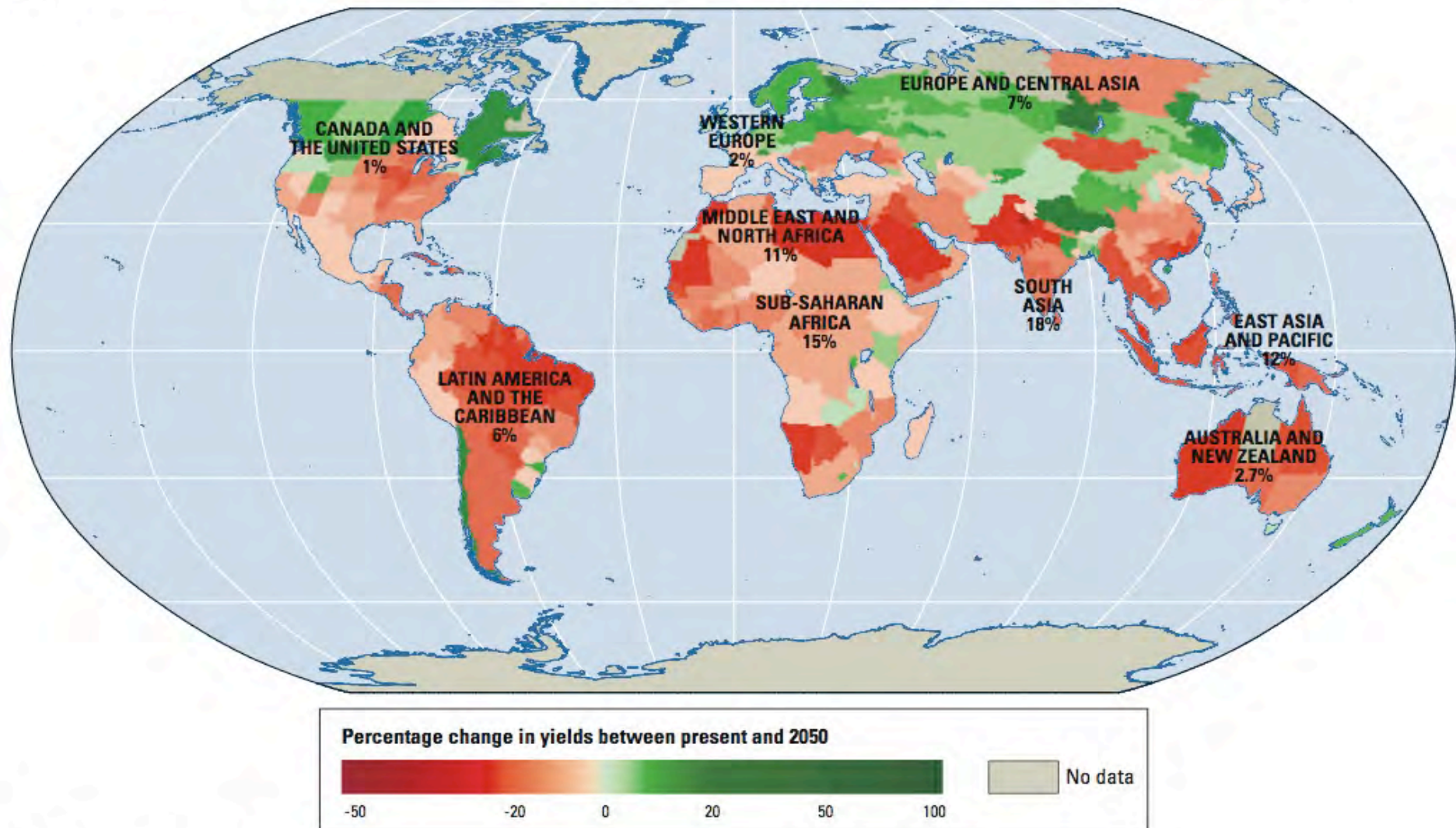


Ecologically oriented crop farming and climate change

Johannes Kotschi

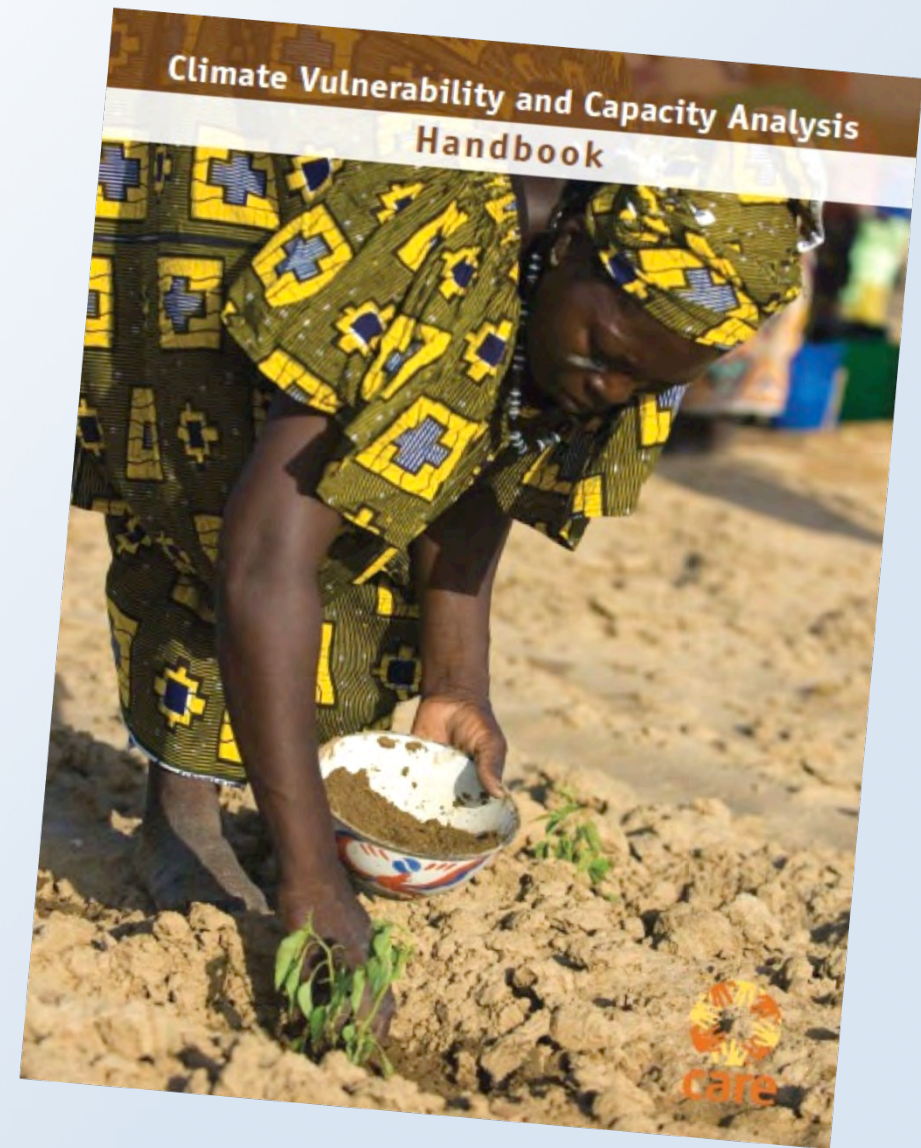
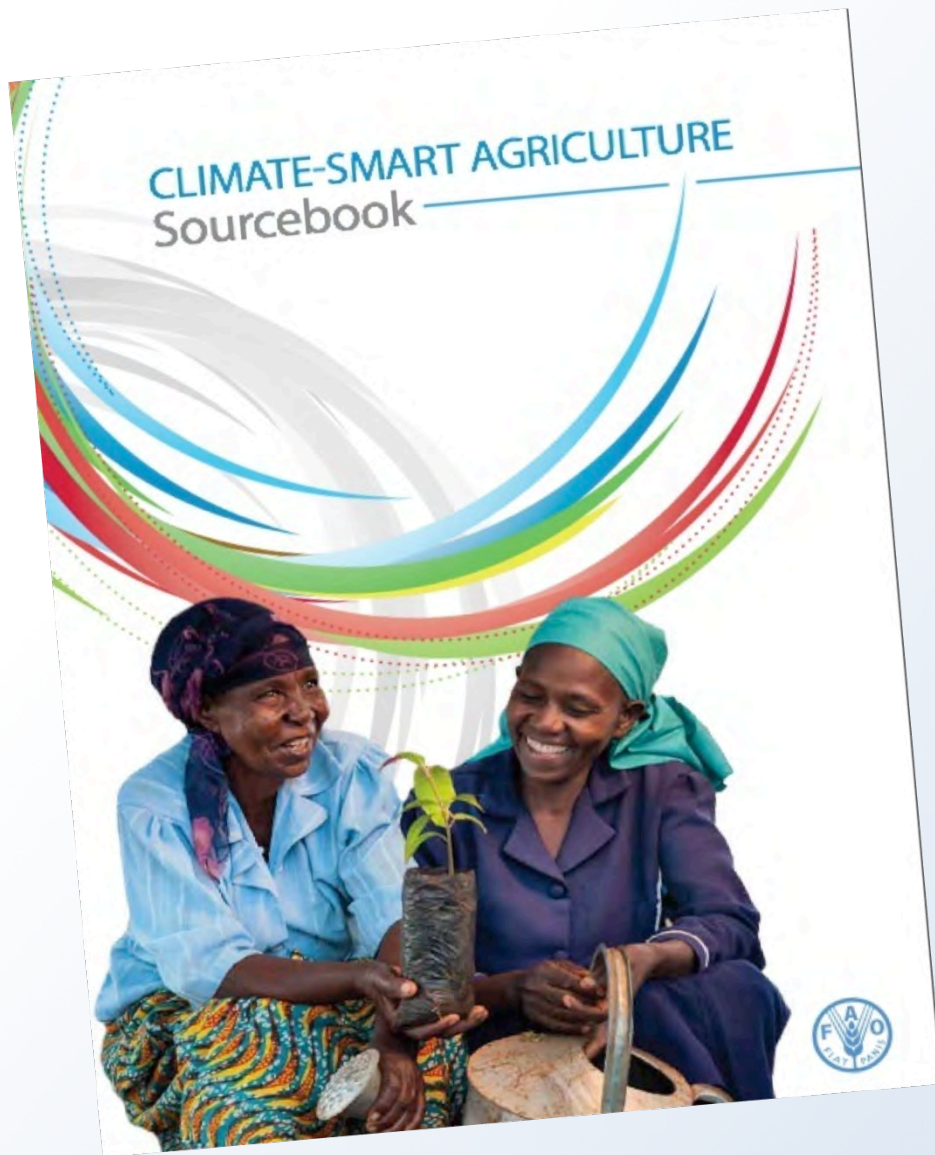
The task is huge

Map 1 Climate change will depress agricultural yields in most countries in 2050, given current agricultural practices and crop varieties



Sources: Müller and others 2009; World Bank 2008c.

Concepts



Ecologically oriented crop farming and climate change – Johannes

Technologies are part of comprehensive development approaches

Areas of intervention:

- Technologies
- Local and regional strategies
- National policies and programmes
- Financing mechanisms

Planning methods

- Bottom up
- Top down

Best practices?

Agro-ecological approaches superior?

What is new?

- Site specific development is after all of utmost importance
- Risk reduction to be increased
- Not only efficiency of resource use but also resilience
- „Efficiency and resilience have to be considered together, at every scale and from both environmental, economic and social perspectives“ (FAO 2013)

Risk reduction is common practice

- Example: Increasing drought tolerance through intercropping (Maize/Sorghum, or Sorghum/Millet)
- Generally, diversification reduces the risk of production



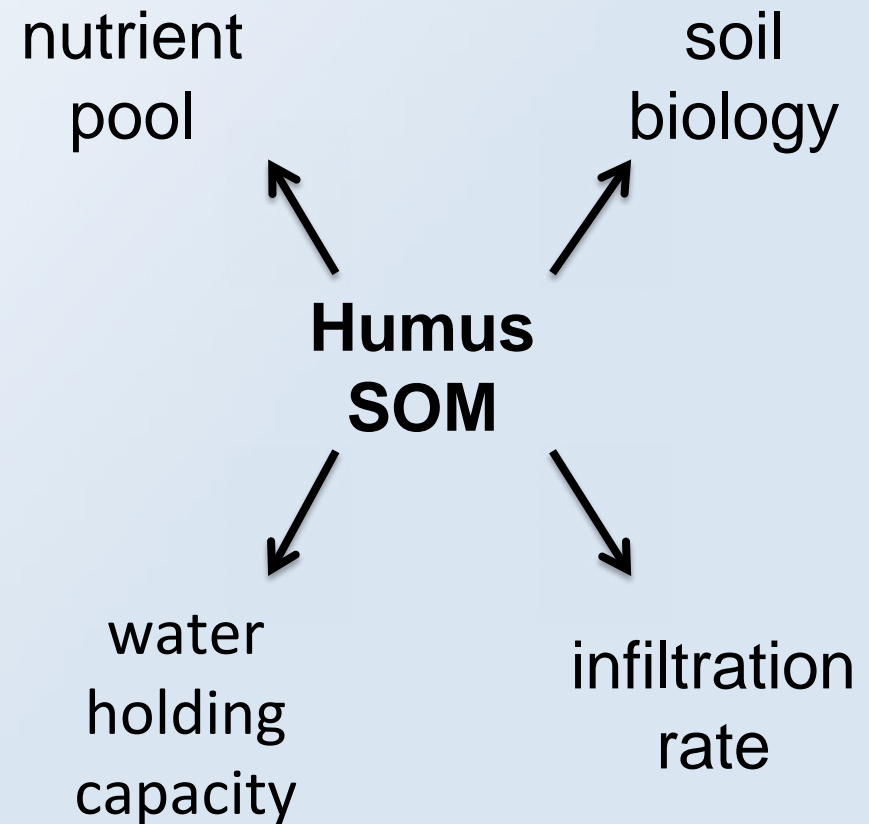
Ecologically oriented crop farming and climate change – Johannes

Focal areas of technology development

Improved management of ...

- Soils
- Water
- Genetic Resources
- Energy

Principle soil fertility management



Soil fertility management



- Gründüngung
- Intensivbrache
- Agroforstwirtschaft
- Mist
- Kompost
- Vermicompost

- Phosphatdünger
- Kalkdünger
-

Water management

Rainfed agriculture

- Water harvesting

Irrigated agriculture

- SRI (System of Rice Intensification)



Genetic resources management

Evolutionary plant breeding:

- Local varieties, genetically diverse, ecologically adapted are recombined through cross pollination,
- Propagation and selection of bulk populations under various ecological conditions (cross composites)



Genetic resources management

In-situ conservation is a must:

- Enhancing the process of evolution and adaptation
- Conserving diversity at all levels (ecosystem, species, intra-species)
- Active involvement of farmers into national adaptation strategies
- Conserving Ecosystem Services
- Improving the livelihoods of resource poor farmers

Participatory plant breeding and in-situ conservation

No agro-ecological technologies without participatory approaches

