

## Evolving a Management Information System for Irrigators' Associations

*Fay M. Lauraya, Antonia Lea R. Sala  
and Ma. Juliet Caceres<sup>13</sup>*

### INTRODUCTION

This paper documents the procedure adopted in evolving a management information system for Irrigators' Associations (IAs) using the results of the self-assessment of irrigation system performance by farmer leaders in a river irrigation system in the Philippines. The management information system aims to strengthen the IA's managerial capability by introducing a systematic process for planning and monitoring IA activities, improve farmers' capacity to analyze the performance data they themselves have collected and to link the IA's management information system to the National Irrigation Administration's (NIA) information needs. The paper poses several challenges both for the farmer organization and for the partner agency in order to sustain the feedback mechanism instituted.

In 1991, the Bicol University (BU) together with the National Irrigation Administration (NIA) Region V, and IIMI Philippine Field Operations introduced a self-assessment mechanism for measuring Irrigators' Association (IA) performance in two farmer organizations in Nabua, Camarines Sur (about 400 km South of Manila). The project covered an aggregate of 2,636 members and 106 farmer leaders. Encouraging the use of the self-assessment process among farmer leaders as a routine performance monitoring mechanism within the organization became an impetus for evolving a management information system in the IA. This paper analyzes the process adopted by the farmers in developing a management information system for their organization.

### RATIONALE

IAs have been organized to operate and maintain irrigation systems in cooperation with NIA. In recent years, IAs have been assuming important system management responsibilities, particularly those under Type II and III contracts. Under the Type II contract, farmer organizations assume system operations and irrigation service fee (ISF) collection functions. System operations include: 1) planning and undertaking O & M activities from the turn-out to the main farm and supplementary farm ditches; 2) planning implementation and monitoring of the cropping calendar; 3) water allocation and distribution; 4) conflict management and 5) maintaining linkages between farmer users and NIA. Collection functions include: 1) planning effective collection strategies; 2) distribution of ISF bills and 3) undertaking ISF collection. Meanwhile, Type III contracts involve full turnover of all or part of the irrigation system to the farmers. Although the farmer leaders of IAs undergo leadership training before their

---

<sup>13</sup> Project Leader and Study Leaders, BU-NIA-IIMI Project to Strengthen the Management Capability of Irrigators' Associations in Bicol, Philippines

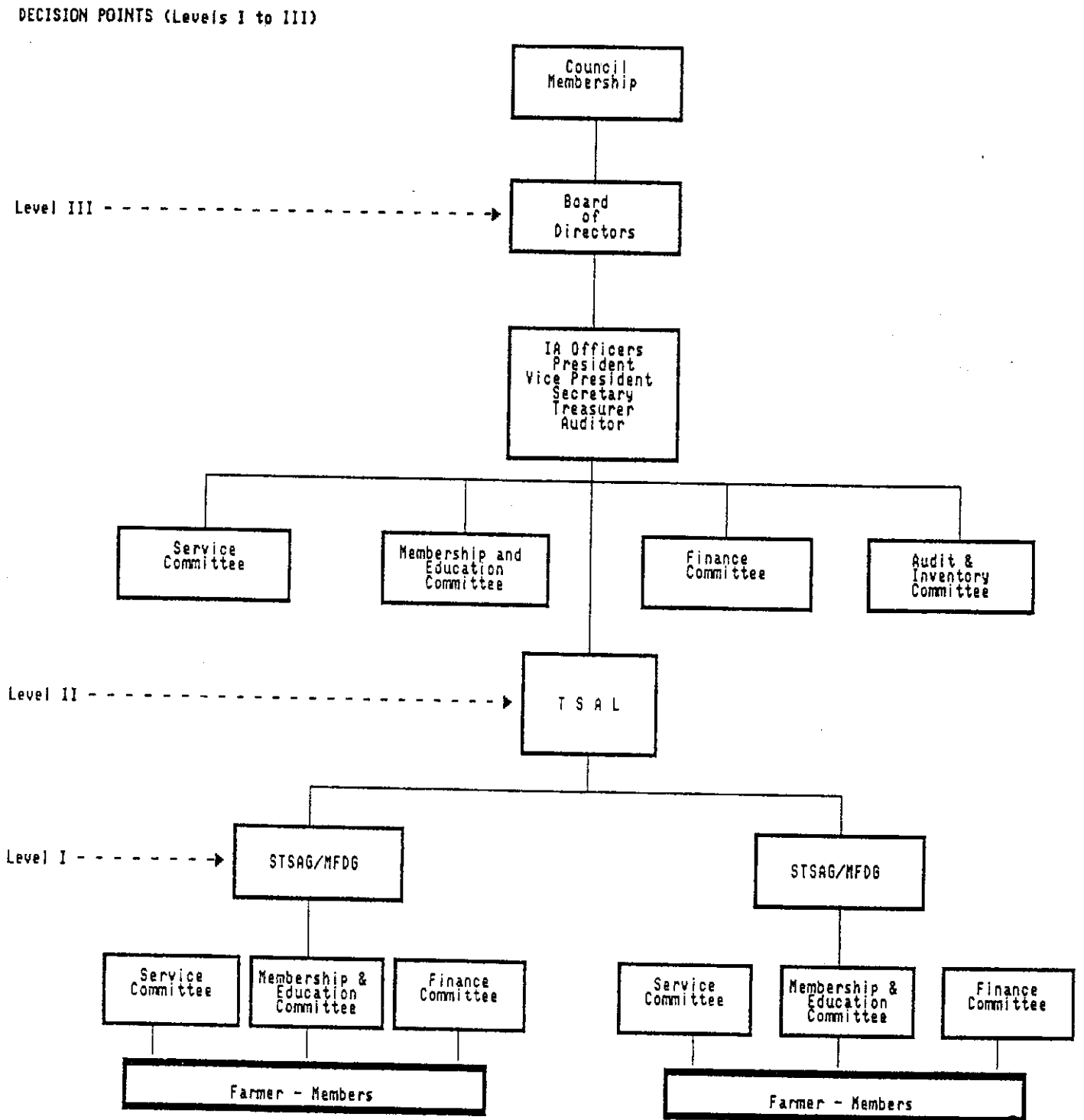
organizations assume these tasks, they have not successfully internalized mechanisms that strengthen management capabilities in order to face the challenges poised by their new irrigation management responsibilities. Thus, self-assessment of performance by farmer members and farmer leaders was conceived. The objectives of self-assessment are as follows: 1) monitor and evaluate performance of irrigation systems in general and IAs in particular; 2) introduce a learning process to identify and characterize the types of strategies that could be used internally by farmers to catalyze collective action; 3) strengthen the IA's managerial capability by introducing a systematic process for planning and monitoring IA activities (both for operations and organizations); 4) improve farmer capacity to analyze the performance data they themselves have collected; and 5) link the self-assessment scheme with NIA's information system.

As the term suggests, self-assessment required the turn-out service area (TSA) leaders to gather data pertaining to the situation of his turn-out which are indicative of how well he is performing his O & M and institutional development responsibilities. This self-correcting scheme is complemented by participatory assessment by farmer-members at the lowest stratum of the organizational hierarchy, as spearheaded by the farmer-leaders at supplementary ditch levels. Utilization of the TSA Leaders' performance report by the Board of Directors (BOD) and officials at the central level of the IA completes the information flow to the decision points of the organization.

Figure 1 illustrates the relationship of the organizational structure to the information flow required by IA decision-makers. Levels I to III are the stages where the data are generated, analyzed and acted upon.

Tracing the information flow in the organizational structure of the IA, the TSA Leaders are the vital link between the IA Central Level Officials and the mass-based membership. If the TSA Leaders are inactive, the chain in the information flow is broken, resulting in inaction. Given this strategic role of the TSA Leaders in the organization, the IA officials should have an information system that would enable said officials to monitor TSA leaders' performance. Considering that the TSA leaders are already collecting the data that reflect capability to carry out their mandated functions, the next step was to put in place a mechanism that would channel and process the information from the TSA leaders to the central level officials and the BOD. Data generated by the TSA leaders not only captures their performance indicators but also covers information pertaining to the status of irrigation structures, farm data needed to establish probable collection level of irrigation service fees, and problems and issues experienced by the members.

Figure 1. Organizational structure of the IA adopted by the action-research project



## CONCEPTUAL FRAMEWORK AND METHODOLOGIES USED

### Conceptual Framework

The self-assessment process serves as primary data source for the management information system of the IA. A sound feedback mechanism shall have a direct consequence on the level of performance of supplementary, turn-out service area leaders and IA officials which in turn shall have bearing on the degree of effectiveness of the farmer organization in delivering services to the water-users. NIA would also benefit from the IA's Management Information System by facilitating its data generation requirement at the grassroots level. It may be mentioned that as part of the project's intervention activities, the O & M personnel have adopted their own performance assessment system utilizing the data reported by the TSA leaders. Through regular interaction with the farmer-leaders, NIA personnel are provided with timely information that could be used as a basis for planning the O & M work of the agency. The designed reciprocal action between the agency personnel and the farmer-leaders is hoped to result in a better working relationship between water management partners that would lead to improvements in irrigation system performance.

Figure 2. Conceptual framework

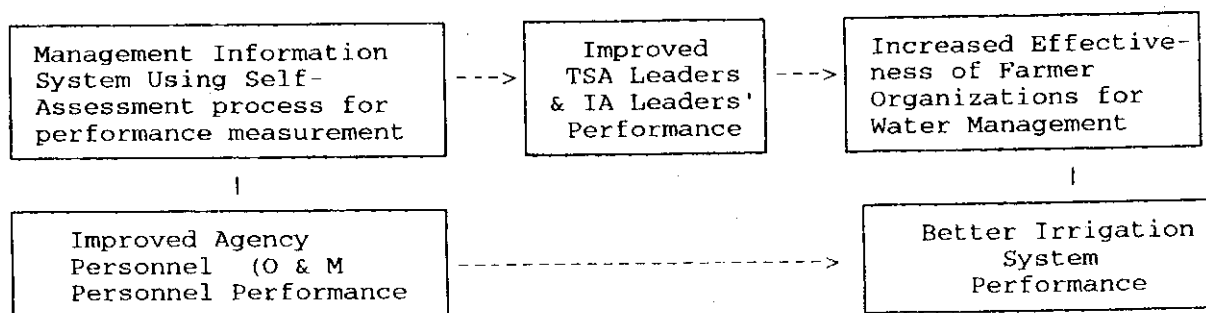


Figure 2 illustrates the schematic flow of expected results of the Management Information System

### Methodologies Used

1. *Establishing IA Profile as baseline data.* At the onset, farmer leaders felt the need for baseline data that would establish the profile for the organization. Using the spot mapping technique, TSA Leaders sketched their service areas to reflect: a) boundaries of turn-out service area, supplementary and main farm ditches; b) lot number and lot area; c) structures and facilities; d) names of owners/tillers and e) tenurial status. These data were deemed useful by the IA as a basis for membership campaign and collection of membership dues. On the part of the NIA, the spot map data updated the list of water users and validated farm areas for billing purposes. Although the said agency has an existing reporting mechanism (IAMIS), such is not currently adopted in the field due to its present format which requires voluminous data on a per farmer basis. Initial results showed that there are a number of farm lots not presently registered with the IA and the NIA that are using irrigation water but are not billed. For the next cropping

season, it is expected that there will be an increase in irrigation service fee collection due to the inclusion of newly identified water users in the IA/NIA's billing list.

2. *Data Generation.* As mentioned earlier, the information system of the IA utilized self-assessment of the performance by the TSA Leaders (including the leaders at the lower level of supplementary ditches) as primary inputs. In designing the self-assessment tool, the project team has taken into account the dynamics of the IA organizational activities vis-a-vis farming activities. Farmer leaders are analyzing the data they themselves have collected. A sample of the data gathering instrument is herein attached as Annex 1. Through a series of consultation meetings with farmer leaders the instrument was streamlined to reflect the most essential questions needed by the TSA Leaders to carry out their functions. The questions had also been transformed to facilitate recording but at the same time draw out vital information for planning and decision-making. Data gathered cover the areas of water management, organizational activities, maintenance, conflict management and farming activities. Inasmuch as the self-assessment process had been structured to capture the indicators of performance of the TSA Leaders, a list of the latter's duties and responsibilities was attached to the questionnaire. This list served as the link between the self-assessment process and the farmer leaders' mandated duties. By emphasizing the objective of the self-assessment process, to support TSA Management, the researchers gained the farmer leaders' cooperation for the recording process. The spotmap drawn by the TSA Leader contains valuable baseline data and was appended to the self-assessment questionnaire. The spotmap served two purposes: a) as a reference point in filling in the questionnaire and b) as a place to record status of canals and facilities.

On the part of NIA, each ditch tender is assigned a specific area of assignment within the IA's service area and has a TSA Leader as counterpart for the O & M task. Since their duties are complementary, the researchers believed that the ditch tenders should also gather field information reflecting the situation in the turn-out which is relevant to the TSA leaders and their performance. Thus, a monitoring form was devised for use by the said personnel, which is attached as Annex 2. The form contains data on farm activities, planted and harvested area, TSA leaders and ditch tender performance, length of canal cleaned and maintained, level of collection, status of structures, etc.

3. *Data Processing.* The TSA Leaders, by virtue of the IA by-laws automatically comprise the BOD, the central decision-making body of the organization. In the pilot IAs, one IA has 59 TSA Leaders, while the other has 47. To facilitate reporting and processing of data from the self-assessment results done by the TSA Leaders, the "small group" concept was adopted at the IA central level whereby each IA official was designated to oversee a group of TSA leaders. Given the present number of 6-7 positions (president, vice-president, secretary, treasurer and auditor; one IA opted to elect an assistant secretary) each IA official is responsible for 7-8 TSA leaders. He is assigned to supervise the accomplishment of the self-assessment tool, consolidate results and report the same to the BOD during its monthly meeting.

Inasmuch as the performance data collected by the ditch tenders covers both the areas of responsibility of the TSA Leaders and the ditch tenders the watermaster is provided a complete picture of the system for his own planning and decision-making function at this supervisory level. He then channels the consolidated report to the irrigation superintendent (IS) for action called for at this higher level. The ditch tender and the watermaster were designated by the IS to be NIA's representative to IA's BOD meetings or assemblies where NIA's participation is

needed. This arrangement facilitates the resolution of issues brought about during BOD meetings needing NIA attention. NIA's institutional development officer (IDO) is responsible to organize IAs and to develop training programs for farmers based on training needs identified by the O & M personnel.

## LESSONS AND CHALLENGES FOR SUSTAINING A MANAGEMENT INFORMATION SYSTEM

At the time when this paper was written, the project team had just finalized the design for the self-assessment tools both for the IA's and the NIA's O & M personnel. Even at this early stage the project team has experienced several things which deserve reflection about the process.

While we recognize that information is a key ingredient in decision-making, and it is important for organizations to devote attention to designing appropriate systems of information flow (Kast and Rozensweig, 1974), it is usually important to recognize the capability and resource at each decision point in the farmer organization to match the scope and influence of their decision-making functions. In the case of the IAs, the TSA leaders in LAPSEFIA (which has a Stage II contract with the NIA), are responsible for clearing and maintaining farm ditches and have the authority to decide on how they will undertake these obligations. Repairs, scheduling of cropping calendars and budgeting are all decisions within the realm of the central decision-making body, the IA BOD. Prior to the introduction of a pilot management information system, the generation and disbursement of funds were centralized functions of the organization. TSA leaders were not provided with regular funds which they can use to act on matters within their authority. The only resource available to them is voluntary services from members, which also requires mobilization funds for meals or snacks as incentives. A challenge that IA Leaders should ponder is how to provide real incentives to farmer leaders to turn in higher performance and to act on the problems and issues resulting from the feedback mechanism instituted. As Goonesekera concludes (cited in Merrey, Rao and Martin, 1988), there is a need to provide irrigation managers with financial incentives to provide good management. For a start, LAPSEFIA and BRISDAFIA (the two IAs covered by the project) have centralized the collection of annual dues from members. As much as 90% of such dues are now retained at the TSA level as seed money for TSA activities. On the average, each TSA stands to collect about P250.00 (US\$ 10.00) per year, which is very meager indeed. Another means for increasing funds is to intensify ISF collection by systematizing collection procedures and providing higher incentive pay for IA collectors.

Feedback from the President of the IA attests that the information system will serve as a basis for farmer-leaders in providing direction for the organization as a whole. However, IA officials are pressured to act on problems that are supposed to be within NIA's realm of responsibility, in order to maintain the feedback mechanism instituted at the farm level. Because of farmers' increasing awareness of the condition and performance of their irrigation system, they have become more "demanding" of NIA to fulfill its part for operating and maintaining the system.

The constant reference to inaction of NIA on problems (which surfaced during the participatory assessment process conducted in 1991) was a learning experience in itself. Henceforth, farmers were encouraged to identify workable areas given their organization's limited resources and to

pin less hope on the NIA fulfilling its part of the O & M contract (given the agency's present financial condition). Researchers observed that when NIA staff were open with farmers about its limited capacity to fulfill its O & M obligations, this triggered positive responses among farmer leaders to act on problems even if they were the legal responsibility of the agency. However, the IAs do not have enough financial resources to undertake major maintenance and repair works required by existing structures. Turn out gates with locks are seen by farmer leaders as critical problems that should be repaired in order to have control over water releases and to impose penalties on undisciplined water-users (through suspension of water delivery). Meanwhile, the IA has come up with a list of rules and regulations with accompanying sanctions for violations to protect the structures and irrigation facilities. IA officials are seeking the conversion of IA policies into Barangay (a political subdivision smaller than but within the Municipal boundaries) or Municipal Council's ordinances or laws as a measure to elicit higher compliance.

### CONCLUDING REMARKS

The basic intervention activity employed by the project team is the evolvement of a management information system within the IA that utilizes the self-assessment of performance as primary input. For this system to effectively work, it would need several ingredients as follows:

**Firstly**, TSA Leaders who recognize the sensitive role they play in the information flow within the organization; who care enough to act on issues and improve their performance for the betterment of service delivery.

**Secondly**, IA officials who have the vision to set higher goals and steer the organization towards attainment of those goals through sound judgment based on adequate and reliable information.

**Finally**, an honest assessment of existing capabilities in order to establish a clear-cut role between the agency and the IA as basis for defining areas for action-planning and decision-making is called for.

### REFERENCES

- Kast, F.E. and Rozenzweig, J.E., 1974. Organization and Management: A System Approach. Quezon City, Philippines. McGraw-Hill Kogakusha Ltd. Phoenix Press, Inc.
- Lauraya, F.M., Sala, A.R., and Wijayaratra, C.M., 1991. Self-Assessment of Performance by Irrigators' Associations (Philippines). Paper presented at the Third International Workshop of the FMIS Network on Performance Measurement Farmer-Managed-Irrigation Systems, Mendoza, Argentina, 12-15 November 1991.
- Merrey, D.J., Rao, P.S., and Martin, E., 1988. Irrigation Management Research in Sri Lanka: A Review of Selected Literature. IIMI Occasional Paper p.27.

Annex 1. Sample self-assessment form

BLOCK B. PAG-MANIHAR KAN TUBIG (WATER MANAGEMENT)		JULY	TO	JUNE
A.	Water Distribution A.1 Pira tabi an parcela nin dagang pigtatanuman sa turn-out an nakakakua nin tamang supply/bastanteng supply nin tubig? (Number of farmlots or parcels of land with sufficient water supply). B. Komunikasyon (Communication) B.1 Pirang para-oma an aram kun nuarin maabot an saindiang tubig? (Number of farmers who know when irrigation water is coming). B.2 Pira an dai nagsunod sa cropping calendar (Number of farmers who fail to comply with cropping calendar). C. Rotation (Kun pinag-guiguibo) C.1 Pirang para-oma an nagtatabang sa rotation lalo kun an turn-out nagkukulang o nagtitipid sa tubig? (Number of farmers who participate in rotation when there is insufficient supply of water). D. Pag-resolvir ki Iwal (Conflict Management) D.1 Pira an total na bilang nin mga iwal/dai pagkasinarabutan manongod sa tubig sa laog kan bulan na ini? (Total number of conflicts over water experienced this month).			



BLOCK B. cont'n.		JULY	TO	JUNE
D.2	Pira an total na bilang nin iriwal/dai pagkasinarabulan manongod sa tubig an naresolbir tolos o natawan nin solusyon sa marjay na paagui? (Total number of conflicts over irrigation water that has been easily resolved).			
E.	Pag-distribuir ki Trabaho (Task Distribution)			
E.1	Pirang mga para-oma sa laog kan TSA ang pigtawan mo nin trabaho/gigibohon ngonyan na bulan? (Number of farmers given specific tasks this month).			
	<b>BLOCK C. PAGPLANO KAN MGA AKTIBIDAD SA ORGANISASYON (PLANNING OF ORGANIZATIONAL ACTIVITIES)</b>			
A.	Presensiya sa mga Miting (Attendance in Meetings)			
A.1	Bilang kan TSA meeting na guinibo sa bulan na ini? (Number of TSA meetings held this month).			
A.2	Pirang mga para-oma sa TSA an nag-atindir ki miting? (Number of farmers who attended the meetings).			
A.3	Pirang small group an nagkaigwa ki pamiting sa bulan na ini? (Number of small groups who conducted meetings this month).			
A.4	Pirang mga para-oma sa small group an nag-atindir ki miting? (Number of farmers in the small group who attended meetings).			
	Group 1			
	Group 2			
	Group 3			

Annex 2. Sample form: ditch tender performance monitoring form

NAME OF TSA \_\_\_\_\_

		B-LINE DATA		JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
		Number of Farm Lots	Total Area						
<p><b>BLOCK A. FARM DATA</b></p> <p>A.1 Stage of Farming Activities (Indicate number of farmlots engaged in)</p> <ul style="list-style-type: none"> <li>a. land soaking and land preparation</li> <li>b. planting</li> <li>c. crop maintenance</li> <li>d. terminal drainage</li> <li>e. harvesting</li> </ul> <p>A.2 Area Planted To Date (Hectares)</p> <p>A.3 Status of Crops</p> <ul style="list-style-type: none"> <li>a. hectares damaged</li> <li>b. hectares in satisfactory condition</li> </ul> <p>A.4 Extent of Harvested Area To Date (Hectares)</p> <p><b>BLOCK B. WATER DISTRIBUTION</b></p> <p>B.1 No. of farmlots with sufficient supply of water</p> <p>B.2 In equivalent hectares</p> <p>B.3 No. of farmlots without water from irrigation</p> <p>B.4 In equivalent hectares</p>									

Annex 2. Cont'd.

	B-LINE DATA		JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
		Canal Length						
<b>BLOCK C. MAINTENANCE OF FARM DITCHES</b>								
C.1	Status of MFDs 1 - very clean 2 - fairly clean 3 - dirty							
C.2	Status of SFDs 1 - very clean 2 - fairly clean 3 - dirty							
C.3	Status of Laterals 1 - very clean 2 - fairly clean 3 - dirty							
C.4	Status of Main Canals 1 - very clean 2 - fairly clean 3 - dirty							
C.5	Status of Structures a. Division Box 1 - damaged 2 - moderately good 3 - in good condition  b. Steel Gate 1 - damaged 2 - moderately good 3 - in good condition							

	B-LINE DATA	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
<p>c. Foot Bridge            1 - damaged            2 - moderately good            3 - in good condition</p> <p>d. Others            1 - damaged            2 - moderately good            3 - in good condition</p>							
<p><b>BLOCK D. FINANCIAL ASPECT</b></p>							
<p>D.1 No. of hectares that have paid ISF to date.</p> <p>a. to LA            b. to NIA Collector</p>							
<p>Certified Correct by: _____ TSA Leader</p>							
<p>Validated by: _____ Water Master</p>							

PROBLEMS OBSERVED/ REPORTED BY TSAL

Problems Date _____	Action	Problems Date _____	Action	Problems Date _____	Action
Problems Date _____	Action	Problems Date _____	Action	Problems Date _____	Action
Problems Date _____	Action	Problems Date _____	Action	Problems Date _____	Action