ORGANIC AGRICULTURE IN WEST AND CENTRAL JAVA FOR SAFE AND ENVIRONMENTALLY FRIENDLY FOOD PRODUCTION AND FOR SECURING SMALLHOLDER FARMERS INCOME

Presented by:

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International ISHS symposium:
“Sustainable vegetable production in South East Asia”
14-17 March 2011, Salatiga, Central Java, Indonesia
http://www.vegsea2011.ugent.be
GENERAL INFORMATION

PROMOTER: Prof. Dr. Ir. Stefaan De Neve
Ghent University, Faculty of Bioscience Engineering, Department of Soil Management.

PARTNER INSTITUTE(S):
- Indonesian Soil Research Institute (ISRI), ICALRRD, AARD.
- University Gadjah Mada (UGM), Faculty of Agriculture, Department of Soil Science.

Project Duration: 5 years (Started 1 September 2010)

Total budget: 328,839.50 EUR (39% operation, 22% investment)

Nature of the project:
- ✓ Research → very important as to the overall project
- ✓ Capacity building → Of overriding importance as to the overall project
- ✓ Extension → very important
BACKGROUND

- Intensive agriculture in Indonesia uses massive external inputs and puts serious threats on the environment and on farmers’ and consumers’ health.
- There is very little research on sustainable farming systems, in particular organic farming.
Urgent need for scientific knowledge and initiatives to stimulate the development of sustainable/organic farming.
Urgent need for basic research to further increase organic production and then farmers income.
OBJECTIVES

- To establish strongly interlinked research groups on sustainable farming that can carry out scientific research at an international level.

- To investigate and optimize existing and new cultural practices in organic farming, tighten links between research, extension and farmers and facilitate certification of organic produce.

Increase organic farming production, thus improving environmental quality, farmers’ and consumers’ health and farmers’ income.
STRATEGY

- Contribute to the capacity building of partner institutes → MSc, PhD programmes, training; laboratory facilities.
- Use the existing knowledge of local institutes.
- Publicize the results internationally by writing scientific papers.
- Reinforce existing or creating new links with local and foreign partners.
- Use a participatory approach for the actual field research and inventorize the existing knowledge from farmers.
- Conduct research at the locations where organic farming initiatives took off.
STRATEGY

*Emphasis on the beneficiaries*

**Direct beneficiaries**

- Local farmers, extension workers, researchers or scientists, students that involve in various stages, NGO’s that are active in the field of organic farming (e.g. certification of organic produce) and traders.

**Indirect beneficiaries**

- Research institutes (IRI, BALITSA, BPTP, etc.), consumers and society as a whole due to the improvement of environmental quality.
INTERMEDIATE RESULTS

Related to CAPACITY BUILDING

- Indonesian student/researcher has successfully obtained MSc and PhD degrees at Ugent related to organic farming by Sept 2012 and the middle of 2014, respectively.

- **Training of researchers** (two 1-month and one 3-month scholarships) with newly installed equipment on soil biological, chemical and mineral N analyses have been carried out by the end of 2011 and 2012, respectively.

- **Laboratories** at partner institutes have been equipped to carry out biological soil quality analysis (microbial communities, nematodes, micro-arthropods) and measure key nitrogen transformations relevant to the project by the end of 2011.
Related to RESEARCH

✓ Socio-economic status of organic farmers in the study area has been inventorized and reported by end 2011, selected sites have been made by the beginning of 2012, and an international peer reviewed publication regarding the topics has been accepted by the middle 2013.

✓ Important soil physical, chemical and biological parameters on the research sites, and water quality in microwatersheds with and without organic farming have been measured and reported by the middle of 2013 and of 2014, respectively, and results have been accepted in two international peer review journals by the beginning of 2015.

✓ A website on sustainable farming systems research is on line by the end of 2012, an international symposium on organic farming in SE Asia has been organized in 2015, and partner institutes take part in major project on sustainable farming, externally funded (preferably EU).
At least **3 locations** per sub district will be selected based on **different soil types**, years since the onset of organic farming and **elevations**.

Inventory and analyses will be on the physical/production and socio-economic factors determining the **potential or limitations for conversion to organic farming** and the **impact of organic farming practices** on nutrient use efficiency, soil quality, and surface water quality.

**MONITORING** of soil physical, chemical and biological quality: soil organic **C and N** (SOC, SON), and **SOC and SON fractions**, **microbial biomass and diversity** (using PLFA analysis), free living **nematodes** and **micro-arthropods** numbers and **community composition**, and **earthworm** numbers and species (as indicator of soil quality); **pesticide residue** measurements.
Research into **NEW/ALTERNATIVE CULTIVATION PRACTICES**:

- Effect of introduction of Azolla-Anabaena N fixation, N fixation potential using a mass balance approach;
- Introduction of green manures for both rice and vegetable growing, Sesbania spp., Tithonia spp. and nitrogen fertilizer value;
- Effect of less frequent and shallower tillage on crop yield and soil quality parameters.
- Composting: i) optimum combination of organic materials for composting on a site specific basis; ii) optimum dimensions of composting piles; iii) optimum moisture and turning frequency; iv) effect of commercial and farm made microbial inoculants on the composting process; N content and N fertilizer value.
Monitoring of **SURFACE WATER QUALITY** (nutrients, pesticides) in different microwatersheds with only conventional and only organic fields: this is certainly possible with organic rice farming, since organic rice farmers choose to be at the upper slopes of microwatersheds to avoid contamination of their water (by fertilizers, pesticides) by conventional farming.
Current organic farming practices in the study area have been inventorized and reported by end 2011.

At least 10% of the staff of applied research stations (BPTP) and all extension workers on rice and vegetables in the villages where the project is active have received intensive field training by the end of 2014. 20 farmer groups (“kelompok tani”) have received training and 40 to 100 ha areas are under organic farming.

A first version of a manual with practical guidelines on optimized organic farming practices has been produced for both organic vegetable and organic rice growing by the beginning of 2014.
FEASIBILITY AND SUSTAINABILITY

✓ Interest in organic farming research within the partner institutes remains, or becomes stronger because of the recent evolution in organic farming research and the common idea to start up this project.

✓ National and local governments increasingly facilitate conversion to organic farming. The “Go Organic 2010 campaign” launched by the Indonesian government shows that there is a political willingness to support initiatives on organic farming. Local governments have also been supporting initiatives on e.g. organic rice growing in the Sragen district. Hence the assumption is very likely to be met.

✓ The market for organic produce will grow both nationally and internationally.
LET’S DISCUSS THE PRESENT AND FUTURE RESEARCH ON ORGANIC FARMING

Thank you

Terima kasih