


Is Organic Agriculture a viable option for the Global South?

A side event for the Science Days of the UN Food System Summit organized by the Research Institute of Organic Agriculture (FiBL), University of Ghana, Kenya Agricultural & Livestock Research Organization (KALRO), and Biovision Africa Trust

Dr. Irene Kadzere (FiBL), Dr. Laura Armengot (FiBL), Joseph Bandanaa (University of Ghana), Dr. Anne Muriuki, (KALRO), Dr. David Amudavi (BVAT), David Bautze (FiBL), Dr. Christian Schader (FiBL), Beate Huber (FiBL)

07.07.2021

Outline of the Side Event - 1.5 hours

A. Introduction and background (Dr. Irene Kadzere)

B. Presentations

1 

Dr. Irene Kadzere

Benefits and drawbacks of OA for African smallholders

2 

Dr. Laura Armengot

Productivity & profitability of OA in Africa, Latin America, India

3 

Joseph Bandanaa

Is organic cocoa farming in Ghana sustainable?

4 

Dr. Anne Muriuki

Mainstreaming organic at national level through participatory research

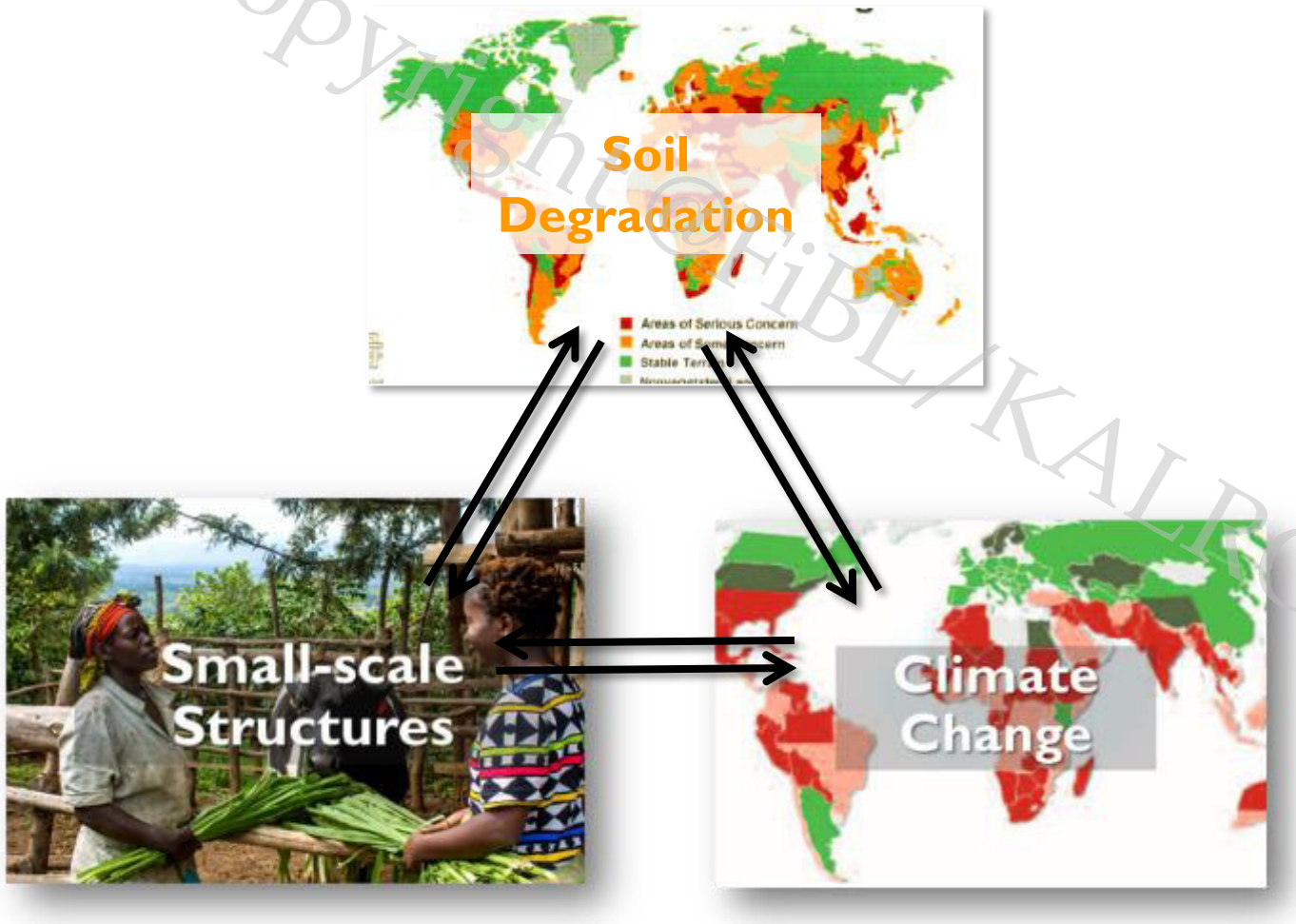
5 

Dr. David Amudavi

Reflections - research findings and knowledge management

C. Conclusion & Discussion (20 min)

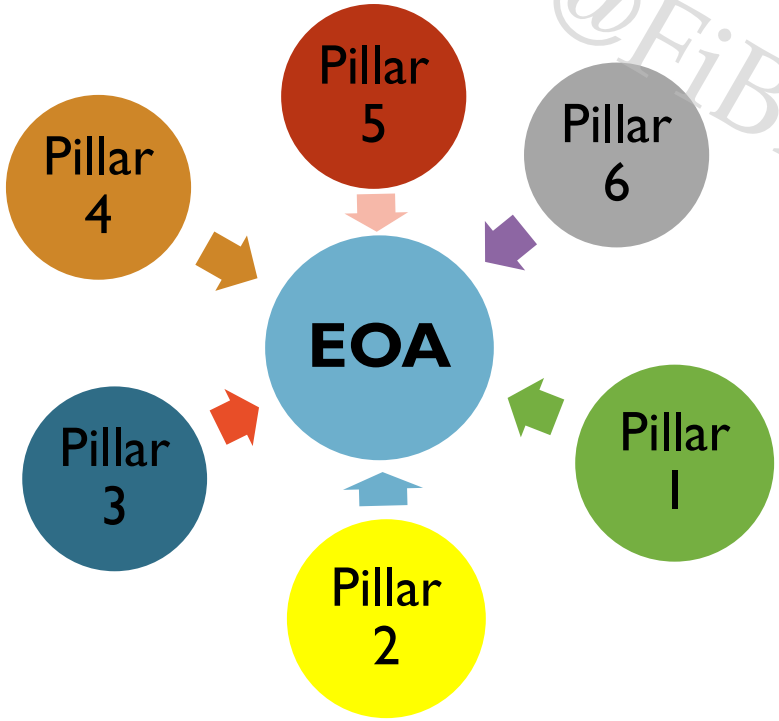
Global challenges to agriculture and food & nutrition security



- Global hunger, undernourishment (nearly 9 % of world population), poverty.
- Rapid decline in agrobiodiversity, and biodiversity in general.
- Yields of major crops could decline by up to 30 % by 2050.
- Smallholders (<10 ha) manage 80 % of the farmland in Sub-Saharan Africa and Asia, supplying most of the food in these regions.

Background

- Global trends in OA - addressing environmental, social, and economic challenges
- Sound comparative empirical evidence on performance important for practice, decisions, policies
  - In Africa, comparative R4D projects on OA: contributing to the EOA Initiative objectives



Pillar 1 = Research, Training and Extension
Pillar 2 = Information and Communication
Pillar 3 = Value chain and Market Development
Pillar 4 = Networking and Partnership
Pillar 5 = Development of Policies and Programs
Pillar 6 = Institutional Capacity Development

How does organic perform in the tropics?

- Global performance data mostly from optimized field trials in high-income countries
- Real farm data about implementation and impacts of OA in tropical farming systems scarce

On-station and on-farm research programmes in the tropics since 2007

FiBL

ProEco Africa

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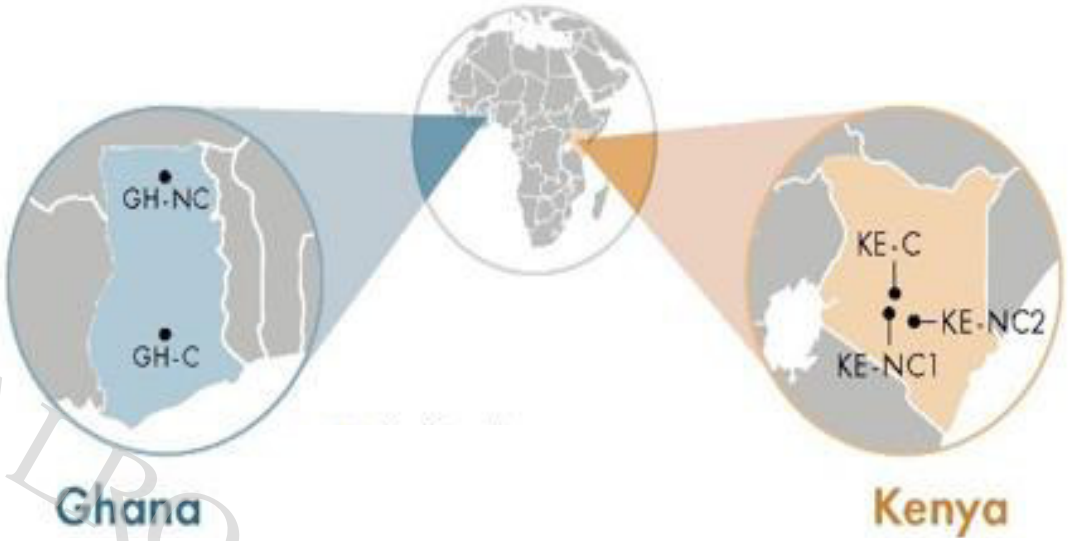
Benefits and drawbacks of organic agriculture for African smallholder farmers

Dr. Irene Kadzere, Dr. Christian Schader, Dr. Irene S. Egyir, Dr. Anne W. Muriuki, Anja Heidenreich, Johan Blockeel, Joseph Bandanaa, Joseph Clottey, John Ndungu, Prof. O_Budu, Dr. Chrysantus Tanga, Dr. Christian Grovermann, Dr. Noah Admatey, Dr. Adrian Mueller, Gian Nicolay, Beate Huber, Matthias Stolze

07.07.2021

ProEcoAfrica / OFSA projects – productivity, profitability and sustainability of organic and conventional farming systems

- Unique study approach – 5 case studies
- ≈ 1,700 smallholder farmers (>2,000 with Uganda)
- Cross sectional prospective observational study



2013 – 2020: Ghana, Kenya, (and Uganda)

Assessing productivity and profitability (whole farm)

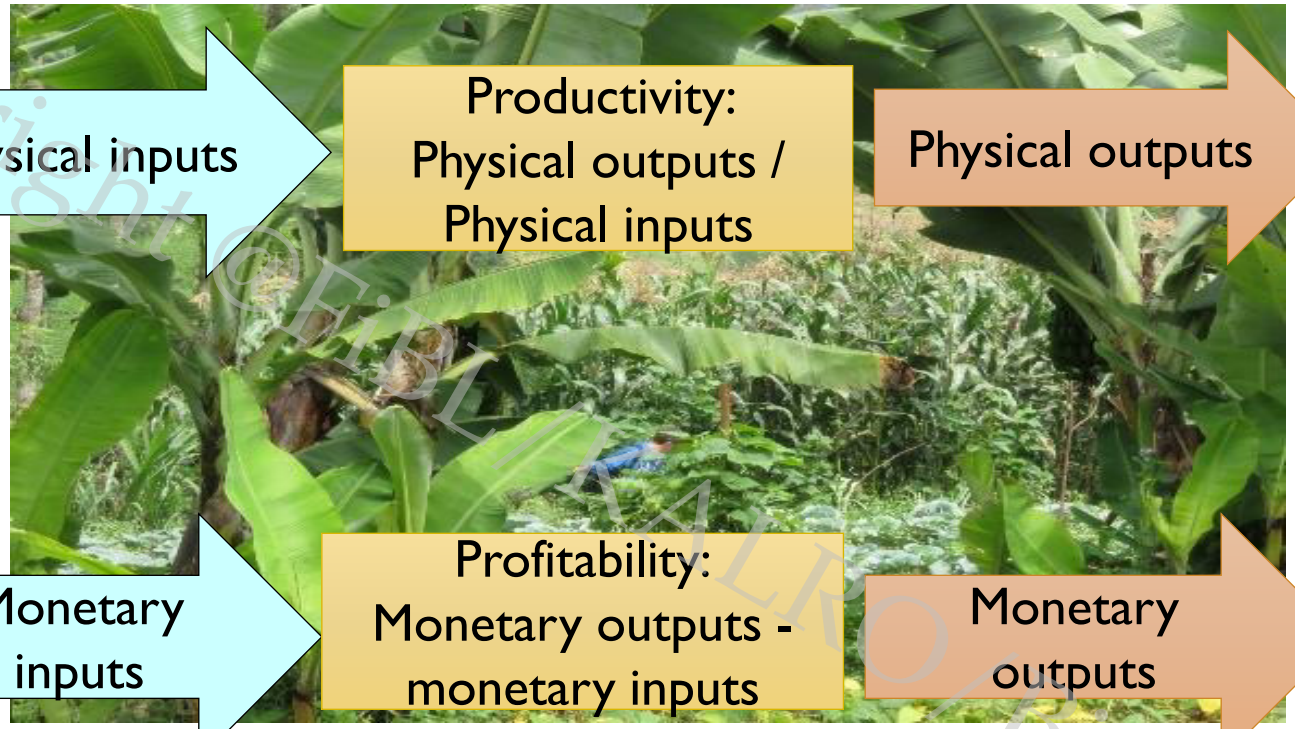
Seedlings
Fertiliser
Compost
Water
Pesticides
Labour

Physical inputs

Productivity:
Physical outputs /
Physical inputs

Physical outputs

Kgs,
Litres,
etc



Costs

Monetary inputs

Profitability:
Monetary outputs -
monetary inputs

Monetary outputs

Revenues










Adoption of organic practices – organic intervention & control groups in 5 sites

ProEco Africa Ghana

ProEco Africa Kenya

Category	Details	Ghana Ashanti	Ghana Northern	Kenya Kirinyaga	Kenya - Muranga	Kenya - Machakos
Non-use of conventional inputs	Non-use of mineral fertilizers	**		***	**	
	Non-use of chemical pesticides (excl. herbicides)	***	***	***	**	***
	Non-use of herbicides			***	***	
Substitution of inputs	Non-chemical; mechanical/manual weeding; cover crops; mulching					
	Application of organic fertilizers		**	*		**
	Incorporation of crop residues		*			*
Further agroecological and preventive practices	Diverse crop rotations		**	**	*	**
	Intercropping		*			*
	Reduced tillage, soil erosion control, agroforestry					

*No * = no significant difference between intervention and control ; * = p<0.05 ; ** = p < 0.01 ; *** = p < 0.001*

Most organic intervention farmers stopped using non-permitted mineral fertilizers and chemical pesticides, they started to signifcantly use organic fertilizer and more diverse crops rotations

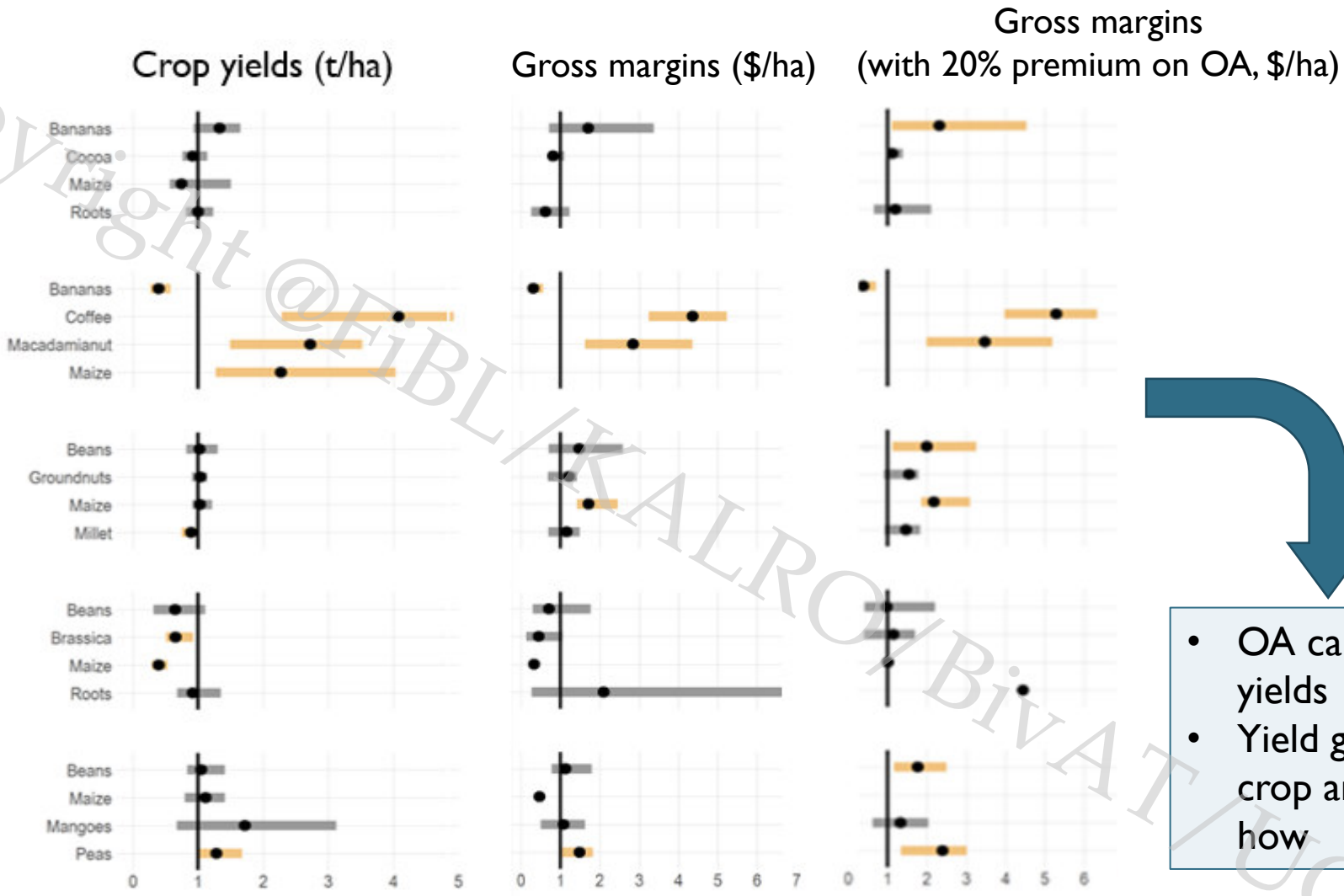
! But, beyond substituting chemical fertilizers, organic farmers often did not significantly go further into active management, e.g. using cover crops, mulching, reducing tillage, or taking up agroforestry !

Source – Schader et. al., under review

Ratios of organic to non-organic

ProEco Africa

Ghana	Ashanti
Kenya	Kirinyaga
Ghana	Northern
Kenya	Murang'a
Kenya	Machakos



- OA can achieve similar yields
- Yield gap depends on crop and farmer know-how

Ratios of organic to non-organic: yields (t/ha/yr) and Gross Margins ($/ha/yr) based on both observed output prices and with an assumed 20 % premium for organic crops

FiBL KALRO Biovision Africa Trust

Some drawbacks of organic among smallholders

- Long learning curve – OA is knowledge intensive
  - But, when farmers are capaciated, they perform well and adapt to contexts

- Manual / mechanical weeding
  - Future innovations?



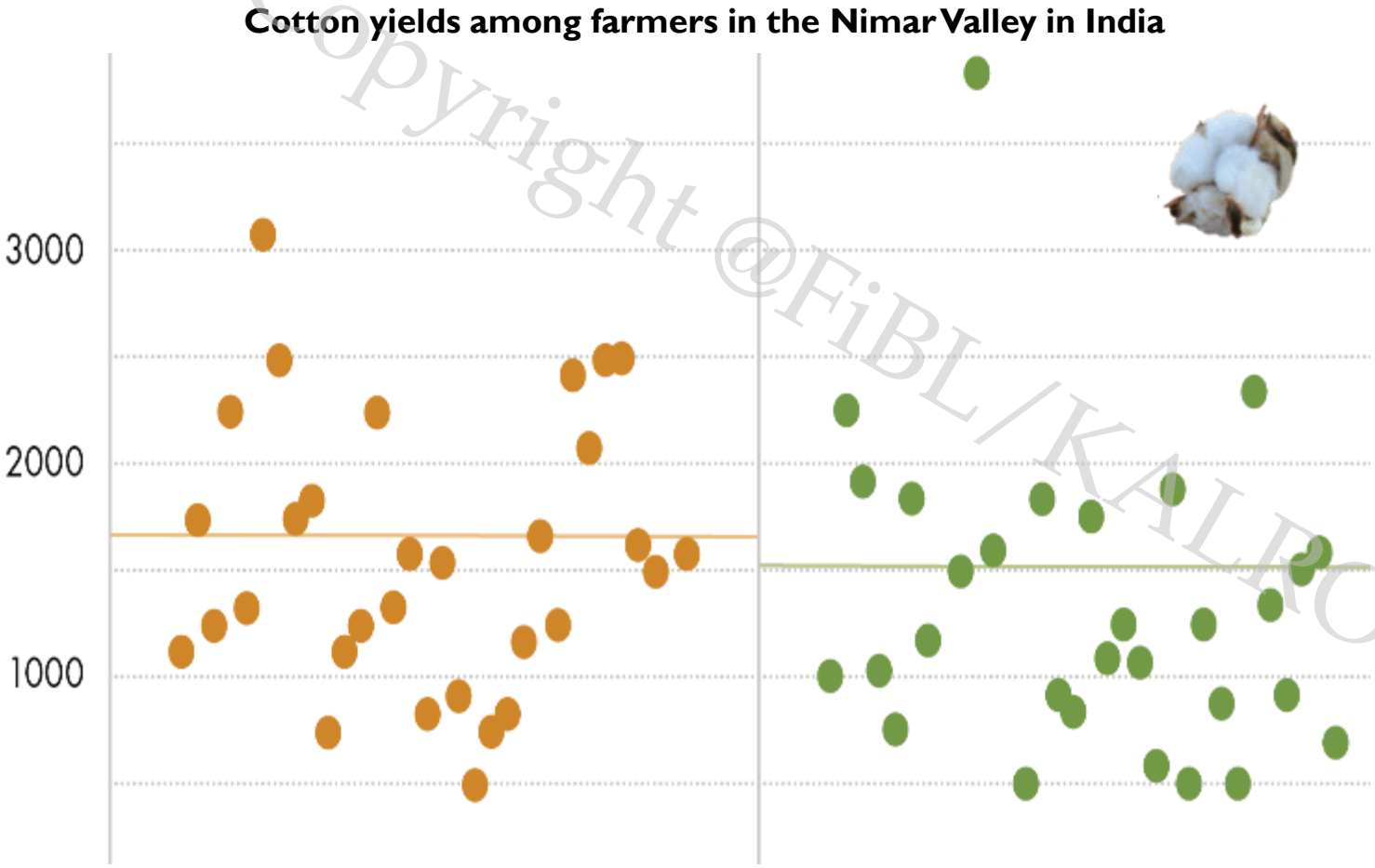

Productivity and profitability of organic compared to conventional farming in Africa, Latin America, and India

Dr. Laura Armengot, 07.07.2021

Syscom programme: On-station and on-farm research since 2007

	Kenya	India	Bolivia
Site	Sub-Saharan Africa - Kenya Central Highlands	South Asia - India Madhya Pradesh, Nimar Valley	South America – Bolivia Sara Ana
			
Crops	**Maize**-based systems, 3-year crop rotation with maize, **vegetables** and **potato**	**Cotton**-based systems, 2-years crop rotation with cotton, **wheat** and **soybean**	**Cacao**-based systems, cacao trees with **bananas**, **coffee** and **timber** and **fruit trees**
Systems	Organic vs conventional at **low** and **high input level**	Organic and **biodynamic** vs conventional **with/without GMO**	Organic vs conventional as **monoculture** or **agroforestry**

1. Good management practices



High heterogeneity in yields (and management) among O and C farmers

Good management practices have more effect/impact than OF and CF

→ Lack of knowledge of the producers about the management
→ Lack of research / knowledge generation (especially locally-adapted best practices)

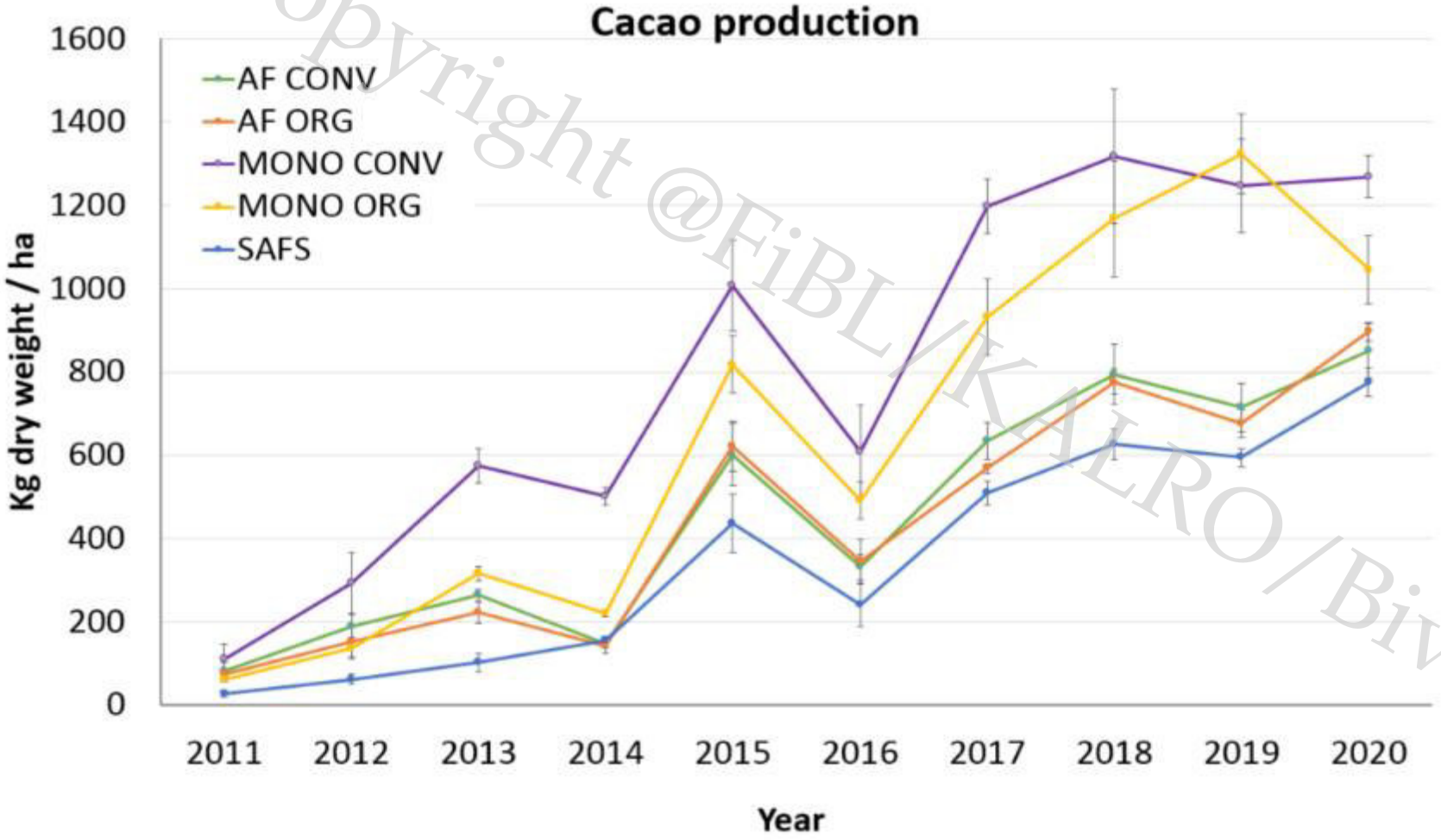
2. Yields (I)

Average yields of annual crops in Kenya and India (2007-2019)

Under good agricultural practices, similar yields to conventional agriculture can be obtained for some crops.

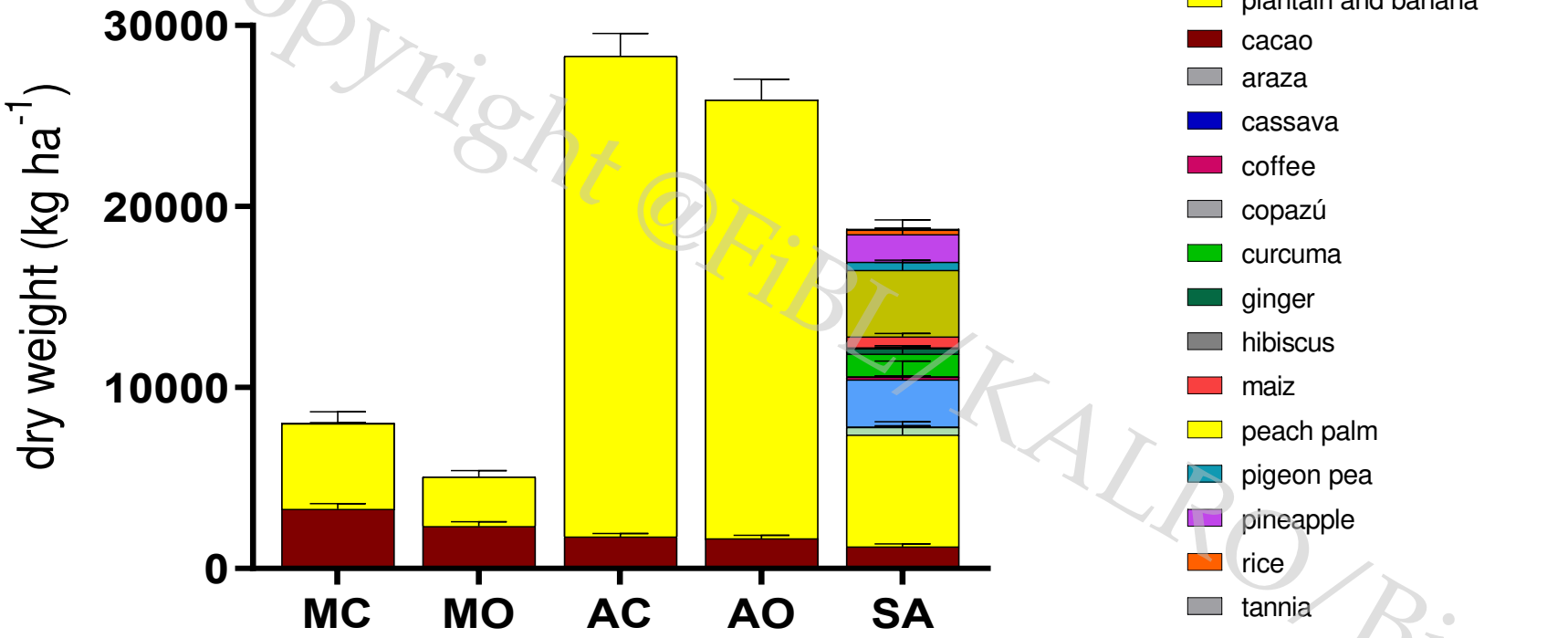
→ Lack of knowledge/research: pests and diseases (especially in horticulture) or nutrient dynamics,

2.Yields (II)



The complexity of the system (monoculture vs agroforestry system) can have more influence on cacao yields than the type of management (organic vs. conventional).

2.Yields (III)

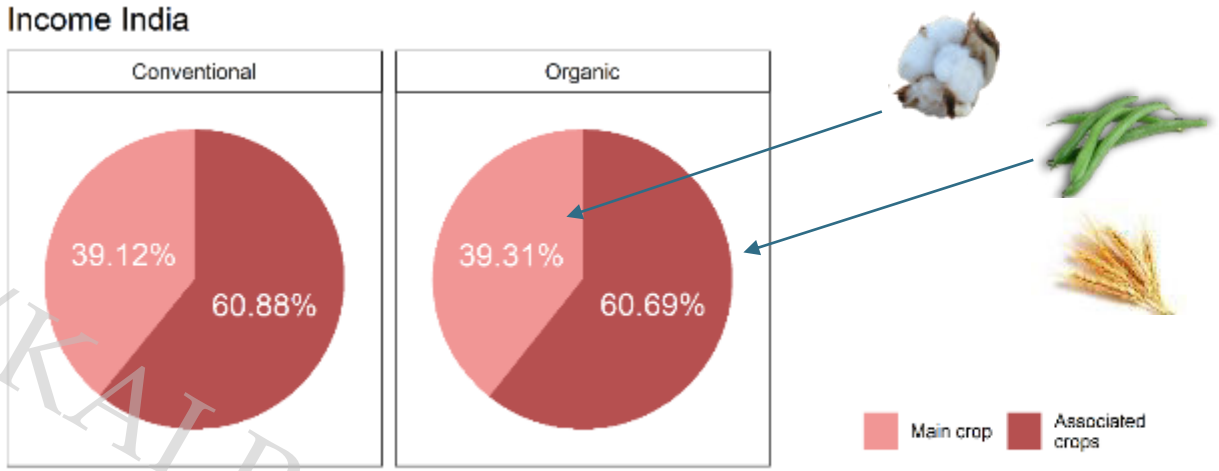


Cumulative data 2010-2017

- More food production in agroforestry systems → food security and diversified income
- SA have higher diversity of products → diversified diets

3. Cash crops and 'premium prices' (I)

Cash crops for export are the only ones getting 'premium prices' (the economic viability depends on them)



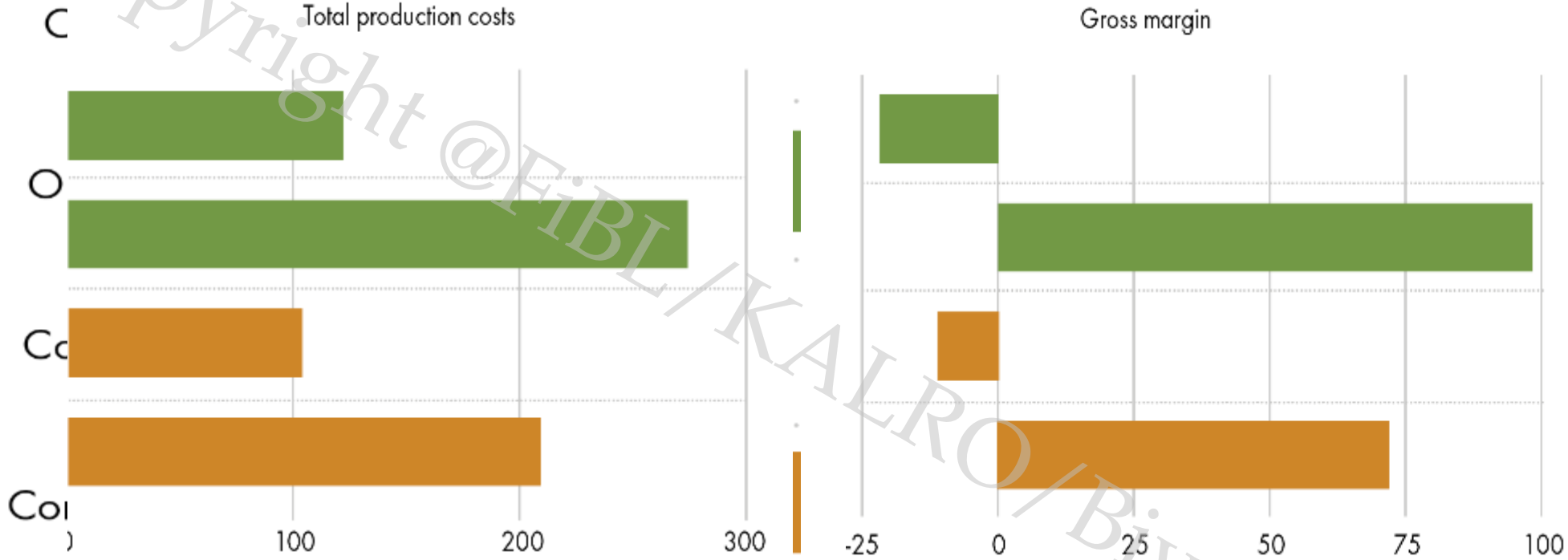
- Only cotton gets 'Premium Price', not soya neither wheat
- Some companies do not pay 'Premium Price'

- Similar contribution to the income in conventional and organic
- The relative contribution of the associated crops would increase in the organic Systems if Premium prices will be paid

Reducing the dependence on one crop makes farmers more resilience to market fluctuations

5. Profitability (I)

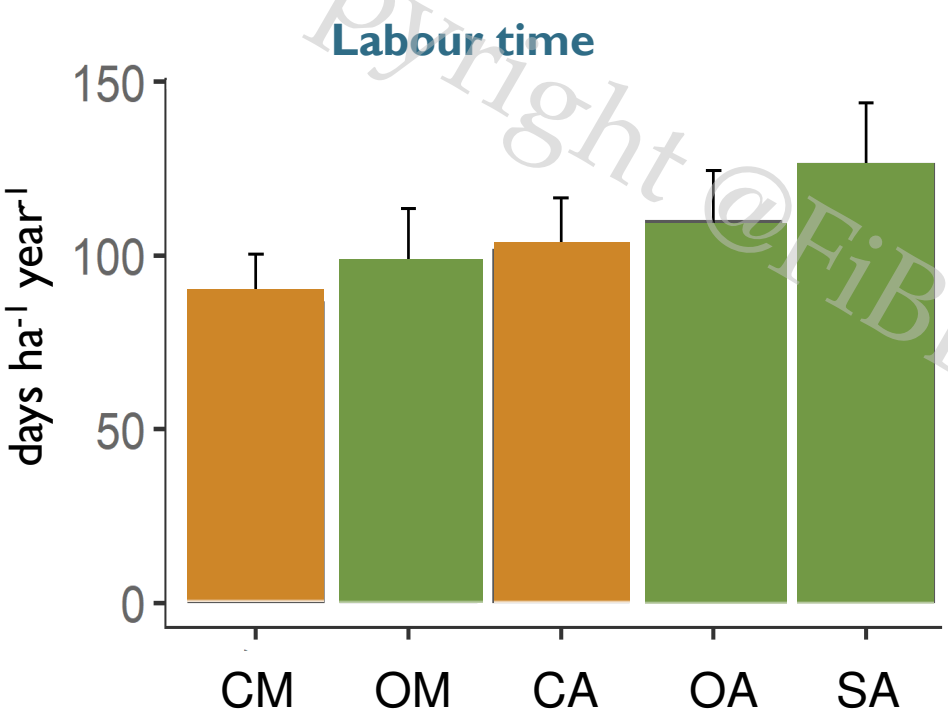
Average gross margin & production costs of annual crops in Kenya (2007-2019)



In organic arable farming systems, labour increases production costs, whereas in conventional systems, production costs relate mainly to external inputs

5. Profitability (II)

Average labour time & return on labour in Bolivia (20010-2019)

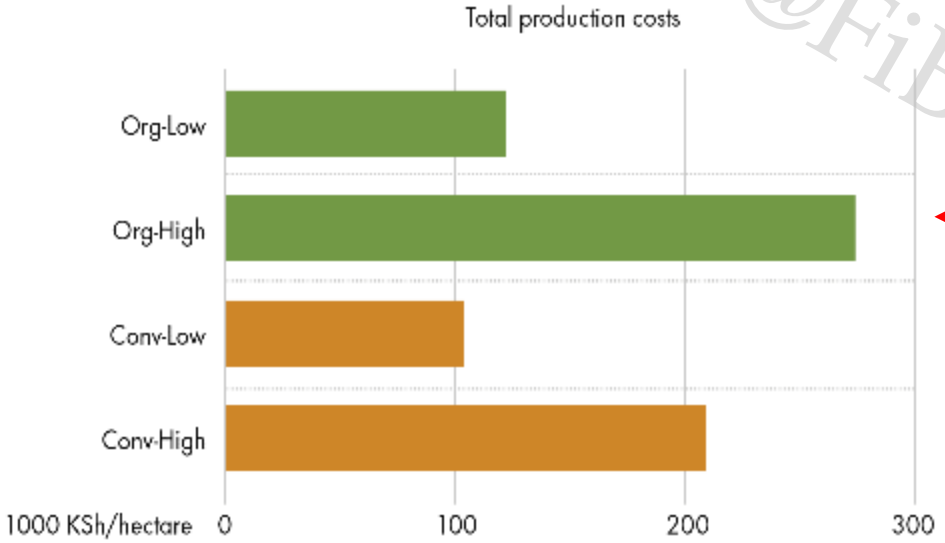


- Higher labour demand in the agroforestry systems
- Similar return on labour in all systems → importance of the cacao production
- Different strategies (production Systems) lead to similar economic benefits

6. Active vs passive organic management (I)

The substitution of conventional inputs for organic inputs is not enough to achieve good production and economic results, and to control pests and diseases.

Production costs of annual crops in Kenya (2007-2019)

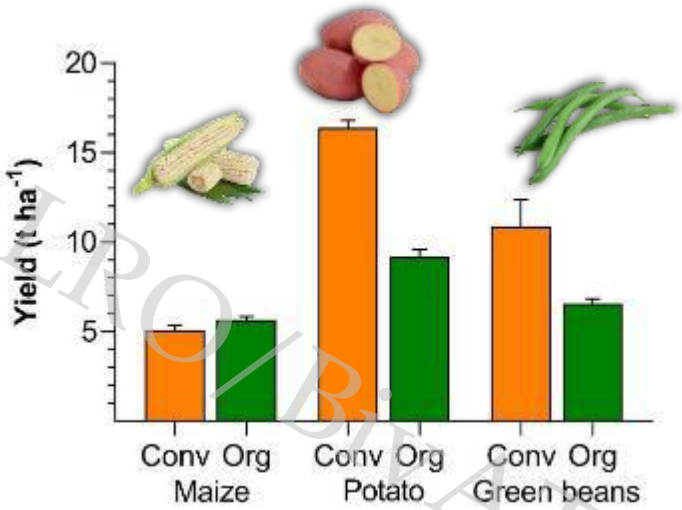


← Inputs, but also labour are included in the costs

6. Active vs passive organic management (II)

The substitution of conventional inputs for organic inputs is not enough to achieve good production and economic results, and to control pests and diseases.

Screening of commercial botanicals and biopesticides to assess their efficacy in Kenya



Organic inputs are expensive and most of the time not as efficient as conventional inputs or not efficient at all

6. Active vs passive organic management (III)

Perceptions of 205 cacao farmers in conversion to organic farming in Uganda

Definition of organic farming:

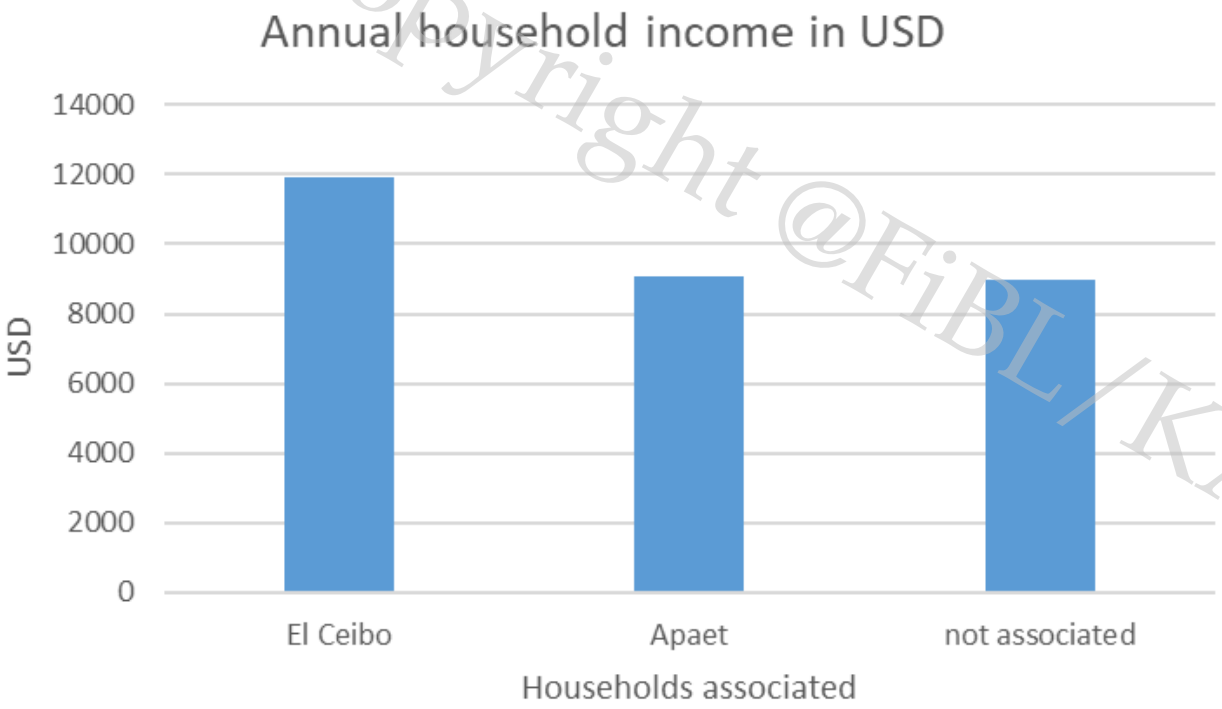
63%: system in which chemicals are banned
32%: system that promotes the use of organic inputs
16%: not able to describe

First heard about organic farming:

42%: from the export company who organises the group certification
29%: group's lead farmer

→ **It is necessary to promote good management and not only to comply with the regulations!**

7. Farmers organizations/Governance



El Ceibo

- 70% of the total cocoa production of Bolivia.
- 48 affiliated cooperatives
- 1,300 producer families, 4,700 hectares
- 200 tons of cocoa, 40% exported and 60% Bolivian market.

MSc Aline Roth, 2019

Higher incomes when farmers are associated in cooperatives

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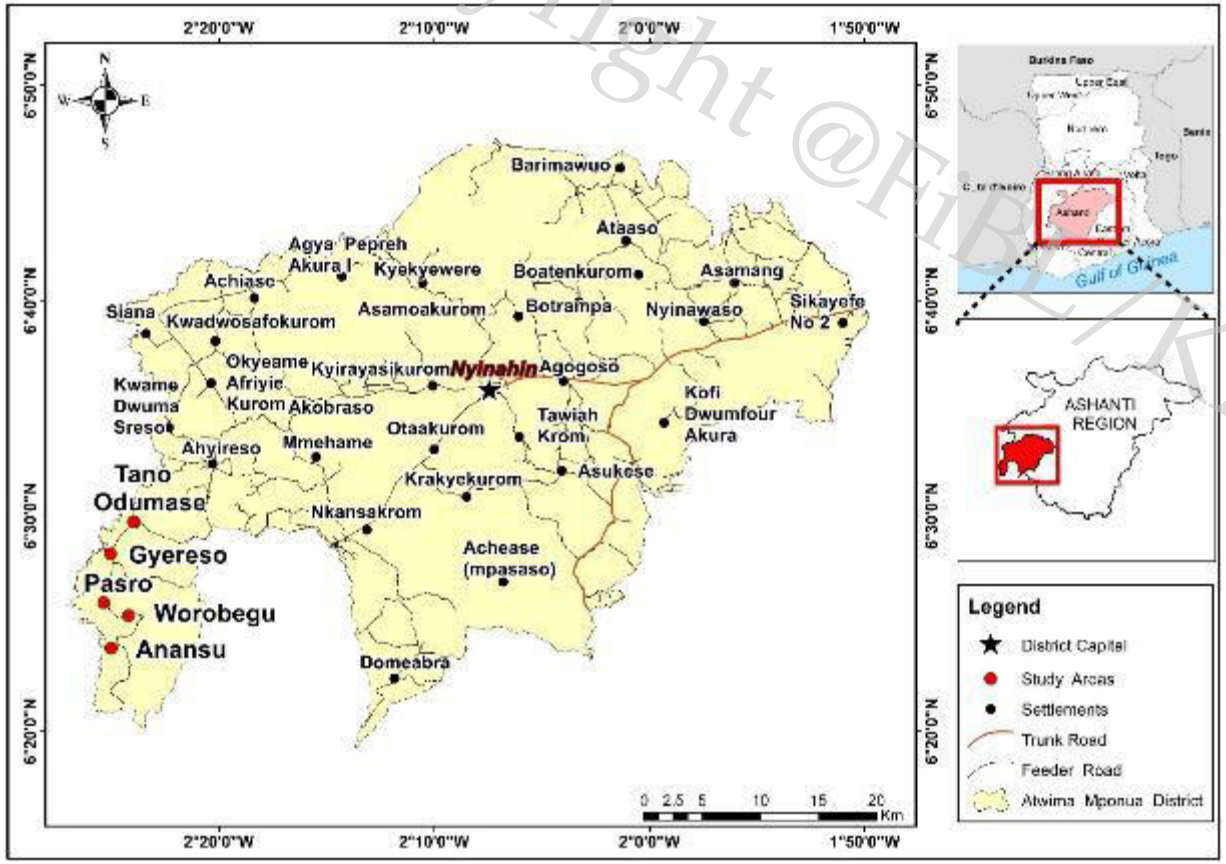
Is organic cocoa farming in Ghana sustainable? Insights from comparative research

Joseph Bandana, 07.07.2021

Introduction (1/1)

- Cocoa is a major source of livelihood for small-holder farmers in Ghana (Afriyie-Kraft et al., 2020 COCOBOD, 2018; Onumah et al., 2013)
- Cocoa is produced mainly using conventional practices (Akrofi-Atitianti et al., 2018)
- Organic practices were introduced in the late 1990s as an environmentally friendly option (Amanor et al., 2020)
- The concern for sustainable cocoa production:
  - Economic
    - Ageing cocoa farms (COCOBOD, 2018; Dormon, 2004)
    - Low producer price (Dormon, 2004)
  - Social
    - Child labour issues in cocoa production (Berlan, 2013; Baradaran and Barclay, 2011 and Schrage and Ewing, 2005)
    - Lack of labour for production activities (Dormon, 2004)
    - Gender diversity issues (Barrientos, 2013; Anglaaere, et al., 2011; Laird et al., 2011)
  - Environmental
    - Soil fertility, air quality, biodiversity loss (Gockowski et al., 2013; Ntiamoah, 2008 and Asare, 2006)
    - Pest & diseases (Dormon, 2004)

Materials and methods: (1/3): Study Area



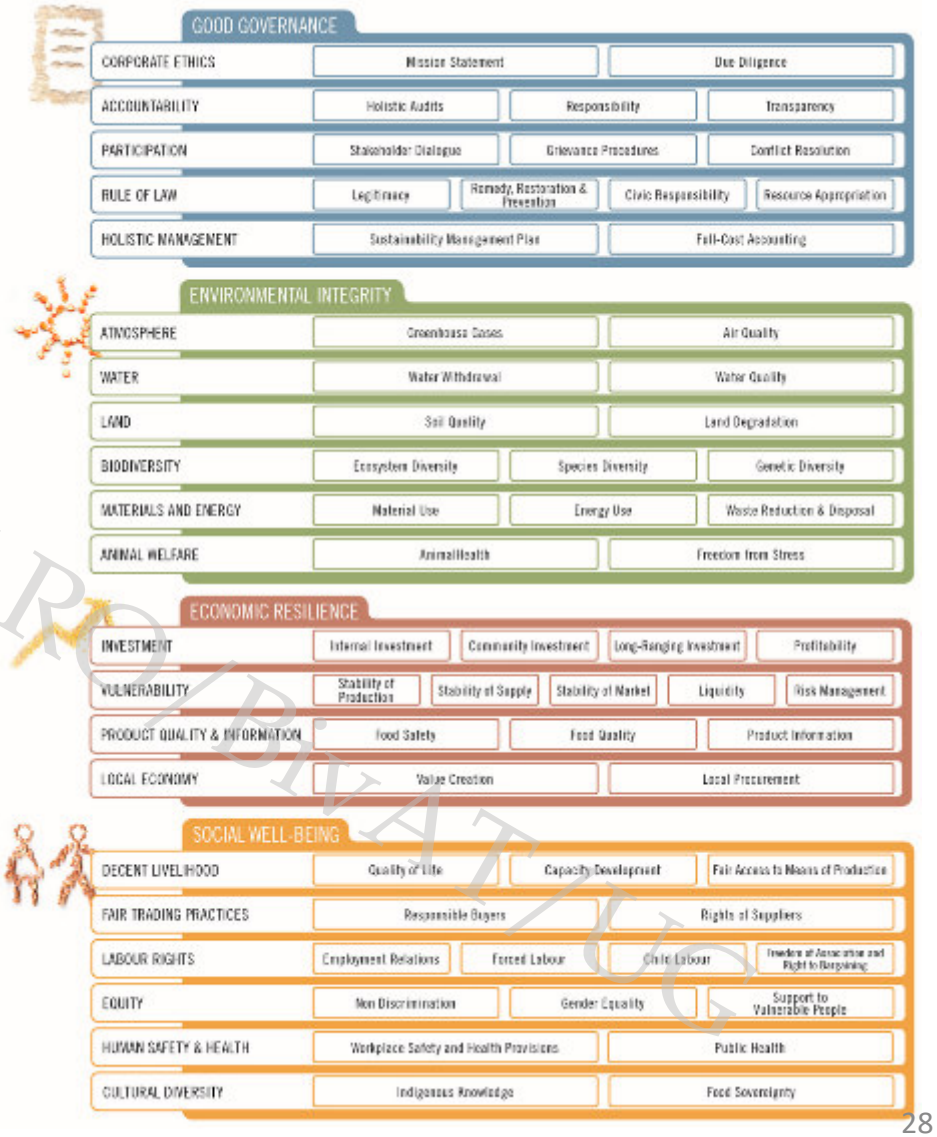
- Atwima Mponua District (AMD) is characterized by moist semi-deciduous forests vegetation and is located within the wet semi-equatorial climatic zone (GSS, 2013)
- 66% of the economically active population are engaged in small holder cocoa farming (GSS, 2013)
- embodies a successfully implemented major ecological and/or organic farming system since 2011 (Akrofi-Atitianti et al., 2018)

Materials and methods: (2/3): Data collection

- **Data collection:** Through the Organic Farm Systems for Africa (OFSA) Project, 398 cocoa farmers were interviewed [71 organic & 327 conventional]
- Data collected in 2016/2017

- SMART farm-tool (Schader et al., 2016; Schader et al., 2019; Ssebunya et al., 2019; Winter et al., 2020; Coteur et al., 2020)

smart
sustainability monitoring and assessment routine



Source: FAO, (2014)

Materials and methods: (3/3): Data analysis

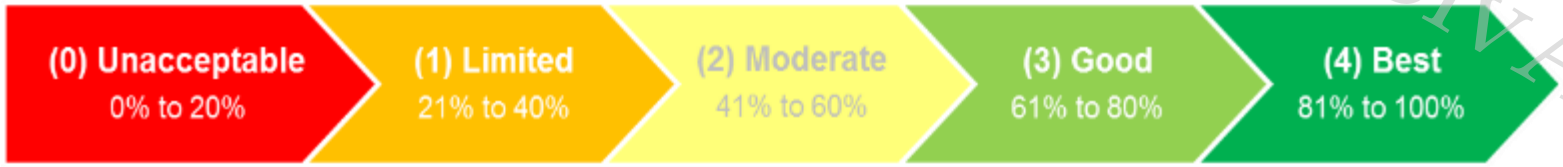
(i) The SMART farm-tool (MCA) was used to model the performance (327 indicators)
(ii) It allows for the assessment of the level of goal achievement of SAFA sustainability goals

(iii) Due to different scales of indicators, it is normalized (Scale: 0-100%)
(iv) Degree of goal achievement scale ranges from 0-100%

(v) 0% >> farm which does not take any action to foster sustainability
100%>> the respective sustainability goal have been fully achieved

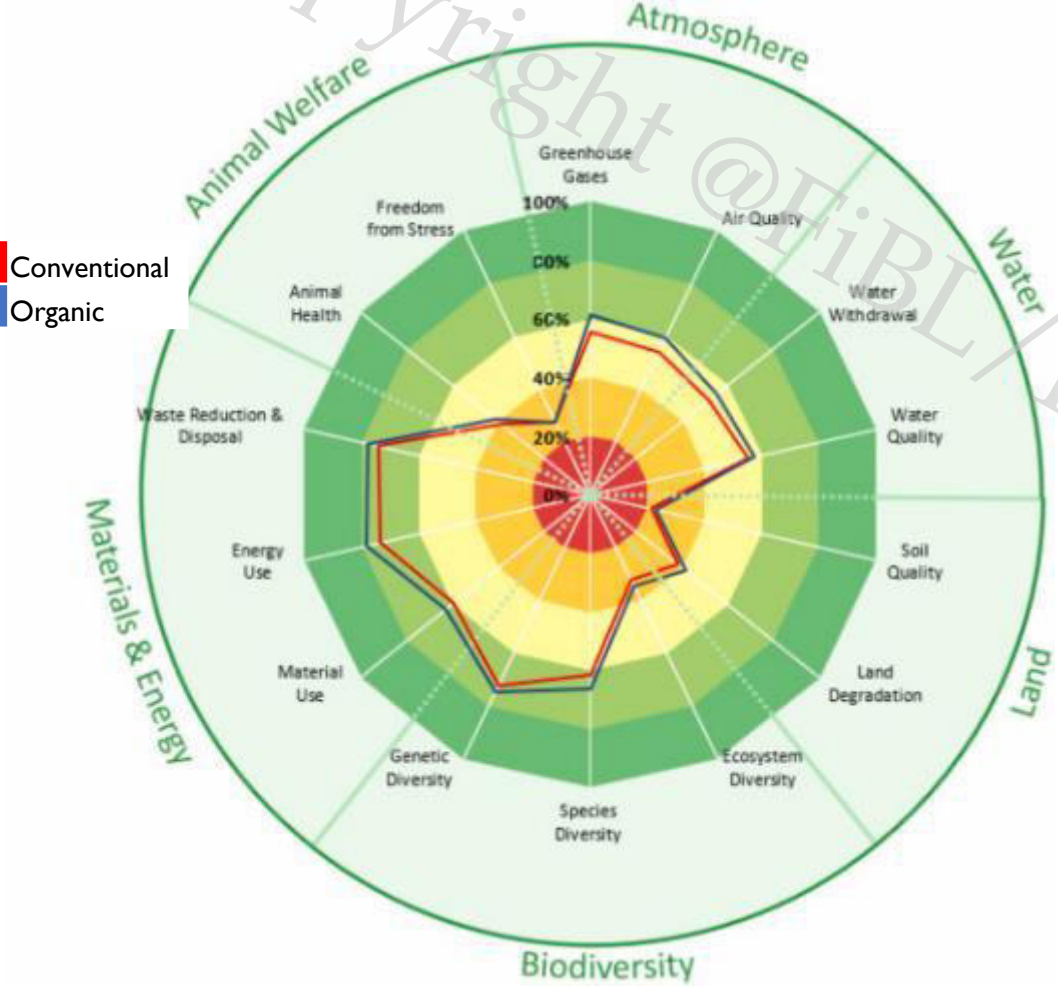
$$DGA_{ix} = \frac{\sum_{n=1}^{N}(IM_{ni} \times IS_{nx})}{\sum_{n=1}^{N}(IM_{ni} \times ISmax_n)} \quad \forall\ i\ and\ x$$

Where IM_{ni}=all indicators relevant to the subtheme
IS_{nx}=actual performance of a farm with respect to an indicator
$ISmax_n$= maximal performance possible for these indicators



(vi) Radar graphs to show the level of sustainability performance of organic & conventional farming

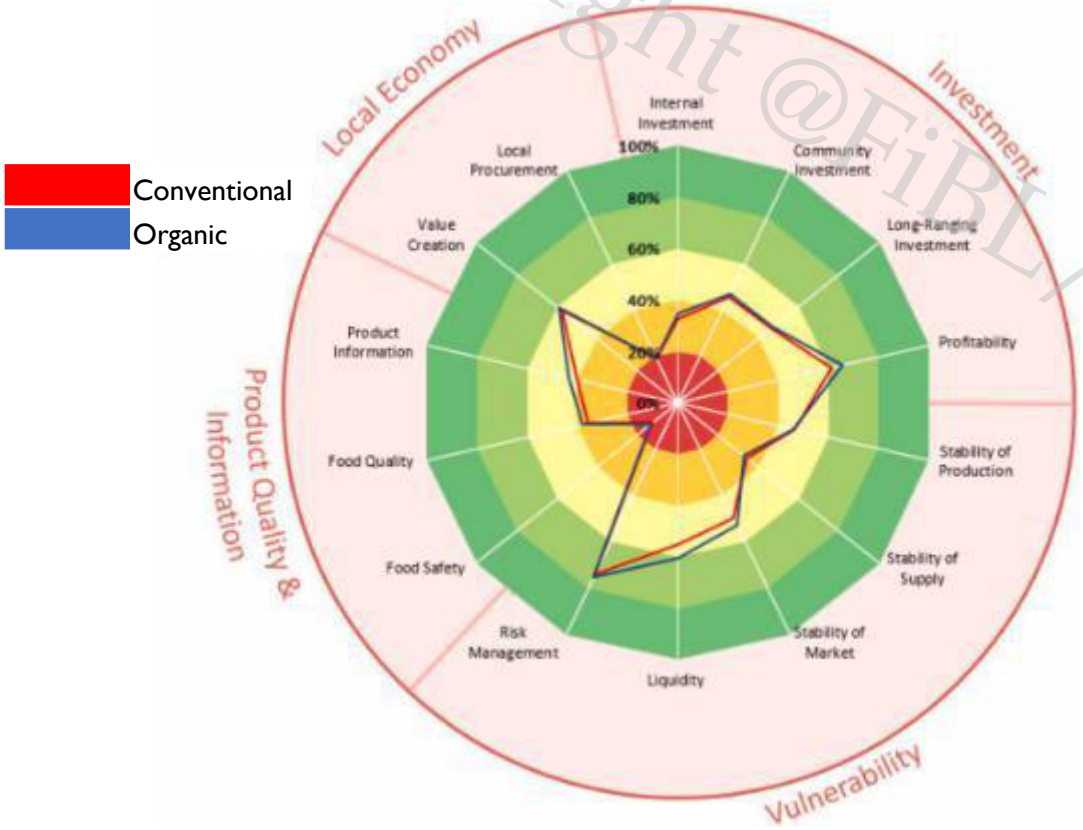
Difference between organic & conventional for environmental integrity



- Organic performs better in terms of:
  - Species diversity (+26%)
  - Land degradation (+24%)
  - Greenhouse gases (+22%)
  - Energy use (+20%)
  - Waste reduction & disposal (+18%)

Source: Bandanaa et al., (2021)

Difference between organic & conventional for economic resilience



- Organic performs better in terms of:
  - Liquidity (+28%)
  - Profitability (+20%)

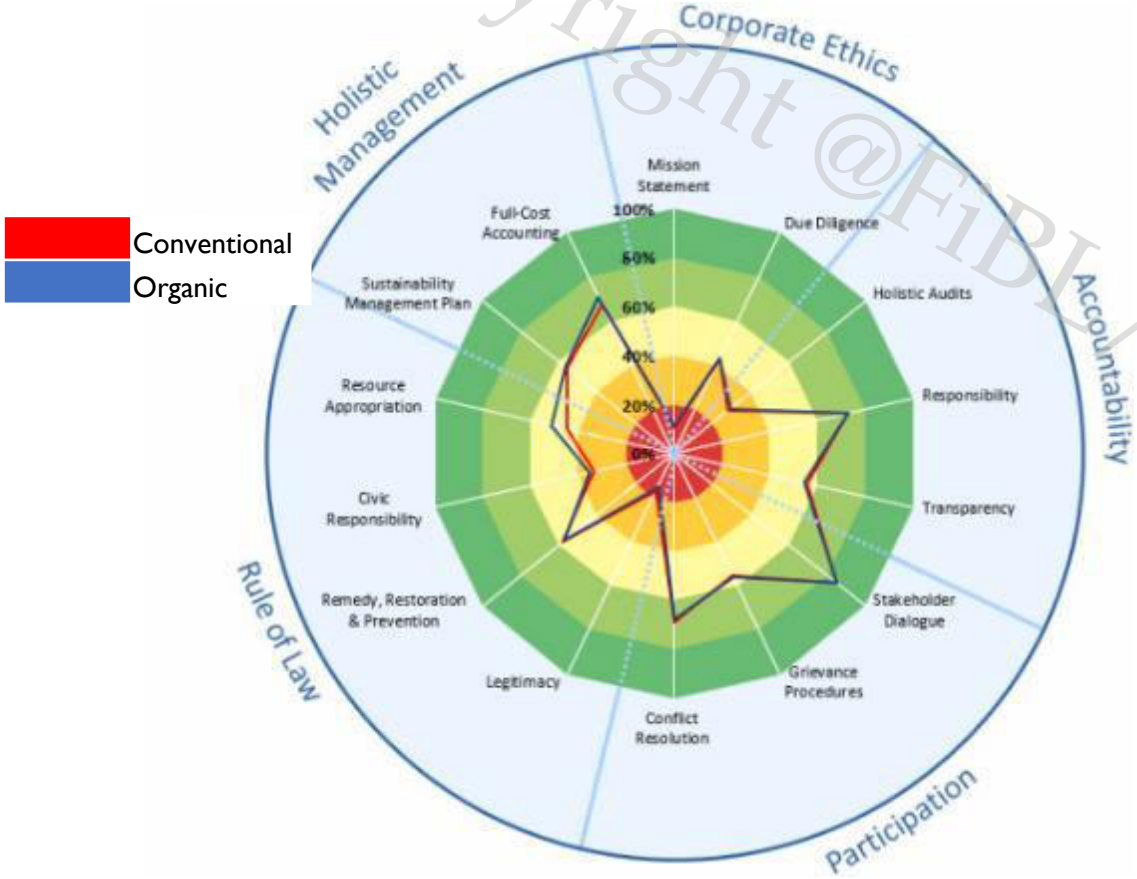
Source: Bandanaa et al., (2021)

Difference between organic & conventional for social wellbeing

- Organic performs better in terms of:
  - Support to vulnerable people (+31%)
  - Gender equality (+27%)
  - Freedom of association (+20)

Source: Bandanaa et al., (2021)

Difference between organic & conventional for good governance



- Organic performs better in terms of:
  - Mission statement [verbally committed to sustainability topics] (+25%)
- Organic and conventional farming system are sustainable in terms of:
  - Stakeholder dialogue
  - Conflict resolution

Source: Bandanaa et al., (2021)

Conclusions & Recommendations

Conclusions

Organic cocoa farming performs sustainably better compared to conventional farming.

- There is a general need for improvement in sustainability performance
- Higher environmental sustainability performance: species diversity, land degradation, genetic diversity and greenhouse gases.
- Higher profit due to market premiums, gender equity and committed to sustainability topics (verbal).

Recommendations

- Practice: Farmers commitment towards sustainability issues is a critical step towards improving cocoa farming sustainability especially for the conventional system
- Policy: Need for capacity development of conventional farmers to conserve biodiversity & reduce GHG

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Mainstreaming organic at the national level through participatory research: Examples from ProEcoAfrica / OFSA and SysCom projects in Kenya

Dr. Anne Muriuki, 07.07.2021

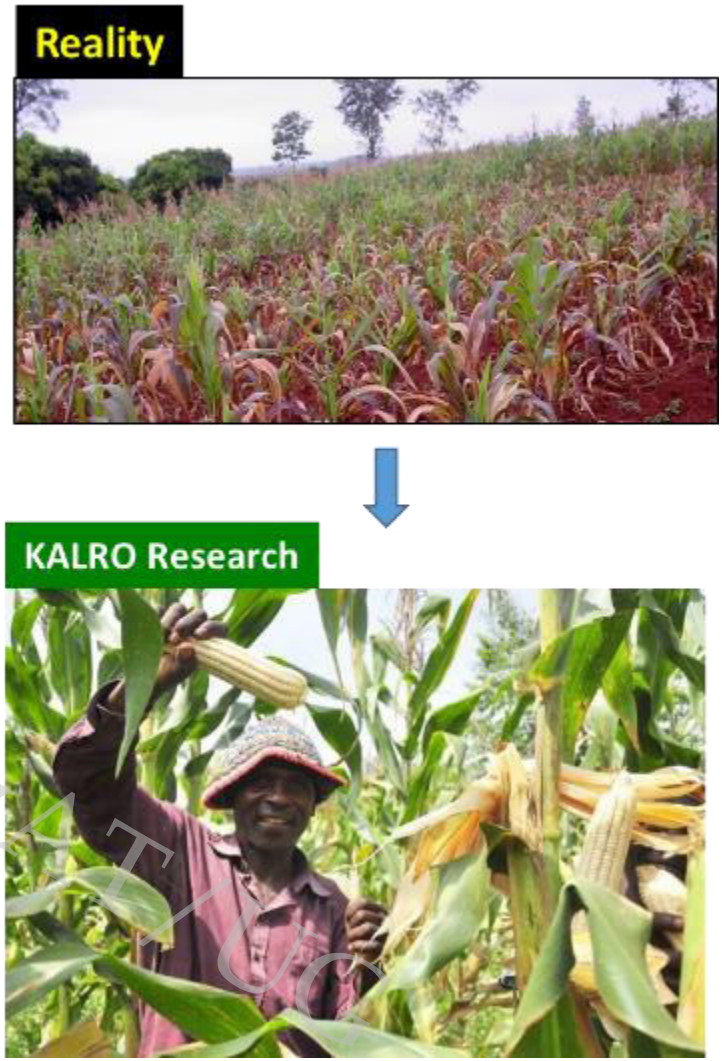
Kenyan agriculture

Agriculture vital to Kenya's **economic growth**, **food security** and **poverty reduction** efforts.

- Contributes **53% to GDP** directly/indirectly; accounts for **65% of export earnings**; employs **>40% of total population** directly; **70% rural people**;
- **Smallholders produce 65%** of total agricultural output;
- **Land fragmentation** affecting food production due to high population growth rate (39.5 million in 2011 ➔ 81 million by 2039)
- **Soil fertility depletion**, nutrient deficiencies & imbalances ➔ Low yields ➔ Rural poverty/insecurity
- **Overuse** of chemical fertilizers & pesticides ➔ Environmental pollution and associated health concerns

Interventions for improving crop productivity:

- ✓ **Better seeds (genetics),**
- ✓ **Fertilizers (organic and conventional),**
- ✓ **Other inputs e.g. water, pesticides (organic/conventional)**
- ✓ **Linking farmers directly to markets**



The SysCom Trial

SysCom Kenya

The SysCom Trial: Methodology

- ✓ Long-term research (**reveal long-term benefits of organic farming**)
- ✓ Holistic data -biodiversity, agronomic, economic, weather, etc. (**monitor system effects**)
- ✓ Detailed studies good for in-depth student studies (**capacity building**)

The SysCom Trial: Results

Productivity/Profitability/Soil Fertility

- **Soil fertility increased** (>10 years) in Org-High compared to Conv-High, Conv-Low and Org-Low;
- Yields of maize grain, baby corn & common beans **comparable in Org and Conv High** input systems after year 3 (conversion period);
- Brassica crops & potatoes yielded 40 – 60% lower in high/low-input organic systems compared to conventional systems, due to ineffective biopesticides in the market & low nutrient availability;
- Org High maize **53% more profitable** than Conv High after application of 25 – 50% premium

Agroecosystem resilience

- Org High had **higher termite populations** (more biodiversity, agroecosystem resilience);
- Plant Parasitic Nematodes **significantly reduced** in Org system;
- Food crops, biomass for animal feed, soil and water **uncontaminated** with pesticide residues in in Org system but highly contaminated in Conv systems

✓ **Evidence based recommendations**

✓ **Organic better for soil, agroecosystem resilience, crop productivity, profits and health!**

The SysCom Trial: Implications for

Extension/Research/Policy

Research:

- ✓ Entrench participatory research approaches
- ✓ Evidence based research recommendations
- ✓ Synchronize nutrient availability & crop demand in organic
- ✓ Develop effective biopesticides

Extension

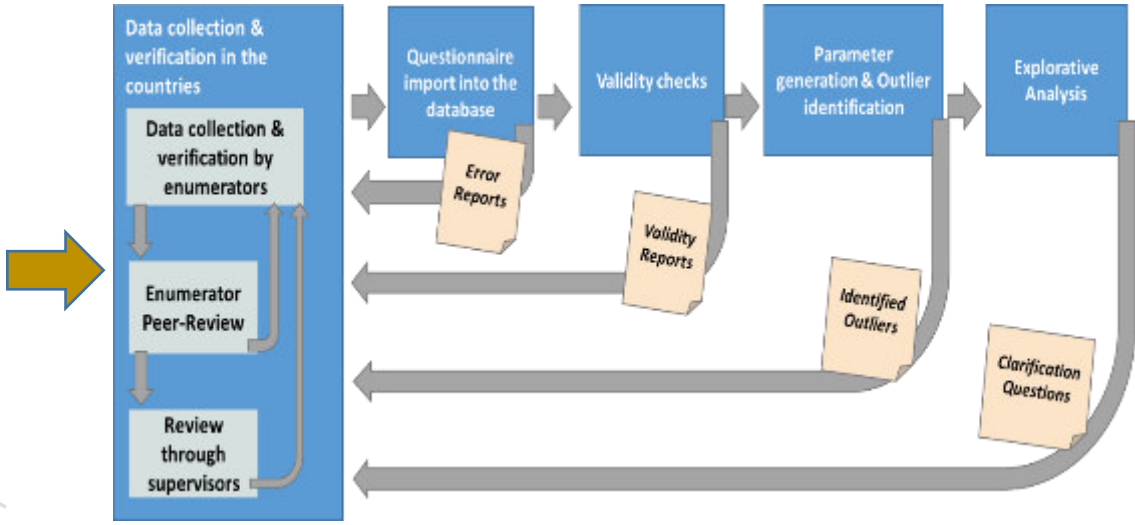
- ✓ Popularize use of organic inputs
- ✓ Capacity build farmers & extension

Policy:

- ✓ Provide subsidy for farmers through conversion period
- ✓ Premium necessary to make organic profitable

ProEcoAfrica/OFSA projects

ProEcoAfrica/OFSA: Methodology



- ✓ ~ 900 farmers (authenticity of real farm/farmer situation)
- ✓ Highly participatory (directly involved farmers, researchers, extension)
- ✓ Continuous capacity building of farmers, research teams (authentic data)
- ✓ Data collection/verification highly consultative → sound representation of farming situation

ProEcoAfrica/OFSA: Results

- Health & profitability most important reasons for going organic
- Conversion back to organic due to pest pressure, unprofitability and lack of suitable organic inputs
- Female farmers important for promoting organic compared to men
- Farmer organisations widespread
- Most farmer training concentrated in high/medium potential areas
- Pest and disease challenges cited in all sites

ProEcoAfrica/OFSA: Implications for

Research

Participatory research approaches good for

- ✓ Enhancing multi-stakeholder participation (including farmers)
- ✓ Accurate results, widely acceptable to multiple stakeholders (whole value chain)
- ✓ Capacity building (farmers, extension, researchers, students, etc.)

However, they are

- Expensive (multiple institutions)
- Require constant nurturing of relationships among stakeholders (coordination)
- Sound financial accountability structures

Extension

- ✓ Use female farmers as entry point to organic
- ✓ Use farmer groups for training, and information access, marketing, etc.
- ✓ Capacity build farmers & extension on organic pest & disease control

Policy

- ✓ Allocate more resources to train farmers in arid/semiarid zones
- ✓ Promote and support organic for health reasons

ProEco Africa

Developing Organic in Kenya

SysCom Kenya

Lessons for next steps

1. Promote organic for soil fertility build-up, agroecosystem resilience and health benefits
2. Promote farm diversification (multiple crops/enterprises, e.g., agro-tourism);
3. Subsidize organic inputs, especially during conversion phase;
4. Prioritize organic products (especially manure) in public procurement;
5. Provide incentives for development of off-shelf organic inputs (fertilizers & pesticides;)
6. Support organic certification e.g. through farmer organizations;
7. Build organic expertise (i.e. farmers, extension, research, schools system, etc.);
8. Encourage processing of organic produce to add shelf life & value addition;
9. Raise public awareness on benefits of consuming organic for health;
10. Develop/expand local market for organic produce (schools, hospitals, etc.);
11. Establish/empower Organic Desk at MALFC Headquarters as national focal point;

Thank you

Sys Com Kenya

ProEco Africa

Biovision Africa Trust




Reflections on the research findings and knowledge management from EOAI perspective: policy implications and recommendations

Dr. David Amudavi, 07.07.2021

Ecological Organic Agriculture Initiative (EOA-I)

- The Ecological Organic Agriculture Initiative (EOA-I) aims to implement the decision adopted by the African Union Heads of States and Governments addressing challenges facing farmers in organic agriculture passed in January 2011.

- An AU-led coalition of international partners expected to support establishment of an African organic farming platform based on available best practices, the development of sustainable organic farming systems and improve seed quality.

- The implementation is under the oversight of the Continental Steering Committee (CSC) chaired by the African Union Commission (AUC), Department of Rural Economy and Agriculture.

- The CSC Secretariat is hosted by Biovision Africa Trust in Nairobi in partnership with the AUC.

- The EOA-I is currently implemented in 9 African countries namely Rwanda, Kenya, Ethiopia, Tanzania and Uganda in Eastern Africa, and Mali, Benin, Senegal and Nigeria in West Africa.

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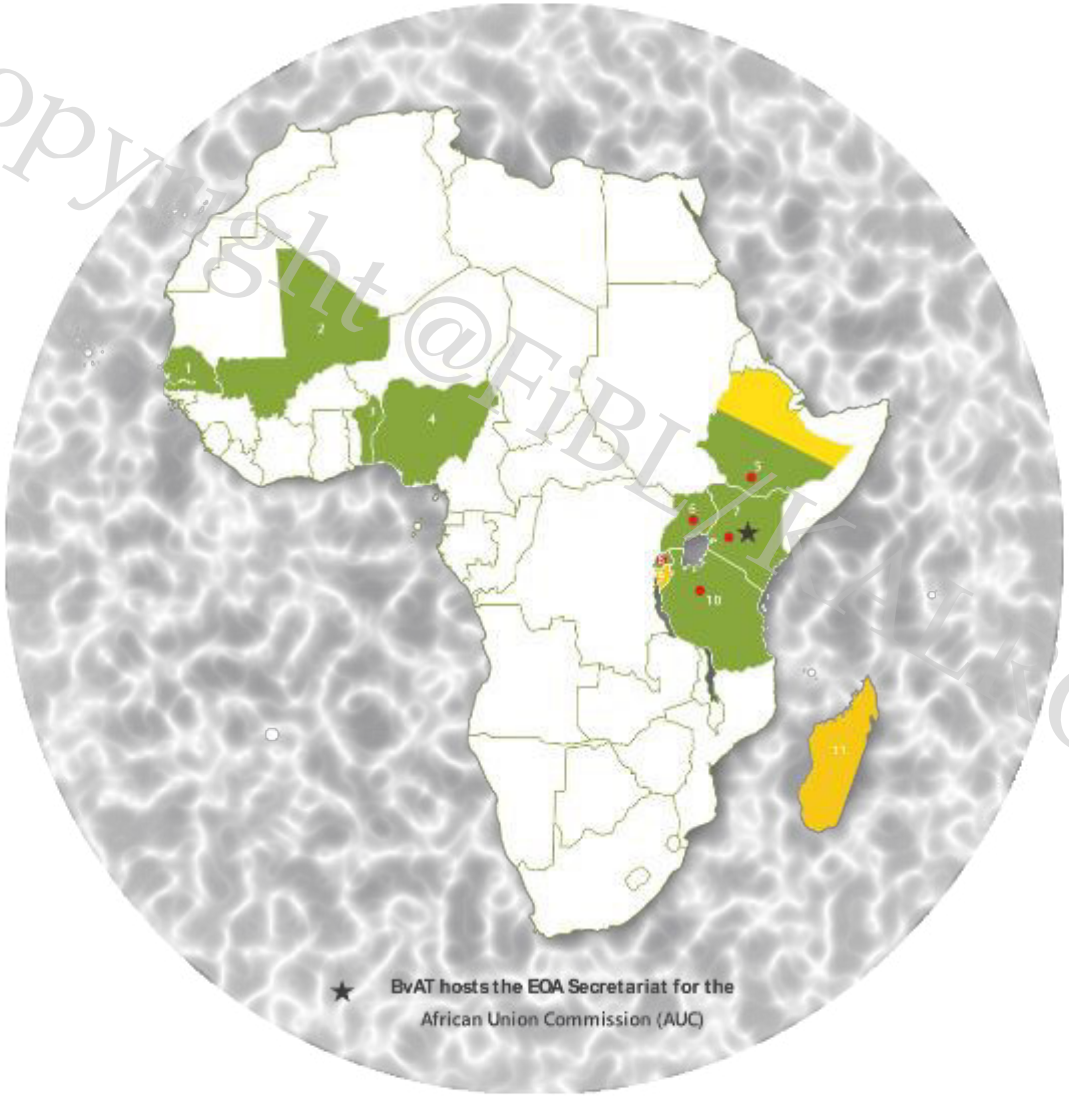
EOA & KCOA PARTNER NETWORK



Main Continental EOA/ KCOA Implementing Partners

1. **Senegal** - Conseli national de Concertation et de Cooperation des Ruraux (CNCR) - EOA
2. **Mali** - Fédération Nationale des Producteurs de l'Agriculture Biologique et Equitable du Mali (FENABE) - EOA
3. **Benin** - Béninoise pour la Promotion de l'Agriculture Biologique (OBEPAB) - EOA
4. **Nigeria** - Association of Organic Agriculture Practitioners of Nigeria (NOAN) - EOA
5. **Ethiopia** - Institute for Sustainable Development (ISD) - EOA
6. **Uganda** - PL Uganda - EOA
7. **Kenya** - Kenya Organic Agricultu Network (KOAN)- EOA/KCOA, PELUM Kenya - EOA/KCOA
8. **Rwanda** - Rwanda Organic Agriculture Movement (ROAM) - EOA/ KCOA
9. **Burundi** - Burundi Organic Agriculture Movement (BOAM) - KCOA
10. **Tanzania** - Tanzania Organic Agriculture Movement (TOAM) - EOA/KCOA
11. **Madagascar** - SYMABIO

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EOA-I & Agricultural Developmental Challenges

1. Low agricultural productivity
2. Food nutritional insecurity
3. Increasing climate change effects
4. Poor & unsustainable livelihoods
5. Information & knowledge management deficiency
6. Low human capacity for management & adaptation
7. Lack of enabling policy frameworks

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Expectations of the EOA-I

- Increased documentation of information and knowledge on organic agricultural products along complete value chain and relevant actors supported to translate it into good management practices and wide application;

- Sufficiently informed producers about the EOA approaches and good management practices and motivated to practise them through strengthened access to advisory and support services;

- Substantially increased share of quality organic products at the local, national and regional markets; and

- Strengthened inclusive stakeholder engagement in organic commodities value chain development by strong national, regional and continental multi-stakeholder platforms that also motivate changes in public policy, plans and practices.

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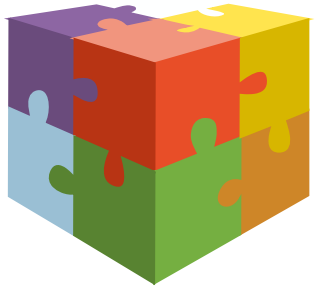
EOA-I Strategic Pillars



1. Research, Training and Extension

Responsible for understanding research and training gaps within the ecological organic agriculture value chains and undertaking activities to fill them.

2. Information and Communication

Charged with awareness creation and strengthening EOA extension support systems.

3. Value Chain and Market Development

Aims to stimulate development of sustainable markets and increase trade in traditional and high value agricultural produce both at domestic and export levels

4. Networking and Partnerships

Calls for engagement by relevant stakeholders including governments, farmers, civil society, private sector, and the international community. This pillar is mandated with sustaining such partnerships.

5. Policy and Programme Development

Supports the development and implementation of enabling policies and programs for EOA.

6. Institutional Capacity Development

Supports equipping of professionals with skills and competences to facilitate community-based innovation and change processes geared towards establishing, developing and supporting EOA in Africa.

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Reflections on the Research Findings

- Potential of Organic farming & agroecological approaches:
  - The results demonstrate the potential of organic farming addressing food security through increased production and productivity.
  - The results show potential contribution of organic farming and agroecological approaches to mitigate climate change in the Global South.
  - High input organic management improve soil fertility over long-term (>10 years) – improved Soil pH, electrical conductivity, cation exchange capacity, total nitrogen, exchangeable potassium, calcium, magnesium, available boron.
  - Agroecosystem resilience - higher termite populations, reduced parasitic nematodes, products and the whole system free from bio-pesticide residues.
  - Achievements conditional on application of Good Management Practices.

Reflections on the Research Findings

❖ **Challenges to Organic farming & agroecological approaches:**

- Balancing short-term needs (food insecurity) and long-term planning horizons.
- Lack of knowledge/research: pests and diseases (especially in horticulture), nutrient dynamics, etc.
- Lack of understanding and management of complex systems - OA and AE systems.
- Ineffective organic inputs, labour intensive, yields obtainable after long periods of time.
- Market failure to recognize all 'organic products' via pricing - economic viability tied to cash crops, risk of leading to unstainable practices, and threats to food security.
- Limited linking of nutrition to health: scarce information on the role that organic farming plays regarding sustainable nutritional practices, healthier and safer diets.
- Limited investment in OA and AE approaches.

Policy Implications

- **Drivers for transformation:**
  - Active organic management of farms is key - The substitution of conventional inputs for organic inputs is not sufficient to guarantee enhanced production and economic results, and to control pests and diseases.
  - Diversification, consistent with principles of organic farming, is key to good management practices.
  - Resource investment OA/agroecological research and extension to generate and provide technical knowledge in system management, pests and diseases control, soil fertility management, management of different crops and livestock, etc.
  - Structural changes to institutions to value all products produced under organic management – rather than base decisions on economic viability consider broad parameters - human and environmental health, food safety, biodiversity

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Policy Recommendations

- Diversification and long-term planning key to **sustainable production & consumption**.
- Institutional improvements to have **market systems** to value all products grown organically/ecologically.
- Development of strong **knowledge management** to ensure active organic management of farms.
- Consideration of **synergies and trade-offs** across farming systems using true cost accounting, SMART farm-tool or other comprehensive tools.
- Development of **institutional and policy support** for national programmes and actions plans for capacity building, active organic management and promotion of organic agriculture practices.

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Thank you very much for your attention!

More information

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