

Agriculture Development and Area Studies: An Experience from Southeast Asia

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ABSTRACT

The agricultural and agrarian structure in Southeast Asia have changed considerably over the last two or three decades due to the introduction of new technologies in crop management and expansion of economic development. However, these changes have raised a number of complex problems and constraints that crop scientists, agronomists or agriculturalists alone have not been able to address. One major question is whether the high-input-type production technologies that have been adopted in intensified and diversified agricultural systems in Southeast Asia will be sustainable from socio-economic, cultural and environmental viewpoints. The suburban areas that have achieved high agricultural production have been disregarded to a great extent due to the spectacular expansion of industrialization and urbanization. Even if the agricultural sector is almost relegated to the sidelines in national development plans, there remain many rural areas in which agricultural research activities should be implemented with new approaches and scopes in order to sustain agricultural production and improve social welfare.

To deal with this situation, it might be useful to explore relevant methodologies in the "area studies," that is, studies that focus on an "area" as a whole through the collaboration of natural, social and cultural scientists. As discipline-oriented research or science deals with its own field of studies and specific methodologies, it eventually has limitations in terms of research implementation and application of research results. Agricultural economists, for example, tend to analyze the economic conditions of households or communities without due consideration of the natural conditions in which they exist. Researchers specialized in cultural studies and social sciences like to interview local people in order to analyze issues such as kinship relations, power structures, and basic principles and concepts controlling life solely for their own theoretical purposes. Natural scientists, such as ecologists, also carry out research to understand the "natural" ecosystems that concern them without due consideration of human and social interactions with them.

Although these norms seem to prevail in discipline-oriented sciences, various efforts for reforming or reconstructing them have been made in the face of various problems and constraints associated with modernization and globalization. Ecologists, for example, were usually and traditionally interested in "natural" ecosystems and their successions, but some of them have begun to carry out research on artificially sustained ecosystems such as agriculture and forestry. Their attention is drawn not only to weeds and pests but also to "ordinary" plants and animals that are not visibly related to the production, and they have tried to reevaluate the farmers' roles in maintaining such "artificially sustained" ecosystems (actually, "natural" for both weeds and pests and "ordinary" plants and animals). Some anthropologists have also paid attention to local people's indigenous knowledge and technologies and tried to reevaluate them to substitute them for modern technologies.

Agricultural scientists have traditionally conducted field experiments either in experimental plots or in farmers' plots in order to develop and disseminate improved, more productive technologies. However, it has not been common for them to extend their interest from the "field" of experiments to the "field" of area's

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social or cultural conditions. Taking this into account, I will present some of my case studies carried out in Vietnam (related to cropping systems and farming systems research), Laos (related to rural development) and Indonesia (related to social forestry) to call attention to the need to develop more productive collaboration between agricultural scientists and area-study researchers. “Area” is both a “field” of complex interaction of nature, human beings and society, and a “field” of scholarship in which intensified and diversified collaboration of various disciplines will be materialized.

WHAT ARE “AREA STUDIES”?

Area studies are difficult to define. Many researchers conducting them are studying completely different fields. If forced to settle on a single definition, area studies can be described as academic elaboration to specify an “area” as a peculiar geographical (or historical, cultural, social, physical, ecological, etc.) unit that can be distinguished from “others.”

Area studies are often conducted through fieldwork (on-site investigation). As the many natural, social, and cultural components of the “area” require interdisciplinary collaboration, the researchers and institutions engaged in area studies must switch from “discipline-oriented” approaches to “discipline-blended” ones. They also share a responsibility to participate in the areas or regions they are studying, and must create provisional visions of how to do so.

If asked to define the area studies approach in the field of agronomy, we can draw up a series of curriculum vitae describing the eco-histories and current situations in research sites by investigating the human-nature interactions in agriculture, forestry, environment, and natural resource management in collaboration with local people.

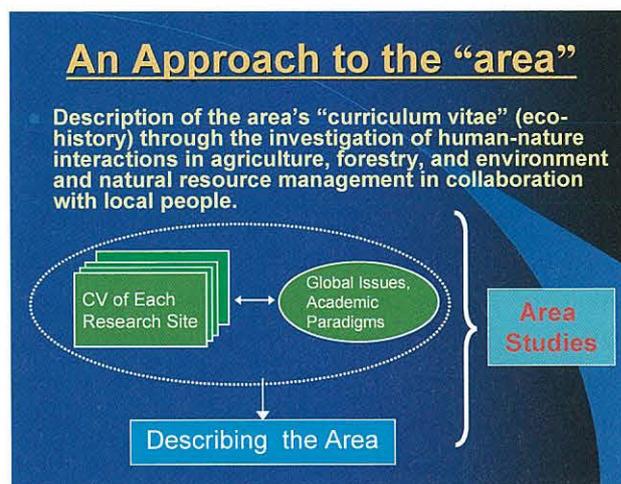


Fig. 1. An approach to the “area”

WHAT IS HAPPENING IN SOUTHEAST ASIA?

The modernization of agriculture and globalization of the economy have wrought many significant changes in Southeast Asia. Rural populations are migrating to cities, subsisting on different sources of livelihood, and contending with the new monetary economy. Economic development continues to take a heavy toll on land, water, and biological resources, and the management of natural resources has been a frequent point of conflict among states, institutions, and people. Three case studies on local areas in Southeast Asia illustrate the different forms that these changes have taken in the last decades.

Transformation of rice-based cropping patterns in the Mekong Delta of Vietnam

Prior to 1975, the Vietnamese people had reclaimed their agricultural lands on many frontiers. Traditional agricultural activities included the location-specific development of rice-cropping in the Delta, abundant fishing activities by seasonal migrants, the trapping of small animals, and the collection of bee honey. When the Vietnamese government began digging out the canals in the Delta region after 1975, new settlements were created and agricultural cultivation greatly expanded, particularly that of paddy rice. The traditional methods of seasonal cultivation were quickly replaced by double cropping of winter-spring and

summer-autumn rice, triple cropping, and the expansion of broadcast rice.

When new technologies were introduced in the 1970s, the traditional pattern of mono-cropping was replaced by newly developed systems for intensified cropping in the Delta Region. Later, when the government introduced its new economic policy, many commercial commodities such as soybeans, sugar cane, corn, and artificially cultivated shrimp were introduced into the rice-based cropping patterns. A drastic change to diversified cropping systems ensued.

Since the middle of the 1990s, the Vietnamese government has been trying to commemorate, preserve, and rehabilitate the wetlands in the Delta Region. Some of the wetlands are being planted with

Development of Canal Excavation and Changes in Rice Cultivation

- ◆ **Environmental Change by Canal**
 - Creation of new settlements
 - Decrease of acidity
 - Decrease of original wetland vegetation
 - Stable water supply through canals
- ◆ **Changes in Rice Cultivation**
 - Decrease of seasonal rice
 - Increase of double cropping of winter-spring and summer-autumn rice
 - Expansion of broadcast rice

Fig. 3. Development of canal excavation in the Mekong Delta

Human-Nature Interaction in the Delta before the Expansion of Intensified/Diversified Rice-Based Farming (Prior to 1975)

- Location-specific development of traditional rice cropping systems in the wet season
- Fishing by seasonal migrants
- Catching of small mammals
- Collection of bee honeys

Fig. 2. Traditional rice-based farming in the Mekong Delta

Intensification and Diversification of Rice-Based Cropping Systems

- Double cropping of rice →
- Triple cropping of rice →
- rice + soybeans →
- rice + sugarcane →
- rice + fruits + freshwater shrimp →
- floating rice + maize →
- seasonal rice + freshwater/brackish-water shrimp →

Fig. 4. Intensification and diversification of rice-based cropping systems in the Mekong Delta

Rehabilitation and conservation of wetlands by *Melaleuca* plantation

- ◆ Attending Ramsar Convention
- ◆ Rehabilitation for commemoration of Vietnam War battlefield
- ◆ Bird-watching Wetland tourism development

Fig. 5. Rehabilitation and conservation of wetlands by *Melaleuca* plantation in the Mekong Delta

Conservation of wetlands and development of timber forestry by government vs. agricultural land development by local people

- ◆ Abolition of state farms and enclosure of protected areas for bird sanctuaries
- ◆ Conversion of state farms to forestry cooperation and joint-ventures for pulp industry
- ◆ Recommendation of agro-forestry by introducing *Melaleuca* plantation

trees and agricultural commodities in order to generate foreign currency income through the promotion of eco-tourism and agro-forestry. Incentives have come from the Vietnamese participation in the Ramsar Convention, the benefits of rehabilitation for the indigenous birds, and the desire to preserve the battlefields of the Vietnam war both as memorials and sources of economic benefit.

These government efforts stand at odds with the interests of the local people, who still wish to expand their agricultural lands. Once again, environmental issues have become a serious point of conflict between a government and local people.

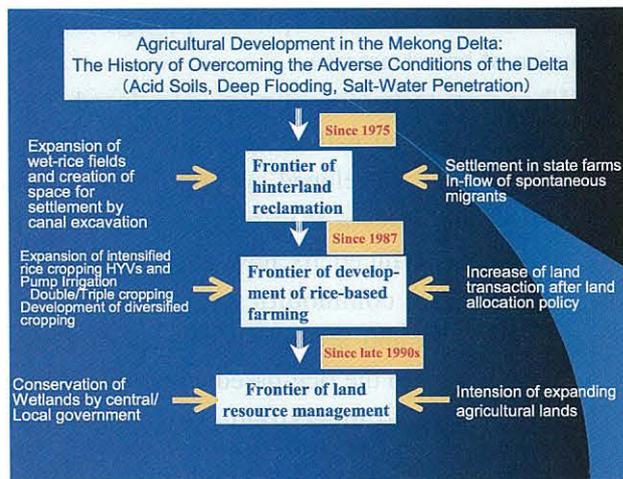


Fig. 6. The history of overcoming adverse conditions of the Mekong Delta

Shifting cultivation and land-allocation program in the northern mountainous region of Laos

In the course of economic liberalization, agricultural production in Laos is being transformed from a means of subsistence to a source of commercial revenue. Extensive research and effective government policies will have to be implemented to surmount the many challenges to agriculture in the country. Laos has a diversity of landforms and ethnic groups, a geographically isolated central region, an underdeveloped legal system, dominance of upland rice growing under shifting cultivation systems, and a high dependency on natural resources.

The government is now attempting to halt shifting cultivation practices by implementing land allocation programs, yet disparities and unevenness in their implementation has been creating many problems. The process of implementation consists of several steps. Once the government designates land use divisions between forestlands, agricultural lands, and others, it demarks the borders between them, measures the land areas, and allocates field plots to local people (who subdivide them amongst themselves). The programs are proceeding unevenly, as mentioned, and they have hampered rice production due to the limited numbers and areas of the plots. Local people remain dependent on non-timber forest products whose production levels continue to decline.

Policymakers will have to examine the present conditions in greater detail. In the mountainous region, people of all classes derive as much as half of their income from forest products. Their traditional system of shifting cultivation is very well organized, employing a combination of slash-and-burn fields and fallows for the collection of non-timber forest products and useful plants. In many cases, scientists look over the function of fallows when considering shifting cultivation.

Since the implementation of the land allocation program, local people have been forced to change their agricultural systems: in particular, to stop the conventional shifting cultivation systems and to establish more sedentary systems by introducing cash-earning crops within a limited number of allocated field plots. As far as alternative technical supports will not be provided, the program will not reach the final goal, that is, eliminating the shifting

Income Distribution and Source of Income in Selected Villages in NMR of Laos		(Source: Yamada et al.2001)			
Classification of HH by wealth ranking (No. of HHs)	Income per capita (USD/year)	Source of Income (%)			
		Crops	Livestock	Wage labor	Natural Bio-Resource
Lowland Paddy Villages					
Wealthy (30)	65.2±13.5	49 ↑	27 ↑	10 ↓	14 ↓
Middle (21)	33.0±6.6	36 ↑	23 ↑	27 ↓	14 ↓
Poor (24)	24.1±3.7	22 ↑	19 ↑	25 ↓	34 ↓
Hillside/Valley Villages					
Wealthy (11)	40.6±12.0	26 ↑	47 ↑	18 ↓	11 ↓
Middle (43)	31.0±4.0	13 ↑	28 ↑	33 ↓	26 ↓
Poor (43)	27.1±2.3	2 ↑	10 ↑	55 ↓	33 ↓
Mountainous Villages					
Wealthy (43)	57.3±4.5	3 ↑	48 ↑	2 ↓	47 ↓
Middle (39)	28.0±2.5	2 ↑	34 ↑	4 ↓	61 ↓
Poor (32)	24.4±2.0	2 ↑	30 ↑	7 ↓	61 ↓

Fig. 7. Income distribution and source of income in selected villages in Laos

cultivation by 2010.

Social forestry program in the borders between agricultural lands and forests in Eastern Indonesia

The historical changes of land use in South Sulawesi, Indonesia provide another example of conflict between a government and local population. The situation arises very often in the fringe of forest areas demarcated by the government without due consideration to local customs and laws. The forestland has been occupied and progressively cleared by local people and migrants who moved in to cultivate commercial crops such as cacao and 'kemiri' (candlenut tree, *Aleurites moluccana*), an oil-producing plant.

To solve this "illegal" reclamation, local governments introduced a new policy, under which "illegally" reclaimed agricultural land can be recognized as their farm land insofar as the land is planted with trees. The policy has been implemented as forest rehabilitation programs by planting useful trees such as fruit orchards and kemiri as well as mix-planting trees and local crops. Various actors appeared to draw benefits from the rehabilitation programs, and local peoples and the government confronted each other on many occasions throughout the entire process.

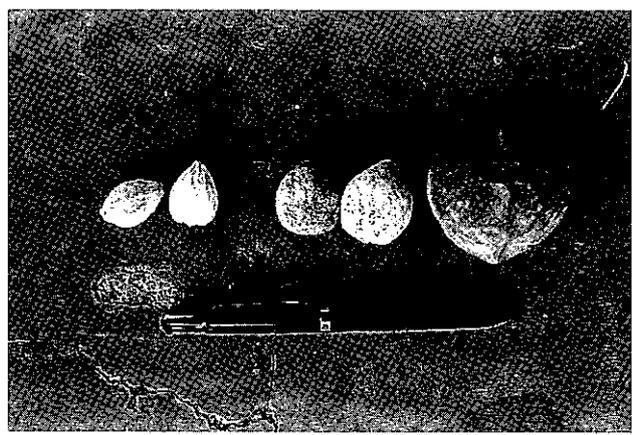


Fig. 8. 'Kemiri' (*Aleurites moluccana*) plants and oil-containing fruits

CONCLUSION

In order to develop the on-site approach for integration, agricultural researchers urgently need to establish the integrated groups and avoid the conventional forms of discipline-oriented research. The "areas" in "area studies" consist of many components and complicated problems that cannot be solved by agronomists alone. Collaboration with scientists in other fields and sustained human resource exchanges among institutions will be crucial.

The great Japanese agronomist Tokiyoshi Yokoi once wrote, "Listen to the farmers about agriculture." By extension, area researchers are well advised to "Learn from the local people about their areas."

