

OVERVIEW OF THE RECOMMENDATIONS FOR POVERTY ALLEVIATION THROUGH AGRICULTURAL DIVERSIFICATION: BASED ON STUDY RESULTS OF AGRIDIV PROJECT¹

Tomohide Sugino

Project Leader of AGRIDIV, UNESCAP-CAPSA

Based on the AGRIDIV country study results during phase I and II, policy recommendations were formulated by country study teams in eight participating countries. As a conclusion of the project, this chapter presents the analysis on the policy recommendations which were classified into ten categories, namely: (a) Technological development, (b) Marketing, (c) Infrastructure and information, (d) Credit, (e) Processing, (f) Price and trade, (g) Input, (h) Regional cooperation, (i) Farmers group, and (j) Land policy.

Technological Development

The previous experience of technology development has shown that technology itself cannot necessarily solve the problem of poverty. Even so, nearly one-third of policy recommendations in the country studies are related to technological issues. They consist of various items from individual technology development to solve a specific problem to institutional renovation of R&D systems including linkages between research and extension.

This fact strongly suggests that technology development for secondary crops in the region is still in formative stage. In most Asian countries, the R&D effort has been concentrated into major cereals, especially rice. Technological development for secondary crops has been very low, mainly due to limited financial resource in each government. For example, in Myanmar, only less than 1% out of total expenditure of MAS (Myanmar Agricultural Service), which is the main technical body for the Ministry of Agriculture and Irrigation, is allocated to CARI (Central Agricultural Research Institute), which is mainly responsible for research on secondary crops (Kyi, 2005). However, thanks to this "neglect", technologies for secondary crops still have enough room to be developed, while the yield increase of rice faces stagnation in these several years in spite of continuous efforts of research.

Most country studies concluded that the government should increase budget allocation to secondary crop related R&D activities. This recommendation is based on

¹ A paper presented in AGRIDIV in-country seminars held during March 2006 in the participating countries.

the better profitability and comparative advantage of secondary crops than major cereals, especially in the rain fed upland areas. For example, the results of economic analysis in Indonesia indicated that all secondary crops, except soybean, have comparative advantage. From sensitivity analysis, it was also concluded that the comparative advantages of maize and groundnut are relatively stable towards changes in import parity prices or changes in yields (Siregar, 2006). Considering that rice is a strategic commodity in the context of food security in the region, proposal to shift R&D focus from rice to secondary crop development might not be welcomed very much, unless concrete evidence for the usefulness of secondary crops is shown. Therefore, it is important to disseminate the findings in the project, which indicates positive impacts of secondary crops to welfare of rural poor farmers.

As is mentioned in the recommendations in Lao PDR, comprehensive approach will be necessary, which includes measurement to maintain productivity of rice as well as to improve production system of secondary crops. Food diversification, which means diversification of dietary pattern from rice centered one to combination of various alternative staple foods, will be another way to reduce pressure of rice production. However, previous experiences have shown that the successful cases of food diversification were rarely observed except developed countries where people increased consumption of meat, fish, fruit, vegetable and other high value commodities while decreased staple food consumption. This policy needs time to be successful until the consumers in the region have sufficient purchase power for high value commodities. Therefore, efforts to increase productivity of rice should be also continued to ease pressure of rice production and provide farmers with land for secondary crop production.

Most of the governments in Asian developing region face financial difficulty and it is difficult for them to meet all the technology development needs with the limited financial and human resources. Therefore, prioritization of R&D topics is quite important to conduct technology development effectively. According to the result of the questionnaire survey conducted to the researchers in AGRIDIV regional study, policy planners in the participating countries, technologies to improve soil fertility with local resources (green manure crops, compost, etc.) and development of varieties with high pest tolerance, both of which can reduce chemical fertilizer and pesticide inputs are recognized the most important technologies out of major R&D topics for agricultural diversification. The results reflect the features of agriculture in Asian developing region, existence of excess labor in rural area and lack of capital to improve their agricultural production. These "cost saving technologies" should be prioritized in the R&D activities in the region (Table 1).

Table 1. Summary of recommendations (Technological development)

<p>(Priority of R&D topics)</p> <ul style="list-style-type: none"> ➤ For appropriate policy decisions, profitability analysis, marketing research and demand projections are necessary at regular intervals (Bangladesh). ➤ Efforts should be made for the collection and preservation of germplasm of secondary crops to save them from the threat of possible extinction (Bangladesh). ➤ The genetically modified high yielding cultivars suiting marginal production environments are an effective option (India). ➤ The increase of paddy/rice consumption, which is linked to population growth, could be met through increased unit yield (Lao PDR). ➤ Mechanized farming will be required in order to decrease production costs and increase work efficiency (Lao PDR). ➤ Research activities for income improvement in shifting cultivation areas to stabilize shifting cultivation (Lao PDR). ➤ Replacement of low potential/pest susceptible older varieties with newer, high yielding varieties (Lao PDR). ➤ Better crop management with popularization of line sowing and adoption of other management technologies (Lao PDR). ➤ Development of location-specific crop production technologies, especially through the adoption of non-monetary inputs (Lao DPR). ➤ The identification and selection of appropriate rhizobium strains, which are variety-specific for high yield and technique for effective inoculums (Myanmar). ➤ Soil Conservation and fertility Improvement such as construction of low-cost check dam for soil erosion, use of organic matter mixed with nitrogen containing chemical fertilizer etc (Myanmar). ➤ Cassava and maize production technologies on sloping land for the sustainability of the production system should be developed (Vietnam).
<p>(Institutional support)</p> <ul style="list-style-type: none"> ➤ Efforts should be made to disseminate research findings to the farmers regularly through the extension system. Training programmes for extension agents should be arranged (Bangladesh). ➤ To improve professionalism, it is essential to design a system of motivating the researchers (Indonesia). ➤ Action should be taken at the national level to promote the adoption of recommended technology packages by farmers to enhance Secondary crop productivity (Sri Lanka). ➤ Extend the learning process by transferring the ideas of the farmers who have succeeded in diversifying their production systems (Thailand).

Processing technologies are included in Table 5.

Marketing

One of the common problems of secondary crop marketing in the participating countries is high marketing cost or inefficiency of the commodity chains. This is primarily because the marketing systems for secondary crops are yet well developed while major crops can enjoy governmental support to improve marketing system such as infrastructure, and provision of market information.

As a solution of this problem, contract farming is recommended in most participating countries. Contract farming can provide mutual benefit to both producers and consumers, if it effectively worked. However, the partnership between both parties is not easy to be developed. For example, farmers are sometimes suspicious about the way processors determine the quality of crops such as moisture and starch contents of cassava, while the latter may impose higher price cut on the ground of the low crop quality which is sometimes difficult to be justified by farmers (Siregar, 2006). Though contract farming is a pure private commercial activity, well controlled governmental intervention will be required until the system will be matured. To formulate mutual trust between the parties, intervention of government will be necessary by making clear and fair rules for contract farming and providing monitoring system for the contract in its formative stage (Table 2).

Table 2. Summary of recommendations (Marketing)

<p>(Contract farming)</p> <ul style="list-style-type: none"> ➤ Newer options like contract farming cooperatives and group action may lead to better opportunities to augment farm income. (India). ➤ The forward sales contract system (FSC) should be expanded to overcome marketing constraints (Sri Lanka). ➤ In the context of smallholders, contract farming should be developed closely with farmer organizations (Vietnam).
<p>(Others)</p> <ul style="list-style-type: none"> ➤ Enhance market information access to credit for those who are willing to enter business in marketing, to increase marketing efficiency (Indonesia). ➤ It is necessary to find a place in the export market for new species of pulses other than the existing traded species, which are commonly traded by other country (Myanmar). ➤ Regarding the OTOP project aiming to raise the income of rural families, the government is urged to enlarge the marketing network from the local level up to the national and export levels (Thailand). ➤ The establishment of product traceability by Protected Designation of Origin (PDO) or Geographical Indication (GI) is a means to the improvement of quality (Vietnam).

Infrastructure and Information

Most recommendation about infrastructure development is concerning irrigation facilities. Reflecting the fact that large scale irrigation development is difficult to be developed due to financial and environmental reasons, the recommendations were focused on the small scale irrigation schemes using tube wells and small tanks which can be developed and managed by the rural poor farmers with proper financial and technological support by government. Storage facilities are another focus of secondary crops development. Since most poor secondary crop farmers have difficulty to use the storage facilities, they are forced to sell their products as soon as after harvest. This deprives the farmers of their liberty to decide when to sell their product, resulting lower income.

Provision of information about secondary crops is also major concern in many countries. The major contents are price and market information to help farmers to decide when they harvest their crops to maximize the profit. The necessity of technological information such as quality of commodity is also suggested in several countries from the view point of fair trade between farmers and processors (Table 3).

Table 3. Summary of recommendations (Infrastructure and information)

<p>(Irrigation)</p> <ul style="list-style-type: none"> ➤ Small scale irrigation to satisfy water requirement of secondary crops, which is usually less than rice, should be promoted (Bangladesh). ➤ In dry season, better maize yield is expected because of less disease and pest problems. Area under irrigation should be increased in order to promote dry season maize (Lao PDR). ➤ State assistance should be provided to encourage the cultivation of secondary crops with irrigation through agro-wells and under minor irrigation systems (Sri Lanka). ➤ Building a smaller scale irrigation facility for secondary crops would save budget and no foreseeable conflict with the public. Also, building farm ponds have to be urged with water management and selection of crops (Thailand).
<p>(Other infrastructures)</p> <ul style="list-style-type: none"> ➤ Storage facilities, especially cold storage for tuber crops should be improved to save products from post harvest losses (Bangladesh). ➤ Better market mechanisms, roads, processing facilities and other appropriate infrastructure should be developed in ensuring the long-term diversification of secondary crops (India). ➤ Planning for infrastructure construction should be well organized to eliminate repetition in operations and budgeting (Thailand).
<p>(Information)</p> <ul style="list-style-type: none"> ➤ Local government should provide farmers with information that may disclose all information on how processing firms weigh and determine quality of secondary crops to reduce transaction costs and for efficient markets (Indonesia). ➤ It is necessary to establish agricultural market information service for producer, trader, exporter and consumer through radio and television etc. to promote domestic and international marketing of secondary crops (Myanmar). ➤ A crop production and market price forecasting system should be established (Sri Lanka). ➤ The local government should deliver market information to support small scale processors for their marketing (Thailand).

Credit

Due to the limited availability of formal credit, secondary crop farmers, especially those who are without solid financial background, have to rely on informal lending sources by paying high interest rates, resulting in the repayment of the interest squeezes the slight profit that the farmers earned from production (Kyi, 2005). To solve the problems, various credit schemes for secondary crops were recommended in the

country studies. It includes extending the term of repayment which is mostly limited to the length of one cropping season or at most one year in many credit schemes, in order to promote long term investment to secondary crop based agriculture.

The key for success to expand accessibility of credit will be to secure the guarantee of repayment. Since most secondary crop farmers are resource poor, creditors usually have suspicion if their debt can be repaid. Microfinance scheme, which formulates farmers' group as recipients of the credit, already popular in Bangladesh, will be one of the solutions to decrease the number of default cases.

Small scale farmers often face difficulty to get collateral when they access to the credit schemes. "Storage-cum-credit scheme" is a unique approach to solve the problem, which allows farmers to borrow loan from bank for their urgent needs, while using stored commodities as collateral (Alam, 2005). Additional effort to improve condition of credit will also be useful such as publishing certification for the access to credit, stabilization of banking system and adjustment of exchange rate (Table 4).

Table 4. Summary of Recommendations (Credit)

<p>(Access to credit)</p> <ul style="list-style-type: none"> ➤ A special credit programme especially microfinance scheme should be launched for the production and processing of secondary crops (Bangladesh). ➤ Improving farmers' accessibility to credit for secondary crop production (Indonesia).
<p>(Credit scheme for a specific purpose)</p> <ul style="list-style-type: none"> ➤ The storage-cum-credit scheme now under operation through the Department of Agricultural Marketing should be extended to secondary crop growers so that they can store their commodities and borrow from banks to meet their urgent cash needs (Bangladesh). ➤ Working capital is the major factor affecting farmers' decision about cropping pattern. Farm input should be subsidized and farmers' access to cheap credits be improved (Indonesia).
<p>(Others)</p> <ul style="list-style-type: none"> ➤ Since land certificate is required to have credit from the banks, the National Agency for Land Certification (BPN) should accelerate a Low-Cost Land Certification Program. ➤ It is necessary to improve the banking and financial sector stability (Indonesia). ➤ Huge difference between official exchange rate and parallel market rate should also be unified while stabilizing exchange rate (Myanmar). ➤ Along with the improvement of MADB (Myanmar Agricultural Development Bank) operation, promoting the involvement of private banks in agricultural financing and designing small-scale credit schemes would benefit rural people (Myanmar). ➤ Amend the Village Fund's rules to extend farm loans to more than one year's terms. A refinancing program should be adopted to allow the farmers for re-borrowing to repay farm debt and a longer-term loan for a new investment. The village committee/farm group members should work as credit supervisors having government agents attached (Thailand).

Processing

The recommendations regarding processing focused on small scale processing in rural areas. There are several benefits of promoting small scale processing rather than large scale, in the context of poverty alleviation. Development of small scale processing units can improve marketing efficiency of secondary crops because the distance from farmers to the processing units becomes shorter and no involvement of middlemen (Siregar, 2006). Traditional processing devices create employment opportunities for rural people, particularly for women (Alam, 2005), who are more vulnerable poverty in rural areas.

Most secondary crop excels in nutrient value, comparing to major cereals. Millet contains twice energy, four times protein, nine times fat as much as rice. Mungbean contains three times iron than spinach (calculated by the author based on JST, 2005). It is useful to facilitate media (radio, television, newspapers etc.) come forward to focus on the utility of secondary crop products as nutritionally rich food and inform people about the versatile use of these crops (Alam, 2005).

In addition to above mentioned conventional processing, modern processing such as bio-degradable plastics and bio-fuel will be also effective way to increase demand for secondary crops and solve the environmental problems. Though only country study in Thailand mentioned that as the world fuel price becomes more expensive, production should be expanded to produce more ethanol (Roonnaphai, 2006), this issue should be more focused in the future policy planning in the region (Table 5).

Table 5. Summary of Recommendations (Processing)

(Small scale processing)
<ul style="list-style-type: none">➤ Providing needed impetus for effectively canalizing maize produce to the various post-harvest uses by establishing small-scale post-harvest manufacturing units in the hinterlands. This will not only provide incentives to the producers by way of commensurate prices, but will also smoothen the marketing and disposal hassles (India).➤ It is necessary that local government rehabilitate ITTARA (Small scale cassava processing program) units. Rehabilitation of each ITTARA unit should be based on a comprehensive benefit-cost study and through participatory approach involving local community (Indonesia).➤ Develop agro-based industries at the cottage level as well as at the large-scale commercial level through incentives and concessions to stakeholders (Sri Lanka).
(Processing technologies)
<ul style="list-style-type: none">➤ Attention should be given to modernization and capacity utilization of processing mills and plants (Bangladesh).➤ Commercial uses of secondary crop products for animal feed and as raw materials to industry have to be researched and encouraged (Bangladesh).➤ Since international market's demand for processed form is increasing, Myanmar has to learn the processing technology and find the market places for processed form of pulse (Myanmar).

Table 5. continued

<ul style="list-style-type: none"> ➤ As production potentials exist for maize, research on maize processing for non-food industries is suggested to be supported (Thailand). ➤ Research on maize processing should be supported as almost all maize production goes to the mills currently (Thailand). ➤ Agro-processing will create employment in rural areas. The introduction of varieties adapted for processing and for the export market is important. There is also demand for the improvement of equipment and institutions for better quality management in the agro-processing chain in order to match high quality markets (Vietnam).
<p>(Quality of products)</p> <ul style="list-style-type: none"> ➤ People need to be made more aware of the high calorie and protein content of secondary crops. Different processed food has to be demonstrated to make them popular under initiatives both public and private (Bangladesh). ➤ The mass media should come forward to focus on the utility of secondary crop products as nutritionally rich food and inform people about the versatile use of secondary crops (Bangladesh). ➤ Small-scale processing firms should maintain the sanitary standards of their products. They should be registered and organized into co-operatives. Loans with simple terms with a low rate of interest should be provided (Bangladesh). ➤ Most of the processed pulses are below international standards in quality and it is a hindrance for the development of viable agro-based industries. The development of viable agro-based industries remains essential in creating employment and raising the living standards of the rural populace. FDI could be the only way to improve the situation at the moment (Myanmar).
<p>(Modern processing)</p> <ul style="list-style-type: none"> ➤ To increase the demand for secondary crop commodities, the government should put high priority on research and development in industrial uses of secondary crops e.g. the use of sweet sorghum for bio-fuel (Indonesia). ➤ Regarding cassava, as the world fuel price becomes more expensive, production should be expanded to produce more ethanol (Thailand).
<p>(Institutional support)</p> <ul style="list-style-type: none"> ➤ The Ministry of Agriculture should have a separate division to facilitate and monitor agro-processing activities in the country. It should co-ordinate such activities with other departments and ministries (Bangladesh).
<p>(Others)</p> <ul style="list-style-type: none"> ➤ An appropriate system to ensure easy access to the imports and the use of processing machinery and equipment should be developed (Sri Lanka).

Price and Trade Policy

All the participating countries lack the price policy which effectively supports the secondary crop farmers, while these supports are available for major cereals. Price support is an effective way to promote secondary crop production and stabilize or increase farmers' profit. However, if considering the current financial difficulty in each government, it is less relevant to recommend establishment of another price support

scheme which increase a financial burden of governments. One of the practical options will be to reduce current price support to major cereals to provide incentives for farmers to shift their cropping pattern from rice mono-culture to secondary crop diversified one. Price support policy as well as relatively higher import tariff to major serials results in a huge cost to the society in the form of net welfare loss. Lower rice prices which will be induced by the ban of these policies also cause real wages to increase without any increase in nominal wages paid by employers in non-agricultural sectors. In other words, the combination of relatively low nominal wages and high real wages would stimulate job creation and economic growth that are absolutely necessary for sustainable poverty alleviation (Siregar, 2006). Of course, this option should be carefully designed since rice is a strategic and sometimes political commodity (Table 6).

Table 6. Summary of Recommendations (Price and trade)

<p>(Price policy)</p> <ul style="list-style-type: none"> ➤ A rational price policy should also be formulated to ensure remunerative prices to secondary crop growers as well as major cereasl growers. This can be made effective through the procurement of produce by the government from the growers and distribution to the consumers in open-market sales. To this end, the procurement price should be determined ahead of harvest. An agricultural price commission should be formed to recommend procurement prices, regularly monitor price fluctuations (Bangladesh). ➤ Price support policies for rice should be removed (Indonesia).
<p>(Trade policy)</p> <ul style="list-style-type: none"> ➤ Farmers should be protected from international competition through the imposition of high tariffs on imports of secondary crop products, particularly on imports of maize and pulses (Bangladesh). ➤ Duty on imported raw materials used for producing snacks at home should be reduced. On the other hand, supplementary duty should be imposed on imports of finished products. This will make domestic products more competitive in the market (Bangladesh). ➤ Cash incentives should be introduced for exports of products made from secondary crops like vegetable which is given a 30 per cent cash incentive for exports (Bangladesh). ➤ Import tariff and import ban for rice be removed such that farmers have less incentives to grow paddy (Indonesia). ➤ Import tariff should be imposed for wheat so that food diversification would be mostly based on domestic production of secondary crops (Indonesia). ➤ The national tariff structure should be amended in order to restrict the import of secondary crops and ensure better producer prices to domestic products (Sri Lanka). ➤ Non-tariff measures such as limit of toxic substances in crops or agro-processing products, sanitary and phyto sanitary measures (SPS), Good Agricultural Practice (GAP), GMP and HACCP should be fairly applied to imports in order to prevent trade deterioration. In the FTA, Mutual Recognition Agreement (MRA) should be settled bilaterally (Thailand). ➤ Enhancing trade management capacity on agricultural products for both state and commodity chain stakeholders is necessary for the international trade rules in the negotiations (Vietnam).

Input

The recommendations for input use mainly focused on fertilizer and seed. Lack of effective marketing system and farmers' access to credit to purchase inputs are the major impediments for securing adequate input supply. Poor farmers do not use the required material inputs for crops due to their financial inability (Alam, 2005). It is also reported that there are shortages of improved seeds and planting materials for promoting crop diversification, due to the absence of private input suppliers and the high price of imported materials (Douangsavanh et al., 2006).

As countermeasures for these problems, subsidy schemes are recommended in several countries. The input use for secondary crop production is still low. Therefore, the output which will be expected by increase of input use is relatively higher than major cereals. It is useful to evaluate the benefit of input use to convince the relevancy of the subsidy schemes. In addition to the institutional measurements, technological issues such as site-specific fertilizing to save input use and promotion of organic material use by formulating farmers group to conduct collective activities to produce green manure are also effective and more economical ways to solve the problems (Table 7).

Table 7. Summary of Recommendations (Input)

(Input policy in general) <ul style="list-style-type: none">➤ Special subsidies should be provided for inputs to be used for secondary crops to encourage appropriate input use (Bangladesh).➤ Ensuring timely and adequate availability of inputs, namely, seeds, fertilizers and irrigation water, and credit to the farmers (Lao PDR).➤ Harmonization of the private and state sector is necessary in enhancing the capacity of input supply (Myanmar).➤ It is necessary to make strong logistic supports from public sector and to encourage private sector participation in this business through appropriate incentive schemes and to develop a program to reform and implement a private/ public partnership for production and distribution of quality farm inputs like fertilizer and pesticides in accordance with the fertilizer law and pesticide law (Myanmar).➤ Develop a system to encourage all stakeholders engaged in the production of seeds and planting material pertaining to all secondary crops to ensure adequate availability of quality stocks of high yielding varieties to the farmers at the village level (Sri Lanka).➤ The efficiency of input supply should be increased to reduce the input cost (Vietnam).
(Fertilizer) <ul style="list-style-type: none">➤ Local government should play significant roles in helping farmer groups to produce organic fertilizers, providing farmer groups with shallow tube-well pumps, and identifying and overcoming the causes of fertilizer shortages (Bangladesh).
(Seed) <ul style="list-style-type: none">➤ To resolve problem of quality seed supply, government should develop and supply foundation seeds for some crops. Private seed farms should implement multiplication of these foundation seeds to minimize government interference in the market economy (Lao PDR).➤ Due consideration in a seed industry development policy should be paid to the international standard in intellectual property rights or plant variety protection (Myanmar).

Regional Cooperation

The request of regional cooperation was recommended by several countries. There is tremendous diversity in Asia and the Pacific to size of the country, economic policy regime, level of economic development, socio cultural aspects and natural conditions. Therefore, it can be safely said that there is enough possibility to formulate regional collaboration schemes which can produce mutual benefit. Within the participating countries, processing is the field in which the cooperation is expected. For example, cassava industry in Thailand is well advanced in the region including various products from starch to bio-degradable plastics. The experiences in Thai can be used as lessons in other cassava producing countries in which cassava industry is under development (Table 8).

Table 8. Summary of Recommendations (Regional cooperation)

- The success stories in the region need to be properly documented and widely disseminated among people. Regional cooperation is required to carry forward research and development activities (Bangladesh).
- Collaborative programmes with regional countries should be implemented to enhance the processing and trade of secondary crops (Sri Lanka).

Farmers Group

Farmers group can be an effective organization to solve problems which small scale farmers cannot handle individually. Support for farmers group is recommended in several countries. While farmers group have several functions, the recommendations focused on their role as a media of contract farming and recipient of developed technologies. Contract farming can avert the associated risks and uncertainty and establish strong vertical linkages between production, marketing and processing (Singh, 2005). On the other hand, for resource poor farmers who don't have sufficient knowledge about the concept of contract farming, they hesitate to join or face difficulty to comply the conditions of the contract. Farmers group can become a party of contract farming which can reduce the risk both for individual farmers and processors or traders. It can be also useful as a recipient of credit and newly developed technologies (Table 9).

Table 9. Summary of Recommendations (Farmers group).

- Group action may lead to better opportunities to augment farm income (India).
- Collective farmer group participatory programmes should be formulated and implemented for the cultivation of secondary crops within larger land tracks (Sri Lanka).
- Promote group procurement of farm input. Besides, arrange for the production of organic fertilizers, compost and bio-extracts having a community fertilizer plant to be managed by the farm groups (Thailand).
- Small-scale farmers and particularly the poor need collective actions and adaptive market institutions to establish good links with the market (Vietnam).

Land policy

Some countries recommended revision of land policies, mainly from the viewpoint of strengthening farmers' motivation to invest their own land. Legally protected land use rights can be used as collateral for loans, which will reduce credit constraints faced by producer throughout the country (Kyi, 2005) Establishment of proper land use plan to use the natural resource effectively reflecting the comparative advantages of the area, will be also required to maximize the income of rural poor farmers. (Table 10).

Table 10. Summary of Recommendations (Land policy)

- More freedom in land use and clear land use rights protected by a legal system are prerequisite for farmers to invest in their land and to improve their productivity. The legal transaction of users' rights contributes to a situation in which more efficient farmers are able to produce more. The use of land right as a loan collateral will reduce credit constraints faced by producer throughout the country (Myanmar).
- Uncultivated rice lands under rain fed, major and minor irrigation schemes should be utilized for agricultural diversification (Sri Lanka).

Overall Conclusion and Recommendations

As a conclusion of the project, we would like to propose criteria for designing and implementation policy measurements and development actions which will contribute to poverty alleviation through secondary crop based agricultural diversification.

- Technology development for secondary crops should be strengthened. The allocation of R&D resources should be examined based on the effect of the developed technologies to the welfare of rural poor farmers. Development of cost saving technologies should be prioritized.
- Contract farming is an effective measurement to provide mutual benefit both to producers and consumers. The clear and fair standard of contract and monitoring system should be provided by the initiative of government.
- Construction of small scale irrigation, storage facilities and provision of market information should be prioritized in infrastructure development.
- Credit schemes should focus on resource poor farmers. Practical measurement such as grouping of credit recipient is necessary to assure repayment.
- Small scale processing is an effective measurement to mitigate rural poverty and should be supported by credit and appropriate technologies. Modern processing has potential to expand secondary crops demand which should be monitored carefully to use opportunities for poverty alleviation.
- Current price support and import trade policy for major cereals should be carefully examined if these policies deteriorate poor people's welfare.

- The input use for secondary crop production is still low. Therefore, the output which will be expected by increase of input use is relatively higher than major cereals. It is useful to evaluate the benefit of input use to convince the relevancy of input subsidy schemes.
- There is enough possibility to formulate regional collaboration schemes which can produce mutual benefit based on the differences in socio-economic conditions.
- Formulation of farmers group should be supported to solve problems which small scale farmers cannot handle individually, especially to promote contract farming and technology dissemination.
- Legal protection of land should be secured to strengthening farmers' motivation to invest their own land.

Reference

- Alam, J. 2005a. Enhancing sustainable development of diverse agriculture in Bangladesh, CAPSA Working Paper No. 80
- Alam, J. 2005b. Secondary Crop Based Farming Systems and Their Integration with Processing and Marketing in Bangladesh, CAPSA Working Paper No. 87
- Douangsavanh, L. 2006. Enhancing Sustainable Development of Diverse Agriculture in Lao People's Democratic Republic, CAPSA Working Paper No. 89
- Japan Science and Technology Agency (JST), Food Composition Database, <http://food.tokyo.jst.go.jp/> (7 February 2005)
- Kyi, A. 2005. Enhancing the sustainable development of diverse agriculture through CGPRT crops in Myanmar: Current status of CGPRT crop agriculture and identification of its development constraints, CAPSA Working Paper No. 85
- Mahrouf, M., Enhancing Sustainable Development of Diverse Agriculture in Sri Lanka, CAPSA Working Paper No.83
- Roonnaphai, N. 2006. Enhancing Sustainable Development of Diverse Agriculture in Thailand, CAPSA Working Paper No. 90
- Siregar, M. 2006, Secondary crops based farming systems and their integration with processing in Lampung, Indonesia, CAPSA Working Paper No. XX.
- Siregar, M. 2006. Enhancing sustainable development of diversified agriculture in Indonesia, CAPSA Working Paper No. XX.