



# **Organic Farming Research in Africa: Some constraints, lots of positive developments**

**Julia Wright, CAWR, Coventry University, UK  
With: David Amudavi, Biovision Africa Trust  
Georgina McAllister, Garden Africa, UK/Zim  
Wilfred Miga, PELUM Zambia**



Centre for  
**Agroecology,  
Water & Resilience**



“Driving innovative, transdisciplinary research on the understanding and development of resilient food and water systems internationally”



# Outline

- **CAWR's current activities in Africa**
- **Challenges of organic research in Africa**
- **Building the evidence base: developments in permaculture and agroecology in Africa**
- **Example of an integrated development research project in Zimbabwe**

## CAWR's current activities in Africa

- Environmental planning and management of Nakivale Refugee Settlement in Uganda through the integration of agroecology in camp farming systems – working with Office of the Prime Minister – Uganda, UNHCR and Makerere University
- Valuing and Integrating Edible Insects in the Humanitarian Food Security Response, in Niger and Uganda



### ***PhD research projects:***

- The role of agroforestry in building social and ecological resilience for refugee settlements in the fragile areas of East Africa
- Smallholder adaptation to climate change in West Africa: pathways to social and environmental resilience
- Adopting and sustaining agroecological approaches through the use of mobile phones in Nigeria
- Reimagining Resilience and Opportunity in the African Post-War Environment: the potential for indigenous agroecological rural-urban market development
- Resilience of Agricultural Ecosystems to Biological Invasion in South Africa

# The Network for Organic Agricultural Research in Africa (NOARA) (presented at Biofach 2015)

**Aim** : NOARA seeks to create a scientifically sound evidence base supported by research in ecologically sound practices in agriculture and environmental protection in order to increase productivity of crop and livestock production, enhance value of system outputs, and sustain resilient farming systems.

- Established 2008
- Action Plan for Ecological Organic Agriculture (EOA) Initiative
- Undertaking baseline studies in 6 countries: Ethiopia, Kenya, Nigeria, Tanzania, Uganda, Zambia

## ***Thematic Areas for Research***

Productivity and sustainability (crops and livestock) – Biodiversity - Extension and dissemination – Marketing - Consumer issues - Socio-economics (Perceptions/criticisms, Benefit/impact quantification) - Climate Change – Policy - Holistic System Approaches

***A key constraint to OA is the limited research on organic – related to limited funding support for R&D***

# Participatory Ecological Land Use Movement (PELUM) – Zambia

<http://pelum.net/pelum-association-structure.html>



PELUM is a network of Civil Society Organizations / NGOs working with small-scale farmers in East, central and southern Africa. Founded in 1995 and inspired by permaculture, it has over 250 members.

## ***Constraints to research and development:***

- Lack of evidence to use to promote organic agriculture in the region
- Research findings not shared with the farmers in rural areas/ not translated into local languages
- Most research is conducted by donors or foreign agencies hence farmers are not accessing the information due to high levels of illiteracy
- Life span of research is only for the period when the donors are present – when they leave they take the findings with them

## ***Recommendations for research institutions & universities***

- Develop improved organic/ agroecology agriculture technologies
- Provide expertise to extension agents to facilitate technology dissemination
- Facilitate farmer led research in farmers' fields

# Permaculture International Research Network (PIRN) – Africa



Founded 2012

Associates in: Cameroon, DR Congo, Ghana, Kenya, Malawi, Namibia, Zambia, Zimbabwe

Examples of research projects:

- Can Permaculture Feed the World? Is Permaculture a viable alternative towards securing food security and income generation in Africa ( Kenya)
- Comparison of food security, diet diversity and agricultural practices between permaculture and conventional smallholder farmers in Central Malawi
- Traditional farming methods of sub-Saharan Africa with special interest in Ghana
- How to avoid desertification in sub-Saharan Africa with a focus on Malawi

<https://www.permaculture.org.uk/research/4-international-research-network>

# The Untold Success Story: Agroecology in Africa Addresses Climate Change, Hunger, and Poverty

**Alliance for Food Sovereignty Africa (AFSA)** Founded in 2011, a Pan African platform comprising networks and farmer organisations working in Africa. The core purpose is to influence policies and to promote African solutions for food sovereignty

[www.afsafrica.org](http://www.afsafrica.org)

Published with The Oakland Institute, California

33 Case studies

<http://www.oaklandinstitute.org/agroecology-case-studies>

## ***Increased agricultural production and productivity***

- In Ethiopia, a low external input approach led to a doubling of Tigray's grain yield between 2003 and 2006, while fertilizer use decreased by 40%.
- In East Africa, over 96,000 farmers have adopted the Push-pull system that fights the parasitic Striga weed and stem borers invasion in maize fields, without any chemical insecticides and herbicides. Maize yields have increased three-fold as a result.
- Kenyan farmers who adopted the Grow Biointensive approach, using mainly compost, close spacing of plants, and intercropping, increased their yields by 2-4 times compared to conventional farming while using 70 to 90 % less water, and purchasing 50 to 100% fewer inputs.





# The Untold Success Story: Agroecology in Africa Addresses Climate Change, Hunger, and Poverty cont.

## ***Halts environmental degradation and mitigates climate change impacts***

- Keita Project in Niger : restored deforested and degraded land through dunes reforestation, construction of water and wind management structures, and a variety of sustainable agriculture techniques. Boosted agriculture and livestock production, restored 45,000 ha woodland, and sequestered 132,000 tons CO<sub>2</sub> per year.
- In Zimbabwe, Mr Zephaniah Phiri Maseko developed successful agroecological and water management techniques including dams, stone walls, plant diversification, to optimize the use of land and water, restore soil fertility and stop erosion. Now adopted by thousands of farmers across the country.
- Agroforestry projects in Mali, Malawi and Cameroon increase nitrogen fixation in soils and reduce the use of synthetic fertilizers. Trees fertilize the soil, provide firewood, fruit, nuts, and medicine, preserve biodiversity and reduce forests degradation and stop erosion.



# The Untold Success Story: Agroecology in Africa

## Addresses Climate Change, Hunger, and Poverty cont.

### *Reduces input expenses and diversifies income sources*

Going organic with cocoa in Sierra Leone, pineapples in Tanzania or cotton in West Africa, thousands of farmers have found new markets, diversified and increased their incomes while cutting down their expenses on agricultural inputs.

### *Improves resilience*

- Ethiopia's Gamo Highlands is managed agroecologically with high agro-biodiversity, sustaining more than 50 different plant species, over 100 enset varieties, and 40 barley varieties.
- After decades of focus on intensive cultivation of maize, Malawi and Zambia have reintroduced diversity on farms and increased access to improved varieties of cassava which can be harvested throughout the year and is resistant to poor growing conditions.
- In Zimbabwe, DR Congo, and Uganda, seed banks and seed fairs have boosted access to affordable seeds for local farmers, increasing resilience, food production and incomes.



# Restoring Degraded Ecosystems by Unlocking Domestic Organic Market Potential: Development research from Zimbabwe (2009-15)



GardenAfrica works with the most vulnerable people to find plant-based solutions to their everyday challenges. Using organic, agroecological & permaculture approaches [www.gardenafrika.org.uk](http://www.gardenafrika.org.uk)

# Situation Overview

- Agriculture remains the primary livelihood means for 75% of Zimbabweans
- Promotional drives and drought relief packages have resulted in a shift from trad staples (cassava, millet , sorghum) to maize cultivation
- Predominance of maize monocropping (av yield 73 kgs p/ha)
- Rate of land degradation - estimated at 46%
- Majority of smallholders struggle to achieve subsistence
- HIV/AIDS further complicates vulnerability
- Loss of indigenous knowledge systems
- Average life expectancy for women is 34
- Chronic malnutrition averaging 30%

# HYPOTHESIS

Creating lucrative & accessible routes to market would increase the income & status of Permaculture producers, & attract more farmers into agroecological production, thus increasing food & livelihood security.

Methodology – Permaculture Practices & Ethics  
Market Mechanism – Organic Certification



# Prevailing Market Situation in 2010

- Organic shelves in Harare supermarkets consistently outsell their non-organic counterparts
- Organic demand serviced by imports from South Africa (large commercial farms)
- Zim smallholders net recipients of food aid
- No national organic standards in place

# Directly Participating Farmers

Phase 1 (2009-11: 18 months)

- 2011 - 591 (68% women)

Phase 2 (2012 – 15: 24 months)

- 2015 - 1,189 (58% women)

*Phase 3 (in application – 2016-19)*

- *2019 – 2,948 (calculated projection)*



# Inclusion of Traditional Leaders and Extension Services leading to:

- security of land tenure
- Allocation of prime virgin land close to key resources
- Mediation between farmers, local value chain actors & officials
- Advocating agroecology and OA to others to scale out initiatives



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# Seed Selection & Storage



# Natural Pest Management



Water  
Conservation



# Live & Recycled Fencing





# Soil Fertility & Conservation

## Deep Trench Beds



# Sheet Mulching



# Dryland Crops





# Companions

## Propagation





# Bee Keeping & Organic Honey Production



Small livestock  
integration



# Processing & Value Addition



# Revolving Loans



# ORGANIC STANDARDS





# Organic Standards

- Consulted existing organic stakeholders (3<sup>rd</sup> party) on a set of national standards
- Developed comprehensive standards based on the participatory guarantee scheme (PGS)
- Tested farmer-friendly standards & materials
- Trained local farmers as standards trainers for wider uptake & scaling out
- Standards successfully incorporated in to the Standards Association of Zimbabwe (SAZ)
- International recognition of the Zim standards by IFOAM

# ORGANIC PREMIUM VS PERMACULTURE ETHICS?

*(...people care, fair share)*

*Premium product / optional  
premium price*



*For the wealthier consumer  
and the farmer on virgin  
land*

*Comparatively priced  
alternative*



*For the conscientious  
consumer on a budget  
And the farmer in  
transition*

# Farmers (production)

- 44 fully certified organic associations (948 farmers – 185 ha)
- 10 more associations (241 farmers) undergoing ‘conversion’ through locally trained farmer standards trainers.
- 122% increase in agrobiodiversity on-farm, improving resilience, access to food, medicine, fuel ... and markets
- Improved yields by 290%, despite 50% lower rainfall than expected.
- 44% increase in value addition resulting in improved food preservation for food security, & consistency of supply & income throughout seasons.



# Farmers (& their markets)

Aggregated supply to market (x 8 districts)

= 246 tons in 3 seasons (2014-15) yielding \$132,000

- Eight associations producing for wholesalers & supermarkets.
- Twelve associations producing to order for local schools, colleges and hospitals
- Forty are producing for local markets / traders
- Four producing for seed houses – increasing access to organic seed and diversified varieties.
- Eight associations producing worms for new org fert company with capacity to supply 200 tons of fert p/month
- Ave income of participating farmers increased by 265%



# Demand for Organic Produce

- The market wants diversity too! 17 primary product lines
- Exclusive relationship with up-market supermarket chain – supply agreement for 7 Harare stores = 4,088 tons p/a
- Supermarket chain interested to convert all 50 nationwide stores to organic fruit & veg = further est 25,112 tons p/a (which is well beyond the scope of the project farmers)
- Distributors/wholesalers requesting increased organic lines & volumes calculated at 492 tons p/a (for supermarkets, hotels, food outlets)
- Local schools, hospitals & colleges ordering directly from farmers currently estimated at in excess of 197 tons p/a





As a result of the organic production & market gains, a total of 8,104 farmers nationally are now entering local PGS certification, with the first 440 ha of locally certified

# 'Most Significant Changes' as articulated by participating farmers



## **Social Change**

Positive change reported by 94.4% of participants (including increase in confidence and self esteem)

## **Economic Change**

Positive impact reported by 88.9% of participants

## **NRM Changes**

Positive impact reported by 66.7% of participants

# Next step: Investing in Peoples' Markets?



Research demonstrated that over 60% of produce leaving Mash East for Mbare market (in Harare) returns to the province – schools, colleges, hospitals, markets and supermarkets

Zimbabwe's domestic organic market has the potential to represent an equitable, market-based mechanism for income redistribution to organic farmers through peoples' markets





**Thank  
you!**



**Garden@frica**