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The Role of Smallholders in Thai Agricultural Development

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ABSTRACT

The role of smallholders in underpinning the Thai economy through exported and domestic product and supporting their 70 percent of the population without government welfare is emphasised in a review of the needs for smallholder development. Economic development models are discussed in a context of agriculture fuelling economic growth with a revision of assumptions that family farms can be viewed as a phase toward large-scale commercial agriculture. Intensive smallholder agriculture permits production of high quality produce, efficient use of by- and waste products in integrated systems, and maintenance of cultural values. The review concludes that specific attention to smallholders is a primary responsibility of government and requires policies based on alternative agriculture, self-sufficiency and social welfare as distinct from the commercial policies of agribusiness.

Key words : smallholders, economic development, self-sufficiency, agribusiness

INTRODUCTION

Thai smallholders produce the majority of agricultural products, the raw materials utilised by agribusiness, and contribute most of the labour (Suphanchaimat, 1998) for an industry that continues to be a major export income source as well as a social welfare system. Policies that have supported agribusiness as an instrument of national development assumed that resulting innovation would meet wider government objectives. However, the diffuse benefits of agricultural research have discouraged agribusiness to assume a creative role, and interpretations of declining comparative advantage in agriculture with rising labour and resource costs, have led to reduced investment as smallholders became increasingly associated with poverty (Christensen, 1992).

Smallholders have been marginalised from foreign development systems, which take a limited economic perspective. In addition, they have not received the full benefit of those approaches that understand smallholders because assumptions of sound government systems, efficient legal environments, and practical social welfare programs proved erroneous. This may be more clearly expressed by considering the specific economic context in

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which smallholders operate, while noting the sharing some characteristics of family farms across cultures. Elements of traditional or risk management agriculture which remain in smallholder agriculture as misnamed 'low input' systems appear to include means for improving environmental management, social well-being, and yields (Uphoff and Fernades, 1999). Such non-economic factors are already as important as economic aspects of the sector, even if not fully recognised.

This review considers some of the diverse literature concerning smallholders in global economic development approaches in Thailand, the economic role of agriculture, the viability of family farms, the efficiencies of integrated production systems, and concludes with a description of policies that acknowledge smallholder needs.

Economic development models

Agricultural development in less developed countries has often been modelled on one of three bases: social issues associated with agriculture and rural dwellers in industrialised countries; producing a higher proportion of domestic foods in food-deficit developing countries, or, economic and political interventions for major food industrialised exporters. A fourth category, the major agricultural exporting developing country, has often been an assemblage of the above models, rather one that suited to the special case that is Thailand. The economic environment for Thai agriculture is characterised by special factors such as changes in domestic markets, fixed marketing costs such as transport, access to international markets, and inferior negotiating power in an over-supplied global economy (Malcolm *et al.*, 1996).

Capital in Thailand has been oriented to manufacturing and industry as these appeared to provide higher economic returns. Such policies are borrowed from more developed countries where economic surplus and international negotiating power can be expected and where a low proportion of the population are engage in agricultural production; this is clearly not the case for Thailand. In addition, the model assumes a free market and that agricultural productivity will increase continually, as appears to occur in countries where research and education support expansion. The absence of a large smallholder sector in these models should cause reconsideration of their application without modification.

Economic growth from Thai farming has not matched those of manufacturing and industry, creating a concentration of poverty around smallholder agriculture. The employment role of agriculture for more than 70 percent of the workforce, and its limited returns, introduce social policy imperatives that do not naturally arise from conventional imported models. Developing countries more commonly can fall back on the link between food production priorities to reduce a national food deficit, through such means as price setting, which incidentally assists smallholders. Thailand again does not fit this mould.

Institutions oriented to assisting Thai smallholders have been constrained by their historical origins and a government orientation to taxation. Inconsistent policy choices have favoured privileged groups and reduced public accountability resulting in, for example, increased cassava grower poverty and relative reductions in educational access, which

might otherwise have allowed informed bargaining with the State (Sirirprachai, 1998). This institutional constraint has not been specifically addressed through aid financing organizations, and has been exacerbated by other economic conditions that impact on producers. The assumption that government policy assistance to agribusiness will create flow on benefits to all in the sector appears to be invalid.

Smallholders have further been caught in a wider economic context which includes the factors of Thailand's: inferior international negotiating position in political and agricultural commodity price terms; poor regulation leading to potential for exploitation of less educated rural dwellers; history of taxing rural surpluses to support national, and particularly, urban programs with minimal social investment into agricultural areas; conceptual, knowledge, and empathic separation between central planning oriented more to the region and the world than to the hinterland; industrialisation policies which favour foreign firms seeking low-cost skilled labour, with supporting government-related funds and finance, and assumptions that agriculture represents less than 20 percent of economic activity when the combined sector may comprise as more than 50 percent.

The link between agriculture and the Thai economy has been clear through the recent financial crisis (ADB, 1999); in such times it limits economic contraction, in other times, it funds growth.

Agriculture: The engine of growth

In creating growth, Thai agriculture has provided a rising range of goods that have benefited all, particularly the urban populace. The common path of development is based on agricultural surplus being invested in manufacturing, usually agro-industries, to create further surpluses for investment in other industries, with the increased national wealth so generated creating demand for manufactured products. This is the model of agriculture as the engine of economic growth (Figure 1). Following from this agriculturally created economic growth, the rising proportion of the work force engaged in, and economic output of, the industrial sector, necessarily leads to a declining proportion of the work-force engaged in agriculture. Agriculture as a proportion of total value within the economy also declines while agricultural output per unit of labour in agriculture increases. In industrialised countries, the rate of change will be largely determined by the relative returns that can be received in the industrial, compared to the agricultural sector. However, the rate of this change appears to depend of the relative contribution of agriculture to an economy, and the development of underpinning services in education and social welfare, and reliable regulatory frameworks, areas that have been criticised in Thailand in recent years.

The assumptions of the past two decades, that economic development associated with a decline in the numbers engaged in agriculture in more developed countries should apply to Thailand and that this would be accompanied by rising employment in the manufacturing and industrial sectors, remain unverified. They may yet prove to be valid, although the export orientation of Thai agriculture and agribusiness, and the high proportion of the population engaged in the sector, indicate that the change will be slow.

Smallholder production systems, high rural populations, urban policy biases, inequities in agricultural land ownership (Feder, *et al.*, 1987) and poor access to capital, among other factors have led to a higher relative rate of poverty in rural areas. Unlike Thailand, occurrence of such an outcome in an industrialised country is usually addressed through broad social welfare policies and continual increases in agricultural output efficiency; the dotted line in Figure 1 stresses the need for agricultural producers to benefit from national economic growth in a viable development model.

Expansion of an economy leads to a declining proportion of additional income being allocated to food and other agricultural commodities. The response in industrialised countries is one of rising technological innovation to increase efficiency of agricultural output, in order to allow producers to maintain income levels. Rises in agricultural production and oversupply further depress agricultural prices, leading to global competition for development, ownership, and application of innovations in agriculture. Agricultural nations within such an industrialized system require this constant technological innovation in an age when their ownership limits access and necessitates high levels of research investment (Malcolm *et al.*, 1996). Agronomic techniques, use of disease controlling organisms and varieties, continuous breed improvement strategies, market research, storage enhancement, as well as genetic modification of crops and a range of other outputs from high cost and high management-demand agricultural research programs, highlight imperatives for both government and private investment. The dilemma for Thailand is how to balance and pay for the application of this expensive technological

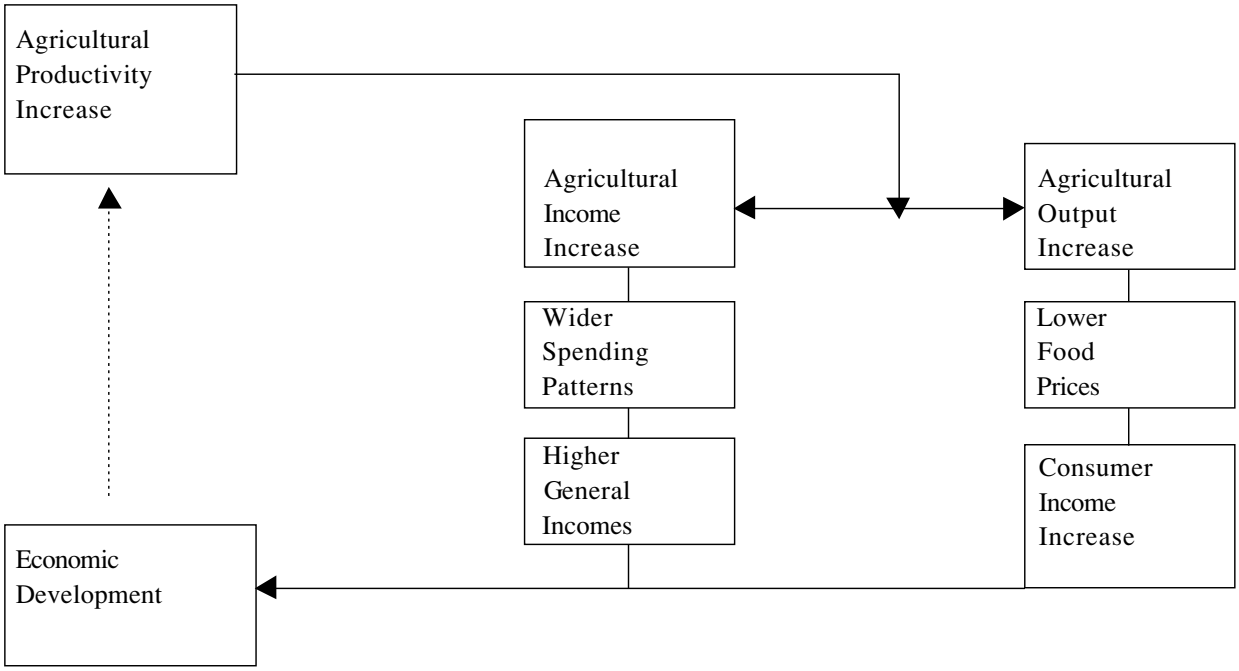

Figure 1 The agricultural engine of economic development (Falvey, 1996).

innovations while enhancing equity for small rural-based families.

Industrialised countries offer producers a choice of remaining in agriculture despite declining incomes in some cases to enjoy the intangible benefits associated with a rural lifestyle supported by social equity policies. However, increased output per unit of input allows maintenance or increases in commercial farmer incomes, as the total number of farmers declines. The industrialised country model for economic development and agriculture requires close government monitoring; an alternative is the recognition of the different rates of growth of the industrial and agriculture sectors, and increased public desire for perceived improvements in management of the natural environment, and hence direct subsidy of farmers by tax payers and consumers. Such subsidising of farmers through price support requires even greater government skill. As adopted in the USA and Western Europe, this approach can stimulate surplus production with unfortunate consequences for other major agricultural countries that operate on world market prices. Countries such as Thailand, may well be excluded from these and other high priced markets.

Where one country's volume of product does not significantly depress global prices, such a situation can be tolerated. However, if one country is the main supplier, and particularly if the commodity is its major agricultural product, as is the case of rice for Thailand, the full impact of being a global price taker with rising competition from other low-cost producers and a poor negotiating position with wealthy countries may accrue to smallholders. In addition, government intervention the markets for rice, sugar, maize, and rubber have, at different times, caused smallholders to react in a manner unfavourable to both their interests and those of Thailand (Siamwalla and Setboonsarng, 1989).

The pattern of a declining proportion of national income and employment deriving from agriculture is common to wealthy nations, and is a major influence on economic approaches to agriculture and rural development. However, political suggestions that Thai agriculture will decline in importance and that within one decade the 70 percent of the population associated with agricultural production will decline to four percent is unrealistic (Bello *et al.*, 1998). Hence smallholders are of continuing critical importance to Thai agriculture, and the economy.

Family farms

Visions of a future Thai agriculture operated by agribusiness on large holdings applying ever new technologies appear to assume economies of scale in agriculture analogous with manufacturing processes. In fact, the majority of farms, even in industrialised countries, remain as family units employing minimal additional labour, because opportunities to reduce average costs by increasing the size and introducing job specialisation are few in the biological and human fields of farming. Sequential tasks that provide economies of scale in manufacturing are uncommon in agriculture beyond a farm size manageable by a family, except in industries with high levels of mechanisation, and in intensive agricultural industries.

The levels of risk manageable within an enterprise also limit farm size. Debt servicing ability

is affected by seasonal and market variations, with rising levels of borrowing incurring higher interest rates. Requirements of around 80 percent equity a farm enterprise, to maintain viability in the cost-price conditions of unsubsidised Australian agriculture for example (Malcolm *et al.*, 1996), further calls into question some smallholder credit-based development strategies in Thailand.

Contract farming has been assumed in some projections to be an interim stage to larger scale commercial agriculture. Instances in the Chiang Mai valley, indicate that a diversified product base can encourage smallholders to enter into supply contracts in order to gain the requisite skills and contacts to also trade in the open market themselves. Variations occur according to the individual smallholder and crop type; for example, tomato and potato crops are tradeable in the local market and Japanese cucumber and hybrid maize seed are not, while contract vegetable soybean requires large uniform pods, rejects of which can be sold on the local market (Wiboonpoonse *et al.*, 1998). Such contracts suit larger farmers in better areas. Smallholders in poorer areas may lack both the requisite initiative and investment for joining agribusiness, which itself will invest first in higher potential areas in terms of management, marketing, and productivity. Cooperative arrangements have been shown to work in some cases, although rely on a functional regulatory environment to offset industry-lobby power.

Smallholder farmers seek to avoid price and seasonal risks through farming systems that have evolved sophisticated management approaches viable under sometimes oppressive economic conditions. Thus, economic development models derived from the different conditions of industrialised countries are not necessarily the only viable approach for agriculture (Berhman, 1967). Smallholder farmers who tolerate the impact of their own poor decisions and the unforeseen circumstances may fail under policy environments that assume a level of formal education uncommon in rural Thailand. Thus the first and major input for improvements in agriculture, whether following the modernisation path or one of self-sufficiency, remains improvement of the ability of smallholder farmers to access and use information.

Intensive care of individual plants or animals can contribute to the sustainability of the smallholder farming systems. By contrast, industrialised agriculture, covering large areas through mechanisation, relies on judicious yet widespread use of chemicals which fuel concerns of environmental contamination and food safety. In a global agricultural trading economy, free market platitudes can easily be confounded by chemical residue levels in food products. However, the natural advantage of smallholders being able to use less chemicals to produce a quality product is not realised where high technology packages form a critical part of a national agricultural development strategy. Integrated pest management seeks to gain the benefits of both approaches, and provides a partial solution; another part is effective marketing investment.

In discussing smallholder agriculture, some analyses have focussed on small land holdings and the crops that are grown on them. A wider view acknowledges the integrated nature of smallholder farms and the impossibility of segregating crop from animal production from social well-being.

Enterprise integration

Smallholder production systems show low outputs of conventional items such as meat, fibre, and milk. For this reason, past development policies have assumed that output efficiencies can be improved by changing smallholder systems to intensive monocultural systems. Such approaches have been largely unsuccessful, as has been seen in a failure of government investment in technology transfer; in fact, the costs can be greater in terms of the loss of the real benefits of integrated smallholder agriculture, as can be illustrated in such industries as poultry. The use of by-products as feed, and multiple outputs such as draught and social functions, can be shown to exceed the production efficiencies of intensive animal mono-cultures. Likewise, improvement of smallholder systems need not rely on replacement by intensive production approaches; for example, rather than intensive Western dairy complexes, increases in milk production from working cows can be effected from feeding to meet nitrogen needs according to the cow's physiological state, work needs, and age (Zerbini and Wold, 1999).

In the same way, the two to five buffalo per smallholder which graze rice straw and stubble and receive traditional medical attention, provide draught power, fertiliser for rice fields, clearing of stubbles, and weed control as an integral component of smallholder family life. The 40 million ton of rice straw and stubble available annually for bovine consumption (Chantalakhana, 1993) otherwise contributes substantially to the annual Southeast Asian smoke haze (Kaosaard and Rerkasam, 1999). Nevertheless, mechanisation of irrigated agriculture under the Sixth and Seventh National Economic and Social Development Plans (Rijk and van der Meer, 1984) led to a decrease in buffalo numbers by about 60 percent by 1999, as credit for small equipment expanded (Bunyavetchewin *et al.*, 1994). Buffalo cows substituted for males and were valued above their cost, in reflection of the intangible benefits of integrated systems (Chantalakhana, 1994) have usually been undervalued in national planning analyses. The archetypal smallholder role of Thai buffalo is indicated by less than one percent being raised on ranches (Chantalakhana, 1995).

Smallholders raise cattle as the preferred bovine meat associated with its loin cut size and marbling, which have been enhanced with Brahman and other cross-breeding. However, smallholder risk perceptions (Jeamsinkul, 1989) have led to low levels of technology uptake, with less than one percent adopting 18 of 24 simple available technologies, and with only one technology, traditional castration, being conducted by more than 50 percent (Chantalakhana, 1993). Such observations can now be related to reconsideration of indigenous cattle (Ministry of Agriculture and Cooperatives, 1999), which have been subject to research biases that overlooked such advantages as early maturity and small size. Weighing less than 70 percent of, and maturing earlier than, crossbreds (Yodseranee *et al.*, 1963) can allow indigenous breeds to show higher live weight production per hectare, and represent a more easily divisible asset which can produce a smaller whole steak for a rising market. Demand for meat and milk in less developed countries (Delgado *et al.*, 1999) appears to offer smallholder systems

with their labour and feed-base efficiencies, a prosperous future which can extend to marginal areas with appropriate research and policy development (Vercoe *et al.*, 1997).

Smallholder pigs are mainly imported breeds raised on rice bran, cooking refuse, and weeds. Being more closely linked to commercial production demonstrates the disadvantage of smallholders competing with agribusiness. Infectious diseases including Foot and Mouth Disease and hog cholera as well as internal parasites, require investment by smallholders who have limited access to either higher technology or full market price, and whom government programs appear to view as adjuncts of the commercial industry. By contrast, indigenous chickens attract a 30 to 50 percent market premium for taste and texture. The more than 120 million Thai village chicken flock suffers high mortality from endemic infectious diseases each year, including Newcastle Disease and fowl cholera. Vaccination services cover less than ten percent of chickens which, from more than 50 eggs per bird per year and 80 percent hatchability and 80 percent chick survival, could have a much larger impact, even allowing semi-commercial production of native chickens instead of their replacement with high input imported breeds (Chantalakhana and Bunyavejchewin, 1993).

Cattle calving rates under smallholder conditions vary from 30 to 50 percent, calf mortality rates from 10 to 30 percent, and live weight gain from 100 gram to one kilogram per day. Improvement of feed base, utilisation of by-products, new technologies, animal health services, use of appropriate bulls, and improved harnessing systems for draught and traction (Chantalakhana and Bunyavejchewin, 1993), can improve productivity substantially within the smallholder system. Uncommon success in the non-traditionally Thai industry of dairying has been attributed to its integration with smallholder practices. Colonies of smallholders use crossbred cattle, artificial insemination, forage crops, and supplementary feeding to produce fresh milk for increasing market demand. Government has created an external environment for smallholder acceptance of risks while a milk drinking populace developed which has in turn improved child nutrition and stimulated imports of milk products, while simultaneously assisting smallholders (Chantalakhana, 1995).

The integration of livestock in smallholder agricultural systems as practiced in Thai culture for a millennia (Falvey, 2000), provides an example for consideration in development plans. Other examples could be elicited such as mixed cropping to minimise the rainfall and price risks of monoculture, rice and fish systems which can also integrate with livestock to reduce fertiliser and feed requirements, and interplanting of green manure or forage crops in maturing rice fields to increase soil organic matter and reduce fertiliser needs. Seeking viable means of enhancing integrated smallholder agriculture therefore cannot rely on spin-offs from industrial agricultural research; a specific research focus is required, such as now evident in Thai Research Fund programs.

Research and development

Effective smallholder agricultural research and education will acknowledge integrated systems and the role of smallholders, when researchable

technical parameters including cost-effective alternative development approaches (Cornell University, 1999), are being considered. Smallholders system needs not met by simple importing of technology, at which Thailand does rather well, require local applied research initiatives. Their continued funding relies on an understanding of the benefits of smallholder systems which may be grouped as: potential for year round engagement of rural and peri-urban labour; high levels of biological efficiency through utilisation of by-products; risk minimisation through integrated diversification, which reduces government relief; chemical fertiliser minimisation through farm-produced manure application; maintaining rural populations *in situ*, with an adequate diet; potential for integrated supply to commercial agriculture; retention of national ruminant herds as multi-purpose work animals; potential for development of new niche products and organic produce; landless persons engaging in smallholder industries such as dairying, and maintaining cultural values which are easily subverted to market forces.

Viewing smallholder agriculture as a phase to be transcended by industrial agriculture has led to rural adjustment programs that encourage smallholders migration to urban centres, while incidentally widening the rural and urban gap (Ieosriwong, 1993). Recent acknowledgment of smallholders as a continuing component of Thai society seems to owe as much to their new association with poverty and urban migration, as to wider understanding of their economic contributions. Thus smallholder agriculture may well receive increased research attention as a significant component of domestic and export primary production.

The needs for research extend beyond technical and economic considerations into social requirements in an unfair global 'free' market. Credit based programs which aim to improve smallholder well-being through increased agricultural incomes require favourable market environments before they can be effective, and enhanced rural employment opportunities may well be a required parallel program which allows smallholder choice in modes of income production from a farm residential base (Chaipon, 1994). Such realisations have stimulated consideration of alternatives to commercial agriculture.

Alternative agriculture and self-sufficiency

Alternative agriculture is often merely an alternative to conceptions of conventional agricultural scientists. Smallholders have once known or practiced many of the techniques now popularly promulgated by concerned development specialists. Such techniques can produce higher yields from lower imported inputs in some circumstances (Uphoff and Fernades, 1999), and thereby allow smallholder contributions to the commercial agricultural sector. In other cases, they can allow a higher quality of life in a self-sufficient production system. Most importantly, rational consideration of a broader context for improved agriculture, allows smallholders a greater choice. Choice, productive work, and access to social infrastructure are elements of rural investment that can contribute to real development and political stability in Thailand. Such approaches are not a segment to be excised from development analysis as they contribute substantially to self-reliance,

psychological and physical health, and to the spirituality of practitioners, and through them and by example, to the country.

Low input, ecologically considerate forms of food production (Schaller, 1993) which incorporate essential human values (Beus and Dunlap, 1990) including self-reliance (Pretty, 1995), and healthy lifestyles and diets, while providing the possibility of some income, have been imported in various forms to Thailand (Udagawa, 1993). The Fukuoaka farming system, for example, which emphasises spiritual aspects in subsistence farming, was technically unsuited to Thailand's tropical environment. Similarly, the Kyusei Nature Farming system (Matsumoto, 1993), which uses microbial inoculants to improve soil quality and plant growth, was not adopted widely, probably for both cultural and technical reasons. Adoption of these forms of alternative agriculture based on religious objectives appears likely to be limited to adherents, such as the natural systems of the Santi Asoke sect (Wasi, 1988).

Permaculture (Mollison, 1988) remains poorly understood and difficult to distinguish from existing integrated Thai agriculture (Sheng-Ji, 1985). On the other hand, an agri-aqua-culture system with modest chemical usage, has evolved to appeal to many Thai farmers and extension agents (Wetchaguran, 1980), as has the idea organic farming. Organic farming requires sound managerial and marketing skills, and access to capital, which has to date limited adoption in Thailand compared to, for example, Japan (IRRI, 1992).

A self-sufficient system of producing for the family without major external inputs while adhering to what are seen as Thai Buddhist values within a global ethic (Nakasone, 1985), has been invoked to re-join man and nature in contrast with selfish commercial behaviour at both individual and institutional levels (Sakharin, 1997). Balancing material with social and spiritual needs (Wichiarajote, 1998) within an environmental context, goals of peaceful coexistence (Wasi, 1998) and national security are linked to historical religious principles of governance, implicitly including the doctrine of the *Digha Nikaya* Volume 3:85 that 'the whole realm dwells in happiness if the King lives aright'. Among the unique aspects of Thai agriculture is the wise influence of His Majesty the King, who has evoked an ethic of self sufficiency for all, not only small farmers (Board of the Royal Projects, 1999).

Within the embracing philosophy of self sufficiency, the rural component is based on recommended land use for a small family farm, collective bargaining, sharing of capital items, and negotiation with outside parties including government officials and commercial interests. However, the concept is often judged against market principles by globally the influenced civil service and agri-business.

Self sufficiency has always been a theme of Thai agriculture at smallholder level, and notwithstanding development policy initiatives, is likely to remain so. In its present conception as a means of re-educating the whole society, it may receive a higher funding profile through social equity programs. Within agriculture, it allows sensible consideration of traditional agricultural practices. Coincident with a growing global appreciation of

smallholder solutions for commercial agricultural problems, this link between Thailand's two agricultures can work against further marginalisation of smallholder farmers.

CONCLUSION

Smallholder agriculture is easily assumed to be a low technology and inferior form of production to which the attendant biases against physical labour accrue, in contrast to the modern commercial agriculture sector with its separate business vocabulary. For Thailand, the two types of agriculture may well persist, with a rising respect for self-sufficiency as international interest widens in scientific interpretation of the hitherto denied benefits of alternatives.

Research has tacitly assumed that the agriculture of the more developed world contains the essence for global agricultural improvement. The Green Revolution relied on improvements of yields through, for example, plant breeding which had conferred such benefits in more developed countries. However, small integrated farmers do not rely on the production of one commodity, even rice; they depend on, among other actions, the integration of backyard gardens, fish in rice paddies, shade and orchard trees, and livestock in an overall production system. Improving the output of one component in such systems requires compensation for any consequent losses from the total system. For this reason, high yielding cereals with high grain to stalk ratios were not universally popular (Lund and Fafchamps, 1997) where smallholders relied on straw as livestock feed, water conserving mulch in gardens, and for other domestic purposes. Smallholders in marginal areas are easily further marginalised by generic recommendations of such apparently superior technologies.

The scientific method requires criticism of the Green Revolution as part of a vital continuous questioning which leads to new knowledge; thus, rather than a belittling of the coordinated international intellectual effort which devised means of feeding millions otherwise destined to starve, current criticism may be used as a constructive input to current research. Science relies on such constant cognitive re-orientations; perhaps one example may yet be a return to smallholder practices of early transplanting and wide spacing to stimulate tiller and roots growth and hence grain production sites and nutrient uptake per plant in areas suited to hand harvesting (Uphoff and Fernades, 1999).

Intensive monoculture substitutes capital, through tractors and chemicals, for labour, producing images of efficient modern agriculture with tidy symmetric vistas that contrast with the apparently unplanned mix of enterprises on an integrated small farm. Clean, ploughed US corn fields for example, became a benchmark which the mulch-strewn plots of Thai smallholders failed to meet, even though they may represent a biologically, environmentally, and agriculturally more efficient system (Steiner, 1996) which can offer technologies to improve commercial systems. The beginnings of this meeting of smallholder practices and commercial agriculture may be seen in modern corn harvesters which chop stalks, husks, and cobs as mulch, and the re-discovery of 'conservation tillage' (Avery and Avery, 1996). Demarginalising of smallholders might occur if the source of such

research outcomes were fully attributed.

Integrated pest management practices, organic fertiliser, prescriptive chemical fertiliser application, root to plant biomass ratios, and improved water use are seen as new scientific insights that can further enhance commercial agriculture, yet each has is antecedents in the type of agriculture practiced by smallholders. These farmers have long known or simply assumed; that hand removal of undesirable insects and judicious use of insecticides is effective and cheap, that manure and plant residues enhance fertility and soil structure, that wider spacing of plants increases the yield of individual plants, and that watering and concentrated fertilisers should be oriented to the needs of individual plants. So, mutual respect of smallholders and commercial agricultural systems can assist in demarginalising smallholders.

In areas with poorer natural resource endowments, higher population densities, and inferior support services, such as sections of the Northeast, the primary development consideration after social equity is the ensuring of livelihoods. Hence, self-sufficiency, and sensitive improvement of smallholder practices where possible, constitute the main approaches to smallholder development. This relies on active engagement of smallholders in research and project planning in a manner that can be humbling to the development expert (Merrill-Sands and Collion, 1995), and help retain the interest of young people in rural communities and perhaps arrest their emigration (Uphoff *et al.*, 1998).

Smallholders remain critical to Thai agriculture, with sensible self-sufficient approaches providing not only release from inappropriate economic forces, but also a clearer focus for research. Smallholder farmers continue to exist in more developed countries, often as a matter of personal choice where financial returns are not an overriding objective; this fact and the information above may inform western influenced policy makers, researchers, and educators and students that large-scale commercialisation applies to only some aspects of Thai agriculture.

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