



**Agricultural
Administration
Unit**

Overseas Development Institute
10-11 Percy Street London W1P 0JB
Telephone: 01-580 7683

IRRIGATION MANAGEMENT NETWORK

NETWORK PAPER 10c

NOVEMBER 1984

DEVELOPING THE ROLE OF FARMERS ASSOCIATIONS IN SRI LANKA AND
NORTHERN THAILAND

	Page
A. The Gal Oya Experiment A S Widanapathirana*	2
B. The Mahaweli Programme J Jayewardene**	6
C. The Nong Wai Irrigation Project, Thailand G N Kathpalia***	16

* Research and Training Officer, Agrarian Research and Training Institute (ARTI), PO Box 1522, Colombo, Sri Lanka

** Resident Project Manager, Mahaweli Economic Agency of the Mahaweli Authority of Sri Lanka, Galnewa, Sri Lanka

*** Formerly Consultant to ADB for Nong Wai Irrigation Project, now Irrigation Management Adviser. DSAID, New Delhi, India.

A. FARMER PARTICIPATION FOR WATER MANAGEMENT: THE GAL OYA EXPERIMENT

The Gal Oya Irrigation Scheme was the largest constructed by the Sri Lankan Government in 1952. Through years of neglect of maintenance and repair work, the irrigation system was in a bad state; production was very low, income disparity was emerging and social problems were beginning to surface. As an attempt to remedy the above situation a scheme of rehabilitation was planned by the Sri Lanka Government with assistance from USAID in 1979. Two major objectives of the programme of rehabilitation are (a) physical renovation of the system, channel net work etc for better water control, and (b) institutional reorganisation to promote farmer participation for system design and water management.

Programme Strategy

To secure farmer participation for the above activities, the Agrarian Research and Training Institute (ART!) was requested to initiate a programme of organising farmers in the project area. This involved development of a few models of farmer participation and testing them in the field.

The farmer organisation programme began with the fielding of a change agent designated IO in a pilot area of 5000 acres in the left bank of Gal Oya scheme. The IO is a university graduate in social sciences with a strong farming background and desire to work with farmers. A group of 30 IOs were selected on merit and after a training in leadership, group dynamics, farmer behaviour, agriculture, water management etc, were fielded along selected channels of the scheme in March 1981. The IO is expected to motivate and educate the farmer for better water management work through group action.

The IOs were fielded in small groups, each group being responsible for organisation work in a specific field channel area. For field work each IO was allowed to work independently from others while discussing problems jointly. Each IO group has a Co-ordinator and 3-7 IOs.

The IO met all the farmers in his channel area and promoted group work such as channel clearing, meeting with officers etc. After a few such activities farmers themselves realised the benefits and necessity of working together. Subsequently it was observed that groups of farmers organised regular monthly meetings with officers and discussed their problems jointly. Farmer groups also assisted in the design of channels, structures etc, where farmers provided local hydrologic knowledge based on their experience to engineers who prepared the design work. After a series of such group activities, the farmers were seen organised into small groups along field channels in the area.

Each field channel organisation is based on a hydrological boundary rather than on a specific area boundary. The

approximate area covered by each group ranges from 12 acres in the smallest group to 100 acres in the largest group. What is important is that all the farmers i.e. the colony farmers, the lessees, the mortgagees, the encroachers etc, are members of the field channel organisation. The smallest group has a membership of 3 farmers while the largest group has a membership of about 50 farmers (the size of the organisation depends on the command area served by each field channel since the average official size of plot is 4.0 acres).

Each farmer was allocated with only one block (plot) of land of size 4.0 acres along a particular field channel in the 1950s. Therefore theoretically each farmer can have only one plot along a field channel. However, because of many types of land transactions which have taken place since initial colonisation, some farmers have more than one plot of cultivable land. In effect therefore, one farmer belongs to several organisations whenever he cultivates several plots of land under commands of different field channels.

A representative is selected by consensus of all farmers to look after the interest of the farmer organisation at discussions, meetings etc, elsewhere.

Once the field channel organisations were formed, group activities were organised better. A regular system of monthly discussions was arranged with field level officers. All such meetings were attended by the IO who continued to play the motivator role.

Farmer Responses

Good response to organisational effort was evident. Field channel farmer groups undertook to carry out regular channel cleaning, desilting and earthwork for repairing bunds, channels etc, with their free labour. Some channels which have not been cleaned since inception of the scheme were cleaned. Farmer organisations also supervised work of private contractors involved with construction activities to ensure quality. Some other groups also undertook rehabilitation work such as channel deepening, main channel desilting etc, and employed members of the farmer organisation for those activities during the off season.

Field channel groups organised water rotations to distribute the amount of water entering a field channel equitably among all farmers. In lengthy channels the head farmers agreed to send water down so that the tail farmers could obtain it first within a particular water rotation adopted by the Irrigation Department. As a result of regular water rotations operated by farmers at field channel level, possible crop damage at tail of the channels was avoided. The survey done by the ARTI in April 1983 indicated a marked reduction in farmer disputes, water thefts and channel crossings etc, after the formation of farmer organisations. Protection of irrigation structures against theft was also reported by farmer organisations. Field channel groups also developed very close links with officers of government departments, which helped the latter's work.

Constraints

Several factors such as land tenure problems, lack of legal status of farmer organisations, bureaucratic procedures of departments, poor leadership of organisations and slow progress of rehabilitation have affected the successful operation of farmer organisations. Also, the heavy turnover of the change agent (10) inhibited the performance of farmer organisations.

The IOs are appointed on contract basis initially for one year with possible extension thereafter. Because of the lack of job security with the programme, they attempt to get permanent appointments elsewhere. This has been the only reason for the turnover amongst IOs.

To illustrate the severity of the problem, it was originally thought that 20,000 acres of the project area could be covered by 70 IOs. However, the ARTI has recruited, trained and fielded a total of 120 IOs since March 1981, in order to cover the 20,000 acres. Yet only 42 IOs remain with the project at present. The IO exodus has been so severe that some of the areas of the scheme have never had IOs contrary to intentions in the project plan. In other channels as many as 3 different IOs have served within a period of one year when only one IO could attend to organisation work. In some channels the IO turnover occurred at a time when most of the farmers were yet to be met. This jeopardised organisation work and caused unnecessary delays in the formation of Farmer Organisations (FOs). Our original plan was to thin out the IO density gradually once the majority of FOs became active. However, the exodus of IOs has caused a natural thin out even before FOs formed in most of the channel areas.

We found that IOs should not cease to operate even after FOs have begun to function; a low density of perhaps one IO for each 3000 acres of paddy may be required after the formation of FOs. They can help strengthen the weaker FOs, motivate the federation of field channel organisations to distributory channel organisations (the distributory channel organisation is a collection of farmer representatives of all the field channels under one distributory channel) and continue to monitor the programme. Therefore, most of the IOs could be withdrawn at a stage when all FOs were functioning (however, the programme has not reached this stage due to frequent turnover of IOs).

There is need for a career structure for IOs similar to the cadre of Technical Assistant (TA) in existing irrigation schemes in Sri Lanka. Each TA has an area of 5000 acres of paddy whose responsibility is to take care of the technical problems related to water management. Our experiment proves that the socio-economic issues including institutional aspects have been neglected although they are at least as important as technical matters.

Benefits and Prospects

The programme has produced both tangible and intangible benefits. The FOs have saved water in the head area allowing

an additional area to be brought under cultivation during the dry season in the tail parts of the project. There was also a reduction in government expenditure since FOs have done all of the field channel maintenance work. The value of these two benefits alone is about Rs 165 per acre. Since most of the benefits produced by FOs are intangible such as less conflicts for water, better farmer-officer relations, protection of irrigation structures, the social benefits resulting from delivering water to tail areas, better design plans produced by farmer consultation, reducing income inequalities by equitable distribution of water among field channels etc, the net benefits will certainly outweigh the cost of the FO programme (about Rs. 222 per acre). The increase in salary overheads attributable to the creating of a career structure for IOs, therefore can be estimated at well below the benefits that can be expected from such investment. Our experiment has also shown that a level of yield increase of only 3.3 bushels (72.6 lbs) of paddy per acre is sufficient to cover the total cost of investment in the programme. This level of yield increase has already been achieved in the project area. The programme therefore appears to be cost effective which can justify the creation of an institutional development division for water management under existing conditions in Sri Lanka.

The Gal Oya experiment indicates that farmers can effectively be organised for water management work based on field channels. However government recognition and incentives towards them appear as important variables affecting the sustenance of the farmer organisations.

B. A DEVELOPMENT PROGRAMME FOR THE POOR

(A case study from the Mahaweli Development Programme in Sri Lanka)

System 'H' is the first area to be settled under the Mahaweli Development Programme. The scheme started in 1975 with the settlement of approximately 500 families in the area. This programme of settlement was accelerated from 1978 by the present Government.

System 'H' is an irrigated settlement scheme where a total of 24,000 families will ultimately be settled. Most have already been brought to the area. The project area consists of a total of 108,000 acres, of which 72,000 acres will be taken up for settlement under the Accelerated Mahaweli Development Programme. The balance 36,000 acres are old colonisation schemes that come under the command area of System 'H'. The Mahaweli Authority is not involved in the total management of these old schemes, but assists some in specific functions like water management, marketing, etc.

Each settler is given an irrigation allotment of 2i acres and a highland allotment of 1/2 acre. In instances where the settlers owned land within the 'H' area and which was taken over, they were given up to seven blocks in the initial stages but now a maximum of three holdings due to problems of labour etc. The new settlers however are entitled to only one allotment each.

The management system that the Mahaweli Development Board had for the settlement areas of System 'H', was based on range, region and project level administration. This system worked well in the initial stages of the project. With the Mahaweli authority of Sri Lanka taking over the management functions of System 'H', they adopted the unitary system of management. This was based on their experience gained in a pilot management project carried out in the H5 area. The organisational charts of the two management systems described above are attached (Annexures I & II).

In the Mahaweli Development Board's management system each range has a set of officers from each of the disciplines like land administration, agriculture, irrigation etc. These officers had a specific role to play. At the next level too, which was the region, there were a higher grade of officers for each of the operative disciplines. At the top or project level too there were Deputy Resident Project Managers for agriculture, water management, land administration, community development, marketing and credit. The senior staff were strengthened by an Accountant and an Administrative Officer. This was the staff that the Resident Project Manager had to assist him to run the project.

At the end of 19 80 an evaluation was carried out to determine the impact of these development programmes. The evaluation was conducted mainly by requesting the officers and farmers attending training sessions to fill in a questionnaire. Interviews were also conducted in the field. It was found that not all the settlers were getting the full benefits of the

development effort and some were not receiving all the inputs.

The reason for this state of affairs seemed to be that the farmers were not geared to receive these benefits and to make best use of them. These farmers did not have sufficient productive and management skills individually to receive the benefits of the services that were available to them. It was necessary to upgrade these skills in the farmers. It also seemed that effective servicing was only possible through group action. Group action was also necessary to get the community to participate in the planned programmes of the project. It has been found that communities do not continue to function effectively if they are organised only to benefit from social and welfare programmes of the project. It has been my experience that initially farmers are only interested in aspects of productivity, ie, agriculture, land and water. It is only after consolidation of these project benefits and successful cultivations that they become fully interested in social, cultural, religious and sports activities. It is only then that they participate together as a community in project activities or programmes in respect of environmental sanitation, community health, nutrition, clean drinking water, day care centres etc. Without community participation no social development programme can be successfully completed.

In System 'H', as in most other irrigation settlement projects, water is the key to the success of the project and in the eyes of the settlers the most valuable commodity. Since all attention is focussed on water and since the irrigation design was provided for a turnout area with groups of 12-20 farmers, it was decided that this should be the base of a farmer organisation. The irrigable area was ultimately broken up into lots of 30 - 60 acres of irrigable land where the water was given to these farmers in bulk. It was the hope of the planners that the farmers in this turnout area would be able to distribute this water equitably among themselves. This, in actual practice, did not happen. Farmers cannot form themselves into groups and co-operate in group activities without their skills in management and organisational ability being developed to an effective degree. Some farm plots received little or no irrigation water for successive cultivations. As a result, the damage to irrigation structures and channels was very high. As mentioned earlier the turnout group was then organised, initially for water management.

Each turnout group was asked to elect from among themselves two representatives to be trained in water management and in agriculture. These representatives so elected by their fellow farmers were then given a formal training by the officers not only in water management and agriculture but in community development, marketing and credit, land matters etc.

The responses of the farmers to the formation of turnout groups and the attendance of their two representatives at the bi-weekly training sessions were very heartening. Their attendance was regular, they paid close attention to the proceedings, they kept notes and records and also participated very keenly in the discussions etc. These two farmer leaders or representatives were in turn supposed to go back to the other

farmers in their turnout group and disseminate the knowledge and training that they got at these fortnightly sessions.

With the organisation of the turnout groups and the election of their leaders for the purpose of training it was necessary to assess the training needs of these farmers. Training had to be relevant to the situation in the field: therefore initially discussions with the farmers themselves and the field officers were held to identify the problems that the farmers faced so that training would be designed to equip the farmers to solve these problems together with the project officers. As mentioned earlier the project management had all the different disciplines represented at different levels or tiers by the officers in the field. There were officers for water management, agriculture, community development etc, at project, regional and range level. All these levels had to be represented in the discussions as otherwise a full list of the problems facing the farmers could not be made out. Also the constraints that the project staff came up against at all levels would be revealed. It would be necessary first to find ways and means of eliminating the problems and constraints faced by the staff, if they were to be fully involved in the solution of the farmers' problems.

Another important aspect of farmer training was that, considering the number of farmer leaders involved, it would not be possible logistically for one group of trainers to train all the farmer leaders. It was therefore necessary to have a number of trainers, a group of whom could work regularly and continuously with a particular group of farmer leaders. In this context the best possible trainers would be the field level officers themselves. But now we had to consider the question of training the officers to be effective trainers. This too was organised soon after farmer training started in 1979. A Foundation Course was held, later a monthly two-day Follow-up course. The Foundation Courses and Follow-up course were organised by the project management. The Follow-up courses still continue with slight modifications. The farmer training was carried out initially by the range and region level officers and later by the block and unit level officers.

The main problems with regard to water management that were identified at these discussions were:

- a. Poor and inequitable distribution of water by farmers amongst themselves in a turnout area.
- b. Poor maintenance of field drains and ditches by farmers within a turnout area.
- c. No solution to the problems in respect of land preparation, irrigation, etc.

As a result of there being no organised system of water distribution within the turnout area, there was a lot of water being wasted and the actual consumption levels of water for crop cultivation were far in excess of the projected levels. In some instances however water was not reaching the fields of some farmers at all.

It was acknowledged at these discussions that the field level officers could not solve these problems by themselves nor could the farmers without some sort of organisation within their turnout area. Cooperation between the officers and the farmers was necessary. It was equally clear that the participation of the farmers in this exercise would be confined to their turnout areas. In System 'H' where nearly 72,000 acres of new lands were being developed for 24,000 families, there were 1734 farmer turnout groups.

Studies conducted in previous settlement schemes have shown very clearly the importance of agricultural production for the success of these schemes. Both agricultural extension and the timely availability of agricultural inputs are important. It was found that relatively few resources were being devoted to agricultural inputs and some of these inputs like tractors and heavy machinery were not appropriate to the needs of the farmers. High costs of oil and spare parts had increased the need to use draught animals for farm power. The extension education pertaining to agricultural production was also weak.

There seemed to be very little coordination between the various project activities like agriculture, water management, community development etc. The little coordination was at the top - ie at project level, whereas it was equally important to have some cohesion and coordination closer to the grass roots. Also there was very little participation by the community in the implementation of these programmes. Community participation to my mind is not merely keeping the community informed of the development programmes but to get the community to actively participate in the implementation process. This also includes taking into consideration their views and satisfying their needs even though they may not be in the original plan that is being implemented. Unfortunately their views could not be obtained in the pre-planning stage.

One of the primary needs for agricultural settlement is to have the necessary infrastructure. Basically there are three types. The physical infrastructure was now almost complete, the buildings and irrigation channels etc, having been built. The administrative infrastructure was organised to facilitate the provision of advice, inputs and other services easily to farmers and may need certain changes if we decide to alter our operation methods. The social infrastructure - the building of communities - had as yet to be created. The social infrastructure is necessary to organise farmers to improve their production, living standards etc, through co-operatives and other organisations to implement women and children's programmes etc. The social infrastructure must be so designed that it does not merely give the farmer security over the life he lives or the land he owns, but it must also be capable of high productivity. The purpose of this development programme is to make the farmers increase production so as to enable them to raise their level of living and not merely to create more subsistence farmers.

In this respect, as much as training is needed for the officers, the farmers too need a training and education to increase production and to make best use of increased incomes.

The Mahaweli authorities have, as mentioned, placed a great deal of emphasis on community development and the participation of farmers in the operation of these programmes. This approach needs intensive training both because it is a departure from the normal bureaucratic approach of the past settlement schemes and because evaluations have shown shortcomings in the implementation of the proposed plans and programmes, especially in respect of farmers receiving the benefit directed to them.

One of the main reasons for these shortcomings was that there was no coordinated effort between the officers of the various disciplines at range or regional level. At project level the Resident Project Manager coordinated all work in the project. The line of command went straight down from the top with no coordination between (say) agriculture and water management. As a result it was not possible to have an integrated, inter-disciplinary programme. Planning such a programme at project level by the Resident Project Manager and his senior staff was no problem, but it could not easily be implemented in the field as there was no single officer responsible for all the staff at the range or regional level.

It now seemed very necessary that there should be some coordinator at a very low level of the management structure. Breaking the management system into too many small coordinated units too would have nullified the purpose in coordinating the managements' activities at the lowest level in the field. These groups had to be coordinated as close to the grass roots as possible but not to the extent that there would be almost as many coordinators as those coordinated.

In the meantime the settlement branch of the Mahaweli Authority of Sri Lanka, which was going to take over the settlement and post-settlement work in System 'H' and subsequently in all the Mahaweli settlement areas, was experimenting with a new management system in a pilot project in the H5 area. This unitary system of management was akin to the system obtaining in the tea and rubber plantations in Sri Lanka which has evolved over a hundred years. It was basically this system that was adopted in H5 where it seemed to be working well. It was decided that with certain modifications and with further experience that could be gained in operation it would be best to adopt this management system in the other settlement areas as well.

The settlement branch of the Mahaweli Authority of Sri Lanka took over the management functions in System 'H' from the Mahaweli Development Board on 1 January 1981. In April 1981 the unitary management system as shown in Annexure II was adopted. With the new system, unit and block level management (the former directly responsible to the latter) replaced range and regional level management. A community development officer is included in the block manager's team. The management system at project level remained almost the same. This, as a management system, has worked quite well. Intensive orientation and training programmes had to be conducted with the officers to enable them to carry out their duties and functions properly and effectively. The existing staff were redeployed to work within the new management system. Due to greater decentralisation there was even a slight reduction in the costs of management.

In development schemes such as this, it is essential that evaluations are made from time to time to ensure that the purposes and objectives of these programmes are being met, particularly when the development programmes are for the benefit of the people and are designed to improve their quality of life. Merely spending large amounts of money on a project does not necessarily guarantee its success. Constant evaluations must be carried out to ensure that this money is being utilised in the best possible way and that the target group has got maximum benefits from these efforts.

In a recent evaluation which I conducted the following points were observed. Here the evaluation was based mainly on personal interviews with a cross-section of farmers and my experiences in the field.

Agriculture

There is a trend of increasing paddy yields season by season and a noticeable increase in the use of fertilizer in paddy cultivation.

More and more farmers are taking to the cultivation of other field crops, especially chillies, during the Yala season encouraged by good prices and easy marketing facilities.

The acreage of paddy that is transplanted is increasing each year. Weed control is more effective. This shows that farmers are receptive to the advice of the agriculture extension officers.

Water Management

Over succeeding Maha and Yala seasons water consumed per acre for cultivation has decreased progressively.

Farmers are taking a greater interest in water management. They are cooperating in the distribution of water and in the maintenance of the irrigation system. Very little damage is done to the irrigation structures now, unlike in the past.

In the Yala season when water is limited farmers get together and cultivate in equal shares the limited land that can be cultivated according to the water available. This is a traditional custom known as a bethma cultivation.

This shows that the farmer training sessions, both in the field and in the classroom, have had a definite impact on the farmers. The first evaluation showed that the farmer leaders were not passing on the training messages effectively to the others in the group. The others in the group considered the leader an extension of the bureaucracy. In some cases too the leader could not be bothered spending more time disseminating his training knowledge. The other farmers in these turnouts got the message of extension

only by the example that the leader set in doing his own cultivation. Now that we have moved to a great extent from the classroom to the field for training there is greater participation by the others in the group: the group is no longer entirely dependent on the leader for their training.

Community Development

By their attendance, and responses shown in many ways, it is obvious that the farmers have realised the benefits of farmer training and group action not only in the solution of their problems but also in carrying out their cultivation work.

The response of the farmers is exemplified by their participation in our programmes. We have over 350 Health Volunteers who serve in each of the hamlets entirely on a voluntary basis. They render first-aid, distribute anti-malaria tablets and distribute milk to children daily as a part of our nutrition programme. They maintain registers and records of the work that they do.

To allow farmers' wives to work as well, twenty five Day Care Centres for children have been started with UNICEF assistance and another fifteen will be opened in 1984. In most instances the affairs of these Day Care Centres are managed by the parents' association formed for each Day Care Centre.

Another matter brought up by the farmers was that the single well presently provided for every 20 families was not suitable and inconvenient to use. It was suggested that a smaller well to cater for six families be built. Here again the management, with UNICEF assistance, responded fast to the request of the farmers and already over 2800 wells have been completed. The actual excavation of the well is done by the six farmers who will benefit from that well.

As an added measure, to strengthen the turnout group organisations, I have requested my officers to give all contract work on maintenance and repairs of each turnout to that particular turnout group. Apart from working together and earning extra money, the farmers will ensure that the work is done to their satisfaction and no reports of poor quality work etc will come back to the management.

A water tax of Rs 75 per hectare was levied in 1980, but was discontinued due to a number of reasons. In 1984 it was decided to levy a sum of Rs 250 per hectare per annum as operation and maintenance costs. This figure will be increased annually by Rs 50 per hectare till it reaches Rs 500 per hectare. This money is collected by the project management and will be utilised for the operation and maintenance of the irrigation system. The rates collected now are however only a fraction of the actual costs incurred by the management. This levy is in respect of maintenance work above the turnout gate. Maintenance of

all field channels has to be carried out by the farmers themselves as before. Turnout groups continue to get small scale maintenance contracts that they are capable of carrying out effectively.

After the first evaluation it was decided to get the active participation of the farmers and that a coordinated effort should be made by the officers in the various disciplines to integrate each of their programmes. Farmer and officer training was to be the key to this new approach. From the results of the subsequent evaluation it is quite obvious that the new approach has paid good dividends. This is mainly as a result of the active participation of the farmers in our programmes which was brought about by the management's quick and effective response to the needs and aspirations of the farmers as articulated by them.

The problems are certainly not over but much headway has been made. As long as we are alive to the changing needs of the farmers and our responses to them positive, we cannot be far wrong.

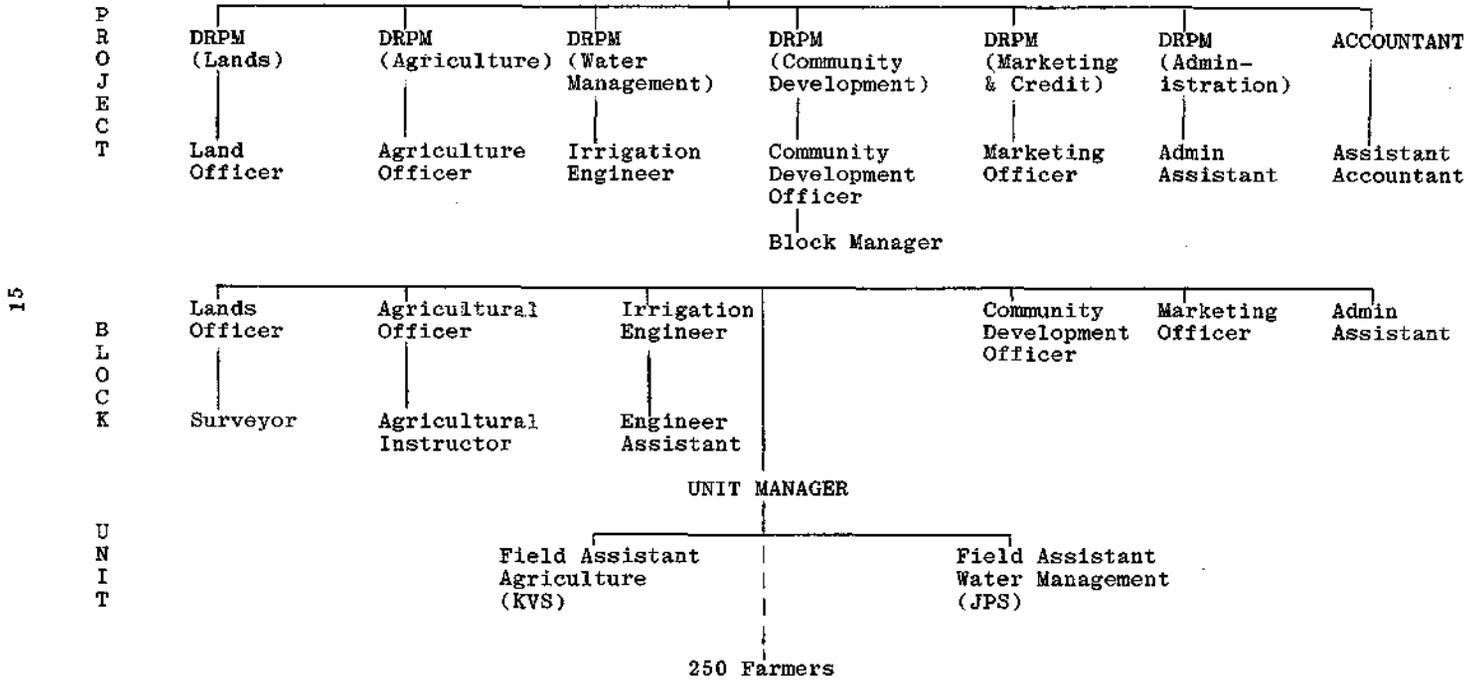
NOTES

Maha Season: is the period from September to March in which paddy is cultivated. The northeast monsoon occurs during this period and this rainfall is used for cultivation with supplementary irrigation.

Yala Season: is the period from April to August in which paddy and other field crops are cultivated. Cultivation is mainly by irrigation.

ANNEXURE II

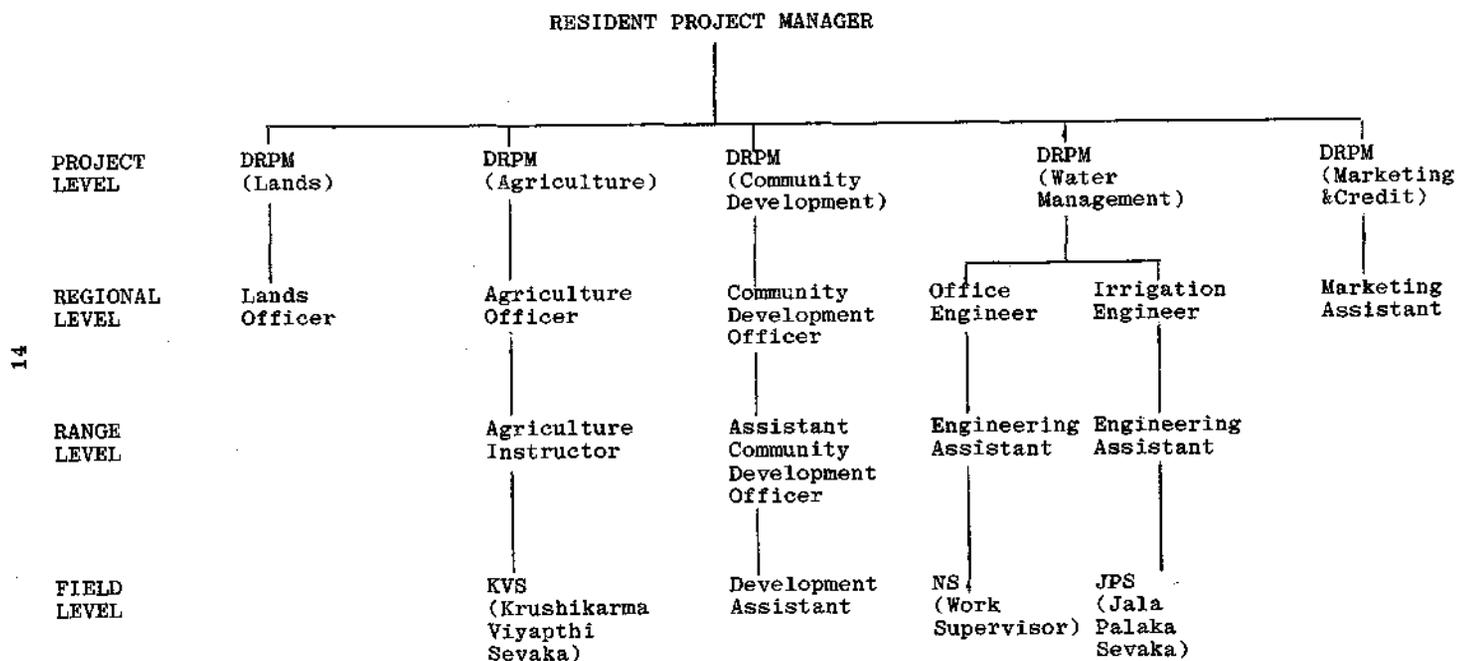
THE NEW MANAGEMENT STRUCTURE IN SYSTEM 'H'



DRPM = Deputy Resident Project Manager

ANNEXURE I

THE OLD MANAGEMENT STRUCTURE IN SYSTEM 'H'



DRPM = Deputy Resident Project Manager

C. WATER USERS' GROUP IN NONG WAI IRRIGATION PROJECT - THAILAND

1. INTRODUCTION

The farmers' group for water use have been active in Thailand for the past 700 years. These schemes generally belonged to one or two villages and irrigated areas of 100 to 300 ha. Each scheme had its own set of rules. The Government then gave some help in organising them under the People's Irrigation Act (1939). Some of these have been merged into associations as the water supply has been connected to a bigger irrigation project, managed by the government.

In the past ten years, consolidation of land was taken up and an act passed making the Cooperative Promotion Department (CPD) responsible to organise water users' groups and activate them through the cooperative in the project area or province. Besides the formation of the water users' group on chak basis of size about 80 ha and election of chak leaders, little activation was done due to lack of staff with the cooperatives. However, with the help of consultants and active cooperation of the Royal Irrigation Department (RID), CPD and Department of Agricultural Extension (DOAE) activation of these water users' groups has been done on a pilot basis in at least three projects, ie Meklong, Nong Wai and Lam Nam Oon with the financial assistance of the World Bank, Asian Development Bank and USAID, respectively.

The experience of Nong Wai project with which the author was connected as team leader of consultants for 21 months (1981-83) is discussed.

2. NONG WAI PIONEER AGRICULTURE PROJECT

2.1 Background

The Ubolratana multi-purpose dam was built across the Nam Pong river in 1965 by the Electricity Generating Authority of Thailand (EGAT). In 1966, the Royal Irrigation Department built an overflow type ogee weir 25 km downstream of the reservoir to divert water for irrigation on both sides of the Nam Pong river. The left main canal takes a maximum discharge of 35 cms with a command area of 29,760 ha, the right main canal a maximum discharge of 15.8 cms to serve a net command area of 10,840 ha in the Nong Wai Pioneer Agricultural Project.

The main canal and laterals in the Nong Wai area were completed in 1971. However, lack of terminal irrigation and drainage facilities, and the undulating topography in some parts of the project area, imposed serious limitations on water delivery and control. Construction was taken up in 1975-83 to overcome these constraints.

A technical assistance for Nong Wat Irrigation Management was implemented from November 1981 for a period of 18 months with the help of three consultants, to establish and demonstrate

systematic water management in an area of 900 ha, besides improving operation of the main system, agricultural support services and training of staff.

2.2 Project

a. General Nong Wai Pioneer Agricultural Project is located in 45 villages in Khon Kaen province in Northeast Thailand, has a gross command area of 15,000 ha and net area of 10,840 ha. The project is served by the right main canal.

The climate in the project area is tropical. Annual rainfall is about 1,200 mm with pronounced seasonal distribution. More than 85 per cent of rainfall occurs in May to October and tropical storms are common in September, the month of maximum rainfall. In the dry season, adequate water is available for 80 per cent of years. During the wet season, there is normally no problem.

The soils in the project area are of alluvial origin, mainly heavy clay and sandy loam.

b. Water conveyance system The right main canal is concrete lined with a length of 47 km. It has a distribution system of 7 laterals and 8 sub-laterals from three of these laterals with a total length of 80 km. There are 8 regulators cum syphons on the main canal for crossing the natural drainage channels. From the main canal, laterals and sub-laterals, 248 irrigation ditches take off with mostly constant head orifices to regulate the discharges.

c. Canal capacity The irrigation system has been designed for 100 per cent cropping during the wet season and 80 per cent during the dry season. The canal capacity is sufficient for an average water duty of 1.438 l/sec/ha at the head of the canal for the wet season and 1.813 l/sec/ha in the dry season when a cropping pattern of 70 per cent rice and 10 per cent upland crops like peanuts, sweet corn and vegetables has been adopted.

d. On-farm development The chaks range from 15-200 ha. In the consolidated area the main ditch is lined with a constant head orifice to regulate discharges and sub-ditches have earthen section of generally 108-120 l/sec capacity with division boxes and checks. Farm inlets with 20 cm pipe have been provided to each plot (two pipes for bigger plots). The plots vary in size from 0.15-3 ha. In the ditch improvement area, the size of the chaks is generally smaller, but the size of the ditch is the same as consolidated area and the main ditch is generally not lined. In the consolidated area, every plot has been provided with a 20 cm drain pipe which drains the water into a tertiary drain linked to a secondary drain taking the water to the main natural drain thence to the Nam Pong or Nam Chi rivers. These types of drains are provided in the ditch improvement area also, although each plot is not always individually drained.

3. WATER USERS' GROUP

3.1 Background

In October 1981 the intensity of cropping during the dry season was 23 per cent. In the chaks of the technical assistance area of 900 ha, it was 50 per cent. A great deal of time was wasted in disputes among the farmers while distributing water. Some of the weaker farmers did not even attempt to sow any crop, as they were not sure of getting the water. During the dry season of 1982 and 1983, water supplies were made more reliable through the introduction of irrigation scheduling, and feedback information systems helped to operate the canals in a systematic manner. The farmers gained more confidence and cropping intensity increased to 80 and 95 per cent in 1982 and 1983 respectively, in the technical assistance area. The increase of intensity in 1983 was mainly due to the activation of the farmers through the water users' group (WUG) and extension work on water management and agricultural practices.

3.2 Activation of Water Users' Group

For efficient use of irrigation water, farmers' cooperation and active participation was essential. This required organisation, skill and discipline. RID has the responsibility of distributing the water to groups of farmers organised in chaks. The responsibility was placed on the farmers for distributing the water and maintenance of all facilities within the chak (ie all action required with respect to irrigation and drainage).

3.3 Attitude

a. Officials Due to lack of sufficient will, action has been taken only to form the water users' group for each chak and elect the chak leader and other functionaries, but no action was taken to activate these groups. The staff was trained by the consultants to be persuasive and instructive and not have an authoritative attitude. Once farmers' confidence was gained through open and frank discussion by explaining the reasons for every suggestion and changes made, their cooperation was forthcoming. This process was slow but succeeded, more so than a directive approach.

b. Farmers The farmer had been used to plenty of water during the development period and therefore did not understand why it should be used efficiently, especially if it is to be given to other farmers far away. His natural inclination was to cooperate first with farmers who are in his sub-ditch and then in his ditch. To expand this process of cooperation, the value of water and necessity for discipline was explained to him.

i. Value of Water: The project aims to achieve an irrigation efficiency of 60 per cent or more, but at present during the dry season it is about 40 per cent. During the transition period till the above efficiency is achieved, the water supplied was a little short, but this helped to

establish an appreciation of the value of water. However the tail portions of the lateral, sub-lateral and chaks were not allowed to suffer at the expense of farmers in the head reach. Equitable distribution of water was aimed for. Farmers' confidence and cooperative effort was obtained by reducing the supplies in a systematic manner after adequate explanation and also by introducing a system of rotation within the chak which ensured each farmer's due share at the proper time with less management effort. Confidence in the rotation system was obtained by ensuring steady supplies in the lateral system and irrigation ditch for the period of rotation, ie a week without fluctuations (within 10 per cent variation).

ii. Discipline. It is best to enforce discipline through group pressures. In a few cases, other sanctions like fines, cutting of water supply were imposed by the WUG. It is not possible to enforce discipline through law by the concerned government agency.

3.4 Responsibility of Cooperative Society

a. Formation of WUG Under the Land Consolidation Act, it is the responsibility of the CPD/NACS in coordination with RID, DOAE, and LCO to set up the water users' group in the scheme. 169 such groups of 60-80 ha (20-60 farmers) have been set up for 248 chaks with 5,500 members by a group organiser provided by CPD. The duties and functions were then explained and chak leader elected. Some of the smaller chaks have been combined and some farmers are members of two WUG as their plots are in two different chaks.

b. Relation between NACS and WUG In order to strengthen the cooperative it was recommended by the consultant that Nong Wai Agricultural Cooperative Society (NACS) would have a steering committee on WUG operations who would be elected by the 169 chak leaders. This committee shall decide all policy matters involving WUG and maintenance work. It is expected that all members of the WUGs would become members of the cooperative and that the organisational structure of the NACS incorporating WUG operations would be as given in the chart.

3.5 WUG Responsibility

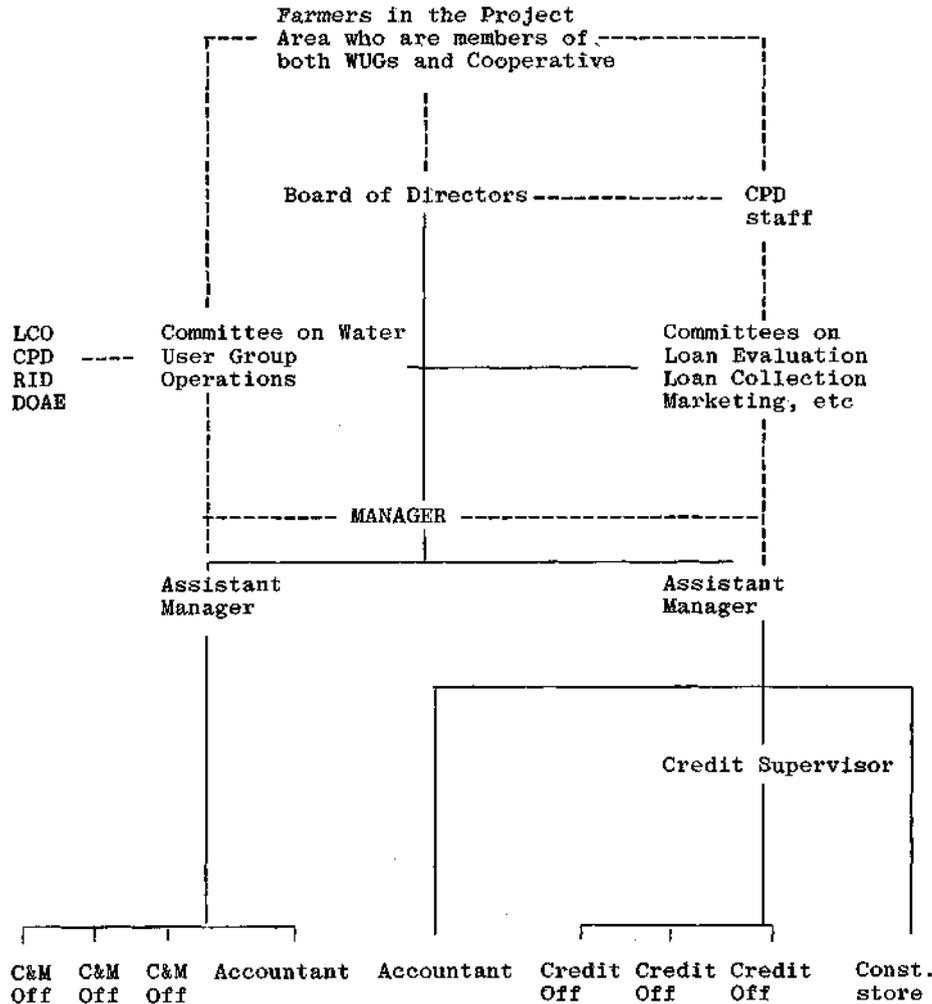
The WUG responsibility is to distribute water among the farmer members within the chak and to maintain discipline according to the rules framed. They are also responsible for the maintenance and repairs of irrigation and drainage ditches, farm roads, and all the structures located on them within the chak.

The distribution of water by the WUG is intimately connected with the supply of water in the main canal, laterals and sub-laterals being operated by RID. It was considered necessary for RID to take an interest and responsibility in activating the farmers within the WUG. In the technical assistance area, WUGs have been activated in 18 chaks by RID. A water distribution

Organisational Structure of NACS with Water User Group Operations

----- indirect supervision

———— direct supervision



plan on a weekly rotation within a chak was drawn up and explained in a number of meetings with the farmers. Some of the new features were:

- i. Change in the size of the farm inlet pipe proportional to the area, ie 10, 15 and 20 cm, instead of 20 cm pipe only for all sizes of plots; and
- ii. sub-groups were formed one for each sub-ditch or section of a ditch in which all farmers were to get water from farm inlets simultaneously.

Very useful suggestions with regard to location of farm inlets, checks, etc were given by the farmers. In some cases land levelling which had not been done properly was rectified so that there was no difficulty in distributing due share of water. The farmers were then trained in actual implementation of the rotation in the field. This whole process took almost one year.

Since water distribution cannot be carried out equitably and effectively without the cooperation of farmers, it was necessary to involve them fully. The chak leader did not get any remuneration for distribution work as every member of the WUG helps to reduce his burden. Similar work is planned to be taken up for other chaks over the next three years.

The maintenance work consisting of weed clearance in ditches and small repairs to structures has been carried out by the farmers in the 18 chaks of technical assistance area on their own under the guidance of the water master and special effort of an officer. Even then, some farmers did not contribute their labour. This effort to bring them together may not always be possible in the future for the whole project. To ensure proper maintenance a maintenance fee is collected by the NACS which places responsibility for this work on the chak leader of the WUG (it should be done at least two times in a year for about two days each time). For the labour component of the work, it was recommended that priority should be given to farmers of the chak to earn back part of their payment.

The coordination between various agencies like RID, CPD, DOAE was carried out through the Dry Season Cropping Committee under the chairmanship of the project manager O&M, RID.

4. EVALUATION

A farmers' seminar was held at the end of the dry season of 1983, to assess the functioning of the WUG and how it could be further improved. In this the chak leaders, group leaders of WUG of 18 chaks which had been activated and the contact farmers for extension service and the chairman and secretary of cooperative groups functioning in this area, were invited. Thus 100 farmers in two groups of 50 each were invited for two days each for exchange of views with the officers of RID, DOAE and CPD/NACS. They were happy with the activation of WUG and would like the zomanan to help them further in maintaining discipline and solving

their problems. They liked the system of rotating water within the chak and making the farm inlet size proportional to the area for equitable distribution of water. The problems of agricultural extension and functioning of the Nong Wai Cooperative Society were also discussed and action taken to further help them in solving their problem with regard to pesticides, and recovery of loans.

It was generally recognised that the TOG should be utilised as the basis by all departments for their activities such as sharing of farm equipment, supply of farm input and pest control.

ANNEX 1

WATER USERS' GROUP ORGANISATION AND FUNCTION

1. MEMBERSHIP

A water users' group would consist of 20 to 60 farmers (all farmers using the water in the chak). Either the land owner or tenant can be a member, but the actual water user is preferred. If the chak consists of more than 10 farmers, then the WUG would be sub-divided into sub-groups for easy distribution of water. In case of smaller chaks, 2 or 3 chaks should be combined for weekly rotation to form one WUG.

2. ORGANISATION OF WUG

- a. Each WUG shall be headed by a chak leader, and a group leader for each sub-group, elected every two years.
- b. The chak leader shall be assisted by a working committee consisting of himself and the sub-group leaders.
- c. Zoneman and KT would act as technical advisor and NACS official would be the supervisor.
- c. The NACS Steering Committee on WUG would take all policy decisions.

3. FUNCTION AND DUTY OF WATER USERS' GROUP

The WUG would perform the following functions:

a. Water distribution

Distribute the available water equitably among the members in

accordance with the following:

- i. Before the start of the crop season, the working committee shall discuss the irrigation schedule of their lateral and chak as intimated by the zoneman and give their suggestions and acceptance to him;
- ii. With the help of the zoneman and water master, the working committee shall draw up an interim rotation schedule for their chak;
- iii. Ensure no member wastes water into the drain, particularly during land preparation;
- iv. All members would help the chak leader in water distribution.

b. Maintenance

Maintain and clean the irrigation ditches, drainage ditches, structures and roads within the chak. Drains at the boundary of two chaks shall be maintained by RID. If necessary new sub-ditches or structures would also be constructed for better distribution of water with the approval of RID. Each sub-group would be responsible for its own sub-ditch, sub-drain structures and the road portion along it. The main ditch would also be divided among the various sub-groups by allotting the portion of the main ditch processing the sub-ditch.

c. Maintenance fee

Each member shall pay a 'maintenance fee' as prescribed by NACS. The NACS will arrange the maintenance work through the chak leader. The farmers of the chak would be given priority for the labour component of the work.

d. Cropping pattern

Each chak should fix its own cropping pattern before the crop season particularly of upland crops during the dry season and also the variety of seed in the case of paddy. This can promote efficient use and management of water and other agricultural practices. The KT should provide technical advice to the WUG on suitable cropping patterns by attendance of meetings.

e. Discipline

To maintain discipline among the members. In case of default, the real reason for default should be established and if genuine it should be remedied, otherwise the farmer should be pressurised by members to fall within the prescribed discipline. In case of repeated default he should be fined as per the agreement, by the working committee in which the zoneman and NACS supervisor are present.

f. Coordination

- i. To send genuine complaints, suggestions and requests of the members to RID, DOAE or CPD/NACS as the case may be, and obtain action by the responsible agency.

ii. To keep close contact with the zoneman, Kaset Tambon and credit supervisor of the area to obtain the latest information for better irrigated agriculture production and inform all the members.

iii. To report any damages to the crop in the chak due to floods or other natural causes to the zoneman and other officials concerned.

g. Meetings

For carrying out the above responsibilities, the WUG shall meet at least twice in a crop season, generally in April, August, October and February.

4. PROCEDURE FOR MAINTENANCE

a. Maintenance fee collection

The LCO would send out the notices one month before harvest to individual farmers in the project area about the amount they have to pay to the cooperative. With the assistance of the chak leader the NACS staff would collect the assessed amounts from the farmers (currently B60/rai and B44/rai from intensive and extensive areas respectively including B10 for administration and payment to chak leader).

If a farmer does not pay on time, the chak leader should inform the cooperative about the reasons why the payment was not made. If the reasons are considered valid (eg crop failure, etc) the chak leader should recommend whether the payment could be postponed up to the next season. The NACS staff would then make appropriate recommendations to the WUG Steering Committee, in coordination with the KT and zoneman. If the farmer has not received water due to reasons beyond his control, he should not be required to pay the fees for that crop season.

b. Maintenance work

Each chak leader with the guidance of the zoneman would prepare an estimate for repair and maintenance in terms of material and labour required two months before the start of the crop season, ie in early April and October. This should be submitted to the Steering Committee for approval (who may delegate authority to the Assistant Manager). The amount should be generally limited to the maintenance fee collected from the chak and exceeded only in special circumstance. The maintenance work must be done at least one or two weeks before the start of the irrigation in early June and December. The C&M officer should make arrangements for the whole project and transport the material to the site of work. The work should be done by the farmers of the chak under the supervision of the chak leader and payment made to the farmers and chak leader by the C&M officer after completion.

5. RESPONSIBILITY OF CHAK LEADERS

i. To coordinate the work of all sub-group leaders,

ii. To maintain liaison with the zoneman, KT and credit supervisor and have an interchange of information.

iii. To ensure discipline and enforce the rules and report the fines to be collected to NACS.

iv. To decide the problems of water distribution and any other problems among the various sub-groups of the chak.

v. To get the estimate for maintenance and repairs prepared and collect the necessary funds from the NACS and get the work done at least twice a year in May and November and in between if necessary.

vi. To assist the NACS supervisor in collecting 'maintenance fee' from the members of WUG.

6. DOCUMENTS TO BE MAINTAINED FOR THE CHAK BY WUG

i. Register of members and plots owned by them.

ii. Map showing each plot on 1 : 4,000 scale.

iii. Summary record of meeting.

iv. List of written documents circulated by RID, DOAE and CPD/ NACS separately.

v. Account book showing receipts and expenditure.

vi. Register of lease of land to others by the owner.

vii. List of structures in the chak and the repairs carried out each year.