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Improving Irrigation Management Through Farmer Organization:
Responses to a Program in Sri Lanka

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Introduction

More than most countries, Sri Lanka depends on the irrigated production of paddy to feed its population. About two-thirds of the area devoted to paddy is irrigated, and irrigated areas produce 80% of the total rice crop. In developing tea, rubber and other plantations in Sri Lanka, the British colonial government created a food-deficit economy dependent upon imported rice. To overcome this colonial legacy and the resulting balance of payments problems, it has been important to increase irrigated paddy production. Also, the intensification of agriculture is important for creating employment opportunities for Sri Lanka's growing population.

Investment in irrigation, particularly large-scale irrigation, is of high priority in Sri Lanka. The Mahaweli scheme now being developed will irrigate 650,000 acres and serve some 250,000 families. Other schemes are being rehabilitated in order to expand the area served. In general, the productivity of water, a resource scarcer than land or labor, has been less than possible and desirable (Chambers, 1975). Thus water management is recognized as an important component of irrigation development for new and for old schemes. The importance of involving farmers in water management to improve water use efficiency and to get more equitable distribution has only in recent years been accepted by the Sri Lankan government. There are currently several experiments in Sri Lanka aimed at promoting farmer participation in water management in large-scale irrigation schemes.

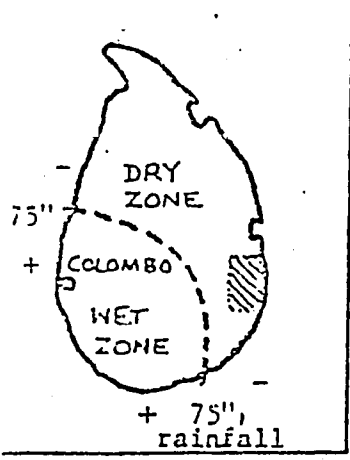
This paper describes one such experiment in promoting farmer participation in irrigation management, reports its initial successes, and offers a preliminary analysis of the reasons for the changes in farmer responsibility for better water utilization. The experiment is located in the Left Bank area of the Gal Oya Irrigation Scheme in southeastern Sri Lanka.


I. The Gal Oya Water Management Project


Large-scale irrigation began in Sri Lanka some 2500 years ago. A distinguished ancient civilization was built upon the engineering and agricultural skills of Sri Lankans (Brohier, 1934-5). In the 11th Century, King Parakramabahu, renowned for the development of irrigation works, decreed that "not one drop of water should run into the sea without being used."

For reasons still not completely understood (Indrapala, 1971), the center of population shifted from Sri Lanka's Dry Zone to the Wet Zone in the southwest of the island after the 4th century. With this shift, the great irrigation works fell into disuse. After British rule was established in the 19th century, small-scale irrigation declined also, at least in part due to the undermining of the village council (Gamsabhawe) system. While some efforts to revive the irrigation systems began in British time (Roberts, 1967), it was not until after 1931, when a measure of self-government was established, that serious efforts to reestablish irrigation systems in the Dry Zone began (K. M. de Silva, 1981).

At the time of Independence in 1948, the government embarked upon construction in the southeastern portion of the country of the Gal Oya Irrigation Scheme, then the largest scheme in Sri Lanka (only the completed Mahaweli scheme will be larger) (see Map). The main reservoir, the Senanayake Samudra (named after the first Prime Minister, the prime mover in the construction of the system), can hold 770,000 acre-feet of water. The system irrigates more than 120,000 acres and serves more than 30,000 farm families. The command area is divided into three parts: the Left Bank, the Right Bank, and the River Division.

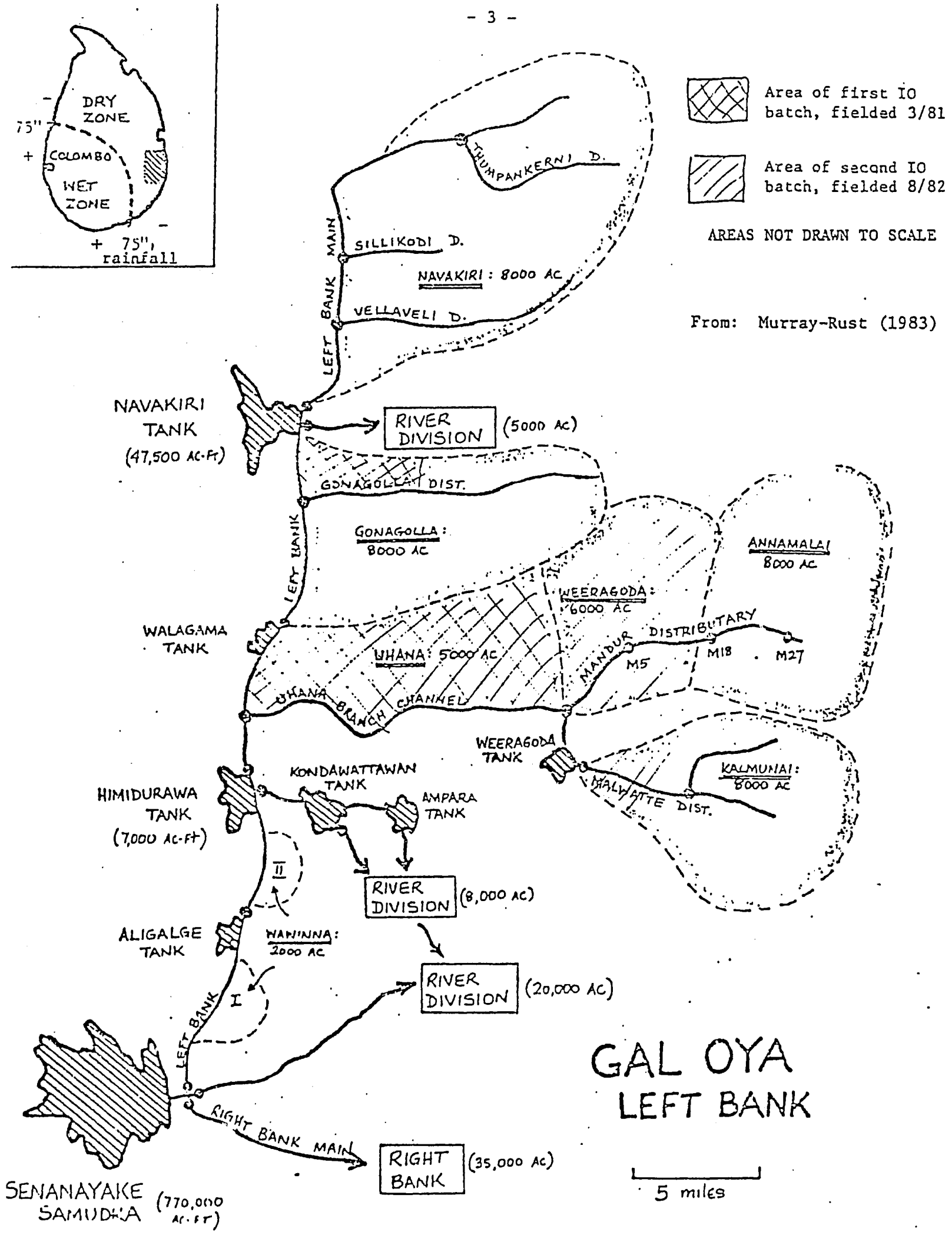


 Area of first IO batch, fielded 3/81

 Area of second IO batch, fielded 8/82

AREAS NOT DRAWN TO SCALE

From: Murray-Rust (1983)



Except for the River Division lands and the coastal regions, the Gal Oya area was largely unpopulated prior to development of the scheme. Sinhala settlers were brought from many places in the Wet Zone and settled in the head and middle areas while Tamil-speaking farmers from nearby East Coast villages were given land close to their villages in the tail of the system.

The Gal Oya system is not only large, it is also very difficult to manage. There is no uniformity in channel length and many channels are serpentine. In much of the area, soils are poorly suited to irrigated paddy cultivation and, because soils vary, water requirements vary.¹ Too, there are often water shortage problems because the catchment area yields less water than expected; the reservoir rarely fills more than halfway and has spilled only twice since it was completed in 1952. The command area today is far larger than planned for. The original design for the Gal Oya System provided for 42,000 irrigated acres in the Left Bank area. Current estimates place the Left Bank irrigated area at more than 60,000 acres. This increase has been due to farmers bringing 40 to 50 percent more land under irrigation. Such an action might otherwise be hailed, were there enough water to serve the entire area. In addition, from lack of maintenance and other problems, structures and channels have greatly deteriorated in the thirty years since settlement began. As a consequence of these changes and the shortage of water, the lowest third of the Left Bank area is essentially rainfed.

In 1978, when USAID and the Government of Sri Lanka analyzed areas in which AID's assistance might be most useful, it was determined that water management deserved high priority. AID agreed to provide funding and technical assistance to the Irrigation Department for physical rehabilitation of one or more irrigation systems, to be accompanied by strengthened institutional arrangements to improve water

management in the rehabilitated systems. The Irrigation Department proposed the Gal Oya system for rehabilitation, perhaps because it was the largest and most in need of rehabilitation. The Gal Oya Left Bank, the oldest, largest, and most deteriorated part of the system was chosen as the place to begin.

The initial project documentation saw "wasting" of by farmers water in the head areas as the primary water management problem.² The suggested solution was enforcement by the Irrigation Department of rules and laws designed to control farmer behavior. In fact, the way head area farmers used water is in large part a response to the unpredictable conditions under which the system operated (Wijayarathne, et al. 1982). Deficiencies in main system management could also be demonstrated (Murray-Rust, 1983).

Experience in other countries suggested that farmer participation would help in water management and rehabilitation. Therefore, provision for introducing farmer organization was added to the project. Responsibility for developing a "model" for farmer organization and for "testing" the model was delegated to the Agrarian Research and Training Institute (ARTI) in Colombo. Because ARTI had limited experience in water management, the Rural Development Committee at Cornell University was asked to work with ARTI in a role of developing institutional capacity. In addition, ARTI undertook to monitor the effects of the rehabilitation activities on system performance, agricultural production, and farmer welfare. ARTI-Cornell cooperative work began in September, 1979.

The ARTI Farmer Organization Program

In January 1980, during the first visit to the field to plan for farmer organization, it became apparent that relations between the farmers and Irrigation Department

officers were strained. Having the latter organize farmers according to some prescribed "model," even if given the force of law, was not likely to succeed (Uphoff, 1982).

The National Irrigation Administration in the Philippines had been very successful in organizing farmers to participate in irrigation system rehabilitation and water management in small systems with the help of Community Organizers.³ Group Organizers had been used in the FAO-supported Small Farmers Development Programme in Nepal and other Asian countries. ARTI and Cornell researchers felt that the effort to get farmer participation in system rehabilitation and in subsequent operation and maintenance was most likely to succeed if "catalysts" similar to the Community Organizers and Group Organizers were recruited to work in Gal Oya.

Further, because of the complexity of the Gal Oya system and the variations within it, it was decided to adopt a "learning process" approach (Korten, 1980) rather than develop a single "model" to be replicated throughout the scheme. This approach called for an intervention strategy that would be modified in response to the situation as it developed.

The strategy adopted was to field catalyst agents called Institutional Organizers (IOs) who live with the farmers. The Institutional Organizers were expected to meet farmers individually explaining to farmers possible roles and improvements and to obtain first-hand information on irrigation and water management problems. The Institutional Organizers then were to meet farmers in small groups and encourage them to undertake self-help activities such as cleaning and desilting field channels and repairing village roads. It was expected that greater understanding and cordiality would

develop among farmers. After the initial group action phase, Institutional Organizers helped arrange a meeting of farmers in a small hydrologically defined area, usually a field channel with about 15-20 farmers. At this meeting the value of organizing themselves to manage their water and to settle problems and conflicts was discussed. Usually after one or two meetings informal farmer organizations were set up. By consensus, farmers would select one of the farmers to serve as the Farmer Representative. (If it was a larger area, they might choose two or three Farmer Reps.) It was expected that these Farmer Representatives would be the link with the Irrigation Department and other officials, and would take the initiative in organizing water management activities and resolving conflicts.

Three broad functions were defined for the farmer organizations. These were: (1) improved operation and maintenance performance by the farmers in those areas for which they had responsibility or which they could handle more effectively than could the Irrigation Department (ID),⁴ (2) solving conflicts among farmers over water, and (3) improving communications and relations between the Irrigation Department and the farmers.

Because the organizations were to be the farmers' organizations, not ARTI's or the ID's, many of the details, including decisions about what farmers were to be included, what the functions of the organization would be, and the powers and responsibilities of the Farmer Representatives were left to the farmers. Also, in the spirit of the "learning process" approach, many of the details of working with farmers were left to the Institutional Organizers. It was planned that detailed records of the intervention would be kept so that the most effective intervention strategies could be subsequently ascertained.

The initial plan was for each institutional Organizer to be assigned to a hydrologically-defined area consisting usually of 3 or 4 field channels and 60 - 100 farmers. We found later that a larger area could be assigned and the second and succeeding batches of Institutional Organizers were given larger areas, usually 6 - 7 field channels and 100 - 200 farmers.

A key element in the intervention strategy was that the Institutional Organizers were fielded in teams to cover large areas (10 - 30 field channels and 200 - 600 farmers). They could adjust individual assignments within their areas and were encouraged to become familiar with the areas of other team members. Most importantly, the teams were asked to discuss their individual experiences and difficulties in regular group meetings, as a front-line problem-solving strategy. This approach had two desirable effects. First, the team problem-solving approach set an example for the farmer groups in how to tackle problems. Second, the team discussions provided much of the feedback necessary for the "learning process" approach. These discussions partially compensated for the difficulties in supervision of the programme from ARTI located in Colombo on the other side of the island.

II. Responses to the Farmer Organization Program

In March 1981 the first batch of 32 Institutional Organizers was fielded in Gal Oya Left Bank. They had received two weeks of training on concepts and strategies of farmer organization, followed by four weeks of field training in Gal Oya. A second batch was fielded in September 1982, a third batch in March 1983 (most of them replacing initial IOs who had left the program for more permanent jobs), and a fourth in October, 1983.

The initial organizing area covered 71 field channels, 1686 farmers, and 5,500 acres. Subsequently the organizing area was extended by another 9,500 acres. The total area covered at the end of October, 1983, was 15,000 acres. The area covered so far is located in the head and middle areas of the system and is largely restricted to Sinhala-speaking farmers. We plan to cover an additional 11,000 acres at the tail of the system which is inhabited by Tamil-speaking farmers.

When the first batch of Institutional Organizers was fielded, specific activities and strategies for the farmer groups in the three areas of interest -- operation and maintenance, conflict resolution, and improving relations with the Irrigation Department -- had not been determined but were only generally mapped out; specific measures were left for the Institutional Organizers to work out with the farmers. It was expected that for the first three months after being fielded, Institutional Organizers would only study their assigned areas without attempting to influence the farmers. Such study based on conversations, observation and constructing a "profile" on each field channel area was to form the basis for formulating strategies.

However, shortly after the first batch arrived in the field, it became apparent that this Yala (dry) season would be unusually water short. At the request of the Institutional Organizers, ARTI deferred work on the profiles in favor of beginning water management activities with the farmers immediately. The experiences of that first season led to a set of water management activities that dealt with the problems in Gal Oya. Although modifications have been made (usually by farmers) in specific cases, the general programme of water management activities for farmer groups developed then has evolved into a strategy for irrigation improvement. Each of the three major areas is addressed separately.

A. Operation and Maintenance of Field Channels

Three activities were found to be necessary and appropriate for farmer organizations in Gal Oya: (1) cleaning (mostly desilting) and maintaining field channels, (2) rotating water along the field channel to ensure that tail-end fields get their share of water, and (3) saving water by closing the field channel turnout when enough water has been received so that water can be sent farther down the system.

According to the rules prevailing before the farmer organization program began, every farmer was responsible for cleaning a specified section of his field channel at the beginning of each season. In fact, these responsibilities were rarely fulfilled. Many channels were clogged and in disrepair, and badly needed to be desilted so that water could flow more efficiently. Without any organization to do the work all at once, the benefits of individual action could not be seen. Also, head-enders neglecting to desilt their section of field channel benefited by getting more water.

To solve this problem, the Institutional Organizers adopted the strategy of getting the farmers to organize shramadana (gift of labor) work groups to clean the channels. Shramadana is a traditional method of mobilizing labor for community projects in rural Sri Lankan villages. It enjoys some religious significance, often having been organized by the village priest in the past. But in Gal Oya as a settlement scheme, traditional social customs figured less prominently in people's lives. In 1981, once the Institutional Organizers began working with the farmers, about two-thirds of the field channels in the program area were cleaned by shramadana labor. Since that time this practice has been maintained. Statistics collected in April 1983 showed that of a sample of 33 farmer groups, 71% reported cleaning all or parts of their channels by shramadana since the formation of farmer organizations while only 23% reported using shramadana labor even once during the preceding 30 years.

Channel cleaning with shramadana has proven to be much more effective than individuals cleaning separate sections of the channel. According to farmer reports, some of the cleaned channels had not been properly maintained for 15 to 20 years. In January 1983, one of the second batch of Institutional Organizers convinced the farmers along one channel to clean it, for the first time that anyone there could remember. A 30-foot tree with huge roots in the bed of the channel testified to the long period of neglect. (This channel was in a "transition" area between head and tail, and thus between Sinhalese and Tamil farmers; 15 Tamil and 12 Sinhalese households participated in the shramadana.)

In the April 1983 survey, 90% of the farmers claimed they had been "satisfied" with channel cleaning before farmer organizations; while 97% reported such satisfaction since the formation of farmer organizations. We feel the "satisfaction" prior to the program may be misleading since numerous farmers interviewed said things like, "Prior to the farmer organization program we had no shramadana campaigns. Each farmer was allotted a portion of the channel. Some farmers cleaned their portions but others did not ... The situation changed completely after the farmer organization program ... During the last Yala season all members of the farmer organization got together and we had a shramadana campaign (to clean the channel). All of the farmers on the channel participated. Those farmers who could not come participated by supplying tea and snacks to the workers." An Irrigation Department employee responsible for operating field channel gates and checking on tertiary maintenance reported, "Another important activity of the farmer organization is cleaning and maintenance of the field channel through shramadana. Because of the unity of the farmers it is very easy to organize shramadanas now. In my area, there were several shramadana campaigns (preceding the 1983 Yala season)."

Shramadana labor is not used solely for channel cleaning. Since the farmer organization program began, various organizations have used shramadana labor to perform other maintenance tasks, including building check structures, repairing bunds, and repairing bund roads. The survey conducted in April 1983 indicated that in the organized area, fully 54% of all maintenance activities other than channel cleaning (including such minimal activities as cutting branches of trees overhanging the road and repairing damage caused by one man's cattle) were performed by shramadana labor, whereas shramadanas were the exception rather than the rule prior to farmer organizations.

In addition, shramadana labor is used to solve specific problems outside the normal maintenance responsibilities of the farmers. For example, in January 1983, the members of a farmer organization used shramadana labor to clean a very long field channel that was supposed to be maintained by the Irrigation Department but which had not been adequately cleaned for several years. When the desilting of a distributary channel during rehabilitation at one location decreased the water flow into one of the field channels, the farmer organization talked with the Irrigation Department officer in charge of the area and obtained his permission and technical advice to build a stone check structure in the distributary channel with shramadana labor.

In 1981 when the program started, the Institutional Organizers found that on virtually every field channel there were some farmers who experienced water shortages. Such shortages are prevalent during all Yala (dry) seasons and some Maha (rainy) seasons, even in the head areas of the system where the first Institutional Organizers were assigned. As noted already, the 1981 as well as 1982 Yala seasons were particularly water short; at the beginning of both seasons, the main reservoir was at or below one-quarter of its capacity.

To remedy these problems, the Institutional Organizers encouraged farmers to set up simple rotations along their field channels to ensure that all farmers, particularly the tail-end farmers, received adequate water. In addition, they suggested that farmers could help others farther down the system by consciously trying to save water. Specifically the IOs suggested that farmer organizations could afford to take water during only four or even three days of the normal five-day rotational issue in order to send the extra water down the system during the remaining day or two of their turn.

A survey of the 56 organizations created in the first six weeks found that one-quarter of the farmer groups had instituted both water rotations on their field channels and water saving for others. One-quarter had undertaken water saving only. (On their channels rotations were not needed because the water supply was ample.) Three-eighths had set up systems of water rotation without attempting to save water, and only one-eighth had not made any change in their practices.⁵ About 20 percent of the farmer organizations that instituted rotations did not sustain them throughout the season, either because water conditions improved or because they could not maintain agreement. At the end of the season, half the groups still had rotations and half were saving water for others.⁶

Since the system had deteriorated, almost no gates could be properly closed and locked; mud, straw, and tree stumps were used by farmers to cut off water flows. In practically all cases where water saving was agreed to on an experimental basis, the farmers had more than adequate water for the crops. Some of the efforts to save water were undercut because certain other farmers (using drainage water) found that better water management by the farmers on the field channels was reducing flows into the drainage channels, by as much as 50 percent. There were instances where such drainage-area farmers came and cut bunds or opened gates that had been closed to save water for downstream farmers.

During Yala 1982 the number of groups attempting rotations increased. In the April 1983 survey, fully 73% of the groups reported that they had instituted rotations for the 1982 Yala season although many did not sustain them the full season. Water saving, however, was less common since the 1982 Yala season was more water short than 1981. (The Irrigation Department issued less water in the main channels.) In April 1983, members of 82% of the groups reported plans to institute rotations for that Yala season. During several seasons, farmer organizations on a number of particularly complex distributary channels instituted a rotation among field channels so that they could increase the head of water in the field channels so as to reach better the tail portions of those field channels.

There has been general satisfaction with the rotations among those groups that have been able to sustain them. One farmer reported, "The farmer organizations decided that during each five days' issue (for a channel) farmers of the head-end should get water in the first two days and then promptly send water to the tail-end for the next three days. The system of rotation has been successfully operated for three seasons (1981-83)."

The success of these efforts at organizing farmers for water management stems from the group approach taken by the Institutional Organizers. By getting the farmers to talk about their water problems in groups, the Institutional Organizers were able to create a "public space" devoted to water problems. In public, individual farmers could not maintain resistance to cooperation. For example, if a tail-end farmer with a water problem would go privately to a head-end farmer to ask him to reduce his offtake, the head-end farmer could simply ignore the tail-end farmer or make his cooperation dependent on the simultaneous cooperation of all other head-end farmers. Once the problem is aired in public with all farmers present, cooperation among the farmers can

be directly agreed upon and any farmer who resists risks public exposure of his unconcern for his neighbor's crops, a particularly censorious situation in a Buddhist society which teaches the sanctity of all life, including that of crops.

A similar dynamic seems to explain the effectiveness of shramadanas for cleaning field channels and other maintenance work. For example, a farmer at the head-end of a field channel may have no need to clean the channel since he gets adequate water even without cleaning. When the channel is to be cleaned by shramadana that head farmer faces group pressure to help others by contributing to the work. As one farmer put it, "Through the farmer organization program, it has been possible for shramadana campaigns to be organized to clean up field channels, (repair) bunds, roads, etc. Earlier we did not have shramadana activities. Previously, channel cleaning was done on an individual basis. The Vel Vidane (a farmer appointed or elected to oversee various farm activities in a large area) allocated sections of the canal to each farmer for cleaning. Some farmers cleaned their sections haphazardly and some neglected to clean their parts of the channel. Now there is no possibility for farmers to neglect their responsibilities."

The creation of the role of Farmer Representative also helped by providing a focal point for group action. The basic functions of a Farmer Representative as conceived by the researchers and by most of the farmer organizations were to convene meetings, oversee and enforce rotations, and meet with other Representatives and/or officials to discuss problems. No legal powers have been given to Farmer Representatives; their power consists solely of the influence they have on their fellow farmers. Yet once appointed, most Farmer Representatives have begun to take responsibility for improving water distribution. One Farmer Representative put it thus, "As Farmer Representative I make an attempt to distribute water in the field channel

equitably to all farmers. In times when there is a shortage of water, I go to see the Maintenance Overseer (a low-level Irrigation Department employee) and explain the problem to him. I have been successful in getting water to the field channel." Another Farmer Representative noted, "I am a farmer at the tail-end and this fact probably influenced the other farmers to appoint me Farmer Representative. As a farmer at the tail-end they thought that I would be motivated to be sure water gets to the tail."

Also with the Farmer Representative as leader or organizer, various maintenance projects, such as improving channels, fixing bund roads, etc. could be undertaken. Ideas for controlling cattle on the bunds could be acted upon. Merely creating this role thus stimulated local initiative and increased local capacity to solve problems.

Neither group action nor the farmer representative role are really new concepts. The traditional shramadana practice, however, for several reasons was not often used in Gal Oya. First, there are no well-defined settlements in Gal Oya. Houses are scattered and the administrative units — called colony units or villages — are nothing more than administrative entities, still bearing numbers rather than names, after 20 years. They do not reflect ecological, economic or sociological units. Second, the settlers of Gal Oya arrived from various parts of the island, and as no attempt was made to create communal spirit among them, no local traditions of communal work or responsibility were formed. (Abeyratne, 1982).

The farmer representative role resembles the traditional role of Vel Vidane (field leader) made familiar to students of irrigation by Leach's study of Pul Eliya (1961). There is also in existence a national system of elected or appointed farmer leaders called Yaya Palaka (tract director). This system has not been effective in mobilizing farmer participation in operation and maintenance in Gal Oya for two reasons: the

areas that the Yaya Palakas represent are too large and diverse, and the Yaya Palakas are generally associated with political parties and political interests.

The innovation introduced by the Institutional Organizers was to apply these concepts to water problems faced in common by a small group of farmers sharing a single water source — the field channel. Because the group is small, the farmers can manage their affairs informally, and because the members share a single resource, they can effectively solve the problems associated with that resource. In addition, they can control their Farmer Representatives. The Institutional Organizers have reported several cases where the members of an organization have replaced their Farmer Representative because he was dishonest or lazy. The net effect has been a large increase in local capacity to solve problems and take initiative.

As discussed more under the third activity heading, this structure has subsequently been extended upward in a "bottom up" manner. Representatives of field channels off long and complex distributaries already the first season began coordinating and rotating water distribution among field channels, as noted above. These informal organizations are being regularized into standing committees with recognized responsibilities for all distributary areas now. At a higher level grouping 10-15 distributaries in a hydrologically-defined service area, Farmer Representatives have been holding meetings every month or so with government staff in their area. Problems which can be resolved at that level, with resources controlled by the staff and/or farmers, are tackled by consensus. At the District level, Farmer Representatives chosen by their peers from each large service area attend meetings of the District Agriculture Committee, hitherto composed only of district-level officials. Farmer Representatives recognize that this is an opportunity to have two-way communication about problems from the farm level to the district headquarters (kachcheri) and back, though it has not yet become as systematic and effective as desirable.

B. Resolution of Conflicts Over Water

The farmer organizations have also succeeded in reducing the numbers and severity of conflicts over water within their areas. Of the farmers who responded to the April 1983 survey, 49% reported the existence of conflicts prior to the formation of farmer organizations but only 17% reported conflicts since that time. Speaking of the situation prior to the formation of farmer organizations, one farmer said, "There were a lot of conflicts among farmers over water. Sometimes farmers would stay awake till morning guarding their poles (offtakes to fields)."

The reduction in conflicts is a consequence of the creation of the "public space." Most of the conflicts centered on the actions of some farmers to close off the inlets to other farmers' fields or of farmers to build check structures in the channels to increase the flow into their own fields without consulting farmers downstream. The problems that led farmers to these actions are precisely those that the farmer organizations address with their rotations and maintenance activities.

In addition, there has been a significant change in the means adopted to have conflicts settled. The farmers surveyed in April 1983 stated that earlier, 45% of conflicts were referred to government agencies for solution, 14% were simply not resolved, and only the remaining 39% were referred to other farmers or to Yaya Palakas for resolution. Since farmer organizations were created, 57% of conflicts are referred to the farmer organization, to farmers in general, or to the Farmer Representative, 39% to government officers (this figure includes referrals to Institutional Organizers), and only 4% are left unresolved.

C. Communication Between Farmers and the Irrigation Department

When work began in Gal Oya, we soon discovered that many Irrigation Department officers held rather negative stereotypes of farmers -- as lazy, uncooperative, always quarreling, ungrateful, irresponsible, etc. In the eyes of Irrigation Department officers, farmers' duties were to maintain their field channels (this is stated in the Irrigation Ordinance), to obey the rules and laws governing water use, not to "waste" water, to cooperate whenever the Irrigation Department asked for their help, and to accept officers' explanations, e.g., that what the farmers asked was impossible to allow for technical reasons. The Irrigation Department's attitude was that it could and would deliver enough water to the field channels and it was then simply a matter of farmers' using the water correctly. Understandably some officers paint an unflattering picture of farmers when they hear farmers complain about ID service at public meetings, when farmers break bunds and structures, when officers are beset by requests for special help, and when farmers regularly attempt to modify Irrigation Department decisions by complaining to politicians.

Subsequently we found that the farmers held similar unflattering ideas about Irrigation Department officers. The farmers generally expect the Department to respond positively to requests for help or when problems are reported. They are understandably displeased when ID officials claim that they cannot help because it is contrary to regulations or for some other bureaucratic reason. Since a great many farmers have problems with water in Gal Oya, the attitude of many officers that most of the problems are caused by farmers is unhelpful.⁷ The lack of appreciation for officers shown by farmers is understandable. At the Cultivation Meetings of farmers and officers held prior to each season, it was a regular occurrence for farmers to complain about the lack of service and help given by the Irrigation Department (Murray-Rust and Moore, 1983).

One farmer, who is both a Farmer Representative and a Yaya Palaka, described the situation like this, "In those days farmers wasted a lot of time going in search of officers (to solve problems such as broken bunds, lack of field intakes, etc.). Even as a Yaya Palaka when I went to see officers, they would say, 'We can't do anything today, come tomorrow.' When I went the next day, the officers would not be there and I have wasted my time. Even if I met the officers, the problem would not be solved. It would take a long time to get problems solved." Another farmer explained, "Prior to the farmer organization program, officers paid no heed to the problems of the farmers. There was a big distance between officers and farmers. Decisions were made at the Cultivation Meetings without any reference to farmers. Therefore these decisions were not implemented by farmers."

As a result of the farmer organization program, officers have come to regard farmers more highly and are more willing to cooperate with farmers. In turn, farmers have shown themselves more willing to listen to officials, to take better care of the system, and to cooperate in other ways. In the April 1983 survey of farmers, 61% felt that there had been a change for the better in the attitude of Irrigation Department officers. Fully 70% felt that relations between farmers and officers were better than before. A majority of the Irrigation officials surveyed a month later also felt there had been an improvement in relations.

The mere existence of farmer organizations and of Farmer Representatives is a major reason for this change in attitude. Before the farmer organization program, a farmer might come to an Irrigation Department official to ask for help. Often, satisfying his request meant possibly harming other farmers, leading to complaints and criticisms. In other cases, satisfying the request required use of scarce funds or other resources. Even if resources were sufficient to satisfy one request, acceding to one

could lead to a flood of similar requests. In these circumstances, officials were understandably unresponsive to many requests.

Once an organization has been created and a spokesman selected, the official can differentiate between requests that originate from a single individual and requests that have the backing of all of the farmers on a channel. He can determine whether satisfying the request will offend other farmers. In addition, he can call upon the labor resources of the farmer organization to supplement his own meager resources. As mentioned earlier, when the farmers of one channel complained that rehabilitation had lowered the water level in the distributary channel so that they had difficulty getting water into their field channel, one officer gave permission and provided technical advice on building a stone check structure in the channel by means of shramadana labor. Before farmer organizations, he would have had to get the structure built with Irrigation Department funds and labor, and that would have taken much time and effort.

In addition, the existence of farmer organizations and Farmer Representatives has led to better and more direct communications between officials and farmers. Now officials and farmers know whom to talk to to get messages across. The improvement in communication has led to an increased appreciation of each other's problems and constraints. Because they get more cordial hearings than do individual farmers speaking for themselves and because they can speak with some assurance of backing from other farmers, Farmer Representatives are now quite willing to speak directly to officials whereas in the past they often waited for the twice-yearly Cultivation Meetings or relayed their demands through politicians and other government officers.

In addition, the farmers themselves have created new avenues of communication. As noted above, the Farmer Representatives in different areas in the Gal Oya Left

Bank have been holding "monthly" meetings to which they invite Irrigation Department and other officers to discuss farmers' problems.⁸ These meetings are different in one important respect from other meetings between officials and farmers: they are initiated and chaired by farmers. IOs do not organize the meetings or set the agenda.

The change in attitude and communication is reflected in officers' statements like, "They (the farmers) understand the problems faced by the Irrigation Department officials better," and "Now they (the farmers) are able to differentiate between the responsibilities held by themselves and by the department. They feel that they should assist the officers." One engineer said, "The farmer organizations have been truly helpful. Through these (monthly) meetings it has been possible for farmers to come out with their views and it has been possible for us (Irrigation Department staff) to explain to farmers our views. Earlier, farmers viewed suggestions from officials with disdain and sometimes with anger. Now it is different. Farmers have learned to look at problems from different angles. It is also very easy for us to reach farmers through the Farmer Representatives."

Farmers' statements agree. For example one farmer said, "since the farmer organization program began, it has been possible for farmers to refer their problems to officers directly (i.e. rather than through politicians). These (monthly) meetings have also resulted in establishing more cordial links with officers."

The improvement in and importance of direct communication between farmers and officers was recognized officially when the Government Agent of the district (equivalent to the District Collector in India) invited the farmers to choose a few of their Farmer Representatives to sit on the District Agricultural Committee. This committee, consisting of the district heads of all government agencies concerned with

agriculture, makes many important decisions, including determining the basic pattern of water issues for the whole Gal Oya system.⁹ The Government Agent issued his invitation for farmers to be represented on the District Agricultural Committee because he was impressed with the seriousness and articulation of the Farmer Representatives.

III. Contributions of the Catalyst Agents

As indicated already, the Institutional Organizers did not bring entirely new ideas to the situation in Gal Oya. The concepts of group action, shramadana, and farmer representatives were already understood by farmers in Gal Oya because of their existence in rural Sri Lanka.

The Institutional Organizers' contribution was to encourage and adapt the application of these pre-existing ideas to water management at the farm and field channel level in Gal Oya. As one farmer said, "The Institutional Organizers first came ... to my home and inquired whether allotment 22/130 was mine. Thereafter they came very often. At these visits they explained that farmers waste a lot of water and that it flows down the drainage canal. This deprives many farmers of water. They also said that unity and cooperation among farmers should be fostered by forming farmer organizations ... (At the first meeting, an Institutional Organizer) said that officers should know about farmers' problems and that this could best be done by appointing farmer representatives."

This description of the IO role does not seem to be, however, a sufficient explanation for the quick progress of the program. The basic ideas were familiar to the farmers, and most of government staff were the same ones who had been there all

along.¹⁰ As we have reported, the level of collective action to improve water management, which was in the farmers' interest, was low. Why were "catalyst" agents, the Institutional Organizers, necessary? Some reasons can be suggested on the basis of ideas put forward by Olson (1965), though other considerations also figure in.¹¹

A. Impetus for Organization

First, participation in an organization requires time and energy. If a farmer organization holds regular meetings to discuss problems, every member must be willing to commit time to those meetings and to shramadana and other group activities. In addition, some members must give up privileges they have by reason of their favored locations on the field channel. Their only return is social credit for being cooperative. As documented above, whatever rewards have been great enough that in the program area in Gal Oya, farmers have been willing to pay these costs.

However, the creation of a farmer organization requires much additional time and effort from somebody. Also, there is no assurance that the effort will succeed.¹² A field channel organization could easily fail if head-end farmers refuse to cooperate or if there are numerous "free riders" who do not participate in shramadana activities. In light of these difficulties, farmers in Gal Oya were not willing to take upon themselves the costs of creating organizations.

It has been the Institutional Organizers who have taken on the organizing duties and given the time and energy necessary to create the organizations, in other words, who have assumed the "start-up" costs. In fact, the Institutional Organizers had to take a more direct role in organizing farmers than envisioned at the beginning of the program. They have had to be involved in organizing shramadanas and meetings among the farmers as well as in acting as intermediaries between officers and farmers. For

example, when a sample of farmers was asked in April 1983 why they joined a farmer organization, 57% responded with some statement about how it would solve their problems, but 22% said that they joined because the Institutional Organizer asked them to.¹³ Also, 55% of the respondents to a question about who organized channel cleaning for 1983 Yala mentioned the Institutional Organizer alone or along with the farmer organization or Farmer Representative.

We would note, however, that farmers recognize the Institutional Organizers have no ultimate responsibility for these organizational tasks. In the same survey, Institutional Organizers were mentioned by very few respondents (6% or less) when asked who should take responsibility for various operation and maintenance tasks.

There may be a second reason why Institutional Organizers were so useful in Gal Oya. One of the primary benefits of forming a farmer organization is to get better cooperation from the Irrigation Department officers. If only one small group of farmers creates its own organization, it is not likely to receive Irrigation Department recognition. Without such recognition we believe the farmers will not find it worthwhile to create and maintain an organization. Indeed, in the original planning of the program, we underestimated the importance to the farmers of officials' cooperation. The Institutional Organizers because of their activity and their status, guaranteed some sort of official recognition and cooperation for the farmer organizations and Farmer Representatives.

A third reason had to do more with factors intrinsic to the settlement scheme situation (Abeyratne, 1982). Gal Oya, like most irrigated settlement schemes, had brought in people from all parts of the country, settlers of different geographical origin, ethnicity, caste, religion and so on. This heterogeneity has contributed to a

continuing lack of social cohesiveness or feeling of community in most parts of the scheme, despite the passage of years. It is reflected mostly in the lack of community-wide organizations of any sort and concomitantly, in the lack of the kinds of leadership that exist in more established communities.¹⁴ Thus the catalyst agent provided the necessary initial impetus to forming farmer organizations, which otherwise would have been lacking.

B. Value Influences

There are also some considerations that derive not so much from structural (role) relationships as from normative (value) orientations. Arthur Maass, who has previously analyzed irrigation management experience in Spain and the United States emphasizes that individuals have many different competing values. Which will prevail in specific situations depends on the way that situation is defined by others as well as by one's self.¹⁵ Farmers, like others, are motivated both to pursue their own advantage and to value the security and solidarity of their community. Norms of personal gain and of fairness to others co-exist in some tension. Which set of values will influence behavior — the more selfish or the more altruistic — can be affected by the kind of "public space" described previously, where generous and cooperative action is more readily justified than self-serving behavior.

Whether people choose to seek individualistic or collective solutions to identified problems also is affected by the climate of opinion around them. The Institutional Organizers in their discussions with farmers emphasized the value of fairness to all, of equal sharing of water, and they also advocated the strategy of group responsibility. While not all farmers would be moved by this reasoning and this ethic, for many the balance could be tipped in such a direction by the group discussions led by the Organizers. To be sure, the resulting cooperative action produced benefits (Pareto

optimal -- basically nobody lost while some gained), so this reinforced a normative orientation which supported more group-serving behavior. We are not saying that values by themselves determine action, independently of "interests." But some influence of mobilizing normative orientations seems to have been involved.

C. The Nonpolitical Status of the Catalyst Agents

Farmers not only needed reassurance that the farmer organizations would get official recognition but they also needed assurance that their efforts would not be quashed by government agencies or politicians for political reasons. Sri Lanka is a heavily politicized country and farmers have numerous experiences with organizations that became so identified with party political interests that only certain sections of the community were benefited. It was thus crucial that the Institutional Organizers could identify themselves as nonpolitical and as serving all farmers regardless of political affiliation.

One farmer recalled that at first "the farmers thought this (program) was a political stunt." Another noted, "At the outset, the Institutional Organizer went to the homes of the farmers and explained the farmer organization program. Later meetings were organized and Farmer Representatives appointed. Initially the farmers did not have much faith in what the Institutional Organizer had to say. The farmers know of many societies and organizations which proved to be failures. The people were tired of these organizations. They thought that the farmer organization would be like the other organizations that failed. Because of this the Institutional Organizers had to work very hard to convince farmers that the farmer organization is different from the other organizations."

The Institutional Organizers were employees of ARTI, a research institution, and were associated with an American university. This may have helped to establish the Institutional Organizers' non-political status in the eyes of the farmers. Of greater importance, however, was the fact that the Institutional Organizers actually lived with the farmers and constantly showed interest in their problems. One farmer explained, "He (the Institutional Organizer) came as a complete stranger to us. For the first day or so we had doubts and suspicions about him. But he spoke to us with kindness and sincerity and we started to trust him."

The Institutional Organizers are university graduates. Graduates were recruited in part because they were easily available through government recruiting agencies and in part because it was felt that they would be able to absorb the necessary training more easily than would recruits with less education. We feared, however, that there would be a social gap between the Institutional Organizers and the farmers. In practice, no gap appeared. The Institutional Organizers' status as graduates has proved to be an advantage, as it has facilitated their relations with Irrigation Department and other officers. Once the Institutional Organizers began living with the farmers, they came to strongly identify with farmers' problems. Farmers came to refer to Institutional Organizers as "our sons and daughters," thus according them a niche in the farming community.¹⁶

IV. Conclusion: Lessons from Gal Oya

The farmer organization experiment in Gal Oya has had considerable success, though we are mindful that still much strengthening remains to be done, and there can still be setbacks.¹⁷ As we have shown, the use of Institutional Organizers as catalyst agents has succeeded in producing a large number of small farmer organizations that

have greatly improved water management practices and relations between farmers and Irrigation Department officers. We attribute this success to certain practices or that may be relevant to other programs aimed at improving water management in large irrigated settlement schemes.

These principles can be summarized as follows:

- (1) The organizations should be hydrologically based, that is, the members of the organization should share and jointly control a single source of water such as a field channel turnout.
- (2) The organizations should be small enough to be both self-managing and socially viable. In Gal Oya we found that 10 to 20 farmers constituted a suitable size.
- (3) In a situation where there is a high probability that farmer organizations will become politicized and thereafter serve only the interests of certain segments of the population, it is imperative that the catalyst program develop and maintain a non-political character. ¹⁸ Apart from the usual political divisions this becomes all the more important in an area that has a multi-ethnic community where each ethnic group supports a different political party.
- (4) In a large irrigation scheme where water is controlled and operated by both a government agency and by farmers (albeit at different levels), it is important that links are forged between the two so that an environment of mutual respect is fostered and is conducive to the effective working of the irrigation system.
- (5) Official recognition of the farmer organizations is necessary if the latter are to have any sustained impact on decisions relating to water management.
- (6) While in traditional rural Sri Lankan villages, certain norms and disciplines associated with the utilization of water were an integral part of community life, they are not automatically applied to water management in settlement schemes. Therefore while the concepts themselves are not new, they must be adapted and applied to the particular conditions of irrigated settlement schemes.
- (7) It was found to be desirable that the catalyst agent, while responsible for an individual area, works as a part of a team that covers a larger area. Working as a member of a team was found to be an effective management device that enabled the catalyst agent to share his/her experiences and to bring collective thinking to bear upon problems.
- (8) The "learning process" approach afforded flexibility to the catalyst agent such that the program could be adapted to the particular conditions of each farmer organization area.

- (9) It was found that the fact that the catalyst agents were university graduates meant that they had useful status in the eyes of government officials; at the same time, the fact that they lived with the farmers enabled them to develop acceptance by the farmers.

Successful farmer organization programs can perhaps be developed without using catalyst agents. The necessary factors are the existence of (1) someone with the time and energy to create the organizations, (2) a guarantee of influence over the decisions of government officials responsible for managing the irrigation scheme, and (3) evidence of dedication to serving the farmers' interests. There have been some isolated examples in Sri Lanka of government officers who have created farmer organizations to improve water management.¹⁹

Yet we feel that catalyst agents can and probably should be used in most cases. Catalyst agents can demonstrate their dedication to serving the farmers' needs much more easily than can government officers, who have many other responsibilities anyway.

Two important matters remain to be tested. First, all of our experience has been with Sinhala-speaking farmers in the head and middle areas of the Left Bank. We are just now beginning to work with the Tamil-speaking farmers in the middle and tail of the system. Both the ethnic differences and the difference in water availability will affect the program. Because we have adopted a learning process approach, we will modify the program as needed. However, we do not yet know what modifications will be required.

Second, we intend to withdraw most of the Institutional Organizers from Gal Oya in the next year or two. What will happen then remains to be seen — how strong the organizations have become on their own, whether feelings of "dependence" on the IOs

have been avoided, whether official cooperation will continue. Creating such social infrastructure as farmer organizations is akin to building the physical reservoir and channels; some up-front investment is needed, but also there are some maintenance expenses. We have planned on having a few experienced IOs remain in the area in an "ombudsman" role, to continue training new Farmer Representatives, and to troubleshoot to keep the organizations strong.

We are expecting the committees of Farmer Representatives to have an officially recognized decision-making role in the operation of the Gal Oya system. One indication of the good performance of the program is that the senior officers of the Irrigation Department agreed (unanimously) in June, 1983, to link a four-tiered structure of farmer organization into a new Irrigation Management branch of the Irrigation Department. The organizational models and favorable experiences in Gal Oya and also at Minipe (N. G. R. de Silva, 1982) provided justification for giving farmers a larger role in water management, from the field channel level up to and including the entire project area.

We would like to thank Hammond Murray-Rust for reviewing this paper, though all responsibility for the exposition rests with us, loosely, collectively. Because the paper was drafted in three locations (New Delhi, Colombo and Ithaca) in successive drafts, we have not been able to coordinate our formulation and emphasis on all points. Thus authors may feel somewhat differently about various points made in this collective draft. We expect further refinement and reconciliation of our presentation once we can talk more about this draft in January.

Notes

- 1) Too little is known of the soils of Gal Oya. In 1970, the Farmer Commission's evaluation of the Gal Oya scheme (Sri Lanka, 1970) recommended that thorough soil studies be done before any rehabilitation was undertaken. No such study has been done yet.
- 2) Although one could see that water was flowing through upstream fields and into the drainage canals, large additional land areas were irrigated with that water. No determination of the amount of land irrigated with drainage water has been made nor has the amount of water actually "wasted" been estimated. The extent of re-use remains to be measured.
- 3) David Korten, a member of the team that visited Gal Oya in January, 1980, was a Ford Foundation advisor to the National Irrigation Administration in Manila at the time.
- 4) According to the Irrigation Ordinance, farmers are responsible for the maintenance of the last half mile of field channels and distributaries (tertiary and secondary canals). In addition, it is assumed that farmers will solve some of their own conflicts. As a practical matter, the Irrigation Department has had neither the personnel nor budget to operate and maintain all of its responsibilities in Gal Oya or any other large system. However, prior to the Water Management Project, the Irrigation Department publicly maintained the position that it was controlling the system down to the farm turnout.
- 5) The rotation systems were devised by the farmers on each channel. Half of the groups that instituted rotations chose to close head-end field turnouts first so as to send water to the tail for one or two days before taking water at the head of the field channel. We find it significant that one-fifth of those that began with head-end-first systems switched to tail-first systems when the initial system proved ineffective while none of those who began with tail-first systems changed. In other words, where farmers switched it was to more probably equitable arrangements than to ones less equitable.
- 6) These were not necessarily the same farmers as farmers could do either or both. Only 2% of those saving water were giving up three of their five days' issue; 55% were closing their channel for two days; and 53% were saving one day of water for the tail enders.
- 7) Note that the Irrigation Department itself has helped create this problem by the attitude that all irrigation systems are the same. As a consequence the Irrigation Department sets a single policy for the whole country that may well be harmful in a particular situation. For example, the Irrigation Department policy is that all field channels should carry one cusec of water and serve 30 acres without regard to soil conditions. The dates of first issue of water for each season have previously been set on an island-wide basis.
- 8) In fact the meetings are not held every month. During particularly busy months for farmers, they are often not held. At present about eight meetings are held each year.

- 9) The invitation came at a meeting between Farmer Representatives and the Government Agent in February 1982 at which the Farmer Representatives sought to have the area authorized for irrigation in the upcoming dry season increased from 5000 acres to the more usual 15-20,000 acres. The agreement by the Government Agent and the District Agricultural Committee to raise the allocation to 12,000 acres was seen as a victory for the program, though in fact the decision merely followed the usual pattern. Still, the public perception was that the farmer organizations helped to influence the decision. See Murray-Rust (1983).
- 10) We have not encountered the kind of resistance which might have been predicted on the basis of Wade's analysis of major irrigation scheme administration in India (1982). His is a controversial though not undocumented account.
- 11) Olson's analysis has stood for a long time in the literature, but is now receiving some persuasive criticism as too individualistic and as internally inconsistent (Kimber, 1981; Runge, 1984).
- 12) This role of "leadership" bearing the costs of organization in peasant communities has been discussed by Popkin (1979), and the specific need to handle "the assurance problem" (as more important than "the free-rider problem") is dealt with by Runge (1981 and 1984).
- 13) Farmers frequently refer to IOs in very friendly and cordial terms, as noted below. Such friendship has been found important in the community organizing work of the Indian Social Institute (Volken et al., 1982:70).
- 14) The Tamil areas in the scheme form an important exception to this generalization. In the Tamil areas, whole villages were relocated; therefore, traditional leaders exist and continue to exert influence.
- 15) "Each individual plays a number of roles in his life and each role can lead him to a unique response to a given choice situation. Thus individuals have the capacity to respond to issues — to formulate their preferences concerning them — in several ways, including what they believe to be good for themselves, largely their economic self-interests; what they believe to be good for particular sectional, occupational, social, or religious groups; and what they believe to be good for the political community. The difference among these can be defined in terms of breadth of view. Responses are community, rather than privately, oriented to the extent that individuals have given greater emphasis to their estimates of the consequences of their choices for the larger community. Furthermore, the responses that individuals give in any choice situation will depend in significant part on how questions are asked of them. This means not simply the way questions are worded, but the total environment in which they are put and discussed." Maass (1983:23). He cites an experiment where people took different positions (even privately) on the question of birth control according to what they perceived to be the prevailing norm of those around them.
- 16) See footnote 13 above. On the general strategy of using such "catalysts," see Chapter 8 in Esman and Uphoff (1984). A similar strategy has been used in Thailand to reach and organize the rural poor, relying on informal procedures for forming groups and selecting leaders, following the same methodology of visiting households (Rabibhadana, 1983). There local officials, however, were a barrier to the farmers' organizations, and it is very clear that the organizations could not

have been set up by or through officials. In Gal Oya, such officials, initially viewed as part of the problem became part of the solution.

- 17) The program managed to survive two major blows during the summer of 1983, first the loss of almost two-thirds of the IO cadre when the government opened up several thousand teaching positions with more job security than the IOs could be given, and then the communal violence in the country at the end of July. The Gal Oya project area was spared violence during the time when there were outbreaks elsewhere, though we cannot know to what extent the farmer organization program contributed. (Gal Oya spans settlement areas of the two ethnic communities and had been the scene of previous strife, as recently as 1981.) Tamil irrigation engineers have been working in recent years quite closely and amicably with mostly Sinhalese farmer organizations, and Sinhalese Farmer Representatives have stated that there should be a single water management organization for all farmers in the area regardless of language. A new batch of Sinhala-speaking IOs has been trained and deployed, carrying the organizational effort forward, and a batch of Tamil-speaking organizers have been fielded in the tail-end areas despite the various difficulties.
- 18) We have been impressed with farmers' determination to keep their organizations from becoming politicized. Even some of the previously most prominent and partisan farmers in the area have, after initially opposing the program, accepted its non-partisan orientation. One even remarked to us that "politics is cancer for farmer organization." He said that once farmers and officials work cooperatively together to solve irrigation problems, farmers will have no reason to seek politicians' help and interference. The District Minister, recognizing the value of non-political farmer organizations, has avoided personal involvement with them. For a few days during the 1983 national election campaign, spokesmen for both major parties in the district made the farmer organization program an issue (pro and con), but apparently behind-the-scenes advice from farmers led both to drop the issue and the program did not become embroiled in partisan politics as was to be feared.
- 19) A documented example is the creation of water management committees in the Minipe scheme (N.G.R. de Silva, 1981). The driving force behind that experiment was Godfrey de Silva, who at the time was the Deputy Director of Irrigation for the district that includes the Minipe scheme.

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