

631.7.5 Irrigation management / performance assessment / pumping
water distribution / land use
Sudan
1994

THE MANAGEMENT CHANGES AND THE PERFORMANCE OF THE WHITE NILE PUMP SCHEMES

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1. INTRODUCTION

1.1 Background

The White Nile Pump Irrigation Schemes include all the pump schemes on the eastern and western banks of the White Nile. The first pumps installed in 1929 were established by the private sector. In 1931, the Government established some livelihood irrigation schemes in the area to compensate farmers who lost their lands because of the construction of Jebel Aulia Dam.

There was a remarkable increase in private investments on cotton plantations along both the Blue Nile and the White Nile following 1950 Korean war related price boom. Ten years later, with depression in cotton prices, incomes of the private scheme owners and tenants started to decline creating conflicts between the two parties. Lately and because of the aggravating situation, the Government placed most of the private schemes along the White Nile and the Blue Nile under its control.

The number of the pump schemes under the management of the White Nile Agricultural Production Corporation (WNAPC) a body established in 1980, was around 174 schemes. About 20 of these schemes were later annexed to adjacent schemes with better irrigation facilities or deserted altogether. About 30 thousand tenants live in these schemes growing food crops and cotton. Although most of the schemes towards the south were established on Government lands, the schemes towards the north are mainly on freehold lands acquired by the old licensees and later the government by a nominal rent. These land tenure arrangements still holds in the lands of these schemes and no measures towards reinstating freehold ownership or longer term lease arrangements are suggested in place of the existing tenancy regulations.

1.2 Land Use

The net commanded area in these schemes is around 360 thousands feddans (131 thousands hectares). The rotation designed for these schemes was originally Cotton - Sorghum/Fallow - Fallow with 50% cropping intensity. The pattern has not been followed systematically and several combinations with varying cropping intensities are found. The most common rotation practiced now is Wheat - Sorghum - Fallow with 67% cropping intensity.

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According to 1976 animal census there are about 4 million heads Cattle (38%), Sheep (50%), and Goats (12%).

1.3 Topography and Soils

The White Nile areas are generally flat with soils derived from clayey montmorillonite alluvia like the properties known for the dark cracking cotton clay soils of Central Sudan. They are self mulching clays with high water holding capacities but low permeability. The upper terraces north of Kosti are less cracking with higher sand deposits and salinity limitations in some areas.

With adequate water, proper irrigation and other production technology requirements, most of the schemes along the White Nile could achieve reasonable higher yields for cotton, cereals and oil seeds.

1.4 Climate

The area extends from latitude 11° N to latitude 16° N. Mean annual rainfall is 528 mm at Renk in the southern part, 396 mm at Kosti on the middle and only 272 mm at Dueim in the North.

The mean monthly humidity ranges from 21% in March-April to 61% in August. While the mean monthly temperature range from 23°C in January to 37°C in May.

1.5 Water Supply

The main source of water supply for the pump schemes is the White Nile. It has a low gradient, a very wide bank (3 to 5 km). Pumps can operate only when water is high enough to flow into the pump inlet channels. This is related to the present regulation of the Jebel Aulia Dam, located about 200 km downstream from Dueim, which lowers the water level to the dry season (March to June).

The average annual flow of the White Nile is about 28 milliard m³ of which the pump schemes consume only about 1.6 milliard m³ annually.

1.6 Water Distribution

Pumping stations are connected to the main stream of the White Nile with inlet channels. The field irrigation layout varies according to the size of the scheme. The typical tertiary canal layout consists of an Abu Ishreen 1.4 km long serving an area + 90 feddans divided by field channels (Abu sittas). It takes normally seven days to complete irrigation in one Abu Ishreen. The pumps usually operate about 18 hours which is enough to meet the net command area of most of these schemes.

1.7 Evolution of the Management Transfer

Throughout the last three decades the White Nile pump schemes experienced various management conditions. After a relatively long period of being under public management, the overall conditions of these schemes were declining in spite of the Government interventions to bring some physical improvements. Most of these schemes are poorly designed and rarely being subjected to suitable management systems. The attempt to address the organizational and managerial issues were many but none of them produced encouraging results. In 1986 a Government resolution was issued by which the managing corporation was changed into an administration as a provisional step to be followed by further management changes involving private entrepreneurs and farmers' cooperative. Lately, by the beginning of this decade, surveys were conducted to assess which of these schemes to be disposed to the private sector and which of them to be retained and managed by (WNAPC).

According to the survey, there are about 154 operating pump irrigation systems used to be administrated by WNAPC. Based on the results of the survey a decision was taken to lay off about 116 schemes. The required changes in the management process in these schemes is to be decided by the farmers. For the remaining 38 schemes which are relatively of better physical conditions, the decision was to be managed temporarily by WNAPC till they are privatized. No case studies were conducted to indicate the elements that would influence the management conditions in these schemes and help in drawing the plans for privatization.

2. THE WHITE NILE AGRICULTURAL PRODUCTION CORPORATION

2.1 Background Information

Before May 1980, there were two separate corporations, operating the White Nile Pump Schemes; the Dueim Agricultural Production Corporation (DAPC) and the Kosti Agricultural Production Corporation (KAPC). After that, WNAPC continued as a single organization. It is responsible of the cropping policy, procurement of inputs, financial arrangements to provide the services, beside the administrative and technical control. It is also responsible of marketing the seed cotton and liaison with other institutions. Although the irrigation services used to be entrusted to the Ministry of Irrigation, there were some periods in history when the irrigation agency was merged in the corporation.

There are two distinct groups of farmers linked to two levels of operations: one level for the schemes of command area less than 3000 feddans (116 schemes) and the second level for the schemes of command area above 3000 feddans (38 schemes). The number of tenants in these schemes varies from

less than 50 to more than 550. The only existing constitutional body for these farmers' groups is the tenants' Union. There are three tenants' unions in the areas of Dueim, Kosti and Renk. They are supposed to serve the common interests of their members in all the schemes irrespective of the prevailing management modes.

The WNAPC after retrenchment of 75% of its staff strength is overseeing the agricultural activities in the 38 larger schemes which have no contractual management agreement with the private sector. The White Nile schemes are still divided among the old divisions of seven groups or regions. They are classified as follows:

	Net Cultivable Area (feddan)	No. of Tenancies	Average holding size (feddan)
Dueim Region			
Um Jar Group (West)	52404	4095	12.80
Hashaba Group (East)	32734	2769	11.82
Abgar Group (West)	54111	4105	13.18
Total Dueim	139249	10969	12.69
Kosti Region			
Um Hani Group (West)	57775	5092	11.35
Um Jalal Group (West)	58350	4205	13.88
Rabak Group (East)	70798	6323	11.20
Elgeiger Group (East)	56771	4149	13.68
Total Kosti	243694	19769	12.33
Grand Total	382943	30738	12.46

2.2 Management Structure

Although the corporation is working with only 25% of earlier staff strength, it is still keeping a huge body compared to the operations they are supervising in the remaining 38 schemes. The organization is working under the following setting:

GENERAL MANAGER

**Office Director
Office Clerk
Office Secretary**

Deputy Manager Dueim.

Agricultural Manager

7 Group Managers
21 Snr. Field Officers
21 Snr. Entomologists
1 Snr. Animal Food Specialist
1 Snr. Horticulturist
1 Agric. Engineer
1 Agric. economist
33 Field officers
8 Entomologists
1 Animal Prod. Officer
1 Horticulturist
1 Statistician
8 Snr Technicians (entomology)
1 Animal Prod. Technician
1 Hortic. Technician
8 Jr. Tech. (Entomology)
2 Office Clerks
8 Ghaffir Supervisors
170 Ghaffir
3 Office Attendant Supervisor
35 Office Attendants
46 Store Attendants

Financial Manager

1 Assist. Mnger (Accounts)
1 Financial Controllers
1 Assist. M. Supplies
2 Accounts Inspectors
11 Accountants
11 Clerk Accountants
2 Cashiers
2 Store Controllers
2 Store Officers
1 Procurement Officer
4 Snr Store-keepers
43 Store-keepers
3 Clerk
accountants(Stores)
4 Jr Store-keepers
1 Clerk
1 Typist
1 Snr. Personnel Officer
3 Personnel Officers
11 Personnel Supervisors
6 Senior Clerks
11 Clerks
26 Drivers

**Engineering Affairs
Manager**

1 Chief Mechanical Eng.
1 Mechan. Engineer
2 Mechan. Foremen
1 Ginnery Manager
1 Mechanical Eng. (Gin)
2 Mechanical Foremen (Gin)
3 Chief Mechanics
3 Mechanics
2 Electricians
1 Snr. Technicians
12 Jnr. Technician
2 Clerks
2 Clerk Accountants

2.3 Management Process

Theoretically the B. of D. of the Corporation which is appointed by the Minister of Agriculture is the organ responsible of the decision making process. After the Federal Minister delegated his authority to the State Minister such organ is under the process of shaping up. Normally the responsibilities are shared by the Minister who is in charge of the overall steering and the General Manager who is in charge of the implementation of the plans. More involvement of the tenants is assured by increasing their participation in the production committees at the region and block levels.

There are elements of uncertainties in the different management aspects, about the costs and revenues as related to the administration of the schemes. The corporate option for managing these schemes is thus left to disappear by time without indicating when and how.

2.4 The Agricultural Programs

The GM assisted by the regional managers will talk to the staff of the irrigation agency, normally the chief civil engineer. They will agree on the areas based on the water availability which decided in consultation with the chief mechanical engineer. Once the corporation agrees on the planned areas with the irrigation agency, the Ministry of Agriculture will be informed so as to be incorporated with the overall agricultural program of the irrigated sub-sector.

2.5 The Organization and Follow-up Procedures

The organization and follow-up procedures are those updated by other corporations and all follow the Gezira Model as follows:

Stage 1: The day to day follow-up by the staff of the Agricultural Administration.

Stage 2: Weekly reports from the block inspector, to the group inspector, to the Agricultural manager to the General Manager.

Stage 3: The monitoring operations of the technical follow-up committee headed by the Agricultural Research Corporation (ARC).

The participation of the tenants is through the production committees which are headed by the block inspectors.

2.6 Irrigation Services

The standard practice followed by the corporation is also similar to the Gezira Model. Water is applied to the field at the rate of 400 m³ per feddan. Taking different crop water requirements, at various stages of growth, this application will be repeated till the numbers of irrigations are completed.

The field irrigation layout varies according to the size of the scheme. The typical tertiary canal layout consists of an Abu Ishreen 1.4 km long, serving an area of 90 feddans through 18 field channels (Abu sitta) each irrigating an area of 5 feddan. It takes seven days to complete irrigation in one Abu Ishreen.

On request from the civil engineer based on the plans approved with the Agricultural Corporation, hours of operations will be instructed by the mechanical engineer of the irrigation Agency. The pump as reported usually operate 18 hours per day. For any irrigation problem the tenant will report to the field inspector who will discuss the problem with the civil engineer who will work the necessary steps to give better services within the facilities available for him.

2.7 Land Preparation

The Corporation owns a fleet of 21 old tractors used to implement the land preparation plans in each season. There are standard practices to be followed for each crop which are recommended by ARC. The tenants' involvement only is in cleaning the fallow lands before they are put again under cropping.

2.8 Extension and Training

In spite that the Corporation received considerable physical and financial support to build its extension unit, the whole process was not pursued with a clear vision and the situation went back to square one where the tenants are left to the minimum they get from the field inspectors who supervise the financed crops (wheat or cotton). Similarly are the training programs of both the staff and the farmers. They are hampered also by the lack of vision in the prevailing state of instability which the corporation has to live till the newly management systems are developed.

2.9 Marketing

With no cotton in the corporation plans, the management is gradually dissociating itself from marketing functions. The only possible intervention is to join the tenants representatives in the decisions on how to market the wheat crop.

2.10 Processing

The only processing unit under the corporation's possession which is the ginnery is now disposed to the private sector. The limited dairy and poultry ventures are also gradually given up. No future plans could be developed under the stage of uncertainty, the Corporation is now passing.

2.11 Expenditure on Investment

The assets which are now in the possession of the corporation are either in the process of depletion or they will be sold off. No further expenditure on investments is envisaged till the newly management systems are developed.

2.12 Expenditure in Social Services

This item of expenditure was part of the cotton production relations. No allowance is now possible after the exclusion of cotton from the Corporation plans.

3. THE WHITE NILE HOLDING COMPANY (ALGABDA)

3.1 Background Information

The White Nile holding company was established as a private company in 1990. its business areas are agricultural and animal production as well as agro-processing activities. The activities of the company are so far limited to the White Nile area.

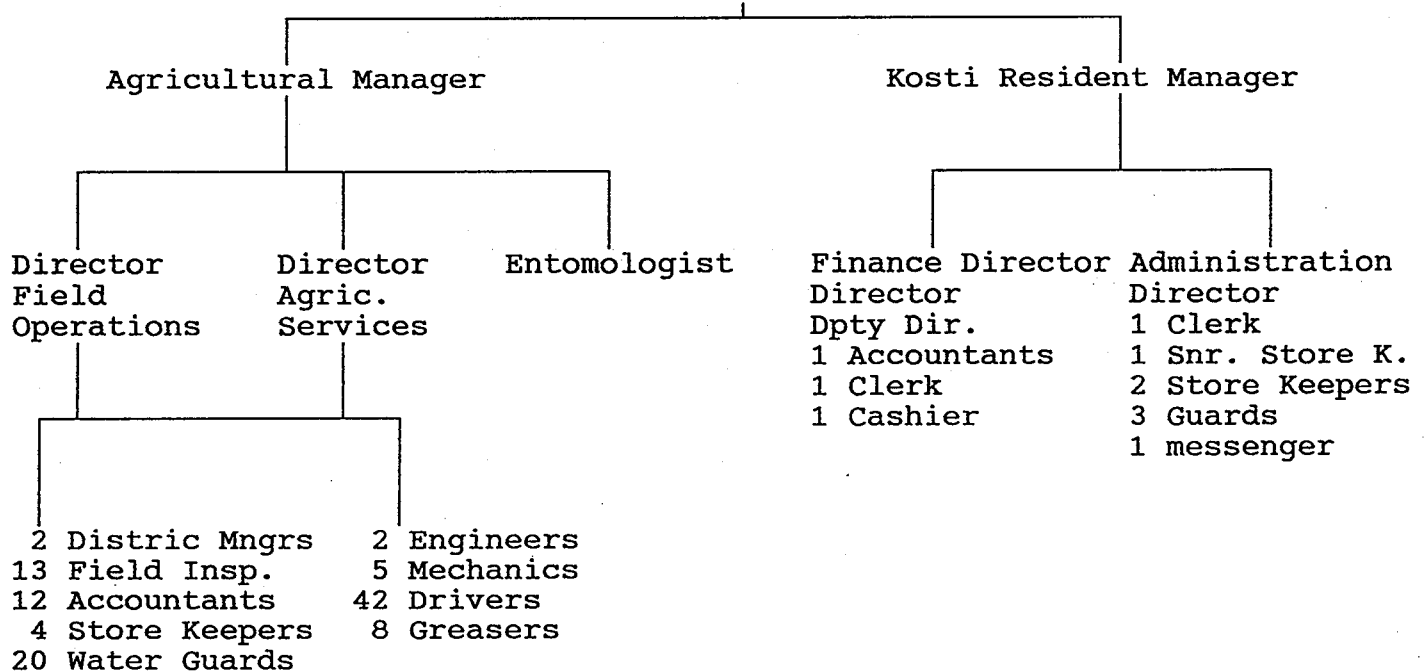
3.2 Management Structure

Although the company still has to draft its organizational structure, it is working under the following setting:

Chairman B. of D. (Khartoum)

General Manger (Khartoum)

Khartoum Coordinator



The management structure of Algabda Company is characterized by a high degree concentration of responsibilities at the GM level. He is the one who decides on the cropping plans, procurement of inputs, financial arrangements, marketing and lastly on linkages with other institutions.

3.3 Management Process

Theoretically the B. of D. of the Company is the organ responsible of the decision making process, but in practice the GM who is at the same time the chairman of the B. of D. is shouldering this task. The annual program once approved by the Board, will be passed by the Gm to the Agricultural manager in Kosti. The Am will make the necessary steps towards implementing the program. He and his staff represent the techno-structure of the company. They are all released finally or on secondment basis from the corporation.

The type of assessment in order to select the schemes to be included in the program suits well their technical abilities and gives them the chance to excel and perform better than they used to do under the corporation. On other tasks, the Am insists on the importance of having approved organizational structure with clear division of responsibilities. There is now overlap between some functions of the resident manager and the agricultural manager. In some instances, the RM or possibly the GM could instruct field staff directly.

In general, the company has a strong leadership which has frequent contacts with the day to day operations. Nevertheless, there are still measures to be taken to fulfil the management requirements of the organization like the set of procedures to plan, organize, control and monitor.

3.4 The Agricultural Programs

The crop development systems selected under the agricultural programs are not based on common criteria. Some of these options are only picked on social grounds. Such decisions are always linked to the judgement of the GM alone who has the interest to develop relationships other than the gains and losses criteria. The schemes for Cotton programs are normally selected on technical and financial grounds.

3.5 The Relationship With Tenants

The Company always prefer to make its discussions direct with individual members rather than their unions. Its approach is to get their consent verbally to undertake the management responsibilities. Once the Company gets this initial approval, a contract will be drafted bearing the initials of the company and the tenants' representatives. A list will be attached showing the approval of the majority of the registered tenants in a particular scheme. Such contract will only be effective if it carries the approval signatory of a Government official authorized by the High Technical

Committee for the disposition of Public Enterprises. The contract will be valid for only one year. Extension of contracts, should also be documented and deposited with the High Technical Committee. There is no clause in these contracts that the agreement following the first term may go on based on verbal notice. They have also to notify the corporation if the scheme is still under their supervision, one the contract is extended.

3.6 The Organization and Follow-up Proceedings

The company developed similar organizational and follow-up procedures that are in the books of the Corporation. They take two stages:

STAGE 1: The day to day follow-up by the staff of the Agricultural Administration.

STAGE 2: The occasional visits to the schemes by the Gm and his advisors (normally professionals from the Research Agency).

The participation of the tenants is realized at two levels:

Level 1. Membership of the Production Committee.

Level 2. Membership of the Advisors Committee.

The production committee is to implement the agricultural programs including inputs distribution and supervision of cultural operations including irrigation. The advisors committee will look on the financial and marketing affairs and settlement of the tenants accounts. Both committees also work on issues like mobilization of resources and resolving conflicts between tenants or between tenants and the company.

3.7 Irrigation Services

The White Nile Company has the means to provide incentives to the staff of the irrigation agency to improve performance. The level of the incentives is left to the GM of the company. The tenants do not mind this arrangement since it give assured water supply at a reasonable additional cost above the irrigation service fees. From the other side, the staff of the irrigation agency respond favorably to these gestures and give more attention to the schemes under the company's management. The last three years data on maintenance of civil works in these schemes, indicate that the irrigation agency gave the highest share of its allocations to these schemes. Actually in totality as shown in table (), it gave equal shares while the areas under the supervision of the company are far less than those under the Corporation and also

than those managed by the farmers. On the level of maintenance of mechanical works, the Company this year alone allocated LS 6 million to support the activities addressed to solve irrigation problems.

3.8 Land Preparation

The Company owns a machinery fleet of 21 new Massey Ferguson Tractors with even larger number of discs, ridgers and levellers. Although the management is keen to follow the recommended land preparation practices including deep ploughing, the availability of fuel which is beyond its control affected the decisions on what level of practices to be done.

3.9 Extension and Training

There is a small extension unit managed by a single extension officer. Advised by field staff in the areas of the operating schemes they try to assist the farmers to improve the field practices. Moreover, there are training plans, but the methodologies to execute them have not yet been developed. The Company needs external help in this matter.

3.10 Marketing

The management decides freely on how to market both the wheat and cotton crops. The management is to consult with the tenants on the levels of prices for the wheat crop because it is marketed internally. On the export market of the cotton crop the management makes its own contracts but it still seeks the help of the cotton marketing company to dispose the cotton lint.

3.11 Processing

The management in order to maximize the earnings, does not mind to pursue some processing ventures. This year the management had plans to process the cotton seed with the purpose to market the oil internally and export the cotton seed cake.

3.12 Expenditure on Investments

The management found it is wise enough to have its own machinery fleets. Now the company is in a better position than the corporation. There is a plan to have a separate company for mechanical services. The business areas of this new company will be the schemes under the company's management as well as other schemes along the White Nile or elsewhere.

3.13 Expenditure on Social Services

The Company deducts a portion from the gross returns of crops to assist in the development of social services like building and maintaining schools, health centers, and rural water supply.

4. THE DUEIM FARMERS' MANAGEMENT ORGANIZATION.

4.1. BACKGROUND INFORMATION

In September 1992 following the resolution taken by the Government to lay off 116 schemes and transfer its management to the tenants, the Commissioner of the Dueim Province initiated some steps to put in place an alternative organization. It should be established with the understanding that the tenants will have the dominant position. The tenants' union leaders welcomed the idea and started a campaign to encourage the tenants in the 33 schemes of the province to participate in such organization.

During the process of creating the institution, all the concerned local government agencies were allowed to share views in the pattern to be developed. At the end the suggestion was to group the 33 schemes into 10 units. For each unit a board of directors is to be elected (five members, one representing the union). Each unit is to elect representative to be a member in the B. of D. of the organization in charge of the operation in all the 33 schemes. The ten units representatives are joined with three representatives of the Dueim Tenants' Union and ten executives form the local agencies to complete the board members.

4.2. MANAGEMENT STRUCTURE

The B. of D. agreed to have a small administrative unit composed of following:

- Agricultural Manager (Assisted by an inspector in each unit).
- Financial Manager
- 7 Accountants
- 1 Clerk
- 1 Office helper
- 1 Driver

The idea to appoint one agricultural inspector in each unit was not implemented and the three members farmers management committee in each scheme is to work without any technical assistance.

4.3. MANAGEMENT PROCESS

Each scheme management committee will report its suggested program to the B. of D. of the unit of schemes they are belonging. The B. of D. of each unit will make its own contacts to formulate the annual work plans. They may or may not need the help of the Administration. During the two years operations of the framers managed organization, the contacts are only firm to overcome the problems they face in financing or input supplies.

4.4. THE AGRICULTURAL PROGRAM

Each scheme management committee is to decide on its own the agricultural program after a direct consultation with the irrigation agency. The requirement of the program will then be discussed with the B. of D. of the unit. The agricultural programs of the different units will be submitted to the B. of D. of the organization for the final approval. There is clear evidence that the tenants of the schemes are more enthusiastic to expand the plans and increase the cropping intensities.

4.5. THE ORGANIZATION AND FOLLOW-UP PROCEDURES

Although the administration claims that it follows the procedures adopted by the corporation, they do not have the technical staff and the logistics that help in follow-up and monitoring. The tenants management committee at the scheme level concentrates on solving the irrigation issues. The advice and follow-up on agricultural issues is minimal.

4.6. IRRIGATION SERVICES

The staff of the irrigation agency usually complain that the farmers managed schemes do not stick to their plans. They feel that the management processes within the organization are not well orchestrated by the administration. The occasional meetings of the B. of D. are not enough to compensate the gaps in the functioning and responsibilities of the administration.

4.7. LAND PREPARATION

The tenants of the farmers' managed scheme depend entirely on the private tractor services. No joint plans are implemented with the administration except the wheat harvesting program.

4.8. EXTENSION AND TRAINING

It was expected that the farmers' managed organization will depend on the extension services provided by the concerned agency of the State Ministry of Agriculture. Such local agencies are not well equipped to fulfil such responsibilities.

4.9. MARKETING

No marketing responsibilities are entrusted to any level of the organization. and the tenants are entirely free to market their crops.

4.10. EXPENDITURE ON INVESTMENTS:

There is no clear vision on the future of these schemes before the recent steps envisaged under the IFAD funded project which indicate the process of the transfer of ownership in the schemes which will selected for rehabilitation. Till such steps are taken, no investments are foreseen in these schemes.

4.11. EXPENDITURE ON SOCIAL SERVICES

There are some contributions offered voluntarily or sometimes imposed by the local agencies to meet expenses on social services.

5. IMPLICATIONS OF THE MANAGEMENT CHANGES IN SYSTEM PERFORMANCE

The main purpose of this paper was to document the different management modes as explained in the earlier section. In this section the implication of the management changes in system performance will be investigated in the following areas:

- a) The per feddan cost of services.
- b) The per feddan cost of input.
- c) The per feddan cost of administration.
- d) The per feddan return under each made.

5.1. THE COMPARISON OF THE COST STRUCTURES

Table (1) shows the layout of the cost structures of the three management modes. The farmers' organization is incurring the least in the different cost items although it is relatively similar to the corporation in some cost items and exceeds it in relation to the application of insecticides. The reason for this is that the tenants in the corporation selected scheme opted for manual spraying when it was needed.

TABLE (1)
1993/93 WHEAT CROP
COST OF INPUTS AND SERVICES
(L.S./FEDDAN)

COST ITEM	WHITE NILE COMPANY	WHITE NILE CORPORATION	FARMER'S ORGANIZATION
<u>INPUTS</u>			
SEEDS	3358	3125	3217
FERTILIZER	8223	4860	4842
INSECTICIDES	2160	375	3348
SACKS ⁽¹⁾	180	327	317
<u>SERVICES</u>			
LAND PREPARATION	2000	1850	1040
HARVESTING	2900	2050	1640
WATER CHARGE	1500	1500	1500
ADMINISTRATION CHARGE ⁽²⁾	500	300	200
OTHER COSTS	1300	---	64

SOURCE: COLLECTED FROM THE ADMINISTRATION ACCOUNTS.

(1) VALUE L.S. PER SACK.

(2) ACTUAL ADMINISTRATION CHANGE IS AS FOLLOWS:

White Nile Company:

Cotton program	13,632 feddans
Wheat program	2,852 feddans
Administration cost	= L.S. 28,8 Million
Administration cost per feddan	= L.S. 1,800

Corporation:

Wheat program	10,876 feddans
Sorghum program	49,278 feddans
Administration cost	= L.S. 97.5 Million
Administration cost per feddan	= L.S. 1,625

Farmers' Organization

Wheat program	10,000 feddans
Sorghum program	
Administration cost	= L.S. 5.3 Million
Administration cost per feddan	= L.S. 265

The White Nile Company has higher rates in all cost items except the sacks which are offered far cheaper than others. It is also clear that the rates applied for fertilizer, indicates that the company applied higher doses almost double that of the other two management modes.

Some of the variations in the cost structures are not justified like the harvesting which always set on common negotiation based on area estimates acceptable to the harvesters' owners. The seeds also are procured mainly from the Gezira Scheme.

Although the three management modes collect administration charges which vary that much, the corporation and the company expend more than the fixed rates. The administration of the farmers's organization try to recover the costs that it incurs and which is substantially lower than the other two systems.

5.2. COMPARISONS OF THE FARM BUSINESS RETURNS

The farm business returns are based on survey data of six selected schemes; two under each management mode. Although the sample mean in each scheme may not represent the average yield of that scheme because other factors like partial irrigation bottlenecks in parts of the system or complete cut-out areas may effect the yield estimates. Anyhow the selection of the schemes were at random and so was the selection of the tertiary canals and the tenants within these canals. The net results of yield estimates as shown in Table (2) indicate better performance of Corporation scheme denoted as C_1 and C_2 followed by farmers' managed schemes denoted by F_1 and F_2 and at the bottom the Company's managed schemes denoted as A_1 and A_2 . The variation of yields within these schemes are the least among the highest yielders and the highest among the least yielders.

TABLE (2)
1993/94 WHEAT CROP
THE FARM BUSINESS RETURNS
(LS/FEDDAN)

	SAMPLE Maa	C.V.	GROSS RETURN	COST OF PRODUCTION	NET RETURN
<u>CORPORATION</u>					
C ₁	7.91	.30	47,640	16,647	30,813
C ₂	6.71	.30	40,260	16,254	24,006
<u>FARMERS</u>					
F ₁	5.09	0.41	30,540	17,464	13,056
F ₂	4.30	0.35	25,800	17,214	8,586
<u>COMPANY</u>					
A ₁	4.02	0.50	24,120	22,665	1,455
A ₂	3.01	0.61	18,060	22,483	(4423)

The gross return was calculated using a fixed market price of L.S. 6000 per sack. This assumption might overestimate the returns for those tenants who are compelled by financiers to deliver part or all of their produce at a lower price. The possibility that this will happen are in the Corporation's and Farmer's managed schemes but not in the Company's managed schemes where the relationship is on profit sharing basis.

The cost of production in column 4 of Table (2) is exactly the total of the cost items in Table (1). Here also the assumption may hide the differences in the cost estimates of different schemes specially in those under the Farmer's management which do not usually follow one pattern of accounts as applied in both the Company's and Corporation's books.

The net returns of the Corporation schemes are appreciably higher and affected by both higher yields and lower costs. The performance of the Farmer's managed systems come next and followed by those under the Company's management.

6. CONCLUDING REMARKS AND RECOMMENDATIONS

The three management modes still depend on the expertise of the Corporation staff. They stand on the same footing as far as the qualifications and abilities are concerned. In face of the capital constraints, the management that is in a better position to mobilize resources achieves better results. It is evident that the private company was concentrating all its efforts in the Cotton program with minor allocation for Wheat program. That is why they managed to lead a successful Cotton program and failed to realize the same in the Wheat program. On the other hand, the Corporation succeeded in convincing the tenants with a joint management trial by which the commitments of each partner is put in an agreement showing the action plan, its requirement and the returns expected for each partner. If the results are related to this factor, the joint management efforts should be pursued and encouraged as a precondition to implement the full turnover.

In case of the farmer's managed schemes there is still a long way to go to create functional management agencies from Farmer's organizations. Well organized training programs are essential to achieve this goal.

The management processes are still pursued without a legal recognition. It is necessary to have a regulatory and legal framework to support the turnover process. A clear orientation of the institutional development could emerge once these regulations are set and operative.