

III

PROVIDING AGRICULTURAL SERVICES IN RICE FARMING AREAS MALAYSIAN AND SURINAM EXPERIENCES

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CONTENTS

SUMMARY	91
1 RURAL INSTITUTIONS AS MODES OF GOVERNMENT INTERVENTION	92
2 RICE FARMING IN SURINAM - THE APPROACH THROUGH RURAL EXTENSION	98
3 THE APPROACH THROUGH FARMERS' ASSOCIATIONS IN WEST MALAYSIA	107
4 DISCUSSION AND CONCLUSIONS	117
GLOSSARY	123
REFERENCES	124

SUMMARY

This article focusses on the structure of selected rural service organizations and the modes of government intervention in rice-producing areas. A cross-organizational perspective is given by comparing agricultural services operating in rural Malaysia and Surinam. Both countries have tried to intervene in the existing farming systems by establishing public agencies and field offices, with the task of modernizing farming practices. In both countries, changes in cultivation practices occur if irrigation facilities are provided and the supply of farming inputs is secured. The contributions of the agencies are of the conventional type, and peasant farmers appear to make limited use of the services.

In Surinam, the institutional approach to rural development is manifested in a network of extension offices; extension work is combined with the provision of farming inputs. In Malaysia, on the other hand, a network of farmers' associations has been established, through which agricultural credit and farming inputs are offered to the farmers. Both approaches are compared in terms of field operations and effectiveness. It has been found that it is not only farmers who operate under conditions of resource scarcity; field workers also experience limitations in performing their role as "agents of change" on the rural periphery. So far, little evidence has been gathered on the existence of effective rural institutions. Present skills of field personnel seem inadequate to tackle the more complex problems of rural development at the area level. These institutions appear to function primarily as heavily subsidized units, created and maintained by the government. This article describes a number of organizational problems in reaching the farming clientele, and discusses some institutional changes at intermediate levels, to arrive at a better utilization of agricultural services by the farmers.

1 RURAL INSTITUTIONS AS MODES OF GOVERNMENT INTERVENTION*

One aspect of modern development has received limited attention, despite its importance for the process: the relation between public service agencies and their clients in rural areas. One of the common features of the developing nations is the creation of new organizations charged with planning and implementation of various programmes of rural development. Within the rural sector, organized efforts are undertaken to increase agricultural production and to improve living conditions of the rural population. The main reasons for these efforts are to be found in rapid population growth and related food problems. The importance of self-sufficiency in food production and the increase of rural purchasing power to provide markets for the new urban products, are among the several economic and political reasons for giving priority to agricultural development. This issue is sharpened by the current impatience with poverty and the low levels of productivity in rural areas. From a policy-making viewpoint a well-functioning public service sector is prerequisite for the development of the rural population at large and in securing the national food supplies.

1.1 Emergence of public agencies

The public agency is the organizational tool through which government and private corporations try to accomplish the many programmes of development and change. While sufficient and appropriate resources and technologies are essential to rural development, so are organizational structures which mobilize, channel, and regulate their flow and use (Uphoff and Esman 1974). In the developing nations, central government often appears to hold a near monopoly of organized action and powers of initiative. There is a great lack of organizational capacity outside the private and public sectors proper, and consequently an extreme concentration in specialized agencies occurs to initiate action (Moore 1966). This is aptly illustrated in rice-growing areas where central governments take the initiative in creating and maintaining large scale irrigation systems, which go beyond the powers of rural communities. Most governments try to intervene in the complex field of rural development by creating public agencies with special tasks in order to achieve

* This article is based on a paper read in 1978 at a workshop of the Institute of Social Studies in The Hague. I am grateful to Leo Fredericks and Louk Box for their useful comments on an earlier draft of this article.

change in the countryside. Agencies for river basin development for example can be typified as service organizations of a public nature. In many cases, dual service structures such as marketing agencies can be found with private, governmental or semi-governmental features. All these institutions can be conceived as the nuclei of organized intervention in the development process, and they can be regarded as instruments related to the implementation of particular task components. Apt examples are rural extension services, experimental stations, farmers' associations, and agencies dealing with the provision of agricultural irrigation water, farm supplies, food processing and marketing.

The management of rural organizations in plural societies is complicated as these institutions face so many client categories with their different value-orientations. Ethnic differences can influence the communication and behaviour of agents in their contacts with clients. Sjöberg and his associates (1973) have documented how sub-cultural differences have led to difficulties in official-client relations. They argue that bureaucracy is a means by which the middle class (of officials) has maintained its advantageous position towards the lower class. Whether intentionally or not, middle-class organizations have often offered their services to categories other than the lower-class clients. For example, public welfare agencies tend to encourage clients who best fit their middle-class values to make use of their services (Katz and Danet 1973). Those who administer the service are supposed to be in a better position to judge what is good for the client than he is himself. Etzioni (1964) has commented on this issue of separation of control from consumption or service utilization.

If we try to apply these abstractions to our specific theme of investigation, we have to search for a particular environment in which the rural population is served by public agencies, the measure of utilization of their services, and the organizational structure and functions of these institutions. Peasant farmers in this respect belong to those categories poorly equipped to make full use of resources which lie outside their immediate area of orientation: the family and the village.

1.2 The field worker's position at the rural periphery

In understanding the role of the field worker one has to consider his position in structural terms. His position and subsequent role in development work in isolated areas is affected by his post at the very fringe of his organization. Postings to rural areas are usually considered undesirable; they are compared with the more comfortable positions at

headquarters level.

In analysing his position, the field worker is not only located in a rural hinterland, he is also operating in a subordinate domain from an organizational point of view. This has many implications for the worker's position in his specific area. Firstly, he is very much dependent on information and logistic support from higher cadre. Secondly, the worker is placed outside the decision making process at the top of his agency. There is a general tendency among field personnel to refrain from taking responsibility for a wide range of subjects. They refer all matters of importance to their superiors. Excessively active behaviour is frowned upon; one should not take risks in undertaking something on one's own initiative. Thirdly, the field worker feels very isolated, as he receives little attention from higher staff personnel, and during their very occasional visits little interest is expressed in his actual work at the field level. Chambers (1974) has noted similar experiences of field workers in East African countries.

Role of the field worker

The role of the field worker is usually conceived as one being linked to his farming clientele. On closer inspection, his role is related to many other persons as well. One may depict his several relations in the following diagram (Figure 1).

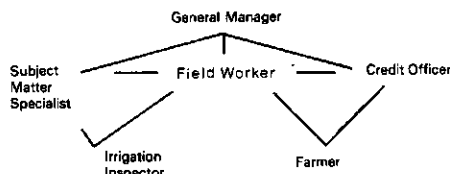


Figure 1: Role-set of the field worker.

Although the roles making up the depicted role-set seem to be rather rigid, in reality social relations between individuals can be described as loosely structured. The workers' role is sometimes adversely affected by tensions and conflicts as well. This is caused by his difficult position: he finds himself placed just between the organization and his farming clientele; parties with whom he has to cope in a different manner. From observations in the field, one may conclude that the field worker is extending the bureaucratic image of his agency to the public at large. He

is required to depict himself more in the role of a 'multi-purpose worker' than of a person in a distinct advisory position. As no specific demands are made of him in his subject matter, he cannot develop himself sufficiently in his proportional capacities. Lacking specific guidelines on his work, he tends to occupy himself with activities which conform to standard practices.

1.3 Scope of the comparison

Organizational theory covers a vast range of subjects and problems. Most studies of organizational importance have been undertaken in industrial settings, and very few are related to rural environments. We are particularly interested in organizational configurations which induce change in specific socio-economic and agricultural settings. Two separate studies in rice-farming areas in Surinam and Malaysia have been undertaken. In both cases, the structure and roles of public agencies and their interrelations with the rural clientele was of special interest. Our concentration on the performance of field personnel stems from the viewpoint that public agencies should be analysed at the lowest organizational level, that is where services are delivered to the people. Another area of interest is the administrative framework within which field units operate, and the policies of the agencies concerned. The main concepts used in this study are: organizational structure, relations between field workers and staff, interrelations between staff and other agencies, flow of communication between the clientele and field personnel, and the role of the last category in providing services. Such themes and concepts have been highlighted by authors like Blau and Scott (1963), Katz and Danet (1973), and Chambers (1974).

As some terms used in this article may need some clarification, short definitions follow:

COMMUNICATION - The transmission of information, ideas, attitudes, or emotions from one person or group to another, primarily through symbols. Communication forms the basis for all social interaction. In a formal setting (as an organization) the interrelated network of communication channels forms the communication system.

INTERVENTION - The interference of a state into the affairs of regions and communities for the purpose of compelling them to do or undo certain things, or to maintain or alter an internal condition. An intervention structure is a highly organized set of positions, exercising influence or power.

ORGANIZATION - A social unit having explicit objectives, formally stated rules and regulations, and a system of roles and tasks, each with clearly designated rights and duties. Complex organizations include informal relationships. Examples are government agencies, voluntary associations, business corporations, etc. A bureaucracy is a large-scale formal organization that is highly differentiated by means of formal rules and departments of trained individuals, working in an established working order or hierarchy, in which distinct levels of graded authority occur.

Limitations

Although the comparison of rural institutions in different settings is a challenging experience, some obvious limitations should be pointed out. Because socio-economic conditions in the two countries of study vary extensively, and because a considerable time-lag occurred between the implementation of the two studies, there is limited scope for drawing far-reaching conclusions.¹

In Surinam, the agricultural services fall under the administration of the Ministry of Agriculture. Main services are provided in the form of rural extension and the distribution of farming inputs. Farmers' associations in the Muda irrigation scheme (Malaysia) operate under the Muda Agricultural Development Authority, a regional agency. Through these associations, members can obtain agricultural credit and farming inputs. The goals of both institutional approaches, however, broadly cover the same objectives: the modernization of the rice economy and the provision of better living conditions for the farmers. The agencies in both countries are of a public nature, and can be described as service organizations concerned with inducing changes in rice-producing areas. The relations between the field personnel of these institutions and the farmers are considered as being of vital importance in the modernization process. Another difference between the two cases is the size and scale of the irrigated areas. In West-Surinam, the total irrigated area for smallholders comprised 15.540 ha in 1969. The Muda scheme in West Malaysia, on the other hand, occupies approximately 98.000 ha of irrigated paddy land. Also, considerable differences in farm size occur: in Surinam, farm sizes vary from 0.5 to 20 ha (with an average of 3.9 ha), those in Malaysia are almost confined to 0.4 - 2.0 ha, with an average of about

¹ Research work in Surinam was conducted in 1967-1969 and 1974; field work in Malaysia was undertaken in 1977-1979. Research grants were obtained from the Agricultural University and the Netherlands Foundation for the Advancement of Tropical Research (WOTRO).

1.6 ha. With these figures in mind, one can reason that Surinam rice farmers are in a better position to apply new cultivation methods than those in Malaysia.

Notwithstanding these variances, it is hoped that the comparison of the two cases under study yield some cross-institutional perspectives into how agricultural services operate, and how the farming clientele is reached.

2 RICE FARMING IN SURINAM - THE APPROACH THROUGH RURAL EXTENSION

The setting

This case study pertains to Surinam, one of the Guyana's, on the north-east coast of Latin-America. The study concentrates on the District of Nickerie (West Surinam), where irrigated rice farming is important (see map). On this coastal plain, bordered by the Atlantic Ocean, farmers of Asian origin till their paddy fields, which differ considerably in size and production conditions; part-time farming is predominant. In this coastal area a thriving rice economy has profited much from heavy investments in irrigation and drainage, and from intensive experiments in modern rice farming on large mechanized estates. Nieuw Nickerie, the district's capital, fulfils an important service and trading function in the region. At the end of the sixties a rapid transition took place from traditional rice farming to modern farming practices. The widespread use of new farming methods in rice production was facilitated by a suitable physical milieu, i.e. a well-developed drainage and irrigation system. With the introduction of double cropping the main innovation was the use of new rice varieties. These were mainly selected at the Foundation for the Development of Mechanized Agriculture in Surinam and distributed by the extension service of the Ministry of Agriculture. The broadcast method of rice cultivation superseded traditional transplanting of seedlings and is nowadays standard practice with small farmers. The application of chemical implements such as fertilizers and insecticides followed the introduction of new rice varieties. Farmers turned to mechanized farming methods in preparing their fields and in harvesting the crop.

Altogether the west coastal area contributed significantly to the production of rice in national terms; the share of the smallholders (all categories) increased from 32,300 tons in 1968/'69 to 63,400 tons of paddy in the agricultural year 1975/'76 (Second and Third Census of Agriculture in Surinam).

In sharp contrast with West Surinam, farmers in the non-irrigated rice producing area of Mid Surinam were not inclined to apply new farming methods. This can be contributed to the fact that only a single crop of paddy is obtained there. Although field demonstrations were undertaken by extension agents, the new technologies did not catch on in this area, as they proved too risky and insufficiently profitable under existing farming conditions. Only the growing of vegetables increased with the expanding urban market of Paramaribo. The lack of attractive agricultural activities led to an increased migration of young farmers to the capital

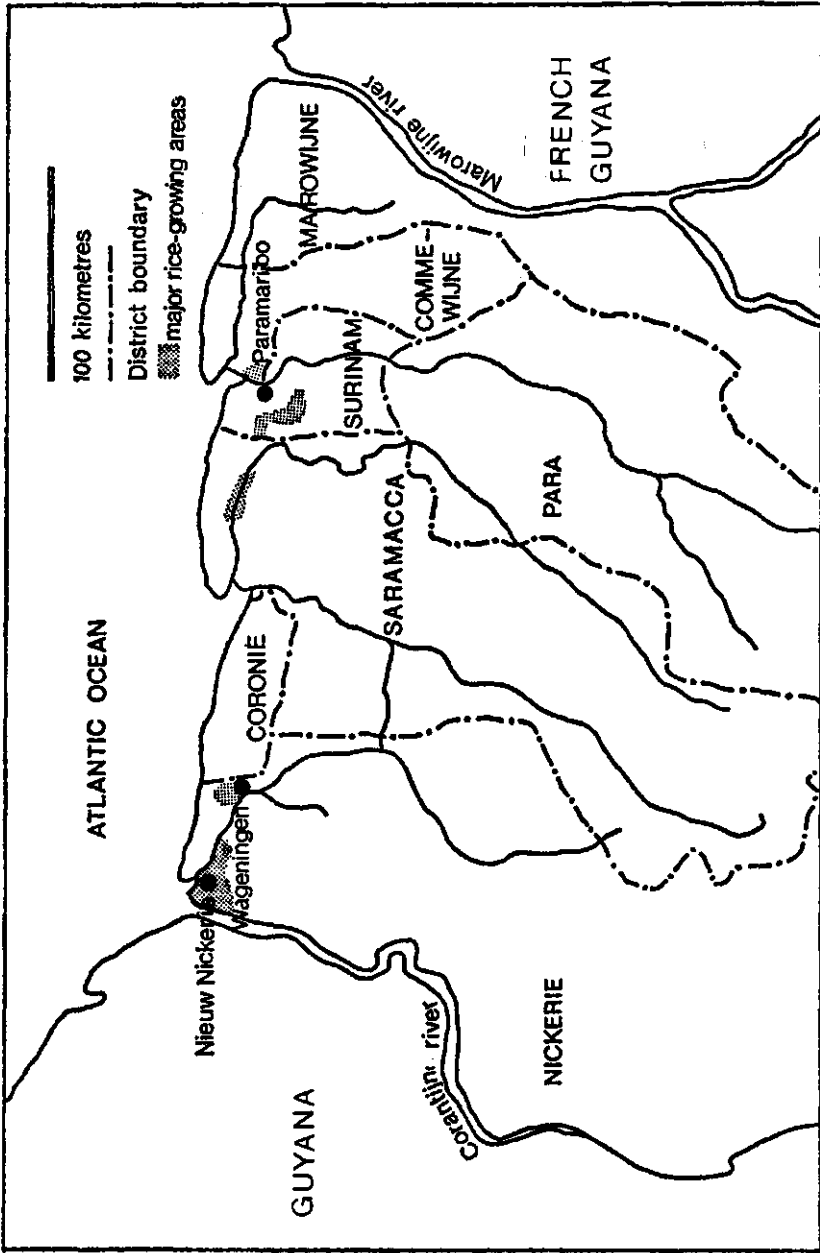


Figure 2: The northern part of Surinam

of Paramaribo. This city offers new job opportunities, educational facilities, plus a pleasant living environment.

2.1 Structure and tasks of the extension service

The organizational features of the extension service reflect in many ways the hierarchical framework in which many governmental services are conceived. The headquarters is based within the Department of Agriculture, one of the three main departments of the Ministry of Agriculture, Animal Husbandry and Fisheries. For our study, relations with the Agricultural Experimental Station were taken into consideration. Other important relations for extension work are embedded in the services for Project Management, Agricultural Education, Mechanization, and Agricultural Engineering; these come under the Department of Agriculture. A small section for Home Economics and Rural Youth Work has a special niche within the Extension Service.

The main areas of extension work are at district and sub-district levels. Activities of field personnel are supervised by district agricultural officers, who come administratively under the head of the national extension service. They are in fact considered as representatives of the Ministry of Agriculture as a whole. Within the boundary of their offices at the district level varied tasks are performed, ranging from supervising field personnel to reporting to headquarters and receiving visitors. Other tasks vary considerably with the characteristics of the agricultural area and the composition of the farming population. In West Surinam, for example, the many changes in rice cultivation methods have carried with it complexities in providing for the right amount of farm supplies, especially rice seeds and plant material. Demands for an ample supply of irrigation water call for close consultation with the District Commissioner and the representative of Public Works. Shared responsibility for the upkeep of canals and the distribution of water often result in misunderstanding and conflicts.

This rather dynamic state of affairs differs sharply from the languid flow of work in most extension offices in Mid Surinam. The work rhythm there seems to reflect the slow pulse of the agricultural scene as depicted above. This climate seems ideally suited to the fulfillment of routine jobs like collecting data and the filling in of standard forms. Extension agents remarked that they found it very difficult to have meaningful contacts with farmers who did not appear to take sufficient interest in their farm enterprise. Only in other projects, notably banana plantations, were some significant activities undertaken, although even

there project staff seemed very busy coping with the many regulations and procedures involving subsidies and credit schemes.

The political pull

Notwithstanding the few activities undertaken in the depressed zone of Mid Surinam, the ratio of extension agents to farmers was higher than the one in West Surinam (1:310 against 1:390).² Thus the staffing varied inversely with the quantity of field operations per agricultural area. In explaining this paradox, consideration needs to be given to the political pull of the capital. Within the environment of the city of Paramaribo close relations between the political elite and their public can be observed. Favours and even jobs in government services are easily obtained through the 'right' (political) approach. Even so, disfavours occur when another party comes into power, sometimes resulting in shifts in rank and position within the administrative structure of the Ministry. The situation in West Surinam was different in some respects. Political influences were also felt, notably with the distribution of land in reclaimed areas. District agricultural officers found themselves in awkward positions when applying objective criteria to applicants, while political preferences were often made explicit from powerful quarters at the top of their agency. Another consequence of being located some distance from the centre was apparent in the long procedures necessary for obtaining approval for allocating funds. Usually, the delivery of agricultural implements and office stationery took quite a long time (3 to 6 months). Long telephone calls were made to expedite the procedures. Here the keen interplay of informal relations was necessary for getting the desired approval.

Interestingly, farmers may use informal relations as well. Discontented with the long awaited outcome of promised action, they occasionally send a delegation to the Minister himself. This practice, which has in most cases a political background, is a very effective way of shortcutting the decision-making process within the bureaucracy. The Minister, obliged to his followers, settles the affair by personal intervention, thus bypassing several officers at department level.

² These are very high ratios if compared with the prevalent ratio of one agent to 3.400 farmers in the Caribbean. In Malaysia, the ratio is of one extension agent to 1.500-2.000 farmers.

2.2 Goals and goal displacement

Officially stated goals of extension work in Surinam are, among others:

- to give advice on agricultural and economic issues to farmers and their families by way of farm visits, demonstrations, training courses and publications;
- to supply farm inputs, especially for rice cultivation and animal husbandry;³
- to stimulate the development of the co-operative movement in rural areas.

At first sight these goals seem reasonably clear; in practice, however, they are too general to arrive at specific activities over a certain period of time. Most field personnel did not see how their work was related to the goals of their organization. Without proper guidance they felt uncertain in undertaking new activities in the field of rural extension.

If we compare the above-mentioned goals with the actual work performance of extension agents, the following graph is illuminating.

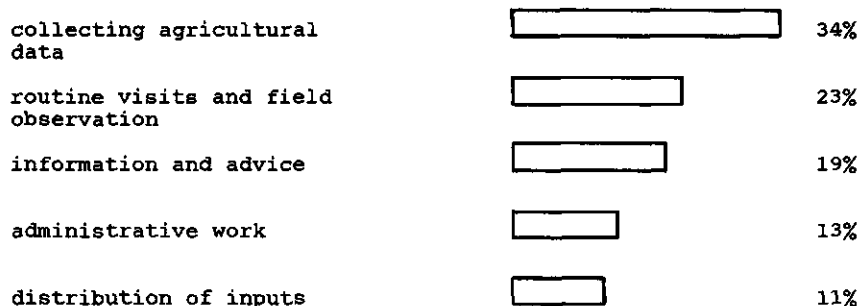


Figure 3: Average distribution of extension work in one year.
Source: Kalshoven 1978.

This outcome, based on written information from the extension agents themselves, showed that the collection of data for statistical purposes predominated over extension work in the traditional meaning of providing information and advice on new farming methods and implementation. As the collecting of data became routine procedures at field level, we may conclude that the well-known phenomenon of *goal displacement* had taken place.

³

In the late sixties, farmers could only apply for credit at a commercial bank. Later, agricultural credit was provided by the Agricultural Bank.

Some staff members justified the collection of agricultural data by saying that this work was indispensable for planning purposes at headquarters. They had a point there, but field personnel retorted that statistically computed data never reached their offices again. At the time of this field study a delay of six years appeared in official year-book reporting. Some officers remarked that the purpose of these routine jobs was to keep subordinates at work; other said that they were things to show to their superiors, who expected some evidence of extension work. This shows how personnel had become pre-occupied with routine procedures. Nevertheless, the presentation of the data in graph form was a shock to the extension staff. "We knew that a lot of data collecting was being done, but we did not realize that it had reached such a size". Not long afterwards it was decided that a limited number of extension personnel should be appointed as data collectors for the department. The remaining agents, relieved of this work, should concentrate on extension work. During an additional study visit five years later, the author could verify that some of these agents gave better evidence of their work. A new training programme had also given them more confidence in their job performance.

2.3 Relations with the experimental station

Generally speaking, work relations between extension agents and researchers at experimental stations or research institutes are vital in extending knowledge to potential users. In this particular study the communication flow appeared to be of a complicated nature, because of differences in orientation and work environment. Extension agents are facing the complexities of changing farming systems and related problems of a general nature. Researchers, on the other hand, concentrate on a specific area of research within their competence and discipline. There are more differences between the two categories, which are summarized in Table 1.

These differences in orientation and work situation appeared to have many implications for the relation between the two categories of workers in Surinam. Extension officers at the higher echelons were very critical of the work of their colleagues at the experimental station. Most complaints were about the long periods of time involved with research work and the small significance of results to immediate farming problems. There were also certain misgivings about the status and privileges of research people at the experimental station near Paramaribo.

Table 1. Orientations of researchers and extension agents.

<i>the researcher</i>	<i>the extension agent</i>
<ul style="list-style-type: none">- is mainly interested in developing and testing new insights and knowledge- tries to apply universal principles to particular cases- studies a limited number of aspects under controlled conditions (lab situation)- is connected to the scientific community of his discipline	<ul style="list-style-type: none">- is mainly interested in disseminating existing knowledge- is directed towards the practical implementation of new methods- is confronted with many inter-related aspects of changing farming conditions (real life situation)- is connected to the farming population of a particular agricultural area

For their part, researchers did not think highly of the results of extension agents, as these were of 'piecemeal importance'. Because of their secondary school level of education it was assumed that they showed no particular expertise in their work. An analysis of research reports showed a tendency to concentrate on problems connected with cash crops. This can be traced to the original orientation of early research workers to Surinam's plantation economy of historical times. Extension agents, on the other hand, tended to be more oriented to problems of small farm enterprises.

2.4 Contacts with farmers

Farm operation factors

In the statistical analysis of data from West Surinam farm operation factors took a central position.⁴ Factors like farm size, ownership of a tractor and a threshing machine are important indications of the available capital of the farm. These factors showed statistically significant correlations with other variables, such as frequency of contacts with extension agents, visits paid to rice estates and the rate of innovations. Owners of large farms appeared to have the most frequent contacts with extension agents and with the managers of fully mechanized rice estates.

⁴

A detailed account of this analysis is given in the main publication on this study (Kalshoven 1977).

The ownership of a tractor showed almost the same rate of correlations as that of farm size. The tractor was not only a valuable asset in mechanized rice farming, but was also a factor contributing to the mobility and status of the farmer. These findings are in line with theoretical implications that persons of high socio-economic status have better access to public service agencies than those of low status (Sjoberg a.o., 1973). With their larger farmholdings, they were also in a better position to experiment with new farming methods.

Farm visits

In probing the appearance of the high correlation of farm size and the visits received from extension agents it is interesting to note the reasons for these visits. According to many respondents, extension personnel visited their farms mainly to collect information about applied practices, planted varieties and the general state of affairs on the farms. Only in a few instances was actual information given on the application of new farming inputs. This is in full correspondence with the actual work behaviour as shown by the agents (see fig. 1). For this and other reasons more significance should be attached to the 'active' contacts of the farmers, i.e. visits paid on their own initiative.

Ethnicity

In a plural society like that found in Surinam, relations between members of the several ethnic groups play an important role in social interaction and communicative behaviour. The main ethnic group consists of Creoles, with a majority in Paramaribo; Surinam people of Hindustani and Javanese backgrounds are dominant in rural areas. In their relations with extension agents significant differences occurred between the farmers of Asian origin. Both groups made use of new rice cultivating practices, but obtained their information through different communication channels. Analysis of the research data from both areas showed that 60 per cent of the Hindustani farmers had visited the seed stores and offices of the local extension service in one year, against 35 per cent of the Javanese farmers. Also, the first group showed a higher frequency of contacts with extension personnel.

In interpreting this phenomenon one should look at the composition of the extension service itself, as most personnel of low and intermediate grades were of Hindustani origin. Interaction between Hindustani farmers with extension agents becomes easier as they speak the same language (Surinam-Hindi) and share the same cultural background. Another possible interpretation lies in the fact that members of the Hindustani popula-

tion group showed more dynamic patterns of behaviour than members of the Javanese group. The latter were rather reserved in their relations with people from other cultural backgrounds. Their own cultural values, centering around the basis concept of r u k u n (internal social harmony) at the same time isolated them from members of other ethnic backgrounds, who predominated in the several public agencies. It is therefore remarkable that they have adopted so many innovations on their farms, although at a slower rate than Hindustani farmers of the same farm size category. Javanese farmers appeared to have established a good communication network within their own ethnic group, showing a high level of social cohesion. Knowledge obtained during their work on one of the large rice estates was willingly shared with farmers of their own neighbourhood. Hindustani farmers seemed more inclined to keep information of modern appliances to themselves and to their immediate kinship group.

3 THE APPROACH THROUGH FARMERS' ASSOCIATIONS IN WEST MALAYSIA

Location

The Muda Irrigation Scheme is located in the States of Kedah and Perlis of Peninsular Malaysia. The scheme occupies a flat alluvial plain, approximately 65 km long and 20 km wide, between the foothills of the Central Range and the Straits. Alor Setar, the capital of Kedah, lies at the centre of the scheme; Perlis' capital Kangar is situated at its northern edge (see map).

The irrigated area occupies approximately 98.000 ha of paddy land, this is about one-third of all paddy land in Malaysia. The area comprises roughly 60.000 Malay farm families, two-thirds of whom rely on paddy farming as their sole source of income. The average farm is about 1.6 ha; there are considerable variations in farm size and income. More than 40 per cent of the farmers are tenants, rents are paid predominantly in cash (Afifuddin, 1978). Soils are mostly heavy marine clays, well suited to paddy production. There are, however, acid-sulphate soils in natural depressions, comprising approximately 26.000 ha or 27 per cent of the total area. Although these soils are used for rice production, yields are lower than those from the remainder of the area.

The climate is influenced by the south-west monsoon in the period of May to October, and the north-east monsoon in the period November to March. About 85 per cent of the annual rainfall occurs in the period May to November, the traditional rice growing season. Insufficient rainfall during the remainder of the year precludes the growing of a second rice crop without supplementary irrigation. Temporal and seasonal variations pose problems in managing the irrigation and drainage system. This was dramatically illustrated in 1977, when prolonged droughts during both monsoon periods seriously affected cultivation patterns and paddy production. In fact, Muda's off-season crop of 1978 was officially abandoned, owing to dangerously low water levels in the Pedu and Muda reservoirs.

The Muda irrigation scheme

During the early sixties, when rice imports became a heavy strain on Malaysia's economy, the Government decided to launch two large-scale irrigation projects in North-west and North-east Malaysia, so as to achieve self-sufficiency in rice. The magnitude of the Muda project alone can be estimated in terms of national paddy production: the area

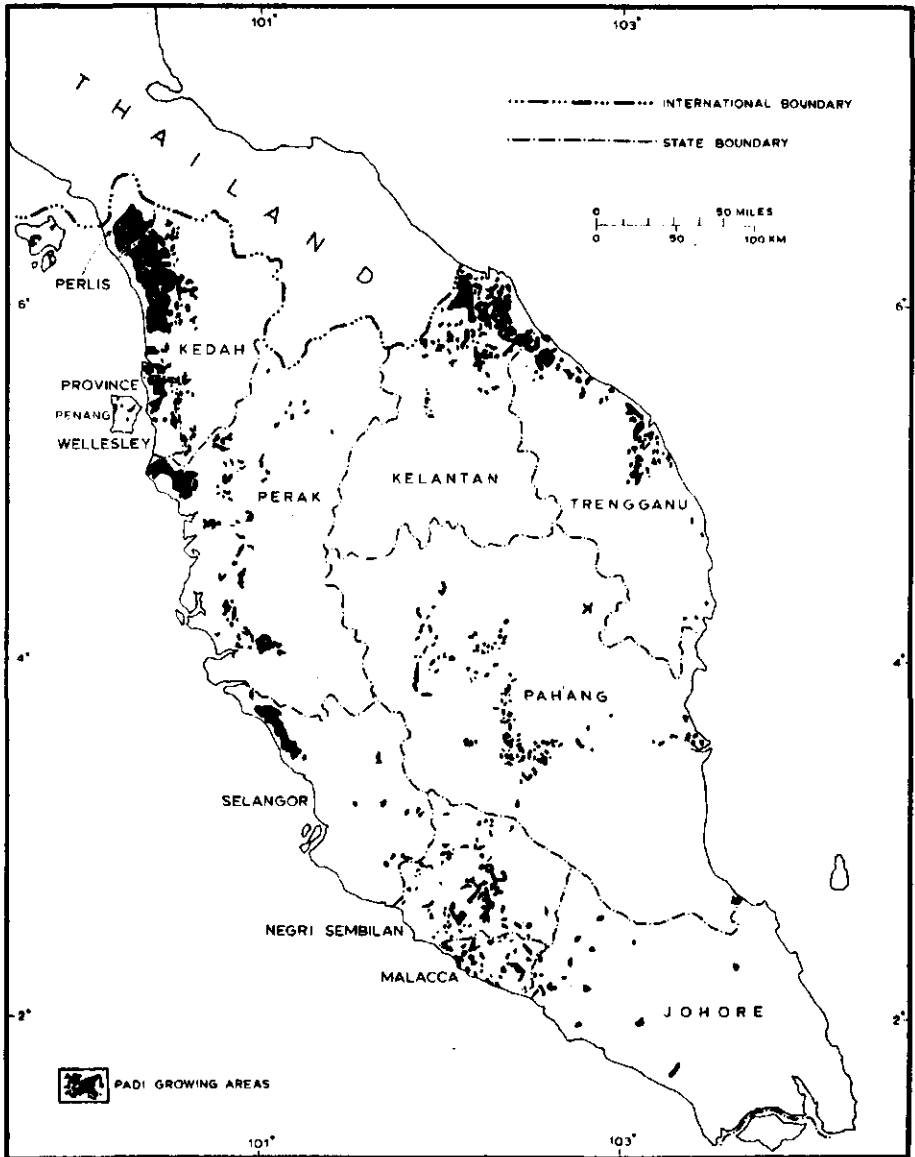


Figure 4: Distribution of paddy in West Malaysia.
Based on Wong, 1971.

at present produces 40 per cent of Malaysia's total rice output. This project approach fits into the national political aim to raise income levels of all those in the lowest income groups of the population, i.e. the Malay segment, of which paddy farmers form a substantial part (Third Malaysia Plan).

Project works for the Muda area began in 1966 with World Bank assistance; the works included the construction of the Muda and Pedu dams with a tunnel connecting them; a headworks and main canal system; improvement of the existing, and construction of new distributor canals; and drainage construction (Muda Irrigation Project 1975). The project was originally conceived to achieve full double cropping of paddy in the Muda area. Only secondary attention was given to potential yield increases, and no provisions were made for on-farm development. One gets the impression that the project embarked primarily on the physical aspects of irrigation; social, economic and agricultural aspects received little attention.

With the creation of the Muda Agricultural Development Authority (MADA) in 1970 a semi-autonomous agency was installed, responsible for the planning and implementation of projects within the Muda area. According to the statutes MADA is responsible to the Minister of Agriculture. In practice, MADA is considerably independent in its operations and day-to-day affairs. All project-related activities in the Muda area are under the control of the General Manager, who thus exercises great power in policy-making and implementation. Main activities include operation and maintenance of the irrigation system, the provision of credit, and the supply of inputs.

3.1 Farmers' Associations

Farmers' Associations (FAs) can be generally described as rural institutions, introduced by the Malaysian Government, through which it is hoped to achieve both economic and social development at the local level. FAs were established in 1967, in order to improve the socio-economic status of the rural population. They have been modelled on the Taiwan system, modified to local conditions. Their main objective is economic development by providing facilities for local credit, agricultural inputs and extension, and by increasing productivity and income at the farm level. The essential aim is to create Farmers' Development Centres as focal points for all economic, technical and social activities in an integrated way (Afifuddin 1978).

Originally, FAs were conceived to become centres for local action; farmers are expected to run the associations as their own organization. One should keep in mind, however, that the associations have been created and introduced by Government action, and not by the farmers themselves. They should therefore not be considered as co-operatives, despite the fact that the same associations are officially labelled as farmers' co-operatives in other parts of Malaysia (Ahmad Sarji 1977). Legal institutional framework was provided for by the Farmers' Associations Act in 1967. Business activities and liabilities of each separate association are contained in the Farmers' Association Constitution, leaving scope for different operations of the individual institutions. As pointed out by Fredericks (1977), at the operational level co-ordination problems are amplified by a plethora of agencies, including those that are development-oriented, and others such as local government, public health, utilities, etc.

For implementing the FA programme in the Muda region, the project area was divided into 27 FA units of about 4000 ha, mainly based on irrigated area and geographical boundaries. Membership in the established FAs usually represents 30 to 35 per cent of the eligible farmers.⁵ Each FA has an office block and meeting room, storage facilities, and a workshop. The offices are clearly marked by signposts along the road. Every FA is subdivided into several Small Agricultural Units (SAUs). The main functions of these units are to provide representatives for the FA board of directors and to serve as contact points for FA staff, usually through the chiefs of the units.

Associations' role in policy making

Special mention should be made of an assembly, consisting of 27 chairmen of the FAs board of directors. This committee has been installed with the primary purpose of stimulating farmers' interests at Muda's regional level. The assembly has a consultative function in MADA's organizational structure. The 27 chairmen in their turn elect an executive committee of nine members from among themselves. The most discussed topics are of political and economic importance, pertaining to all matters affecting the farmers' interests in the Muda region.

Farmers' Association management

To implement activities, a general manager (with the rank of Agricul-

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A detailed field study on the utilization of FA services by the farmers has been undertaken by Jon R.V. Daane. His major publication (Ph.D. thesis) will appear in 1981.

tural Assistant) and four or five Junior Agricultural Assistants are appointed at each of the 27 FAs. These officers perform duties in the field of administration, accounting, credit, agricultural economics and extension. Most managers remarked, that the officers perform manifold duties. This apparently has repercussions on the division of labour of the personnel. According to the managers, much of the work centres around the provision of credit and the recovery of loans. A rough estimate of the division of work, based on information from the managers themselves, is that most officers spend approximately 70 per cent of their time within the office, and 30 per cent outside, mainly for making field visits to FA members.

At present, FA management is concentrating on the provision of short-term credit and inputs for paddy production. The provision of credit is far the most important function of the FA, as it acts as an agent for the Agricultural Bank of Malaysia. From long interviews with FA managers it appears that the associations do not function so much as development centres, but more as local centres for supervised credit. Most MADA officers agree on this limited scope of activities, as a great deal of the effort, so far, has been directed towards the provision of credit and inputs to the FA members.

Some of the visited associations have small projects, like the manufacture of furniture and clothing, and poultry farming. These projects are run by the FAs themselves, providing jobs for a small number of sons and daughters of FA members. These enterprises are stimulated by MADA staff, but the associations are left on their own to implement them. Although some well-established associations make some profit on these projects, other associations face serious difficulties in making a profitable business in the long run.

Although the writer is not in the position to evaluate the managers' capacity, their own remarks that there is a lack of management skills. For the time being, one could describe the managers main function as managerial, as their designation suggests. One may bring this in line with their appointment as government officials, serving in an administrative capacity. At the same time, it should be added, that some of the managers seem willing to play an active role, but lack the skill and assistance of qualified staff to implement development work on the local level.

The officers who are designated to run the associations have received a college education on agricultural matters at Serdang but have had no training in the management of rural development. It is being argued, however, that they obtain experience on the spot and so develop their management capacity.

The main issue here is, what role is expected of them by their superiors. If they have to perform duties as managers of vital developmental centres this calls for more dynamic roles in managing rural development. So far, the impression is made that they have to perform administrative duties, especially in the provision of agricultural credit. At headquarters it is felt that the managers act primarily in their capacity of officers in charge of agricultural development. This designation highlights their function as a government official, while their managerial capacity seems to be of only secondary importance. Although it is expected that field officers also act as managers, there is in fact little opportunity to do so in their day-to-day affairs. There is thus more occasion for exercising administrative functions than for developing businesslike characteristics. Similar observations on the orientation of Malay civil servants have been made by Puthucheary (1978).

3.2 Credit function

Before the Muda project was established the major source of credit was constituted by shopkeepers, rice millers, rice dealers, friends and relatives. The only institutional credit available was provided by rural credit societies and multi-purpose co-operatives at the local level. The co-operative credit scheme did not function effectively, because of poor management, small membership and poor repayment records (Muda Irrigation Project 1975). The traditional credit market was, and still is, the main provider of credit.

With the establishment of the Muda project it was realized that a suitable credit scheme was an essential feature of successful project implementation. With technical assistance from the World Bank a new programme for supervised credit was drawn up. After running two pilot projects in 1970 the Agricultural Bank of Malaysia was entrusted to finance and supervise the scheme. Although there seems to be an increasing receptiveness by the farmers to make use of agricultural credit, interviews with general managers brought some serious problems to light, among which the recovery of loans appeared to be the toughest one.

Recovery of loans

It is commonly acknowledged that the recovery of loans is one the most vulnerable spots of many agricultural credit institutions. In the early years of credit implementation in the Muda area repayments were about 95 per cent, which was a good recovery record. Credit officers nowadays complain, however, about a slackness in repayment. One well-established FA sets to record:

Table 2. Recovery of loans over a period of five seasons in the Muda region.

1974/ 1 & 2	1975/ 1 & 2	1976/1	1976/2	1977/1
98%	97%	90%	84%	76%

This sharp decline in repayments since 1975 is experienced throughout the Muda region. Overdue payments by farmers to the FAs or downright failure to repay their debts at all is felt as the most serious problem by the managers.

Asked what measures are taken to recover the loans, most managers said that farmers were reminded and advised by FA staff to repay their loans during farm visits. Some managers are trying to involve the board members in the recovery process. One gets the impression that farmers are admonished by sweet reasoning, which is required from people who respect the Malay norms in inter-personal relationships. When confronted with the question if any legal action was taken, most managers declared that this was 'under consideration'. In recent years no legal actions have been undertaken. Here one encounters a dilemma between the FAs and the Agricultural Bank, as the latter assumes that recovery of loans is the direct responsibility of the local credit centre. It is obvious that if one refrains from taking appropriate action the present credit scheme will be gravely endangered (Fredericks, Kalshoven and Daane 1980). Even so, it is common knowledge that farmers rely to a great extent on middlemen and shopkeepers, who provide money readily and who have a keen eye for the apparent needs of their clients. In this connection there are good reasons for arguing that these traditional sources of credit fulfill a valuable role in the paddy economy, especially now that excessive interest rates have been abolished.

3.3 Rural extension

At first sight the well-located and strategically placed FAs throughout the Muda area seem ideally equipped for their development task. One of five Junior Agricultural Assistants of the FA staff is specifically charged with extension work. The four other JAAs are also expected to undertake extension activities, besides their specific duties in the fields of credit, accounting, administration, and economic activities. On closer inspection, the present ratio of one extension worker to

1,500-2,000 farmers is too large to do any effective extension work. As stipulated above, the credit and administrative functions of FA personnel takes so much of the attention that there is little time to contact farmers for advisory purposes. Most field visits are used to admonish the chiefs of the small agricultural units to remind farmers to repay their loans. Ironically, instead of being helped in his extension work by the other field staff, the extension worker is expected to assist his colleagues in their respective duties.

According to the general managers of the FAs, not much effective assistance has been experienced so far in the form of practical information from agricultural research stations. These remarks reflect on the field workers' own position as well, as they consider that the knowledge received from their college education is inadequate for giving practical advice to the farmers on agricultural matters. As one manager candidly observed: "At present we feel inferior to the farmers; our field visits cause much embarrassment to us". Apparently, there is much scope for improving the credibility of field workers at all levels.

During interviews with general managers it appeared that the term extension has taken on a special connotation. Many officers used the term in denoting the necessity 'to extend our FA activities to the farmers'. This is not an isolated conception at the field level; at headquarters one of the staff remarked that 'we have to extend our image to the farmers'. One can easily conclude that there is apparently very little practical knowledge available on agricultural matters.

3.4 Cultivation practices

Considerable changes in rice farming have occurred since the creation of the irrigation scheme. Before its implementation, farmers were growing a large number of rice varieties, mainly based on Malay and Thai stock. Most varieties were tall and susceptible to lodging, and matured in 170 to 180 days. When the irrigation scheme was in an advanced stage of implementation, there was concern about the non-availability of new varieties. Later, the introduction of such varieties was successfully implemented through pilot projects. Under favourable conditions, farmers now obtain yields of up to 3.5 ton/ha.

The preparation of paddy land has undergone a rapid change since 1966. Traditionally, most of the land was ploughed with buffaloes. Later, many farmers made use of hired tractor services. Nowadays, two-wheeled pedestrian tractors are very popular for the cultivation of the land. Very few farmers still use animal traction for the final stage of land preparation.

Very little change has occurred in the planting techniques. Wet seed beds are still much in use and 25 to 35 days old seedlings are transplanted with a "kuku kambing" (a forked stick resembling a goat's hoof). Notwithstanding the introduction of double cropping, great variation occurs in actual cropping patterns. During both seasons, crops can be seen at all stages of development. There are large noticeboards, placed at strategic points, displaying the dates on which the paddy farming activities should begin and be completed. Nevertheless, actual practices differ widely from the recommended dates. There are valid reasons for this, as farmers face problems in early water supply, and because of shortages in transplanting and harvesting periods.

The use of fertilizers is common practice, but in some areas the amount used is much less than recommended. Few farmers use pesticides and herbicides. Harvesting, threshing and winnowing are still largely carried out by hand; the paddy crop is transported to the road and house mainly by bicycle. For drying purposes there are very few drying floors available; most farmers spread the grain out on mats.

One does not get a clear picture about MADA's role in the introduction of new rice varieties. The Section of Agricultural Input Development and Distribution is mainly concerned with the distribution of fertilizers and agrochemicals through the Farmers' Associations. A seed exchange programme is in operation, under which farmers can exchange their seed for improved varieties on a weight for weight basis. At present, the programme can only provide a small portion of the desirable amount of fresh seed supply. FA personnel refrain from recommending any specific rice varieties to the farmers. The farmers' initiative in planting improved varieties of their own choice is shown in the increasing popularity of "Seribu Gantang", a non-recommended variety.

Rice breeding and selection is the main responsibility of MARDI's experimental station at Bumbong Lima in Province Wellesley. There is also a field research station near Alor Setar. The main emphasis is being placed on disease and pest resistance, early maturation and nitrogen response.

3.5 Marketing

Time and again the question is raised which facilities should be used to market the surplus of farmers' produce. In many cases, such facilities are created by government intervention, for instance by para-statal arrangement. This is done with a view to circumvent the role of middlemen and traders of Chinese origin.

In 1967, the Malaysian Government intervened in rice marketing by establishing the Paddy and Rice Marketing Board (under the federal Agricultural Marketing Authority), which was incorporated in the National Paddy and Rice Authority in 1971. The previous Board started its operations by providing drying and storage facilities in the Muda region. The Rice Authority extended these facilities in the first place. Since drying alone was not considered to allow adequate intervention in marketing, it was decided to provide milling facilities as well. The Authority currently has 17 operational complexes in the Muda area, nine of which have integrated rice milling units.

On visiting these modern complexes, little activity seems to be going on in comparison with the smaller units of private mills. Apparently, private millers have also installed driers working at a much lower cost than imported equipment for the government units. According to FA staff, farmers prefer to go to the private millers, as these give a better price. Transport to the complexes is also a problem for many farmers. Apparently, much preference is given to continue dealings with the well-established licensed shops in their immediate surroundings. It is therefore generally felt that official facilities are under-utilized to some extent.

Farmers, however, do bring part of their crop to the Authority's complexes, mainly in the off-season, when the paddy is wet and private mills refuse to accept it. When the paddy is received at 25 per cent moisture content, 21 per cent is deducted from a 100 lb bag of paddy. Mills lose considerably as the extra drying processes are expensive and time consuming. Nevertheless, all offered paddy is taken in; the handling of wet paddy may be seen in terms of a subsidy for the farmers.

In promoting agro-business through Farmers' Associations attempts have been made to provide paddy marketing outlets at the FAs. These trials have been abandoned as the management capacity of the associations was not adequate for undertaking such complex activities. General managers do not seem eager to undertake marketing activities with the present staff and equipment (Fredericks, Kalshoven and Daane 1980).

In conclusion, it can be stated that despite the several measures of the Malaysian government to reform the paddy marketing structure, traditional marketing channels are still in use to a great extent.

4 DISCUSSION AND CONCLUSIONS

In the foregoing chapters two approaches in providing agricultural services to rice farmers have been presented. In Surinam, the Ministry of Agriculture has established district and field offices for extension work throughout the country, and notably within irrigated areas. In Malaysia, the provision of rural extension and farming inputs has been combined with the administration of agricultural credit, through a dense network of farmers' associations (called farmers' co-operatives outside the Muda scheme). Both approaches are compared in terms of field operation and effectiveness, whereby the role of field staff is highlighted. Between the two rural areas, many differences occur in farming conditions and cultivation practices, making an overall comparison very difficult. It is worthwhile, however, to clarify the main issues of the two approaches, and to comment on the organizational consequences.

4.1 Irrigated areas as domains of government intervention

Rural institutions do not come into existence by chance; they are purposefully created to initiate changes in existing rural environments. In our case, agricultural services have been created by national governments to introduce new farming methods in paddy farming areas, and to stimulate farmers to achieve better production standards. At the same time, these institutions and services relate local communities to intermediate and national centres, incorporating them into the larger society.

In both countries these goals have been reached, or are in a state of implementation. This has been the accomplishment of rice farmers themselves; it is very difficult to evaluate the results of the agricultural services in the field. Their representatives belong to another world, yet unknown to many farmers, who meet them with proper respect, although with much reserve.

In both Surinam and Malaysia, capital-intensive investments have been made in the construction of irrigation and drainage systems in the paddy landscape. Environments have been created which are suitable for the introduction of new rice-farming technologies; the provision of irrigation water is a conditional factor in achieving a higher paddy production. This is in accordance with the expectations of the results of the "green revolution". One would expect that modern irrigated areas also form fertile environments for farmers' participation and action. There is more reason, however, to argue that these areas form ideal domains for government intervention in rural development. This is readily illus-

trated by the fact that in both countries single cropping areas have been converted into double cropping areas, with the many social, economic, and technical implications for the farmers concerned. In these man-made environments, government agencies appear to create and maintain their field offices and services, with the view to changing existing farming practices. This concentration of effort in field agencies is in contrast to the apparent lack of organizational capacity among the farmers. In this vacuum government agencies tend to overemphasize their role in achieving rural development activities, while neglecting the knowledge of the rural clientele.

It should be realized that agencies for rural development face complex and heterogenous task environments. One major organizational challenge is to locate and staff servicing units with respect to the particular conditions and needs of the farming population. Within irrigated areas, rice farmers show interest in adopting new rice varieties and modern cultivation methods. In such areas, specialized field units can concentrate on giving the required information, and on supplying the necessary inputs. The search for adequate input delivery systems seems to be one of the essential tasks in creating a viable public sector. A sound framework is needed to give field workers a proper perspective into the inter-related factors of development work, such as the provision of drying, storage and marketing facilities in the expanding rice-producing areas. Making existing public service agencies more effective and more accessible to the rural population is a major effort. At the same time, experimenting with development work on commercial lines seems worthwhile. In this respect much expertise has been gained in Surinam on large rice producing estates. Their experimental fields, repair shops for machinery and training facilities form a good physical setting for undertaking development activities. The problem of staffing, however, is still to be solved.

4.2 The case of rural extension (Surinam)

The organizational features of the extension service in Surinam reflect, in many ways, the hierarchical framework in which most governmental services are conceived. The main administrative areas of extension work are at district and sub-district levels. Field personnel are supervised by district agricultural officers, who in their turn come under the head of the national extension service, with its headquarters in the Ministry. The extension agents perform varied tasks, whereby the collection of agricultural data predominates over extension work and advice. This corresponds with the experiences of the farmers: they receive visits

from extension agents, who come to gather information about planted paddy varieties and applied farming methods. Only in a few instances was actual information received on the application of new technologies. Extension personnel, for their part, seemed to lack up-to-date knowledge about the characteristics of new cultivation methods. From their isolated position, on the fringe of their organization, they lacked the advice and supervision of qualified staff. Although the formal organizational structure had been established, communication channels were ineffectively used. Differences in opinion between researchers and extension officers hampered the flow of information in both directions. Consequently, much was left to the initiative of the extension agent, who faces many problems in his work, among which the lack of appropriate technical knowledge. His lack of certainty in his work led him to comply with standard procedures demanded by his agency.

Most farmers, for their part, frequented the paddy store in their immediate surroundings to buy paddy seed and other farming inputs. In this respect, the availability of these inputs through a network of distribution points can be considered as being of vital importance to the spread of agricultural innovations in the area.

4.3 The approach through farmers' associations (Malaysia)

In the Muda irrigation scheme, a network of farmers' associations has been established by the Muda Agricultural Development Authority. Although originally conceived as development centres for the farmers, these institutions function primarily as local centres for agricultural credit, combined with the delivery of inputs. One of the outstanding problems is the recovery of loans from the members. As some formalities are involved in the provision of credit, many farmers tend to remain customers of local shopkeepers, who provide credit in a less cumbersome way. Informal relations with the middlemen pave the way to obtain credit, in contrast to the more formal relations as required by the credit officers of the associations.

Farmers' associations are government-sponsored and supported institutions, with which member-farmers do not easily identify. For the time being, decision-making and the allocation of resources is fully controlled by the association's general manager and his staff. In contrast, the formal leadership role of the elected members of the board of directors, and their influence on policy formulation, are of marginal scope.

The extension arm of the association is at present a weak one, and extension methods are not very effective. As in Surinam, difficulties occur

for field staff to acquire up-to-date information from agricultural research stations. Consequently, the advice given to farmers is of a simple nature, of general scope, and already known to the majority of them. In the farmers' eyes, their paddy yields can stand the test of comparison with those obtained by more cumbersome practices, as advised by extension personnel. Interestingly, the spread of some non-recommended rice varieties is undertaken by the farmers themselves, with apparent success. In conclusion, one may observe that farmers' associations function primarily as delivery points of institutional credit. It is too early to speculate on their possible role as viable co-operatives and development centres, as advocated by some official sources (Ahmad Sarji 1977).

4.4 Conclusions

Specification of goals

Most public agencies feature a number of broad objectives, such as the promotion of agricultural production and the raising of the standard of living of the rural population. These objectives, however, fall short of further specifications needed in order to give the activities a proper direction, related to farmer category, place and time. It thus becomes a matter of prime importance that policy-makers formulate a firm line of thought of what will be the eventual role of the agricultural services in the long run.

In many cases, field personnel focus their attention on the bigger and better-off farmers. This can be traced to the much propagated 'progressive farmer approach', and the attractiveness of visiting farmers of relatively high status. It is therefore necessary to be specific on the farmer categories to be reached, especially the poorer farmers, and those not yet covered in development efforts (e.g. those living in fringe areas). As it appears from the study, some categories of farmers have been given preferential treatment from the agencies. In order to provide services in a more equitable way, special programmes should be developed for those categories which lag behind.

For obvious reasons, the various activities should be meaningful to the farming population in its specific environment. The Muda area, for example, shows much variation in topography, soil condition, and irrigation facilities. As these features form important conditions for paddy cultivation, much effort should be spent on identifying areas and localities to which the activities of farmers' associations can be related. Fluctuations in the seasons also have a definite bearing on the timing of extension activities.

By making services more available in their local context it is hoped that the image of field workers as collectors or as multi-purpose agents will change into that of persons with reliable information and practical advice.

The link of communication

For obvious reasons, much attention should be given to the communication process as this is at the core of implementing development programmes. Contrary to most studies on agricultural services, which focus on external communication, in this study special attention has been given to the communication process within the agency itself. A wide gap in understanding between field workers and staff poses a special problem here. Because in this type of organization main services are delivered at the field level, communication channels between field personnel and their headquarters should be considered as vital.

As field workers are in close contact with the farming population, much emphasis should be given to the encouragement of the upward flow of communication. Working in a rapidly changing environment means that changes occur in the ongoing farming system and these changes should be communicated to the staff. Obstacles of structural importance arise however, as this implies a reversal of attitudes and orientation of personnel involved. For this and other reasons it becomes necessary to appoint well-qualified personnel at the district level, who are equal in rank to the staff officers at headquarters. Promotion prospects should be equal for both categories so as to end the much regretted drain of better qualified personnel to staff positions.

To ease working relations between agricultural researchers and field personnel, joint meetings should be arranged to discuss and plan activities which have mutual bearings. Seminars and workshops can also be held at which information and ideas are exchanged. Combined field trips can also help to bridge the gap in understanding between researchers, credit officers, extension staff and the farmers.

When these measures are realized, it is hoped that informal relations will develop which, in their turn, can evoke co-operative work patterns in the future. In Surinam, two instances occurred in which researchers, extension officers and experienced workers of large rice estates worked together in thrashing out problems connected with the introduction of new cultivation practices in the district of Nickerie. Also, a working group at department level was officially installed to review the several implications for better co-ordinated activities.

Much will depend, however, on the interest and action of top officials

of the respective departments. As long as they remain entrenched in their own domains of immediate interest, little progress will be made in achieving interdisciplinary work.

Supervision and support

The proper supervision of field workers is an important though often neglected feature in the implementation of projects. Without proper instruction in their tasks, and without technical support in their work, one cannot expect field workers to make any meaningful contribution to the already difficult area of rural development.

It is common knowledge that the staff at headquarters tend to concentrate on their own immediate work. Unless special measures are taken, field personnel are left very much on their own and a gap arises between such workers and staff personnel. In this respect, one can appoint officers with the special task of making regular visits to the several units, not only to gain first hand information of ongoing activities, but also to give on the spot advice. On the other hand, one should avoid creating an overload of instructions, as field personnel are already sceptical of the many centrally-derived plans and regulations.

In order to provide field personnel with practical and up-to-date knowledge, the support from subject matter specialists becomes a vital link in the total communication process. For easy consultation they should preferably be posted at the district level. In some cases, however, the posting at headquarters is unavoidable, provided that the visiting team approach is adopted.

Institutional linkages

The several functions of rural development in small farming systems form an integrated whole of planning, resource mobilization, provision of services and implementation of rural work programmes. Without the support of local organizations it is very difficult for the administrative institutions of the state to work effectively with the rural population. At the same time, however, local institutions should interact with administrative structures if information and resources from outside the local area are employed. Institutional linkages are an essential factor in strengthening local organizations concerned with rural development work.

By using various channels, farmers can enhance their access to resources not locally available and participate in the network through which information, resources and influence are exchanged. As we have seen from the case of Surinam, communication channels may be blocked, or may carry

insufficient information. It is, therefore, important to have multiple channels which local leaders use either singly or in combination. Single channels will be used for specific purposes; for example between the irrigation department and irrigation associations for information about the water supply. The existence of alternative channels increases the bargaining power of local leaders, and their capacity to use the institutional system for local advantage. It should be realized, however, that the centre's range of potential influence and control is also extended by making use of such a range of formal and informal channels. Institutional support at the regional level can be given by committees formed by representatives of the different service organizations. Such committees are not only concerned with the integration of the work of their agencies, but also gear research and extension programmes towards increased agricultural productivity. Another important step to be taken is in the direction of better co-operation between the agencies at the area level. As is the case with many development projects, only when these efforts are translated into actual field activities, will the farming population benefit in the long run.

GLOSSARY

AA	Agricultural Assistant
AO	Agricultural Officer
FA	Farmers' Association
JAA	Junior Agricultural Assistant
LPN	Lembaga Padi Dan Beras Negara (National Paddy and Rice Authority)
MADA	Muda Agricultural Development Authority
MARDI	Malaysian Agricultural Research and Development Institute
SAU	Small Agricultural Unit.

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