Future agricultural challenges:

- Enough, healthy, affordable food
- Limitations of fossil resources
- Climate change
- No/low pollution
- Changing ethics and habits
- Economics and globalisation

Recently we use our world 1.5-times
Organic Farming research

- How is it done in Germany?
- Organic and non-organic research
- Organic Research in Africa
- ISOFAR and IFOAM
Organic Agriculture Research in Germany (estimations 2018)

- In Germany are 450 full time OA scientists (13 chairs) (globally: 1500 scientists)
- Annually 100 mio Euro research money for OA (80 mio public and 20 mio private companies; 1% of total funds for total agricultural research in Germany)
- 40% of global OA research funds are in Germany, 80% are in Europe, incl. EU
- Modern education, laboratories and other research facilities for OA are mainly found in developed (western) countries.
- OA research became accepted in this millenium. Organic Agriculture research has no bias anymore and high quality publishing is possible.
- 25% OA in Germany (and EU) till 2030 is target. This needs research to overcome the development and scaling-up barriers.
German Institute of Organic Farming

- Belongs to the German Ministry of Agriculture
- Goal: development of the „organic farming of the future“
- 100 employees
- Annual budget: 10 Mio. €
- Modern laboratories
- 600 ha organic research station
OA and non-OA research

- OA yields and qualities are lower than non-OA:
  - OA goals and standards have restrictions to ensure ecological sustainability.
  - Markets are not as much developed as non-OA: losses and costs

- OA does re-invent research methodologies and concepts:
  - System research versus isolated disciplinary approaches
  - Working with practice and find solutions together
Conventional can learn from Organic

For example:

- Nutrient cycles
- Crop rotation & mix crops
- Improve animal welfare

Avoiding pesticides with machines and knowledge
Organic can learn from Conventional

Global conventional grain$_{eq}$ yields:
- 1961: 1.4 tons/ha
- 2014: 3.9 tons/ha

German organic grain$_{eq}$ yields:
- 1961: 1.4 tons/ha
- 2014: 2.4 tons/ha
Characteristics of an ideal organic farm

Successfully managing natural resources while achieving social goals

- Ensuring sufficient production for subsistence and income
- Ensuring safe nutrition for the family
- Ensuring good and fair working conditions
- Encouraging learning and application of local knowledge
Prof. Dr. agr. habil. Gerold Rahmann

Resource- and decision level

(output: • food • income • hobby • status • etc.)

Resource: • labour • land • capital • knowledge • quota

The farm organism

Socio-economic frame condition

Policy, laws ↔ Markets ↔ Culture, tradition ↔ Infrastructure ↔ Misc.

Action level and production structure

livestock ↔ Crop production ↔ Misc. (e.g. forest)

Ecological frame condition

Micro-ecology: Farm land (direct changeable)

Flora and Fauna

Water

Relief

Macro-ecology: landscape (only indirect changeable)

Soil texture and fertility

Climate
Research in cooperation of farmers and researchers

• On-station done by scientists (experiments)
• On-station done by farmers (staff) (observing)

• On-farm done by scientists (interventions)
• On-farm done by farmers (surveys)
Organic data 2018

North America:
- 3.1 mio. ha
- 0.3 mio. ha

Latin America:
- 7.1 mio. ha
- 4.2 mio. ha

Europe:
- 13.5 mio. ha
- 16.7 mio. ha

Asia:
- 4.9 mio. ha
- 6.3 mio. ha

Africa:
- 1.8 mio. ha
- 12.1 mio. ha

Oceania:
- 27.3 mio. ha

Legends:
- Agricultural land
- Other areas (Wild collection, beekeeping, aquaculture, forests, grazed non agricultural land)

IFOAM/FiBL 2020

Prof. Dr. agr. habil. Gerold Rahmann
Organic Agricultural research in Africa
(my observations)

• Isolated in the academic world (networking ! )
• Lack of knowledge of OA research needs (IFOAM, AfroNet ? )
• Little education and training of students and scientists in OA research methodologies and publication (ISOFAR, NOARA ?)
• Lack of experimental facilities (staff and money, advocacy !)
My recommendations

- Network throughout Africa to find cooperation, relevant topics for Africa, more resources and good friends.
- Study the OA markets in Europe or America, to gain knowledge and skills.
- Work with farmers in your areas.
- Gain experience OA methodologies and publication
Project: Knowledge Hubs for Organic Agriculture in Africa?
Project: Knowledge Hubs for Organic Agriculture in Africa?

AT A GLANCE

The implementing partners create technical and methodological **knowledge products** in English, French, Arabic and selected local languages in the countries involved in the project.

The project develops an online platform to disseminate **knowledge about organic farming** in Africa.

The implementing partners are selected **non-governmental organisations** in the five knowledge hubs.

Duration: 2019 to 2024

Budget: approx. €23 million
Project: Knowledge Hubs for Organic Agriculture in Africa?
What is ISOFAR?

• Networking the global organic scientists
• Making organic research results communicated
• Networking with the Organic movement
• Creating capacities for research activities

www.isofar.online
Our institutional competence

- Organic companies
- Governmental bodies
- Organic movement (IFOAM etc.)
- Private organic research institutions
- Environmentalist groups
- Civil society organizations
- Universities
www.ISOFAR.org

Become a member!
Organic Agriculture 3.0 is innovation with research

Gerold Rahmann, M. Reza Ardakani, Raffaele Zanoli

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