Sustainable Development of Agriculture: Southeast Asian Perspectives and Issues

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ABSTRACT

In the context of agricultural research activities in the Southeast Asian region, the development has enhanced the human capacity of research institutions and has gradually changed research needs from crop productivity to diversification of production, competitiveness, and sustainability. In particular, this region is characterized by both a high potential of productivity per land unit and labor-intensive and resource-saving inputs that have resulted in very dense population even in rural areas. However, this situation has become a very severe constraint against the structural reforms that have been realized in some western countries based on the institutional liberalization and/or economy of scale. Many international collaborative research programs and/or projects have also gradually revealed such changes and characteristics in the region and have eventually focused on similar aspects for the region. Some have focused on the competitiveness of a target sector, area, and/or field by encouraging them to join the market and globalized economy; some have focused on the sustainability of a target(s) as a whole by emphasizing community-based approaches, while others have managed to adopt alternative ways to survive in the region by emphasizing subsistence activities.

Sustainable development of agriculture is an agricultural system that contributes to the protection of soil and water resources and biodiversity to exist along with the maintenance of adequate production both in forms of yield and quality for the basic requirements of farmers and consumers. This system includes integrated farming, organic farming, natural farming, agro-forestry, and other alternative forms of farming.

Cooperation among Asian countries is important in order to share the information on sustainable agriculture. At present, many research and development activities involve the participatory process, a strategy for the transfer of technology know-how that increases the capabilities of sustainable farming.

INTRODUCTION

For the past ten years, there have been significant economic reforms, changes in policy, and restructuring of government institutions in many Southeast Asian countries. In the field of agricultural research, however, researchers and scientists are still focusing on short-term prospects and supply-oriented issues. The present research fields need to be reviewed in order to provide more scientific bases for trade policy and crop productivity.

WHAT IS SUSTAINABLE AGRICULTURE?

Sustainable agriculture is a process closely linked to rural development. According to the Johannesburg Declaration adopted at the World Summit on Sustainable Development on September 2002, "sustainable

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development requires a long-term perspective and broad-based participation in policy formulation, decision-making, and implementation at all levels." Sustainable agriculture can be likened to a system of interdisciplinary research and education for which the various stakeholders – researchers, policymakers, farmers, laborers, and consumers – take responsibilities.

The FAO, on the other hand, offers the following definition: "Sustainable agricultural development is the management and conservation of the natural resource base, and the orientation of technological and institutional changes in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations."

Under this definition, sustainable agriculture encompasses fields as far flung as agriculture, forestry, fisheries, land, water, plants, animals, and animal genetic resources. This is why the stakeholders involved in interdisciplinary research and education must take responsibilities.

As a process, sustainable agriculture is also linked to family economics and personal goals. Families and individuals take the first step towards sustainable agriculture, approaching it in a participatory fashion. In this respect, sustainable agriculture is in a transition period.

THE ROLE OF AGRICULTURE

The roles of agriculture in Thailand underwent many changes in the 19th and 20th Centuries. At the beginning these roles were taken in the development of rural communities and organizations, but over time, national economic activities and government policies to maximize production and meet export targets came to be major factors.

The words "food security" and "food safety" are now used everywhere in the world. Government policies in these areas are especially important in this decade, as the world becomes more competitive. In Thailand, the government's agricultural policies seek to maximize production and meet export targets. In implementing the policy, at least five main patterns of sustainable agriculture are being promoted as alternatives to Thai farmers: the integrated farming system, organic farming, natural farming, agroforestry, and "New Theory" farming.

The first pattern, the integrated farming system, involves at least two kinds of agricultural production operating simultaneously and complementing each other in one way or another to reduce production costs. Successful integrated farming systems include various types such as fish-rice and pig-fish-vegetable combinations.

The second, organic farming, involves the farming of crops such as rice, fruits, and vegetables using organic fertilizers and herbal pesticides to supply the products to the markets in Bangkok and abroad.

The third, natural farming, attempts to avoid the use of input from outside the farm gate, as well as to reduce all physical methods that disturb the ecological base of farmland. This is still very far from commercialization and is practiced only in remote regions such as the northeast of the country.

The fourth, agroforestry, is a combination of farm production and forestry developed to conserve forest resources as well as biodiversity and the national economy. The farmers produce food, earn money, and, at the same time, enhance the forestry resources.

Finally, "New Theory" farming is a special farming pattern for small-scale farmers initiated by His Majesty King of Thailand. New Theory farming is practiced exclusively in poverty-stricken areas lacking water resources, that is, the areas where it is expected to yield the most benefit in the forms of food security, self sufficiency, and quality of life for farmers.

The populations of Southeast Asian nations are increasing, and the majority of these populations still live on the economies of agriculture (Table 1).

Table 1. Selected statistics on rural and urban population

Country	Total Population in 2002 (Million)	Rural Population (%)		Urban Population (%)		Projected Population in 2025 (Million)
		2000	2001	2000	2001	
Afghanistan	23.4	78	77	22	23	44.9
Bangladesh	143.4	76	74	24	26	178.7
India	1051.6	72	71	28	29	1330.4
Indonesia	217.6	59	57	41	43	272.4
Lao PDR	5.5	77	75	23	25	9.6
Malaysia	24.1	43	41	57	59	30.9
Myanmar	50.6	72	71	28	29	58.1
Nepal	24.1	88	87	12	13	38.0
Pakistan	149.1	63	62	37	38	263.0
Philippines	78.7	41	40	59	60	108.2
Sri Lanka	18.9	76	75	24	25	23.5
Thailand	63.4	78	69	22	31	72.7
Vietnam	80.6	80	80	20	20	108.0
Total	1931					2.5 billion

Source: Economic and social survey of Asia and the Pacific, ESCAP, 2000; ESCAP Population Data Sheet; 200 Key Indicaters 2002, ADB

It should be noted that the change in the share of agricultural GDP does not necessarily mean that the industries in Southeast Asian countries are inactive. The share of agricultural GDP in Bangladesh dropped from 35% in 1991 to 25% in 1999,while the annual growth rates of value added in agriculture and industry increased from 1.6 to 3.2% and from 4.3 to 4.9%, respectively. However, the share of agricultural GDP in Myanmar increased from 57% to 60% during that period, while the annual rates of value added in agriculture and industry rose sharply from -2.4 to 11.5% and from 1.5 to 13.7%, respectively. It seems that, although Myanmar is still a typical agricultural country, both agriculture and industry are developing very rapidly and improving the situation from this macro-economic viewpoint. It is up to these countries to choose the

Table 2. Changes in shares of agricultural GDP and annual growth rates of value added in agriculture and industry in Southeast Asian countries

Country	Share of agriculture in GDP (%)		Annual growth rate of value added in agriculture		Annual growth rate of value added in industry	
	1991	1999	1991	1999	1991	1999
Bangladesh	35	25	1.6	3.2	4.3	4.9
India	32	28	-2.3	0.7	0.8	6.4
Indonesia	19	19	2.9	2.7	11.7	1.9
Lao PDR	57.3	53	-1.7	5	19.9	7.5
Malaysia	17.3	11	0	3.8	11.2	8
Myanmar	57	60	-2.4	11.5	1.5	13.7
Nepal	59.0	42.0	2.2	2.7	12.5	6.0
Pakistan	26.0	27.0	5.0	1.9	6.9	2.5
Philippines	21.0	18.0	1.4	6.0	-2.6	0.9
Sri Lanka	27.0	21.0	1.9	4.5	4.1	4.8
Thailand	12.0	10.0	6.5	2.7	12.1	9.5
Vietnam	–	25.0	2.2	5.2	9.0	7.6

Source: Asian Development Bank Outlook---2000 and 2001; FAO Country Tables, Asian Development Key Indicators 2000; World Bank Atlas 2001

industries in which to invest.

If a similar comparison is made between Nepal and Vietnam, both of their growth rates are somehow decreasing. In Nepal and Vietnam, however, the growth rate of the value added in agriculture is increasing. Given their importance to food security and food safety, these trends must be carefully reflected in the strategies used to balance food supply and demand in the next 20 years.

COOPERATION AMONG ASIAN COUNTRIES

The ten ASEAN member countries are now cooperating together in many ways. I have attended the ASEAN meetings for last three years as a DOA representative. Some of these meetings have consisted of ASEAN members +2 (Japan and China) and ASEAN +3 (Japan, China and Korea). Current initiatives include partnership programs, joint projects, trilateral cooperation, and subregional cooperation.

We have shared much information and have developed some collaborative research projects. Though data on agriculture is often limited in each individual member country, a collection of such data from all member countries may help us explain more could be freely shared among all members. Similarities in climate and agricultural production in the region will make the compilation of limited information from member countries more meaningful and useful. These experiences will also help the Asian and Pacific regions work together in pursuing their policies in a more harmonious way. A host of new issues such as sanitary and phytosanitary measures (SPS), maximum residue limits (MRL) and information on crop history from cultivation to harvesting and packaging will require regional dialogues and cooperation based upon collaborative research. But who will be the focal point for such collaboration? One of the reasonable and realistic focal points will be JIRCAS. I am sure.

THE ROLE OF THE NATIONAL AGRICULTURAL RESEARCH SYSTEM

We must, however, recognize that there are barriers to international cooperation that are more or less the same in Southeast Asian countries. In a majority of the countries, for example, research is run by government administrations that frequently change their policies and resource appropriations. Another barrier is the lack of awareness of timely issues among policymakers, particularly intellectual property rights, trade competitiveness, globalization, and biodiversity protection. In addition, the time required for government and/or parliamentary approvals may also become a roadblock.

Moreover, for a sustainable agriculture and participatory system to succeed in the region, research must encompass the aspects of cooperation, training, and discussion amongst stakeholders, the government, and the private sector. Other factors affecting agricultural development in Southeast Asia include government policies and commitments, infrastructure development, agricultural inputs, the marketing of agricultural produce, agricultural extension services, human resource development, and the government land reform/land tenure policy. All these aspects play crucial parts in the success of the current efforts of research institutions, including those of JIRCAS, a body that promotes the collaborative development of the following present research projects in Southeast Asia:

- Technology for reducing post harvest losses of rice
- Development of technology and their practices for sustainable farming in the Mekong Delta
- Rainfed agriculture in Indochina through the efficient use of water resources
- Technology for rehabilitation of tropical forests
- Sustainable production systems

CONCLUSION

Researchers face numerous questions as they pursue sustainable agriculture and research development, including questions on how their activities and research need to change. They also face a host of strategies, visions, and goals from which to choose as they move forward, including effective strategies for rural communities, NARS, and realistic implementation. Whatever their choices are, all must appreciate the importance of building stronger partnerships and pursuing common goals. Partnership stands for prosperity and takes its strength from diversity.