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CAPSA Monograph No. 50

Proceedings of the Regional Meeting

**Towards a Joint Regional Agenda
for the Alleviation of Poverty
through Agriculture and
Secondary Crop Development
Bangkok, 21-22 November 2007**

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Outline of JIRCAS and its Commitment to Rural Poverty Alleviation*

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Introduction

The purpose of this paper is to introduce the current activities of the Japan International Research Center for Agricultural Sciences (JIRCAS) and how its activities contribute to rural poverty alleviation. Since its establishment, JIRCAS has carried out a number of research activities in the developing regions concerning agriculture, forestry, fisheries and environmental issues. Though its academic achievement has been appreciated by the collaborating countries and academic communities, there is still much room for improvement in its contribution to poverty alleviation. In the following part of the paper, the outline of JIRCAS's activity and its commitment to poverty alleviation is described. Then, the future direction of its R&D focus is discussed.

Outline of JIRCAS

JIRCAS was established in October 1993, through the reorganization of its predecessor, the Tropical Agriculture Research Center (TARC). TARC was established in 1970 and its major mission was development of techniques necessary for agricultural promotion in developing countries. In order to expand its scope of work and enable it to conduct a comprehensive approach to solving food and environmental problems in developing regions, TARC was reorganized into JIRCAS.

JIRCAS is the sole national institute in Japan that undertakes comprehensive research on agriculture, forestry and fisheries technology in developing regions. The study areas include not only tropical and subtropical regions, but also temperate zones such as Central Asia and Mongolia. The major objective of the activities is providing solutions to

* Paper presented at the Regional Meeting, "Towards a Joint Regional Agenda for the Alleviation of Poverty through Agriculture and Secondary Crop Development", UNESCAP-CAPSA, Bangkok, 21-22 November, 2007.

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international food supply and environmental problems through technology development. Besides technology development, it also collects, analyses and publishes information to grasp trends relevant to international agriculture, forestry and fisheries as well as farming systems.

Though the most of R&D activities of JIRCAS are classified into Official Development Assistance (ODA), the basic concept of its international collaboration has been equal partnership and mutual benefits. While JIRCAS provides most of the research budget and sends its personnel to project areas, the partner institutes also contribute to the project via means such as providing counterpart researchers, office space and various support which is necessary for the research implementation. To formulate the projects, JIRCAS holds an intensive discussion with partners to identify the study subjects that will provide benefit to the collaborating countries and contribute to rural development through technological innovation.

JIRCAS tries to achieve its objectives through four major activities, namely, 1) international collaborative research; 2) dispatch and invitation of researchers; 3) research planning and evaluation; and 4) co-operation with developing regions.

The current main research areas of JIRCAS are as follows.

1. Genetic research geared towards maintaining crop productivity despite adverse environments of drought, salinity and freezing.
2. Research on biomass utilization technology which converts plant or agricultural residues into useful energy resource alternatives to fossil oil.
3. Research on sustainable agricultural, forestry and fisheries technology suitable for restricted space on island environments threatened by population pressure in the tropics and the subtropics.
4. Research aimed at contributing to the development of stable farming villages in Asia, where 50 per cent of the global population lives.
5. Research on environmentally friendly agricultural farming systems for food security in Africa, which lags behind in global development.

JIRCAS implements its activities according to a five-year mid-term plan. Under the current mid-term plan (2006-2010), the main focuses are the four programmes below. Under these programmes, 33 R&D projects are carried out (See Annex).

- 1-1 Developing technologies to utilize biological resources for stable production and multi-purpose application, under adverse environments.

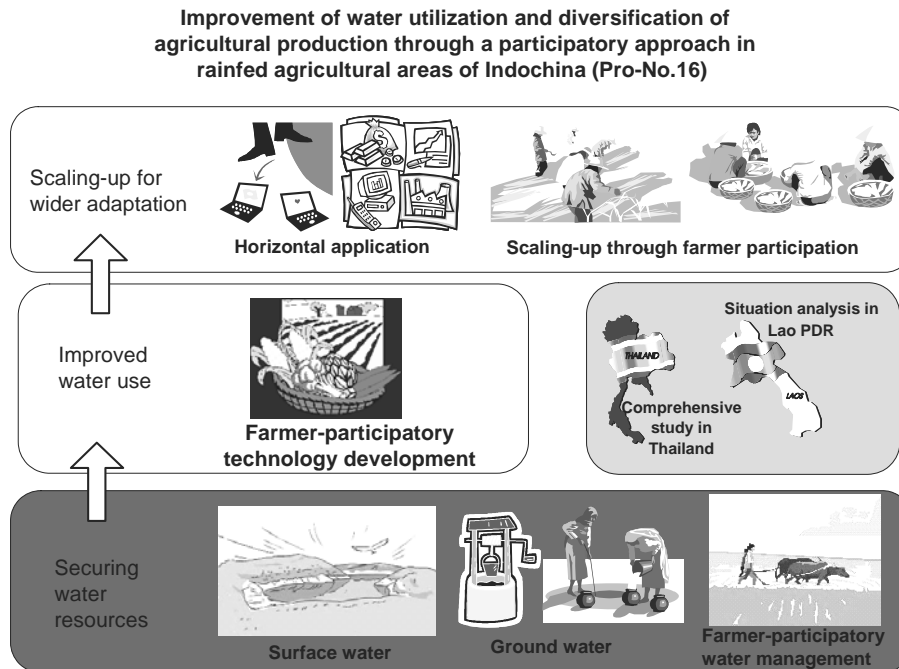
- 1-2 Developing technologies of environmental resources management and production-system management to sustain agriculture, forestry and fisheries.
- 1-3 Resolving global impacts of environmental changes on agriculture, forestry and fisheries and developing remedial technologies.
- 2 Clarification of the direction of technology development in developing regions and analysis of socio-economic conditions of development in rural areas.

Considering its mission (to contribute globally to address issues on agriculture, forestry and fisheries in developing countries through research activities), each project focuses on specific issues that are the crucial constraints for the development of rural societies. If some projects aim to develop new technologies to solve the technological constraints in the agricultural production system in the region, it is recommended to consider how the developed technologies effectively adopted by the farmers, thus contribute to poverty alleviation through improved productivities. The outlines of the selected ongoing projects are introduced as below.

(1) Improvement of water utilization and diversification of agricultural production through a participatory approach in rainfed agricultural areas of Indochina (Rainfed Agriculture)

Rainfed agriculture refers to farms that depend primarily on rainfall. Due to the stagnation of the irrigation facility construction these days, they are becoming widespread all over the world and the technology development which can be applicable in these areas is increasing its importance. For rainfed farms in the Indochina peninsula, technology for improved water use is crucial towards achieving stable agricultural production and income.

This requires a watershed-based approach that utilizes rainfall, shallow ground water and small-scale ponds. This project seeks to analyse traditional cropping methods and water-saving mechanisms using a farmer-participatory approach, in order to identify suitable water collection and distribution technologies with appropriate crop selection techniques. It also aims to realize increased farm diversification and higher incomes in the region. The project is implemented in Thailand and Lao People's Democratic Republic (Figure 1).

Figure 1. Outline of the Rainfed Agriculture project

Source: Courtesy by Osamu Ito, modified by author.

(2) Impact Analyses of Economic Integration on Agriculture and Policy Proposals toward Poverty Alleviation in Rural East Asia (ECOIN)

East Asia has attained high degrees of food self-sufficiency and economic growth. However, through such process, income inequalities have expanded within rural areas and between urban and rural areas. It has become increasingly important to alleviate rural poverty by various means including increasing agricultural income and creating rural jobs.

It is frequently commented that recent and rapid integration of East Asian economy will provide both good opportunities of reducing poverty and also negative effects. In fact, even some lately developing countries and areas such as Cambodia, Lao People's Democratic Republic and inland China are expanding their opportunities to export their agricultural products to advanced developing countries and international markets on the process of trade liberalization and transportation network development in the region. The liberalization of capital movements has also enhanced the investment of international food processing and supermarket companies to such developing countries, which promoted the production of high-value agricultural commodities and created rural jobs. The shift toward

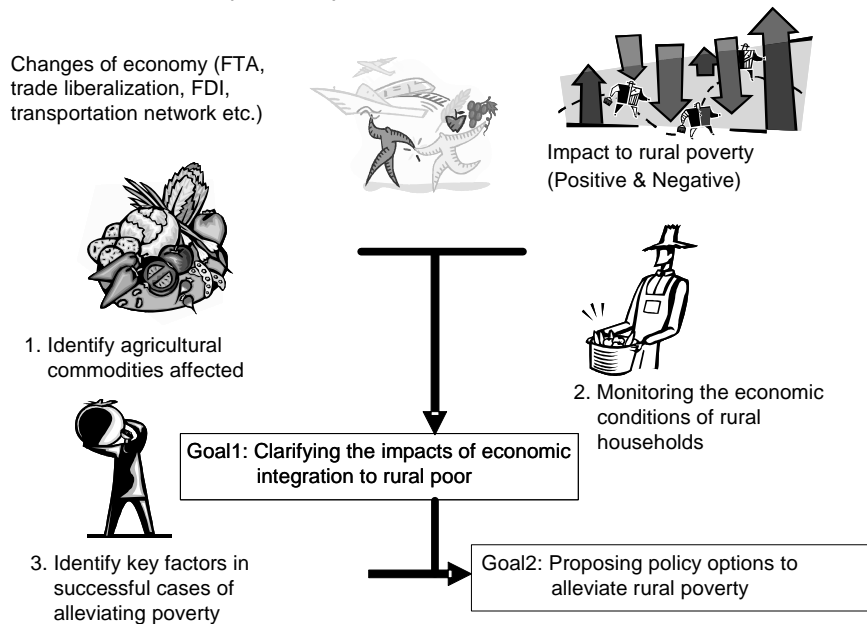
such high-value agriculture will result in a deeper integration between firm and farm sectors and will enable the structural change of traditional agriculture.

Attention should also be paid to realities that economic integration does not always provide positive effects for every region and social class. It has been more often said that, especially in the marginal areas where crop diversification and market access are difficult due to insufficient infrastructure, that economic integration has worsened poverty and even reproduced poverty due to fewer of educational opportunities

The project aims at clarifying the impacts of economic integration on East Asian agriculture, especially on diversified and high-value agriculture, and diversified income resources and employment opportunities through farming-marketing integration, thereby proposing ways to take advantage of economic integration for poverty reduction and to minimize negative influences. The project focuses not only on the impacts of economic integration but also on the measures for supporting the poor. The results of the study will be provided to policymakers for poverty alleviation. The project is implemented in Cambodia, China, Indonesia, Lao People's Democratic Republic, Malaysia, Thailand and Viet Nam (Figure 2).

Figure 2. Outline of the ECOIN project

Framework of ECOIN (Pro-No.33)



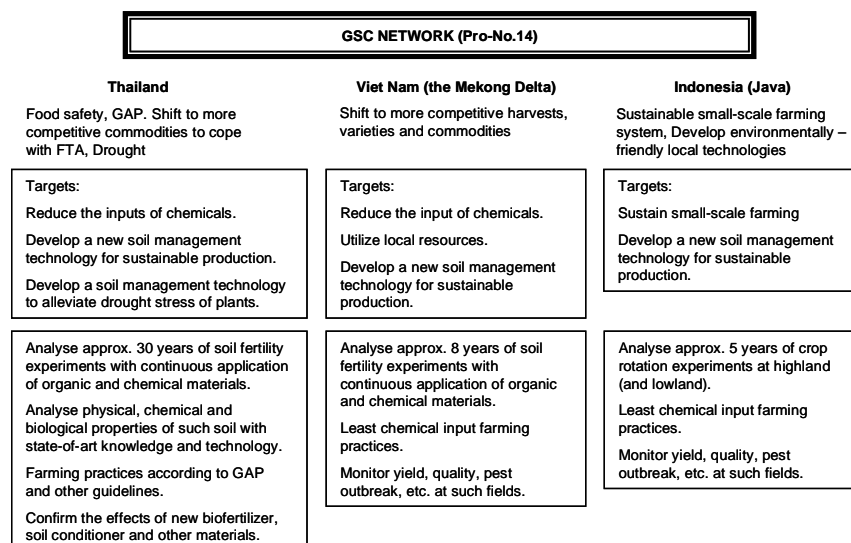
Source: By author

(3) Good Soil Care (GSC) in the tropics

In Southeast Asia, high-chemical input farming practice has resulted in yield stagnation in some crops, environmental degradation and more concerns for food safety and good agricultural practice. Therefore, agriculture in the region has gradually shifted to less-chemical input farming and safety-oriented production. Such shift necessitates more research on sustainable soil management with less dependence on chemical input.

The GSC Project aims to develop a model to evaluate resource inputs and environmental burden baselines, while conducting sustained measurements of the physical, chemical and biological properties of soil to illustrate the results of continuous application of organic matters and other practices (green manure/cover/crops, microorganisms, minimum tillage, etc.) in tropical agricultural land. The project tries to contribute to the welfare of rural small-scale farmers by improved soil productivities. The project is implemented in Indonesia, Thailand and Viet Nam (Figure 3).

Figure 3. Outline of the GSC project



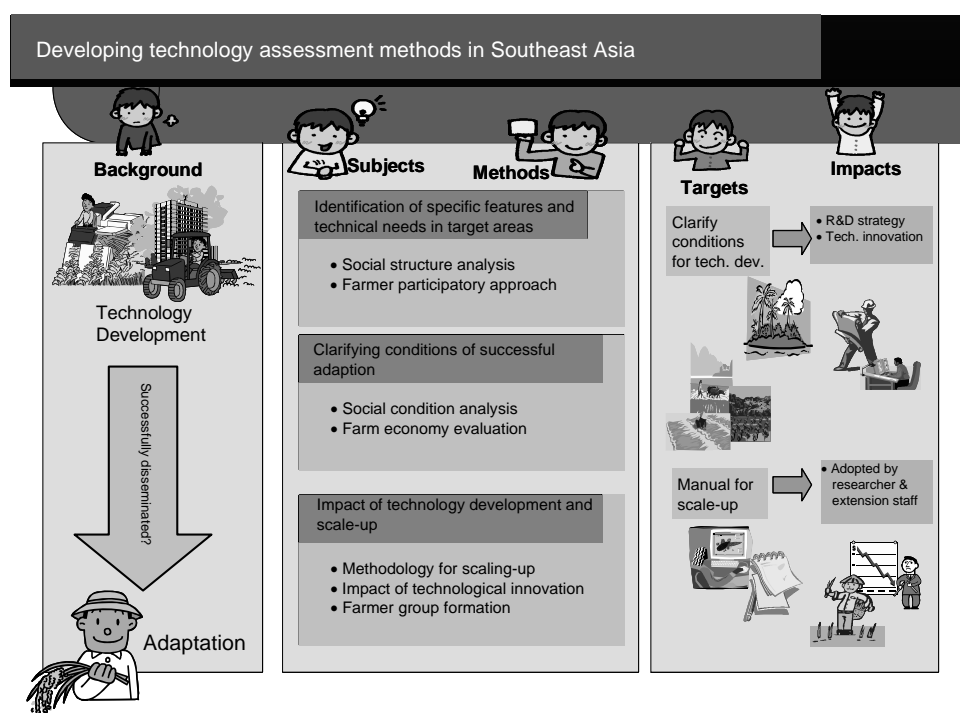
Source: Courtesy of Satoru Miyata, modified by author.

(4) Developing technology assessment methods in Southeast Asia (Technology Assessment)

To minimize the gap between agricultural technology developed by advanced institutions and those of farm level diffusion and adaptation, this project will develop a technology assessment and monitoring tool and conduct *ex ante* assessment and

comparative analysis on local farm management through participatory research. Influences and impacts of technology diffusion will be examined to develop a method of scaling-up. And socio-economic impacts of technology in rural society and interrelationships between individual farms and the community will be evaluated. The output of the project will be used by research managers and policy planners to formulate technology development plans that have wider impacts and stronger effects on rural poverty alleviation. The project is implemented in Cambodia, Indonesia, Lao People's Democratic Republic, Philippines and Thailand (Figure 4).

Figure 4. Outline of the technology assessment project



Source: Courtesy of Kumi Yasunobu, modified by author

JIRCAS's commitment to rural poverty alleviation

If we can distinguish four ways of poverty alleviation in rural areas as indicated below, which were proposed by UNESCAP-CAPSA in the conceptual framework of the Regional Meeting (21-22 November 2007, in Bangkok), the activities implemented by JIRCAS will be classified into categories 2 and 3.

1. Transferring cash to the poor
2. Increasing farm and labour productivity and income in agriculture
3. Including the local rural and agriculture economies in a wider process of economic growth
4. Reducing costs and increasing prices through subsidies.

Out of 33 projects implemented under the current mid-term plan, 31 projects belong to the programme 1-1, 1-2 and 1-3 (As indicated at the beginning of section 2), which are mainly focusing on technology development and its application to local farming systems. They will contribute to poverty alleviation through the improvement of productivities. The other two projects belong to programme 2, which aims to identify socio-economic problems in the target areas and then provide practical information to the policymakers in the region for their pro-poor policy formulation process.

To consider how JIRCAS can realize its commitment to poverty alleviation, it is useful to note several recent aspects of international agricultural research. First, the issue of 'scaling up' has become a major concern of research institutes. The basic concept of scaling up is that agricultural research should produce "more benefit and more equity to more people, more quickly and be more long-lasting" (IIRR, 2000). Based on this concept, donors and other stakeholders are not only expecting increased impacts but they are also emphasizing the quality of such impacts, especially sustainability and equity (Menter *et al.*, 2004).

After the economic depression in the 1990s, taxpayers in Japanese society, who are the major donors for Japanese ODA, have keener eyes on the efficiency and effectiveness of ODA. In 2003, the Government of Japan established its new ODA policies to intensify all efforts to deepen the relationship between Japan and developing countries. It is important for all the agencies to show the fact that their technological co-operation has successfully contributed to the development of the target countries.

Another trend to which attention should be paid will be the sharp decline of the public investment in rural development and agricultural R&D and increasing private investment into these areas. Private sector investment in agricultural research now exceeds the combined total investments of all the public sector research institutes in the world (Byerlee and Fischer, 2001).

As for JIRCAS, it is obliged to cut the research budget by 1 per cent and management cost by 3 per cent annually according to its Second Medium Term Plan. Therefore, it is encouraged to find an alternative resource other than governmental support.

However, most of the research funds in Japan focus on the development of state of the art technologies that are beneficial to domestic industrial development. It is not an easy task for JIRCAS to find a resource that expands R&D activities to contribute to poverty alleviation and rural development in developing countries.

If a shrinking budget is inevitable, the possible strategy will be the 'concentration, co-ordination and confidence' approach. Concentration means JIRCAS should concentrate its effort into the fields where it has better advantages and where public institutes like JIRCAS are expected to do. As is described by Anderson (2007), 'new pro-poor' research priorities (research subjects focusing on less-favoured areas and small-scale farmers) should be the major target of JIRCAS's R&D programmes.

Co-ordination means strengthened partnerships with collaborating organizations. For the effective use of limited resource, the collaborative works with National Agricultural Research Systems (NARS) both in developing and industrialized countries, international research systems like the Consultative Group on International Agricultural Research (CGIAR) is important. In this context, it is remarkable that JIRCAS provided its first contribution to UNESCAP for its collaborative research project in 2007. This reveals its intent to strengthen effort to contribute to the MDGs, especially the target of halving extreme poverty by 2015.

Confidence will be formulated if the farmers, the ultimate beneficiaries of the technological development can receive the fruit of newly developed technologies. To achieve farmers' confidence, JIRCAS should promote more active participation by farmers into its R&D process. The policy planners in the developing countries is another user of the R&D output, especially the information and recommendations formulated by the findings of the project. It is necessary to increase the effort to translate the findings into a clear and easy-to-understand format, which can be used by policy planners on their planning process of rural development.

Conclusions

During the discussion about the current mid-term plan, JIRCAS has shown three overall goals of its international collaborative research areas, namely, 1) sustainable development, 2) poverty alleviation and 3) science and technology improvement (JIRCAS, 2005). Considering the shrinking public allocation to agricultural R&D, the collaborative studies by JIRCAS should be results based and focus more on international development goals typified by MDGs. To achieve these goals, further effort will be useful for three "Cs",

namely, concentration on the prioritized subjects, co-ordination with the partners and confidence by the recipients and donors.

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Annex:**Ongoing projects by JIRCAS (as of FY 2007)**

	Project title
1	Development of abiotic stress-tolerant crops
2	Elucidation of molecular mechanisms of abiotic stress tolerance and improvement of stress tolerance in model plants
3	Improvement of drought and submergence tolerance of rice in Africa
4	Blast research network for stable rice production
5	Identification of stable resistance to soybean rust in South America
6	Development of technologies to utilize biomass resources in Southeast Asia
7	Value-addition to traditional agricultural products of Asia
8	Development of the stress-tolerant <i>Vigna</i> legumes in tropical and subtropical regions
9	Development of breeding materials to diversify sugar cane utilization
10	Technology to control reproduction in commercially important shrimp and prawn species
11	Research for suitable stock management in tropical/subtropical areas
12	Development of aquaculture technology suitable for Southeast Asia
13	Improvement of the fertility of sandy soils in the semi-arid zones of West Africa through organic matter management
14	Good Soil Care (GSC) in the tropics
15	Development of integrated rice cultivation system for reduced water availability
16	Improvement of water utilization and diversification of agricultural production through a participatory approach in rainfed agricultural areas of Indochina
17	Development of a sustainable agro-pastoral system in dry areas of Northeast Asia
18	Technical development for monitoring soil water and crop growth under drought stress in West Asia and North Africa
19	Establishment of a feeding standard for beef cattle and a feed database for the Indochinese peninsula
20	Verification of the effectiveness of the agro-pastoral system and development of supplemental feed
21	Production of <i>Brachiaria</i> forage grasses with improved quality and drought tolerance for efficient beef production in the tropics
22	Characterization and exploitation of Biological Nitrification Inhibition (BNI)
23	Development of environmental management technology for sustainable crop production in tropical and subtropical islands
24	Improvement of selective logging techniques for the conservation of biodiversity in the hill dipterocarp forests of Peninsular Malaysia
25	Development of techniques for nurturing beneficial indigenous tree species and combined

management of agriculture and forestry in Northeast Thailand's tropical monsoon regions

Project title	
26	Development of techniques for low tree height-cultivation and year-round production of tropical fruits such as durian, mangosteen, etc., in Southeast Asia
27	Stable food supply systems for mitigating the fluctuations in production and markets in China
28	Water supply fluctuations in Indochina
29	Enhancement of GIS applications for agricultural land information at local to regional scales
30	Development of management techniques for Citrus Greening disease in severely affected areas
31	Development of biological control against invasive insect pests on coconut trees
32	Developing technology assessment methods to determine factors that influence technology diffusion in Southeast Asia
33	Impact analyses of economic integration on agriculture and policy formulation towards alleviation of rural poverty in East Asia

Source: Author.

Note: Projects Nos. 1-12 are implemented under programme 1-1, Nos. 13-26 are under programme 1-2, Nos. 27-31 are under programme 1-3 and Nos. 32-33 are under programme 2.