibuga, Dr. Angelika Hilbeck - Mr. John Constantine, Dr. Mawazo Shitindi, Prof. Kallunde Sibuga, Dr. Angelika Hilbeck

I. Growth Performance of Spleen Amaranth (*Amaranthus dubius*) Under Different Manure Types and Biological Stresses - Mr. Francis Muzaga, Dr. Naza Mmbaga, Dr. Kelvin Ngongolo

The world population is rapidly increasing and there is a need for improving food security through increasing food production including the production and consumption of vegetables such as spleen amaranth (*A. dubius*). The Spleen amaranth (*A. dubius*) is widely used by local communities in East Africa for nutritional purposes. Amaranth growth is determined by the type of manure applied, variety of characteristics and biological stress occasioned by weeds, pests, and diseases.

The study was conducted as a complete randomized block design with three replications and data was collected on the following variables: growth variables (leaf length, leaf width, plant height all in cm and the number of leaves. The data was subjected to Kruskal Wallis and GLMN statistical tests.

Results

The weed species that affect amaranth included: Wild lettuce (*Launaea cornuta*), Blackjack (*Bidens pilosa*) and the Monkey thorn seedlings (*Acacia galpinii*)

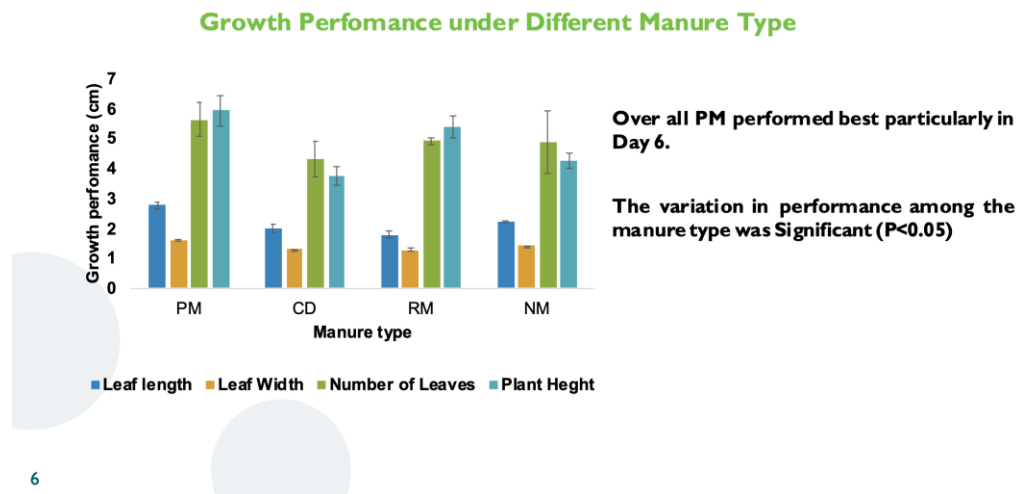
The pests that affect ammaranth include Defoliating caterpillars (*Spodoptera exigua*), Grasshoppers (*Orthoptera*), Aphid (*Aphis craccivora*) and Viburnum leaf beetle (*Pyrrhalta viburni*).





There was low infestation of weeds and pests on the amaranth under the poultry and rabbit manure treatment. The effect was insignificant.

The figure below shows the performance of amaranth under different manure applications namely: poultry manure, rabbit manure and no manure and a conventional demonstration that served as a control. Overall, the Poultry manure performed better as evidenced by the height of the plant and the numbers of leaves followed by the one with rabbit manure application.



Conclusion and Recommendation

1. Poultry manure had a significant positive influence on the growth performance of *A. dubius* compared to other types of manure. There is a need to explore more on this type of manure on other vegetables.
2. Despite being insignificant, the effect of weed invasion and pest infestation on the growth performance of amaranth need not be undermined.
3. To reduce their impact on the plants, the issue of plot distance from the bush should be put into consideration before the cultivation process.

II. Soil Quality Change following Compost and Farmyard Manure Application in Maize and Cassava Based Agro-Ecosystems of Mvomero and Masasi - Tanzania Mr. John Constantine, Dr. Mawazo Shitindi, Prof. Kallunde Sibuga, Dr. Angelika Hilbeck - Mr. John Constantine, Dr. Mawazo Shitindi, Prof. Kallunde Sibuga, Dr. Angelika Hilbeck

The world is experiencing an increasing human population resulting in ever increasing demand for food and fiber while the total arable land is however decreasing due to land degradation caused by unsustainable land use. This calls for sustainable farming approaches which can restore degraded agricultural soils and maintain the soil health for sustainable production.





Ecological farming relies on organic inputs such as farmyard manure (FYM) and composts (CP) to maintain the soil health and sustain its productivity. The short-term and long-term effects of FYM and CP on crop yields, soil physical and chemical quality attributes have been reported (De Schutter, 2010; Altieri, 2002a) however, little is known on the short-term effects of these amendments on soil biochemical quality attributes. As such, a study was conducted to determine the effects of two consecutive seasons of application of different rates of FYM and CP on activities of β -Glucosidase and Phosphatases as indicators of soil biochemical quality change under cassava and maize-based agroecosystems in Masasi and Mvomero in Tanzania. The experiment was designed in such a way that there were CP and FYM at three different rates of 2.5, 5.0 and 7.5 t ha⁻¹ including a control (0 t ha⁻¹). The application was done by broadcasting before planting in a RCBD with three replications. The cassava variety used was the 'Kiroba' and the maize variety was 'TMV 1' as test crops.

The research team conducted soil sampling and analysis at the baseline from each of the experimental plot before the application of FYM or CP treatments. At the end of the cropping season soil samples were also taken and analyzed. The soil pH and activities of β -glucosidase and Phosphatase were measured as indicators of soil chemical and biochemical quality change. Soil pH was determined by was determined in a 1:2.5 (w/v): water using pH meter (Mclean, 1982) while activities of acid phosphatase (ACP), alkaline phosphatase (ALP) and Beta-glucosidase were determined following the methods described by Tabatabai and Bremner (1994) with some modifications.

Results

1. Generally, findings indicated that the effect of FYM and CP on soil pH was not statistically significant and sensitive enough to be used as an indicator for soil quality change as influenced by applications.
2. Activities of β -glucosidase and phosphatase significantly ($p=0.05$) increased with increasing FYM and CP application rates because of increasing soil microbial activities.
3. Incorporation of FYM and CP has a potential for improving soil quality and productivity.
4. Soil pH is not sensitive enough to indicate short term effects of FYM and CP application on soil quality change.
5. Activities of β -glucosidase and phosphatase are sensitive enough to serve as indicators for short-term change in soil quality following applications of FYM and CP

Recommendations

1. Application of FYM or CP at a rate of 5 t ha⁻¹ is enough to bring about the desired level of soil microbial activities.





More studies are required to generate area-specific data to be used to scale up the use of FYM and CP in the restoration and maintenance of soil health.

THEME 2: BEST PRACTICES TOWARDS FOOD SECURITY, NUTRITION, CONSUMPTION, AND HEALTH: SOIL HEALTH AND FARMER-MANAGED SEED SYSTEM

BREAKOUT SESSION 1

Moderator: Julia Kamau, Seed Savers, and Eric

Speakers:

1. Farmer-Centered Interventions: A Key Approach for Agroecological Transition in Meru and Laikipia - *Mr. Sam Njogo, Ms. Nadège Kippeurt, Mr. Joses Muthamia*
2. Evaluation of Biopesticides for Traditional African Vegetables in Kenya - *Mr. Martin Barare, Dr. Ralph Roothaert, Dr. Paola Sotelo*
3. Soil Health Interventions in The Central Highlands of Ethiopia - *Mr. Amha Besufkad, Dr. Wubetu Bihon Legesse, Mr. Gemechis Jaleta*
4. Organic Farming System Enhances Below Ground Biodiversity Than Conventional Farming System in The Tropics - *Dr. Edward Karanja, Dr. Noah Adamtey, Mr. David Bautze, Dr. Hans- Martin Krause, Dr. John Anyango, Ms. Janet Atandi, Mr. Felix Matheri, Mr. Nderitu Mwangi, Ms. Nancy Mwendu Munyoki, Dr. Ruegg Johanna, Dr. Akansha Singh, Dr. Thomas Dubois*

I. A Key Approach for Agroecological Transition in Meru and Laikipia - *Mr. Sam Njogo, Ms. Nadège Kippeurt, Mr. Joses Muthamia: Farmer-Centered Interventions*

Farmers need to start doing small things collectively in a big way. This is according to one of the farmers who was engaged in the project. Mr. Samuel Kiarie, CGA Farmer Advisor, Laikipia.

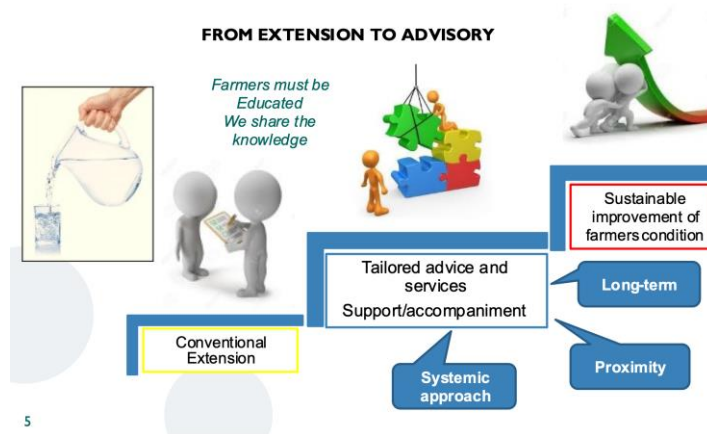
The methodology that was applied involved conducting a pilot experiment for 3 years with 8 groups at the beginning and adding an additional 8 groups to make 16 groups at the end of the 3rd year. The project objectives were to restore/improve soil fertility, to improve soil moisture retention, to improve crop production and productivity, to increase food security, enhance water harvesting technologies, diversify sources of income through farm enterprise diversification and rationalization of costs through collective actions (e.g., shared equipment). The delivery approach was to move from conventional extension where you tell farmers what to do to advisory where you work with what farmers already know and helping them improve their current practices.





The project brought on board 320 farmers out of which 154 were women. The project started with a needs assessment that combined context analysis. Informed by the analysis of the needs assessment, the intervention was co-designed with farmers together with its implementation plan. Through the process, there were scheduled meetings for co-learning and joint assessment of the ongoing project. At the end of the season there were discussions and plans for cascading the lessons learnt and upscaling the best practice.

The below figure summarizes the advisory approach.



Results

By applying context-specific interventions in diverse agro-economic and social conditions, farmers can develop diversified sources of income and food choices despite extended periods of droughts. Through co-designing farmers are able to own their development agenda and become fully engaged in the process. Through collective action, it is possible for farmers to sustain their practices as they see value in working together to adopt new innovations and technologies that offer food and income security.

Challenges Experienced

1. Extreme and extended periods of drought
2. Lack of water harvesting and management systems
3. Lack of proactivity and anticipatory spirit.

Opportunities for upscaling

- Training of Agroecological (AE) farmer advisors to facilitate peer-to-peer learning and establishment of model farms for learning.
- Promotion of exchange visits to enable farmers to learn from each other.





- Establishment of AE learning sites to offer opportunities to showcase the AE technologies.
- Establishment of seed multiplication sites for accessing seeds by farmers
- Promotion of agroecology farming as it has the potential to feed the world.
- There is a need to conduct more research on some aspects such as biopesticides.
- Promotion of organic farming as it is more stable and sustainable.

II. Evaluation of Biopesticides for Traditional African Vegetables in Kenya - Mr. Martin Barare, Dr. Ralph Roothaert, Dr. Paola Sotelo

Traditional African Vegetables (TAVs) provide essential nutrients that promote good human health and when produced commercially, they have the potential to meet a growing demand thus earning income for many smallholder farmers. However, production is limited by insect pests such as aphids (*Myzus persicae*), white flies (*Bemisia tabaci*) and diamondback moth (*Plutella xylostella* L.) that cause yield and quality losses. To control these pests and avert potential economic losses, farmers resort to a range of measures including spraying of synthetic chemicals. The undesired effects from the indiscriminate use of these chemicals include both human and environmental health concerns from pesticide residues, pest resistance and killing of beneficial organisms such as bees. As such, an eco-friendly approach to manage insect pests on TAVs is much needed. Biopesticides made from naturally occurring soil microorganisms and plant extracts offer a safe and effective alternative solution. A study was conducted in Kenya to evaluate the efficacy of commercially available biopesticides against insect pests in kale, African nightshade and amaranth.

Methodology

The study had six treatments with four biopesticides namely: *Bacillus thuringiensis*, *Metarhizium anisopliae*, *Beauveria bassiana* and azadirachtin 0.03%. There was one with synthetic pesticide Lambda cyhalothrin and one control (no treatment). The three crops under investigation were: amaranth, African nightshade and kale. Each of the treatments measuring 2m by 2m had three replicates in a randomized complete block design with a meter separating each block. The treatments were applied two weeks after transplanting and continued at weekly intervals for 9 weeks and the target insect pests were aphids and whiteflies. Data was collected from three inner rows of every block and five random plants from the selected rows were sampled. The information of importance was the total number of adult aphids and whiteflies from the sampled plants and the leaf area damage determined through visual examination on plants estimated as a percentage of the total plants sampled.





Observations/Results

Aphid Pest Abundance: biopesticide treatments showed a similar effect to the synthetic pesticide in controlling aphids in Kale and Amaranth. In African nightshade, Aphid population was significantly higher in plots treated with *Bacillus thuringiensis*, *Metarhizium anisopliae* and Azadirachtin than in synthetic pesticide treatment. Only plots treated with *Beauveria Bassiana* showed similar effect to the synthetic pesticide.

White fly abundance: White fly abundance in kale plots treated with biopesticides showed no significant difference with plots treated with synthetic pesticide translating to similar control effect in these pesticides.

Leaf area damage: The leaf area damage in kale and African nightshade was statistically similar in all treatments except in Amaranth, plots treated with *Bacillus Thuringiensis*, *Metarhizium Anisopliae* and Azadirachtin which showed significantly lower damage than synthetic pesticide.

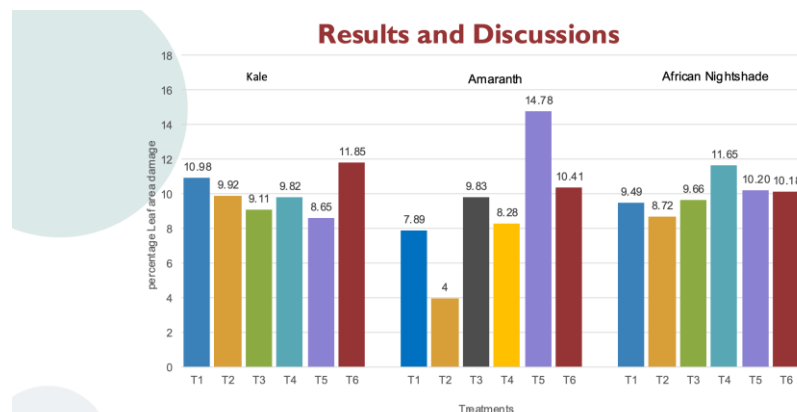


Fig 1: Mean Leaf area damage in different treatments

Conclusions

The study showed that biopesticides are effective in managing the population and subsequent damage caused by insect pests such as aphids and whiteflies in TAVs. One can use biopesticides that are user and environmentally friendly to manage pests in African indigenous vegetables.

III. Soil Health Interventions in The Central Highlands of Ethiopia - Mr. Amha Besufkad, Dr. Wubetu Bihon Legesse, Mr. Gemechis Jaleta

The productivity and quality of vegetables produced in Ethiopia are not at their optimum. Production practices in use are not safe for humans and the environment. The Veggies 4 Planet





and People project, funded by the IKEA Foundation piloted interventions with the aim of reversing the negative trends. The project tested, piloted, and promoted selected regenerative soil management practices in three districts of central highlands of Ethiopia namely Welmera, Ejere and Wolliso. The practices were: conventional composting, vermicomposting, use of bio-slurry, use of organic liquid fertilizers, mulching, crop rotation, agroforestry and interventions aimed at reducing/eliminating use of synthetic pesticides.

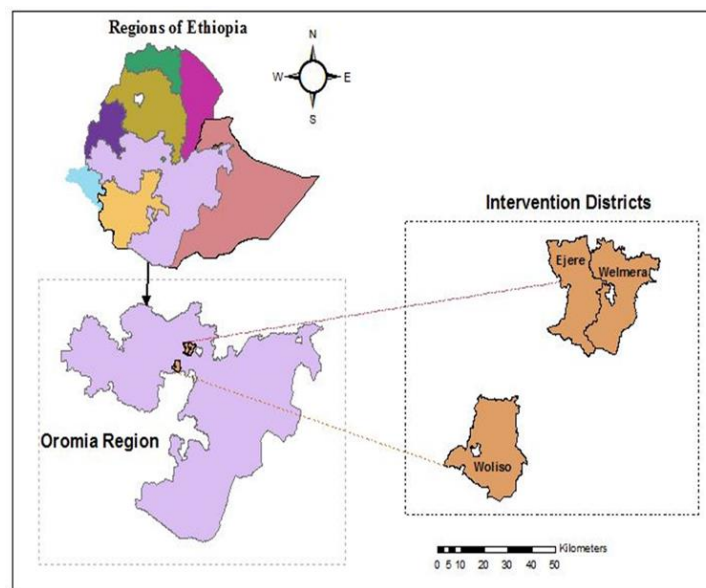
The objectives of the projects were to: analyze the status of the soil in the districts, pilot and promote soil health-enhancing RA practices and raise awareness on soil health amongst the target groups of farmers.

About the intervention areas

Welmera: Highlands to mid-highlands, have a bimodal rainfall pattern, annual rainfall, and temperatures of 1100 mm and 21.3°C respectively and mostly engage in vegetable production (2022) of about 11,823 ha.

Ejere: Highlands to mid-highlands, have a bimodal rainfall pattern, annual rainfall, and temperatures of 900-1200 mm and 18.5 °C respectively, and engage in vegetable production (2022) on about 729 ha.

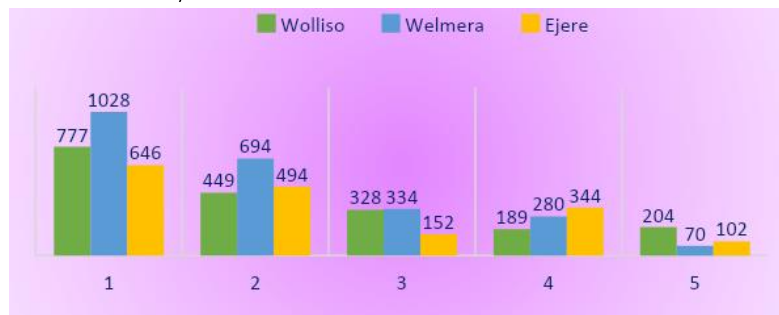
Wolliso: Highlands to mid-highlands, have a unimodal rainfall pattern, annual rainfall, and temperatures of 1200 -1350 mm and 18.5 °C respectively and engage in vegetable production (2022) of about 7007 ha.





The project also conducted purposive soil sampling to selected farms where composite soil samples were collected from each site for analysis. The soils were analyzed for: soil acidity (soil pH-H₂O), organic carbon (OC), organic matter (OM), total nitrogen (TN), cation exchange capacity (CEC), available phosphorus (AP), Calcium (Ca), Potassium (K), sodium (Na), Sulphur (S), Magnesium (Mg), Copper (Cu), Iron (Fe), Manganese (Mn), Zinc (Zn) and Boron (B).

On capacity development and training of trainers (ToT) cascading, four rounds ToT were conducted with government extension workers. The ToTs training was a blend of theoretical and hands-on practical sessions facilitated by different experts. The training was then cascaded to farmers using the ToT model. The ToT pattern follows the cropping seasons so that the cascading can be synchronized with the farming activity of the intervention areas. To support knowledge dissemination, training leaflets were produced for farmers. Following the training, farmers started producing inputs such as compost, vermicompost, and bio-slurry. The figure below shows a summary of the number of farmers trained.



The project provided farmers with boxes and worms for vermicomposting and for bio-slurry, farmers who had the financial means cost-shared the construction costs of a biodigester through linkages with the Energy project of SNV.

In the learning plots, farmers exercised RA soil amendments and other improved agronomic practices while at the demonstration sites, apart from displaying vegetable crops with different organic amendments, a composting pit and vermicomposting box were placed for learning.

Results

The OM varied from 2.68 to 3.48 %, which extends from low to moderate levels (Tadesse 1991). The OC was between 1.34 and 2.02 %, which according to Musinguzi et al., (2013) was generally below the threshold for sustaining soil quality. The total soil nitrogen for the districts was under the low category for tropical soils (Landon 1991; Tekalign et al., 1991). The lower OM and OC in Ethiopian soils were attributed mostly to the low addition of organic matter to the soil (Yihenew, 2002) and leaching (Lin et al., 2001)

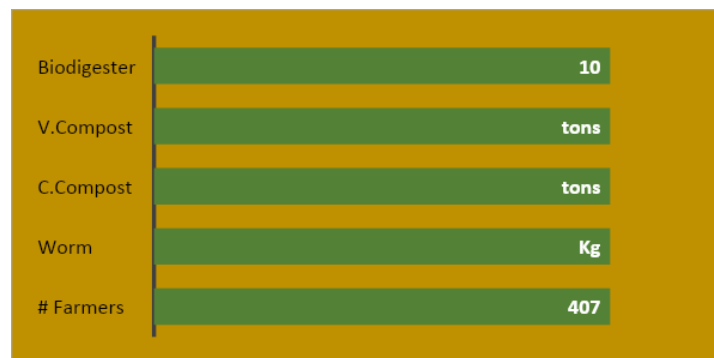
From the baseline survey, the AP was within the low to high range (Horneck et al., 2011), K was in very high range, similar to other districts in the country (Hailu et al., 2015), S was above the





critical level (Lewis, 1999). The micronutrients such as Fe and Mn were well above the critical level (Jones 2023) and Zn which was generally considered deficient in most Ethiopian soils (Ethiosis, 2015; Eyob *et al.*, 2016; Ashenafi *et al.*, 2016) in all the three districts was found to be above the critical level. The B was below the critical level (Hailu *et al.*, 2015)

The figure below shows the amount of compost, vermicompost and bio-slurry that was produced by farmers in the three districts.



The demonstration and learning plots were used as an assembly point for farmers to learn about the different aspects of regenerative soil amendment methods and practices such as conventional compost production, pit vermicomposting, mulching, and green manuring. In total 120.1ha of land was covered, with 1886 farmers adopting regenerative technologies. In total 402 learning plots and 3 demonstration plots were established.

Conclusion

Scaling soil management practices such as manure, compost, vermicompost, bio-slurry, crop rotation, mulching, etc. should be a continuous process and that both the ToT and cascading of the training to farmers had a profound impact on the scaling of soil health interventions in the V4P&P intervention areas. There is a need to assess the impact of the practices on the physical, chemical, and biological properties of the soil. Moving forward, there is a need to establish the best way to maintain and enhance soil health and since regenerative agriculture practices have recently been proposed as a planet and people-conscious alternative way of producing food, they should be promoted for adoption.

Regenerative Agriculture refers to a production system that nurtures and restores soil health, protects the climate and water resources and biodiversity, and enhances productivity and profitability'. Farming practices under the RA umbrella are known to have a significant impact on soil health, which has the highest importance for sustainable food production.

IV. Organic Farming System Enhances Below Ground Biodiversity Than Conventional





Farming System in The Tropics - Dr. Edward Karanja, Dr. Noah Adamtey, Mr. David Bautze, Dr. Hans-Martin Krause, Dr. John Anyango, Ms. Janet Atandi, Mr. Felix Matheri, Mr. Nderitu Mwangi, Ms. Nancy Mwendu Munyoki, Dr. Ruegg Johanna, Dr. Akansha Singh, Dr. Thomas Dubois

If farmers use the Agroecological model correctly, they can increase their yields and ensure their food supply while preserving biodiversity and reducing their impact on the climate and soil depletion. They also become less vulnerable to climate change as they grow many different crops and improve the soil structure "Ellinor Isgren, a researcher at the Lund University Centre for Sustainability Studies

Dr. Karanja presented the findings of a long-term farming systems comparison trials in the Tropics (SysCom) project that they have been implementing in three countries (Bolivia, India, and Kenya) from 2007 and now in its 5th phase 2023-2026. This is a project implemented by Research Institute of Organic Agriculture (FiBL), Switzerland through a collaboration with Ecotop S.R.L, Institute of Ecology (University San Andres), PIAF-EI Ceibo Foundation, bioRe Foundation, Remai India Ltd and Institute of Insect Physiology and Ecology (ICIPE). The project is funded by the Swiss Agency for Development and Cooperation (SDC), Liechtenstein Development Service (LED), Coop Sustainability Fund and Biovision Foundation

The objectives of the SysCom project in the tropics is to compare organic versus other farming systems e.g., conventional, biodynamics and agroforestry in relation to quality and quantity of crop products, resource use efficiencies and sustainability of the agro-ecological systems. It also seeks to provide solid data that can be used to influence policy and to disseminate findings to stakeholders.

In Kenya the project was implemented from 2007 at Chuka (Tharaka Nithi County) and Thika (Murang'a County) with two components, long-term experiment, and participatory on-farm research. The project has so far done 3 years 6 seasons of maize-based crop rotation. The farming systems being tested are conventional and organic farming systems on randomized complete block design with high and low input levels.

In Bolivia the project has been running since 2009 and has two components, long-term experiment, and participatory on-farm research on cocoa agroforestry systems. The farming systems being tested are conventional, monoculture, organic and successional agroforestry systems on randomized complete block design.

In India the project has been running since 2007 and has two components, long-term experiment, and participatory on-farm research in Nimar valley on 2 years cotton-based crop rotation systems. The farming systems being tested are conventional, organic, biodynamic, and conventional biodynamic on randomized complete block design.

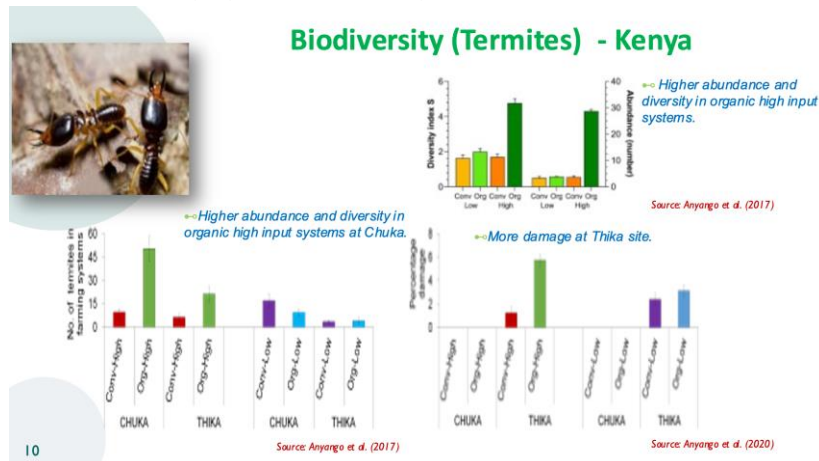




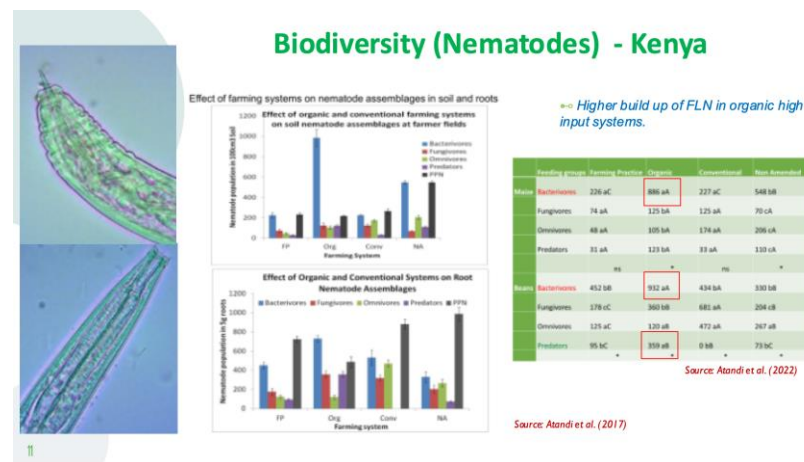
Results

Biodiversity (Bacteria & Archea) - Kenya

After 9 years of LTE implementation, high input conventional system had more diverse biodiversity than the organic farming system. Low input systems had similar diversity with conventional systems. 14 years later after trial implementation, organic systems have more diverse biodiversity than conventional farming systems. The figure below shows the findings about termite and nematode populations (Kenya).



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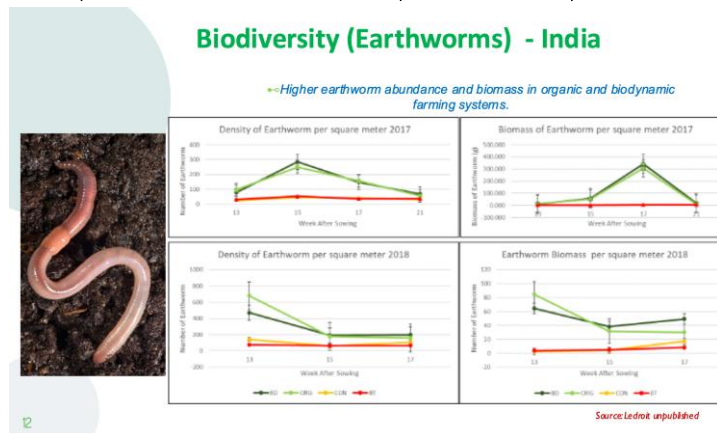


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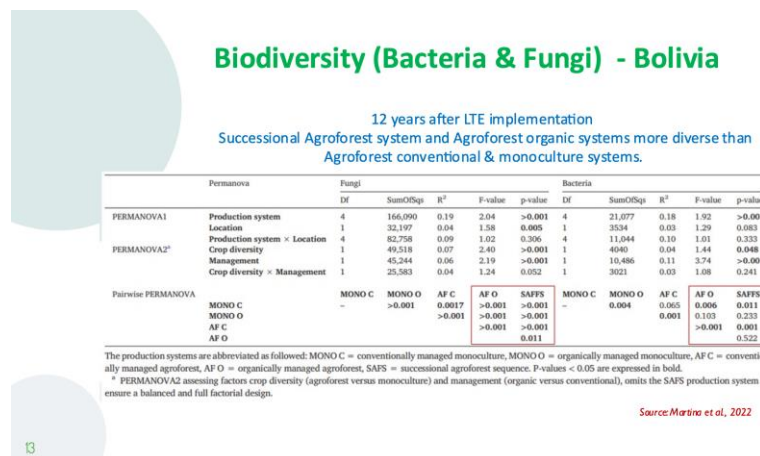




In India there were higher earthworms' abundance and biomass in organic and biodynamic systems as compared to conventional systems as depicted in the figure below.



In Bolivia after 14 years of implementation of SysCom, there was more biodiversity in successional agroforestry systems and agroforest organic systems than in the agroforestry conventional and monoculture systems.



Conclusion and Recommendations

1. Organic agriculture has a large potential to contribute to biodiversity conservation, soil health, productivity, profitability, and sustainable agriculture.
2. To get optimal results, major efforts are needed to assess biodiversity quantification, biodiversity loss, and biodiversity conservation.
3. Biodiversity refers to all forms of organisms in the ecosystem which play very important roles in the lives of humans, plants and the environment.





BREAKOUT SESSION 4

Session Moderator/ Facilitator/Chair: Judith Libaisi

Speakers:

1. Striving for Resilient Farming Systems through Poultry Interventions in Semi-Arid Eastern Kenya - *Ms. Carolyne Khalayi Wafula*
2. Investigating Foot and Mouth Disease in Wami Village, Tanzania. A Study of Pastoralists' Awareness, Practices and Vaccination Applicability - *Dr. Rajab Awami, Dr. Shaabani Mshamu, Mrs. Janet Maro, Ms. Salma Yassin, Mr. Alex Wostry, Mr. Yohana Haule, Dr. Latifa Mreta*
3. Promoting Exponential Change to Agroecology - *Ms. Liesl Hattingh, Ms. Sumeeta Gawande, Ms. Suzanne Neave, Ms. Claire Bake: Interact*
4. Informal Seed Exchange and Own Seed Production by Farmers Are the Key Pillars of Tanzanian Agriculture - *Ms. Veronica Massawe, Mr. Simon Degelo, Ms. Rajwinder Riar, Dr. Tanay Joshi, Mr. Alexander Heer, Mr. Rainard Mjunguli, Ms. Betty Malaki, Mr. Etienne Basset, Dr. Monika Messmer, Dr. Amritbir Riar*

I. Striving for Resilient Farming Systems through Poultry Interventions in Semi-Arid Eastern Kenya - Ms. Carolyne Khalayi Wafula

Poultry farming is an intervention that builds resilience among smallholder farmers in arid and semi-arid regions of Kenya making them able to withstand and recover from climate shocks and adapt to the changing environment. Resilience and diversity play a major role in agroecological transitions and farm-level diversity contributes to resilient food systems that deliver improved nutrition. Poultry production plays two significant roles that contribute to agroecological transition and climate change through synergistic benefits. Chicken has lower greenhouse gas emissions compared to cattle and pigs. Likewise, poultry droppings can be used to produce biogas which in turn substitutes for additional fuels. The objective of the research was to assess production and management information, chicken breeding practices and marketing of chicken among smallholders and to assess factors contributing to the selling of chicken among smallholders in Tharaka Nithi County. The research was conducted in Tharaka Nithi County specifically in Mukothima and Nkondi Wards. Tharaka-Nithi County lies in the Southeastern of Mt. Kenya at 0.30°S, 38.06°E with an elevation of 600–1500 m (a.s.l). it has an average temperature of 11 °C during cold seasons, while in the hot seasons, the temperature rises to 25 °C. it is largely semi-arid and receives a bimodal pattern of rainfall, approximated to <1000 mm annually. It has up to 60% smallholder farmers who engage in intensive mixed farming.

Data Collection and Sampling

Sample farmers were randomly selected, and data collected from them using a structured questionnaire that was administered face-to-face among 48 smallholder farmers. Both qualitative and quantitative data was collected on socio-demographics, production, breeding practices, crops, livestock, and agroforestry enterprises, income, and marketing.





Results

The results showed that the average age of male participants ($M= 44.1$ years) was higher than that of females ($M=41.4$ years). The average size for male-headed households was 5.7 and ranged from 2 to 15 persons while the size for female-headed households ranged from 0 to 14 persons with an average of 5.5. The results also showed that the household wife (89.8%) owns chicken while at the same time 95.9% participate in taking care of the poultry. Majority of respondents keep chicken for income generation purposes (34.7% for males and 53.1% for females) and 81.6% use grain by-product as poultry feeds, 75.8% use kitchen waste, 38.8% homemade rations and 26.5% use commercial feeds. Households that utilize commercial feeds reported the highest monthly consumption (44.8 kg) followed by those that used grain by-product (23.9 kg), homemade ratios (23.6 kg) and kitchen waste (10.8 kg).

It was observed that the crops that are used for livestock feed include sorghum, pearl millet, cowpeas, soybean and maize. The results showed that 97.7% of farmers sold their chicken on average three times a year and nine chickens on average. Income (75%) was found to be the most motivating factor for selling poultry among smallholders' farmers. Farmers reported that the consumers of chicken were traders/brokers/agents, hotels, and individuals or groups of farmers who sourced directly from the farmers or at the village open-air market. Farmers reported that apart from keeping chickens for income generation, they also keep chickens for food security and economic empowerment.

How the study links to agroecology

The research focused on the following agroecology principles namely: diversity, co-creation and sharing of knowledge, synergies, resilience, culture, and food traditions, recycling, and circular economy.

Conclusions

1. Different crops, livestock, and agroforestry trees are found in smallholder farmers.
2. The wife plays a major role in poultry production, management, and decision making.
3. Income was the most contributing factor for selling chicken.
4. Chicken rearing is found to be the second most important enterprise at the household level in regard to food security and economic empowerment.
5. Poultry farming is a strategic entry point to building resilient farming systems and could contribute significantly towards food security and income generation.
6. Study findings have important implications for policy reforms and practice that target farmers especially in semi-arid areas.
7. Diversification and resilient farming systems have the potential to mitigate risks such as severe drought due to climate change.
8. The farmers' coping mechanism contributes to improved resilience, and hence agro-ecological intensification which is the necessary case for the implementation of effective agricultural risk management policies.





9. Policies related to access to different farm enterprises and farmers' rights provisions are relevant to farming practices.

II. Investigating Foot and Mouth Disease in Wami Village, Tanzania. A Study of Pastoralists' Awareness, Practices and Vaccination Applicability - Dr. Rajab Awami, Dr. Shaabani Mshamu, Mrs. Janet Maro, Ms. Salma Yassin, Mr. Alex Wostry, Mr. Yohana Haule, Dr. Latifa Mreta

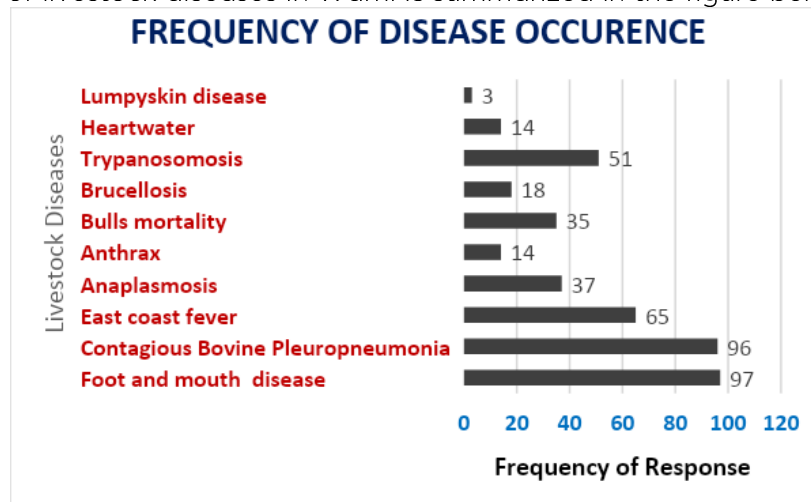
Pastoralists of Wami face the problem of Foot and Mouth Disease (FMD), a disease that is a highly contagious viral disease of cloven-hoofed livestock that has a significant economic impact. The principles of livestock disease management through biosecurity recommend prevention of disease entry and exit. This is the 1st line of defense. The 2nd line of defense is to implement a vaccination plan and the last option is treatment.

Currently, there is no cure for FMD and so the control of the disease is by strict biosecurity measures and vaccination where applicable. The research applied a participatory applied research design to investigate the awareness of vaccination, local methods available for treatment of FMD, the time of occurrence and effects of FMD amongst smallholder farmers using a sample of 100 farmers. Two hundred randomly selected cattle were drawn from 5 different farms for the study. A sample of 100 cattle were vaccinated. The Kobo collect and EPIINFO (SA) tools were used for data collection.

Results

Foot and Mouth Disease, Contagious Bovine Pleuro-Pneumonia, East Coast Fever, and Trypanosomiasis are the most prevalent diseases in Wami and 69% of farmers don't know how FMD is transmitted. However, 100% of farmers have witnessed the occurrence of FMD in their cattle.

The prevalence of livestock diseases in Wami is summarized in the figure below.





The commonly used medications used by pastoralists to treat FMD include mixture of table salt and wood ash, Kiloriti plant and Mtangalala plant, Wild sunflower, Cattle urine, Diesel, Olukulu practice (cattle jump over traditional herb), Wild onion, use of chemicals such as PENSTREPT and Diminazine Diacetate. Some medications such as Diminazine are not scientifically proven to treat FMD but have been used for years by pastoralists.

The highest prevalence of FMD disease can be explained by the mode of traditional livestock keeping practiced by pastoralists and the knowledge, importance, and role of vaccines in disease prevention is not well emphasized among Maasai communities of Wami villages. 62% of pastoralists do not have a tendency to vaccinate their animals against commonly occurring diseases. Despite FMD being diseases of highest prevalence pastoralists are stagnant in using commercially available FMD vaccines.

Some of the reasons why pastoralists do not use vaccines include: high costs, unavailability of vaccines, lack of vaccination skills, failure to define the timing of vaccination, poor veterinary extension services and presence of fake vaccines. Despite all these challenges, vaccination has been found to be effective as evidenced by reduced number of disease cases in vaccinated compared to non-vaccinated herds. Informed by these findings, researchers used the analysis as a basis to educate and influence pastoralists on the importance of using vaccination.

Recommendations

1. The results from research reveal that the pastoralists (of Wami) are less aware of the mode of transmission, prevention, and control of FMD in cattle.
2. Vaccination is an effective intervention in prevention of Foot and Mouth Disease in cattle.
3. Authorities should impose strong vaccination programs to manage FMD disease.
4. Strict biosecurity measures should be undertaken to control the disease from entering and exiting a location.

III. Informal Seed Exchange and Own Seed Production by Farmers Are the Key Pillars of Tanzanian Agriculture - Ms. Veronica Massawe, Mr. Simon Degelo, Ms. Rajwinder Riar, Dr. Tanay Joshi, Mr. Alexander Heer, Mr. Rainard Mjunguli, Ms. Betty Malaki, Mr. Etienne Basset, Dr. Monika Messmer, Dr. Amritbir Riar

The seed sovereignty of a country should not be sacrificed at the altar of food security as seeds form the basis for food and nutrition security including income source and resilience building against impacts of climate change. The formal and informal seed system should be integrated. In fact, commercial formal seeds should be selected and prioritized based on their adaptability to the local context. Hybrid seeds cannot be reused and shared yet farmers for a very long time have shared seeds amongst themselves. There are limitations within policies that prohibit sharing and exchange of uncertified seeds amongst farmers. As such there is a need for policy





alignment and integration of farmer seed systems into the main seed system within a country. Farmers seed systems have the potential for commercialization.

IV. Promoting Exponential Change to Agroecology - Ms. Liesl Hattingh, Ms. Sumeeta Gawande, Ms. Suzanne Neave, Ms. Claire Bake: InterAct

InterAct is a global gathering of people supporting farmers' transition to agroecology. Through the Food Systems Game Changers lab, a group of people and organizations, who work in-person with farmers across the globe to support their implementation of agroecology, gathered and shared their experiences. From their lived experiences and needs, they proposed a solution to accelerate the global transition to agroecology founded on input from grassroots practitioners.

Why InterAct?

Farmers know the food security crisis firsthand and knowledge-development, funding, and policies often lack input from farmers' lived experiences. Farmers lack time and access to resources to learn from one another and engage. This disconnect is a major barrier to resolving the food security and climate change crises. Anyone who works directly with farmers and supports transitioning to agroecology and has access to data, information, finance and policy they are a legible member of InterAct and they are transition catalysts. As transition catalysts, such people are well-positioned to interact multi-directionally in the food production system.

The InterAct approach is such that it operates in two-part solution: in-person regional network, and a web-based digital tool that the Transition Catalyst sets up to meet the needs of farmers. InterACT wants to save time and money by making the most of existing, available resources in knowledge, finance and policy to get these resources to farmers faster and more efficiently via Transition Catalysts. At the same time, interACT relays critical information from Transition Catalysts (and farmers) to those working in knowledge, finance and policy in order to shift outcomes toward support for agroecology. InterACT does not replace existing Web-based digital tools or in-person networks; it is simply a reservoir that pools together these resources, breaks down silos, and adds interactive tools to make resources more accessible and relevant to the needs of end users. It also highlights gaps, which the available interactive tools, support services, and in-person network can then strive to fill.

InterActors meet in person with Transition Catalysts locally and globally to help Transition Catalysts in accessing Web-based resources and enable them to upload their knowledge, solutions and case studies. The in-person component will consist of regional InterACT representatives (dubbed "InterACTORS") who will seek out and meet with Transitional Catalysts in regions ultimately throughout the world to facilitate the exchange of knowledge and resources from Transition Catalysts to the webtool and from the webtool to Transition





Catalysts. Many Transition Catalysts have knowledge which can be useful to others, but the Transition Catalysts often lack time and resources to record and share their knowledge. Transition Catalysts also have challenges and questions and need support. The InterACTORS assist Transition Catalysts in capturing their knowledge, solutions, challenges, and questions which can be easily uploaded and shared on the platform. The InterACTORS also assist Transition Catalysts to use the web tool to access the resources and connections available on the website, including training provided by SciDev.Net, a CABI subsidiary, in storytelling for impact, thereby growing the potential of users.





THEME 3: WOMEN AND YOUTH IN AGROECOLOGY

BREAKOUT SESSION 3

Moderator: Ann Maina - BIBA

1. Organic Lifestyle Influencer Approach (OLIA): Promoting Awareness and Consumption of Sustainable Food Through Social Media Campaigns - *Mr. Martin Njoroge, Ms. Selina Ulmann, Dr. Thomas Bernet, Ms. Lilian Mbithe, Mr. Benjamin, Mr. Mike Otieno*
2. Herbs Made in Africa! Bringing Health and Food to People, Crops and Animals. Exploring Herbs as Medicine, Food, Spices, Essential Oils and Cosmetics - *Ms. Bakirya Judith*
3. Roles of Women and Youth in Agroecology to Increase Food Production and Reduce Income Poverty in Dodoma Semi-Arid, Tanzania - *Dr. Leopody Gayo*
4. Innovative Agroecology and Agrobiodiversity Training Course (AATC) for Undergraduate Students - *Prof. Richard Onwonga, Dr. Janeth Chepkemoi, Mr. Noel Templer*

I. **Herbs Made in Africa! Bringing Health and Food to People, Crops and Animals. Exploring Herbs as Medicine, Food, Spices, Essential Oils and Cosmetics - Ms. Bakirya Judith**

"You receive knowledge of working with medicinal plants, food plants, flowers, and essential oils as a doorway into understanding health, spirituality and true wellness." "You learn how to eat more healthfully and joyfully in a way that really nourishes your body". "You engage in a paradigm shift toward real reverence for plants, which is the beginning of a sacred relationship with nature." "By David Crow, Master herbalist and Aromatherapist"

Herbal plants have multiple uses as medicine, as food, as spices, as oils and as cosmetics. The world market of herbs or medicinal plants will become \$114 billion by 2030. Herbal plants are a resource with big potential to improve health care, increase incomes, create jobs, and drive economic development in Africa. Thousands of medicinal plant varieties in Africa are our cultural heritage, and herbalists carry with them hundreds of years of knowledge, history, and culture. The use of herbal curatives is widespread and estimated at more than 60% in Eastern Africa. Treating a wide variety of common illnesses.

About Bakirya Organics – Herbal Enterprise

Bakirya Organics is an evolving community-based herbal enterprise producing medicinal herbals from fruits blended with indigenous herbs under the brand name NAMAZ. Bakirya





Organics works in partnership with rural women and young people in preserving, multiplying, processing, and promoting the use of herbs for treatment, learning, research, aesthetic beauty, and income generation. Namaz herbals (*the brand name*) has been tested by national laboratories for medicinal elements and food value. In Agro- Ecology Education, Bakiryas organics has included the element of learning for schools, groups, and individuals. The enterprise organizes farm education tours and question and answer sessions and under the Master Classes, the learning focuses on Agro-Ecology Tourism. Further, Bakiryas Organics hosts visitors on the forest farm who come to enjoy calm spaces offered for health and wellbeing.

The business model for Bakiryas is working with the local community as partners who form part and parcel of the herbal supply chain. The linkage between medicinal plants and agroecology presents enormous opportunities from which the world stands to benefit from. The East African economies can benefit from exports of herbal medicine and from gainful employment for numerous micro-enterprises cultivating medicinal plants, doing artisanal processing, and aggregating with nucleus businesses, agritourism and botanical gardens.

Recommendations

1. There is a need to brand African medicine and healing systems. Africans should name, package, market, patent and believe in its own medicine like the Ayurveda in India
2. There is a need to support governments to develop policy, legislation and regulation of herbal medicine which will in turn support the promotion and the investment in the use and commercialization of production of herbal medicine.
3. There is need to encourage the development of herbal gardens for environmental protection, for income generation and for every home to have a Garden Pharmacy
4. Support the acquisition of Intellectual Property (IPs) rights and patenting of medicinal plants and medicines as tangible and intangible assets.
5. Promote the unexploited potential of micro, small and medium-sized herbal enterprises as creators of employment opportunities, and income security.
6. Influence governments to integrate the health care systems (African indigenous system and Modern or Orthodox)
7. There is a need to invest in research into herbal medicine, documenting available knowledge, preservation, and multiplication.
8. There is a need to protect sacred rainforests that have survived because of traditional beliefs.





II. Organic Lifestyle Influencer Approach (OLIA): Promoting Awareness and Consumption of Sustainable Food Through Social Media Campaigns - Mr. Martin Njoroge, Ms. Selina Ulmann, Dr. Thomas Bernet, Ms. Lilian Mbithe, Mr. Benjamin, Mr. Mike Otiemo

The Organic Lifestyle Influencer Approach (OLIA) approach refers to the approach that aims to promote a more sustainable lifestyle among consumers in emerging economies through well-planned and implemented social media influencer awareness campaigns focusing on organic production and consumption.

How it was developed

It started as a social media influencer project in Kenya in 2021 and is running until December 2023 with funding from the Leopold Bachmann foundation, FiBL, KOAN, Wowzi. The project aims at promoting healthier diets for consumers and support higher demand and better prices for organic products including strengthening the organic stakeholders and brand Kilimohai. The project uses social media influencers campaigns to raise awareness and promote the consumption of organic food. The development and testing of OLIA took place from 2021 – 2022. The main campaigns started in 2023 and currently the reach is over 4 million Kenyans.

OLIA Framework

The OLIA framework has 5 steps that define the methodology of outreach and impact.

Step 1: Situation/Primary Analysis

The situation analysis is carried out to assess the level of 'organic awareness' and to define the entry points and scope of 'OLIA interventions' together with relevant partners. From the assessment, it is evident that 2.9 million Kenyans are tech-savvy youth in Nairobi region involved and reached using social media: Twitter, Facebook, Instagram, Tiktok. The youth are helping farmers grow to become Farmfluencers. There is also a widespread misunderstanding of what is "organic". There is great interest in healthy, sustainable lifestyles amongst urban youth.

Step 2: Conceptualization of Interventions

In this step, there is a description of the type of impact, target group(s), core values, and key messages. Based on this, a marketing concept is created. Accordingly, a sequence of different campaigns is defined.

The desired impact is awareness building, education, and promotion of consumption of organic food/ promotion of the brand Kilimohai. The core values and key message is "organic lifestyle is healthy and sustainable" and the marketing concept is "safe and healthy", "trustworthy", "good for you and Kenya". The current ongoing campaigns include organic caravans, Safaricom staff campaign, Miss Universe Kenya campaign, Organic farmer markets campaign, Farmfluencer campaign and the E-commerce and retailer campaigns.





Step 3: Influencer Selection and Training

Lifestyle influencers are selected and approached. They are then exposed to and taught about campaign ideas, values, messaging and to different 'organic content'. The influencer selection identifies individuals from micro to macro influencers.

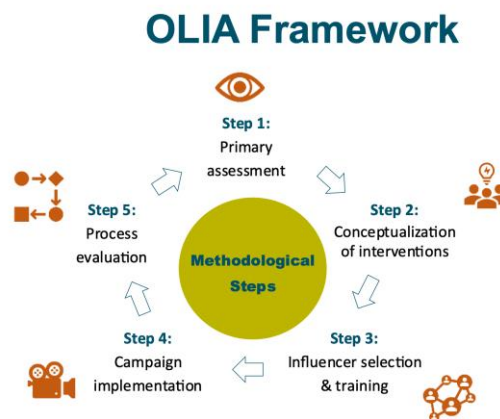
Step 4: Campaign Implementation

One or several campaigns are implemented. They are first tested in a smaller setting to adjust, prior to launching the main campaign(s). The impressions from the social media world are documented.

Step 5: Process Evaluation

All steps in the OLIA framework are evaluated. The learnings are incorporated into a potential new OLIA cycle starting again with Step 1. The evaluation focuses on the number of influencers engaged (currently 290+), average engagement rate (at 8.3% now which is considered very high), and the overall reach (currently at 2.96+ million people).

The figure below summarizes the steps above.



Lessons Learnt and Recommendations

- Complementing partnerships are key in pushing the messages and also in campaigns.
- There is a need for a clear main message and good visualization.
- For campaigns to be successful, there is a need for optimal engagement of consumers.
- Measuring campaign success is key in tracking progress and also improvement of messaging and communication.





- OLIA is a novel twist to using social media as a tool for behavioral change. It is flexible and can be used for advocacy on PGS, organic market development and agroecology technology and innovation diffusion.

III. Roles of Women and Youth in Agroecology to Increase Food Production and Reduce Income Poverty in Dodoma Semi-Arid, Tanzania - *Dr. Leopody Gayo*

Agroecology, as an integrative discipline of ecology and agriculture, is widely employed to enhance food production and local livelihood development. It is one of the interventions with the potential for productivity of cash and food crops while reducing biodiversity loss, mitigating climate change, and solving energy crisis. The role of women and youths in practicing agroforestry to increase food production and reduce income poverty in semi-arid areas has received little attention. A study was conducted in Dodoma semi-arid areas of Tanzania to assess the contribution of women and youth in agroecology (agroforestry) to increasing food production and reducing income poverty. The study focused on determination of the proportion of women and youth practicing agroforestry, the types of agroforestry practiced, the perceived crop yield and income from agroforestry practices, and the benefits derived, and drawbacks experienced by women and youth from agroforestry practices.

A mixed research design was employed to collect data from Mpunguzi, Hombolo, and Mbalawala villages using questionnaires, focused group discussions, and key informant interviews. A total of 258 women and 126 youth were involved in this study.

Results

The proportion of respondents practicing agroforestry indicated that the majority of the interviewed women and youth practiced agroforestry at an average of 73.4% and 69.5% respectively.

Villages	Practicing agroforestry (%)		Not practicing agroforestry (%)	
	Women	Youth	Women	Youth
Mpunguzi	71.6	67.2	28.4	32.8
Mbalawala	76.4	72.4	23.6	27.6
Hombolo	72.3	68.9	27.7	31.1
Average	73.4	69.5	26.6	30.5

On the types of agroforestry systems applied, the results indicated that, the majority of women and youth practiced Agri silviculture (intercropping) as shown in the table below.





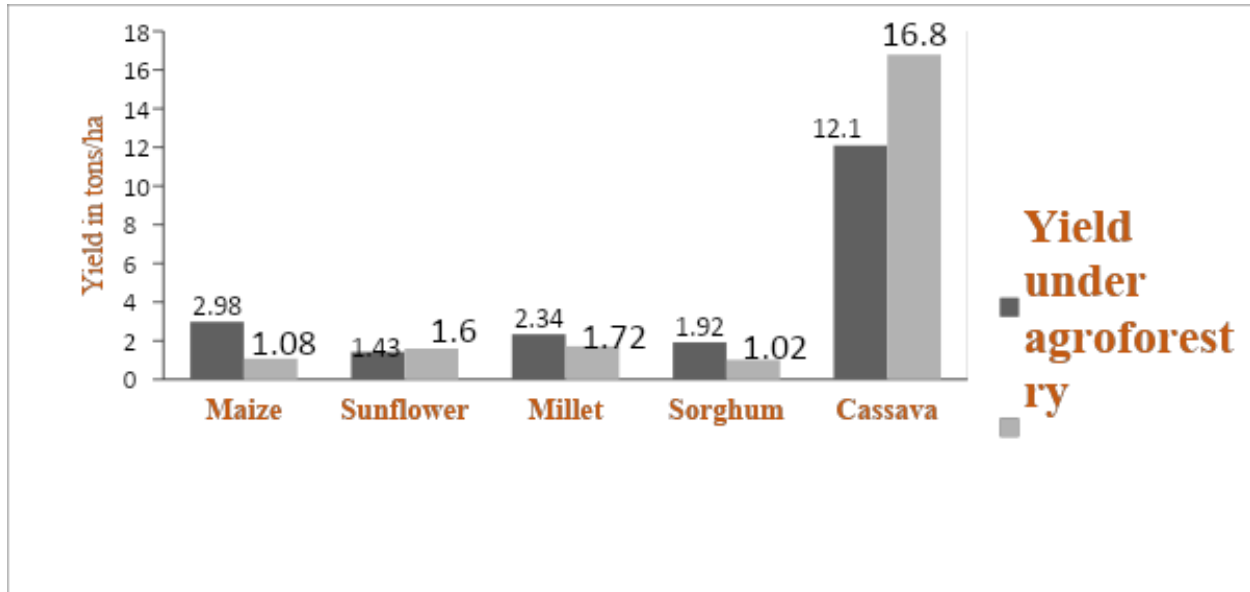
Villages	Types of agroforestry (%)					
	Agri silviculture (intercropping)		Silviculture (home garden)		Silvopastoral (livestock production)	
	Women	Youth	Women	Youth	Women	Youth
Mpunguzi	69.4	50.6	17.6	26.7	13.6	22.7
Mbalawala	61.7	50.0	26.6	37.0	11.7	13.0
Hombolo	44.2	43.4	22.1	28.4	33.7	28.2
Average	58.4	48.0	22.1	30.7	19.7	21.4

The average perceived annual income per farmer from agroforestry practices is summarized in the table below.

Types of products	Annual income per farmer in TShs and USD in brackets			
	Mpunguzi	Mbalawala	Hombolo	Average
Crops	317543(136)	452505(194)	372800(160)	380949(163)
Fruits	470065(201)	680040(291)	405403(174)	518503(222)
Firewood	137533(59)	152580(65)	337508(145)	209207(90)
Charcoal	47500(20)	102515(44)	195355(84)	115123(49)
Timber	95260(41)	125153(54)	210152(90)	143522(61)
Total	1067901(457)	1512793(643)	1521218(651)	1,367,304(586)

The Crop yield under agroforestry and without agroforestry were compared and the results are as summarized below. Maize, millet, and sorghum crops performed well under agroforestry combinations while cassava did well without agroforestry.





Perceived benefits from agroforestry indicate that farmers perceive benefits to be moderate to very high.

Benefit	Mpunguzi	Mbalawala	Hombolo	χ^2 -test	P-value
Food through crop yield, fruits, and vegetables	High	V. high	High	37.67	0.033
Income through selling agricultural and forest products	High	Moderate	High	19.12	0.021
Ecosystem services (soil fertility, shade, windbreak, soil erosion control)	High	Moderate	V. high	41.19	0.013
Forest products (timber, fuel wood, medicinal plants)	High	V. low	High	39.74	0.011
Increased land/plot value	High	V. high	High	28.81	0.014
Farm boundary demarcation	High	High	High	36.27	0.021

Some of the perceived limitation to do agroforestry as reported include:

- Lack of markets for agricultural and forest products
- Lack of capital leading to inadequate financial investment
- Poor silvicultural knowledge and inadequate extension service
- Lack of land ownership to carryout agroforestry
- Low availability of improved seeds
- Prolonged drought





Recommendations

- Despite the identified limitations, the study found a large proportion of women and youth practicing various agroforestry systems to improve food production and reduce income poverty.
- To improve food production and reduce income poverty among women and youth through agroforestry systems, the study recommends; the integration of agroforestry with other agroecological practices, enhanced market accessibility for agroforestry farmers, the provision of high-quality seeds and seedlings, and provisioning of technical and financial empowerment.

IV. Innovative Agroecology and Agrobiodiversity Training Course (AATC) for Undergraduate Students - Prof. Richard Onwonga, Dr. Janeth Chepkemoi, Mr. Noel Templer

Sub-Saharan Africa suffers from vagaries of weather, low productivity, soil degradation and the widespread vicious cycle of poverty. The conventional agriculture system is not delivering on food security as expected and African governments have not embraced alternative agricultural production methods such as agroecology and ecological organic agriculture. Kenya faces similar agri-food ecosystem management challenges. The International Training Course on Organic Agriculture (ITCOA) trained students in Organic Agriculture which resulted in a network of alumni inter-university partnerships. The Agroecology Agrobiodiversity Training Course (AATC) borrows from ITCOA and employs a transdisciplinary learning approach. The training is a four-week training course for undergraduates at the University of Nairobi. The use of transdisciplinary training in shaping trainee perspectives in both ITCOA and AATC has been lauded and the alumni of the course have ventured into their careers and set up businesses in the sector. The AATC is also in line with the ASTGS, which calls for adopting sustainable agricultural practices. The ASTGS further promotes eco-agriculture, one of the strategies pursued by the National Biodiversity Strategy and Action Plan (2019-2030). AATC is also aligned with Vision 2030's 4th medium-term plan (MTP) on a national agroecology strategy.

Objective

The overall objective of the training is to; build the capacity of participants on the principles and practices of agrobiodiversity and agroecology through an intensive theoretical and practical training course that is geared toward creating a critical mass of young professionals well-grounded in the tenets of sustainable agro ecological food production systems.

The Training Project Approach

In "How to teach agroecology," Altieri (2010) recommends combining theoretical discussions of the ecological crisis of modern agriculture, and related nature-based solutions and





ethnoecology with participatory and practical site-specific research. The AATC adopted a co-learning methodology where students got to learn from farmers and other practitioners. Students also get a chance to validate their findings in a session with experts in the field via a public workshop. The AATC training has a 4 step- approach: e-learning, classroom sessions, field excursions and reports development and public participation. A total of 42 students distributed across the participating universities attended. The e-learning introduces students to concepts such as: agroecology, agrobiodiversity, food systems, climate change and sustainability. The classroom setup focuses on in-depth learning on agroecology and agrobiodiversity, ecological organic agriculture (EOA), data collection and management, global climate change, food crisis and sustainability, system thinking, sustainability and food systems, sovereignty in food and seed systems, nature-based solutions in agriculture, contemporary Issues in Food, systems and contribution of the EOA to food security. The farm visits afforded the students an opportunity to experience agroecology, agrobiodiversity, and ecological organic agriculture practitioners, e.g., producers, traders, and certification agencies first-hand.

The interaction with researchers such as researchers at the SysCom (system comparison) project also expanded the students' understanding of agroecological concepts and experienced participatory research on agroecology with farmers.

Agroecosystem Assessment: the students had an opportunity to carry out an agroecosystem assessment of the sustainability of farmers' fields. The students were divided into three groups and were respectively tasked to assess the ecological, social, and economic dimensions of sustainability of selected farmers.

Feedback and workshop: students were divided into four groups based on the themes of the project which included ecology, economics, social and sustainability and a summary of their reports were used to prepare posters for presentation during the public workshop. The feedback and workshop marked the culmination of the AATC training.

Conclusion

The AATC training set out to build the capacity of participants on the principles and practices of agrobiodiversity and agroecology through an intensive theoretical and practical training course, geared toward creating a critical mass of young professionals well-grounded in the tenets of agroecological food production systems. A wide array of stakeholders (in the agroecology value chain) participated in the public workshop. Agroecology may not be a silver bullet; however, its principles and practices could serve as avenues for rethinking chemical-based farming systems and transitioning to sustainable systems.

From the agroecosystem assessment, adapting research approaches in line with indicators that promote inter- and transdisciplinary research is essential. The students are better





positioned to articulate why farming ought to be done “sustainably” and more so through applying agroecology and agrobiodiversity principles. The training enhanced the capacity of students on integrated/holistic understanding of food systems and now they can design experiments to investigate challenges in agriculture production. The outputs will not only help address the problem but will also inform policy decisions on agroecology. The training also contributed to the Biovision strategy of promoting and dissemination of agroecological innovations, knowledge transfer, and strengthening of the capacity of the participants, local communities, and other stakeholders. The graduates from the AATC 2022 would be a source of human capital e.g., to Infonet- Biovision, as interns and field officers. It is worth noting that the approach used in this training is a departure from the traditional classroom model of instruction to a mix of exposure visits with practitioners and farmers. The approach embodied practical aspects critical to sustainable agriculture. The training emphasized a blend of theory, practical’s, and innovation through frequent engagement/interaction with experts in AA, offering lectures and engaging students in participatory discourse, farmers to find and recommend innovative solutions to their prevailing challenges, private sector entrepreneurs to test and possibly upscale their innovations and stakeholder/practitioners through public workshops and guest speakers’ invitations.

BREAKOUT SESSION 6

Session Moderator: Richard Mugisha (Yalta) And Ann Maina (BIBA)

1. Food Sources and Dietary Diversity among Conventional and Organic Female Farmers in Murang’a County, Kenya - *Dr. Kadzere Irene, Dr. Anne Muriuki, Ms. Marian Kamau, Mr. David Gathuka, Dr. Peter Mokaya, Dr. Noah Adamtey, Ms. Marlene Heeb, Dr. Christian Schader, Prof. Isabelle Herter-Aeberli*
2. Enhancing Research Through Farmers Research Networks: Opportunities and Challenges - *Suzana Nyanda and Dr. Devotha Mosha, Dr. Siwel Nyamba, Dr. Newton Kilasi, Prof. Dismas Mwaseba*
3. Nderitu Agroecology and Sustainable Livelihoods as a Framework to Empower Women and Youth in East Africa - *Ms. Celina Butali & Dr. Monica*
4. Increasing Productivity and Reducing Poverty Through Regenerative Agriculture and Circular Economy - *Ms. Chiara Baiocco*





I. Food Sources and Dietary Diversity among Conventional and Organic Female Farmers in Murang'a County, Kenya - *Dr. Kadzere Irene, Dr. Anne Muriuki, Ms. Marian Kamau, Mr. David Gathuka, Dr. Peter Mokaya, Dr. Noah Adamtey, Ms. Marlene Heeb, Dr. Christian Schader, Prof. Isabelle Herter-Aeberli*

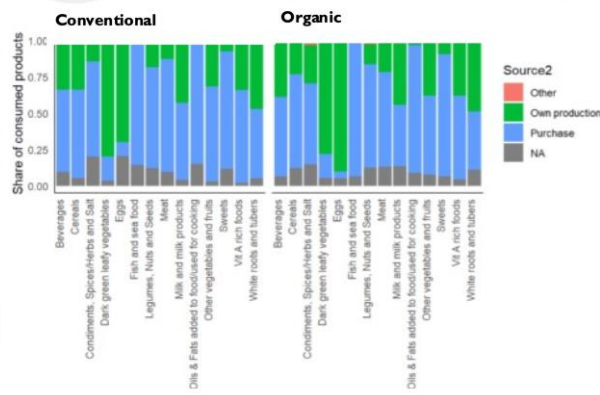
Malnutrition remains a key public health risk in Kenya and the women and children particularly in the rural areas most at risk. For these families, farming is a key to rural food and livelihood sources. Organic agriculture is gaining importance in Kenya as shown by studies on productivity, profitability and sustainability implemented from 2007. But what are potential impacts on household nutrition, especially to women?

A study was conducted of the ProEcoAfrica/OFSA organic and conventional farmers projects in Murang'a, Kenya. An equal number of organic and conventional farming women with similar education and age were selected. Interviews were conducted between January and March 2020 through Food Consumption Frequency (FFQ) questionnaire, a general household questionnaire, and 24-Hour Recall questionnaire. The data was used to calculate the Minimum Dietary Diversity for Women (MDD-W). The MDD-W is a simple, food-based indicator for measuring dietary diversity and micronutrient adequacy of women of reproductive age. The MDD-W indicator tracks consumption of 1. grains, white roots and tubers, and plantains, 2. pulses (beans, peas, and lentils), 3. nuts and seeds, 4. Dairy, 5. meat, poultry, and fish, 6. Eggs, 7. dark green leafy vegetables, 8. other vitamin A-rich fruits and vegetables, 9. other vegetables and 10. other fruits.

Results

The farming systems under own production and purchase showed that these systems are the significant sources of food at family level. Dark green leafy vegetables and eggs were sourced from their own production. Most of the organic farmers consumed food from own-production vs conventional (Chi-square $p = 0.00165$). This is summarized in the figure below.

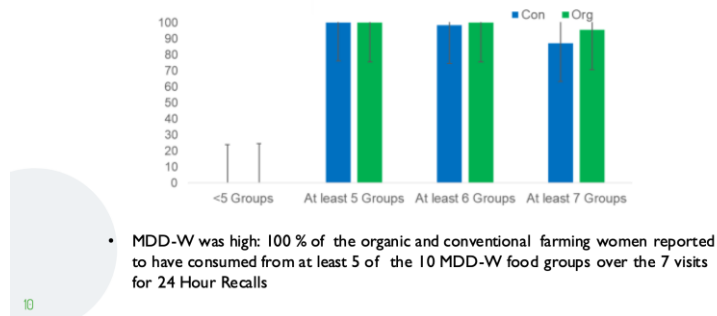
Food sources reported through FFQ





Consumption of the food items from 10MDD-W food groups indicated that women have consumed at least 5 out of the 10 MDD-W food groups based on the recall analysis conducted. This is summarized in the graph below.

Consumption of food items from 10 MDD -W Food Groups by the women



Conclusion

- Own production and own purchase were important food sources for both women farming groups.
- A greater share of foods consumed by organic groups was from our own production both from FFQ and the 24-Hour Recalls.
- Conventional groups had a greater share of consumed foods from purchase both through FFQ and 24-Hour Recalls.
- The overall high MDD-W (over 7 visits) suggests that women from both groups tended to achieve acceptable levels of dietary nutrient intake and quality.

Recommendations

1. There is a need for similar studies which factor seasonal differences to capture when food is in abundance and when there is scarcity or during lean season.
2. There is a need for a study to compare certified versus non-certified and the implications of price premiums on food purchases.
3. There is a need for a study to compare agroecological and socio-economic differences of varying agroecological conditions and socio-economic characteristics.
4. There is a need for a repeat study with a larger sample size.





II. Enhancing Research Through Farmers Research Networks: Opportunities and Challenges - *Suzana Nyanda, Dr. Devotha Moshia, Dr. Siwel Nyamba, Dr. Newton Kilasi, Prof. Dismas Mwaseba*

Farmers form a special group in a society and yet they're left behind in agricultural related research. The conventional top-down approach to research provides one-size-fits-all solutions for problems and opportunities that farmers face. This approach is not favorable to most of the developing countries where the majority are small-scale farmers and are engaged in diverse crop and livestock weather-based farming systems. There is an emergence of participatory research and extension methods including Farmer Research Networks (FRNs). Participatory research approaches aim at involving farmers as key players in research. The FRN is "an association of farmer groups, working together with research and development organizations to facilitate access to technical, institutional, and financial support, which engages in research and is networked so as to share information and data" (Nelson et al., 2019). In the study that was conducted, farmers groups and FRNs were used interchangeably because some of the groups involved in the study were not undertaking 'research' though they were sharing information and networking with other farmers groups.

Genesis of the study

The McKnight Foundation through Collaborative Crop Research Program (CCRP) initiated support for Agroecological Intensification (AEI) using FRNs. The strength of FRNs depended on members composition, the aspect that influenced the levels of members participation, power relations (Méndez et al., 2017). The AEHT project aimed at undertaking multi-disciplinary demand-led research contributing to enhanced livelihoods and sustainable environment in rural communities through principles of Agro-Ecological Intensification. The project partners worked with farmer groups with and without a research component. A scoping study to assess the status, opportunities, and challenges of the existing FRNs/farmers groups to inform AEHT project interventions was also conducted. The project worked in three regions Mbeya, Singida and Morogoro with 4,7, and 17 FRNs respectively. Data collection was through surveys, focused group discussions and key informant interviews.

Results

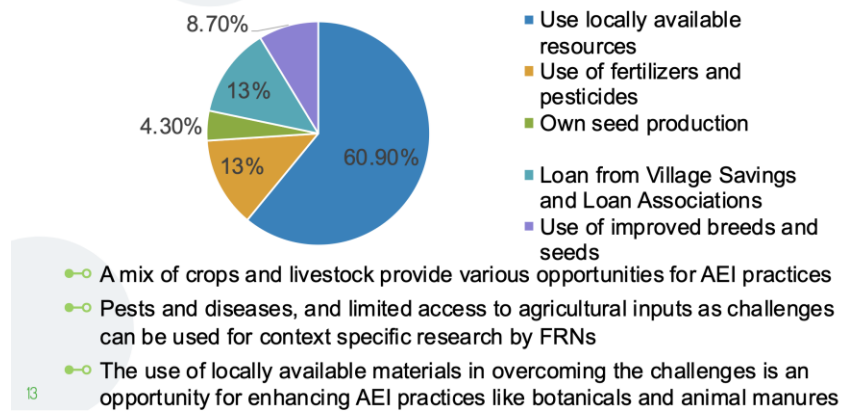
1. Inclusiveness: the project team worked with all categories of farmers including people with disabilities, youth, female and males that brought a lot of diversity on board. Diverse composition of farmers' group members permits consideration of diverse needs and contexts (van den Berg et al., 2020 and Richardson et al., 2021).
2. Diversity: diverse crops were grown by the farmers' cereals and leguminous crops that permitted AEI practices. Also, different livestock were kept by the farmers including cattle, sheep, goats that provided animal manure for the crops.





3. Co-creation of knowledge: there was identification of challenges by farmers including sharing of experiences amongst farmers during group meetings and experts for technical issues.
4. Networking: FRNs networks worked with other FRNs within and outside their communities through participation in events such as farmers' field days and exhibitions. This provides for potentiality for scaling up best AEI practices.
5. Some of the challenges identified that affect livestock production include pests and diseases, lack of markets, limited access to quality inputs, drought, lack of facilities for value addition, poor infrastructure, poor soil fertility and conflicts between farmers and livestock keepers. The figure below is a summary of some of the practice's farmers are engaged in to deal with the aforementioned challenges.

Ways farmers use to overcome challenges



Conclusions and Recommendations

1. Presence of farmers groups with FRNs qualities are good starting points due to their social capital.
2. A mix of farming activities; crop production, livestock and their associated problems are research gates for FRNs in promoting AEI practices.
3. The use of locally available materials for overcoming challenges farmers face is an opportunity in transitioning to agroecology.
4. FRNs and networking enhance economies of scale through collective production and marketing.
5. Existing farmers groups should be trained on the research component so as to engage in AEI research suitable to their context.
6. AEHT project should establish more FRNs based on FRN principles.





7. The use of lead farmers should be encouraged to fill the gap due to inadequate public extension officers.

III. Agroecology and Sustainable Livelihoods as a Framework to Empower Women and Youth in East Africa - Ms. Celina Butali and Dr. Monica Nderitu

The Agroforestry for Livelihood Empowerment (ALIVE) Programme (2018-2022) was developed on the background of Vi Agroforestry Strategy (2017-2021). The vision and the overarching goal of the strategy and the programme was a sustainable environment that enables women and men living in poverty to improve their lives. The programme objective was to create societal changes enabling economic empowerment of small-holder farmer families through market-led, sustainable agriculture based on agroforestry. The programme supported 42 grassroots farmer organizations and local NGOs in Kenya, Rwanda, Tanzania, and Uganda through a mutually beneficial partnership approach to strengthen their capacities to engage duty bearers as well as support their members in accessing essential services. The programme was implemented through working long-term with local partners focusing on fighting poverty and climate change. The project sought to contribute to SDG 1: No poverty, SDG 2: Zero hunger, SDG 5: Gender equality, SDG 13: Climate action and SDG 15: Life on land. The agroecology practices that were promoted included agroforestry, apiculture, poultry, and livestock.

Under the sustainable agriculture and land management and agroecology component, the project acknowledged that, agricultural biodiversity provides humans with food and raw materials for goods - such as cotton for clothing, wood for shelter and fuel, plants and roots for medicines, and materials for biofuels - and with incomes and livelihoods, including those derived from subsistence farming. As such, a diverse agriculture is beneficial for nutrition, resilience (when one crop fails, another might sustain), yearly provision (one can harvest over a longer period of the year), and adaptation to climate change (many different crops can more easily be adjusted to a changed climate).

Results from the programme showed that there was improved gender equality and empowerment when baseline results of 2018 were compared with the achieved results in 2021. The figure below summarizes this observation.





2. Gender Equality and Empowerment

Performance level	Baseline (2018)	Target (2021)	Results (2021)	% target reached
Women in managerial positions	8%	30%	26%	86.70%
Young females and males in managerial positions	8%	30%	11%	36.70%
Women membership in farmer organizations	19%	44%	24.90%	56.60%
Young females and males affiliated to farmers organizations	19%	44%	14%	31.80%
Women practicing agricultural enterprises with rights over resources	7730	10,118	5,105	50.50%
Girls and boys involved in the programme.	0	42324	34324	81.10%



It was observed that there were greater participation of women and young people in leadership and decision making at the household level. The other observation showed that agricultural productivity as a result of applying sustainable methods increased compared to the baseline as depicted in the figure below.

3. Agricultural productivity and use of sustainable agricultural methods

Indicator	Baseline (2018)	Target (2021)	Results (2021)	% target reached
% Increase in the volume of production per labour unit	6%	48%	41%	85.4%
Area of degraded agriculture land under restoration	0%	400ha	492.9ha	123%
% Increase of agricultural area farmed using sustainable methods	14%	57%	34%	59%



On economic security, the results showed that over 80% of smallholder farmers access financial services through the village savings and loan associations and borrow money to meet their household enterprise's needs. 53% women and youth had increased access to financial services while 71% of the farmers accessed agricultural inputs, 80% accessed agricultural technologies and 24% of the farmers, especially those who grow high value products such as coffee, sunflower, milk and honey, added value or processed their crops before selling. Further, 47% of the farmers sold their crops through collective markets that saw 49% women and young people increase their incomes.

Conclusion and Recommendations





1. Agroecology practices require land as a main production resource and gender equality issues revolve around access, control and benefit from land.
2. It is prudent that women and young people are empowered and given a voice to build their agency.
3. Transformative approaches have proved to be an enabler in women and young people's involvement in profitable sustainable agriculture.
4. Household methodologies have created an enabling environment for women and young people to participate in leadership and decision making at all levels.
5. A proper gender analysis provides an opportunity to develop interventions that respond to interests and concerns for young people and women.
6. Right based approach recognizes the rights of individuals of "Do No Harm" "HRBA" and conflict sensitivity.
7. There is a need to take an intersectionality approach to gender.
8. Agroecology and SALM are sustainable practices that enhance adaptation to climate change and livelihood systems.
9. Women and youth have unique needs that should be addressed right from the project design to implementation.
10. Youths are more attracted to agriculture activities that use innovation and technology.
11. Policies should be able to support youth and women in their participation in agroecology and SALM e.g., land rights, financial inclusion among others.

IV. Increasing Productivity and Reducing Poverty Through Regenerative Agriculture and Circular Economy - Ms. Chiara Baiocco

Food systems must be holistic and recognize that farmers are more than just producers but are also managers of an agroecological system which provides several public goods including water, energy, soil, and biodiversity (UNCTAD, 2013).

About Hand in Hand

Hand in Hand has existed in Kenya since 2010 where it has trained 350,000 people in 33 out of the 47 counties, 70% of whom are farmers out of which 80% are women. These farmers have 50% of their land severely degraded.

Why Regenerative Agriculture?

Farmers face severely degraded soil and are faced with persistent droughts which is driving the increase in poverty and gender inequality. To address this and improve quality of life for women and their communities, Hand in Hand is implementing interventions that aim to improve environmental integrity and sustainability and contribute to securing the current and future livelihoods.





Project with IKEA Foundation

The current project with funding from IKEA foundation (2021 – 2023) was developed with support from Pablo Titonell, Principal Research Scientist in Argentina's National Council for Science and Technology (CONICET) with a seat at the National Agricultural Technology Institute (INTA), in San Carlos de Bariloche, Argentina. The project aims at training 1,600 members in planet-positive agriculture focusing on two regenerative programmes in Kenya.

Approach

The project has four intervention areas namely: improved farming, improved soil health, increased and diversified crop yields and increased farm revenue.

To achieve this the project conducts: Training of members on regenerative agriculture, circular economy and practices, development of community-based knowledge hubs such as demo farms and training lead farmers and advocacy champions on community natural resource plan.

The training covers 5 modules.

- Module 1: Introduction to circular economy and regenerative agriculture
- Module 2: Circular economy and farm design
- Module 3: Ecological pests, disease and weed management.
- Module 4: Post-harvest management and marketing
- Module 5: Financial management. Business plan and record keeping

Results

1. Target communities increased integration into new and existing circular value chains
2. Target communities increased and sustained knowledge on CERA through access to knowledge platforms.
3. There was improved inclusive and transparent governance of communal resources and landscapes for the benefit of women and communities.
4. The long impact expected from programme implementation is improved farm productivity and efficiency for women and their communities, income uplift for women and their communities, increased financial resilience and women empowerment with an outreach of 7.5 million smallholder farmers in Kenya.





THEME 4: ECOLOGICAL ORGANIC TRADE, MARKETS, AND ECONOMY

BREAKOUT SESSION 3

Session Moderator: Eustace Kiarrii (KOAN)/ Bert-Jern Ottens (ProFound)

Speakers

1. Addressing Challenges in Access to Ecological Inputs at the Smallholder Level in Ethiopia: The Case of Veggies 4 Planet and People Project - *Mr. Gemechis Jaleta, Mrs. Leah Mwaura, Dr. Ralph Roothaert*
2. Working with Micro and Small Agroecological Enterprises in Lake Victoria Zone, Uganda - *Mr. Patrick Delba Kiirya*
3. Consumer Study in Tanzania - *Pierre BERRI – AgroParisTech (Paris-Saclay University, France) and Win Luhwago – Sokoine University of Agriculture (Morogoro, Tanzania)*

I. Addressing Challenges in Access to Ecological Inputs at the Smallholder Level in Ethiopia: The Case of Veggies 4 Planet and People Project - *Mr. Gemechis Jaleta, Mrs. Leah Mwaura, Dr. Ralph Roothaert*

The Veggies 4 Planet and People project aims at creating jobs and income, particularly for youth and women in the vegetable sector in Ethiopia and Kenya, and to also improve environmental and human health through the safe production of vegetables. Accessing quality agroecological inputs at the smallholder level is one of the main limitations toward farmers' transitioning to agroecology. The existing input supply systems are dominated by conventional input suppliers while the suppliers of ecological inputs largely target sizable horticultural farms, neglecting the smallholder farmers. Smallholder farmers often face challenges in accessing high-quality inputs in the small quantities needed, quality, at an affordable cost, and at the right time. The agro-dealers are also facing challenges in accessing high-quality inputs from reliable sources and they end up buying inputs from small retailers in Addis Ababa to stock their shops. This results in a lack of diversity of the inputs retailing and the ones available are sold at a higher price.

To address this there is a need to establish a tailored input supply system that speaks to the demand of affordability, timeliness, diversity, volume of inputs and associated services. This will go hand in hand with strengthening and developing a localized ecological input supply system for smallholder farmers. By creating the input supply chain, there will be the creation of employment opportunities for young people and entrepreneurs along the vegetable value chain.

The Veggies 4 Planet and People project intervened by creating awareness on regenerative agriculture among smallholder farmers through hands-on training, setting up demonstrations,





organizing experience exchange visits, and through farmer field days. The agro-dealers were also taken through training and coaching on technical and business aspects of their businesses. On the technical aspects the training focused on product use, product handling, and application. The business training focused on: record keeping, marketing, managing working capital (cashflow), managing stocks, costing, and pricing, managing business relationships and business planning. There were also organized business-to-business meetings between agro-dealers and manufacturers/importers and between agro-dealers and farmers.

Some of the project outcomes include.

1. Agro-dealers were able to take stock of a variety of ecological inputs hence improving smallholders' access to these inputs.
2. There were signed contracts between the distributors and agro-dealers that enabled the agro-dealers to sell inputs at competitive prices and ascertain the quality of inputs.
3. The agro-dealers developed functional capabilities in their business including their technical skills.
4. There is an effective and inclusive input supply market system evolving in rural areas.
5. There is profitable trade between the distributors and the agro-dealers.

Observations and Recommendations

1. Most of the commercial input suppliers willing to work with small-scale farmers are start-ups that need business support for working capital and large-scale production of inputs.
2. Agro-dealers' backward and forward market linkages through different capacity-building mechanisms are important for their business's sustainability.
3. The success of agro-dealers suggests that the approach can be replicated to provide quality inputs at competitive prices to Ethiopian farming households that do not have access to them.

II. Working with Micro and Small Agroecological Enterprises in Lake Victoria Zone, Uganda the Case of Busaino Fruits and Herbs - *Mr. Patrick Delba Kiirya*

"SMEs are significant drivers of job creation and economic growth. Yet, unlike in the developed world, where they are treated as the goose that lays the golden egg, it is survival of the fittest in Africa" *John Njiraini, former Commissioner - General Kenya Revenue Authority.*

Farmers are both a social and economic unit that produces, trades/sells, and consumes produce and products. Food is the fastest moving consumer goods with an expanding consumer base that includes peri-urban, urban areas, and rural growth centers. Generally, there exists very few consumer demands and willingness to try new foods is low. This is despite the





very active broadcast media which can be accessed by most people as the basic mobile phone services are widespread covering even the rural areas.

The following are key questions that need to be answered to strengthen micro and small agroecological enterprises.

1. How can face-to-face selling of agroecological products to consumers be more fun/enjoyable?
2. How can very localized farm-to-market selling be improved?
3. Despite some cheap food from "outside", how can MSEs still compete favorably?
4. Which markets with high growth potential are still underserved by MSEs?
5. How can MSEs be much more on the ground in the different fragmented markets?
6. How can we deliberately promote women and youth led MSEs within the family business framework?

Establishing answers to the above questions forms the basis of recommendations that need to be considered to support ecological organic trade, markets, and economy.

III. Consumer Study in Tanzania - Pierre BERRI – AgroParisTech (Paris-Saclay University, France) and Win Luhwago – Sokoine University of Agriculture (Morogoro, Tanzania)

A consumer study was conducted in Dar es Salam, Morogoro, Dodoma and Zanzibar of Tanzania on understanding the consumption of organic products (OP), the organic market itself and the opportunities and obstacles to the development of organic markets in Tanzania. The methodology involved a pre-survey to map the study areas, non-participatory observations in different places of purchase, interviews with farmers, store managers, vendors, consumers and TOAM members and a qualitative and quantitative consumer questionnaire to study four criteria that may influence the consumption of OP in Tanzania. The four criteria are the consumer's profile, knowledge of OA, food behavior and the perception of OP.

The analysis of the study on the characteristics, obstacles, and opportunities for the development of OP consumption in Tanzania were as indicated in the figure below.





DAR-ES-SALAM	MOROGORO	ZANZIBAR
Consumer's profile		
Female: 70% [26-45]: 59% Tanzanian: 55% / Expatriate: 45% Urban area: 88% Bachelor/Master/PhD: 79% Entrepreneur/Business owner/Employee/Executive: 66% Single / Married (ratio) = 1 More than 2 people: 80% >100,000 TSh: 53% Not responsible of shopping: 7% Not responsible of cooking: 10%	Male: 54% [18-35]: 82% Tanzanian: 96% Urban area: 69% A'level and lower level: 66% Student: 54% Single / Married (ratio) = 2 More than 2 people: 90% <50,000 TSh: 64% Not responsible of shopping: 17% Not responsible of cooking: 31%	Male: 58% [26-35]: 49% Tanzanian: 54% / Tourist: 35% Urban area: 43% A'level/Bachelor/Master: 77% Employee: 35% Single / Married (ratio) = 1,58 More than 2 people: 75% <100,000 TSh: 57% Not responsible of shopping: 19% Not responsible of cooking: 24%
Knowledge of organic products		
Familiar with organic farming: 78% Number of differences chosen at more than 50%: 4 Organic certification as a difference: 39% Good knowledge of organic farming: 15%	Familiar with organic farming: 75% Number of differences chosen at more than 50%: 2 Organic certification as a difference: 14% Good knowledge of organic farming: 1%	Familiar with organic farming: 59% (46% of Tanzanian residents) Number of differences chosen at more than 50%: 1 Organic certification as a difference: 21% Good knowledge of organic farming: 4%
Food behavior		
Organic consumers: 83% Number of organic product types chosen at more than 50%: 4 The organic products purchased are "all" or "not all" certified: 62% The organic products purchased are not certified at all: 24% The most chosen markets: Local market/Organic shop/Supermarket	Organic consumers: 94% Number of organic product types chosen at more than 50%: 4 The organic products purchased are "all" or "not all" certified: 54% The organic products purchased are not certified at all: 43% The most chosen markets: Local market/Organic shop/L grow products	Organic consumers: 62% Number of organic product types chosen at more than 50%: 3 The organic products purchased are "all" or "not all" certified: 13% The organic products purchased are not certified at all: 87% The most chosen markets: Local market
Perception of organic food		
Price opinion "a little bit expensive": 41% I'm willing to pay more: 63% Certification encourages me to buy organic products: 47%	Price opinion "justified" and "very cheap": 65% I'm willing to pay more: 59% Certification encourages me to buy organic products: 61%	Price opinion "justified" and "very cheap": 51% (No opinion: 27%) I'm willing to pay more: 51% Certification encourages me to buy organic products: 61%
Main reasons why consumers buy organic products: Health benefits / Environmental and social impact / Taste and freshness / Support for the trader/producer Main obstacles that may prevent the consumption of organic products: Low knowledge / Price too high		

Other findings include:

1. Organic market is currently very small in Tanzania.
2. OP remains significantly more expensive than conventional foods in local markets.
3. Most consumers buy products they consider organic in local markets.
4. Awareness of OP among consumers was found to be very low overall.
5. Lack of knowledge was considered as the main barrier to OP consumption before the price factor.
6. Tanzanians seem to consider their health as the most important reason for consuming OP.

Recommendations

1. There is a need to develop the organic market by intensifying the certification of farmer groups through PGS. This model has been set up by SAT and TOAM in Morogoro
2. There is a need to raise awareness through educational programs, agricultural and social initiatives such as PPIZ including using the internet and social networks.
3. There is a need to sell OP and disseminate knowledge in local markets.
4. The government and TBS should recognize EAOPS and provide financial incentives and subsidies.
5. There is a need to intensify communication and marketing campaigns that integrate messages on recyclable components.
6. There is a need to create organic and agroecological networks on a national scale.





THEME 5: INSTITUTIONAL AND POLICY DRIVERS FOR AGROECOLOGICAL TRANSFORMATIONS

BREAKOUT SESSION 5

Session Moderator: Gabor Figeczky

Speakers

1. Policy Recommendations on Agroecology Approaches for Sustainable Agriculture and Food Systems that Enhance Food Security and Nutrition in Vihiga County-Kenya - Mr. Reuben Chumba K. B., Ms. Olimba Lillian Aluso, Dr. Caroline Wambui, Mrs. Ennia Bosshard, Mr. Harrison Carter
2. Breaking the Cycle of Debt, Poverty, and Hunger to Build Resilient Agroecological Food Systems - Dr. Hans R. Herren, Dr. Million Belay, Ms. Li Ching Lim, Dr. Jennifer Clapp, Ms. Shalmali Guttal, Dr. Desmond Mcneill, Ms. Sofia Monsalve Suárez, Dr. Rajeev Patel, Mr. Nicholas Jacobs, Dr. Emile Frison
3. A Case for Strengthening Kenya's Climate Smart Agriculture County Policy Frameworks - Mr. Rikki Agudah, Mrs. Jane Musindi, Mr. Felix Odingo, Mr. Gideon Muli

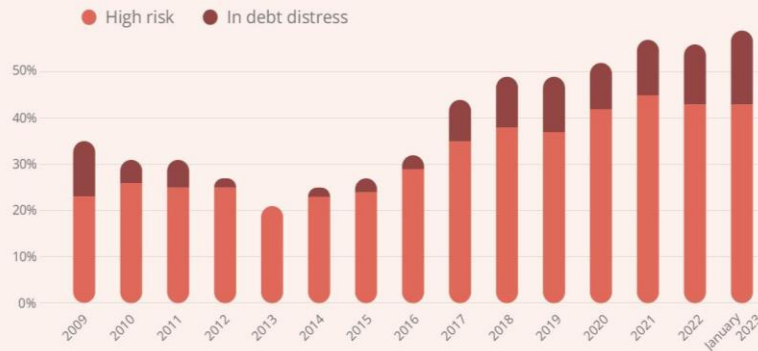
- I. Breaking the Cycle of Debt, Poverty, and Hunger to Build Resilient Agroecological Food Systems - Dr. Hans R. Herren, Dr. Million Belay, Ms. Li Ching Lim, Dr. Jennifer Clapp, Ms. Shalmali Guttal, Dr. Desmond Mcneill, Ms. Sofia Monsalve Suárez, Dr. Rajeev Patel, Mr. Nicholas Jacobs, Dr. Emile Frison**

The world is still facing worsening debt and hunger crises. Food prices are down from the 2022 peak, but still historically high, and global hunger levels are rising. The global public debt is at its highest levels in almost sixty years, especially for the low-income countries whose debt service exceeds the core social spending by 125%. Nearly 60% of low-income countries are now considered at high risk of, or already in, debt distress with 21 countries nearing catastrophic levels of both debt distress and food insecurity, including Djibouti, Ethiopia, Kenya, Somalia, South Sudan, and Sudan. The figure below shows the rising debt distress among the low - income countries that shows that figures tripled from 2013.





Rising debt distress among low-income countries

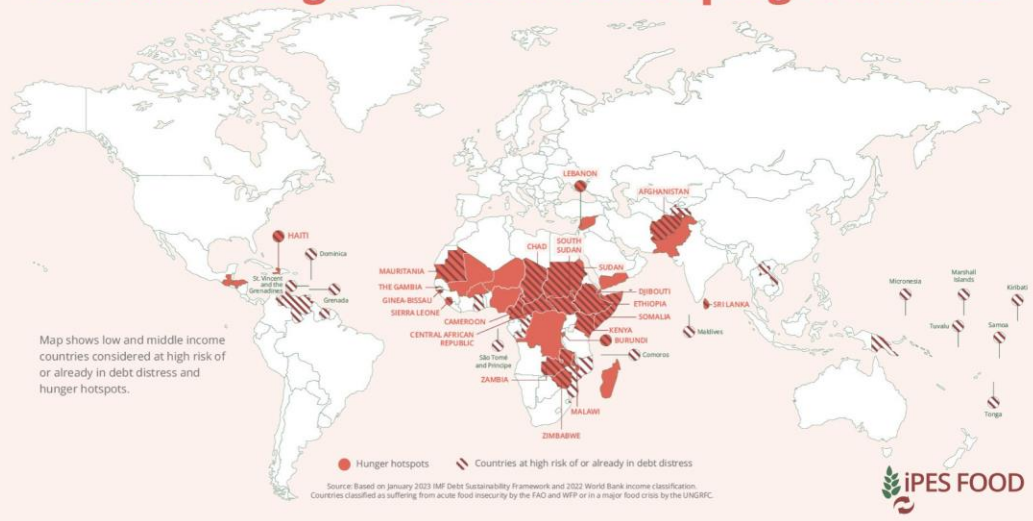


The graph shows the percentage of low income countries at or near debt distress. Since 2013 the number has nearly tripled.

Source: Based on IMF and World Bank low-income country Debt Sustainability Framework.

The figure below shows countries in debt and hunger crises in developing countries with some countries including Kenya that are already marked as countries in hunger crisis hot spots and at high risk of debt distress.

Debt and hunger crises in developing countries





Why the current status?

High import costs for food, fertilizer, and energy, rapidly rising interest rates, and depreciating currencies have pushed countries into debt crises. As a result of these cost drivers, the world's poorest countries saw the costs of servicing their debt increase by 35% in 2022. Today's unsustainable and inequitable food systems are driving rising debt and hunger due to this unsustainable debt. Countries have been left critically exposed to shocks thus undermining their ability to invest in sustainable, climate-resilient food production and food security. Some of the drivers of unsustainable food systems and debt are summarized in the figure below.

What's driving the vicious cycle of unsustainable food systems and unsustainable debt?



Some of the recommendations to break the cycle of unsustainable food systems, hunger, and debt.

1. Provision of debt relief and development finance on a scope and scale for Covid 19 recovery, climate action, resilient food systems and the SDGs
2. Repairing historical food system injustices and returning resources to the global south
3. Democratization of financial and food systems governance to put the interest of the world's poorest countries and marginalized populations first.
4. More recommendations can be accessed at www.ipes-food.org/pages/debtfoodcrisis.





Session Moderator: Dr. Martin Oulu (ISFAA)

Speakers

1. Mainstreaming Agroecological Policy and Legal Frameworks in Agriculture for Transforming Food Systems The Case of Muranga and Kiambu Counties - *Ms. Faith Gikunda and Mr. Gathuru Mburu*
2. Mwaseba Agroecology Issues in Agricultural and Allied Policies: Experience from Tanzania - *Dr. Devotha Masha, Dr. Suzana Nyanda and Prof. Dismas*
3. A Case for Strengthening Kenya's Climate Smart Agriculture County Policy Frameworks - *Mr. Rikki Agudah, Mrs. Jane Musindi, Mr. Felix Odingo and Mr. Gideon Muli*

II. Mainstreaming Agroecological Policy and Legal Frameworks in Agriculture for Transforming Food Systems: The Case of Muranga and Kiambu Counties - *Ms. Faith Gikunda and Mr. Gathuru Mburu*

The Institute for Culture and Ecology is a national NGO established in 2006 currently operating in seven counties in Kenya and implements four main programmes namely: Natural Resources Management (protection of forests and rivers), Food Sovereignty (recuperation of indigenous seeds and afro-ecology), Advocacy and Networking (policy work and related lobbying) and Research and Knowledge Management (mainly community-based research). The main focus is indigenous and local knowledge. Policy transformation change has been happening in Kenya, especially in agroecology. Previous attempts to have an organic agriculture policy failed however, the Constitution 2010 has since seen agriculture become a devolved function with Article 43 (1) (c) of Constitution acknowledging the right to safe and adequate food of good quality. The National Agriculture Policy 2021 further recognizes agro-ecology as a climate change mitigation and adaptation strategy. The National Agro-ecology Strategy is work in progress which once approved will be a great milestone in Kenya toward the institutionalization of agroecology in Kenya's development agenda. To achieve effective policy transformation, there is a need for multi-stakeholder collaborations. Why multi-stakeholder collaborations and or platforms (MSP)?

MSP provides for effective coordination of sector actors for purposes of identification of opportunities for partnerships (resources, finance, research and knowledge, expertise), policy development and decision making based on evidence and knowledge and information, and for communication of agroecology actions and interventions in the county by facilitating the participation of diverse actors. MSP are also good for data and information management. Through monitoring and evaluation and reporting on climate action, MSP can support in consolidating data and information that is key in learning and decision-making.

What do you need to set up an effective MSP?

1. **Mapping partners:** there is a need to conduct a detailed assessment of partner needs, and what they need to indulge, why they feel the MSP is important, and understanding what they do through the profiling process is key.





2. **Communication:** engaging members in open and transparent communication, informing them of the role of the MSP while determining their interest as participants.
3. **Leadership:** calls for a strong and neutral convener, who is able to bring people to the table, mitigate divergent opinions and drive the difficult start-up process.
4. **Goal (Objective) setting:** set easy to achieve goals for ease of monitoring and evaluation.
5. **Management:** identify a lean team for process management. This includes the setting up of a core group, steering committee, and thematic working groups (TWG).
6. **Monitoring evaluation and learning:** this should be robust and an open process of recording progress so as to facilitate learning.
7. **Funding:** adequate funding is required for convening MSP meetings and financing associated activities.
8. **Governance:** there is a need to recognize the strength of multilevel governance systems at national, county, sub-county, and farmer level linkages. The objectives need to be anchored on goals such as SDGs, UNFCC processes and other agriculture-related platforms like National MSP
9. **Political and social context:** there is a need to understand the context and what is going on, what are partners doing, what approaches are common among others.

Some of the challenges encountered.

- Fear of change resulting from over- reliance on synthetic inputs
- Long and tedious process
- Inadequate information
- Political interference
- Inadequate resources

Lessons learned.

- Legislating from below is more innovative and requires walking with stakeholders in every step.
- Participatory governance has the capacity to empower citizens to take charge of their life pathways.
- Counties can influence national policy development by being proactive.
- Broad-based stakeholder participation through MSP ensures a fast-tracked policy development process and avoids legal tussles about public participation.
- Devolution provides an opportunity for holistic legislation where policy takes care of many connected functions (taking a catchment approach)

III. Agroecology Issues in Agricultural and Allied Policies: Experience from Tanzania - Dr. Devotha Masha, Dr. Suzana Nyanda and Prof. Dismas Mwaseba

Policies for agriculture and related fields consist of government decisions that influence the level and stability of input and output prices, public investments, costs and incomes, and





allocation of resources. These policies affect agricultural production and food systems. They also influence the adoption and implementation of AE practices either directly or indirectly.

Why the study

The study aimed at understanding how agroecology (AE) issues have been embedded in the current agricultural and allied policies in Tanzania.

Why AE?

Adoption of AE helps reduce land degradation through regeneration of landscape quality and biodiversity, creating growing ecosystems and increasing crop productivity and food production in a sustainable manner.

The objectives of the study were to:

1. Identify policies in Tanzania that have a bearing on AE.
2. Identify gaps in the relevant policies that have implications on AEI practices in the country.
3. Propose policy interventions for the promotion of AE in the country.

Approach

The was conducted through literature review by studying the various policies and journal papers including The Tanzania National Agriculture Policy 2013, The National Environmental Policy 2004 other Livestock and Forest policies.

Key Findings

National Agriculture Policy 2013

Policies in Tanzania that embedded Agroecology issues include the National Agriculture Policy 2013 (NAP 2013) which is the principal institutional framework for agricultural development in Tanzania. The policy aims at developing an efficient, competitive, and profitable agricultural industry that contributes to the livelihood improvement of Tanzanians, and the attainment of broad-based economic growth and poverty alleviation. The goals can be achieved through the promotion of Agric systems; technologies and practices which are environmentally sound including intensification and diversification of agricultural production, promotion of mixed farming, intensification of biological processes on farmlands via AE practices; improvement in water use efficiency and intensification of wild and domesticated plant genetic materials (traditional seeds). The NAP 2013 recognizes the importance of organic foods as products derived from certifiable farm management systems.

The National Environmental Policy, 2004

The NEP 2004 recognizes the broad meaning of environment (air, land and water, plant and animal life, and the socio-economic aspects). It recognizes the lives of all people are connected to the environment as such it recognizes sustainable exploitation of biodiversity. Thus,





programmes for the conservation and utilization of biological diversity are important to prevent biodiversity loss.

Livestock sector

The policy clearly sees the relevance of agroecology and supports the promotion of improved conservation on grazing lands, preservation of feed resources, restoration and protection of grazing lands, and promotion of rotational grazing.

However, there are policy gaps that were identified.

- In the NAP (2013), there is no direct or explicit emphasis on the use of agroecology practices to overcome agricultural challenges. Agroecology has not prominently featured in agriculture and related policies meaning there is a window of opportunity to place emphasis on specific strategies or regulations in support of AE. Movement on Ecological Organic Agriculture (EOA) Tanzania can take advantage of this and lead the advocacy process.
- The Plant Health Act (2020) has provisions for licensing bio-input suppliers. However, legislation is yet to be operationalized waiting for the completion and sanctioning of regulations that would spell out details on procedures and processes for operationalization of the law.
- There are limited interventions to support the distribution and access to bio-inputs (bio-fertilizers, and bio-pesticides).

Recommendations

- AE has the potential to support Agricultural transformation in Africa. However, it requires far greater attention from the policy perspective.
- There is a need for institutional support from the Government and NGOs
- Strategic intervention is required in the design of guidelines to support investments in the local production of bio-inputs.
- Importantly, there is a need to improve and increase the supply and availability of the bio-inputs to meet the rising demand in AE production requirements.
- The Ministry of Agriculture has already taken steps in the development of new curricula that mention AE features for the training of potential staff for extension services at the Certificate and Diploma level However, there is a need to train in-service extension staff to include AE practices in their day-to-day extension services.
- Transforming FSs requires a change of existing policies and institutional frameworks to include AE issues.
- There is a need for necessary policy statements and guidelines to support agroecological organic agriculture. Government and NGOs' attention and support are key.

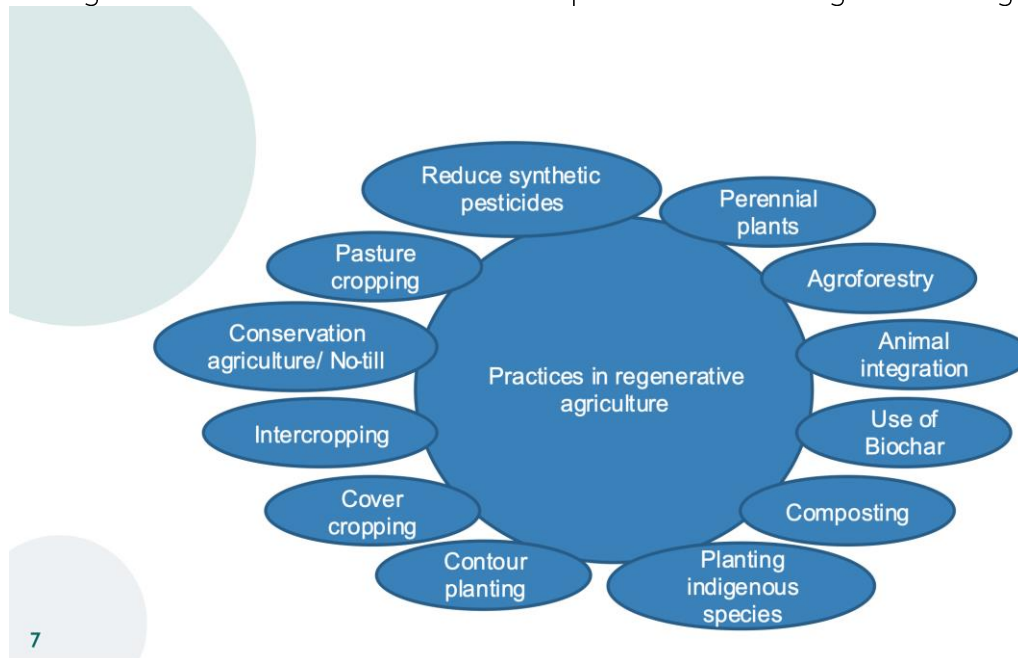




IV. A Case for Strengthening Kenya's Climate Smart Agriculture County Policy Frameworks - Mr. Rikki Agudah, Mrs. Jane Musindi, Mr. Felix Odingo and Mr. Gideon Muli

Regenerative agriculture is the base of Agroecology in Kenya. Through regenerative agriculture Kenya can fix its food system: This can be achieved by increasing food resilience, reversing land degradation, mitigating the impacts of climate change, and providing better food for future generations among others.

The figure below summarizes some of the practices used in regenerative agriculture.



How do we achieve upscaling of regenerative agriculture?

1. By valuing indigenous knowledge sources
2. By encouraging young people to participate in regenerative agriculture
3. Giving priority to context-specific agricultural solutions
4. Reducing or eliminating synthetic inputs through mindset shift.
5. Being committed to the implementation of policies for regenerative agriculture
6. By recognizing the value of ecosystem services
7. By promoting durable land tenure arrangements to incentivize farmers to invest in regenerative practices





Regenerative Agricultural Practices for improved Livelihoods and Markets (REALMs)

This is a programme that seeks to structure indigenous seed systems and promote sustainable waste management. It also seeks to support the development of organic standards and domestication of green financing models in the Counties. At the county level, the approach is to establish a task force that utilizes a multi stakeholder platform to gather and build evidence for organic farming and regenerative practices. The task force then does presentations to the county government for development of supportive policies and for the allocation of budgets and incentives to support the same.

BREAKOUT SESSION 6

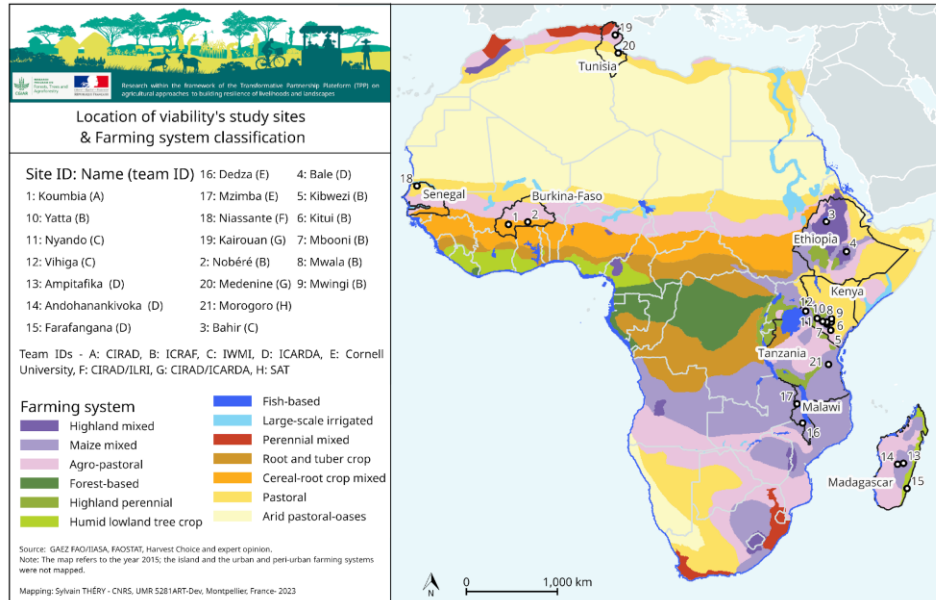
Session Moderator: Dr. Martin Oulu (ISFAA)

1. Emerging Messages on Viability of Agroecological Practices in Africa - *Mr. Ric Coe*
2. Testing Co-Management as An Option of Sustaining Fishery Resources for An Open Access Water Body: The Case of Lake Malawi in Nkhotakota District - *Ms. Cynthia Vugutsa, Dr. Charity Chanza, Prof. Emmanuel Kaunda*
3. The Role of African Progressive Cultural Practices and Social Institutions on Sustainable Agri-Food Systems and Improved Nutrition - *Ms. Salome Owuonda and Dr. Sarah Olembo*

V. Emerging Messages on Viability of Agroecological Practices in Africa - *Ric Coe*

The viability Project sought to have a better understanding of the socio-economic viability of agroecological practices, and their livelihood system impacts across environmental and demographic gradients in Africa including income and production, labour and work pattern, lock-ins and drivers and role of environmental concerns. The figure below shows the viability of project study locations.





The study hypothesized that:

1. Farming systems with AE practices are labor-intensive but can generate attractive returns to employment.
2. Agroecology supports the socio-economic viability of family farms for which capital-intensive technologies are inaccessible and risky.
3. Agroecological practices are knowledge-intensive and can provide opportunities for capacity-building, social capital and other social benefits.
4. The impact of agroecological practices on family farm viability is shaped by the process through which they are introduced and supported, as well as the context and properties of the practice.

The approach employed included: secondary data review, key informant interviews, farm and farm household surveys, focused group discussions, detailed studies on labour and participatory cost-benefit analysis.

Preliminary findings showed that.

- Practices are used in many interacting combinations by farmers.
- Agroecology concerns shifts in systems that cannot be reduced to changes in practices.
- Viability depends on the regime and context beyond the farm scale to include things like support, policies, information flows, and collective action.
- Opinions and points of view matter, not just metrics and indicators. The same practice or system can be judged differently by different people in the same context.
- Understanding directions and drivers of system change needs longitudinal data, with limits to learning from single time points.





• Concepts and definitions are contested and evolving, not agreed and fixed. Agroecological practices are used by farmers widely and are diverse as summarized in the table below.

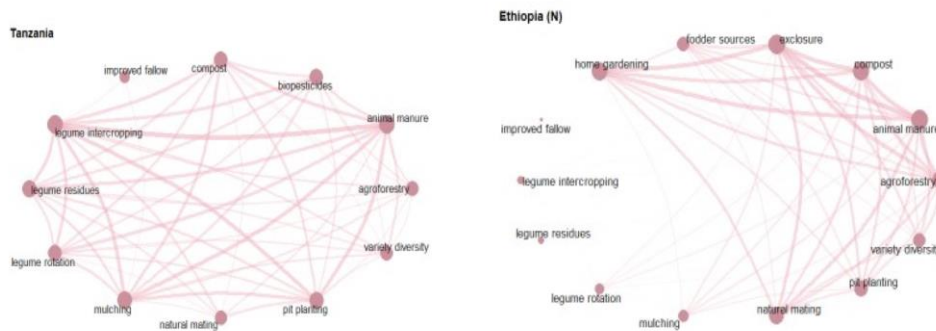
Principle	Number	Examples of practices
Input reduction	29	Improved compost, legume integration, biopesticides
Soil health	26	Reduced tillage, green manure, erosion management
Synergy	16	Intercropping, agroforestry, home gardens
Recycling	12	Using crop residues, integrating rice and fish
Biodiversity	12	Agroforestry, using local varieties, exclosures
Economic diversification	11	Market gardening, seed production
Animal health	9	Biopesticides, local breeds, fodder storage
Social and diets	4	Local seeds and varieties, home gardens
Land governance	3	Livestock mobility, reforestation
Connectivity	2	Local seed production and use
Fairness	1	Local seed use
Participation	0	
Knowledge creation	co- 0	

Example of networks illustrating combinations of practices used on farms in Ethiopia and Tanzania are as shown in the figure below.





Practices are used in many combinations that contribute to changing farm systems



Examples of networks illustrating combinations of practices used on farms

Farmers can still use agroecological practices despite unsupportive regimes and this they do based on a diversity of reasons key among them include increase in yield, they are cheaper, they increase income, they protect the environment among others. Farmers make trade-offs between advantages and disadvantages of agroecological practices with costs and benefits being associated with economic, social, environmental, and political dimensions, most of which cannot be valued in monetary terms.

The results also showed three common narratives about AE, that:

1. Agroecology is for poor people and may be a poverty trap.
2. Agroecology provides a basket of options that can be combined with non-AE practices, extending the set of tools farmers have.
3. Agroecology is a holistic vision of food and agricultural systems working for combined social, environmental, and economic outcomes.

These narratives are key and important in providing insights in the status, predictions for the future and when designing strategies and interventions around AE.

VI. Testing Co-Management as an Option of Sustaining Fishery Resources for an Open Access Water Body: The Case of Lake Malawi in Nkhotakota District - Ms. Cynthia Vugutsa, Dr. Charity Chanza, Prof. Emmanuel Kaunda

Why fish?

Taking the food system approach, IPCC researchers conclude that if people would stop eating meat and only consume fish, the world would save up to 4 billion tons of greenhouse gas emissions annually thus reducing the driver of climate change. The world would further free up land for crop production and forests instead of livestock feeds. Fish is a food security value





chain and is the livelihood supply for approximately 12.3 million people in Africa. One of the strategies employed to deal with the fisheries challenges is building responsive management institutions and investing in human capacity to participate in making decisions that affect their livelihoods through co-management. According to (Graaf & Garibaldi, 2014) co-management is a management system that calls for partnership arrangement in which the community, the government, other stakeholders, and external agents share the responsibility and authority in managing the fishery. This management system has been implemented by most African nations as a replacement to the centralized formal management system which has been seen to be ineffective given that it did not consider the indigenous knowledge of the fishing community among other actors in management decision-making. However, the system has not proved to be a simple solution to amending governance problems. Most countries that have implemented this legislative framework have presented mixed outcomes depending on the different strategies taken by the countries to implement the approach.

The study on testing co-management option of sustaining fishery resources in Malawi aimed at:

1. Identifying the actors in Lake Malawi co-management system.
2. Assessing the roles of actors in Lake Malawi fishery co-management system.
3. Analyzing the power relations among the actors and how they affect Lake Malawi fisheries co-management system.

The expected outcome was to:

1. To unearth the scenario behind the fishery exploitation and unending cycle of food insecurity.
2. To provide empirical evidence on the crucial role the communities play in sustainable food systems.
3. To provide data needed in designing and implementing responsive fisheries management institutions.

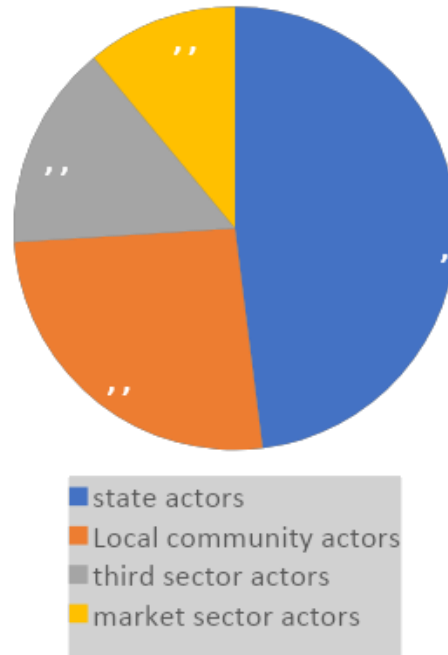
The study was conducted in Nkhotakota district, west coast of Lake Malawi among the fisherfolk. The district has a population of 9000 fisherfolks distributed across 5 strata and sixty-eight beaches. Beaches Vintega with 291 fisherfolks and Lozi 376 fisherfolks were purposively selected from Sani stratum. Beaches Manyamba with 98 fisherfolks and Thawe with 103 fisherfolks were purposively selected from the Benga stratum. 32 willing fisherfolks were selected for individual interviews. Data was collected from exploratory study, key informant interviews, focused group discussions and individual interviews.

The findings from the study indicate that:





The distribution of actors in the district are as follows: 48% state actors, 26% local community. 15% were 3rd party actors and 11% were market actors. The figure below summarizes the distribution, and the table gives a summary of their role's description.



Category of Actors	The Actors	General Role
State Actors	Fisheries Department, District Council, Director of Planning and Development, District Fisheries Officer, Extension workers, Judiciary, Police, Immigration, Min of Natural Resource.	<ul style="list-style-type: none"> To formulate and enforce fisheries regulations and Act. To conduct research To control finance, human, mental, and material resources
Local fishing community Actors	Crew, artisanal traders, net menders, processors, traders, boat owners, boat builders, BVC committee, Village heads, Group Village Heads, and Traditional Authority.	<ul style="list-style-type: none"> To exploit fishery resources To manage fishery resources
Third Sector Actors	NGOs and academic institutions	<ul style="list-style-type: none"> Carry out research and finance fisheries activities on volunteer basis





Market Actors	Sector	Businesspeople, artisanal and industrial fish traders	• Buy and sale fish related products
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The results also indicated that Fisherfolks were aware of their roles but did not exercise them due to the perception they had concerning the influence the chiefs and fisheries officers had on their roles. The artisanal fishers were not aware of their roles, hence did not exercise them since they associated themselves with their long-term role of just selling and buying fish.

Recommendations based on the observations from the study is that:

1. Co-management has not had a major positive influence on the fishery.
2. Conflict of interest among actors has not been revealed since actors still exercise previous roles and authority.
3. Policymakers need to consider the background of all actors brought on board before assigning new positions.
4. Actors are to be made aware of how the new roles assigned relate to the challenges they are experiencing.
5. Fisheries Department to partner with all actors and finalize the revised legal provisions in place for full devolution.

VII. The Role of African Progressive Cultural Practices and Social Institutions on Sustainable Agri-Food Systems and Improved Nutrition - Ms. Salome Owuonda and Dr. Sarah Olembo

Agri-food systems encompass the entire range of actors and their interlinked value-adding activities. Africa’s food insecurity is high with the extreme impact of climate change on her food system hence the need to identify a sustainable agri-food system which is transformative in nature. Strategies to address the underlying institutional and policy structures at the roots of agri-food systems such as the reversal of the abandonment of progressive cultural and/or traditional food systems. Food is intimately related to human culture. Most often, the culture will determine how human beings relate to certain food and the respect to food which ultimately affects the level of food security in a community.

The study on the subject majorly relied on secondary data. The data was then analyzed based on the trends of beliefs, values, and festivities; and how these impact on the agri-food systems. The study was not exhaustive on information on the traditional agri-food systems as it focused specifically on the African agri-food system and cultural and traditional practices and values that can support its sustainability.

Some of the key findings include:





1. Culture makes food more accessible while modernization does not necessarily lead to the disappearance of culture.
2. Adopted agri-food systems should take into consideration culturally determined preferences. The cultural and traditional practices are practical solutions in today's food-insecure world as they are accessible and sustainable.
3. Traditional and cultural technologies are more accessible to the disadvantaged groups hence more sustainable. As such, policymakers need to integrate culture and modern approaches.
4. Africa's food insecurity is a result of, among other things, climate change. Cultural and traditional food practices and values can ensure food security and reverse the impacts of climate change hence sustainability.
5. The practices and values, if embraced, can be a means to African food sovereignty.
The study was supported by PELUM Kenya through the Africa Women Leaders in Agroecology (AWOLA) mentorship program.

THEME 6: FINANCING AGROECOLOGICAL TRANSFORMATIONS

BREAKOUT SESSION 6

Session Moderator: Dr. Matthias Geck (TPP - ICRAF), Gladness Brush Martin (Swiss Aid Tanzania)

Speakers

1. Prosperous Land, Prosperous People: Scaling Finance for Nature-Based Solutions in Kenya - Mr. Jeremiah Rogito
2. Public Investments in Organic Agriculture in Kenya - Dr. David Amudavi, Venancia Wambua and Alex Mutungi

I. Public Investments in Organic Agriculture in Kenya - Dr. David Amudavi, Venancia Wambua and Alex Mutungi

The Government of Kenya has strived to achieve individual household, county and national food security through various legislations and investments. Despite the government making the provision of food one of its top four priorities, it is estimated that about 14.5 million of Kenyans face food insecurity and poor nutrition each year (GHI, 2020). This is closely linked to use of unsustainable farming practices, environmental and land degradation, unpredictable weather patterns, high rates of poverty, aging farming population among others (KIPPR, 2020). Kenya's smallholder farmers constitute a huge portion of the rural population and therefore, are important stakeholders to consider in realizing the broader goals of food security.





Why the Ecological Organic Agriculture (EOA) Initiative

- a) To increase documentation of information and knowledge on organic agricultural products along the complete value chains and support relevant actors to translate it into practices and wide application.
- b) To systematically inform producers about the EOA approaches and good practices and motivate their uptake through strengthening access to advisory and support services.
- c) To substantially increase the share of quality organic products at the local, national, regional and global markets.
- d) To strengthen inclusive stakeholder engagement in organic commodities value chain development by developing national, regional and continental multi-stakeholder platforms to advocate for changes in public policy, plans and practices.

All this is aimed at providing evidence on the importance of increased investment on organic agriculture (OA) in Kenya and to support the advancement of the implementation of the African Union (AU) Council's Decision on Organic Farming passed during the Eighteenth Ordinary Session, 24-28 January 2011, EX.CL/Dec.621 (XVIII) through the development of a policy brief for effective advocacy and lobby.

About the study

The EOA team undertook a rapid review of public sector investments to the agricultural sector in general and organic agriculture in Kenya. The study modeled returns on the investments and implications of organic agriculture health on human, animal, and the environment in the last five years. The purpose was to provide recommendations for building and sustaining modeling capacity in the agricultural sector and use of modeling results to inform policy development and implementation.

The Approach

- a) **Document Review** - The team conducted a document search to identify data on public investments for the past ten years to the agricultural Sector at the National (from 2010) and County levels (from 2014).
- b) **Financial Investment Modeling** – The team assessed the economic returns for investments in agriculture and organic agriculture at both national and county levels. For this they used the Internal Rates of Return (IRR) using budget allocations (investment) and expenditure (assumption) costs
- c) **Participatory Scenario Forecasting (KESHO Tool)** – The team used the KESHO (a Swahili word that means tomorrow) tool through a participatory and consultative process that entailed soliciting views from stakeholders (national governments, NGOs, CBOs, Academia), and using it for forecasting of prospects of investing in organic agriculture. They utilized the "what if" scenarios on public investments, soils, ecosystems/environment, and people and animals.

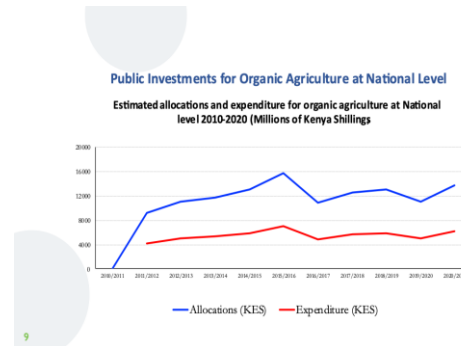
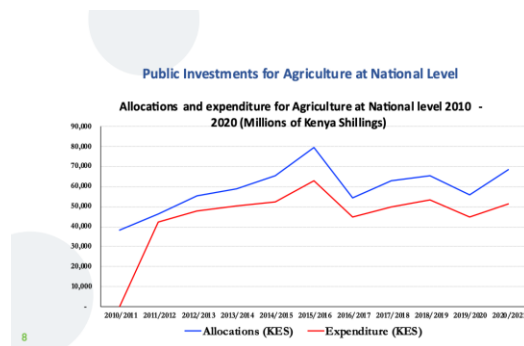




Findings

The results showed that at both County and National Levels, the expenditure on agriculture and organic agriculture is way below or less compared to the budget allocation. The figures below show the scenarios at the two levels for agriculture and organic agriculture.

National Level

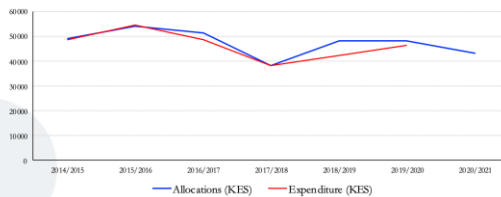




County Level

Public Investments for Agriculture at County Level

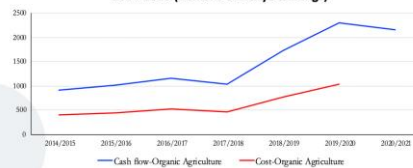
Amount of funding for Agriculture at County level 2014-2020 (Millions of Kenya Shillings)



10

Investments for Organic Agriculture at County Level

Amount of funding for organic agriculture at County level 2014-2020 (Millions of Kenya Shillings)



11

Internal Rate of Return to Organic Agriculture in Kenya

According to the findings, for the period of 2010 to 2020, the Government of Kenya invested over USD 3,634,605,000 into Agriculture of which USD **109,038,150** was allocated to organic agriculture. At the County level, a total of Kenya shillings USD **1,767,173,651** and USD **88,358,683** were allocated to **agriculture** and **organic agriculture**, respectively. The allocations depend on priority that is given to agriculture in each County's Integrated Development Plans. As a country Kenya can choose to go organic or inorganic farming or have a blend of both to increase food production and achieve food security. Organic agriculture has compound benefits especially for smallholders as it promotes climate resilience as it offers a unique combination of low inputs, and environmental conservation, and contributes to adaptation and low carbon emission. The following questions are critical in decision-making.

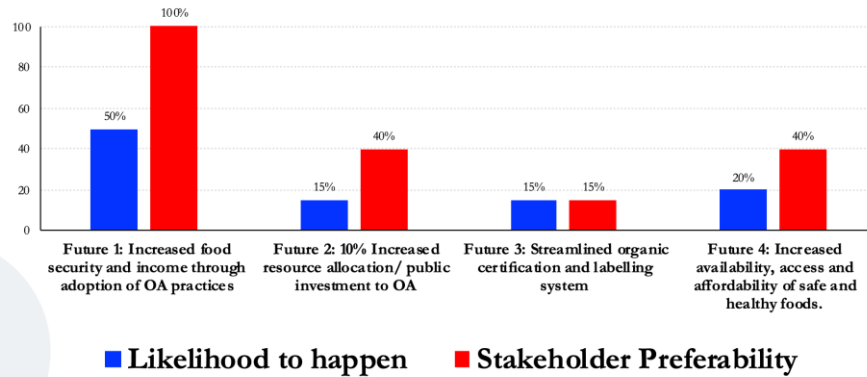
- What is the ideal future that stakeholders envision for food production in Kenya?
- What is needed to achieve the organic agriculture future that stakeholders desire?
- How much public investment is needed to achieve the desired organic agriculture future?
- What are the implications of organic agriculture on soils, ecosystems/environment, and human and animal health in Kenya?

The study team asked stakeholders' perceptions on the likelihood of the futures of organic agriculture on increasing food security and income, increasing resource allocation by the government, streamlining of organic certification, and increasing availability and access to healthy foods. The results are as shown in the figure below.





Likelihood and Stakeholder Preferability of Futures in Kenya



15

Stakeholders were asked to share their views on what is needed to achieve organic agriculture futures. The results are as shown in the table below.

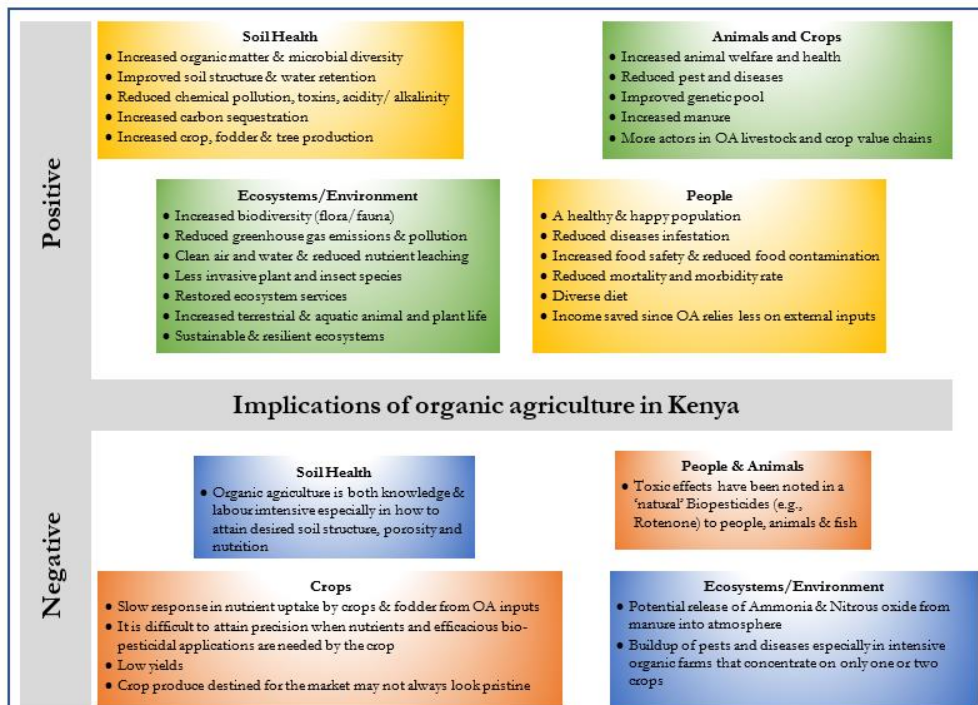
Possible desired futures	What is needed to achieve this desired future?
Future 1: Increased food security and income through the adoption of OA practices	<ul style="list-style-type: none"> ● Development and implementation of an organic policy and strategy for providing an enabling environment. ● Improved market infrastructure for organic products ● Increased political support for OA. ● Increased public awareness of the benefits of OA. ● Subsidized organic inputs. ● Increased funding for organic agriculture ● Efficient and renewable irrigation systems ● Access to weather and agro-advisory services ● Adoption of Integrated pest & disease management (IPDM) for emerging crop and livestock pest and diseases
Future 2: 10% Increased resource allocation/ public investment to OA	<ul style="list-style-type: none"> ● Development and implementation of an organic Policy/Strategy for providing an enabling environment. ● Framework for certification of organic products
Future 3: Streamlined organic certification and labelling system	<ul style="list-style-type: none"> ● Consumer education and awareness stimulate demand for organic products. ● Safe organic product with traceability mechanism ● OA curriculum from primary to tertiary institutions developed and implemented





Future 4: Increased availability, access, and affordability of safe and healthy foods.	<ul style="list-style-type: none"> ● Increased adoption of organic technologies and practices by producers ● Wide variety of organic products that are locally produced. ● Digital platforms to boost OA. ● Support stronger OA farmer organizations
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Stakeholders were asked to share their perceptions of implications of organic agriculture on Soils, Ecosystems/Environment, Human and Animal Health in Kenya. The results are as summarized in the figure below.



Further stakeholders were asked to share their perceptions on the likelihood of the ideal future desired organic agriculture happening and the results are summarized in the table below.

Stakeholders	Ideal future	Likelihood of this happening by 2030
Input suppliers	<ul style="list-style-type: none"> ● Increased demand for organic inputs (manure, slurry and green compost, bio-pesticides) ● Increased varieties of organic inputs 	80%





<p>Producers (farmers)</p>	<ul style="list-style-type: none"> ● Reliable, affordable, available, accessible and quality organic inputs (seeds, fertilizers, pesticides etc.) ● Government to increase subsidies and develop favorable policies for OA. ● Sustained market for organic produce and good prices ● Low cost and sustainable production technologies ● Increased and sustained food production ● Increased household incomes ● Improved soil health ● Reduction in post-harvest losses ● Increased adoption of organic agriculture practices ● Increased farmers knowledge on organic agriculture from outreach and exchange activities ● Increased access and utilization of technology from research ● Re-orientation of organic agriculture from subsistence to commercial ● Farmers investing in value addition for diversified products. ● Increased number of farmers producing organic products for the local and international markets ● Farmers understand importance of certification schemes and labelling. ● Strong farmers' organizations that will ensure secure food security 	<p>85%</p>
<p>Processors</p>	<ul style="list-style-type: none"> ● Increased supply of organically produced raw materials ● Sustained market for the organic product ● Efficient, affordable, and low carbon technologies for processing organic products ● Friendly and harmonized regulatory framework that supports manufacturing of organic products ● Enhanced linkages to the markets, and Business Development Support Services (BDSS) 	<p>65%</p>
<p>Distributors/ marketing/ traders</p>	<ul style="list-style-type: none"> ● Sustained supply ● Friendly and harmonized regulatory framework that supports organic products ● Improved infrastructures 	<p>30%</p>





Consumers	<ul style="list-style-type: none"> ● Sustained and reliable supply of organic products that is available in diversified markets ● Affordable products ● Wide variety of locally sourced organic products ● Improved packaging that is biodegradable ● Safe organic food ● Access to affordable and healthy diets and improved quality of life ● Increased awareness of safe foods ● Well streamlined organic certification systems/ and access to certified organic products. 	45%
CSO/CBO	<ul style="list-style-type: none"> ● Friendly Policies to organic VCs and take care of the environment and health. ● Increased funding allocation for organic agriculture ● Enhanced access to information and capacity building activities on OA. ● Ability to facilitate certification of organic products. ● Enhanced Advocacy promoting organic products. ● Sustained and increased funds in OA 	55%
Government (Regulator)	<ul style="list-style-type: none"> ● Organic Agriculture Policy, Strategy and Regulation developed and implemented. ● Achieve safe and nutritious food security for all Kenyans as per Big 4 Agenda ● Safe organic food ● Improved food traceability ● Increased funding for organic agriculture ● Reduced cases of non-communicable diseases and thus reduced pressure on the healthcare bill. ● Adequate government allocation of funds into organic agriculture at the national and county government (at least 10%) 	50%
National Research Institutions	<ul style="list-style-type: none"> ● Increased innovations on organic agriculture ● Adoption of appropriate organic agriculture technologies ● Increased funding for organic agriculture ● Scaling up best practices of OA 	45%





Education/ Academia	<ul style="list-style-type: none"> Organic agriculture program curriculum developed for primary to university level institutions (The curriculum has to include organic, sustainable and regenerative agricultural practices, focused on replicating natural processes, through to technology-driven precision farming, digital agriculture, resilient to climate change, using locally sourced inputs in circular farming systems, entrepreneurship, agribusiness and market prospecting) Integration of OA curriculum at agriculture training institutions 	10%
Extension/ advisory	<ul style="list-style-type: none"> Strengthened and structured farmer to farmer extension services to support OA. Capacity building of extension providers on OA Digitization of extension services 	35%

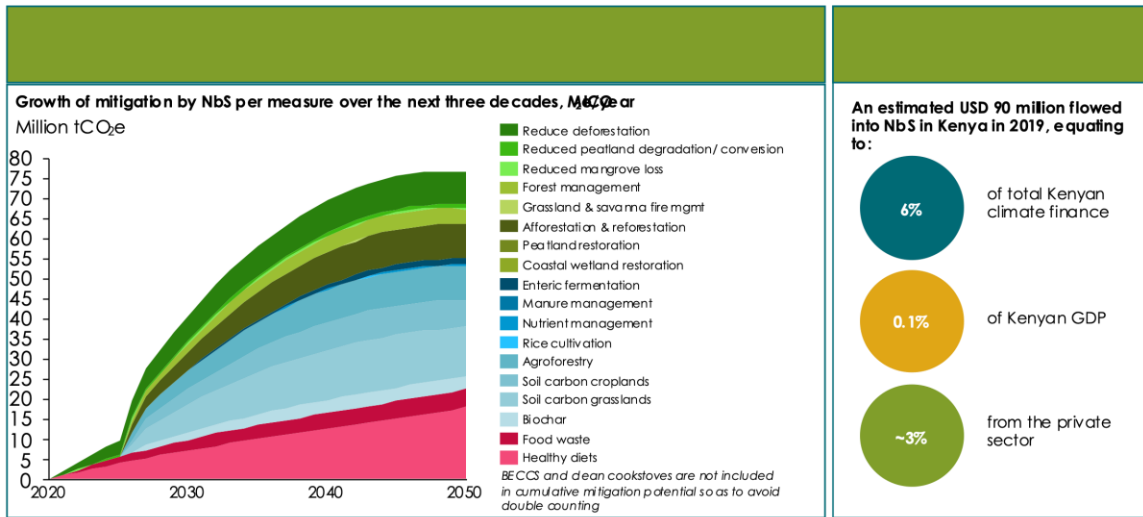
Recommendations

To achieve the desired organic agriculture future, there is a need to develop and implement organic policy and strategy for providing an enabling environment. There is a need to increase public awareness and consumer education of the benefits of organic agriculture that will stimulate demand for organic products. Government ministries need to coordinate policies related to OA to avoid inconsistencies and clarify responsibilities to enhance enforcement. Agriculture being a devolved function, county governments need to prioritize and invest in organic agriculture. Capacity building programs including vocational training, exposure/exchange visits for farmers and extension service providers, lead/model farm approach will be of great importance as seeing is believing. Investment in more research programs to demonstrate the suitability and benefits of organic agriculture in various regions in the country. Finally, there is a need to improve organic market infrastructure to stimulate demand and enhance consumer education.

II. Prosperous Land, Prosperous People: Scaling Finance for Nature-Based Solutions in Kenya - Mr. Jeremiah Rogito

Kenya has an opportunity to build a thriving and resilient nature-positive economy through investment into Nature-based Solutions (NbS), however, they remain critically underfunded. The NbS could provide multiple benefits to Kenya including strengthening the building of climate resilience, biodiversity protection, improvement of local livelihoods, improvement of food security and mitigation of ~80 million tCO₂e per year by 2050. However, current flows of finance into NbS are limited. The figure below summarizes the scenario.

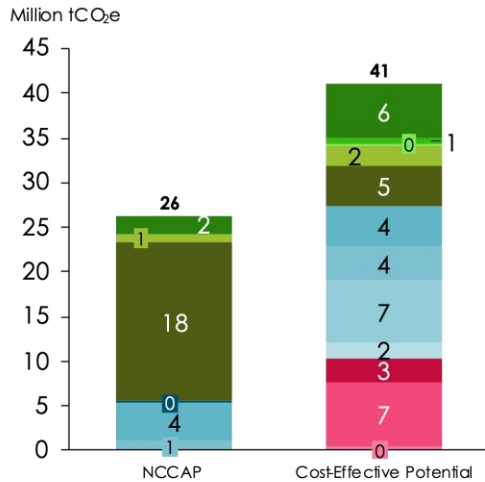




4 Sources: Roe et al., 2019, 'Contribution of the Land Sector to a "CSWorld"'; Roe et al. 2021, 'Land-based Measures to Mitigate Climate Change: Potential and Feasibility by Country'; Climate Policy Initiative, 2021, 'The Landscape of Climate Finance in Kenya'

Kenya's National Climate Change Action Plan (NCCAP) does not yet capture the full potential of Kenyan NbS and relies heavily on the promise of afforestation and reforestation. The figure below shows the mitigation potential indicated through Kenya's NCCAP vs. Roe et al's 2021 cost-effective mitigation potential.





Key differences between NCCAP and Roe et al. (2021):

- The NCCAP assumes restoration of 300,000ha/ yr, compared to Roe's cost-effective area of 31,000ha/yr.
- The NCCAP looks at agroforestry and soil carbon sequestration in croplands but *not* in grasslands or biochar.
- The NCCAP does not consider demand-side measures, and so misses the potential of healthy diets and food waste.

- | | |
|--|------------------------|
| Reduce deforestation | Rice cultivation |
| Reduce peatland degradation and conversion | Nutrient management |
| Reduce mangrove loss | Agroforestry |
| Forest management | Soil carbon croplands |
| Grassland and savanna fire mgmt | Soil carbon grasslands |
| Afforestation and reforestation | Biochar |
| Peatland restoration | Food waste |
| Coastal wetland (mangrove) restoration | Healthy diets |
| Enteric fermentation | Clean cookstoves |
| Manure management | |



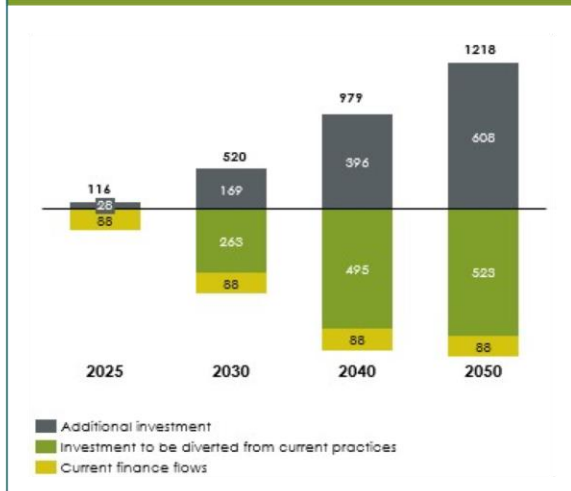
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About USD 1.2 billion per year will be required in Kenya by 2050 to unlock the potential of land based NbS, 50% of which could be reallocated from current agricultural investments. A range of public and private financiers will be required to unlock the USD 1.2 billion of investment needed per year by 2050. Both public and private actors have important roles to play, but investment from the public sector can be kept to less than 1% of GDP by 2050, by creating a positive environment for the private sector to invest in NbS in Kenya.

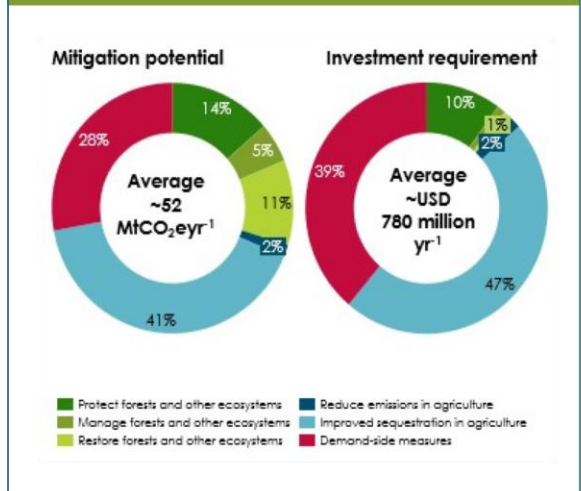




Investment need by NbS category per decade, USD million/ year



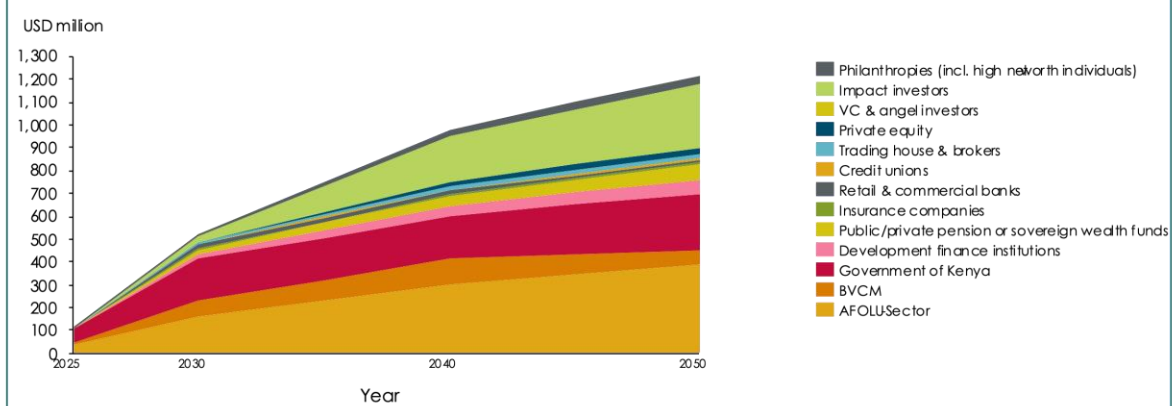
Av. annual mitigation potential & investment requirement to 2050



6 Source:FOLU preliminary analysis



Investments across investor type over the next 3 decades to achieve Kenya's NbS mitigation potential



7



Kenyan policymakers can play a key role in creating an enabling environment for institutional investors and domestic and international corporates to finance NbS in Kenya. The following are the recommendations for consideration.





Development or reform of the policy, regulation, and incentives

- By incorporating a broader suite of Nature - Based Solutions (NbS) into the NCCAP
- Increasing regulation and advocacy for climate risk disclosure and net zero targets
- Introducing or reforming policies to improve land tenure and ensure it is enforced.
- Consideration of land use in trade deals to reduce pressure on farmers and natural capital.
- Engaging in and promoting the use of the voluntary carbon market

Public spending in activities that promote NbS.

- Develop blended finance instruments for use on NbS initiatives.
- Finance capacity-building mechanisms to scale up profitable NbS business models.
- Foster aggregation activities to increase investment size and reduce risk.
- Invest in research and development to ease implementation of NbS e.g., forest monitoring systems.
- Increase demand for climate-positive commodities through public procurement.

Panelists: Dr. David Amudavi, Jeremiah Rogito and Yodit Kebede:

Recommendations from the Panel

Agroecology is not about practice only but is a social movement aspect. Social movements play a role in scaling agroecology and there is a need to understand that there is a political system around AE that cannot be ignored. Land tenure and the youth is still critical and must be addressed for youth to participate in AE effectively and profitably. There is a need to unpack the AE agenda in such a way the public can easily understand, and this should be pegged on people's emotions, especially on health. Moving forward, without reinventing the wheel, there is a need to invest in already existing initiatives including markets. Stakeholders should intentionally and deliberately seek a buy-in by the political clout and this can be achieved through building strong coalitions.





1.7 HIGHLIGHTS FROM CLOSING PLENARY

Session Moderator: Ms. Victoria Rubadiri

Presentations

1. **Call to Action:** Ms. Venancia Wambua, Senior Project Manager, EOA Initiative for Africa
2. **Closing Remarks:** Mr. Alex Mutungi, Coordinator AU EOA Continental Secretariat
3. **Official Closing Speeches**
 - a) **Dr. David Amudavi**- Chair of the Conference Organizing Committee
 - b) **Hon. Fred Bwino Kyakulaga** - The Minister of State for Agriculture -Uganda
 - c) **Hon. Mithika Linturi** - Cabinet Secretary, Ministry of Agriculture and Livestock Development, Kenya (Leonard Kubok)
 - d) **Vote of Thanks:** Dr Sarah Olembo

CALL TO ACTION

Ms. Venancia Wambua, Senior Project Manager, EOA Initiative for Africa presented the call to action that was officially received and adopted by all delegates. The call to action outlined the broad actions to be undertaken at: Global, continental, regional, national, and local levels. The call also reached out to financial and lending institutions and research institutions including individual delegates to undertake bold actions towards adopting and promoting agroecology.





Closing Remarks from Mr. Alex Mutungi, Coordinator of the African Union (AU) Ecological Organic Agriculture (EOA) Initiative Africa Secretariat

He reminded the delegates that the conference was timely in that it contributed to providing solutions to climate change. He stressed the need for embracing co-creation and that the solutions lay with the delegates in the conference. Transformation and more transformation are needed for Africa's food systems and as mentioned by the keynote speaker who set the foundation for the conference, it is no longer business as usual. He congratulated the delegates for daring to take bold, innovative actions and showing commitment to change Africa's desires. He encouraged delegates to harness potential all around to move towards collective action with everyone taking full responsibility. He urged the delegates to commit to the implementation of the call to action and utilize the available tools to measure the performance of agroecology such as the CAADP biannual review that has integrated agroecology indicators. He assured the delegates that the AU was committed to working with partners within the member states to ensure sustainable agriculture and food systems. He informed members that the EAC was developing the agroecology strategy while at the same time,





ECOWAS had already started to implement its strategy. He informed delegates that in November 2023 there was going to be an Organic Agriculture Conference and employed all the delegates to plan to attend and participate. He ended by thanking all delegates and partners for making the conference a success.

Dr. David Amudavi- Chair of the Conference Organizing Committee and Executive Director BvAT

He informed the delegates that he was excited that the plan to host the inaugural Eastern Africa conference had come to fruition. He reiterated that it was not an easy journey, but the COC was committed to the cause, and they ensured the delivery of the conference. Indeed, the delegates contributed to making the world a better place where no one was left behind. He appreciated all the researchers who submitted their papers. He informed delegates that over 300 papers were submitted for review out of which 100 were presented. He thanked partners who exhibited and even put-up posters for sharing knowledge and experiences. He reinforced the fact that the conference had come up with a call to action that calls upon everyone at their individual and collective level to participate in transforming how food is produced, processed, and consumed. He informed delegates that the call to action had laid out a blueprint for actions for the next two years against which when the next biannual conference will be taking stock of the progress achieved so far. He informed delegates that the call to action is a living document that will be implemented and improved on as transformation to sustainable food systems is taking place by all stakeholders. He stressed the need to reduce planetary boundary depletion and urged delegates to stay on course until all the committed actions are actualized.





Hon. Fred Bwino Kyakulaga - The Minister of State for Agriculture - Uganda

Hon. Fred congratulated all the delegates for their resilience and active participation throughout the conference. He noted that the participants had been 100% from the beginning to the end in all sessions (plenary, breakout, exhibition visits, and even the side events). He acknowledged the importance of the conference subject matter to all the sectors of development. Through the shared experiences he emphasized that agroecology can and has the potential to contribute to transforming the way food is produced, processed, and consumed in a sustainable way. He reiterated that the call to action has reached out to everyone at whatever level including individual commitments. He reiterated that change begins with an individual and everyone in the conference had a responsibility to the call to action and stressed that agroecology is the way to go. There is a need to have harmonization of actions from the global, continental, regional, national, and sub-national to grassroots levels. He emphasized that political goodwill is key to the success of adopting agroecology and as such politicians and all policymakers must be onboarded. He ended by thanking all delegates, organizers, funders, participants, and the GoK for hosting and providing hospitality to all guests. He wished all journey mercies and success in implementing the call to action.

Leonard Kubok: Director Research and Innovations MoALD Kenya for Hon. Franklin Linturi Mithika CS MoALD - Kenya

Representing the Cabinet Secretary Ministry of Agriculture and Livestock Development Kenya, Hon. Linturi Mithika, Mr. Leonard Kubok Assistant Director of Agriculture appreciated the effort of delegates to the production of the call to action that clearly stipulates responsibilities from the individual level to the global level. He was excited that the call to action recognized the role of sub-national level (county government in the Kenya context) because this is where agriculture and food production happens. He applauded the delegates for their active participation in the conference and pointed out that agroecology was the promising alternative for a better future in pursuit of sustainable food systems. He noted that indeed "Agroecology is Beautiful."

In the speech read on his behalf, the CS informed the delegates that he was delighted to join this 1st Eastern Africa conference on agroecology and thanked all for turning up in good numbers both in-person and online. He noted that it was through such commitments that made the conference a success. The conference marked a big milestone in the agroecology discourse in the region and beyond. National, regional, and global experiences on agroecology are an aspiration and are therefore worth sharing for scaling up. He appreciated that the conference came up with clear recommendations on the need for policy coherence, partnerships and collaborations and capacity building in agroecology for promoting enhanced adoption of





agroecology. He enjoined the delegates in stressing that business as the usual state is no longer an option to address food and nutrition insecurity in the face of climate change that is currently affecting food production systems. There is a need to move with speed to achieve the SDGs and vision 2063 and this will require taking bold and innovative actions just as highlighted in the call to action. He committed on behalf of the government of Kenya to implement the call to action by including in the development agenda of the agriculture sector.

Key messages

1. We have many blueprints: agroecology-based interventions can provide solutions and require strong institutions that are transparent and embrace inclusion.
2. Women, youth, and marginalized groups need to be supported at all levels.
3. There is a need to target agroecology programmes and projects that offer women and youth and marginalized groups opportunities to participate.
4. The sustainability of food systems based on agroecology is desirable and requires integrated efforts by all as this conference has proven. The Ministry of Agriculture Kenya is ready to be part of it.
5. Creation of an enabling environment for trade, markets and rural economies is key in the agroecology agenda.
6. There is a need to strengthen institutions and allocate resources to relevant programs that will help realize transformed food systems are stable and resilient.
7. Kenya already has an agriculture policy that recognizes agroecology.
8. The government of Kenya is committed to ending hunger in Kenya and any approach towards that is welcome and one of them is agroecology.
9. Kenya's performance has been commended by CAADP in the 3rd cycle of review and CAADP has included indicators for tracking agroecology including farmer managed food systems, seed index among others.
10. Kenya is reviewing the seed policy to make it inclusive and robust and through such the policy will recognize farmer seed systems. The EOA secretariat is a member of the task force reviewing the policy.

Thanked all for choosing Nairobi as the pioneer venue to host the inaugural Eastern Africa Conference on agroecology and encouraged delegates to sample some of the best places to visit while in Nairobi like the National Park, National Museum to balance business and pleasure. He officially declared the conference closed.





Dr. Sarah Olembo Closing Remarks and Vote of Thanks on behalf of the COC.

On behalf of the Conference Organizing Committee, Dr. Olembo expressed heartfelt gratitude to all the delegates for making the conference a success. The delegates were drawn from the public sector, NGOs, CSOs, research organizations, financial institutions, academia, and Ecological Organic Agriculture country lead organizations. She appreciated the delegates for their commitment in evangelizing Ecological Organic Agriculture in their respective countries and organizations with the aim of contributing towards food and nutrition security. She commended the contribution of delegates in causing a revolution in the education sector, research and other intervention areas that have seen the bring back of the eroding seeds, languages and cultures. She applauded the women for playing a very important role in food and nutrition security as they are the people who pass this knowledge to the next generations through their nurturing functions. She affirmed the fact that Africa's answer to food security is right with the delegates and that these solutions are found among the practitioners including farmers.

She offered special gratitude to the Ministry of Agriculture and Livestock Development (Kenya) for co-convening the conference and for its commitment to ensuring food security and the general stewardship of the Kenyan agricultural sector. Further, she acknowledged and appreciated the presence of the Honorable Minister of Agriculture Hon. Fred Bwino Kyakulaga from Uganda who doubled as a delegate and a chief guest. She reiterated that East Africans are people with a common heritage, common challenges as well as solutions. The active participation of all delegates was a clear demonstration of a strong resolve in the region towards achieving food security for all in sustainable ways.

Further, Dr. Olembo acknowledged the presence and participation of the delegation from the African Union Commission led by Dr. Sarah Osia, representing Director of Agriculture and Rural Development AUC was a true testament to the importance of Agroecology and its potential to spur economic growth and sustainable development in Africa as a continent. She affirmed that the presence of the Director representative was a true testament to the importance of Agroecology and its potential to spur economic growth and sustainable development in Africa as a continent.

She also appreciated the keynote speakers who played a key role in expanding the knowledge through presentation of well thought out and the much-needed roadmap based on own experience towards attaining the United Nations Sustainable Development Goals (UN - SDGs); whose aim is to eradicate poverty through food security for all in sustainable ways that respect the environment. Special mention was made to Dr. Hans R. Herren who anchored the conference by delivering a presentation on the Pathways to Food Systems Transformation towards Resilience and Sustainability in Africa that emphasized that Agroecology offers potential in addressing the 17 UN - SDGs and he persuaded donor community funding





agriculture to invest more resources in Agroecology. She assured delegates that the presentations made by the keynote speakers will form part of the archived information and knowledge for future reference.

She extended special gratitude to all esteemed partners who provided encouragement, commitment, support, and funding that saw the success of the conference. The partners demonstrated their faith in the principles of agroecology.

Dr. Olembo applauded and acknowledged farmers who she pointed out were the reason, cause and legacy for agroecology. The farmers who majority are overwhelmingly women and youth act as gatekeepers and custodians of food security and agroecology. She reiterated that farmers' dedication to farming sustainably and protecting the natural resources including pollinators, soil health, indigenous seeds, and ecosystems services, was central to achieving food security and sustainable development that eventually will deliver a truly happy world for all mankind to live in.

To the Conference Organizing Committee she extended special appreciation to the Committee, led by the incomparable Dr. David Amudavi of Biovision Trust and consisting of Ministry of Agriculture, and Livestock Development led by Grace Mugo, GIZ led by Martin Oulu, BIBA led by Anne Maina, Koan team led by Eustace Gacanja, PELUM Kenya led by Rozina Mbenya, PELUM Uganda led by Josephine Akia, PELUM Ethiopia led by Institute for Sustainable Development, PELUM Rwanda led by Lise Chantal Dusabe, 4K Club led by Mr. Jaika, Wanjiru Kamau, and Central Steering Committee EOAI led by Dr. Sarah Olembo. She likened the commitment of the COC to the saying: *"In a breakfast of bacon and eggs, the chicken is involved, but the pig is committed."* The COC was committed through its teamwork and selflessness that delivered stellar performance.

Finally, Dr. Sarah appreciated the event organizers, Best House led by Mr. Griffin Omwenga, for the great coordination of the conference sessions and systems.

She concluded the vote of thanks by appreciation and eulogizing Dr. Tewolde for boldly speaking about feeding Africa and whether it was the space of science to deliver the reasons as to why Africa is not food secure. She recognized that Africa had lost a great man that spoke boldly and provided the evidence that is needed to transform Africa's food system. The late Dr. Tewolde's life is a reminder that the evidence for transforming Africa's agriculture and food system must be derived from the field where it resides with the farmers and rightly so with the women farmers. Tewolde's death was a win for Africa and nature because it is through his work that agroecology benefits are being felt now and in the coming generations. And this he spoke boldly was the future for Africa's agricultural transformation. Dr. Tewolde did a lot to push for adoption of Agroecology by the Africa Union. In fact, Agroecology in Africa can be wholly attributed to Dr. Tewolde. His approach and belief was the same as George Washington





Carvers who recognized the importance of observing nature and understanding its processes in developing sustainable farming practices. He encouraged his students to watch insects and other natural processes and learn from them in their farming practices. This approach was based on the idea that nature had already developed efficient and sustainable solutions to problems that farmers were facing, and by mimicking these natural processes, farmers could improve their yields and reduce their dependence on synthetic inputs.

Long Live Agroecology, Long Live the Women and Youth, Long Live African Food Sovereignty.

Memorable Quotes

Dr. Martin Luther King: that *"We must learn to live together as brothers and sisters- or perish together as fools"*

Matthew 23:11: To be the greatest, be a servant."





1.8 HIGHLIGHTS ABOUT CONFERENCE EXCURSION SITES

Taste the Forests Kenya Ltd in Limuru

The farm in Limuru sits on more than 70 hectares of forest land. The farm is cultivated and integrates food and forest. There are more than 120,000 indigenous trees on the farm and the food produced on the farm is supplied to different suppliers and traders within and without Nairobi and some is used in the Hotel located on the farm.

Key Features

- Uses woodchips as fertilizer.
- Use of wild bananas to conserve water and keep moisture in the farm.
- Agroforestry: Integrated crops and trees
- Garden for flowers
- Practice Mulching
- Birds' biodiversity
- Use of drip Irrigation
- Established nursery for indigenous trees.
- Training for nursery operators and farmers

Learning Points

- Compost manure conservation
- Use of herbs for pest control
- Seed bank conservation





- Seedlings nursery management



Charles Mawia Farm in Machakos

Charles Mawia, a primary school teacher, owns the farm and his journey to organic agriculture started when he expressed his passion and interest to turn his backyard into a thriving food forest. He had an engaging conversation with one of the extension officers in Biovision Africa Trust who trained him more on vertical kitchen gardens. He uses recycled tyres and bags to grow his organic crops. He utilizes intercropping and other climate smart technologies. His farm is in Machakos County, one and half hours' drive from the city of Nairobi.

Key Features

- Half acre land under cultivation
- Purely organic
- Fruit tree nursery
- Natural pest control (plant extracts, traps, bio-pesticides)
- Recycling of tyres to be used in the farming.
- Use liquid fertilizers.



- Conical gardens technology

Learning Points

- Herbs/indigenous vegetable production
- Innovative Technologies (use of containers, Zai pits, multi-storey/conical gardens)
- Peri-urban farming-utilization of small space for food production
- Small animal production (rabbits, poultry, sheep, dairy goat)
- Water conservation
- Making of plant extracts
- Azola production
- Composting



Grow Biointensive Agriculture Center of Kenya (G-BLACK) in Kiambu

The Grow Biointensive Agriculture Centre of Kenya, demonstrates, trains, and promotes GROW BIOINTENSIVE AGRICULTURE methods and other appropriate community development techniques for sustainability among small-scale farm holders in Central, Eastern, and Nairobi Provinces in Kenya. It is a centre that tries to support youth, particularly girls from the poorest families, to have alternatives for livelihoods after completing primary school and have no hope and opportunity to further their studies. It is a designed model farm for small-scale farm holders. The centre has over 160 double-dug beds, all planted with different types of food





crops, organically grown. Soil fertility is continuously improved and maintained using composted bio-matter from the centre's gardens. There are also chickens, rabbits, dairy goats and an apiary. G-BIACK centre staff trains small-scale farmers on sustainable ways and methods of increased food production both at site, and through outreach to communities. The centre is located at the route to Thika town, which is about 40 kilometers North of the city of Nairobi, 10 km east of Thika town along the Thika – Garissa Road.

Key Features

- One and half acre's land under cultivation
- Purely organic farm
- Tree seedlings propagation
- Tea Manure making
- Vermiculture composting
- Many enterprises

Learning Points

- Largescale organic farming
- Grow Biointensive Agriculture (GBIA)practices.
- Livestock integration
- Water harvesting
- Food preservation
- Use of raised bed technology
- Income Generation
- Can be found at: <http://www.g-black.org/>







ANNEXES

Annex 1: List of Participants



List of Delegates.xlsx

Annex 2: List of Exhibitors

1. Biovision Africa Trust
2. Pelum Association
3. Giz Kenya
4. SNV
5. Slow Food
6. Interact
7. Eastern And Southern Africa Small-Scale Farmers' Forum
8. African Centre for Agroecology and Livelihood Systems (Acalise)
9. KAPI Ltd
10. Practical Action
11. Center For Food and Adequate
12. Living Rights
13. CUC and Inspections Kenya Limited
14. World Animal Protection

Annex 3: List of Conference Organizing Committee

1. Biovision Africa Trust- lead organizers Dr. David Amudavi, Ms. Venancia Wambua and Mr. Alex Mutungi
2. MOALD – Ms. Grace Mugo
3. Pelum Kenya- Mr. Mathew Mutinda
4. ISFAA- Dr. Martin Oulu, and Mr. Jaika Oberi
5. KOAN- Mr. Eustace Gacanja
6. BIBA- Ms. Anne Maina
7. CSC representative, Dr. Sarah Olemba
8. Organic expert - Ms. Wanjiru





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