

# Farm Management in Agricultural Extension in Thailand

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## Background and Institutional Setting

Generally, Thai small farmers, like other southeast Asian developing countries, depend on mono-commodity farming, mainly on crop. They are poor, lack proper training, skill and know-how knowledge in tilling the lands. Apparently, there are still certain constraints barring the adoption of new technology, resulting in very low productivity.

At present, agriculture in Thailand covers such a large number of small farms with limited resources : land, labor and capital. The ability to allocate and utilize these limited resources of maximizing the economic returns is called management.

Under existing farming systems in Thailand, farmers who are mostly small holders with living standard at subsistence level integrate livestock to crop production. There are many farms of crop-livestock integrating which vary according to different socio-economic needs. These systems exist even long before any attention, assistance or involvement, was given by the public.

The Agricultural Extension Strategy with the prime objective of increasing farmers' production through improved technical practices. Secondly it aims also to improve rural family life by teaching home economics to women, and to create farmer youth clubs. Emphasis is on production technologies and only second priority is given to economic matters, such as farm planning and management, credit and input supply, and product marketing. "Recommended practice" are given from experts at higher level and disseminated to farmers through various extension methods based on a combination of pedagogical, communications and public relation theories. The underlying stage model is creating awareness, achieving interest, providing information and demonstration, trial stage, and adoption stage. Another approach of this strategy is to achieve a multiplier effect through progressive leader farmers.

This strategy originated in the early 1940s in the United States and was introduced in many Asian countries by their technical assistance programme in the 1950s. The extension service of the Thai Department of Agricultural Extension (DOAE) adopted and followed this model until it was substituted in 1976 by the National Agricultural Extension Project (NAEP) which introduced an offspring of the conventional extension strategy, i.e. the World Bank supported Training and Visiting System (T + V). Prior to its functional

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revision, NAEP operational policy was aimed at implementing its services within the context of production of major economic crop in all regions. This certainly means that other extension activities such as livestock, inland fishery, and forestry production were not included in its function. However, due to the National Development Policy, the NAEP present objectives are to be emphasizing on an integrated agricultural development approach by which several programs on on-farm irrigation, expansion of agricultural credit, improvement of extension delivery system, and creation of marketing facilities to crop, livestock, fishery and forestry production. All these have to be together organized into a functional theme.

Prior to inducement of the NAEP to the country, DOAE had performed its functional activities to millions of farmer families through a small number of extension personnel at provincial and district levels. The ratio of extension officer to farmer families was about 1 to 4,000. Experience, however, indicates that together with a problem of inadequate extension staff to perform their roles at the grass-roots level, extension officers had been found possessing insufficient characteristics to work with rural people. Many of them had been inadequately trained in subject matters relevant to their work. Furthermore, due to a burden of administrative responsibility requiring them to spend a major portion of their time in the office, they had no adequate field experience to understand the real situations of the target population. As a consequence, lack of self-confidence among extension officers to deal with farmer needs and problems was widely recognized.

The establishment of the NAEP is therefore aimed at reorganizing the structure and functions of the existing agricultural extension system, improving capability of extension personnel at all levels to be ready to work, and increasing number of extension personnel particularly at the field operation level to come up with an expanded volume of extension activities. Of the latter, it appears that the number of extension personnel has increased considerably. More than 8,000 college and university graduates have been continuously recruited. Among them 5,600 are village-based extension agents. 465 are subject matter oriented-specialists, and the rest are district, provincial, regional, and headquarters-based extension officers. In essence, the ratio of extension agent to farmer families becomes at present, 1 to 1,000.

Among the approximately 400 to 500 non-governmental organizations (NGO) committed to social or welfare work, there are 113 involved in development activities. As identified by a study of the Asian Institute of Technology, the NGOs take their main approaches towards development :

- 1) the integrated community development approach,
- 2) the sectoral approach,
- 3) the coordination and services for development workers and NGOs approach.

Out of the total there are 54 NGOs involved in community development in rural areas. With the exception of two or three, the others are small organizations. These NGOs promote the following objectives in their development work

- (1) To foster self-reliance by encouraging maximum use of local resources, local management, local leadership, and appropriate technology.
- (2) To derive from local needs initiatives and innovations.
- (3) To allow maximum participation of the local people.
- (4) To develop human resources, leadership or people's organization.
- (5) To develop the quality of life of the people
- (6) To implement small scale projects and focus on village level development.

Activities performed with the support of these agencies range from agricultural development and food production, irrigation and potable water development, non-formal education and training for new skills, health, sanitation and nutrition, rice banks, buffalo banks and fertilizer banks, credit unions, cooperatives, saving groups and cooperative shops, youth groups, youth training and women groups, to leadership training, and appropriate technology.

Development is an evolutionary process of people and is therefore concerned with the crucial components of education, organization and discipline. In order to improve the situation of small farmers a number of functions are necessary which have to be performed in accordance with the suitability of the organization, be it a governmental (GO) or a non-governmental (NGO) one. The most important reason for the poor performance so far in the development of the rural sector lies in the fact that these organizations are not appropriate, to the task. An assignment of functions with a division of work as well as cooperation amongst GOs and NGOs, however, is decisive for rural development. Ideally, the following functions would be performed by the stated agencies :

- policy guidelines and master plans of the area-GO
- nomination of the general target groups-GO
- selection and training of development workers-NGO
- area analysis and identification of the special target groups-NGO
- know-how and skill training-GO
- organizational and management education-GO and NGO
- supply of finance and input only on request-GO
- supply of subject matter knowledge on request-GO
- tapping of resources and effective utilization of those- GO and NGO
- performance of activities-NGO
- group organization-NGO
- support in product marketing-GO
- overall supervision and coordination of all development activities in a certain area-GO

NGOs are flexible organizations, which are not characterized by autocratic and hierarchical structures of command but by two-way communication systems. The field worker has a decisive role regarding all decision in his local area. This is an essential condition for starting, organizing and accelerating and evolutionary rural development process.

There are a great number of private and commercial organizations represented at local level. It is often forgotten but should, nevertheless, be taken into serious consideration that there are banks, insurance companies, commercial companies and merchants involved with the farming population. It is mainly merchants who deal with farmers and have close connections with them. As merchants are the long-standing and, in many cases, only source of credit, farm services and marketing, farmers hesitate to turn away from them. The merchants understand the community and the farmers and use this understanding. They have access to information about marketing channels, prices and government actions, and are in close contact with officials. One should never underestimate their power and flexibility at local level.

The private sector should be engaged in selected programme activities to secure cooperation and support of the private side by informing them about the programme and integrating them into activities. Merchants will be present at local level as long as there are farmers, that is at any event longer than officials or development workers.

Within the National Economic and Social Development Board (NESDB) the present trend is to involve the private sector in rural development. We assume that the NESDB understands the situation as it really is and that private sector involvement proposes cooperative efforts between the official sector, the NGOs and the commercial sector in developing the small farming sector of Thailand. We also assume that a national development board in such a country as Thailand cannot permit the growth of a few large agro-industrial companies to be favoured with the main aim of profit maximization to the detriment of the majority of the population. Things in Thailand cannot go as they have been for generations, especially in times such as these when problems accumulate and the nation is threatened by external and internal confrontations.

The comprehensive Agricultural Development Strategy is a more comprehensive and integrated approach to agricultural development. It is based on the assumption that only a combination of factors can get agriculture moving. The factors include besides technology and education also the institutional and physical infrastructure in rural areas to provide the necessary transport, access to credit, input and marketing services, as well as attractive prices and the information needed for development. This strategy was implemented in a number of more comprehensive agricultural development projects initiated by governments, bilateral and international organizations as well as private entrepreneurs. All of these projects, however, faced the problems of generating unequal income distribution as well as adverse social side-effects.

This strategy towards agricultural growth is still favoured in Thailand by a number of nationally, bilaterally and internationally sponsored agricultural development projects. Common features of these projects are :

- to promote agricultural production through improved extension services;
- to organize or provide production credits in cash or kind to farmers; and
- to improve marketing facilities for farmers.

Project goals mention usually that agricultural productivity and thus living conditions of the rural population will be improved by means of a package of economic activities, forwarded to the rural people through delivery systems oriented toward individual farmers. Sometimes these projects call themselves integrated rural development projects, whereas in their performance they are only concerned with comprehensive agricultural development.

## **Current Status of Farm Management in Extension**

The Department of Agricultural Extension, an organization which responsibilities are to help farmers to gain better income and to raise their standard of living both in terms of economic and social aspects, deems it necessary to lay down its development goals, policy, strategy, measure, and agricultural administration in line with the foregoing policy of the Government and the Ministry of Agriculture and Cooperatives; the National Economic and Social Development Plan; in particular the rapid change of agricultural economic situations at the regional and global levels which have considerable impacts on production and income of Thai farmers

The mains objectives of the Department of Agricultural Extension in the 7<sup>th</sup> National Economic and Social Development Plan (1992-1996) and 8<sup>th</sup> NESDP (1997-2001) are to :

1. Maintain and stabilize the agricultural sector growth rate and commodity prices by promoting Integrated Farming Systems for satisfactory income and good quality of life of farmers; also included are the promotion of natural resources conservation and environment rehabilitation.
2. Generate even income distribution and raise farmers' incomes by developing a pattern of farm home improvement for sustainable agriculture development in the home through farm house models and improve food processing technology and handicraft for agribusiness by farm women.
3. Improve administrative system in DOAE by dividing its functioning into executive task and co-ordination task from department level down to Tambol level.

4. Improve extension system and methodology by emphasizing on continuous training and schedule system. Through these approach, the field staffs will be able to perform their role with efficiency. Demonstration plots and testing plots have been made to be part of technology transfer to farmers.
5. Improve linkage between agricultural research system and agricultural extension system. This relevant activities enable people involved to exchange their knowledge/education invention experimental/problem for farm and farmer's prospective.
6. Improve sufficient facilities such as vehicle provision, audio-visual-aid, housing and available equipment as appropriated to encourage all field staffs' performance.
7. Establish supervision and evaluation projects system for measuring step by step implementation output.

**The objectives aim to be met through the following policies :**

- promoting the farming systems for sustainable agricultural and food security
- stabilize farm prices and farmers' incomes
- development of farmers' institutions, improving the quality of the for farmers and maintenance of the environment.
- development of the agricultural extension administrative system
- promoting agri-business

Thus in order to reduce risk of production and supplement incomes of farmer, the DOAE has adjusted its direction to promote agricultural production in accordance with present situations followed :

**1. To produce the commodities according to the market need.**

Usually, nearly all productions are responsible by private sector. The role of DOAE in this regard is to support and strengthen private sector and farmers' capability whenever necessary in decisions making such as

- 1.1 Supporting and promoting farmers' participation
- 1.2 Supporting and promoting information data, production, marketing
- 1.3 Supporting and promoting on production as necessary

**2. To emphasize on Increasing Incomes rather than Increasing Production**

The DOAE's target in upgrading the condition of living of farmer is to aim at distributing incomes. The farmers now, instead of producing the crops with limited demand will diverse their crop production in accordance with market circumstances. The farmer will then have a stable income and increased opportunity to improve the family's condition. The implementation pattern regarding to the diversification of crops are as follows :

## 2.1 Increasing cropping intensity instead of only one crop cultivation during rainy season

As a consequence, the agronomists seemed to concentrate on developing system which have maximum production potential but employ a package of practices designed for optimal conditions which can be divided into 2 main categories as follows :

- For the inter-cropping system such as growing cotton as main crops follow by soybean just before cotton is bloomed or selected cocoa between coconut rows, etc. Besides if the market is not too far, vegetable is considered a higher income cash crops, comparing to field crops.
- Multiple Cropping System – For crop rotation, if the main crop is the second crop, we have to be careful about soil moisture and crop growing period especially cultivation that depends on rain.

## 2.2 Improving agricultural systems by means of integrated farm management, planning to combine among other enterprises such as livestock, fishery, planting.

Now the Department of Agricultural Extension is developing the farming systems into production system for more trade, the agricultural extension in prospect, will deal and connect with both domestic and world market mechanism in which being fluctuated all the times, including the competition with foreign market. This competition has led to many crucial problems in term of type of commodities, production investment and production.

The future direction of agricultural extension, both short-term and long-term, is to restructure agricultural system taking into account the principle of market-oriented issue. The production must be based on the suitability of the potential of cultivated areas and farm households. Crop production, especially exported ones, which encounter marketing problems will be decreased and substituted by other promising crops or by agricultural system that can provide higher returns and income for farmers than traditional crops or activities currently practiced. The appropriate alternatives (crops or agricultural system) will be available for discussion with farmers so they can make their own decisions and propose farm production plan according to their actual needs and readiness. Furthermore, emphasis will be placed on increasing production efficiency for both traditional and new crops by

- transferring technical know-how to support farm plan;
- providing essential production inputs and low-interest credit to farmers as incentives to carry out the restructuring of agricultural system on a continual basis, resulting in the increased production efficiency in terms of both quantity and quality i.e. higher yield per rai, low cost of production, quality which meets market demand; and
- linking production with marketing system at various levels in close cooperation with the Ministry of Commerce and the private sector through the formation of farmers' groups or institution.

**Management** is important to everyone. All people are required to be their own personal managers. Management, in simplest term, is using what you have to get what you want most.

We all have things that we want-our goals. These goals may include wealth, good health, a happy family life, a nice home, yearly vacations, and social prestige, to name but a few.

We also have certain resources with which to pursue our goals : time (hours, days, weeks, years), physical abilities, and mental abilities. In addition, some people have savings, land, stocks, bonds, a good credit profile, training for a particular profession, and other assets.

Finally, our resources can be used in a variety of ways and each of these uses had a different pay off in terms of the things we want. The science of management includes the decisions and actions that allocate limited resources among alternative uses so that achievement of goals is maximized.

**Farm Management** is the science of allocating land, buildings, machinery, operating capital, and labor among different crops, livestock, production systems, buying system, and selling systems so that goals such as income, income stability, risk minimization, as well as personal goals, are attained (Figure 1). Differences in decision about the use of resources and differences in the ability to put these decisions into action can have a great impact on farm profit.



**Figure 1. Basic parts of farm management.**

#### **The management revolution involves :**

- \* Greater emphasis on continual analysis for key decisions to be made and the adjustment of the farm business to changes in technology and market conditions. Computers and electronic information systems will be important tools for accomplishing continual analysis.

- \* Increased importance of gaining control of adequate capital to have on economic-sized farm.

- \* Greater importance of control of capital and production costs.

- \* Increased market orientation-choice of time, place and method of selling and buying.

- \* More emphasis on hiring and supervising workers and dealing with people.
- \* Increased importance of business legal organization and tax management.
- \* More complex and sophisticated farm business

## **NEW ROLE OF FARM MANAGEMENT.**

The new role of the farm management worker is basically one of helping the small farmer make this transition from traditional to semi-commercial or commercial farming. Essentially, this role covers the following areas :

- Identifying the goals of the farmer, with emphases on achieving not only the highest income possible, but also a better standard of living which includes the use of facilities such as schooling, electricity, clean water, health and social services,
- Assessing the opportunities for achieving higher yields or income from his farm enterprise,
- Evaluation the level and type of inputs to employ in agricultural enterprise in order to ensure optimum use of his farm resources,
- Finding markets for farm produce and ensuring that farmers obtain the best prices possible,
- Analyzing farm operation in order to identify the weakness and strength of existing practices,
- Preparing the farm plan and budget for next farming year,
- Guiding the farmer directing his problems to the relevant agencies, so that the maximum benefits can be obtained from these agencies, and
- Viewing farming as a dynamic process where technical and economic changes can be expected and learn to use these changes to his own benefit.

Besides working with individual farmers, the extension worker will also work towards promoting group activities among groups of farmers where such group activities are found to be beneficial. For example, for farmers with scarce resources such as land or labor, joint activities to pool their limited resources will result in a higher income for all farmers.

## **ROLE OF THE EXTENSION WORKER IN FARM MANAGEMENT.**

As the small farmer changes from producing food primarily for his own need to producing and selling his produce for the market, he finds himself needing more information about his farm cultural practices as well as new developments about the outside world. This change from subsistence to commercial or semi-commercial farming is often bewildering and difficult for many small farmers.

The role of the extension worker is primarily one of helping the farmer in overcoming the problems associated with this transition period, and education the farmer to think scientifically about farming. Mosher listed six main roles for the extension worker :

- **Education** – to help farmers master new information and develop new skills ;
- **Access to new resources** – to help in any local task related to agricultural production and marketing that is not being effectively carried out by someone else;
- **Take research results to farmers** – the extension worker provides a link between the farmer and the research worker or other successful farmer. He can assist in dissemination the solution to this problem back to the farmer;
- **Encouraging companion** – to assist the farmer through the difficult transition period from subsistence to commercial farming. The extension worker's role here is one of a friend of the farmer who can clear his doubts and provide him moral support in trying new practices or formulating new goals in farming;
- **Push production of a particular crop or crops** – to encourage the farmers to grow or increase his production of a particular crop which is in line with the needs of his country. The increased productivity must also be financially rewarding to the farmer; and
- **Training farmers in decision-making** – to guide the farmer to think about farming as a business and that the farmer has to think about alternatives in the use of his resources. The farmer is also encouraged to make his own decision on the use of his inputs, choice of crops to grow and type of marketing arrangement. The ultimate aim of this training programme is to provide the farmer with a framework of analysis and way of thinking so that he can make independent decisions for the improvements of his crop yield, income and standard of family living.

## **EXTENSION PROGRAMMES IN FARM MANAGEMENT**

The Farm Management Extension Worker has an important role in the planning, implementation and evaluation of such programmes. These programmes can be viewed as focussing on three major problems areas, that is,

1. on farm problems,
2. utilizing off farm services and
3. participation in group activities.

### **1. Assisting Farmers Solve On-Farm Problems.**

Hers, there is a need to identify the problems faced by farmers and to study the alternative courses of action available to overcome this problem. The following are some of the programmes designed to solve on-farm problems.

#### **1.1 Identify the Objectives of Farming.**

The ultimate goal of farming is the attainment of better family living. The immediate goals are greater production and higher income. The Extension Worker's role is to assist the farmer in making decisions which will result in higher yields and income, and thereby attain the objectives of training.

#### **1.2 Increase Efficiency in Resource Use.**

The extension worker must study the input-output information available from other farms in the area. This information can be used to guide the farmer to adjust his resource use so as to increase the efficiency of resource use and attain higher yields.

#### **1.3 Farm Accounts and Records.**

The farmer is encouraged to keep a record of his input use, expenditure, yield and income. These records can form part of the farm account that will give the information needed to determine the best combination of various enterprises and the proper use of farm credit.

#### **1.4 Farm Plan and Budget**

The farm plan is a programme of activities for the next crop year. It shows what is to be done and how to do it. The farm budget shows the expenses involved in carrying out the farm plan and the expected revenue. Both the plan and the budget are useful in demonstration how the farmer can improve his farm management and income.

## **2. Assisting Farmers Use Off-farm Services**

In recent years, government agencies have been formed to provide services for the small farmers. It is important that farmers are aware of the services provided by these agencies and also how they can utilize these services to increase their farm yields and incomes. The task of the Farm Management Extension Worker is to serve as a link between the farmers and these agencies in order to ensure that farmers fully utilize the service provided by these agencies.

The following are some of the types of agencies and the programmes they undertake.

### **2.1 Credit**

This may be provided by an agricultural bank, farmers organization or other agencies. Each of these agencies may have different application procedures, interest rate charged and period of repayment. In addition, farmers may also be able to obtain credit from non-institutional sources such as the money-lender, a relative or friend.

The credit required may be for production or consumption purposes. Production credit refers to credit used to purchase inputs that are needed to obtain higher yields and income. The income obtained after the sale of farm produce can be used to repay the loan.

Consumption credit is primarily intended for personal or family use and not related to production. Examples of consumption credit are loans obtained to pay for marriage expenses and festivals. Such credit does not add to the farmer's income but must be repaid from his expected income.

The task of the Farm Management Extension Worker is to advise on the following areas :

- maximum amount of credit that can be borrowed given the current and expected income.
- Period of repayment of the credit,
- Accessing the best source of credit that the farmer should utilize, and
- Evaluating the cost and benefit of using credit for productive purposes.

### **2.2 Market and Market Information**

This refers to both markets and market information regarding purchase of input and sale of farm produce. The role of the Farm Management Extension Worker is to advise farmers on how he can obtain his inputs at the cheapest cost and sell his output at the highest prices.

Before offering this advice, the Farm Management Extension Worker will have to spend some time on acquiring this information. There is a need for him to gather data on the prices of inputs from various sources. In addition, he has to access whether the discount offered from bulk purchase is beneficial for the farmer or not.

Similarly, on the sale of farm produce, there is a need to identify the benefit and cost of the farmer performing different marketing functions, or selling his unprocessed product at the farm gate.

Another area where market information is important is in the future expectations. For example, there may be the likelihood of a price increase in fertilizer in the near future. In this case, it will be in the farmer's advantage to buy the fertilizer now rather than wait to purchase it a few months later. Another example applies for some commodities where experts may have predicted that their future prices may fall drastically. In this event, the farmer should be advised of this possibility so that he can consider the options of growing another crop.

### **2.3 Research**

The traditional role of extension workers in serving as a link between the research worker and the farmer is just as important in the area of farm management. The technical extension worker is likely to stress the increases in yield that will result from using a new technology, whereas the FMEW will need to advise the farmer how the new technology will effect his cost of production and income.

At the same time, the Farm Management Extension Worker will be able to assist the farm management research worker in identifying the farmer's management problems. The results of the research effort to overcome this problem will then be transmitted back to the farmer through the extension worker.

### **2.4 Development Projects and Programmes**

It is important that the farmer be made aware of the government development projects and programmes which have an effect on his income and well-being. Many of these projects and programmes are designed primarily for the benefit of small farmers. However, if the farmer is ignorant of these projects and programmes, he will very often fail to derive the expected benefits from them.

For example, development projects such as the provision of irrigation facilities are usually designed to enable the farmer to grow two crops per year on his land. There is a need here, to advise the farmer on the economic benefit of double cropping, since it will increase his farm income. Failure of farmers to double crop their paddy land will lead to a reduction in project benefits, or project failure. In Thailand, governments have initiated

input subsidy programmes and price support schemes for farm produce. The role of the Farm Management Extension Worker is to advise farmers of these programmes and to assist them to make full use of such programmes.

### **3. Assisting farmers to Participate in Group Activities**

Many small farmers can benefit by participating in group activities. Such activities can be classified into three major categories :

- pooling of resources such as land or labour with the view towards increasing efficiency and reducing cost. Thus, farmers, each with small pieces of land, can pool their land resources and use farm machinery for ploughing or harvesting.
- Activities for landless farmers or laborers. These people can participate in group activities where they provide only the labour and receive a share of the crop in exchange for their labour input, and
- Undertaking group activities for specific functions. This could be arranged for activities such as ploughing, transplanting or harvesting.

The role of the extension worker is to advise the farmers on the scope for such activities and assist in organizing such groups if there is sufficient interest among the farmers.

### **Agricultural Diversification**

Agricultural diversification is aimed to reduce farmers' risk from rely on one commodity to emphasize on several commodities which have good market potential. This strategy will help farmers to earn more income, reduce seasonal unemployment and preserve natural resources in farmers fields. In the 6<sup>th</sup> National Socioeconomic plan, government aims to introduce agricultural diversification to 51 provinces, which cover area of 5.71 million rai in 5 years. It will be done through improving cropping systems, farming systems and introducing agro-forestry.

Although, agro-ecosystem, marketing, investment and return could limit agricultural diversification sustainability. From research study, it was found that four factors could help achieve sustainable agricultural diversification i.e. government invested to develop water resource, has complete cycle production system, related to the agro-ecosystem and supported previous farmers' activities.

So, agricultural diversification should emphasize on agricultural commodities which are suitable for the agro-ecosystem, market demand. Government could help in developing water resources, producing and marketing systems giving loan especially to small farmers.

Whether alternative proposals by a government agency will be accepted or not is a question of the incentives provided to, and understood by, the target farmers. In viewing the alternative proposals in economic terms, the farmers will consider whether the income generated by the alternatives is higher than the traditional one or not. As to the social aspects, an alternative plan may or may not be suitable for their farm resources in terms of land, labour and capital available. That means market and farm resources are the main factors influencing the decision making (and risk taking!) which is the farmers' own, not the government's. The farmers will not accept the alternatives if they can not see the market opportunity. The farmers will also consider whether the land, labour and capital they have are suitable for the diversification or not.

## **Sustainable Agricultural Management of Small Farmer in Thailand**

From past to present, a shortage of water supply for agricultural activities has been a major problem facing Thai farmers. The impact is severe for the agricultural areas which rely heavily on rainwater. Unfortunately, such areas where there is little precipitation constitute a predominant part of the country with mostly rice and field crop farming being implemented. Such a condition limits farmers from carrying out their cultivation to only once a year during the rainy season. Moreover, farmers were exposed to high risks and damage due to adverse environment conditions of the soil, climate, and inconsistent rainfall patterns. Although efforts have been made to tackle water shortage problems, for example, by digging ponds to store water, appropriate sizes or systems have never been determined. There were still other factors which magnified the shortage of water such as unsystematically planned crop cultivation or mono-cropping farming systems.

Being of the situation, His Majesty King Bhumibol Adulyadej graciously set up an initiative to relieve the farmers from sufferings and guide them through the plight of water scarcity, with minimal impacts and pain.

His Majesty's ingenious solution was named the "New Theory" : it serves as a set of principles or guidelines on the proper management of land and water resources to create optimum benefits for farmers who own a small piece of land.

The New Theory : A Novelty in Agriculture, His Majesty King Bhumibol Adulyadej give guidelines to the people who live in the rural area (farmer) by Royal Speech :

**"...New theory...a new way to help people make a living on subsistence level. They might not be that rich but they would not starve either."**

**"...An integral part of this program is the division of land into 3 parts, one for rice farming another for gardening and the last portion for water storage..."**

The New theory is a novel approach and concept aimed at assisting individual farmers possessing a small piece of land in being able to manage the utilization of land and water for agricultural activities properly in order to create optimum benefits.

## **Farm Management Promotion**

Farm management promotion aims to teach farmers how to manage their limited resources such as land, labor, investment, water resource and appropriate agricultural technology. Farm management promotion project was carried as the demonstration crop, livestock and fishery which suitable to particular areas. Agriculture improvement must begin at the farm level. Agriculture extension programs should give equal emphasis to both the technical and the management aspects of these many farm. The technical approach stresses changes in individual enterprises or activities. The management approach must consider the farm as a whole. Experiences show that the technical and management approaches are combined. Therefore it is extremely important for the extension workers to realize the need of this balanced farm-oriented approach. It is recognized that agricultural conditions are quite different in each farmers. However, many common management problem exist. Among the important ones are the small size of farm business, the pressing need of subsistence production, the under-employment of farm labor, the lack of access to adequate capital, the difficulty in applying new technology, the inadequacy in supplies and materials, the low level of managerial abilities, and other. Thus the need of common management program for tackling these common problems has become apparent and urgent. A program of common management principle can apply to the farmers.

Trained extension workers can contribute a lot of help farmers solve these management problems in their daily contacts. For instance, they can advise the farmers to treat the farm as a single management unit. They can help farm families identify the goals of farming, and show how to study the information of farms in neighboring areas. By analyzing the individual farm business, the extension worker can help the individual farmer develop his own farm plan. Then he can discuss both the problems and opportunities of putting this plan into practice.

Extension workers can also assist the farmers in arrangement to secure the needed supplies according to the plan. This guided help improves the managerial skills of the individual farmers. The aggregate achievements become very impressive for the areas or country as a whole when every farmer achieves his own production target as planned.

Farm Management Promotion Project support the budget to 76 provinces since 1976. The activities are :

### 1. Farm Management Demonstration Plots;

Every farm has a farm planning for improving the resources of the farm. The record-keeping to be useful a basis for complete farm planning and budgeting and farm management should contain sufficient physical and financial data for assessing results, and analyzing problems and identifying appropriate changes in order to improve the performance for the farm.

The record-keeping is al tools for the farmer to manage his farm better particularly, in analyzing, organizing, planning and directing his farm operations toward his objectives. To the agricultural extensionist, record will provide him facts for better understanding of specific farming situations and problems to enable him to render appropriate farming advice.

Each Farm Management Demonstration plot has this condition :

- Training course for the farmers.
- Crop, animal or fishery activities in the farm
- Farm planning and record-keeping

2. Farm management, Agribusiness and Marketing Training Course for farmers. To train the farmers, how to do the farm plan and budget, hot to do the farm records and account before improving their farms and to plan how to extend the each demonstration farmers

3. Field day one of the activity transfer farm management technology to farmers. Field days emphasized on these activities :

- Farm management
- Farm Plan and record-keeping
- How to evaluate farm management promotion
- Integration of activities and resources
- Private sector involvement exhibition and selling of farmers' products.
- Emphasize on group structure, administration, statistics and activities of the group in case of group field day
- Inviting farmers from nearby areas to participate.

Format of the field day will be divided into 5 sections.

- 1) gathering point
- 2) farm conditions before joining farm management project
- 3) how to choose activities
- 4) return profit decision making

- 5) exhibition, marketing system, answering questions and evaluation.

## **Farm Management training and Materials.**

The training Strategy is based on the assumption that knowledge and skills by themselves can cause the process of development. This strategy aims at extension workers as well as selected farmers. The method employed consists of a systematic sequence of instructional units combining theory and practice leading to certain skills and related knowledge. The training approach is purely educational, and usually supplements the extension system. Institutions which adhere to this strategy are short-term farmers training, farmer training centres and long-term farmer training. One of the Thai agencies employing this strategy is the Department of Agricultural Extension (DOAE). The target is to train and develop both officials and farmers. The education and training programme includes farmers, farm women and youth and puts emphases on leadership development (rural leaders). The rural leaders are supposed to disseminate the knowledge to their villages. When a rural leaders needs extra support for training, the DOAE steps in with a mobile team. Activities of the DOAE are diversified and cover occupational development (cash crops, fruit trees, animal husbandry, supplementary occupation, and farm mechanization, social development (village organization, women and child, and basic health), economic and marketing development (farmers organization, agricultural marketing), technical support services (library, hand-outs, training aids), and demonstration and input supply (demonstration plots, seed multiplication, youth training farm).

Educational and training methodologies used are classroom lectures, field demonstrations, village meetings, test and trial plots and the use of audio-visual aids.

## **Thailand's Department of Agricultural Extension present training programs.**

As far as the experience in Thailand is concerned, the Department of Agricultural Extension (DOAE) has recognized the important of Agribusiness development, Farm Management and Marketing of several years. It has launched training program both at the national level and the regional level on systems concepts and methodologies. In the Thai system agricultural research is conducted by the Department of Agriculture (DOA), while extension is the responsibility of the Department of Agricultural Extension (DOAE). Linkages between DOA and DOAE are made at the central level but usually confined to formal procedures. The linkages are to made at all levels but in practice it is found to be less at the local level especially at the amphur, district or village levels. In the extension side, DOAE initiated a nation-wide program to improve the System of Planning and Farmers' Development. Under this program, extension worker is designed to be more bottom-up in

planning and implementation. Extension officers will be assisting farmers in making their choices. This program employs the farming systems concept in its data preparation, analysis and interface with farmers.

The essence of this program is to provide “appropriate alternatives to farmers” through increasing farmers participation. Its emphasis is on diversification and small farmer development. The specific strategies include :

1. Train the principle of Farm Management, Agribusiness and Marketing to the extension workers and target farmers.
2. Support extension workers (kaset tambon) to be able to analyze and fine appropriate alternatives to farmers.
3. Support target farmers to organize themselves into farmers' group so that they can think, plan, implement and evaluate work together with the assistance of extension offices.
4. Support farmers' production and marketing plans through the integration of work by the government and non-government agencies and the improvement of plan integration so that farmers' plan can be integrated in the normal operation of national rural development plans.
5. Accelerate income and production diversification for small farmers and assist them to achieve self-reliance.

The training program in Farm Management, Agribusiness and Marketing concept and methods in 1983 with the initiation of this program. At first, it was planned that training for subject matter specialist (SMS) from head office and 6 regions. One-month training farm Management, Agribusiness and Marketing” program was conducted, it was trained for 30 trainers. In 1984-1986 trainers teams trained for subject matter specialist from 72 provinces. Later, the extension workers from amphurs and districts were trained during 1986-1998. The six Regional Agricultural Extension Offices were responsible for the training nation-wide. Because of the large number of kasat tambon to be trained, the training was divided into batch. Take an example of the Northern Regional Agricultural Extension Offices (NRAEO), in 1989, the NRAEO trained around 800 kasat tambon in 12 batches, each batch around 50-70 persons. Similar training program was done in other regions. A 7-day training program was conducted. About 5-6 trainers were available in each session. After training the all extension workers, DOAE had the training program for target farmers from each province for every year. The target farmers were trained before they had done “The Farm Management Demonstration Project”. The budget for training and demonstrating plot used the annual government budget.

The improvement of Farm Management, Agribusiness and Marketing are easier said than done. Extension workers should learn special techniques. The techniques will include the following three aspects :

1. Approaches to increase production and income.
2. Key points to improve resource use.
3. Tools used in farm management extension.

### **Approaches**

Extension workers know that farmers are the real producers. Production and income increases depend upon them. So, the first thing extension workers should do is to identify the local problems to be overcome through the study of some representative farms. Next the extension workers must motivate farmers to make the necessary changes. To change from the traditional practices to the decision-making approach is resisted by farmers just as others resist change. Test the new ideas first on the demonstration farms where all can see how these ideas work. Organize farm groups to visit neighboring areas where the advanced techniques have been adopted. For effective motivation governments may have to provide incentives through subsidies. Sponsor crop and livestock competition in order to create the awareness and interest among them. Demonstrate, persuade and keep farmers informed.

Introduce changes in farming practices gradually. Extension workers may have to approach the farmers in three different stages.

**The first stage** is to help farmers improve practices on existing enterprises.

**The second stage** is to help them reorganize the existing enterprises.

**The third stage** is to help them introduce new enterprises.

In each stage the extension workers should assist the farmers to identify the conditions essential for making changes. He should compare the benefits before and after making the changes. Finally, make sure that other farmers see and are informed about benefits available.

### **Key Points**

Again, extension workers have to treat the farm as a whole. This begins with the selection of a sound crop and livestock production system. This system will enable the farmers to use both land and labor in the most efficient way. Moreover, credit may be required to make the system work effectively. Since the farmers are interested in higher income, advice to them on adjusting production to suitable market conditions is binomials less

important. No two farms are exactly alike. Therefore the pattern of resources use within each farm undoubtedly will vary from each other.

The DOAE specially stresses the importance for the extension workers to understand the management problems before they would give any advice. For this reason, the extension workers should learn :

- **First** – how to conduct simple farm survey,
- **Second** – how to analyze input-output data
- **Third** – how to prepare farm plan and budget, and
- **Fourth** – how to keep farm records and accounts.

### Tools

How to sharpen these tools is the responsibility of the research workers. But, the extension workers should know how to apply these tools in their area extension programs. Their important task is to educate the farmers to use these tools on their own farms.

### TRAINING “FARM MANAGEMENT, AGRIBUSINESS AND MARKETING” PROGRAMS.

1. Training Program for Trainers.
2. Training Program for Provincial's Subject Matter Specialist.
3. Training Program for Extension Workers.
4. Training Program for Farmers.

**Table 1 : Type, Duration and Participants of Training Programs.**

Training Program for	Trainers	Provincial's Subject Matter Specialist (SMS)	Extension Workers
Type of training	Seminar and Workshops.	Workshops.	Workshops.
Duration	One month	10-days	7-days
Participants	Subject Matter Specialist from Head office and Regional offices 30 persons	Subject Matter Specialist from 76 provinces 200 persons	Extension Workers from amphurs and districts 4,000 persons

**Table 2 : Topic discussed, Lessons, Methodology and Output of Training Programs.**

TOPICS DISCUSSED	Trainers	SMS	Extension Workers
What can extension workers do in Farm Management, Agribusiness and Marketing	√	√	√

<b>TOPICS DISCUSSED</b>	<b>Trainers</b>	<b>SMS</b>	<b>Extension Workers</b>
How to train - SMS. - Extension Workers. - Farmers.	√ √ √	- √ √	- - √
How to organize the training program for - SMS. - Extension Workers. - Farmers.	√ √ √	- √ √	- - √
How to prepare the manual for - SMS. - Extension Workers. - Farmers.	√ √ √	- √ √	- - √
How to conduct farm surveys.	√	√	√
How to prepare farm plan and budget.	√	√	√
How to keep farm records and account.	√	√	√
<b>LESSONS</b>			
What is Farm Management	☆	☆	☆
Data collection and analysis.	☆	☆	☆
Capital budgeting.	☆	☆	☆
Investment.	☆	☆	☆
Farm plan and budget	☆	☆	☆
Farm records and account	☆	☆	☆
Agribusiness development.	☆	☆	☆
Marketing.	☆	☆	☆
<b>METHODOLOGY OF TRAINING</b>			
Lecture	❖	❖	❖
Case study.	❖	❖	-
Practice.	❖	❖	❖
Farm survey, data collection and analysis.	❖	❖	❖
Presentation and discussion.	❖	❖	❖
<b>OUTPUT OF TRAINING</b>			
Curriculum of Training Course : ➤ 10-days for SMS. ➤ 7-days for Extension Workers ➤ 5-days for Farmers.	Δ	Δ	Δ
Manual for : ☉ SMS. ☉ Extension Workers. ☉ Farmers.	❖ ❖ ❖	❖ ❖	❖
Publication and Audio-visual Aid.	♣	♣	♣

## 1. Program “the Intensive Farm Management, Agribusiness and Marketing Course”

This program trained for farm management’s trainers.

### 1. Objectives.

- To train subject matter specialist from head office and regional office for the core trainers
- To prepare the manual, publication and audio-visual aid for training programs.

### 2. Course contents.

	<b>Hours</b>
- Principle of Farm Management.	12
- What can extension workers do in Farm Management, Agribusiness and Marketing.	12
- Farm survey. Data collection,	18
- How to analyze input output data.	36
- Farm plan and budget.	15
- Farm records and account.	15
- Investment.	12
- Agribusiness development.	15
- Marketing.	15
- Case study.	15
- Discussion	15

## 2. Program “Farm Management, Agribusiness and Marketing Course”

This program trained for Provincial’s Subject Matter Specialist.

### 1. Objectives.

- To train subject matter specialist from provinces
- To prepare the manual, publication and audio-visual aid for extension workers and farmers training program.

### 2. Course contents.

	<b>Hours</b>
- Principle of Farm Management.	5
- What can extension workers do in Farm Management, Agribusiness and Marketing.	6
- Farm survey. Data collection,	10
- How to analyze input output data.	10
- Farm plan and budget.	6
- Farm records and account.	6
- Investment.	2
- Agribusiness development.	6
- Marketing.	6
- Discussion	3

### 3. Program “Farm Management, Agribusiness and Marketing Course”

This program trained for Extension Workers from amphurs and districts.

#### 1. Objectives.

- To train extension workers from amphurs and districts.
- To prepare the manual, publication and audio-visual aid for farmers training program.

#### 2. Course contents.

	<b>Hours</b>
- Principle of Farm Management.	3
- What can extension workers do in Farm Management, Agribusiness and Marketing.	3
- Farm survey. Data collection,	6
- How to analyze input output data.	6
- Farm plan and budget.	5
- Farm records and account.	5
- Investment.	2
- Agribusiness development.	5
- Marketing.	5
- Discussion	2

### 4. Program “Farm Management, Agribusiness and Marketing Course”

This program trained for Target Farmers...

#### 1. Objectives.

- To train the target farmers, who done the Farm Management, Agribusiness and Marketing Demonstration Farms from 76 provinces.
- To train the farmers, how to do the farm plan and budget and how to do the farm records and account before improving their farms.
- To plan how to extend the each demonstration farms.

#### 2. Type of training.

Workshops in 76 provinces...

#### 3. Duration.

5-days. For training and practicing.

#### 4. Course contents.

	Hours
- Principle of Farm Management.	5
- How to improve the farms	3
- Agribusiness and Marketing.	3
- Farm survey. Data collection,	2
- Farm plan and budget (practice).	6
- Farm records and account. (practice)	6
- Crop, Livestock and Fishery Technology.	3
- Discussion.	2

## Stakeholder Needs Assessment

### Problems in Agriculture

Problems in agriculture stem from technical, economic and social factors. Major problems can be summarized as follows :

#### 1. Problems of the poverty of farmer and income distribution

In general, farmers are poor because of their main engagement in agricultural occupation which has to face different conditions such as natural disasters, uncertainties of markets and farm prices, as well as potential of good quality production to meet market demand. Farmers are regarded as the poorest group of the country.

#### 2. Problems of production efficiency

Agricultural production efficiency in Thailand is relatively low because the production depends mainly on rainfall, farmers are therefore unable to integrate the adoption of technology for the increase of their production. Furthermore, most farmers are less educated, which is the constraint in laying down production plan in line with changing situations. Beside, there remains problems about farming in unsuitable land. These factors result in the low production of various crops.

#### 3. Problems of land tenure

More than half of the Thai farmers have farm holding size of less than 20 rai per household. In the future, the farm land tenure is expected to gradually decrease because of limited land resources as well as the inability to compete with other production and services sectors to secure additional land. The small plots of land occupied by farmers is usually situated in non-irrigated areas, their income is therefore low which is insufficient for their living.

#### 4. Problems of marketing and farm prices

In general, the process of farm products are unstable and low because most farmers are small producers. The quantity of their production is in a small amount. Farmers still lack the facilities to store their products after harvesting period. The farm prices are determined by the marketing

mechanism at different period and farmers have no bargaining power for their production.

#### **5. Problems of technology transfer and dissemination of information for decision making**

Other problems and constraints of farmers are their education which is normally at the compulsory level only. However, the development of technology to increase the production efficiency and value of products is deemed necessary because the dependence on natural factors only does not enhance the competition in the world market. With the decrease of soil fertility, the major production input, technology and proper management has become essential. So, it is necessary that technology from elsewhere be modified and improved to suit local conditions before transferring to farmers. However, the farmers' adoption of such technology requires updated and reliable information together with the readiness of capital and procurement of production inputs.

#### **To solve the problem, DOAE promote and support farmers for farm management by :**

1. encourage local organizations and farmers to be able to analyze and draw up their own farm production plan at community level with the technical and information support from the extension agents.
2. Promote small farmers and those who stay in the state's allocated land to produce food for household consumption by adopting integrated farming, the "New Theory" of agricultural development and other alternative agriculture so as to reduce marketing risks and high cost of production arising from imported production
3. Encourage farmers' institution or local communities to lessen the dependence upon external fund and promote rural savings as internal fund, instead. This fund will be used for improvement of production efficiency, support of processing and agro-industries or downstream agro-industries towards the production of value-added products. In addition, another fund will be set up to assist farmers and farmers' institution in marketing aspect.
4. Support farmers' institution and local organizations to provide services in acquiring planting materials, breeding animals, and production inputs which are of good quality and farm prices to farmers.
5. Promote agricultural processing at household level to increase value of the products and develop a wide variety of product types to meet market demand.
6. Support the establishment of local markets as places for purchasing and selling agricultural products in each locality.

7. Enhance the setting-up of agricultural products storage at local level and accelerate the utilization of the existing ones so that the products can be gradually supplied to the markets according to the periodical demand.
8. Promote backyard vegetable and native vegetable production sufficient for household and local consumption.

### Stakeholders analysis and how to motivate

**Table 3 : Type of stakeholders and Motivational activities**

<b>Type of stakeholders</b>	<b>Motivational activities</b>
1) Farmer, farmer leaders, commercial farmers training agencies, NGOs	<ul style="list-style-type: none"> <li>- Training "Farm Management, Agribusiness and Marketing Course"</li> <li>- Farm Management Demonstration</li> <li>- Farm trials</li> <li>- Farm visits</li> <li>- Increased availability of inputs</li> <li>- Reduced cost</li> <li>- Price guarantee</li> <li>- Information on financial services</li> <li>- Marketing information</li> <li>- Market guarantee</li> </ul>
2) Local leaders, small farmers' organization, cooperatives	<ul style="list-style-type: none"> <li>- Profitability</li> <li>- Recognition</li> <li>- Creation of new mind-set</li> <li>- Adoption of new technology</li> </ul>
3) Private traders, bankers, market development agencies (organizations), government and private organization, input suppliers (private) government input suppliers	<ul style="list-style-type: none"> <li>- Risk reduction</li> <li>- Quality and Quantity</li> <li>- Service</li> </ul>
4) Agriculture extension workers	<ul style="list-style-type: none"> <li>- Opportunities of short-term and long term in "Farm Management, Agribusiness and Marketing Training Course"</li> <li>- Study tour in Farm Management Farm in the country and foreign</li> <li>- Transfer existing and new technology to the farm</li> <li>- Extend Farm Management Methodology</li> <li>- Expand the farm business</li> <li>- Support audio-visual aid</li> <li>- Farm management Handbook</li> <li>- Farm management Book keeping-record</li> </ul>

## **Constraints**

### **(1) Education**

It is not uncommon to find that 50-60 percent of farmers are illiterate in Thailand. A higher rate of illiteracy and low education among farmers make it difficult to diffuse the knowledge and modern technical know-how and therefore delay the process of development in agriculture.

### **(2) Marketing of agricultural products and production inputs**

Marketing of agricultural products and input materials together with the marketing of the agricultural finances are in the hand of the landlords and local merchants. Good seeds have been distributed only by landlords while rice marketing has been entirely controlled and regulated by the merchants in some other countries, thus making a situation of unreasonably high margin which goes to the merchants. This happens both in handling the purchase form and in selling the materials to farmers.

### **(3) Development of agribusiness**

Development of the enterprise producing agricultural input materials and equipment (fertilizer, agricultural chemicals, farm machinery etc.) is lacking behind the desirable level and the needed agricultural materials are either short of supply or too expensive. Thai's government has been using the policy of input price subsidy and some are being active in supplying the inputs directly to farmers but under the present situation of absolute shortage these inputs usually flow into the black market.

### **(4) Export of the primary products**

Trade venture in Thailand is generally characterized by the export of the primary products to the developed countries at the expense of the import of industrial products. But recently the export of the primary products from Thailand is gradually decreasing along with the reduction of the share of other countries in the world trade.

### **(5) Research activities**

One cannot help but say that the research activities concerning agricultural techniques are still underdeveloped in Thailand, yet, the research targets is often dealing with the basic aspects and the research in the applied field seems to be very limited.

### **(6) Extension service**

Needless to say that Thailand has facilitated the agricultural extension service system in one way or another, however, the activities have been far from sufficient. In many farming areas the number of the extension

agents is too small and therefore the coverage area assigned to them is often too wide to be efficiently managed. Moreover, besides their routine work which is difficult to be fulfilled, these people are asked by the government to help in distributing and handling agricultural materials to farmers and have to engage in other administrative chores.

### **Recommendation**

1. The Government must support the policy of developing the agricultural sector by increasing the efficiency of methods of production. This can be achieved by adjusting the methods of production through the integration of crops, livestock, fisheries and forestry within the farming systems as stipulated in the 8<sup>th</sup> National Economic and Social Development Plan (1997-2001)

2. The Ministry of Agriculture and Cooperation (MOAC) must support and strengthen the coordination among government officers in terms of budgetary and technical matters, as well as work benefits. Further, they should coordinate their work in adjusting land models for production systems within integrated farming systems.

3. The Government and/or financial institutions must set up available funds so long term agricultural credit can be provided to build up integrated farming systems with low interest rates for farmers in line with their production plan. This will help generate quick returns from their activities.

4. The Government must assist landless farmers in acquiring land in special areas in order for these farmers to make a living in agriculture. Furthermore, assistance must be given regarding models of production and related production elements. The production methods should be geared to build up integrated farming systems.

5. With regard to an efficient management of activities regarding crops, livestock, fisheries and forestry at farm or village level, the Government agencies and NGO's should coordinate in using the farm or village as the center of focus.

6. Local communities and farmer organizations should be stimulated regarding production techniques, management, buying and selling or agricultural inputs and produce, as well as contract farming, so these organizations can function as centers for production and marketing services.

7. Promotion of this farming systems : through research into sustainable farming systems by setting up demonstration farms, field trips and training courses. The objective is to increase farmers' income while environmental development has set in a policy to conserve and improve natural resources.

8. Agricultural extension services aim to overcome environmental problems for sustainable agriculture and the means that have been developed to achieve this include :

- encouraging farmers to use water for farming in economical and efficient manner
- encouraging farmers to adopt various techniques to conserve soil and water in their farmland
- persuading rural youth, farm women and farmers' group to participate in the community forest programme to build up the greenery for their farm families and communities
- providing knowledge on the proper use of agricultural chemicals and hazards arising from careless use
- subsidizing essential farm input in achieving sustainable production on agriculture

9. Extension workers should be trained on the Farm management, Agribusiness, Marketing, Appropriate knowledge and accurate understanding of the need for conservation of natural resources, for future transfer to the rural population

The limitation of sustainable farming systems development is the poverty of farmers; this makes them more interested in the income they gain than the loss of natural resources. There are also certain limitations and problems regarding technology transfer, low agricultural productivity, in appropriate land and agricultural create.

10. Technology transfer experiences problems such as lack of technology transfer resources, inadequate access to foreign technology, and incomplete infrastructure. Steps should be taken to strengthen infrastructure. Sufficient resources need to be made available to the extension services. There is a need for integration of technology transfer mechanisms into the extension systems.

11. There is a need to develop professionals capable of working under complex and fluid circumstances, with little supervision, efficiently, effectively and confidently. They should be able to diagnose farm problems, able and willing to listen and learn from the farmers and farm groups and at the same time must be good at offering valid options based on agricultural practices that could widen real choices available to farming community.

12. Measures should be taken to make extension more accountable, responsible and relevant; extension must be responsive to the problems and opportunities faced by the farming community of Asian countries.

13. Extension has a great number of individual methods and media at its disposal. Each method has its own properties. Research indicates the majority of farmers in Asian countries own a radio and this media enables a wider audience reach. However, complicated messages should not be conveyed through radio.

14. Shortcomings of the extension service can be due to organization defects and operational weaknesses and ineffective extension personnel. Additionally, economic constraints, deficient linkages with other institutions, political, cultural social and institutional constraints have been identified as limitations. Extension must be accountable to its clients, the farmers, and farmers must be responsible, at least in part, for extension.

15. Training, Evaluation and Monitoring, including Documentation

- Continuing training for the multidisciplinary team
- Commercialization of the successful Farming Systems technologies;
- The extension workers should receive basic

## Conclusions

Traditional systems of farming in Thailand were based in integrated farming systems, as these were low risk and provided the farmer with a small income and sufficient food for home consumption. The introduction of high intensive production systems mainly during the Green Revolution in the 1970's, diverted farmers away from their previously low risk, low input "sustainable" systems. Sustainable farming system is a farm scheme which involves many production activities in the farm including plants, livestock and fisheries. The yield of one activity can be used as input for production of others activities or recycling in the farm resulting in low investment and less depend on external input but more steady farm income. This farming systems are a logical and low risk method of farming. However, in practice a number of problems are encountered, mainly :

- Farmers' perceptions and willingness to adopt new systems and methods.
- Traditional farming methods.
- Lack of credit and loan facilities.
- Landlessness.
- Labour shortages and lack of skilled labour.

The 8th National Development Plan emphasizes the need for more sustainable farming systems, particularly those that increase small farmers income, maintain natural resources, reduce soil erosion and management of water resources. Integrated Sustainable Farming System are seen as one of the solutions to these problems. However a lot of investment is needed in promoting, setting up and managing these systems, along with major policies on credit provision to farmers and most important of all, land reform policies to help the landless rural poor.

Trained extension workers can contribute a lot of help farmers solve management problems in their daily contacts. For instance, they can advise the farmers to treat the farm as a single management unit. By analyzing the individual farm business, the extension worker can help the individual farmer develop his own farm plan. Then he can discuss both the problems and opportunities of putting this plan into practice.

Extension workers can also assist the farmers in arrangement to secure the needed supplies according to the plan. This guided help improves the managerial skills of the individual farmers. The aggregate achievements become very impressive for the areas or country as a whole when every farmer achieves his own production target as planned.