

# Organic agriculture in Africa, a technological engine for food security ?

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# Challenges for Africa



- 1.2 billion people, a process of urbanization (and urbanization of food regime)
- Increasing population and food demand : 1.35 billion more people by 2050, with a massive influx of young working-age people
- Despite urbanization, the population should remain predominantly rural until the 2040s, and population density in rural areas will continue to increase
- Rapid development of telephony, progress of access to energy and construction of major transport and irrigation of infrastructure (in some regions), growing audience of farmers' organizations
- But integration in the global economy remains fragile, the metropolisation towards the capital remains, with the risk of rural depopulation and large-scale migration towards cities

*A new emerging rural world. An overview of rural change in Africa. Nepad, 2016*

# Which pathways for agriculture in Africa ?

A typology of pathways (ProIntensAfrica) :

- Conventional pathway
- Eco-technical pathway
- Agroecological pathway
- Organic pathway



-Different visions, organizations, governances, technologies, use of resources..... With major environmental, economic and social consequences

*Windmeijer P., Löffler H., Petit-Huguenin P., Fatunbi W., 2016. Harnessing the potential of diverse intensification pathways and nutrition security and sustainable agriculture. Outline for a long-term EU-Africa Research and Innovation Partners ProIntensAfrica*



# Question

- Organic agriculture (IFOAM): health, ecology, fairness, care
- Is organic agriculture (agricultural production, use of natural resources, high manpower) a development pathway for African agriculture to achieve food security?

# Food security



## 4 components

- Access (income level, purchasing power)
- Food utilisation (nutritional quality..),
- Stability (all times..),
- Availability (food production, stock levels, net trade, )

# On-going situation

- Few research activities
- Little involvement of public agricultural policies
- Development in Eastern Africa (Uganda, Kenya), very slow in Central and West Africa
- Requests from civil society, farmers organizations, some private companies

# Methods

- Various sources of data: meta-analyses (Lesur-Dumoulin et al. 2017., Badgley et al., 2007, De Ponti et al., 2012, Seufert et al., 2012, Ponisio et al., 2014).
- Experts investigations with 50 experts from France, Burkina faso, Benin, Cameroon (INRA-CIRAD Glofoods project)
  - Workshops in each country to define OA in Africa and the link to food security
  - Interpretation with knowledge probabilistic elicitation (Andriamampianina L. et al. 2018)

# Some results

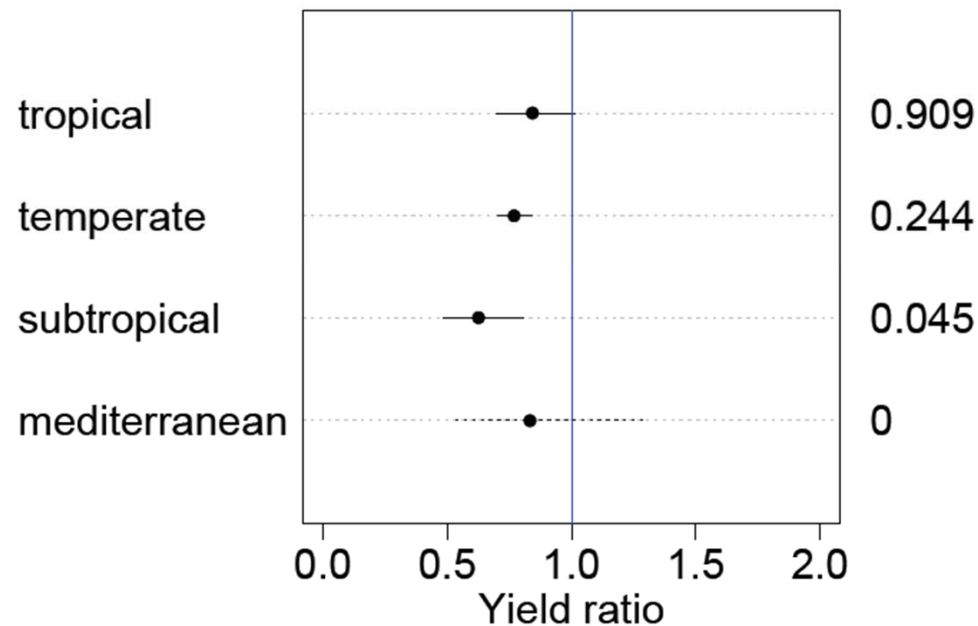
- 1-Performances of organic agriculture yields
- 2- Potential contribution of OA to nutritional and sanitary security
- 3- Institutional conditions evaluation linked with the certification forms



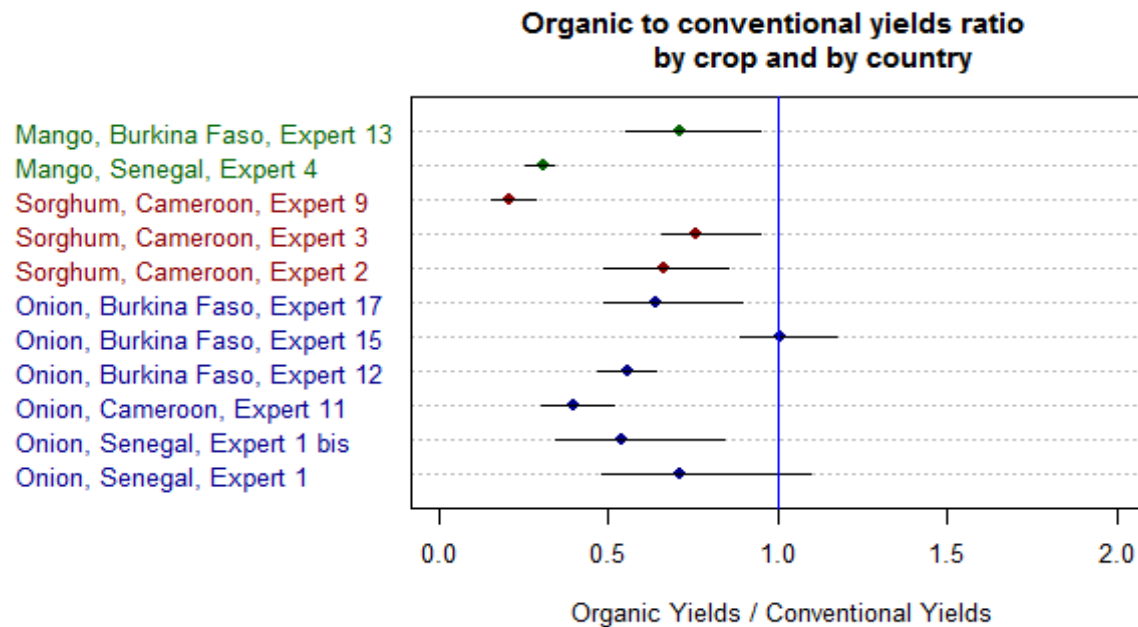
# 1-Performances of organic agriculture yields

- Yields are lower in organic agriculture
- Differences : crops, areas of production, marketing organization
- On horticulture crops (Lesur-Dumoulin et al. 2017):
  - OH yields are in average 10 to 32 % lower than CH yields
  - Yield ratios do not differ accross crop, crop types, product types, biological types
  - Yield ratios do not differ accross organic horticulture types (certified, etc.) or conventional horticultural types (High/low input)
  - Yield ratios do not differ accross climates

Effects of covariables. Effect of climate. On the right side of each graph stand the p.values. Bars show 95% confidence intervals (from Lesur-Dumoulin et al. 2017)



*Credibility intervals (80%) of organic to conventional yields ratios. The blue line represents the threshold at which organic and conventional yields are equal. Points indicate medians*



*From: Probabilistics elicitation of experts words. Andriamampianina L. et al. 2018*

## 2- Potential contribution of OA to nutrition and sanitary security

- The trends are pessimistic
  - Increase %age population with non – transmissible diseases as obesity, diabetes
  - Increasing use of pesticides and water pollution (Branchet et al., 2018)
- But consumption of OA products decrease of cancer risks by 25% (Baudry et al., 2018)

### 3- Institutional conditions evaluation linked with the certification forms

- Needs to diversify the innovation models to build the frameworks to replace the chemical inputs by other resources (Temple et Compaoré 2018)
- Standardization setting
- Certification : third party certification, accreditation, participatory guarantee systems (Fouilleux et al. 2016) (Lemeilleur et Allaire,2018)
- Mechanisms to develop local or regional certification

# Conclusion

- Not only « niches » markets for export
- A transition variation to recognize agro-ecological systems
- Little recognized by political bodies and policy makers
- Could be an engine for a transition
- The need to conduct more experience on the relative performance of OA / CA in Southern countries
- OA=> driver of food security
- Yield is not the only criteria to define performance of OA (explore other criteria labor? quality? ... happiness)
- Take into consideration the diversity of OA in Africa and the way to support the various situation through adapted mechanisms (PGS, dedicated markets...)

