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EXCELLENCE FOR SUSTAINABILITY

Research Institute of Organic Agriculture
Forschungsinstitut für biologischen Landbau
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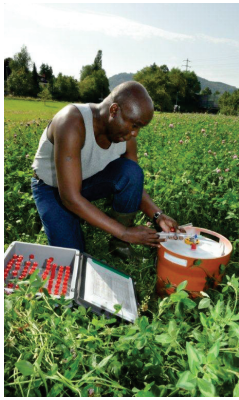


Improving the Efficiency of Rock Phosphate on high pH Soils
Results from Participatory Research in India

Christian Andres (christian.andres@fibl.org)

14 October 2014

WORKSHOP

Participatory Research in Practice – Challenges, Opportunities and Developing Ideas around the World

18th IFOAM ORGANIC WORLD CONGRESS
ICC, 13-15 October 2014, İstanbul

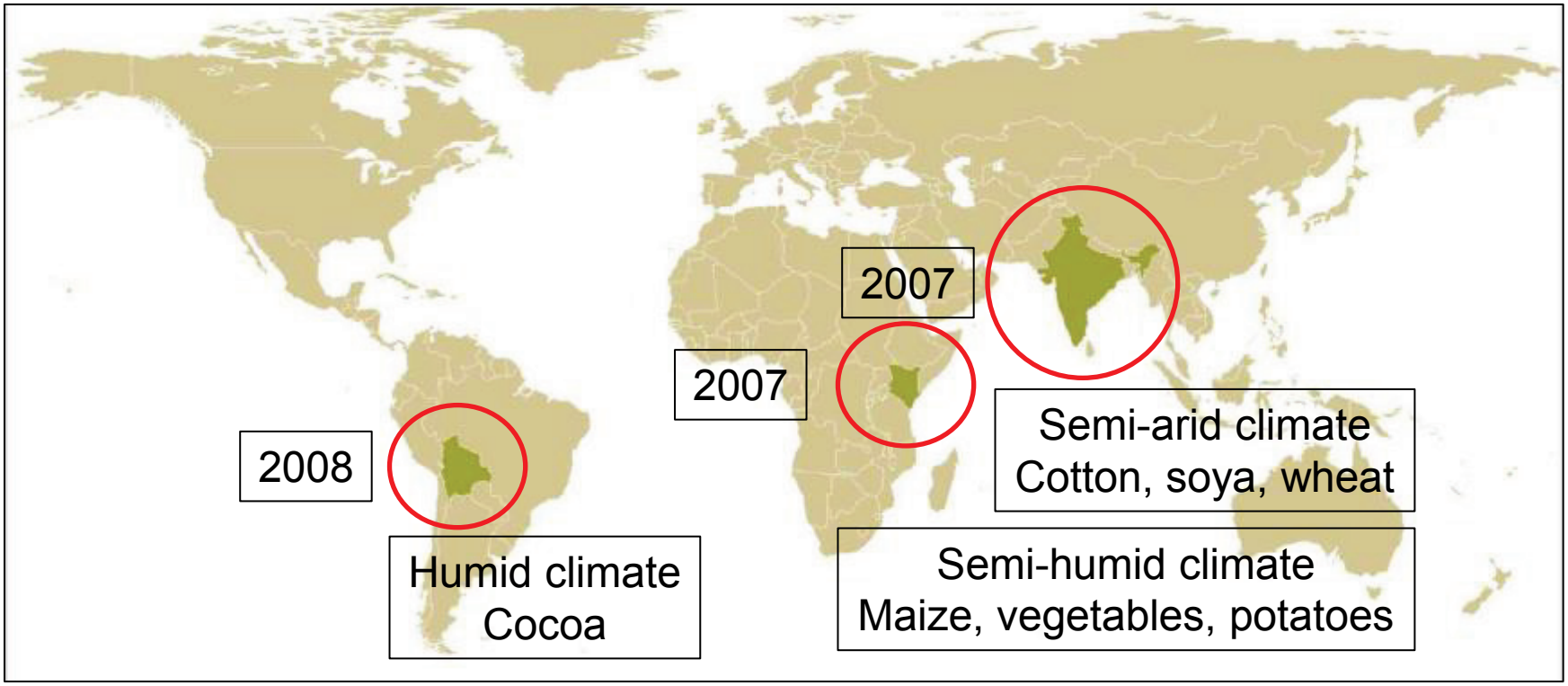
Content

1. **Background: Farming Systems Comparisons in the Tropics (SysCom)**

2. **Participatory Research Trials in Central India: Approaches and Results**

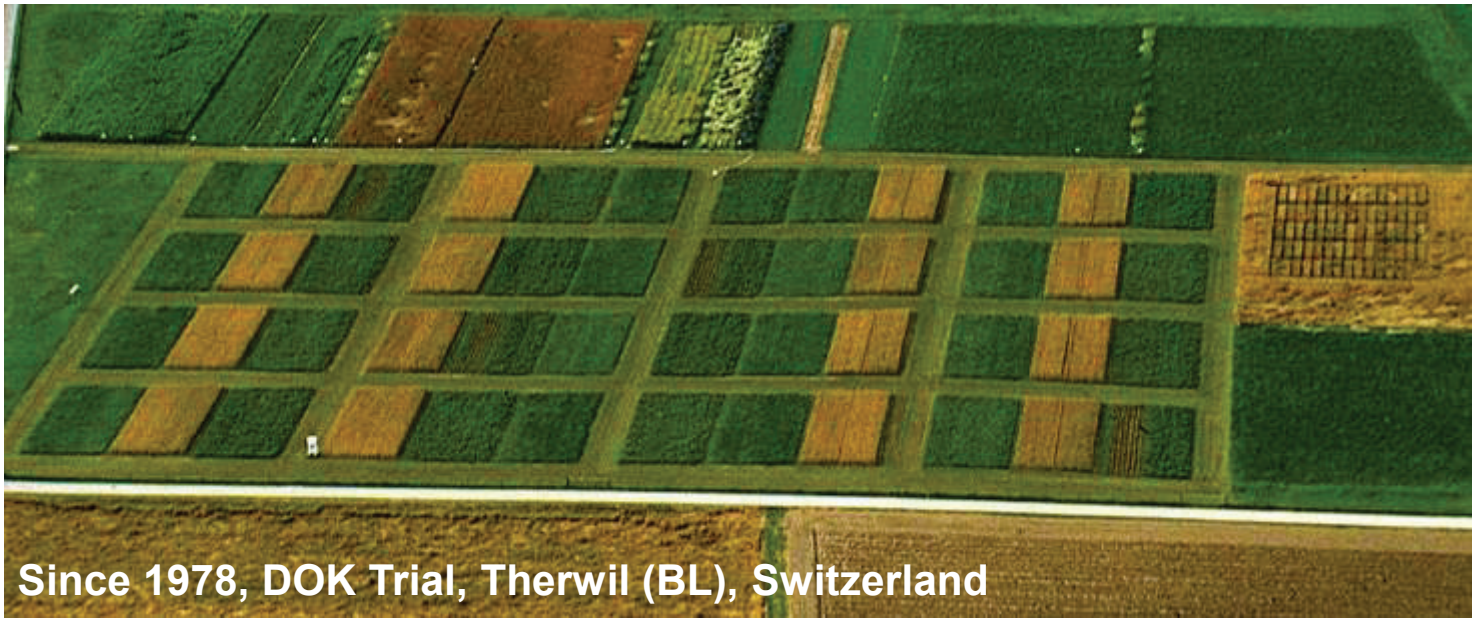
Farming systems comparisons in the tropics (SysCom)

What is the contribution of organic agriculture to sustainable development?



www.systems-comparison.fibl.org

Background: DOK Long-term trial Therwil (BL)



- 8 treatments
- 5 crops in a 7 years‘ rotation
- 4 replications
- 96 plots à 100m2
- 35 year-trial

FiBL

UNI BASEL

agroscope
FAL RECKENHOLZ

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

FAL
Bundesforschungsanstalt für Landwirtschaft

SysCom India:

Cotton production between high-input GMO and medium-input organic systems

Objective

- Assess prospects and limits of organic cotton production in central India

Collaboration

- bioRe Association

bioRe Association

Program components

1. To collect, publish and disseminate solid agronomic and socio-economic data on major organic and conventional agricultural production systems in selected regions

   → **Long Term Experiment (LTE)**

on-station

OPEN ACCESS Freely available online

PLOS ONE

Yield and Economic Performance of Organic and Conventional Cotton-Based Farming Systems – Results from a Field Trial in India

Dionys Forster[1], Christian Andres[1]*, Rajeev Verma[2], Christine Zundel[1,3], Monika M. Messmer[4], Paul Mäder[4]

2. To research new locally-adapted technology innovations for major organic production systems and provide them for dissemination

   → **Participatory Technology Development (PTD)**

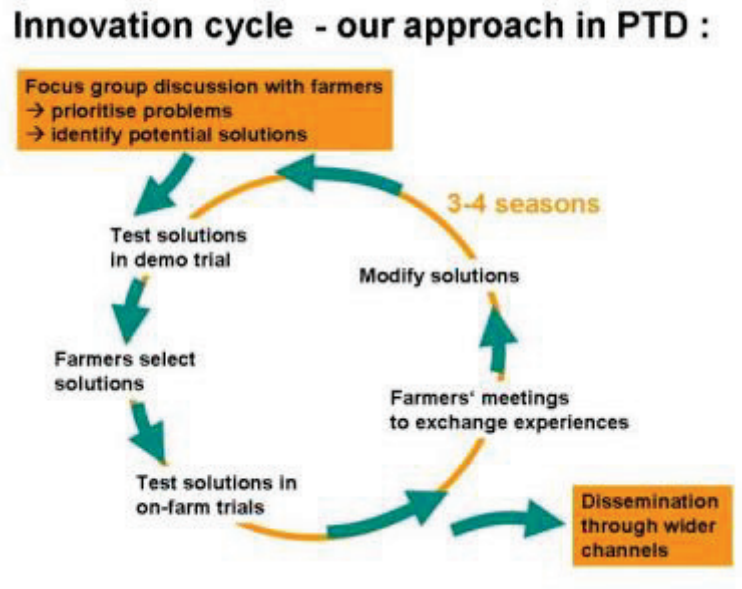
on-farm

PTD: Concept

Stage 1

1. Participatory identification of current practices, local knowledge and associated problems (surveys)

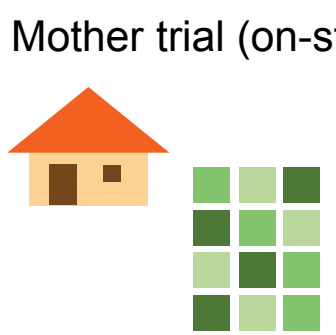
Picture: Sara Gomez

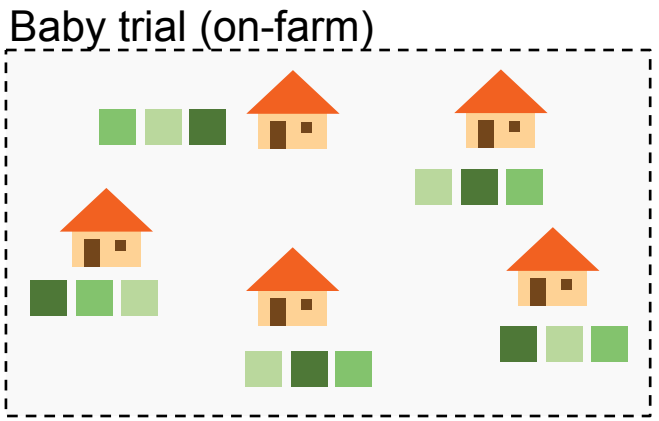


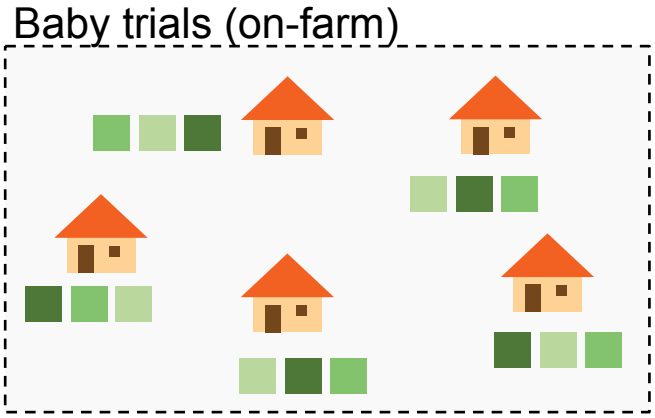
PTD: Concept

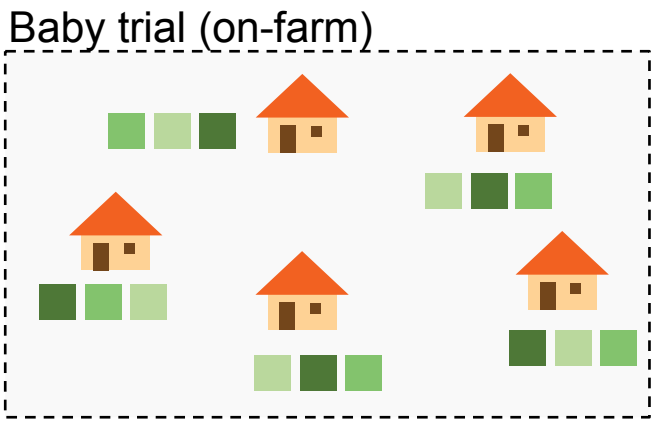
Stage 2

2. On-station (mother) trial and smaller on-farm (baby) trials









PTD: Concept

Stage 3

3. After identification of most promising technologies
   a) Increase number of on-farm trials
   b) Dissemination of information

Picture: Christian Andres

RP & FYM trials *Stage 1*

Long-Term Systems Comparison Trials

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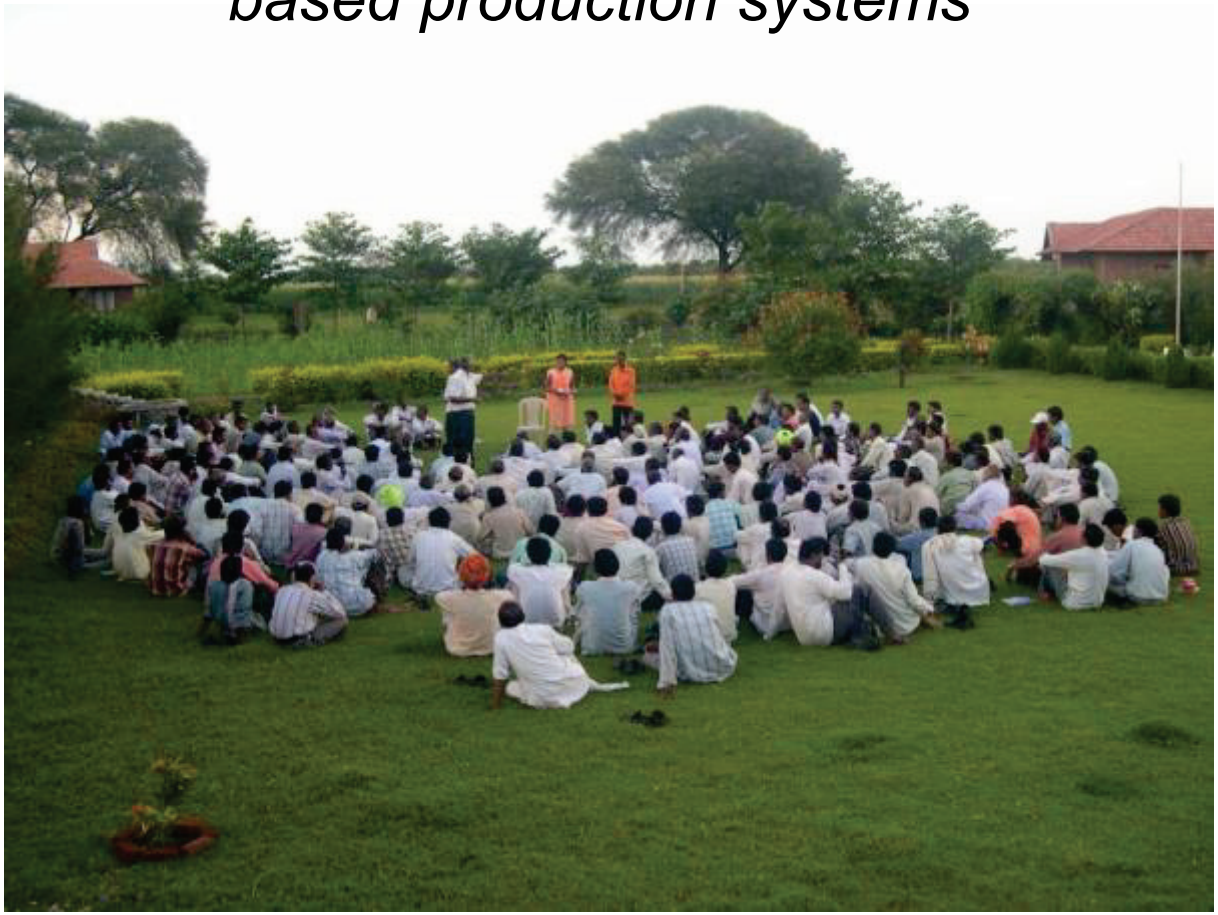
I. Focus Group Discussions (2009)

Farmers state challenges with P limitation in their cotton-based production systems



Picture: Christine Zundel

RP & FYM trials *Stage 2*

II. Mother trials (2010 & 2011, on-station)

Two most promising options for solubilizing RP are:

1. *Butter Milk (BM)*
2. *Mahua Vinegar (MV)*

RP & FYM trials *Stage 2*

II. Mother trial (2012, on-station)

BM is more favorable than MV, adequate incubation period = 1 week, optimal ratio of RP:BM = 1:10

Picture:
Mirjam
Nyffenegger

RP & FYM trials *Stage 2*

II. Mother trial (2012, on-station)

Shaded shallow-pit system best conserves the quality of farm yard manure (FYM) as a fertilizer

Picture:
Sara Gomez

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. Demonstration shed and farmers training

BM acidulated RP is mixed with FYM, laying on and covered by tarpaulin foil, in a shaded shed structure

Picture: Lokendra S. Mandloi

RP & FYM trials *Stage 3*

III. Demonstration shed and farmers training

BM acidulated RP is mixed with FYM, laying on and covered by tarpaulin foil, in a shaded shed structure

Picture: Christian Andres

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. Production of RP-FYM by five lead farmers

Each farmer produced about 1'000 kg RP-FYM and provided another 4 farmers with 200 kg to make trials

Picture: Lokendra S. Mandloi

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. Motivation of associated farmers

Competition was launched among 25 farmers (5 lead, 20 associated), best farmer would win a high prize: A COW!

Picture: Christian Andres

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. On-farm trials with farmers (2013)

*Soybean grain yield increased by 40%*** across a range of farms (n=14) and soils (heavy/light soil)*

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. On-farm trials with farmers (2013)

Seed cotton yield increased by 41% across a range of farms (n=10) and soils (heavy/light soil)*

RP & FYM trials *Stage 3*

Long-Term Systems Comparison Trials

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III. Dissemination

Competition among farmers: best quality compost won a cow and calve

Picture: Lokendra S. Mandloi

RP & FYM trials *Stage 3*

III. Dissemination

Leaflet on RP-FYM technology is being developed, will be used for extension and training

सामग्री

साधन

- डीन या बाल्टी व कपड़ा
- लकड़ी
- प्लास्टीक की पल्ली

असर प्रणाली

बनाने कि विधि

Conclusion

1. Participatory on-farm research can lead to locally adapted and applicable solutions for smallholders
2. In the Nimar region, P-enriched farm yard manure can increase soybean and cotton yields of organic smallholders by up to 40% compared to farmer practices
3. Farmer to Farmer Extension is a powerful tool which can increase the acceptance of novel technologies
4. Including illustrated leaflets in the local language into existing extension programs may help to disseminate information beyond the scope of a project intervention

Thank you for your attention!

Schweizerische Eidgenossenschaft
Confédération suisse
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Confederaziun svizra

Direktion für Entwicklung und Zusammenarbeit DEZA

LIECHTENSTEINISCHER ENTWICKLUNGS-DIENST

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