

TECHNICAL REPORT NO. 68



DEVELOPING LOCAL FARMER ORGANIZATIONS
A THEORETICAL PERSPECTIVE

By:

James B. Mayfield and Mohamed Naguib

June, 1984

EGYPT WATER USE AND MANAGEMENT PROJECT

22 El Galaa St., Bulak, Cairo, Egypt

DEVELOPING LOCAL FARMER ORGANIZATIONS:
A THEORETICAL PERSPECTIVE

By:

James B. Mayfield and Mohamed Naguib

EWUP PROJECT TECHNICAL REPORT NO. 68

Prepared under support of

WATER DISTRIBUTION RESEARCH INSTITUTE, WATER RESEARCH CENTER

MINISTRY OF IRRIGATION, GOVERNMENT OF EGYPT

Contracting agencies

Colorado State University
Engineering Research Center
Ft. Collins, Colorado 80521
USA

Consortium for International
Development
5151 E. Broadway, Ste., 1500
Tucson, Arizona 85711 USA

All reported opinions, conclusions or
recommendations are those of the writers
and not those of the supporting or contracting agencies.

ABSTRACT

Developing water users' associations, or any other type of farmer organizations, results in the adherence by change agents to particular theoretical parameters. One theoretical foundation of an organization is the development of participatory leadership. The development of leadership is a continual process emphasizing the components of motivation, action, consequence, and reaction. A well-functioning leadership group facilitates cooperation between the villagers and government agencies, develops training programs to teach the people to become more reliant, generates income to finance programs and performs needs assessments and solutions to problems in order to motivate the people to cooperatively perform the necessary tasks. Change agents, called rural extension facilitators, work to develop the leadership by developing awareness among the population, practicing activities and internalizing the concept of cooperative action among the group members. These theoretical parameters are discussed in this paper with the purpose of sensitizing individuals involved in organizing farmers as to some fundamental conditions which affect how such organizations are developed.

نقدية

تطوير جمعيات منفعي الحياة أو أي جمعيات أخرى
للغلوهميه يتم بنظريات تفكير العوازل وأهم من صنع النظريات
تلك التي نتعلمه منه القيادة الجماعية . إنه تطوير القيادة
بمخيلة مستمرة وتتركز أساساً على التسلسل الهرمي وردود
الفعل وأنه مقومات القيادة الجماعية الناجمة تعتمد على تعاونه
القدريين والمؤسات الكلوبيه وذلك بتحويل برامج لتدريب
وتقديم الحلول للتساكل كسب ما يستدسم في الأعمال إضرورية
والطاقة وأنه مؤسات التطوير هذه تعرف بمؤسات امتداد
الخدمات الى الريف لغرض تطوير فن القيادة وذلك بتوعية الأفراد
بأهمية مشاركتهم في التنمية وكذلك أهمية التعاون بينه أعضاء
المجتمعي الدائمة إنه نظريات تفكير العوامل هذه تتم عرضها
في هذا التقرير لإبراز أهمية مشاركة الأفراد في جمعيات الغلوهميه
كعامل اساسي لتطويرها .

TABLE OF CONTENTS

	Page
Abstract	i
Arabic Abstract	ii
Table of Contents	iii
List of Figures	iv
Acknowledgements	v
INTRODUCTION	1
PARAMETERS OF LEADERSHIP	2
ACTIVITIES OF VILLAGE LEADERSHIP	3
Cooperation Facilitation	4
Training and Leadership Development	6
Income Generation	7
Needs Assessment of Solution Implementation	8
THE ROLE OF RURAL EXTENSION FACILITATORS (REF)	12
CONVERSION TABLE	29
LIST OF EGYPT WATER USE AND MANAGEMENT PROJECT REPORTS	30

LIST OF FIGURES

FIGURE	DESCRIPTION	PAGE
1	The Windmill of Village Leadership	4
2	The Process of Leadership Development in the Villages	9
3	Cycle of Rural Organization Building	15
4	Steps of Rural Extension Facilitator	16
5	Matrix for Rural Organization Building	19
6	T=Trust -- Climate Building	20
7	O = Openness -- Data Flow	22
8	R = Realization -- Goal Formation	23
9	I = Interdependency -- Control and Evaluation	25

ACKNOWLEDGEMENTS

The authors wish to express their thanks and appreciation for the contributions made to this paper by the staff of the Egypt Water Use and Management Project, and to the field teams at Mansuriya, Kafr El Sheikh and El Minya.

The Project is funded jointly by the Arab Republic of Egypt, and by the United States Agency for International Development. The United States Agency for International Development in Egypt is under the directorship of Mr. Michael P. W. Stone. Mr. John Foster is the United States Agency for International Development Project Officer for the Egypt Water Use and Management Project.

The Egypt Water Use and Management Project is implemented under the auspices of the Ministry of Irrigation's Water Management and Irrigation Technologies Research Institute and in collaboration with both the Ministry of Irrigation and the Ministry of Agriculture through the Soil and Water Research Institute and the Agriculture Economics Institute, which provide the Project with personnel and services.

The Consortium for International Development, with executive offices in Tucson, Arizona, is the United States Agency for International Development Contractor for the Project. American Project personnel are drawn from the faculties of Colorado State University, the lead American university taking part in the Project, Oregon State University, New Mexico State University, and Montana State University. The Project Director is Dr. Hassan Wahby and the Project Technical Director is Dr. Eugene Quenemoen. Dr. E. V. Richardson is the Campus Project Coordinator.

11

DEVELOPING LOCAL FARMER ORGANIZATIONS A THEORETICAL PERSPECTIVE

By:

James B. Mayfield and Mohamed Naguib

INTRODUCTION

The work of the Egypt Water Use and Management Project (EWUP) pertaining to the organizing of farmers into water users' associations is based on the assumption that local farmer involvement is necessary in order for the irrigation system to be effectively managed. What is also assumed is that such local participation can be generated, developed and established to the extent where farmers can truly play a major role in the operation of the national irrigation system. Another technical report, PTR #65, will address the specific issue of developing a water users' association; but in order for that report to become as meaningful as it should, the theoretical base for such work needs to be examined.

Therefore, the purpose of this report is to present to the reader some fundamental theoretical underpinnings upon which work in organizing farmers for any purpose emanates. The major points to be addressed in this report revolve around the concepts of leadership and participation. To begin with, the notion of leadership will be defined and a general process of participatory leadership will be identified. The next section of the report will examine some distinct activities of a community leadership group which must be developed in order for a specific program to become institutionalized in that particular community. Finally, a section will be devoted to how a change agent, a rural extension facilitator as he is called in this paper, works with a leadership group to introduce change into a community.

The concepts presented here represent a theoretical basis for much of the community development activities around the world. These same concepts are relevant for EWUP's work in developing water users' associations because they are addressing the problem of how does one change existing collective patterns of behavior in order to perform a new task. An appreciation and understanding

of these principles by the change agent will allow that individual to systematically observe the forces permeating a change situation; and therefore give that change agent a greater opportunity to successfully direct those forces in the desired manner.

PARAMETERS OF LEADERSHIP

One of the most crucial steps in any program designed to organize farmers is to develop a viable leadership within the group of farmers to be organized. The word leadership is very difficult to define. It implies initiative, enthusiasm, awareness, direction, motivation, planning, implementing, evaluation, involvement, cooperation, and accomplishment. Leadership tends to emerge; it is not forced. It can be encouraged and fine-tuned by appropriate training, but the heart of leadership comes from within. It is active and goal-directed, but will never be long-lasting without meaningful participation and involvement of the followers.

An analysis of the process of leadership suggests an unending cycle of motive (M), action (A), consequence (C), reaction (R), motive (M), action (A), consequence (C), reaction (R), motive (M)..... This "MACR process" should sensitize any observer of leadership to the following implications.

1. The motives (M) which stimulate an individual to accept or engage in various leadership behaviors may be varied and unexpected - - all the way from a sense of duty of obligation, a coerced request from the government, a desire to serve the community, a stepping stone to higher office, better access to governmental services and benefits, a fear of losing face, a wish to obtain training skills, the possibility for more income and allowances, and the desire to dominate and control.
2. The actions (A) which stem from these motives may be effective or ineffective, honest or dishonest, characterized by high levels of energy and enthusiasm or low levels of energy and apathy. The actions may only reflect what is required or they may reflect an initiative and willingness "to go the second mile." The actions may be short-lived or long-term, they may be carefully planned and thought-through or haphazard and ill-defined.
3. The consequences (C) of these motives and these actions may solve problems or cause problems, may generate support and cooperation,

or may lead to disunity and demand for better leadership. Consequences are the environment from which motives to engage or not engage in leadership behaviors emerge.

4. The reactions (R) which emerge from the consequences establish the environment in which leadership must function. In a social milieu of the village which historically has been characterized by domination, authoritarianism, exploitation, and dependency, it should not be too surprising that the initial reactions to any effort which seeks to develop leadership would be viewed with some apathy and/or suspicion. The common reactions of the village people to the past motives, actions (behaviors) and consequences of outside intervention must be approached with patience and understanding. Any attempt to understand why there is or is not leadership or why there is effective or ineffective leadership, must understand what consequences from past motives and actions dominate the villages today. No amount of training will generate leadership in the villages until the motives, actions, consequences, and reactions are synchronized to reinforce and support the incipient and early attempts at leadership behavior which can be observed and are being gradually developed.

ACTIVITIES OF VILLAGE LEADERSHIP

Based upon extension experience in a wide variety of village settings, the following conclusions can be drawn. It appears that local leadership and farmer participation require an interactive process, perhaps characterized as "the Windmill Effect". (Figure 1) Each blade represents one aspect of the process that must be stimulated and developed if self-sustaining institutions are to be initiated. The emerging process of leadership may be related to this windmill analogy as the breath of energy which stimulates and develops each of the following four activities: (1) a program to facilitate cooperation between the villages and various government agencies which may be able to provide services and solutions to their problems; (2) a program of training and leadership development to encourage local leaders to acquire the skills needed to help themselves and to release the energy to make themselves autonomous and more self-reliant; (3) a program of income generation to provide the

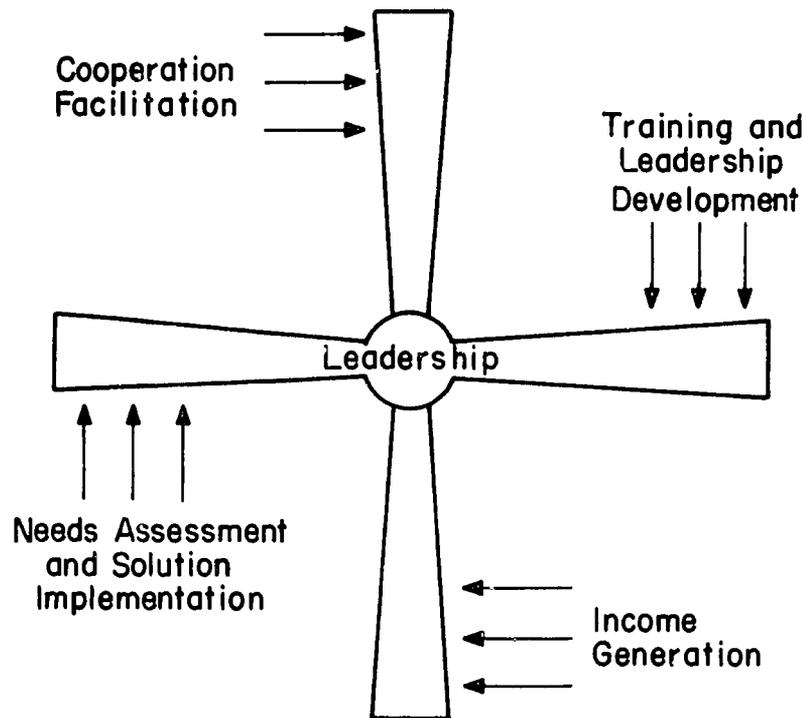


Figure 1. The Windmill of Village Leadership

capital needed by village institutions to finance their own programs and services; and (4) a program of need assessments and solution implementation to motivate the village people with a sense of cooperation and unity.

The significance of this analogy is that leadership, if it is to be motivated, encouraged, and developed, will probably not start with just training or with just the development of better cooperation, but rather will require a carefully integrated plan of effort. Following is a series of items that might be included in each of the four programs being suggested.

Cooperation Facilitation

If some type of village organization (water user association, cooperatives, local village decision-making groups, etc.) is to be developed, there is a need for the establishment of some type of rural extension/facilitator/trainer cadre

(REF) to help initiate the process.¹ For example, there would be a need to help the farmers at the mesqa level to learn how to interact effectively with the village/district-level bureaucracy. Some type of training to bring the village people and the government officials in their area together is needed and should include the following items:

1. Identify all sources of external support and aid (both private and governmental) at the village, district, provincial, and national level.
2. Determine a schedule of visits and contacts and the individuals within the EWUP Staff responsible for such visits. If the field operation people were brought into this program, additional staff people would be available.
3. Organize a workshop to develop and train REFs in the roles, procedures, goals, techniques, schedule, obstacles, etc. which will be needed if effective cooperation is to be established with these government and private agencies.
4. Implement initial visits and follow these visits up with a feedback workshop to share experiences, identify problems, map out new strategies, and coordinate new information learned.
5. If, for example, all REFs were to set aside two or three days each month to contact village district and/or provincial-level officials responsible for areas of their interest, a logical process of cooperation development would probably include: (1) first, establish a contact; (2) seek to develop a friendship or warm relationship (3) help the official to be more aware of EWUP and the villages involved; (4) seek to stimulate an interest in working together in mutually complementary activities; and (5) generate a commitment in the officials to cooperate in meeting the needs and solving the problems that exist in the villages. It would be appropriate for the members of the REF Team to schedule a monthly follow-up staff meeting to report on their contacts, share information,

¹ For example, in the EWUP Project, which is seeking to establish water users' associations among the farmers participating in their irrigation development program, it would be appropriate to designate a certain number of their staff to be the rural facilitators (REFs) in the project. Extensive training would be needed to help these members of the EWUP Staff become effective rural extension facilitators (REFs).

plan new strategies to involve outside sources and officials, and provide staff training in the interpersonal and professional skills needed to facilitate this cooperation. As personal relationships are developed, it is hoped that the REF Team would help both village leaders and government officials to be aware of programs, needs, and services that are available and needed. Village people need training in how to interact and work effectively with government officials who have programs and services needed in the village.

6. A program to legitimize this process.
 - a. REFs come to identify and understand the problems, needs, and concerns of the village leadership. (Both formal and informal leaders).
 - b. REFs gradually (as a relationship is developed) bring these village needs to the attention of government and private agency officials.
 - c. A quarterly meeting to coordinate and plan joint projects might be established where village leaders and government and private officials would be encouraged to meet regularly every three months.
 - d. Efforts might be made for the REFs to invite and to take government and private officials actually to visit the village. Also, village leaders might be taken to government offices to familiarize them with the structure and procedures of the government offices.
 - e. Develop, implement, monitor, and evaluate programs established.
7. This process of assisting the village people to interact more effectively with the various agencies would be very helpful. The REF Team, in building bridges between the rural areas and the service delivery systems of government, could clearly give the village people the skills, confidence, and awareness needed to generate their own initiative, to release their own energies, and to actively seek the things they need in the form of roads, health facilities, schools, water, etc.

Training and Leadership Development

Training and Leadership Development is obviously a crucial and significant part of EWUP's desire to help develop local water users' associations in rural Egypt. Following is a series of items to consider:

1. Develop a typology of training needs.
 - a. Institutional, legal, structural training which focuses on training leaders in the authorities, function, powers and obligations they have under law.
 - b. Communication skills needed for building rapport, trust, and interest - needs assessment skills, brainstorming, team building are all skills needed to help local leadership groups work more effectively together.
 - c. Action Research training which facilitates planning, implementing, monitoring, and evaluating skills. These management skills are essential if leadership groups are to develop projects and programs actually achieving some successes.
 - d. Develop greater awareness for the need to coordinate and integrate the activities of the various leadership groups to develop skills in contacting and working with local government agencies (note the section above on Cooperation Facilitation) and the value of working together in the accomplishment of goals.
2. Determine schedules of training, participants to be involved, and individuals to be responsible for the training. It is important that the REF Team be sensitive to the fact that training will be much more effective if it is structured to meet a perceived need, rather than as a process to create the need. Being sensitive to when the village people themselves identify and request a specific type of training will be much more effective, even though this requires greater flexibility on the part of the training staff and close and continuous communication with the village people themselves.
3. Workshop to train trainers is greatly needed if appropriate and innovative techniques and approaches are to be used.
4. Implementation of training programs.
5. Crucial to the long-run effectiveness and relevancy of training is the need to have evaluation and feedback sessions where village people's perceptions of the training can be identified, where good and bad experiences can be discussed, where old approaches can be redesigned and new approaches can be developed.

Income Generation

Local initiative and a sense of responsibility will never develop until village institutions have independent sources of income which can be

developed and prioritized through a formal budgetary process. The sense of independence and local enthusiasm needed for leadership to function effectively will only tend to emerge when these village institutions share some financial autonomy. The REF Team will play a significant role in rural reconstruction and the development of self-government if an income-generating mechanism can be encouraged in the villages:

1. Special efforts are needed to help local leaders be aware of the laws and processes associated with tax collection in the villages. Often many sources of revenue for rural villages are unused simply because the local leadership is unaware of the law. Sensitivity is needed in training these leaders to use these powers carefully, to demonstrate quickly to the village people an immediate service for the taxes collected. This is often a slow and difficult process. Only when local taxing is perceived as a legitimate way to finance needed services in the village will this collection process be perceived as legitimate.
2. If the earlier "cooperation facilitation" process is developed over time the REF Team may help the village leaders identify sources of financial support from government and private agencies. Great efforts should be made to provide this type of "seed money" as it will develop a sense of enthusiasm and accomplishment. There is no stronger motive for developing leadership and a sense of cooperation than the perception that resources are available, that maybe something can be done, that through their efforts specific needs can be met and specific problems can be solved.
3. Several strategies in other countries suggest that local village councils (also Farmer, Women, and Youth groups) may be encouraged to organize and develop income-producing projects in their area. Some of this income can be funneled back into the Village Council -- eventually to be used for salaries, service projects and other needs required by the community. It is clear that many leadership groups in the village lack the ability to utilize a financial incentive as a good way of stimulating commitment and generating higher levels of activity. Such financial incentives are not only useful, but often essential if local councils are to have "sustained interest".

Needs Assessment and Solution Implementation

The above-mentioned three activities (Cooperation Facilitation, Training, and Leadership Development, and Income Generation) will have no cumulative

impact on the leadership motives of the village people unless there is more action and less talk--unless real needs can be identified and then specific steps are taken to meet those needs. All the talk about facilitation, training, and income will not only be useless, but may even be harmful in the sense that unfulfilled expectation may lead to greater cynicism and reinforced apathy. These reactions, so typical of rural people throughout the world, are natural consequences of the motives and actions that have characterized too many rural reconstruction programs. It is imperative that the REFs effectively interact with all members of EWUP to ensure that projects started are monitored carefully, that appropriate resources are made available, that local initiative and effort be utilized in implementing these projects. It is better to have a few small real successes than to encourage huge projects that may be only partially successful. It is probably better that these new organizations tackle a smaller project in the early efforts of implementing an Action Research strategy. It will be the sense of accomplishment and the feeling of success more than any other motive that can sustain the interest and generate the confidence needed to reinforce and develop the leadership required in village-level organization. No rural development program will be self-perpetuating and cumulative over time without the development of self-motivated and highly skilled village leaders.

From the above discussion, it should be clear that leadership development should be conceptualized as a process of involvement and not the achievement of some end, and that leadership may increase or decrease in a village, depending upon the motives, actions, consequences, and reactions that emerge. What will follow is a summary of how the MACR leadership cycle is developed as the leaders proceed to perform the necessary activities of establishing voluntary farmer organizations designed to solve specific problems. (Figure 2)

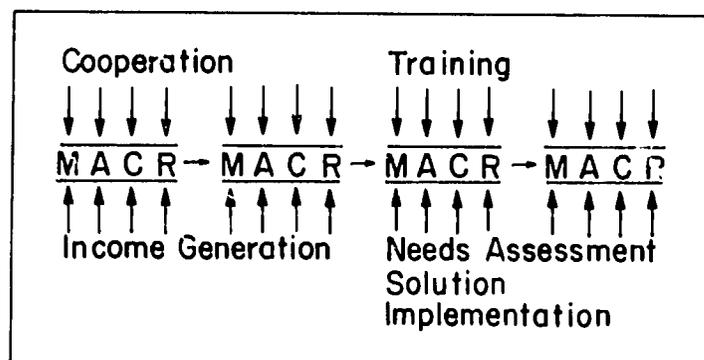


Figure 2 The Process of Leadership Development in the Villages

Note that each phase in the MACR cycle is susceptible to influences and reinforcements from each of the four programs:

A. Motives

1. Cooperation--A government agency induced to provide a specific service or to solve a specific program in the village may give the village leaders just the encouragement needed to try something themselves.
2. Training--A specific training program may provide a village leader with the planning skills to gain the cooperation and support of his village and, thus, the recognition he may need.
3. Income Generation--The development of an adequate budget and available funds to pay the village council members' transportation costs might be just the incentive to ensure better attendance at council meetings among members who need some financial incentives.
4. Needs Assessment/Solution Implementation--A greater awareness of village needs and the sense of accomplishment which comes from the identification of a real need and its solution may develop a sense of community consciousness that no other process can duplicate; thus, the emergence of stronger and better developed motives.

B. Actions

1. Cooperation--Showing village leaders how to contact and work with government agencies will generate greater activities in this area.
2. Training--Once a village council understands its functions, organizational structures, and the options available to it, then this village institution is more likely to engage in various activities and specific actions.
3. Income Generation--There is no doubt that if appropriate sources of income could be developed, village leaders would be more apt to be active. Once resources are available, the opportunities for action are stimulated.

C. Consequences

1. Cooperation--Once a village leader feels comfortable in contacting a government agency and once a government official has developed some rapport with different village leaders, the consequences of this interaction should be positive.
2. Training--The obvious consequence of training is a greater awareness of options and opportunities and a greater confidence in being able to solve problems and accomplish goals. Of course, while effective training can have positive consequences, ineffective training will have negative ones.
3. Income Generation--The availability of financial resources can have either positive or negative consequences--depending on how and for what purpose the funds are used.
4. Needs Assessment and Solution Implementation--If problems are actually identified and if such problems are indeed solved, the consequences could be the reversal of a whole historical trend which emphasized stagnation, poverty, illiteracy, disease, and dependency. The challenge is clearly identified.

D. Reactions

1. Cooperation--An environment of cooperation between local villagers and local government officials could be established which would encourage both groups to work more cooperatively together.
2. Training--The emergence of effectively trained local leaders should help develop a greater sense of competency in the village leadership and should generate a greater sense of confidence among the villages for their leaders.
3. Income Generation--As specific funds are developed in a specific village setting and local leaders gain control over how these funds are to be allocated and dispersed, the significance and importance of local leadership positions becomes enhanced and legitimized.
4. Needs Assessment and Solution Implementation--If we assume a positive orientation to the processes of cooperation, training, and income generation, which hopefully builds upon a self-sustaining set of motives, actions and consequences, it is entirely conceivable that

the reaction to these developments could be a reduction in the feelings of dependency and apathy and a rekindling in the hearts and minds of rural people to begin to take responsibility for their own lives, to seek an interdependency orientation toward the central government, and to initiate the processes by which they come to organize themselves for self-help projects and institutions.

THE ROLE OF RURAL EXTENSION FACILITATORS (REF)

In providing a useful understanding of the leadership training and development process for rural villages, it may be helpful to conceptualize the responsibilities of rural extension facilitation (REF) in terms of the following categories:

1. There is a need to help develop within each group of village participants the following awareness:
 - a. Awareness of where they are now.
 - b. Awareness of why they are where they are now.
 - c. Awareness of where they want to be in the future.
 - d. Awareness of what skills and resources they need to achieve their future.
2. Most successful training programs in leadership and organization development require the following general steps:
 - a. Awareness of their present behavior, attitudes, perceptions, values, opinions, and goals, and an understanding of which of these may be obstacles and constraints on the effectiveness of the group of people being trained.
 - b. Awareness of alternative behaviors, attitudes, perceptions, values, opinions, goals, and an understanding of how these may be facilitative and useful in helping the group being trained to be more effective.
 - c. Opportunity to practice the skills needed to utilize the alternative behaviors, attitudes, perceptions, values, opinions, and goals to the point where the group being trained may, in fact, be more effective.
 - d. Opportunity to receive feedback on how well the members of the group being trained are actually utilizing these new skills, behaviors, attitudes, perceptions, values, opinions, goals, and understanding so the person developing these skills will know that he/she is or is not making progress. (3-6 months)

e. Opportunity for the members of the group being trained to internalize THESE NEW SKILLS, behaviors, perceptions, etc. to the point where they become a part of their leadership and interpersonal style.

3. In terms of understanding where the village group is now, it may be helpful for them to experience the meaning of some concepts which reflect a variety of "interaction patterns" among individuals residing in a village.

a. **Independency**--In this situation each family goes its own, separate way. There is little cooperation or unity in the village. There is little willingness among different family groups to help each other.

b. **Dependency**--In this situation the people of the village tend to be apathetic. They are waiting for someone else (government, the landowners, officials, etc.) to solve their problems for them. Everybody assumes it is somebody's else's responsibility to find solutions for their problems.

c. **Counterdependency**--In this situation the village people are divided into two or more conflicting groups. There is much anger and hostility in the village because of past fights and misunderstandings. If one group makes a suggestion, the other groups automatically reject it and try to make it fail.

d. **Interdependency**--In this situation all the people of the village are united and feel a sense of responsibility to solve their own problems. They may seek help from other sources, but they don't stop just because such outside resources are not available.

The critical issue for a group of village people to consider is where they are in terms of these four concepts and what are the consequences of these interaction patterns for their own villages. Much research in social psychology has shown that the first three types of interaction (independency, dependency, and counter dependency) restrict activity and are serious obstacles to the effective working-together of any group of villagers.

Once a village recognizes where it is now and has some awareness of why it is where it is, then some efforts can be made to help it see where it might want to be in the future and how to get there. Villages

characterized by counterdependency must seek to reduce feelings of anger, hostility, disunity, and fear through some type of conflict resolution training. Villages characterized by dependency and independency must seek to reduce feelings of apathy, isolation, inactivity, and frustration through some type of communication and social awareness training.

4. It is helpful for the REFs responsible for leadership training and development to be aware that an effective training program is a continual process which seeks to encourage: first, awareness of the skills needed; second, an opportunity to practice these skills; third, feedback from others on how well the trainee is doing in these skills; and fourth, the opportunity to internalize these skills. It is important also to recognize that the very process of training must go through several phases and that different emphases and strategies are needed depending on at what point the village people being trained are in the process itself.²

Introducing a training program into a rural setting is always very difficult. There is a need to be aware of feelings and behaviors (F) on the one hand and on the other, the need for a structure of system of procedures and organization if rural extension workers are to be effective. Too often rural extension facilitators (REFs) focus only on the structure and procedures (how to organize, what procedures to use in making decisions, what shall be the responsibilities and functions for the members of the group, etc.) rather than on what the village people are feeling, thinking, or perceiving. There is a need to train the REFs to be sensitive to the feelings, the behaviors, and the perceptions of the village people before they begin to emphasize the problems of organization, rules, regulations, and procedures. In fact, it is crucial that the rural organization building process go through a continual cycle (Figure 3) of first checking feelings (F) and attitudes; suggesting techniques, approaches, procedures, and systems (S); checking again on feelings and attitudes; introducing additional techniques, approaches; and then again checking feelings, attitudes, etc.

² Please note that the theoretical model of leadership training and development described here should sensitize the EWUP Staff to the issues and problems that must be considered in establishing water users' associations in rural Egypt. The actual implementation of this model, would require extensive pretraining preparation for the participants.

Figure 4 suggest a series of steps which may be appropriately considered as the rural extension facilitator (REF) seeks to introduce projects first: at the small group level, then the sectoral level, and finally at the village level. Each step implies a series of skills and training experiences which must be developed prior to moving to a higher step. For example, the first step

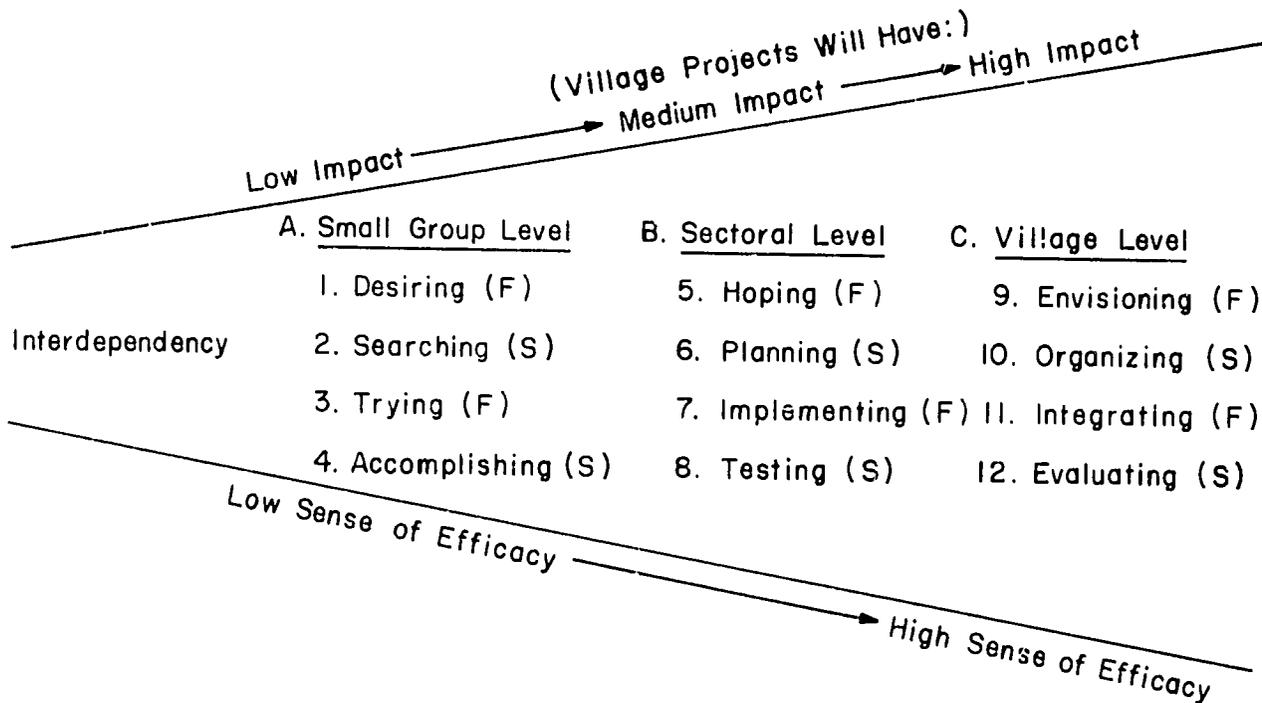


Figure 4

suggested is desiring (F). It is assumed that the worker with a small group of village people must first help to develop a desire on their part to change some situation in their village. This step is designated as a feeling (F) step since the REF must focus on feelings, attitudes, and perceptions of the group members. The skills needed in this step include the ability to share feelings, perceptions, ideas, goals; the ability to brainstorm without the ideas generated being criticized or evaluated; the ability to communicate more effectively,

employing the skill of active listening; and the ability to use the ways of increasing group effectiveness--more openness, more trust, more awareness of each other, and the proceses of communication, decision-making, and conflict resolution which characterize the group. As the sense of group awareness begins to emerge, it has been found that a desire to initiate some activity begins to emerge.

The second step involves searching. This is designate as a system (S) step since the REFs will begin to introduce a system (a set of procedures, suggestions, methods, and approaches) which will facilitate the process of searching for a project and the means to accomplish it. At this step the group will seek to consider alternative projects and goals and to serach out the availability of resources and funding (both within and outside of the village.)

The third step is trying--again designated as a (F) feeling step because it is important that the REF work closely with the village group to ensure that this early attempt to try some new project is successfully monitored, encouraged, and supported. Such monitoring and supporting requires very close communication between the REFs and the village group to ensure that the feelings, concerns, desires, and perceptions of the village people are continually considered. This is an extremely important step in this early phase of leadership training and development because this is the point where a village group actually embarks upon some project and tests the REF's ideas that effort and activity can lead to its successful completion.

The fourth step is accomplishing, designated as a system (S) step since its discussions, records, and evaluation imply a commitment to some type of system or procedure. This is the difficult step of assessing whether the goals and purposes of the group project have been, are in the process of being, or have not been accomplished. The REF will try to help the members of the group evaluate what they have done, why they were or were not successful, the lessons they have learned, and what the situations, skills, procedures, and relationships are which need to be developed or changed if the project is to be more successful in the future and if it is to be expanded to the sector or village level.

In analyzing the first level of the small group approach, it is important to recognize the following four characteristics:

1. Although each step is designated as an F (feeling) step or an S (systems) step, it should be emphasized that these are not mutually exclusive concepts. Thus, the REFs sensitivity and awareness of feelings, attitudes, and perceptions must be checked and considered in all four steps, just as in each one some systems procedures, approaches, rules, techniques, and methods must be utilized and implemented. The point is that both feelings data and systems data must continually be considered. However, it appears that different steps require a different emphasis and mixture of the two types of data.
2. There is no inevitability about any of these steps. It is just as possible that a specific step may be a success as it is that it may be a failure. This whole approach invites the REF to go back again and again to earlier steps if it appears that the latter steps are not successful.
3. At the group level the role of the REF is very crucial. Here REFs play a key role in teaching, encouraging, monitoring, and evaluating the skills and new procedures needed to help the group achieve the envisioned goals. Training at the group level is still mainly at the awareness stage. It is during the first four steps (desiring, trying, searching, and accomplishing) that the REF helps to make village people aware of the skills and procedures needed. At the sector level, the next four steps, 5 through 8 (hoping, planning, implementing, and testing), tend to provide village leaders with the opportunity to practice the skills and to receive feedback on how well they are doing. The village level, which includes the steps 9 through 12 (envisioning, organizing, integrating, and evaluating), provides village leaders with an opportunity to begin to internalize the skills and approaches needed to make the village programs self-sustaining.
4. At the group level, the REF is generally responsible for training. At the sector level, the REF begins to help the earlier trained leaders to become trainers themselves: thus, as the earlier trained leaders are moving through the practicing phase of steps 5 through 8, they are also being encouraged to train new groups to go through steps 1 through 4. Only at a later phase will some leaders begin to emerge who have internalized or are in the process of internalizing the skills in steps 1 through 12 with the hope of eventually developing a village-wide project which can have a major impact. In this final stage of internalization at

the village level, the REF gradually begins to withdraw from the village as the people themselves become capable of running their own projects. This eventually allows the REF to move into a new village where he/she can then start the whole process over again at the group level.

It is anticipated that this early attempt to conceptualize the process of training and leadership development will be largely restricted to identifying the general phases of training, the general steps associated with village leadership development, some of the skills required at each step, and some of the behaviors and feelings which may be characteristic of success and/or failure within each step. However, it should be noted that extensive thought, research, and validation will still be needed before specific skill-building strategies can be outlined in any detail or with any confidence for each of the steps outlined earlier.

At this point it may be helpful to re-emphasize the ways in which the twelve steps are distinguished. For the purpose of analysis it has been found useful to discriminate analytically between the processes of training (awareness, practicing, feedback, and internalization) and the processes of group/leadership development (climate building, data flow, goal formation, and control). (Figure 5)

Figure 5 Matrix for Rural Organization Building

	Phase I Awareness (Group)	Phase II Practicing/ Feedback (Sector)	Phase III Internalization (Village)
A. Climate Building	1. Desiring————→	5. Hoping————→	9. Envisioning
B. Data Flow	2. Searching————→	6. Planning————→	10. Organizing
C. Goal Formation	3. Trying————→	7. Implementing————→	11. Integrating
D. Control/Evaluation	4. Accomplishing————→	8. Testing————→	12. Evaluating

Building upon the work of Gibb,³ let us review the four dimensions of group/leadership development. For example, steps 1, 5, and 9 are all manifestations of the first dimension (A--Climate Building); 2, 6, and 10 are associated with the second (B--Data Flow); 3, 7, and 11 are part of the third (C--Goal Formation); and steps 4, 8, and 12 are characteristic of the fourth

³ Jack R. Gibb, Trust: A New View of Personal and Organizational Development (L. A., California: The Guild of Tutors Press, 1978).

dimension (D--Control/Evaluation). Gibb has suggested that these four dimensions can best be remembered as a reflection of his TORI theory (T=Trust, O=Openness, R=Realization, and I=Interdependency). The utility of this TORI model is in its ability to sensitize an REF to the issues that must be considered if leadership and group development are to take place in a rural setting.

A. From the adjectives listed below, the reader may clearly see why the emotional climate is the dominating factor. All other processes of problem solving, goal setting, action research, and program implementation are colored by the climate of trust or distrust. It should not be difficult to identify the differences and the characteristics of those situations in which an REF is functioning in a village with a low-trust or a high-trust environment. (Figure 6)

Figure 6 T=Trust--Climate Building

Low Trust		High Trust	
Fear	Hostility	Confidence	Acceptance
Coldness	Envy	Respect	Trust
Distrust	Suspicion	Esteem	Love
Cynicism	Criticism	Sympathy	Warmth
Defensiveness	Alienation	Affection	Less Defensiveness
Distorted Perceptions	Conflicting Values	Appreciation of Diversity	Noncriticism
Anxiety	Protective Behavior	Receptiveness	Caring
Paranoia	Need for Status	Acceptance of Motives	

In step 1 the goal of training and leadership development must be to heighten some awareness for the need for greater trust. Out of a milieu of greater trust will emerge a desire for some action, a desire for more cooperation, a desire for greater interaction. Often during this first phase, with its emphasis on "Developing Awareness", the process of trust building is based upon an intellectual or cognitive commitment to the notion that trust is

better than distrust. However, such early awareness will often be characterized as superficial, skin deep, and less than sincere. Nevertheless, it is this early desire--even if the skills and behaviors to build trust are not yet developed--that is the first step in developing effective leadership and group building.

In step 5, at the sectoral level, there is some opportunity to practice the skills and the behaviors needed to develop an environment of trust building. A crucial variable in this first dimension, as has been said, is climate. Is the emotional climate conducive to trust building? How would you characterize the climate of the sector in terms of trust and acceptance? It is usually in this phase of practicing that leaders and members move from a desiring mode to a hoping mode. Based upon their experience in steps 1 through 4, a certain degree of optimism emerges, and as the skills needed to reinforce greater trust levels are practiced and developed, a larger number of the village people begin to accept the genuineness and the sincerity of the individuals making up the sector with which the REF is interacting. It is this higher level of trust which allows the village people to begin to visualize greater goals to pursue. Hoping implies a certain confidence and trust not only in the REFs and the groups to which they belong, but also in the environment. It is this improved climate of trust that can motivate various groups in the village to move to the practicing level of training and leadership development. A climate of desire requires help from the REF because of the uncertainties and lack of trust which permeate such an environment. It is a dependency relationship at this stage, and the villagers' desire to try something is a reflection of their awareness that trust is necessary if they are to solve some of their problems in a cooperative manner. A climate of hope implies less dependency on the REF since steps 1 through 4 have given them some sense of accomplishment and an awareness that specific skills are still needed if they are to move from the group level to the sector level. Hope generates motivation to practice the skills needed to succeed at the sectoral level.

In step 9, at the total village level, the process of internalizing the skills and behaviors associated with high trust generates a new vision of what is possible. This ninth step of envisioning suggests a degree of competency, awareness, and high trust which allows the village leadership to see beyond the present to the future, to replace gradually the REF as the source of desire and hope. A new form of interdependency emerges as a sincere appreciation of diversity, a low defensiveness in interpersonal relationships, and a sympathy

and respect for different opinions comes to characterize the village leadership structure. Only as the leadership begins to internalize the skills and behaviors associated with higher levels of trust will the climate be conducive to a self-sustaining and self-reinforcing process of growth and development in the rural community.

B. The key component of the second dimension is Data Flow, the tendency for communication to be valid and distortion-free or restricted and characterized by hidden agendas and games people play to deceive and/or to manipulate. (Figure 7)

Figure 7 O = Openness -- Data Flow

Low Openness		High Openness	
Deception	Masking	Empathy	Spontaneity
Formality	Strategizing	Active Listening	Intimacy
Politeness	Hidden Agenda	Rapport	Receptivity
Circumvention	Facade Building	Two-Way Communication	Mutual Understanding
Role Playing	Distortion/ Deceit	Open Brainstorming	Candor/ Frankness
Superficial Communication	Grapevine-- Rumors	Valid and Distortion-Free Data	Openness
Data Restriction	False Assumptions	Conflict Confrontation	Clarity/Direct Expression
Ambiguity	Caution		

In step 2 the goal of training and leadership development must be to stimulate some awareness that communication patterns need to be open and distortion-free. Effective development of good ideas and appropriate alternative goals to pursue require a process of searching which stimulates the generation of valid information. At the group level individuals must be exposed to the necessity to give non-evaluative feedback, a greater awareness of what "shared meaning" communication implies, what the negative consequences of role playing, distortion of intention, and deception can do to the whole process of data flow.

In step 6 comes the opportunity to practice the communication skills needed to increase the quality of planning at the sectoral level. It is in this phase that feedback skills are practiced, planning skills are developed, skills in active listening and brainstorming are stimulated and reinforced. Effective planning implies open access to a variety of information sources both internal and external to the village. Developing linkage skills with the village district and provincial government official should be emphasized and practiced with the support of the REF. Practicing the skills needed to reduce defensiveness and game playing in the whole decision-making and planning process should be encouraged during this stage.

In step 10 effective interpersonal and intergroup communication skills must be internalized if the organizing structures of the village's formal institutions are to be strengthened. Organization implies a set of procedures and decision-making approaches which aim at maximizing the data flow process within the rural community. The internalization of certain behaviors associated with empathy, active listening, two-way communication, and valid and distortion-free data is a slow process yet absolutely essential if the quality of decision-making and planning is to be up to the long-term needs of rural villages.

C. The third dimension of the group/leadership development process is primarily concerned with the action steps required to complete some task, to achieve some goal, or to institute some change strategy. The goal-formation aspect of this whole process emphasizes the obstacles of passivity, apathy, indifference, and resistance. (Figure 8)

Figure 8 R=Realization--Goal Formation

Low Realization		High Realization	
Coercion	Passivity	Achievement	Commitment
Guidance	Apathy/ Withdrawal	Fulfillment	Assumption of Responsibility
Manipulation	Resentment	Eagerness	Self- Determination
Resistance	Disinterest	Enthusiasm	Goal Integration

Figure 8 Continued

Persuasion	Indifference	Goal Setting	High Productivity
Irresponsibility	Fatalism	Excitement	Well-Being
Competitiveness	Extrinsic Motivation	Fervency	Shared Problem Solving
Rivalry	Diffused Goals	Involvement	Creativity
		Intrinsic Motivation	Cooperative Behavior
		Clarity of Goals	Work Satisfaction

At the group level the crucial awareness needed for step 3 is the importance of trying, doing, starting, and continuing. Some awareness of the relationship that appears to exist between coercion and passivity, manipulation and resentment, persuasion and indifference, and between forcing and apathy should be developed in step 3. Although the REF plays a crucial role in stimulating, encouraging, and supporting local leadership, the group seeking to complete the task or achieve some limited goal will gain an awareness of the satisfaction which comes from setting a goal, the excitement of watching a project develop, and the sense of expectancy in seeing a plan unfold.

At the sectoral level, step 7 endeavors to generate an opportunity for village leaders to practice the skills needed to implement, monitor, and follow through. Specialized training in problem solving, goal setting, and action research strategies should provide such incipient leadership with the opportunity to experience the sense of achievement, eagerness, and urgency that comes from seeing a project actually implemented from beginning to end in a larger group (sector) setting.

The ultimate goal of "integrating," during step 11, is the internalization of these skills and behaviors associated with actually taking personal responsibility for a project and seeing it through to completion, that sense of deep commitment that comes to a person who totally identified with the project being implemented. This step implies not only a sense of commitment and enthusiasm for some goal, but the actual integration of the individual's goals with his/her village's goals; also, the excitement and high productivity

that comes from the feeling that one is free, not coerced; genuinely responsible without unfair persuasion; and self-determining, not forced. Integration focuses on that sense of self-fulfillment which stimulates the commitment and excitement needed for village leaders to seek a goal, implement a task, and complete a project without the support or encouragement of an REF. At this point the mode of dependency has been broken and an integration of personal and community needs and goals has been achieved. This process of internalization such a commitment, such a sense of responsibility, and such an integration of purpose and meaning within village leaders must be acknowledged as a slow and unsteady experience - yet still, the ultimate goal of any type of rural development.

D. The key component of the fourth dimension of the leadership/group development process is control and evaluation aimed at understanding the process by which groups of people build the control mechanism needed to increase effectiveness and progress. This dimension focuses on the issue of how best to structure evaluation, quality controls, and improvement over time; how to instill internal commitment to change and increased effectiveness; and how to release the potentialities of people through useful feedback, evaluation, and rethinking. It is at this step that significant growth of the individual, group, and institutional level begins to take place. The opposite of interdependency is dependency, submission and discouragement, or counterdependency, tension and hostility. Groups which have tried to implement a project and have failed feel impotent, defeated, and incompetent. Groups which have succeeded feel the exhilaration of success, accomplishment, and competency. (Figure 9)

Figure 9 I=Interdependency --Control and Evaluation

Low Interdependency		High Interdependency	
Dependency	Inadequacy	Freedom	No Need For Formal Rules
Counter-dependency	Tension	Cooperation	Mutuality
Rebellion/War	Hostility	Interaction	High Self-esteem
Submission	Dominance	Participation	Controls Unimportant

Figure 9 Continued

Impotence	Defeat	Potency	Synergism
Uselessness	Discouragement	Adequacy	Efficacy
Weakness	Restrictions	Sense of Being Needed	Leadership Sharing
Power Struggles	Concern For Leadership	Informality	Sharing Influence
Legalism	Formal Rules		
Evaluation- Threatening		Evaluation- Useful	

In step 4 the goal of leadership training and development is to generate some awareness that the group can accomplish a task. The role of the REF is crucial at this awareness stage since the feelings of inadequacy, dependency, and uncertainty still tend to dominate. In a society characterized by authoritarian leadership styles, legalistic rules and procedures, power struggles, and counterdependency, there is little room for a spirit of interdependence to emerge among members of the group. In steps, 1, 2, and 3 the REF helps increase an awareness that through a process of desiring, searching, and trying, specific project with positive results will emerge. In this early phase, when the dominant norms of distrust, suspicion, and skepticism underlie most interpersonal relationships, there is little willingness to evaluate carefully or openly to test out the success or failure of a project. If the project fails, the old patterns of apathy and discouragement will be reinforced. If the project succeeds, there may be some awareness which reaches the level of consciousness among the group members that they have, in fact, accomplished a task. yet in this early phase, this sense of accomplishment may be weakened by the realization that it was the REF, or outsider, who is most responsible for their accomplishment. From a group development point of view, the reader should recognize how important project success is in developing these early feelings of awareness. Small projects with high probability of success constitute the formula for stimulating this positive awareness.

It is at the sectoral level of step 8 that the group may actually begin to practice the skills needed to create an environment of interdependence. The development of higher levels of trust and interpersonal competence required to develop, plan, and implement a project by themselves with only peripheral help from an REF can set the stage for some open testing of where the members of the group are, why they are succeeding or failing, how they may begin to improve themselves and move to a higher level of competence. This step of testing is a delicate point in a group's development, for it is at this point that a group faces a key function.

If the process of testing is characterized by power struggles, formal rules and regulations, and an environment of defensiveness and tension, then the older forms of hostility, rebellion, rejection, and counterdependency will be reinforced. If, on the other hand, the process of testing encourages a participative mode of interaction, with some freedom to confront in non-evaluative ways, to interact spontaneously with no need for formal procedures and rules, then the newer forms of high self-esteem, confidence, and cooperation will be strengthened.

In the final analysis, it is step 12 where the whole process of group leadership training and development reaches full circle. It is at this step that a group of individuals attempts to internalize the skills, the behaviors, and competencies needed to evaluate themselves without outside interference or structure. There is much evidence in the literature⁴ of rural reconstruction which documents the utility and the appropriateness of structures and interacting patterns which emphasize leadership sharing, freedom of choice in decision-making, openness in communication and significant self-awareness. The type of evaluation described here implies an openness to a review of all aspects of the process so far discussed. Once the

⁴ See: Robert Chambers, Managing Rural Development: Ideas and Experience from East Africa (Uppsala: Scandinavian Institute of African Studies, 1974); Elliott Morss, et.al., Strategies for Small Farmer Development; An Empirical Study of Rural Development Projects (Boulder: Westview Press, 1976); Norman T. Uphoff and Milton J. Esman, Local Organization for Rural Development: Analysis of Asian Experience (Ithaca: Cornell University Rural Development Committee, 1974); George Honadel and Rudi Klauss, eds., International Development Administration: Implementation Analyses for Developing Projects (New York: Praeger, 1979); and David K. Leonard, Reaching the Peasant Farmer: Organization Theory and Practice in Kenya (Chicago: University of Chicago, Press, 1977).

process of self-evaluation, group evaluation, and institution evaluation is perceived to be not only useful and appropriate, but even absolutely necessary, then the locked-in potentialities for growth and improvement can be released. As feelings of impotence, weakness and fatalism, power struggles, and game playing are replaced by feelings of efficacy, strength, and confidence, a sense of being needed and the freedom to be yourself, then and only then, will an individual's, group's, or institution's full potentiality begin to emerge.

Attaining the point where a group's potential is fully realized is the overall goal for any change agent working to organize farmers. What has been presented is a description of some major concepts which make up the process of developing participatory leadership in a particular group. It has been found that in order to successfully develop farmer organizations, a major effort must be made to develop the participatory leadership aspect of the group. If this is properly developed, then the organization will become a self-sustaining entity which can more effectively achieve the goals it was designed to achieve. Once the organization can attain this position, then it can most effectively help the farmers who make up that organization, and thus justify the existence of the organization.

AMERICAN EQUIVALENTS OF EGYPTIAN ARABIC
TERMS AND MEASURES COMMONLY USED
IN IRRIGATION WORK

<u>LAND AREA</u>	<u>IN SQ METERS</u>	<u>IN ACRES</u>	<u>IN FEDDANS</u>	<u>IN HECTARES</u>
1 acre	4,046.856	1.000	0.963	0.405
1 feddan	4,200.833	1.038	1.000	0.420
1 hectare (ha)	10,000.000	2.471	2.380	1.000
1 sq. kilometer	100 x 10 ⁴	247.105	238.048	100.000
1 sq. mile	259 x 10 ⁶	640.000	616.400	259.000

<u>WATER MEASUREMENTS</u>	<u>FEDDAN-CM</u>	<u>ACRE-FEET</u>	<u>ACRE-INCHES</u>
1 billion m ³	23,809,000.000	810,710.000	
1,000 m ³	23.809	0.811	9.728
1,000 m ³ /Feddan (= 238 mm rainfall)	23.809	0.781	9.372
420 m ³ /Feddan (= 100 mm rainfall)	10.00	0.328	3.936

OTHER CONVERSION

	<u>METRIC</u>	<u>U.S.</u>
1 <u>ardab</u>	= 198 liters	5.62 bushels
1 <u>ardab/feddan</u>	=	5.41 bushels/acre
1 <u>kg/feddan</u>	=	2.12 lb/acre
1 donkey load	= 100 kg	
1 camel load	= 250 kg	
1 donkey load of manure	= 0.1 m ³	
1 camel load of manure	= 0.25 m ³	

EGYPTIAN UNITS OF FIELD CROPS

<u>CROP</u>	<u>EG. UNIT</u>	<u>IN KG</u>	<u>IN LBS</u>	<u>IN BUSHELS</u>
Lentils	<u>ardeb</u>	160.0	352.42	5.87
Clover	<u>ardeb</u>	157.0	345.81	5.76
Broadbeans	<u>ardeb</u>	155.0	341.41	6.10
Wheat	<u>ardeb</u>	150.0	330.40	5.51
Maize, Sorghum	<u>ardeb</u>	140.0	308.37	5.51
Barley	<u>ardeb</u>	120.0	264.32	5.51
Cottonseed	<u>ardeb</u>	120.0	264.32	8.26
Sesame	<u>ardeb</u>	120.0	264.32	
Groundnut	<u>ardeb</u>	75.0	165.20	7.51
Rice	<u>dariba</u>	945.0	2081.50	46.26
Chick-peas	<u>ardeb</u>	150.0	330.40	
Lupine	<u>ardeb</u>	150.0	330.40	
Linseed	<u>ardeb</u>	122.0	268.72	
Fenugreek	<u>ardeb</u>	155.0	341.41	
Cotton (unginned)	<u>metric qintar</u>	157.5	346.92	
Cotton (lint or ginned)	<u>metric qintar</u>	50.0	110.13	

EGYPTIAN FARMING AND IRRIGATION TERMS

<u>fara</u>	= branch
<u>marwa</u>	= small distributor, irrigation ditch
<u>masraf</u>	= field drain
<u>mesqa</u>	= small canal feeding from 10 to 40 farms
<u>qirat</u>	= cf. English "karat", A land measure of 1/24 <u>feddan</u> , 175.03 m ²
<u>qaria</u>	= village
<u>sahm</u>	= 1/24th of a qirat, 7.29 m ²
<u>saqia</u>	= animal powered water wheel
<u>sarf</u>	= drain (vb.), or drainage. See also <u>masraf</u> , (n.)

EGYPT WATER USE AND MANAGEMENT PROJECTPROJECT TECHNICAL REPORTS

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#1	Problem Identification Report for Mansuriya Study Area, 10/77 to 10/78.	Egyptian and American Field Teams.
PTR#2	Preliminary Soil Survey Report for the Beni Magdul and El-Hammami Areas.	A. D. Dotzenko, M. Zanati, A. A. Abdel Wahed, & A. M. Keleg.
PTR#3	Preliminary Evaluation of Mansuriya Canal System, Giza Governorate, Egypt.	American and Egyptian Field Teams.
PIR#4	On-farm Irrigation Practices in Mansuriya District, Egypt.	M. El-Kady, W. Clyma & M. Abu-Zeid
PTR#5	Economic Costs of Water Shortage Along Branch Canals.	A. El Shinnawi M. Skold & M. Nasr
PIR#6	Problem Identification Report For Kafr El-Sheikh Study Area.	Egyptian and American Field Teams.
PTR#7	A Procedure for Evaluating the Cost of Lifting Water for Irrigation in Egypt.	H. Wahby, G. Quenemoen & M. Helal
PIR#8	Farm Record Summary and Analysis for Study Cases at Abu Raya and Mansuriya Sites, 1978/1979.	F. Abdel Al & M. Skold
PTR#9	Irrigation & Production of Rice in Abu Raya, Kafr El-Sheikh Governorate.	Kafr El-Sheikh Team as Compiled by T. W. Ley & R. L. Tinsley
PTR#10	Soil Fertility Survey in Kafr El-Sheikh, El Mansuriya and El-Minya Sites.	M. Zanati, P. N. Soltanpour, A.T.A. Mostafa, & A. Keleg.
PTR#11	Kafr El-Sheikh Farm Management Survey Crop Enterprise Budgets and Profitability Analysis.	M. Haider & F. Abdel Al
PIR#12	Use of Feasibility Studies and Evaluation of Irrigation Projects: Procedures for Analysing Alternative Water Distribution System in Egypt.	R. J. McConnen, F. Abdel Al, M. Skold, G. Ayad & E. Sorial

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#13	The Role of Rural Sociologists in an Interdisciplinary, Action-Orientated Project: An Egyptian Case Study.	J. Layton and M. Sallam
PTR#14	Administering an Interdisciplinary Project: Some Fundamental Assumptions Upon Which to Build.	J. B. Mayfield & M. Naguib
PTR#15	Village Bank Loans to Egyptian Farmers.	G. Ayad, M. Skold, & M. Quenemoen.
PIR#16A	Irrigation System Improvement By Simulation and Optimization: I. Theory.	J. Mohan Reddy & W. Clyma
PTR#16B	Irrigation System Improvement By Simulation and Optimization: I. Application.	J. Mohan Reddy & W. Clyma
PIR#17	Optimal Design of Border Irrigation System	J. Mohan Reddy & W. Clyma
PTR#18	Population Growth and Development in Egypt: Farmers' and Rural Development Officials' Perspectives.	M. Sallam, E.C. Knop, & S.A. Knop
PTR#19	Rural Development and Effective Extension Strategies: Farmers' and Officials' Views.	M. S. Sallam, E. C. Knop, & S. A. Knop
PTR#20	The Rotation Water Distribution System vs. The Continual Flow Water Distribution System.	M. El-Kady, J. Wolfe, & H. Wahby
PTR#21	El-Hammami Pipeline Design.	Fort Collins Staff Team
PTR#22	The Hydraulic Design of <u>Mesqa 10</u> , An Egyptian Irrigation Canal.	W.O. Ree, M. El-Kady, J. Wolfe, & W. Fahim
PIR#23	Farm Record Summary and Analysis for Study Cases at Abyuha, Mansuriya and Abu Raya Sites, 79/80.	F. Abdel Al, & M. Skold
PTR#24	Agricultural Pests and Their Control: General Concepts.	E. Attalla
PIR#25	Problem Identification Report for El-Minya	R. Brooks

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#26	Social Dimensions of Egyptian Irrigation Patterns.	E.C. Knop, M. Sallam, S.A. Knop & M. El-Kady
PIR#27	Alternative Approaches in Extension and Rural Development Work: An Analysis of Differing Perspective In Egypt.	M. Sallam & E. C. Knop
PIR#28	Economic Evaluation of Wheat Trials at Abyuha, El-Minya Governorate 79/80-80/81.	N. K. Farag, E. Sorial, & M. Awad
PTR#29	Irrigation Practices Reported by EWUP Farm Record Keepers.	F. Abdel Al, M. Skold & D. Martella
PTR#30	The Role of Farm Records in the EWUP Project.	F. Abdel Al & D. Martella.
PTR#31	Analysis of Farm Management Data From Abyuha Project Site.	E. Sorial, M. Skold, R. Rehnberg & F. Abdel Al
PIR#32	Accessibility of EWUP Pilot Sites.	A. El-Kayal, S. Saleh, A. Bayoumi & R. L. Tinsley
PTR#33	Soil Survey Report for Abyuha Area Minya Governorate.	A. A. Selim, M. A. El-Nahal, & M. H. Assal
PTR#34	Soil Survey Report for Abu Raya Area, Kafr El-Sheikh Governorate	A. A. Selim, M. A. El-Nahal, M. A. Assal & F. Hawela.
PIR#35	Farm Irrigation System Design, Kafr El-Sheikh, Egypt.	Kafr El-Sheikh Team as compiled by T. W. Ley
PTR#36	Discharge and Mechanical Efficiency of Egyptian Water-Lifting Wheels.	R. Slack, H. Wahby, W. Clyma, & D. K. Sunada
PIR#37	Allocative Efficiency and Equity of Alternative Methods of Charging for Irrigation Water: A Case Study in Egypt.	R. Bowen and R. A. Young
PTR#38	Precision Land Leveling On Abu Raya Farms, Kafr El-Sheikh Governorate, Egypt.	EWUP Kafr El-Sheikh Team, as compiled by T. W. Ley
PTR#39*	On-Farm Irrigation Practices for Winter Crops at Abu Raya.	A. F. Metawie, N. I.. Adams, & T. A. Tawfic

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#40	A Procedure For Evaluation Crop Growth Environments For Optimal Drain Design.	D. S. Durnford, F. V. Richardson & T. H. Podmore
PTR#41	The Influence of Farm Irrigation System Design and Precision Land Leveling on Irrigation Efficiency and Irrigation Water Management.	T. W. Ley, M. El-Kady K. Litwiller, E. Hanson W. S. Braunworth, A. El-Falaky & E. Wafik
PTR#42	<u>Mesqa</u> Renovation Report.	N. Illsley & A. Bayoumi
PTR#43	Planning Irrigation Improvements in Egypt: The Impact of Policies and Prices on Farm Income and Resource Use.	M. Haider & M. Skold
PTR#44	Conjunctive Water Use - The State of the Art and Potential for Egypt.	V. H. Scott & A. El-Falaky
PTR#45	Irrigation Practices of EWUP Study Abyuha and Abu Raya Sites for 1979-1980, 1980-1981, 1981-1982.	F. Abdel Al, D. Martella, & R. L. Tinsley
PTR#46	Hydraulic Design of a Canal System For Gravity Irrigation.	T. K. Gates, W. O. Ree M. Helal & A. Nasr
PIR#47	Water Budgets for Irrigated Regions in Egypt	M. Helal, A Nasr, M. Ibrahim, T. K. Gates, W. O. Ree & M. Semaika
PTR#48*	A Method for Evaluating and Revising Irrigation Rotations.	R. L. Tinsley, A. Ismail & M. El-Kady
PIR#49*	Farming System of Egypt: With Special Reference to EWUP Project Sites.	G. Fawzy, M. Skold & F. Abdel Al.
PTR#50	Farming System Economic Analysis of EWUP Study Cases.	F. Abdel Al, D. Martella, & D. W. Lybecker
PTR#51	Structural Specifications and Construction of a Canal System for Gravity Irrigation.	W. R. Gwinn, T. K. Gates, A. Raouf, E. Wafik & E. Nielsen
PIR#52*	Status of Zinc in the Soils of Project Sites.	M. Abdel Naim
PTR#53*	Crcp Management Studies by EWUP.	M. Abdel Naim
PTR#54*	Criteria for Determining Desirable Irrigation Frequencies and Requirements and Comparisons with Conventional Frequencies and Amounts Measured in EWUP.	M. El-Kady, J. Wolfe & M. Semaika

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#55*	Design and Evaluation of Water Delivery System Improvement Alternatives.	T. K. Gates, J. Andrew, J. Ruff, D. Martella, J. Layton, M. Helal & A. Nasr.
PTR#56	Egyptian Canal Lining Techniques and Economic Analysis	M. El-Kady, H. Wahby, J. Andrew
PTR#57	Infiltration Studies on Egyptian Vertisols.	K. Litwiller, R. L. Tinsley H. Deweeb, & T. W. Ley
PTR#58*	Cotton Field Trials, Summer, 1980 Abu Raya.	Kafr El-Sheikh Team as compiled by M. Awad & A. El-Kaya!
PTR#59*	Management Plan for a Distributary Canal System	A. Saber, E. Wafik, T. K. Gates, & J. Layton
PTR#60	Hydraulic Conductivity and Vertical Leakage in the Clay-Silt Layer of the Nile Alluvium in Egypt.	J. W. Warner, T. K. Gates, W. Fahim, M. Ibrahim, M. Awad, & T. W. Ley.
PTR#61	The Relation Between Irrigation Water Management and High Water Tables in Egypt.	K. Litwiller, M. El-Kady T. K. Gates & E. Hanson
PTR#62*	Water Quality of Irrigation Canals, Drains and Groundwater in Mansuriya, Kafr El-Sheikh and El-Minya Project Sites.	A. El-Falaky & V. H. Scott
PTR#63	Watercourse Improvement Evaluation (<u>Mesqa #26</u> and <u>Mesqa #10</u>)	R. McConnen, E. Sorial, G. Fawzy
PTR#64	Influence of Soil Properties on Irrigation Management in Egypt.	A.T.A. Moustafa & R. L. Tinsley
PTR#65	Experiences in Developing Water Users' Associations.	J. Layton and Sociology Team
PTR#66*	The Irrigation Advisory Service: A Proposed Organization for Improving On-Farm Irrigation Management in Egypt.	J. Layton and Sociology Team
PTR#67	Sociological Evaluation of the On-Farm Irrigation Practices Introduced in Kafr El-Sheikh.	J. Layton, A. El-Attar H. Hussein, S. Kamal & A. El-Masry
PTR#68	Developing Local Farmer Organizations: A Theoretical Procedure.	J. B. Mayfield & M. Naguib
PTR#69	The Administrative and Social Environment of the Farmers in an Egyptian Village.	J. B. Mayfield & M. Naguib

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
PTR#70*	Factors Affecting the Ability of Farmers to Effectively Irrigate: A Case Study of the Mansuriya <u>Mesqa</u> , Kafr El-Sheikh.	M. Naguib & J. Layton
PIR#71*	Impact of Turnout Size and Condition on Water Management on Farms.	E. Hanson, M. El-Kady & K. Litwiller
PTR#72	Baseline Data for Improvement of a Distributary Canal System.	K. Ezz El-Din, K. Litwiller, & Kafr El-Sheikh Team
PIR#73	Considerations of Various Soil Properties For The Irrigation Management of Vertisols	C. W. Honeycutt & R. D. Heil
PTR#74	Farmers's Irrigation Practices in El-Hammami Sands	T. A. Tawfic, & R. J. Tinsley
PIR#75	Abyuha Farm Record Summary 1979-1983	EWUP Field Team
PIR#76	Kafr El Sheikh Farm Record Summary	EWUP Field Team
PTR#77	El Hammami Farm Record Summary & Analysis	M. Haider & M. Skold
PTR#78	Beni Magdul Farm Record Summary	EWUP Field Team
PIR#79	Analysis of Low Lift Irrigation Pumping	H. R. Horsey, F. V. Richardson M. Skold & D. K. Sunada

EGYPT WATER USE AND MANAGEMENT PROJECT
MANUALS

<u>NO.</u>	<u>TITLE</u>	<u>AUTHOR</u>
MAN.#1	Trapezoidal Flumes for the Egypt Water Use Project.	By: A. R. Robinson.
MAN.#2	Programs for the HP Computer Model 9825 for EWUP Operations.	By: M. Helal, D. Sunada, J. Loftis, M. Quenemoen, W. Rec, R. McConnen, R. King, A. Nazr and R. Stalford.
MAN.#5	Precision Land Leveling Data Analysis Program for HP9825 Desktop Calculator	T. W. Ley
MAN.#8	Thirty Steps to Precision Land Leveling	A. Bayoumi, S. Boctor & N. Dimick
MAN.#9	Alphabetical List of Some Crops and Plants with Their English, Egyptian, Botanical & Arabic Names and Vocabulary of Agricultural and other Terms Commonly Used.	G. Ayad
MAN.#10	EWUP Farm Record System	Farouk Abdel Al, David R. Martella, and Gamal Ayad

TO ACQUIRE REPORTS LISTED IN THE ATTACHED
PLEASE WRITE TO:

EGYPT WATER USE AND MANAGEMENT PROJECT
COLORADO STATE UNIVERSITY
ENGINEERING RESEARCH CENTER
FORT COLLINS, COLORADO 80523

Reports available at nominal cost, plus postage and handling.

*In Progress