

Enhancing the Impact of Research for Development: A Pilot Competitive Grants Program to support innovative partnerships and projects

Concept Note

Note: the concept note must not exceed **5 pages** and should be sent to cs0-cgiar-grants@cgiar.org

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Organization description and date established	AIT, an international institute established in 1959, promotes technological change and sustainable development in the Asian-Pacific region through higher education, research and outreach. It is actively working with public and private sector partners throughout the region and with some of the top universities in the world. (http://www.ait.ac.th).

II. Project Details

Title of Proposal	Linking Thai Jasmine Rice farmers with markets using SRI principles for sustainability of rainfed lowland rice-based system of Northeast Thailand.
Project Duration using Grant Funds (in month)	24 months
Countries of Implementation	Thailand

III. Primary CGIAR Center Partner

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IV. Other Partners

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V. Project Questions

1) PROBLEM DEFINITION: Describe the specific challenge you will try to address and why it is significant. Include causes of the problem and estimates of the number of people affected in your target area.

Amongst the four regions of Thailand, Northeast Thailand has the most land devoted to agriculture (9.25 million hectares) and the most farms (2,273,000) (Office of Agricultural Economics, 1998). However, income per capita for the region is less than 40% of the national average and the incidence of poverty is at a relatively high level effecting 37% of the population (Matsuo, 2002). More than 80% of the population is engaged in agriculture of which the dominant form is rainfed. The region is considered an integral component in agricultural food production with rice production being undertaken on 70% of the arable land in the region. Apart from the constraints of small farm size, the region is dominated by low fertility soils (sandy soil, extremely poor water holding capacity of the soil, soil erosion), lack of irrigation infrastructure (Anon. 2007a), inadequate water management techniques, flash floods and droughts (Kabaki, et al., 2003; Kupkanchanakul, 2005) and a lack of location-specific technologies to address these constraints. Whilst the predominant form of rice production is rainfed, poor soil fertility and low nutrient inputs are considered to be the major limiting factors affecting low rice yields (Wijnhoud, 2007). As a means of addressing the constraints of water and poor fertility several farmers have adopted the principles imbedded within the System of Rice Intensification (SRI) to enhance productivity. SRI practices require less water and seed, yet produce more rice (Satyanarayana et al., 2006). However, enhancing the fertility of soils through inputs of organic matter has become a key issue for SRI farmers.

SRI (for overview see Uphoff and Randriamiharisoa, 2002) is based largely on the principles of ecological farming and encourages the notion “Grow soil to grow rice” (Uphoff, 2006). Two major limitations to farmers of Northeast Thailand adapting and adopting SRI principles are the weed problem that often arises in SRI systems and raising the level of soil organic matter. To address these challenges, farmers recently established experiments to evaluate intercropping rice with different species of green manure. This represented an innovative action research approach by the farmers of this region which has reduced weed pressure, increased water use efficiency and enhanced soil organic matter. Farmers evaluated SRI management practices and adapted them to meet local circumstance using the Farmer Field School methodology. They were assisted by the Asian Institute of Technology (AIT), and ThaiEd Foundation, with the funding support from Challenge Program for Water and Food (Grant number 504), CGIAR. The first season of action research was highly successful. It helped farmers reduce weeds, meliorated pest problems, improved water usage, enhanced soil organic matter. The result was with increased rice productivity and improved profitability which was presented and discussed by the farmers at International Forum on Water and Food (12-17 November 2006 at Vientiane, Lao PDR) (Anon. 2007 b)

In studies undertaken in Northeast Thailand to assess the efficacy of a range of soil amendment techniques in rejuvenating degraded light textured sandy soil, two treatments including a local source of bentonite resulted in dramatic increases in forage sorghum yields (Noble et al., 2004). Total above ground dry matter (DM) production over the two years ranged from 0.22 t ha⁻¹ in the control treatments (where plant production completely failed in the second year of cropping), to 23 and 36 t ha⁻¹ for the locally sourced bentonite and the bentonite/leaf litter combination respectively. The reasons for the substantial increase in production are thought to be due to the ability of the added clay to increase soil negative charge with a resultant increase in nutrient supplying capacity, and also to an increase the soil water holding capacity (Suzuki *et al.*, 2005; Noble et al., 2005). In recent research undertaken with organic rice farmers in Northeast Thailand, rates of bentonite between 0.6 – 9.6 t ha⁻¹ in combination with their normal compost/manure applications have yielded considerable increases in organic paddy rice production as well as profits.

With the expanding success of these local initiatives at the community level, farmers are now increasingly willing to adapt/adopt SRI concepts for Jasmine rice in the northeast region which is the original home of Thai Jasmine rice (Anon. 2007c). There is a growing market demand for Jasmine rice both nationally and internationally that is grown in a sustainable manner. However, productivity of Jasmine rice is very low

compared to other rice varieties. Furthermore, farmers cite additional significant risk factors that include pests and diseases and poor soils as factors influencing productivity (Wall, 2006).

This proposal aims to integrate, evaluate and upscale the initial learning derived from the introduction of SRI + green mulch and soil amendment techniques. In addition, the project will assist farming communities/NGO develop an innovative multi-stakeholder model - involving traders, millers, researchers, government and nongovernmental organizations – that enhances the profitability and income security of rice farmers which is ecologically sustainable.

2) OBJECTIVE: List the specific objectives of your project

The overall objective of the project is to increase the productivity of Jasmine rice production systems that will lead to enhanced incomes and poverty alleviation in Northeast Thailand. This will be achieved through the following specific objectives:

1. Evaluate the potential role of green mulches and combinations of clay and organic amendments to soils in order to enhance the fertility and water holding capacity of degraded sandy soils within an SRI rice based production system.
2. Evaluate the impact of these interventions on soil fertility status, water holding capacity and microbial diversity and its subsequent effect on rice plant.
3. Develop training materials based on the result of PAR along with systems of forward and backward linkages for sustainability of the process and benefits to the rice farming community.
4. Build capacity of participants in understanding the process of problem sensing, trial development and setting, evaluating and modifying action research to enhance the water, rice and soil productivity for Thai Jasmine rice.
5. Incorporate technological and quality issues into the action research and training process in order to provide stronger linkages between Thai Jasmine rice farmers and the market that will facilitate meeting national and export market demands.

3) PROJECT IMPLEMENTATION: How will you implement your idea? List and describe the specific steps you will take to meet your objective(s). Explain the status of the project: is it a new project or a new phase of an ongoing project? Describe what is new and how it differs from previous phase? Have you already tested the idea on the ground?

The Asian Institute of technology (AIT, details at www.ait.ac.th) and its NGO partner, Thai-Education Foundation (TEF, details at www.thaied.info) received a CGIAR's *Challenge Program For water and Food* small grant (Grant no. 504). The objective was to increase water use efficiency of rice in NE Thailand by evaluating, adapting and adopting successful elements from the SRI (System and Rice Intensification) and other local innovations. The project successfully mobilized stakeholders' from the Governor to district-level functionaries of the government. It also engaged non-government organizations leading to the successful increase in rice yield with less external input use, especially water. The project is in its second season of action research using the innovative research-community-farmers platform (January – July 2007). The project has so far trained 30 farmers (extending to around 200 through field day and mid-season workshops) for season-long studies on water and biodiversity, using an innovative rice growth development curriculum. An additional 60 farmers are being trained through funding from the FAO regional IPM program to the partner NGO, ThaiEd. In addition, 10 field trainers from the Department of Non-formal education were trained in the methodology and technical contents of the project.

The first project cycle tested the idea of increasing the water productivity and sustainable production of locally preferred traditional/glutinous rice varieties to improve food security. The proposed second cycle seeks to go beyond food security to income security by working on internationally-preferred Thai Jasmine rice which has considerable export potential and to introduce innovative approaches to enhancing soil fertility. The proposed cycle of work also aims to develop a sustainable consortium between farmers, traders, government and NGOs to work as a focal point for a proposed research-extension-trade partnership. This could serve as model with national significance.

The following steps will be undertaken to achieve the stated objectives:

1. Development of innovative action research platform by active advocacy involving farmers, traders, research and development community;
2. Participatory problem analysis on current status of the Jasmine rice production (from crop production and protection, post harvest, quality, market (local and export policy etc)) from strategically selected areas in two provinces using direct baseline surveys, secondary information source, empirical experience coupled with SWOT analysis to enlist priority and achievable problems;
3. Workshop to seek the best available solution (under the framework of Good Agriculture Practices, GAP) from the research communities on these various aspects and development of study designs (field study, market chain study etc.) so as to enable farmers and traders to produce GAP standard produce for in-country and export-oriented Jasmine rice;
4. Implementation of PAR (participatory action research) field studies;
5. Participatory project evaluations (mid-season) and end-season by involving all stakeholders of the consortium;
6. Second-season project implementation and repetition of the evaluations to generate local specific technology and GAP standards;
7. Second year – A curriculum development workshop to assemble and finalize local specific training curricula
8. Two seasons of training to additional farmer groups using FFS (Farmers Field Schools) methodology of non-formal adult education based on site training and linking the produce to the local traders and rice mills to the market;
9. Collection, analysis of all information, field data and presentation of the key results to the key policy makers at regional and national level. Presentation of key findings to students from the various countries in AIT for further dissemination of the results and methodologies.

4) INNOVATION: How is your project idea innovative or unique?

The following key points make this proposed project unique:

1. Development of location-specific and knowledge-intensive technology for Jasmine rice production for resource poor women and men farmers in poorest region of Thailand deriving elements from innovative ecologically sound science that includes SRI, use of green mulch for weed control, improved soil fertility, and more efficient water management;
2. Development of local consortia of stakeholders involving farmers, research community, traders to have two way linkages for sustainable production and marketing of Jasmine rice;
3. Development of community-owned and managed needs-based peer group, possibly creating and assisting policies related to food, nutrition and income security for the most vulnerable in society;
4. Development of design and content of field-based non-formal education adult learning training session guides and training curricula based on Jasmine rice for NE Thailand;
5. Training of Government and non-government agencies working in rice production on the participatory methodologies, contents and technical know-how for development of the Good Agricultural Practices using successful elements from best of rice science;

5) RELEVANCE and INNOVATIVENESS of PARTNERSHIP: How is each partner contribution critical for achieving the overall project objectives? Describe how the partnership embraces principles of joint decision-making, inclusiveness, knowledge-sharing.

This proposal would be a new phase of an ongoing project that focused on the bottom-up approach - from the problem definition and gaining consensus to dissemination of solutions and formulation of related policy imperatives by bringing all stakeholders to a common platform involved either at local, regional, national or international level. AIT, being a regional hub of the post-graduate studies, a series of work on cutting-edge rice science is ongoing (<http://ciifad.cornell.edu/sri/countries/thailand/index.html>) and these

would directly contribute to the project along with its commitment to bringing knowledge of sustainable water use technologies and experience from over 5 decades of working in the Mekong region. Further, AIT and its local partner, ThaiEd, would contribute from their wide ranging experiences of working in Thailand. Notably, the ongoing work on water productivity using SRI elements in the NE Thailand would directly contribute to the project's understanding and day to day functioning at the ground level. In addition, a partnership of AIT-ThaiEd with IWMI (CGIAR) would help the project achieve its ambitious goals and assist in gaining a wider and more sustainable impact.

6) EXPECTED RESULTS: (a) Please state the expected results of your project and its contribution to achieving sustainable food security and reducing poverty; (b) How will you measure your results? Please be as precise and quantitative as possible.

Since the ongoing project directly focuses on achieving food and nutritional security by increasing rice productivity, the proposed new phase of work will concentrate on improving income security. It will do this by assisting farmers grow quality rice with better market linkages so as to enable them to reap higher net returns in a practical and sustainable way. Currently, rice production and marketing are highly fragmented. The new cycle would strive to streamline the system from planning through production to marketing. For example, if organic Jasmine rice has better market prospects than the most appropriate production technologies would be assembled, field tested under local conditions; and suitable market links established. Farmers often face problems in assessing information and putting it to effective use. Participating farmers would combine a basket of production technologies under the GAP. This would raise food and income security in a sustainable manner.

There are inbuilt steps to measure the qualitative and quantitative project achievements:

1. At farmer level – the pre and post training evaluation to be used would sufficiently point towards the increase in farmer knowledge and understanding of sustainable crop production;
2. At production level – sound scientific analysis of field experiments for crop and soil productivity (both at farm and research institute level) would help explain results on seasonal and yearly basis;
3. Cost –benefit analysis and return of investment would permit an economic assessment of the impact of the project
4. The number of attendees and participants to the farmers field day and their deliberations at proposed consortia would provide ideas on the health of consortia;
5. The consortia should be owned and managed by local community and their successful integration into local society would indicate success on this count;
6. Finally, the number of farmers trained, training of local government and non government officials for each season for total project cycle would be an important indicator of achievement.

7) REPLICABILITY: What is the scaling-up potential of your project idea? What is the possibility of implementing your project idea in a different region or globally?

Small scale farming is highly fragmented across much of the developing world, often for similar reasons. On the resource front – inadequate inputs, paucity of sustainable production options, poor and declining soil fertility, global warming and changes in the amount of water available; on knowledge front – lack of knowledge pertinent to local plant production and protection. Therefore, the broader project idea could be implemented in different regions but will need to be fine-tuned to suit the needs of the targeted community, its available resources and constraints.

8) SUSTAINABILITY: What characteristics of your project will ensure that it is sustainable? How will your project continue beyond the phases funded by the CGIAR grant?

Project should be sustainable because:

1. It addresses the needs of the local community and aims to achieve production, economic and environmental sustainability in a collaborative and complementary way;
2. The FFS approach would build the capacity of the participants in identifying and listing problems and finding solutions to these problems in a holistic approach. Therefore any learned knowledge should be sustainable in the targeted community ;
3. It builds on indigenous knowledge to find the solution, and extension is embedded within the testing of the technology thus increasing chance for adoption and scaling up;
4. It aims to prepare farmers, NGOs and other stakeholders for better linkages with the national/international markets by incorporating technological and quality issues and;
5. The learned knowledge could be incorporated dynamically into the curricula of future FFSs and follow-up activities for any future field activities thus insuring sustainability of the project.

V. Proposed Budget

Item	Proposed budget (in US\$)
Personnel	80,000
Research supplies and services	45,000
Equipment	35,000
Training and other knowledge-sharing activities	105,000
Travel	30,000
Communication	20,000
General Administrative Expenses	33,000
TOTAL Project Cost	348,000
Co-Financing and Funding (no less than 30% of total project cost)	105,000
GRANT Funding Request (no more than 70% of total project cost)	243,000
Details of co-financing and funding sources	This includes the cost towards faculty time and cost of physical facilities use in-kind contributed by AIT for the period of two years

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