

PDAAT-798

12N 45957

EGYPTIAN AGRICULTURAL MECHANIZATION PROJECT

Contract Number 263-0031-HHC-01

ACTIVITY REPORT NUMBER 12

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Submitted by

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## 1.0 SUMMARY

Project expenditures are on schedule as compared to the Project's budgetary projections for this year (figure 1.1): 1) The overall outgoing/expended category reached 77 percent, as projected, and 2) The legally committed and expended category rose to 44 percent, also as projected. Thus, the Project is on its expenditure schedule.

However, this should not be confused with the Project Paper's anticipated expenditure rate since the latter assumed certain events that did not transpire, e.g., ordering of commodities a year before the arrival of the technical assistance team.

Figure 1.2 summarizes the credit funds: 1) The Service Center Fund is oversubscribed by \$538,000, if all existing applicants are processed, 2) The original Waterlifting Fund has been completely expended, so it has been increased from \$2.0 to \$3.0 million, and 3) The Machine Introduction Fund is at the 70 percent level of expenditure of the first half of the Fund (\$2.0 million).

As the Project is maturing, it has the capability of offering an input to other Egyptian projects as well as utilizing the knowledge from these programs. In this respect, the Project was involved with other programs: Egyptian Water Use and Management Project, Egyptian Major Cereals Improvement Project, Small farmer Production Project, and the Food and Agricultural Organization of the United Nations.

Briefly, activity highlights were:

### 1. Planning and Evaluation

- a. Completed a comprehensive economic analysis of cotton production in Egypt. From the standpoint of mechanization, several of the highlights were:
  - 1) Farmers using mechanical seedbed preparation, on average, increased yields 1.25 kintars per feddan as compared to farmers who planted directly without seedbed preparation.
  - 2) Farmers using pumps for irrigation increased yields 0.74 kintars per feddan.
  - 3) For every Egyptian pound invested in mechanized seedbed preparation and waterlifting devices, the surveyed farmers received LE 3.73 in additional income.

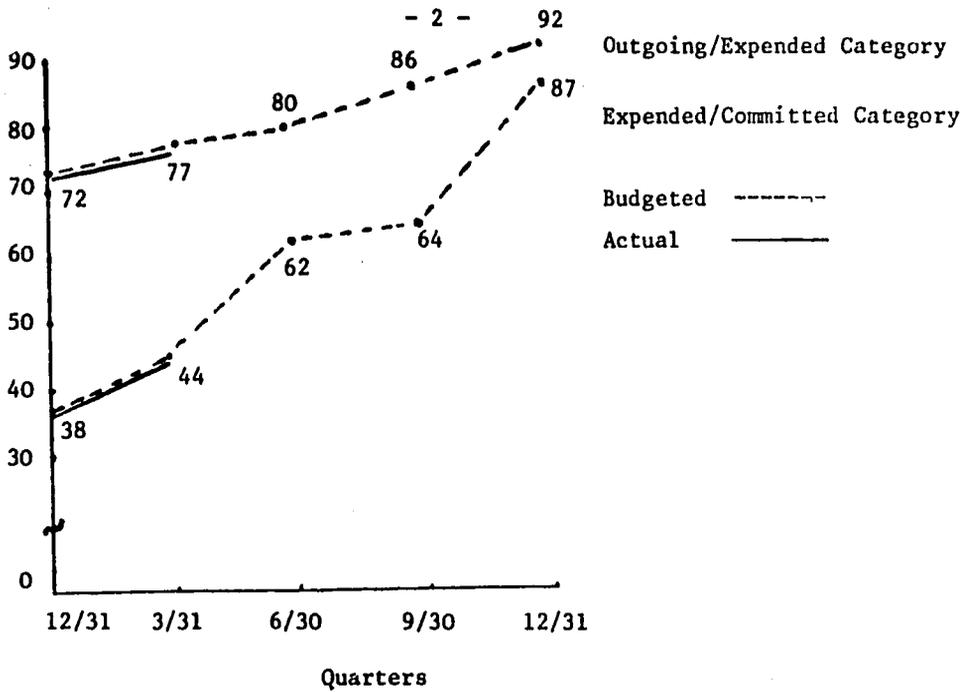


Figure 1.1 Project expenditures, 1984

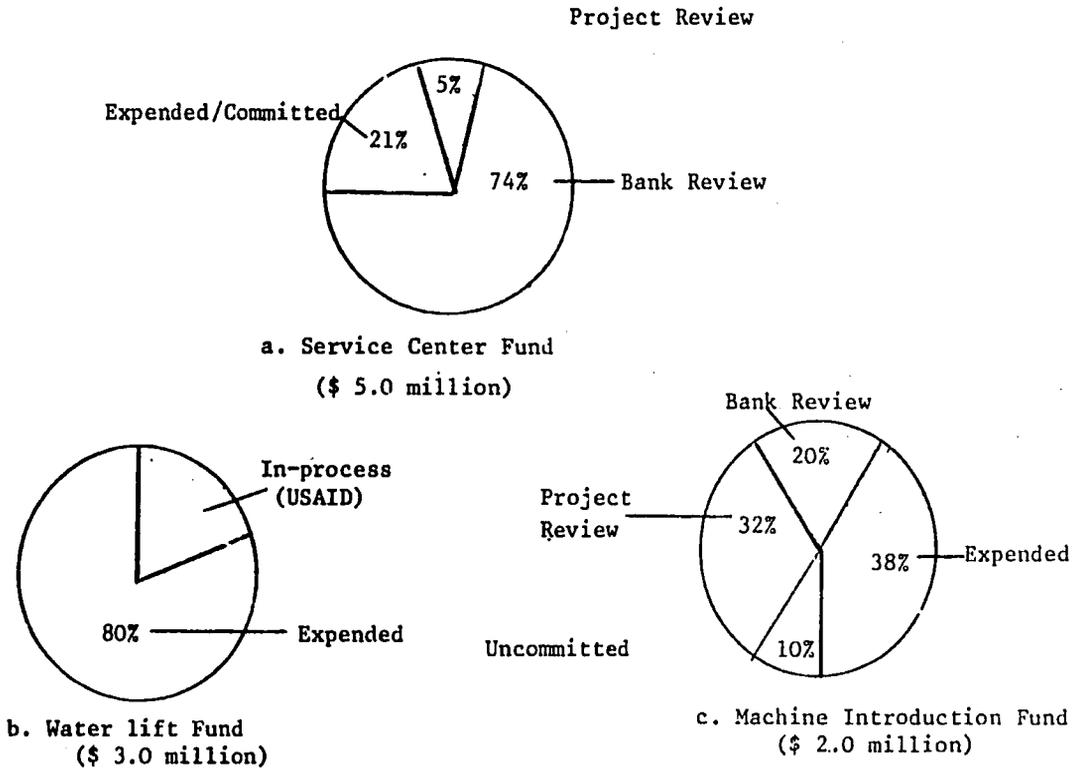


Figure 1.2. Credit funds status, 31 March, 1984

- b. Developed a computer machinery selection model based upon optimal planting dates for area-specific application.
- c. Prepared a report dealing with a farmer survey on reactions to precision landleveling:
  - 1) Farmers reduced irrigation time ranging from 30 to 50 percent.
  - 2) The farmers lengthened their basins on the following crop after landleveling but did not go to a field-length irrigation system, although they were interested in doing so in the future.
  - 3) The majority of the interviewed farmers did not object having topsoil moved across farm boundaries, so farmers were willing to consolidate land for landleveling.

## 2. Extension/Training

- a. A strong emphasis this quarter has been placed on service and maintenance support programs: 1) all Project governates have been requested to provide maintenance counterparts for training; and 2) training courses in mechanics, welding, machinery management, and parts and service administration are supporting this effort.
- b. Completed a paper entitled "Agricultural Machinery Management Suitable for Egyptian Conditions": This paper formalizes a machinery management guideline for the Project's extension program.
- c. Project village extension/training field activities involved 65 sessions and 1,320 participants.
- d. During this quarter, 576 trainees attended 35 new and on-going courses/sessions.

## 3. Service Center/Village Workshop Subproject

- a. To date, 23 village workshops have been completed, 50 are under investigation at the banks, and 11 are in-process at the Project-level.
- b. At this time, two service centers are in the development process: contracts with the PBDAC have been signed and monies advanced.
- c. Seventy-four percent of the Fund (\$5.0 million) is under review at the banks.

#### 4. Land Improvement Subproject

- a. Delivery of tractors and equipment completed.
- b. Prepared a preliminary study on precision landleveling from the Subproject's records:
  - 1) Earth volume work: On average, 41 cubic meters per feddan were moved.
  - 2) Machinery productivity: A machinery unit averaged 18.56 cubic meters per hour and leveled 0.42 feddans per hour with a three meter scraper.
  - 3) Financial costs ranged from LE 50 to LE 100 per feddan assuming zero leveling, working areas of less than 10 feddans, and earthwork volumes up to 75 cubic meters. But different laser equipment configurations can reduce these costs.

#### 5. Local Manufacturing Program

- a. Drawings and bills of material are ready for formal bid invitation.
- b. Estimated the breakeven manufacturing cost to be LE1,700; this will require a minimum output of one thresher per day.
- c. Started design work for a thresher manufacturing plant that can minimally produce one unit a day: specification of major tools required, definition of processes to be used, and special tooling needed.

Implementation has been progressing satisfactorily within the constraints that the Project faces: 1) The slow process of procurement, beyond the control of the Project, has limited the range of the extension demonstration activities; 2) The inability of the banks to process the submitted loan requests has greatly delayed the expenditure of the Service Center credit fund; and 3) The lack of candidates with English language proficiency has slowed the development of the participant training program.

## 2.0 PROJECT ACCOMPLISHMENTS

### 2.1 Planning and Evaluation

#### 2.1.1 Planning and Financial Unit

1. Completed a comprehensive economic analysis of cotton production in Egypt. This will be Project Working Paper No. 13. From the standpoint of mechanization, several of the highlights were:
  - a. From the Project's Farm Management Study, 85 percent of the surveyed farms are using mechanized seedbed preparation and 50 percent are using mechanical waterlifting devices, mostly pumps.
  - b. Farmers using mechanical seedbed preparation, on average, increased yields 1.25 kintars per feddan as compared to farmers who planted directly without seedbed preparation.
  - c. Farmers using pumps for irrigation increased yields of 0.74 kintars per feddan as compared to farmers not using pumps.
  - d. The marginal rate of return for farmers, who partially mechanized, i.e., seedbed preparation and waterlifting, was found to be 376 percent, as compared to farmers using traditional practises; or otherwise stated: For every Egyptian pound that the surveyed farmers invested in mechanized seedbed and waterlifting devices, they received LE 3.73 in additional income.
2. Developed a computer machinery selection model based upon optimal planting dates to maximize production for a specific area.
3. Prepared detailed input/output budgets for cotton, short-term berseem, rice and maize; completed statistical processing of data for all major crops.
4. Developed, with the Land Improvement subproject, an economic methodology identifying benefits attributable to landleveling, and assisted with a breakeven analysis for private sector landleveling operations.
5. Prepared cash needs statement and expenditure report for Project funds, and with the Extension unit, participated in procurement including Project invitation to bid documents.

### 2.1.2 Evaluation Unit

1. Prepared a report dealing with a farmer survey on reactions to precision landleveling in two Project basins in Minia (Annex B): Abu Askar in El Birba and El Kubra in El Atlat. Highlights of farmer reactions were:
  - a. Farmers reported reduced irrigation time ranging from 30 to 50 percent.
  - b. Farmers lengthened their basins on the following crop but did not adopt a field-length irrigation system, except for one interviewed farmer out of fifty.
  - c. However, the farmers seemed willing to move towards a field-length irrigation system, but gradually so.
  - d. Blocks of farmers were willing to leave their land clear at one time to facilitate area landleveling.
  - e. The majority of the interviewed farmers did not object to having topsoil moved across farm boundaries.
  - f. In conclusion, a strong extension input is needed with the Land Improvement program: both to convince the farmers of its potential benefits, and to follow the landleveling activity with a mechanization package.
2. Started development of an agricultural labor paper entitled: "Agricultural Labor and Public Policy Planning for Agricultural Mechanization". This paper will examine the information sources available to the Ministry of Agriculture for policy planning and suggestions for needed research to clarify this continuing problem.
3. Began an evaluation of machinery used for rice cultivation. The report focuses on the operation of three pieces of equipment -- grain drills, transplanters, and combines -- and reasons for early and late planting of rice amongst farmers who participated in the Project's farm management study.
4. Initiated plans for a workshop for members of the village studies program. The workshop will focus on data collection capabilities of the participants and will introduce analytical techniques to the participants.

## 2.2 Research and Development Subproject

1. During this period, the activity of this subproject centered around the thresher development program in association with the Local Manufacturing advisor. Consequently, these activities are described under the Local Manufacturing program.
2. Minimal investigative work was devoted to a tool carrier tractor for grain harvesting. It was recommended that the tractor must be a high-clearance, riding tractor with forward-mounted, hydraulic controlled implements and enclosed final drive to the front drive wheels. In addition, the steering wheels would be trailed. And harvesting attachments should converge the crop, possibly with drums and a finger reel.
3. Design considerations have been made on the "donkey replacement tractor": Vee-belt design has been improved and the center of gravity lowered for better stability.

## 2.3 Extension/Training Subproject

### 2.3.1 Overall Activities

1. Equipment procurement: stateside
  - a. IFB 83/02: Project village demo/training equipment -- bid award waiting USAID's legal approval. Bid value: \$3.663 million.
  - b. IFB 83/03: Crop-specific demo/training equipment -- advertised for bids. Estimated bid value: \$4.4 million.
2. Equipment procurement: local
  - a. Group 5: Hay balers -- received by dealer. Bid value: LE 88,000 (\$105,810).
  - b. Group 7: Joint bid with Small Farmer Production Project: bids under evaluation. Estimated value: LE 857,000 (\$1.03 million).
  - c. Group 10: village maintenance equipment -- bids under evaluation. Estimated value: LE 534,000 (\$642,000).
  - d. IFB Group 11: Research, demo/training equipment -- specifications under final preparation. Estimated value: LE 1.24 million (\$1.49 million).

### 3. Interproject activities:

- a. Major Cereals Improvement Project -- discuss/plan joint field effort.
  - b. Small Farmer Production Project -- joint bidding of equipment
  - c. FAO -- FAO group assisted the Project in holding a series of week-long training sessions dealing with cotton planting with a grain drill. FAO has pioneered this practise in Minia.
4. Three extension TDY's arrived to assist the extension staff in service and maintenance and demonstration of Project equipment.

#### 2.3.2 Extension Unit

1. A strong emphasis this quarter has been placed upon service support and maintenance programs: 1) all governates have been requested to provide a maintenance counterpart to work with, and be trained by, the TDY experts; 2) training courses in mechanics, welding, machinery management, and parts and service administration are supporting this effort; 3) a series of night meetings with farmers has concentrated on maintenance procedures; and 4) the MOA continues to erect demonstration/training sheds in the Project villages.
2. Finished a paper entitled "Agricultural Machinery Management Suitable for Egyptian Conditions"(Annex C):This paper formalizes a machinery management guideline for the Project's extension program.
3. Field activities centered around seedbed preparation and planting for cotton and other crops.
3. All extension specialists now have field transportation, which should dramatically improve their field effectiveness.
4. Held a three-day field trip for USAID personnel and Project management in Minia governate.

#### 2.3.3 Training Unit

1. Project village extension/training field activities involved 65 sessions and 1,320 participants.
2. During the quarter, 576 trainees attended 35 new and on-going courses/sessions.

3. This quarter six trainees attended six new and continuing programs as a part of the Participant Training activities:
  - a. Technical training: instrumentation (2) and soil science (1).
  - b. Academic training: agricultural economics (3) and agricultural production (1).
4. 1984 Training Plan is nearly completed.

#### 2.3.4 Extension Information Unit

1. Completed and delivered 30 extension signs for the Land Improvement program in Minia.
2. Preparing pamphlets on mechanized wheat, maize, and cotton farming.
3. Prepared exhibit for the Cairo International Fair.
4. Completed an agricultural almanac.

#### 2.3.5 Demonstration/Training Unit

1. All equipment has been received and spare parts are being finalized.
2. Four lazer units began leveling two additional fields at Gabel Asfsar.
3. The Unit's activities have been expanded to include demonstration work in Fayoum and Qualibia.

#### 2.4 Service Center/Village Workshop Subproject

Table 2.1 summarizes the status of the Service Center-Village Workshop Fund:

1. Of the first tranche (\$1,500,000), 68 percent is in the expended/committed category.
2. Of the total fund (\$5,000,000), 21 percent is in the expended/committed category.
3. Seventy-four percent of the total fund is under review by the banks.

TABLE 2.1 SERVICE CENTER/VILLAGE WORKSHOP LOANS IN-PROCESS AT GOVERNATE BANKS AND AT THE PROJECT LEVEL, 3/31/84.

CATEGORY	UNITS	EXPENDED	COMMITTED	LOAN VALUE
<b>A. COMMITTED/EXPENDED</b>				
1. SERVICE CENTERS	2	259000	180000	439000
2. VILLAGE WORKSHOPS	19	415109	0	415109
3. SUBTOTAL	21	674109	180000	854109
<b>B. LOANS IN-PROCESS AT THE BANKS</b>				
1. SERVICE CENTERS	8			2018800
2. VILLAGE WORKSHOPS	43			1079000
3. SUBTOTAL	51	0	0	3097800
<b>C. LOANS IN-PROCESS AT THE PROJECT</b>				
1. SERVICE CENTERS	1			250000
2. VILLAGE WORKSHOPS	19			404000
3. SUBTOTAL	20	0	0	654000
<b>D. LOAN ACTIVITY</b>				
1. SERVICE CENTERS	11			2707800
2. VILLAGE WORKSHOPS	81			1898109
3. OVERALL TOTAL (LE)	92			4605909
(US\$ EQUIVALENT)	.83168			5538078

4. If all commitments and funds in-process are approved, the Fund would be overdrawn by \$538,078.

### 2.5 Land Improvement Subproject

#### 1. IFB 83/01:

- a. Ford tractors: Assembly and delivery completed.
  - b. Laser units: Installation on Ford tractors completed.
  - c. Scrapers: Delivery completed.
2. Demonstration program: 110 feddans were precisioned land-leveled. This was on an ad hoc basis because most fields were planted to winter crops at this time.
  3. Prepared a preliminary study on a precision landleveling service (Annex D): This paper examines one year's field-work with respect to appropriate volumes of earthworks, approximate time to complete a given area, machinery productivity and the precision of laser landleveling. Highlights are as follows:
    - a. Earthwork volume: On average, 41 cubic meters per feddan were moved; this ranged from 22 to 75 cubic meters per feddan.
    - b. Machinery productivity: A machinery unit averaged 18.56 cubic meters per hour and leveled 0.42 feddans per hour.  
(A machinery unit consisted of one tractor with a scraper working off a laser transmitting unit.)
    - c. Transportation can time strongly affect machine productivity: at Abou Askar, 2.9 percent of the time was spent in transport; but at El Biik this was 10.5 percent.
    - d. Time required to level one feddan: On average, 2.4 hours per feddan are required when the average earth volume moved is 19 cubic meters per hour, as in the Project sites in Minia to date.
    - e. Precision standard: When 80 percent or more of the field rod readings, on a 20m by 20m grid, fall within a plus or minus 2cm.
    - f. Financial costs ranged from LE 50 to LE 100 per feddan assuming zero level designs, working areas of less than 10 feddans, and earthwork volumes up to 75 cubic meters. Different laser configurations can reduce these costs.

4. Started landleveling activities in support of the Egyptian Water Use and Management Project (EWUP) program in the Abyuha area of El Minia governate.

#### 2.6 Local Manufacturing Program

1. The principal effort has been the drafting of the final thresher drawings with the assistance of the Machinery Development advisor.
2. Drawings and bills of material are ready for formal bid invitation. The major groups are:
  - a. Main frame
  - b. Threshing cylinder
  - c. Straw fan
  - d. Concave
  - e. General transmission group
3. Estimated the breakeven manufacturing cost to be LE1,700; this will require a minimum output of one thresher per day.
4. Started design work for a thresher manufacturing plant that can minimally produce one unit a day; specification of major tools required, definition of processes to be used, and special tooling needed.

### 3.0 FINANCIAL AND TECHNICAL LEVEL OF EFFORT

#### 3.1 Financial Level of Effort

Table 3.1 summarizes the Project's expenditure position as of March 31, 1984. In this table, the definition of the money flows are as follows:

1. Grant Agreement (column 1): Total Grant Agreement line item funding, as may be amended.
2. Line Item Balance (column 2): Uncommitted line item funds.
3. Funds In-coming/Available (column 3): Funds coming into the Project from USAID and/or cash.
4. Outgoing Funds (column 4): Funds in the process of expenditure either by USAID, MOA, or PBDAC.
5. Funds Committed (column 5): Funds committed by contract or bid award.
6. Outgoing Pipeline (column 6): All funds on the outgoing side of the pipeline, columns 4 plus 5.
7. Funds Expended (column 7): Funds physically expended.
8. Outgoing Pipeline/Expended (column 8): The summation of outgoing and expended funds, columns 6 plus 7.

The Project is on its financial schedule, as budgeted for this year: The budget projected that the Project would reach 77 percent in the outgoing pipeline/expended category, which was achieved. In addition, the projection was that the Project would reach the 44 percent level in the funds committed/expended category: This has also been achieved. Most line item has been proceeding as anticipated with an increase of \$1.4 million in the local currency commodity line item.

#### 3.2 Technical Assistance Level of Effort

Table 3.2 compares the anticipated level of effort (column 2) with the projected level of effort (column 3). The latter is based upon the Inception Report and subsequent contract amendments. The Project is slightly lagging in man-months, but this mainly reflects later expatriate starting dates than originally anticipated. Most of these man-months are recoverable, if the current positions remain filled. Three TDY's started this period to assist with the Extension program. To date the man-month contribution totaled 458 as compared to a projected 477.

**TABLE 3.1. FINANCIAL LEVEL OF EFFORT: FOREIGN AND LOCAL CURRENCIES  
FROM 15 SEPTEMBER 1980 - 31 MARCH 1984, IN US DOLLARS.**

LINE ITEMS	(1) GRANT AGREEMENT	(2) LINE ITEM BALANCE (1-3-8)	(3) FUNDS IN-COMING/ AVAILABLE	(4) OUTGOING (AID,MOA, PBDAC)	(5) FUNDS COMMITTED	(6) OUTGOING PIPELINE (4+5)	(7) FUNDS EXPENDED	(8) OUTGOING PIPELINE EXPENDED
<b>A. FOREIGN CURRENCY</b>								
1. TECHNICAL ASSISTANCE	6424000	468382	0	131134	2157513	2288647	3666971	5955618
2. COMMODITIES	9133000	-396066	0	8000000	105979	8105979	1423087	9529066
3. TRAINING	2023000	1414411	0	208847	45065	253912	354677	608589
4. RESEARCH SUPPORT	1005000	798436	0	0	0	0	206564	206564
5. SPECIAL STUDIES/ EVALUATION	215000	202548	0	0	0	0	12452	12452
6. SUBTOTAL	18800000	2487711	0	8339981	2308557	10648538	5663751	16312289
<b>B. LOCAL CURRENCY</b>								
1. TECHNICAL ASSISTANCE	2302000	587102	0	99798	568493	668291	1046607	1714898
2. COMMODITIES	4000000	-272376	806136	1030444	0	1030444	2435796	3466240
3. TRAINING	1000000	89879	463036	0	0	0	447085	447085
4. VEHICLE OPERATING EXP	100000	48217	18131	0	0	0	33652	33652
5. FACILITIES	70000	70000	0	0	0	0	0	0
6. CREDIT FUNDS								
A. SERVICE CENTER	5000000	52159	199249	3447841	492665	3940506	808086	4748592
B. WATER LIFT	3000000	0	599472	69731	0	69731	2330797	2400528
C. MACHINE INTRO	2000000	902868	0	377909	0	377909	719223	1097132
D. UNCOMMITTED	1000000	1000000	0	0	0	0	0	0
7. RESEARCH SUPPORT	2000000	1301389	0	0	327226	327226	371385	698611
8. SPECIAL STUDIES/ EVALUATION	728000	701895	4480	0	0	0	21625	21625
9. SUBTOTAL	21200000	4481133	2090504	5025723	1388384	6414107	8214256	14628363
C. PROJECT TOTAL	40000000	6968844	2090504	13365704	3696941	17062645	13878007	30940652
PERCENT COMMITTED/EXPENDED		17.42			9.24	42.66	34.70	77.35
								43.94

TABLE 3.2 LEVEL OF EFFORT: TECHNICAL STAFF FROM SEPTEMBER 15, 1980 THROUGH MARCH 31, 1983, IN MAN-MONTHS.

POSITION	(1) STARTING DATE DAY/MO/YR	(2) EFFORT TO DATE	(3) PROJECTED EFFORT	(4) CONTRACT EFFORT	(5) DIFFERENCE (2-3)
1.TEAM LEADER	4/10/80	42	42	60	0
2.PLANNING/FINANCIAL ADVISOR	9/15/80	42	42	60	0
3.RESEARCH DIRECTOR	3/11/80	38	38	38	0
4.EVALUATION ADVISOR	7/12/80	40	40	58	0
5.EXTENSION ADVISOR	4/2/81	30	30	30	0
6.FARM MANAGEMENT ADVISOR	15/4/81	32	34	36	-2
7.SERVICE CENTER ADVISOR	9/4/81	36	32	48	4
8.EQUIPMENT ADVISOR	7/5/81	35	35	48	0
9.SOIL IMPROVEMENT ADVISOR	13/7/81	30	30	36	0
10.TRAINING ADVISOR	9/9/81	31	32	36	-1
11.MACHINERY DEVELOPMENT ADVISOR .	5/1/82	16	27	36	-11
12.LOCAL MANUFACTURING ADVISOR	3/2/82	26	24	36	2
13.SI IRRIGATION ENGINEER	1/4/82	24	31	36	-7
14.SENIOR ACCOUNTING ADVISOR	1/11/82	13	17	36	-4
15.SHORT-TERM TECHNICAL ASSISTANCE		23	23	36	0
TOTAL		458	477	630	-19

#### 4.0 IMPLEMENTATION

Milestone implementation schedules for the six months to June, 1984 are shown for extension, research and development, and land improvement in figures 4.1, 4.2, and 4.3 respectively. The R/D program will be implemented through the Egyptian side with TDY support from Dr. Reaves starting next quarter.

A summary of implementation during this past period is as follows:

1. Extension (figure 4.1):
  - a. IFB 83/02: bid awards not made, waiting USAID legal approval.
  - b. IFB 83/03: invitation for bid as per schedule.
  - c. Groups 5, 7, 10, and 11 are on schedule.
  - d. Project village activities are on schedule: agricultural backhoe and seedbed demonstrations, cotton grain drill trials with FAO, TDY support for maintenance and village workshop construction.
2. Research and Development: In-house research is on its new schedule, and applied research contracts are progressing, although not as fast as originally intended.
3. Land Improvement: Equipment was delivered as scheduled, but field activities were limited since crops were in the ground. Field survey work is behind schedule.
4. Planning and Evaluation: The Farm Management data analysis is proceeding well with crop reports issued after completion of each data set. The evaluation of Project activities is proceeding with specific subproject reports rather than a Project-wide evaluation since USAID will commence with a Project evaluation this next quarter.
5. Training: The in-country training program is developing as anticipated in terms of participants but lags a little as regards expenditures. As has been the problem throughout the Project's life, the US training is behind schedule because of the lack of qualified candidates with the necessary level of English language capability.

**PROCUREMENT**

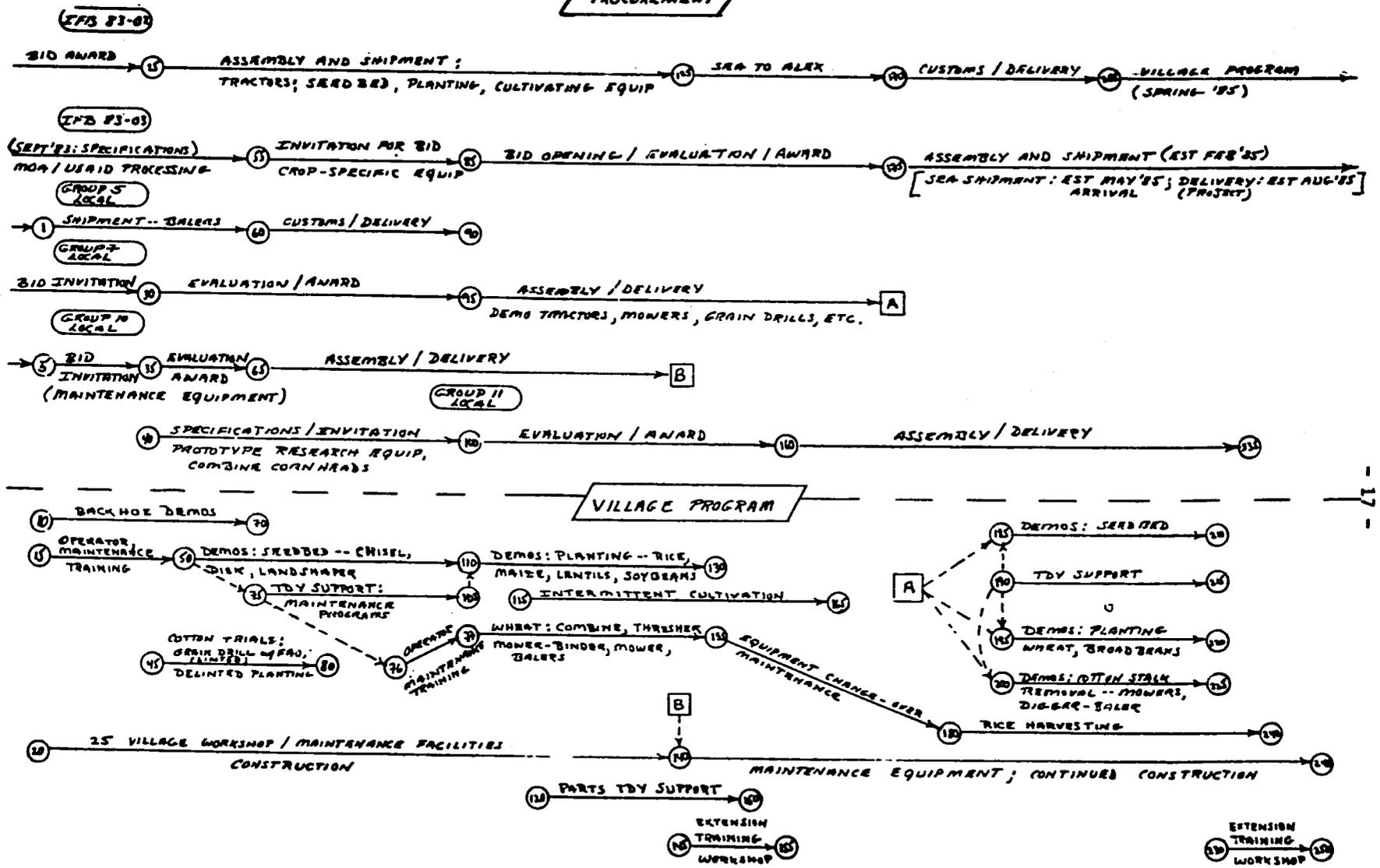


Figure 4.1 Extension Activity Program.

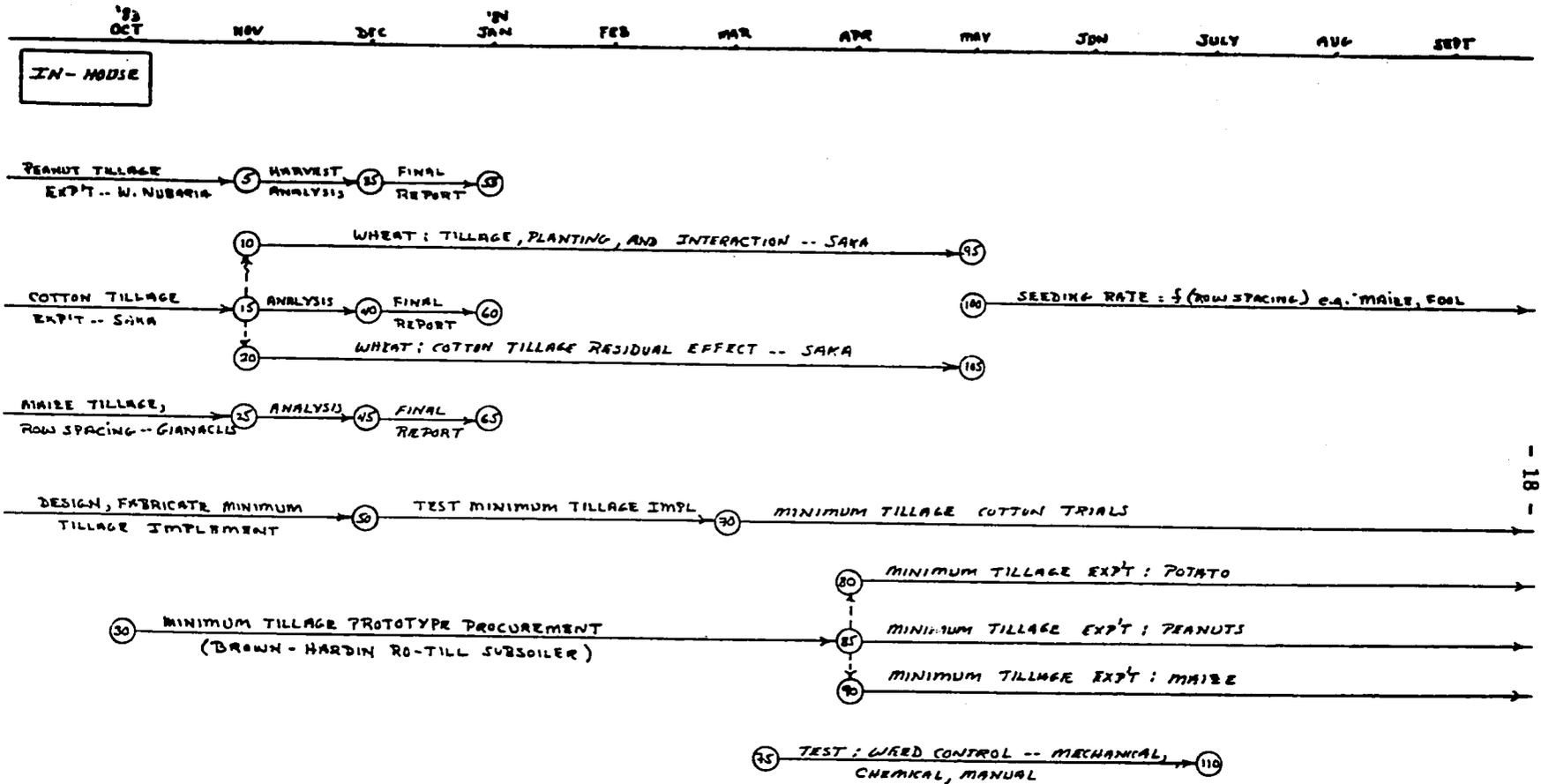


Figure 4.2 Research Activity Program.

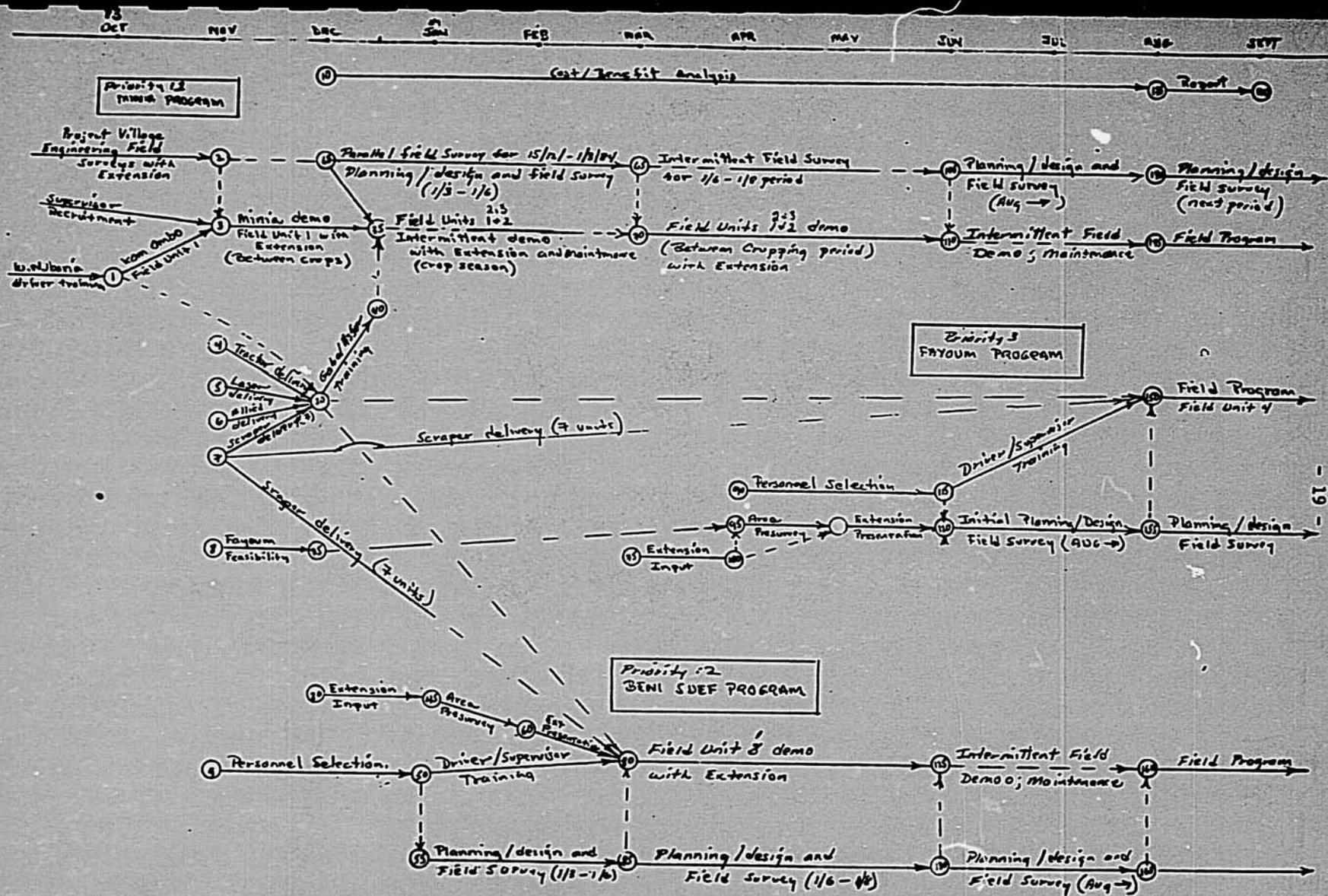


Figure 4.3 Land Improvement Activity Program.

6. **Service Center/Village Workshop:** At the Project-level, the program is on schedule but at the Bank-level it is sadly behind schedule. It is hoped that this bottleneck can be resolved through a review and clarification of the Letter of Understanding with the PBDAC, which is currently in progress through the Egyptian side.
7. **Local Manufacturing:** Although behind its original schedule, the development of a full set of plans for manufacturing the thresher has been completed so that bids can be entertained for the production of manufacturing prototypes.

## 5.0 NEXT QUARTER'S OBJECTIVES

### 5.1 Overall Objectives

1. Machine Introduction Fund (\$2.0 million): Request the last \$1.0 million from USAID.
2. Water Lifting Fund (\$3.0 million): Reach a \$2.5 million expenditure level and request the final \$500,000 from USAID.
3. IFB 83/02: Bids to be awarded.
4. IFB 83/03: Start bid evaluation.

### 5.2 Planning and Evaluation

1. Finalize Project working paper on "Egyptian Cotton Production and Farmer Response to Government Price Intervention and Meat Import Policies".
2. Develop mechanization support packages for the Egyptian-USAID sector plan.
3. Complete Machinery Evaluation Series No.3: Rice cultivation using grain drills, transplanters, and combines, and reasons for early or late planting of rice.
4. Complete paper on "Agricultural Labor and Public Policy Planning for Agricultural Mechanization".
5. Finalize plans for Sidi Bisher evaluation workshop.

### 5.3 Research and Development

1. Evaluation of selected Applied Research projects.
2. Start design of a new chisel plow shank and point.
3. Conduct combine tests on wheat losses.
4. Evaluate residual effect of cotton tillage treatments on wheat.

### 5.4 Extension/Training

1. Complete 1984 Training Program.

2. Start local procurement of Groups 5, 7, 10, and 11.
3. Complete construction of at least one extension workshop in each Project district.
4. Plan for the biannual mechanization extension workshop for the Project's extension specialists.
5. Establish maintenance programs in each Project area with TDY support.

#### 5.5 Service Centers/Village Workshops

1. Develop one service center.
2. Develop four village workshops.
3. Request a second tranche of \$2.0 million for the Service Center Fund.

#### 5.6 Land Improvement

1. Establish a pretest operation in Beni Suef and expand Minia activities.
2. Commence with field surveys needed to implement landleveling activities during the June - December period.
3. Develop a data collection plan for monitoring landleveling costs and benefits.
4. Start an implementation plan for Beni Suef governate.

#### 5.7 Local Manufacturing

1. Let bids for thresher manufacturing prototype construction and assist the manufacturer(s) as needed.
2. Complete drawings for optional thresher equipment.
3. Commence with development of a local manufacturing feasibility study.

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**A.1 Planning, Ebaluation**

**A.1.1 Planning & Financial Unit**

**A.1.2 Evaluation Unit**

PLANNING AND EVALUATION UNIT  
Planning and Financial Group

Quarterly Report: January, February and March  
Prepared by: Steven C. Shepley  
Mohammed Shoukry  
Mohammed Ismail  
Nour El Din Nasr  
Mohammed Ibrahim

Summary

Major activities during the quarter were concentrated on developing a comprehensive economic analysis of cotton production in Egypt. This technical effort has culminated in the preparation of a 60 page report now under publication. In addition to the above technical output, which consumed the majority of the staff effort, the economic planning group also developed a machinery intensity model to calculate total mechanization needs on an area specific basis. Further outputs included preparation of detailed crop budgets for cotton, rice, maize and short berseem. Statistical processing for all of the major crops was completed and a methodology for evaluating the benefits of land levelling was prepared and delivered to the Soil Improvement Sub-project together with training in the use of breakeven analysis for evaluating the financial feasibility of private sector enterprise in landlevelling ventures. Finally, the sub-unit has continued to provide technical assistance in project financial affairs and AID financed procurements.

Study of Cotton Economics

An analysis of farm management data has revealed that 85% of the surveyed farms are using mechanized seedbed preparation with 50% substitution of animal powered irrigation technology by mechanized water lifting devices. An analysis of variance on yields among the mechanized and non-mechanized technologies revealed significant differences and it was found that farmers using mechanized seedbed preparation technology can expect, ceteris paribus, a mean increase of 1.25 kintar per feddan in yields over farmers that plant directly without any land preparation. Similarly, the marginal yield increase from using diesel pumps of sakia irrigation was found to be 0.74 kintar per feddan. The marginal rate of return from partially mechanized cotton farming over traditional methods was found to be 376%, meaning that for every Egyptian Pound the surveyed farmers invested in mechanized seedbed and irrigation, he received E£3.76 in additional income.

In spite of these highly favorable returns from existing levels of mechanization and the demonstrated willingness of farmers to adopt new technologies which result in adequate returns on investments, the cotton production situation in Egypt is not promising. The cotton crop requires the highest labor input (over 135 man-days per feddan). The labor demand occurs during the peak season (September through November) when there is heavy competition for labor created by maize and rice harvesting needs in a finite labor market. During this period, seasonal prices are highest, sometimes over E£ 1.00 per hour. In addition to labor cost and supply problems, operations most in need of mechanization, planting and harvesting, require technical inputs which have not yet been perfected as the extra fine quality of Egyptian cotton makes it somewhat unsuitable for existing state of the art technology.

The most serious constraint to improving cotton production, however, was found to be neither technical nor labor related. Government price policy is at the core of low profitability. Over the past decade acreage planted to cotton has been steadily declining and farmers have sacrificed optimizing production practices (such as timely planting) to maximize returns from freely marketed <sup>ALTERNATIVE</sup> crops. At present, the regulated farm gate price of cotton is only half the export parity price and returns to on-farm labor in terms of net profits are the lowest in the entire cropping pattern. The study of cotton production economics soon to be published statistically tested these phenomena and found hypothesized farmer response to declining cotton profitability to be empirically supported. Farmers have been shifting acreage to more profitable berseem production and have been planting, on the average, 50 days beyond the optimal planting date of February 18th. As a result of these cultivation practices, survey yield losses determined through a planting date yield simulation model, averaged some 2.5 kintars per feddan. Considering the magnitude of these losses over the entire area currently planted to cotton, the late plantings are costing the national economy some 2.5 kintars x 1,070,000 x £E 102.96 = £E 275,418,000 in lost income per year.

The reason for the late survey plantings is that farmers delay cotton planting to take as many cuts of the preceding short berseem crop as possible (usually 3 cuts). Berseem is freely marketed and tied to the price of meat, most of which is also freely marketed in the domestic economy. Government policies related to imports are restrictive, creating a shortfall between demand and supply and putting upward pressure on domestic meat prices. The current price of £E 5.20 per kilogram vs £E 2.41 for imported meats. *This* is a reflection of the supply and demand problem and the high opportunity cost of producing meats in Egypt where valuable farm land is allocated to low value fodder crops to support the animal population.

A computerized simulation model was constructed from which experiments were run to test the impact of government cotton price policies and meat import levels on meat prices, berseem prices, cotton profitability and production. The experiments showed that if meat import levels are held constant, thereby keeping berseem prices high, the cotton price would have to rise from the current £E 60 per kintar to at least £E 77 before farmers can be induced to forego the third berseem cutting. When meat supplies are increased 10 percent through importing an additional 64,000 metric tons, supply and demand interaction causes meat prices to fall to £E 4.66, berseem prices to drop to £E 17.54 per metric ton. When this environmental change interacts with cotton price policy, farmers forfeit the third and second berseem cuts, cotton area expands some 21,000 feddans, production of cotton increases by 3 million kintar at a farm gate price £E 94 per kintar. The net economic returns from this increase in production 60 million Egyptian Pounds per annum.

The report uses a rigorous system of quantitative analysis to demonstrate that improvements in cotton production can only be realized through a combined effort to promote further mechanization and governmental policy changes.

### Machinery Intensity Model

With the expansion of project extension activities and the need to project agricultural machinery requirements over time and area, the economics group has developed a computer model to determine machinery needs to maximize production. The model receives planting date /yield correlation equations, machinery unit costs and treatment time as inputs. The process is iterative with the model starting with an assumed machinery density (e.g. 20 tractors and plows for an area of 500 feddans). Machinery units are added or subtracted until a level is reached which maximizes production by planting as close to optimal planting times as possible. The optimum is reached when marginal input costs equal marginal returns. The model has been programmed and debugged and will be used later in the project to project governorate-wide machinery requirements based upon the empirical data from the farm management survey and the Project research effort.

### Farm Management Survey Data Processing

The data processing of the farm management survey material has proceeded satisfactorily. Detailed input/output budgets for cotton, short berseem, rice and maize were prepared and the statistical processing of data for all major crops was completed. The crop budgets will be published when typing support becomes available. The next phase of the analytical work will consist of data processing and budget development for the principal minor crops such as fava beans, onions and vegetables.

### Technical Assistance to the Land Improvement Sub-project

Meetings with Land Improvement Sub-project technical staff were held to discuss the requirements and methodology for evaluating the economic and financial benefits of landlevelling. It was noted that relatively reliable estimates of landlevelling costs have been made but that no work has yet been done to quantify the income effects of this particular treatment. Benefit analysis should receive high priority as land levelling costs about £E 50 per feddan and there are no assurances that farmers will be willing to absorb the high costs of land treatment unless that it can be shown that this technical input increases yields and/or reduces irrigation times and costs. The attached section describes the methodology that will be used by the economics group and the Land Improvement Sub-project to evaluate benefits during the following cropping cycle.

In addition to this material, the economics group assisted the Land Improvement technicians evaluate financial costs and returns for private sector land levelling operations, using alternative sized equipment packages. The models used in the analysis were breakeven analysis models run over a range of equipment package sizes and net profit incentives. This technical input has been published in a report recently issued by the Land Improvement Sub-project.

### Financial Assistance

During the reporting period, a cash need statement and expenditure report for AID financed Project funds was prepared and submitted to USAID and technical guidance to the Extension and Training activity was provided on procurement matters and preparation of Project invitation for bid documents.

## Evaluating Benefits from Landlevelling

### I. Categories of Benefits

The assumed benefits from precision landlevelling are expected to fall into two categories: (1) irrigation cost savings, and (2) productivity increases. To quantify the magnitude of these benefits a randomized block testing procedure must be implemented.

### II. Sampling Procedure

In standard analysis of variance methodology, two alternative technologies (levelling and no levelling) are factors with location (the two basins where land levelling will take place) as other factors.

The experiment, then, consists of treatments consisting of one level from each factor. Thus, a 2 x 2 factorial experiment shall be conducted with two levels: (1) land levelling and no levelling and (2) two separate basins comprising the other level. In total, there shall be four treatments.

The number of participating farmers (replicates) shall be determined from a pre-test sample to evaluate yield and irrigation time variances among farms with already levelled land and contiguous farms without levelled land in each of the two basins. The final number of replicates shall be determined through the formula:

$$n = \frac{(z(1-\alpha/2))^2 \sigma^2}{h^2}$$

where:

n = number of replicates

(z(1-α/2)) = normal distribution probability percentile  
(at the 95% probability level, this value is 1.960)

σ<sup>2</sup> = pre-test sample variance

h = desired confidence interval half-width  
(5 to 10% of the mean value)

While the pre-test variances are not yet known, it is expected that the number of replicates will not exceed 10 to 15 farmers for each factor, making a total sample of some 40 to 60 farmers.

At each farm, there should be an enumeration of all irrigation times and volume of water delivery. This can best be done by stop watch and parshall flume inserted in the on-field delivery canal. Since irrigation occurs only during limited periods, it is expected that one enumerator can survey two farms, making a total requirement of 20 to 30 personnel over the survey period, which would last for one year beginning in September 1984.

The yield data for each factor, will be collected by taking four to five randomly selected one square meter plots from each field and weighing the yield and measuring the moisture content.

An analysis of variance shall be performed on the plot samples from each factor to calculate degrees of freedom for the treatments and for the residual. Mean square errors and F-ratios shall also be determined.

Treatment significance shall be determined through least significant difference tests according to the formula:

$$LSD_1 = t_1(\text{residual DF}) \sqrt{\frac{2(\text{residual mean square})}{\text{sample size}}}$$

The decision rule shall be that a treatment is significant if the mean difference is greater than the LSD at the 95% probability level and shall be judged insignificant when the LSD is greater than the mean difference.

Where treatments are found significant, the sample mean differences shall be assumed as the magnitudes of irrigation time savings and yield increases that will be evaluated at farm gate and equilibrium prices to quantify the land levelling benefits. Costs are then subtracted from benefits to calculate financial and economic rates of return for the land levelling technology.

EVALUATION UNIT

JANUARY 1984 ACTIVITY REPORT

SUBMITTED BY: Peter Reiss  
Aiman El Tunsi  
Raafat Lutfi

1. Evaluation Advisory Committee Meeting

The first meeting of the newly reorganized Evaluation Advisory Committee was held during the period. The minutes of the meeting are attached. They include the assignments and responsibilities of the committee members for the next six months.

2. Conference Paper on Mechanization and Labor

At the request of Dr. Zakaria El Haddad, members of the committee have prepared and submitted an abstract of a paper to be presented at a conference at the Agricultural Research Center sometime in March. The abstract follows:

AGRICULTURAL LABOR AND PUBLIC POLICY PLANNING FOR  
AGRICULTURAL MECHANIZATION

Dr. Peter Reiss  
Agricultural Mechanization Project

Dr. Nabil Habashi  
Agricultural Economics Research Institute

Dr. Abdel Tawab El Yamani  
College of Agriculture  
University of Tanta

Dr. Zakaria El Haddad  
Agricultural Mechanization Project

Ambitious and expensive rural development programs are being initiated by the Government of Egypt with the aim of alleviating shortages in agricultural labor. However, the seriousness and duration of these shortages remain uncertain. This paper examines many of the information sources available to the Ministry of Agriculture for policy planning and will suggest what further research ought to be undertaken to clarify this continuing problem.

Our investigation indicates that existing reports on the rural labor situation in Egypt are disappointing. We still do not have a good understanding of the dynamics of the rural labor market, including the condition of landless laborers and the processes of off-farm employment. No clear picture is yet available concerning who emigrates, the destination, the uses made of remittances, and continuing interest in and commitment to agriculture in the home village.

It appears that what is needed is a long-term micro-level study of the choices of and constraints on rural households to arrive at levels of labor input. The dynamics of the labor market at the village level are unlikely to emerge until this is done.

### 3. Precision Landlevelling in Two Minia Basins

During the period a report on precision landlevelling using laser equipment was distributed to Project management and staff. A summary of the report follows:

Despite radical changes in the system of water distribution during the past two decades, farmers have continued to cultivate and irrigate their land under roughly the same conditions. Problems with soil and drainage leading to salinity and waterlogging have become endemic. The Agricultural Mechanization Project has been charged, in part, with rectifying this situation through a Soil Improvement Component. Its activities, however, have wider implications because they also seek to establish a base which will make interrow mechanization possible.

To date, soil improvement activities have been largely limited to precision landlevelling using laser equipment. Also drainage improvement, tertiary canal rehabilitation, and improved field access are planned. Landlevelling was selected as a primary activity because of a need to improve irrigation efficiency and surface drainage. Although used by the Ministry of Agriculture elsewhere, only the Agricultural Mechanization Project is attempting to use it on a commercial basis for the private sector.

Yet, the appropriateness of laser equipment is still at issue. Conflicting estimates of its cost have circulated, but a convincing costs and benefits analysis has not been undertaken. If, as planned, the work is to be extended to the private sector by operators, such an investigation must be made. Otherwise, precision landlevelling risks being the sole responsibility to the Project and the Ministry which underwrite its costs by providing it as a free service.

Landlevelling by the Project has been largely carried out in Middle Egypt. Through the summer of 1983, 360 feddans had been levelled in Minia, and additional land is now being worked. This report is based on visits to two basins in Minia, Abu Askar in El Birba El Kubra and El Biik in El Atlas which were levelled in June and July 1983. The following points defined the boundaries of the investigation:

- (1) the participation of farmers in planning and implementing landlevelling activities
- (2) the difficulty in levelling a number of contiguous plots at the same time and the problems associated with determining the original plot boundaries
- (3) the problems encountered moving topsoil across plots while levelling and the demands of farmers for compensation.

- (4) the role of extension in landlevelling
- (5) the impact of landlevelling on planting techniques and the incidence and effectiveness of longer furrow use
- (6) the impact of landlevelling on irrigation time
- (7) the impact of landlevelling on crop yields
- (8) the existence of and need for an accurate data base for assessing the costs and benefits of laser equipment for precision landlevelling

This report is based on interviews with twenty-five farmers from each of the two basins with the following information solicited: crop variety, crop yield, furrow length, irrigation time, and method of irrigation before and after landlevelling. In addition, twelve farmers were interviewed in-depth.

Abu Askar and El Biik basins were selected, in part, because of their soil and water conditions. Farmers in the villages identified the basins as having severe irrigation and levelling problems.

Farmer participation in landlevelling activities has been passive thus far. Although invited to attend educational sessions, there has not been an ostensible effort to bring them into planning the activities. As long as the Component limits its work to landlevelling, it is unlikely that farmer participation will be significant. However, should the Component expand its work into drainage, road, and canal improvements, the active participation of farmers would be advisable. The work of another project, Egypt Water Use Management, reveals that the organization of participating farmers into committees was an important and necessary part of planning and implementation.

Although some members of the Component feared that farmers would have some difficulty reestablishing the original boundaries of their plots after landlevelling, thus creating conflicts among neighbors, this was not the case in the two basins levelled. A system of boundary demarcation by sinking iron bars into the ground allows for the determination of boundaries. It is not certain if this system is universally used.

Farmers in the two basins indicated no serious opposition to the movement of topsoil across plot boundaries during the levelling operations. Given the estimated cost of compensation, it is not advocated.

Extension efforts in landlevelling were made independently of the Project's Machinery Extension and Training Component and the Extension Department of the Agricultural Directorate of Minia.

A comparison of the methods of planting and irrigating maize, the field crop grown in the two basins after landlevelling, reveals differences in preference for furrow and ridge length. Forty-nine of the fifty farmers interviewed indicated that they have increased the length of their furrows. However, in Abu Askar farmers had increased the length, on average, by only five meters, while in El Biik they had increased it by thirty-

five meters. This difference may be explained, in part, by previous planting techniques. Farmers in El Biik have planted maize in somewhat longer furrows on ridges for many years, possibly because of a village labor shortage, while farmers in El Biik have planted maize in short basins with short furrows. At the encouragement of extension agents, farmers in Abu Askar planted maize in ridges, but continued their traditional basin technique. Still, the use of longer furrows and ridges appears to be gaining some acceptance. Farmers in both basins have retained the ridges for growing fuul and will use them for cotton this summer. Several of the farmers in El Biik said that when they next construct ridges and furrows, they plan to extend them uncut the full length of their fields.

The farmers were unanimous that landlevelling had shortened their irrigation time. Reductions ranged from 30 to 50%. Since irrigation time is measured by the period a pump is running, landlevelling has the potential of increasing profits for farmers by reducing their input costs.

Assessing the impact of landlevelling on crop yields has been problematic and, at this point, is uncertain. No records of agricultural inputs were kept and no samples were taken during harvesting. Further complicating the situation was the introduction of a high-yielding maize variety which had never been grown in the basins before. Through the work of the Egyptian Major Cereals Improvement Project and the village banks, Giza 2 maize was grown on nearly 28,000 feddans in Minia this year and is expected to be expanded to 70,000 next summer. As introduced by EMCIP, Giza 2 is part of an agronomic package which can be implemented by farmers. Production increases appear to be on the order of 100% when compared to the baladi varieties.

Little information has been collected, thus far, about the costs and benefits of precision landlevelling using laser equipment in Egypt. Two studies ought to be undertaken in the near future: the cost-effectiveness of precision landlevelling and the block testing of EMCIP's agronomic package with our own soil improvement and machinery introduction program. EMCIP staff are eager to work cooperatively with us.

Based on this report, the following recommendations are made:

(1) Thus far, farmers in the levelled basins have been invited to attend demonstration sessions but have played no role in the planning of the activities. As long as the work of the Soil Improvement Component is limited to precision landlevelling, it is unlikely that farmer participation will be any greater. However, it is strongly urged that if the work of the Component is extended to drainage improvement, tertiary canal rehabilitation, and improvements in access to fields, as planned, farmers be more actively involved. Work in landlevelling is necessarily fast moving, but these remaining activities will require large expenditures of capital, much time, and the cooperation of participating farmers.

(2) There is a concern by members of the Soil Improvement Component that if large tracts of land are worked as a single unit, farmers will have difficulty reestablishing the original boundaries, creating conflicts between neighbors. A system of boundary demarcation does exist in the first two basins worked which precludes such disputes. Yet, this system may not be

universal. It should be the responsibility of those using the levelling equipment to determine how boundaries are determined before they begin their work.

(3) Farmers in the two basins levelled indicated no serious opposition to the movement of topsoil across boundaries. In any case, compensation to farmers would be unrealistic and cannot be advocated. Rather, a concerted extension effort must be in place to allay farmers' fears as they arise.

(4) Landlevelling was carried out in the two basins largely independently of the Extension and Training Component. The perpetuation of artificial, institutional distinctions within the Project can only work to its detriment. Since one of the objectives of landlevelling is the facilitation of interrow mechanization, it is advisable that machinery demonstrations directly follow the work of the Soil Improvement Component in an integrated plan. It appears that seed drills have been used to plant wheat after levelling; this move ought to be encouraged and expanded.

(5) Extension efforts by the Soil Improvement Component, as well as by the Machinery Extension and Training Component, have been independent of the extension wing of the Agricultural Directorate of Minia. Its director, Ahmed Gedâ El Karim, is extremely competent and ought to be encouraged to assist in Project implementation and help to coordinate the work of this project with that of others working in Minia.

(6) An examination of the planting techniques in Abu Askar basin in El Birba El Kubra reveals that farmers are essentially using the traditional method with a small change in furrow length. Basically, they have added ridges to their small basin techniques. The effects of landlevelling will not be realized if this situation persists. Again, a serious extension effort must be undertaken so that farmers make the adjustments necessary to gain the maximum benefits.

(7) Although farmers in El Biik basin in El Atlas did shorten their irrigation time by 30 to 50% it is clear that they deal with difficult irrigation conditions. If the Soil Improvement Component extends its responsibilities into drainage and canal improvements, it is recommended that the basin be used as a demonstration site.

(8) Little information is available concerning the costs and benefits of precision landlevelling. Since private operators are to be encouraged to undertake the work at the conclusion of the project, a convincing costing of the activity must be undertaken as soon as possible. Given the plan to purchase an additional four units for the Delta, to be operated by the Machinery Extension and Training Component, indicating a significant increase in the Ministry's commitment to the work, such an investigation of costs and benefits must have the highest priority.

(9) Staff members of EMCIP are prepared to work with the Agricultural Mechanization Project in block testing their agronomic package with our landlevelling program. These tests hold the potential of combining an apparently successful agronomic package with our own machinery inputs. Dramatic increases in production are most likely to be realized with a combination of the two programs. Testing may begin as soon as summer 1984 with precision landlevelling and the planting of maize. The results are likely to have important policy making implications for the Ministry of Agriculture.

#### 4. Evaluation of Service Center Fund

A study of the impact of the service center fund on workshops in the Project villages is being prepared. Information about where the loans have gone and their current status has been collected. Trips are planned with members of the Service Center Component to various villages to gain an overview of their work.

#### 5. Evaluation of Mechanized Rice Cultivation

At the request of Dr. Zakaria El Haddad a study will be undertaken of rice cultivation as part of the Evaluation Unit's Machinery Demonstration Series. The proposed study will have three parts: demonstrations of seed drill for planting rice, the outreach work of the Japanese Rice Mechanization Project in Kafr El Sheikh in using rice transplanters on farmers' land, and the reasons for planting late. A recent report of the Planning Unit indicates that many farmers (44%) plant rice later than the assessed optimal period of 24-30/6 or earlier (32%). Project Management would like to know why this is the case.

#### 6. Transportation Difficulties

A good deal of travelling is envisioned during the coming months. Dr. El Sahrigi has told the Evaluation Unit that it will receive a vehicle, however the one to be assigned has a cracked block. A properly running vehicle is urgently requested.

#### 7. Follow-up

- a. With the proper transportation, visits are expected to villages for the rice study.
- b. Some visits are planned with members of the Service Center Component
- c. The conference paper on agricultural labor and agricultural mechanization must be prepared for presentation. It appears that the conference may be as soon as the first week of March.

AGRICULTURAL MECHANIZATION PROJECT

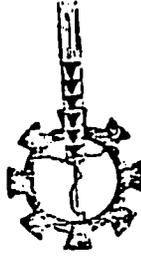
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DATE \_\_\_\_\_ التاريخ.

To: Dr. Ahmed El Sahrighi, Project Director

Dr. David Gaiser, Chief of Party

From: Dr. Peter Reiss, Evaluation Advisor and Committee Coordinator

Date: 5 January 1983

Re: Evaluation Advisory Committee Meeting

On 4 January the first meeting of the newly reorganized Evaluation Advisory Committee was held. The meeting was led by Dr. Zakaria El Haddad.

During the meeting, it was decided that a plan of work and a distribution of responsibilities would be made for the next six month period through June 1984.

It was also decided that the committee would meet on the first Wednesday of each month to review work and distribute new assignments, as necessary.

The following assignments and deadlines were made :

<u>EVALUATION STUDY</u>	<u>RESPONSIBLES</u>	<u>DUE DATE</u>
1. Tractor Costs and Time Use	Nabil Habashi Abdel Tawab El Yamani Mahmoud Mesbah Steven Shepley	1st report: 1 June
2. Farmer Adoption Rates	Bahgat Abdel Maksoud Mahmoud Mesbah	1 June
3. Labor and Mechanization	Peter Reiss Abdel Tawab El Yamani Zakaria El Haddad Nabil Habashi	1 April
4. Landlevelling in Minia	Peter Reiss	1 February
5. Rice Transplanters	Peter Reiss	1 March
6. Service Center Credit Fund	Peter Reiss	1 May

cc: Dr. Zakaria El Haddad  
Committee Members

## EVALUATION UNIT

### FEBRUARY 1984 ACTIVITY REPORT

SUBMITTED BY: Peter Reiss  
Aiman El Tunsi  
Raafat Lutfi

#### 1. Evaluation Advisory Committee Meeting

The second monthly meeting of the Advisory Committee was held during the period. A labor paper to be given at a conference of the Agricultural Research Center was discussed by those responsible. In addition, the usefulness of another unit-wide workshop was raised. It was agreed that one ought to be held in the near future. Minutes of the meeting are included with this report.

#### 2. Evaluation Unit Workshop

At the meeting, it was decided that a second workshop ought to be held at Sidi Bisher for members of the Village Studies Program. The workshop is expected to last for no more than four days and will focus on improving the data-collection capabilities of the participants and introduce analytical techniques, thus standardizing the methodologies of the Delta and Middle Egypt teams. Professors who are team leaders (Dr. Bahgat Abdelmaksoud and Dr. Mahmoud Musbah) and Drs. Abdel Tawab El Yamani and Nabil Habashi will be responsible for providing sessions. In addition, a few field trips will be made. Among the places most likely are the Beheira Company to review the progress being made on the Project's thresher/winnow/cleaner (which they saw in May 1982 at the last workshop), the Kallin farm of the Japanese Rice Mechanization Project, Sheikh Ahmed to see the Project sponsored activities, and possibly the site of the Chinese-sponsored mechanization activities in Beheira.

Dr. Ahmed El Sahrigi has already approved the holding of a second workshop. Ibrahim El Ghattas of the Training and Extension Component has visited Sidi Bisher and arranged that the workshop be held on 16 through 19 April since this is the earliest opening in April. The next step is to plan the four day program and have it approved by Dr. Zakaria.

#### 3. Conference Paper on Labor and Mechanization

The Evaluation Adviser has met with both Drs. Nabil Habashi and Abdel Tawab El Yamani to discuss the outlines of the conference paper to be given at the Agricultural Research Center. Dr. Abdel Tawab has isolated variables: the Villages Profile Report to be used in a regression on agricultural wages and the supply and demand of labor. Dr. Nabil will supervise the computer analysis and write a section on policy implications. Dr. Reiss will be responsible for the literature review and implications for future research on the issue of labor and mechanization.

#### 4. Evaluation of Machinery for Rice Cultivation

Work has begun on the third report in the machinery demonstration evaluation series. The report focuses on the operation of three

different pieces of equipment: grain drills transplanners, and combine harvesters and on reasons for the apparent early and late planting of rice among farmers who participated in the Farm Management Survey. The Evaluation Adviser will be accompanied by Mohamed Ghazi, Fieldwork Counterpart.

5. The Implications of Irrigating with Primary Effluent at Gabal Asfar Farm

An evaluation of the irrigation at the Gabal Asfar Farm was given to Dr. Ahmed El Sahrigi and Dr. David Gaiser for their consideration and action.

6. Follow-up for March

- a. Much of the time will be spent collecting data for the rice cultivation report.
- b. Preparation of the conference paper on labor and mechanization.
- c. Arrangements for workshop at Sidi Bisher to be held in mid-April.

بسم الله الرحمن الرحيم

AGRICULTURAL MECHANIZATION PROJECT

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٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE \_\_\_\_\_ التاريخ

To: Dr. Ahmed El Sahrigi  
Agricultural Mechanization Projects Director  
Dr. Zakaria El Haddad  
Project Coordinator  
Dr. David Gaiser  
Project Technical Director

From: Dr. Peter Reiss *Peter Reiss*  
Evaluation Advisor  
Eng. Ali Nashat *Ali Nashat*  
Evaluation Consultant

Date: 20 February 1984

Re: Evaluation Advisory Committee February Meeting

The following actions were taken and topics discussed at the Evaluation Advisory Committee Meeting held on 1 February:

1. Memoranda were given to Dr. Bahgat Abdel Maksoud and Dr. Mahmoud Mesbah which authorize the extension of the Evaluation Unit's village staff for an additional twelve months. Letters to the governorate offices were also given, since local approval is required for their continuation.
2. A memorandum was given to Drs. Bahgat and Mahmoud which permit them to hire research assistants for three months to code and analyze data for the survey on farmer adoption rates.
3. Copies of a memo sent to Dr. El Sahrigi concerning the last committee meeting and the confirmed deadlines for evaluation reports during the next six months were distributed to committee members.
4. Drs. Abdel Tawab El Yamani, Nabil Habahsi, and Peter Reiss discussed the broad outlines of a conference paper on agricultural mechanization and agricultural labor which will be given at the Agricultural Research Center in March. Another meeting was arranged for the discussion of methodology, data needs, and policy implications.

5. Drs. Bahgat and Mahmoud expressed an interest in giving a paper, based on their farmer adoption rate survey, at the conference on agricultural mechanization which will be held sometime in the spring.
6. Dr. Reiss stated his plan to go ahead with the rice cultivation study which focuses on seed drills, the Japanese rice transplanter, and planting dates and yield correspondances. The study will be based on a number of visits to the areas. Dr. Abdel Tawab would like to take part in the second phase of the study which would involve conducting a small survey of farmers who have used project equipment during the coming rice season. As such, that study will not begin until summer, at the earliest.
7. Committee members agreed that it would be useful to hold a second evaluation workshop for all of the unit's staff. The workshop would last for three or four days and focus on areas of data collection and especially analysis. Team members would be shown analytical techniques to help them with their work. The workshop will have a focus, most probably the farmer adoption rates data. A tentative schedule would set the workshop at Sidi Bisher Center in late March or early April. A few field trips would also be included in the workshop's schedule.
8. The evaluation report, "Precision Landlevelling in Two Minia Basins," was shown but not distributed because the office photocopying machine was not working. Instead, copies have been sent to committee members for their comments.
9. The next committee meeting will be held on 4 April.

## EVALUATION UNIT

### MARCH 1984 ACTIVITY REPORT

SUBMITTED BY: Peter Reiss  
Aiman El Tunsi  
Raafat Lutfi

#### 1. Machinery Demonstration Evaluation Series No. 3. Rice Cultivation: The Determinants of Planting Dates and the Operation of Seed Drills and Combines

The Evaluation Advisor and Fieldwork Counterpart, Mohamed Ghazi, made three extended field trips to villages in Beheira, Gharbia, and Sharqia during the period. Under investigation were the reasons why farmers apparently plant before or after optimal planting time, as determined in a recently distributed report of the Planning Unit on optimizing rice yields. The report suggested that there is a conflict between bersim and rice which require the untimely planting of the latter. The Evaluation Unit was asked by Project management to determine the range of reasons for late or early planting. Research in the villages disclosed that bersim scheduling was only one of the reasons for planting dates for rice. Other winter crops were also important determinants as were water conditions and constraints set by neighboring farmers who discouraged the early planting of rice, seeing it as a danger to their fields planted with cotton. The operation of seed drills and combines was also examined in Sharqia where they were demonstrated on farmers' fields in several villages there. Many of these farmers were visited. Weed management seems to be the most crucial consideration in the use of the seed drill. By transplanting and with the assistance of teams of child workers, farmers have controlled the weeds during the past few decades. Provision of herbicides and careful instruction in their use must be made an integral part of any project extension program. Combines have met with general approval, and the absence of a bailer has not caused the widespread disappointment and anger found when they were used for wheat harvesting. Still, the appropriateness of these large machines on relatively small holdings must be questioned.

#### 2. The Patterns of the Crop Rotation System

In response to questions by members of the team, the Unit has undertaken a small study which looks at the rotation system in agriculture over a three year period. Twenty farmers in each of the Project villages are being asked what crops they grew on a single plot of land over this period. The study simply shows the pattern of crop change between seasons. The study was thought to be necessary because it shows changes over more than a one year period, which is the scope of the Farm Management Study.

#### 3. Evaluation Advisory Committee Meeting

The monthly meeting of the advisory committee was held on 7 March, attended by Mr. Ali Nashat and Drs. Bahgat Abdel Maksoud, Mahmoud Mesbah, and Peter Reiss. Drs. Nabil Habashi and Abdel Tawab El Yamani, were unable to attend but the

Evaluation Advisor did meet with them twice during the same week to discuss the paper on agricultural labor and wages they were writing. The committee meeting focused exclusively on the up-coming workshop in analytical methods to be held at the Sidi Bisher Training Center from 16 to 19 April. Minutes of the meeting are included with this report. Mr. Nashat stressed the importance of all members attending the monthly meetings and suggested that an agenda of the meeting be distributed each month to the members two weeks before it is held. The agenda is included.

#### 4. Evaluation Workshop at Sidi Bisher Training Center

A plan for the workshop is included with this activity report.

#### 5. Agricultural Labor and Agricultural Wages

Nabil Habashi, Abdel Tawab El Yamani, and Peter Reiss are preparing a paper to be given at the conference of the Agricultural Research Center to be held at the beginning of April. The paper to be given will focus on the determinants of agricultural wages in the Project villages. An expanded version which will include a literature review of the research done on agricultural labor in Egypt will be released as a working paper by the project.

#### 6. The Effects of Precision Landlevelling on Furrow Length, Irrigation Time, and Yield in Minia

James McClung and Peter Reiss have registered to present a paper at the Second National Conference on the Problems of Land Degradation in Egypt which will be held in November 1984. It may be recalled that Peter Reiss gave a paper at the First Conference with Bahgat Abdel Maksoud in February 1982.

#### 7. Agricultural Labor Survey and Intensive Research Period

The Evaluation Advisor had a series of meetings with Dr. Nicholas Hopkins of the Social Research Center of the American University in Cairo to discuss working cooperatively on a survey of agricultural labor supply in Egypt next year. The survey would follow a period of intensive research in one of two Project villages during which time the parameters of the survey would be established. The Evaluation Advisor would like to carry out this study with Dr. Abdel Basset El Sayyad of the Rural Sociology Department of al-Azhar University who has spent the past two years at Exeter University in England. Dr. Abdel Basset was one of the original professors working in the unit, who did an excellent job supervising the Qalubia team. The intensive work will start in September 1984.

#### 8. Follow-up

- a. Continue work on rice mechanization paper.
- b. Complete conference paper on agricultural wages.
- c. Finalize plans for Sidi Bisher evaluation workshop.

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٧٠٤٦٦٠ - ٧٠٤٧٢٠  
٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE \_\_\_\_\_ التاريخ

To: Dr. Ahmed El Sahrigi  
Director, Agricultural Mechanization Projects

Dr. David Gaiser  
Project Technical Director

From: Mr. Ali Nashat  
Evaluation Consultant

Dr. Peter Reiss  
Evaluation Advisor

أحمد النشأت

Peter Reiss

Date: 20 March 1984

Re: Evaluation Advisory Committee Meeting

The monthly meeting of the Evaluation Advisory Committee was held in Project offices on 7 March 1984. Those attending included Drs. Mahmoud Mesbah, Bahgat Abdel Maksoud and Peter Reiss, and Mr. Ali Nashat. Drs. Nabil Habashi and Abdel Tawab El Yamani were unable to attend, but the Evaluation Advisor met with them twice during the same week.

The meeting focused exclusively on the up-coming evaluation workshop planned to be held at the Sidi Bisher Training Center from 16-19 April.

It was agreed that the first day be spent on a field trip to the Rice Mechanization Project in Kallin and to the Beheira Company near Alexandria, if time permits. The final two days of the workshop will be spent in practical working sessions about data collection and analysis. Dr. Mesbah is to give an introductory lecture on different approaches to data collection. This will be followed by a session led by Dr. El Yamani concerning the economic aspects of data analysis. Dr. Mesbah will then discuss the farmer adoption survey giving model data sets drawn from that survey to be analyzed from the perspective of specific questions that need to be answered. Assignments will be given to be done that evening. The following day, those assignments will be reviewed. Dr. Abdel Maksoud will take the rest of the day covering other data sets with more examples of analytical techniques. Additional assignments

will be given at the end of this session, to be completed for review by the two teams (Delta and Middle Egypt) during their individual weekly meetings in the coming week. It was agreed that the model data sets and the assignments will be reviewed by the members of the Committee at the next meeting which precedes the workshop.

It was also agreed that the April workshop would not deal with the data from the tractor survey since it is still being entered into the computers. Rather, it will be discussed at a third workshop to be held in the late summer or early fall.

Mr. Nashat stressed the importance of all members attending the monthly committee meetings and suggested that an agenda of the meeting be distributed each month to the members two weeks before the meeting.

The next meeting of the Committee will be held on 4 April at noon in the offices of the Agricultural Mechanization Project.

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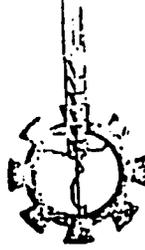
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٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE \_\_\_\_\_ التاريخ

To: Members of the Evaluation Advisory Committee

From: Dr. Peter Reiss *Peter Reiss*  
Evaluation Advisor and Committee Coordinator

Date: 20 March 1984

AGENDA OF THE APRIL MEETING OF THE EVALUATION  
ADVISORY COMMITTEE

In accordance with a suggestion made by Mr. Ali Nashat during the March meeting of the Committee, an agenda of the following meeting will be sent to all committee members two weeks before it is held.

The April meeting of the committee is expected to focus on the up-coming Evaluation Workshop to be held at the Sidi Bisher Training Center from 16 to 19 April.

Drs. Bahgat and Mahmoud, during the March meeting, agreed to isolate model data sets from the farmer adoption rate survey which will be used for teaching analytical techniques to the workshop participants.

They will provide data sets for the committee's review. In addition, they will provide examples of the kinds of questions that can be asked about the data sets. Assignments to be given to the participants on the evening of the 18th to be completed for the following day and to be given on the 19th for later completion will also be reviewed.

cc. Dr. Ahmed El Sahrigi  
Dr. Zakaria El Haddad  
Dr. David Gaiser

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DATE \_\_\_\_\_ التاريخ

To: Ibrahim El Ghattas, Training Expert  
Fred Schantz, Training Advisor

From: Peter Reiss, Evaluation Advisor

Date: 19 March 1984

Re: Evaluation Workshop at Sidi Bisher

A second Evaluation Workshop is being planned for 16 through 19 April 1984 at the Sidi Bisher Training Center in Alexandria. The first workshop was held at the center in May 1982.

The coming workshop is expected to focus on two concerns; present mechanization efforts in Egypt and analytical skills. For the first, a trip to the site of the Rice Mechanization Project in Kallin, Kafr El Sheikh is planned for 17 April. Analytical skills will be taught by professors involved in the Unit's Village Studies Program on 18 and 19 April.

A visit to the Rice Mechanization Project seems most appropriate for a number of reasons: (1) Village monitors in Beheira, Gharbia, and Sharqia have been involved, during the past weeks, in an evaluation of project efforts to mechanize rice cultivation with seed drills and combine harvesters. Japanese-built equipment, particularly transplanters and small combine units, ought to be of particular interest since they represent alternative technologies. (2) The Project has met success with planting and mechanizing the cultivation of new varieties. (3) An alternative approach to agricultural development for comparative purposes ought to be enlightening. (4) The Project has played a role in outreach to some areas in expanding the use of rice machinery. (5) The Agricultural Mechanization Project is now preparing to cultivate large areas in rice-growing areas with seed drills, and the Unit's staff will be monitoring these activities during the summer 1984 growing season. More experience in mechanized rice cultivation ought to make them better prepared to do this work. The trip will be arranged with Dr. Toyoo Tomita of the Rice Mechanization Project.

During the 18 and 19 April, workshop participants are expected to attend lectures and gain practical experience in data analysis. The previous workshop focused on data collection methods. Weekly meetings in Tanta and Minia deal with analysis, and the workshop will serve to standardize the data treatments.

The sessions during the two days will focus on the farmer adoption survey designed and conducted by Drs. Bahgat Abdel Maksoud and Mahmoud Mesbah. Participants will be given model data sets and taught techniques for analyzing them.

The following chart shows the tentative program:

Time	17 April	18 April	19 April
9 AM	Trip to Rice Mech. Proj.	Dr. Mahmoud Mesbah Sampling and data methods	Dr. Mahmoud Mesbah Review of assignments
10 AM		Dr. Abdel Tawab El Yamani Data analysis using economic methods	Dr. Bahgat Abdel Maksoud Data sets and analysis
Noon		Lunch break	
2 PM		Dr. Mahmoud Mesbah Techniques of data analysis	Dr. Bahgat Abdel Maksoud Further analysis
5 PM	Break and dinner		
8 PM		Independent and group work on assignments	Participants may leave or spend the night and leave Friday morning

In all, it is expected that accommodations will be required for roughly twenty participants. As soon as I know the exact number I shall inform you, if necessary. Please note that some of the participants will be expected to leave on the evening of 19 April. Most likely, the participants from Minia will spend the night.

Also, could you please arrange with the center to have a bus ready on the morning of 17 April for the trip to Kafr El Sheikh? The center ought also to be informed that box lunches will be required on that first full day.

The first workshop at the center was very successful. With your assistance, we hope to make this one equally successful.

cc. Dr. Ahmed El Sahrigi  
Dr. Zakaria El Haddad  
Dr. David Gaiser  
Members of the Evaluation Advisory Committee

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Dr. David Gaiser  
Members of the Evaluation Advisory Committee

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To: Dr. Ahmed El Sahrigi  
Director, Agricultural Mechanization Projects

Dr. David Gaiser  
Project Technical Director

From: Mr. Ali Nashat  
Evaluation Consultant

Dr. Peter Reiss  
Evaluation Advisor

أحمد السحري

Peter Reiss

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DATE \_\_\_\_\_ التاريخ

To: Members of the Evaluation Advisory Committee

From: Dr. Peter Reiss *P. Reiss*  
Evaluation Advisor and Committee Coordinator

Date: 20 March 1984

AGENDA OF THE APRIL MEETING OF THE EVALUATION  
ADVISORY COMMITTEE

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cc, Dr. Ahmed El Sahrigi  
Dr. Zakaria El Haddad  
Dr. David Gaiser

**A.2 Research and Development Subproject**

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AGRICULTURAL MECHANIZATION PROJECT

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٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE May 17, 1984 التاريخ

To : Dr. David Gaiser  
Team Leader / Project Technical Director  
From : Allison Blanshine *Allison Blanshine*  
Machinery Development Advisor  
Subject : Monthly Report Jan. - Feb. - Mar.

The release of the pre-production prints of the main frame of the Ministry project thresher 84 on Dec. 7, 1983 was the first of eighteen releases per our memo of Mar. 26, 1984. Accurate checking of these prints was not accomplished because of the time requirement of making a checking layout. Design changes were kept to a minimum so the design is basically as was approved in November 83.

The prints as released were intended for use in the development of manufacturing prototypes and the associated tools and fixtures to manufacture this product. Formal invitation for bids for the supplying of parts, assembly, and proof of tooling were let to three manufacturing sources each to build five test units. This work continues in process.

Minimal investigative work was done relative to a Tool Carrier Tractor for grain harvesting. This tractor must be a high clearance riding tractor with forward mounted hydraulically controlled implements and enclosed final drive to forward drive wheels and trailing steering wheels. Harvesting attachments should converge the crops possibly with drums and a finger reel.

con't

Design considerations have been made on the " Donkey Replacement Tractor. The Vee-belt design has been improved and the center of gravity has been lowered for better stability. Further testing and development work will continue on this project.

Projects presented in my memo of Feb. 7 with board presentation were not approved.

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DATE March 26, 1984 التاريخ

To : Dr. Ahmed F. El Sahrighi  
Project Director

c.c. Dr. David Gaiser  
Team Leader / Project Technical Director

Dr. Zakaria El Haddad  
Project Coordinator

Dr. Abdel Mogeith El Kadim

Head of Production Engineering Dept. - Alex. Univ.

From : *Richard K. Berky* / *Allison W. Blanshine*  
Manufacturing Advisor / Machinery Development Advisor

Subject : BOM Index on Thresher 84

The following is a group listing of pre-production prints on the Ministry Project 84 Thresher. The number of prints for each group are in ( ).

- |                               |                        |
|-------------------------------|------------------------|
| 1. Main Frame (68)            | 2. Cylinder (18)       |
| 3. Fan (16)                   | 4. Lower Concave (61)  |
| 5. Main Transmission (32)     | 6. Cover (31)          |
| 7. Upper Screen (21)          | 8. Lower Sieve (24)    |
| 9. Cleaning System (46)       | 10. Bearing Group (13) |
| 11. Bearing Support BRK T (7) | 12. Grain Chute (4)    |
| 13. Trail Wheel (36)          | 14. Blower (29)        |
| 15. Stand (12)                | 16. Wind Board (14)    |
| 17. Auger (17)                | 18. Feed Table (13)    |

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

AGRICULTURAL MECHANIZATION PROJECT

A. I. D. Proj. NO. 263 - 0031

EGYPTIAN MOA/USAID

5<sup>th</sup> Floor - Building of the  
General Society For Land Reform

P. O. B. 256 Dokki - Giza, A.R.E.

704660 - 704720

704964 - 707247



مشروع المكنة الزراعية  
وزارة الزراعة المصرية - وكالة التنمية الأمريكية  
الدرع الخامس - مبنى الجمعية العامة للإصلاح الزراعي

صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



DATE March 26, 1984 التاريخ

To : Dr. Ahmed F. El Sahrigi  
Project Director  
c.c. Dr. David Gaiser  
Team Leader / Project Technical Director  
Dr. Zakaria El Haddad  
Project Coordinator

From : Allison W. Blanshine *Allison W. Blanshine*  
Machinery Development Advisor

Subject : Work Projects at Alex. Research Center

Apparently the projects presented in my memo of Feb. 7 have not been acceptable. Therefore the following are suggested :

1. Finger reel sickle bar harvester with conical drum convergence of harvested grain mounted on Canon tractor.  
(2) Engineers - 20 weeks
2. Rotary drum harvesting of grain and cotton stalks.  
(2) Engineers - 20 weeks
3. Sugar cane harvesting investigation for future proposed harvester project.  
(1) Engineer - 10 weeks

بسم الله الرحمن الرحيم

AGRICULTURAL MECHANIZATION PROJECT

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سندون بريد ٢٥٦ - الدقي - جيزة ج ٢٠

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE March 18, 1984 التاريخ

To : Dr. Ahmed F. El Sahrigi  
Project Director

c.c. Dr. David Gaiser  
Team Leader / Project Technical Director

Dr. Zakaria El Haddad  
Project Coordinator

From Al Blanshine  
Machinery Development Advisor

Subject : Mounting Drum Mower To Tool Carrier Tractor for Grain  
Harvesting

A PZ Zweegers Cyclomower or GEMI drum are drum-disc type mowers that may be the right unit for field harvesting and windrowing grain in Egypt. It could be mounted on the forward side of a tool carrier high clearance tractor like the Fenot 275 or the Camon tractor. Such a unit would provide direct cutting with field opening possibilities because it will cut its own path through the field and leave windrows with the grain heads on the top side.

It also will cut through lodged grain with minimal field losses.

Another use for this unit would be cutting and windrowing cotton stalks, a much better unit than the Gesparado mower for this operation.

*Al Blanshine*  
Al Blanshine

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

AGRICULTURAL MECHANIZATION PROJECT

A. I. D. Proj. NO. 269 - 0031

EGYPTIAN MOA/USAID

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صندوق بريد ٢٥٦ - الدق - جيزة ج ٢٠ ع

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE February 7, 1984 التاريخ

To : Dr. Ahemd F. El Sahrigi  
Project Director  
cc. Dr. David Gaiser  
Team Leader / Project Technical Director  
Dr. Zakaria El Haddad  
Project Coordinator

From : Al Blanshine *Al Blanshine*  
Machinery Development Advisor

Subject : Coordinated Work Program - Self-Propelled Rotary Thresher -  
( Egyptian Combine )

The Egyptian need for a small self-propelled rotary thresher has been established. This unit would cut grain from the ground, feed it into a rotary drum thresher, separate the grain from the straw, clean the grain, bag the grain, chop the straw, and bag the straw in large cotton size bags. This same harvesting unit could also be developed into an offset pull type unit - tractor drawn - and P.T.O. driven. The pull type unit will cost about one half the cost of the self-propelled unit. This is the system we are working towards with the following work coordinated program for 1984.

Work Program

1. French International Belan Combine with apron feed attached:

- (a) Update the feed system 6 man weeks
- (b) Adjustment-maintenance of combine power and drive unit.  
( Need battery and complete servicing of variable drive belt system. May need help from French supplier of unit.)  
10 men weeks

(c) Test in early May - June local crops	<u>3 man weeks</u>
(d) Test in village conditions July, Aug.	<u>6 man weeks</u>
(e) Remove the French cylinder and separating unit and replace with project rotary thresher. Sept., Oct, Nov.	<u>22 man weeks</u>
(f) Test in late rice crops Nov.	<u>3 man weeks</u>
Total	<u>50 man weeks</u>

2. Dr. Saad Fathallah F-10 Sickle Bar Harvester:

(a) Rework reel for strength and better adjustment.	<u>4 man weeks</u>
(b) Rework feed system to provide for positive cross-wise movement of crop behind reel.	<u>8 man weeks</u>
(c) Test in early local grain crops.	<u>3 man weeks</u>
(d) Design changes	<u>4 man weeks</u>
(e) Test in village crops	<u>4 man weeks</u>
Total	<u>23 man weeks</u>

The objectives of this work program are to test initially the Belen power unit and the redesigned feed system. Later replacement of the Belen cylinder threshing unit with the project threshing unit is to test the principal of the rotary separation and chopping of straw and the bagging of grain and large bagging of chopped straw. This is an ambitious program but it can be accomplished with much work and co-operation from all concerned personnel.

Additional work programs on the tool bar planter, cotton stalk cutter, and small Egyptian riding power unit for planting, spraying, cultivating and harvesting will be developed as information becomes available.

**A.3 Extension / Training Subproject**

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

AGRICULTURAL MECHANIZATION PROJECT

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٧٠٤٦٦٠ - ٧٠٤٧٢٠  
٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE ~~29 APRIL, 1984~~ التاريخ

TO: Dr. David Gaiser  
Team Leader

Dr. Zakaria El Haddad  
Project Coordinator

FROM: The Machinery Management Extension and Training Staff:

Fred Schantz  
Ibrahim El Gatas  
Zagloul El Sayed  
Hussein Heiza  
Salah Bakar  
Moussa Shafik  
Moh. Abd El Wahab

Roger Engstrom  
Ahmed El Beheri  
Moh. Abdel Aziz  
Aly Ibe. Moh.  
A. Hamid Soiden  
Mohiye El Din Moh.  
Abd Moniem Moh.  
Hassan

Dr. Mandough El Baz  
Craig Garwig  
Jim Carlisle  
Paul Armstrong  
Maher Iskander  
Said  
Essam Wasif

SUBJECT: Quarterly Report for January/February/March, 1984

Due to the administrative workload planned for 1984, periodic activities reports will be prepared on a quarterly basis. The summary section will combine all three months' activities reports which will be presented in the attached Annexes as follows (a,b,c for the various months):

Annex	Reports of the
1: a, b, c	Extension Advisor(s)
1.2: a-1 to f-1	Extension Counterpart Staff (5 areas)
2: a, b, c	Extension Information Unit
3: a, b, c	Demonstration/Training Unit
4: a, b, c	Land Improvement Extension Activities
5: a, b, c	Machinery Introduction Funds Committee Unit
6: a, b, c	In-Country Training Unit
7: a, b, c	Participant Training Unit
8: a, b, c	Financial Report

SUMMARY

A. Extension Unit Activities:

1. Demonstration/training field activities continued during this quarter as the seed bed preparation and planting of cotton and other spring crops began. A list of the project villages' extension/training sessions is presented in Annex 6. A total of 65 sessions were held for 1,320 participants.

2. Completed during the quarter was a paper/article entitled "Agricultural Machinery Management Suitable for Egyptian Conditions" which will be translated into Arabic for use in structuring the maintenance programs now under preparation for the field demonstration/training equipment.

3. In February-March three short-term technical advisors (Paul Armstrong, Craig Garwig, Jim Carlisle) arrived on the project to assist in the field effort, especially on receiving, settling, examining and designing maintenance programs on field equipment. At least three of these short term farming/maintenance experts will be needed during peak seasons (March/April/May and Sept. to Nov.) over the next two years due to the quantity of equipment being received by the project.

4. A mechanized cotton planting to harvesting (picking) exercise was carried out in part during the quarter (plan is presented in Annex 1). As detailed in the attached Extension Advisor's reports (Annex 1 a,b,c), incomplete support to set up and effect the 5 feddan experiment in the Garbya government (village of Kom El Naggar) resulted in all but one feddan being planted with a grain drill on flat ground at 60 cm row spacing. One feddan was planted on beds at 100 cm but will not be a large enough area to effectively run-in, adjust and demonstrate correctly one or more of the project's cotton pickers.

5. Demonstration/training equipment continued to reach village sites including the critically needed motorcycles. All extension specialists now have transportation to the field which will drastically improve their effectiveness in project activities.

6. A series of extension night meetings were held in the various areas to explain and teach farming populations about mechanization and maintenance procedures (see schedule in Annex 1).

7. A three day field trip was completed in the Minia area with Project management and USAID senior staff. All villages and their equipment was surveyed and examined by the extension staff in addition to the land improvement program expanding in the Minia area.

8. Coordination between the Food and Agricultural Organization (FAO) research village of Nawai in Minia and the extension/training staff resulted in a series of week-long field day and practical training sessions being held for Project extension staff and key farmers from all 5 Project governorates. The subject was drilling of linted cotton which the FAO group has been doing successfully in the area for 5 years. The method has been accepted by the Project Coordinator who has directed the mechanization specialists to carry out similar planting practices in Project areas.

9. Close contact was maintained with the staff of the Small Farmers Production Project (SFPP) during the evaluation of a

joint commodities procurement of similar agricultural equipment to be demonstrated in the field by both Projects.

10. A joint meeting was held with the extension staff of the Egyptian Major Cereals Improvement Project (EMCIP) on March 8 to discuss/plan joint field efforts. The Project's equipment together with EMCIP's advanced cereals and research results were the main topics of conversation.

11. During the third week of March, Vincent and Mary Checchi of Checchi and Company visited the Project. Several meetings and discussions were held regarding the company's role on the Project, position extensions, etc.

12. Intensive effort continued in many villages to complete the erection of demonstration/training equipment sheds and cooperative workshops furnished to the Project by the MOA. The Project's input of concrete floor training in order to train all involved on farm structures, has resulted in an impressive joint effort and increased interest by farmers, extension and Project staff. The completed structures will provide a safe, clean parking area for the demonstration/training equipment and maintenance support equipment as well as a satisfactory equipment adjustment and training area.

13. Demonstration/training equipment procurements

Preparation - processing continued throughout the quarter requiring a great deal of time from the advisory and counterpart staff due to the absence of fully qualified commodities procurement officers to deal with the complex procurement procedures. An updated procurement flow chart presented on pages 77-86 in Annex 9 shows the same six separate procurements in process in addition to three former ones not listed which have required final attention. The results to date on these time consuming procurements are as follows:

<u>No.</u>	<u>Group Order No.</u>	<u>Present Status (as of 31 March, '84)</u>
1.	IFB 83/02	Waiting USAID legal approval.
2.	IFB 84/03	Advertised for bids.
3.	Group 5	Arrived in customs.
4.	Group 7 (joint)	Bids being evaluated.
5.	Group 10	Bids being evaluated.
6.	Group 11	(Under final preparation)

OTHER

FINALIZING

1.	Group B/Gabel Asphar	Spare parts lists
2.	Group 2	Spare parts lists (& late delivery)
3.	IFB 82/01 (Land Improvement)	Spare parts lists

The same 12 steps required to process and order outlined for all nine outstanding orders is detailed in Annex 9 (pp 79-86)

14. The Field Extension Unit's 23 Mechanization Programs

Have been submitted in ARABIC to the Project and are in separate unit files for reference. The absence of a full time translator requested but not approved prevents these programs from being translated into English. The solution for this has been to require the Project coordinators to submit a monthly summary of these in English for the contractor's review.

15. The Extension Information Unit

Continued its activities as follows:

- (a) Completing and delivering 30 extension signs for the land improvement unit in the Minia area.
- (b) Preparing pamphlets on mechanized wheat, corn (maize) and cotton farming.
- (c) Prepare for and attended the Cairo International Fair. Included were several examples and pictures of Project equipment and operations in the agricultural (MOA) exhibit.
- (d) Participated in training center courses as lecturers.
- (e) Completing an agricultural almanac.

16. The Demonstration/training Unit

Continued to function as four lazer units began levelling two additional fields at Gabel Asphar. Project management has directed the expansion of the Unit's activities to other areas (Fayum and Qualibya) to also demonstrate mechanized farming now that all the ordered equipment (less spare parts) has been received.

17. The Land (Soil Improvement) Extension Unit

Expanded its activities during the quarter with the reception of 33 tractors and 22 lazer units. Most of these were located in the Minia area while others are planned for the Beni Suef and Fayum areas. Nine of the new Ford tractors and 4 lazer units were loaned to the other extension areas for operations until sufficient equipment (on order) arrives on site.

The Group 10 equipment order for maintenance equipment was completed and tools, welders, etc. will begin arriving on site next month to support this equipment. Unfortunately, the service trucks for each area had to be rebid delaying their arrival until the fall. Also, the needed spare parts are now being ordered and should arrive next year.

18. The Machinery Introduction Fund

Continued to be disbursed as shown in Annex 5 a,b,c. Although not shown, the recent estimated spending is about 70% of the

first one million dollar tranch of funds. Plans are being made, pending a 75% spending completion, to request for a second tranch of US\$1 million for additional equipment funding.

19. Subproject Expenditures

Are listed in Annex 8 a,b,c and summarized as follows:

ITEM	JAN./FEB./MAR. 1984 QUARTER		
	TOTAL BUDGET	PROJECT (on hand) EXPENDITURE	PROJECT (on hand) BALANCE
1. <u>TRAINING</u>			
a) In country (LE)	831,680	96,492.84	184,311.00
b) Participant (US\$)	2,000,000	350,000	1,650,000
2. <u>DEMO/TRNG. EQUIP COMMODITIES</u>			
a) LE		345,562.31	657,962.00
b) US\$	8,000,000	- 0 -	8,000,000
3. <u>PETTY CASH (LE)</u>			
Checks/cash out as of 31 March, 1984		=	31,590.00

B. In-Country Training Activities

1. During the quarter 576 trainees attended 35 new and continuing courses/sessions (Annex 6 summary, a,b,c).

2. The 1984 Training Plan was drafted during the month but not completed (50%) due to commodities procurements priorities. Another two months minimum are required to publish the plan.

3. An impressive effort was put forth by the training staff who in a short time organized the seven IAO courses on cotton planting in Minia and some six key farmer courses in Alexandria in addition to their other courses and activities.

C. Participant Training Activities

1. During the quarter 6 trainees attended 6 new and continuing programs (Annex 7 a,b,c). A summary is as follows:

TECHNICAL TRAINING

<u>No.</u>	<u>Course No./Title</u>	<u>No. Trainees</u>	<u>Names</u>
1.	2RD1 Instrumentation	1	Nazak (Aug. 83/Jn.84)
2.	2RD2 Soil Science	1	Nader (Aug. 83/Mar.84)
Total :		<u>2</u>	

ACADEMIC TRAINING

1.	3PE/a Agr. Economics	1	Atef (Aug.83/Jan.86)
2.	3PE/b Agr. Economics	1	Zaki (Jan.84/Aug.86)
3.	3PE/c Agr. Economics	1	Ali Kamel (Mar.84/Jly.86)
4.	3RMil Agr. Production	1	Ayman (Jan.84/June 86)
Total :		<u>4</u>	

2. The participant training program continues to move along slowly due to additional administrative steps initiated this quarter. The office manager is now required to examine all paperwork for Project participants and has assumed full administrative authority over the processing procedures. Since all paperwork is now kept confidential and is typed outside the Project, it is unlikely that many additional courses, especially academic ones, will take place during the life of the Project unless these procedures are amended.

3. Participant training candidates now in process with USAID, Cairo (Annex 7) include 3 academic and 3 technical training participants.

## II DURING THE QUARTER

- A. Although there were several highlights during the quarter the most important include the arrival of the short term technical specialists during peak spring operations which coincided with the distribution of extension motorcycles as well as additional machinery to the Project villages. Intensive and extensive implementation of the Project's objectives will be strongly felt due to these critical inputs to the field effort which has been developing over the past three years.
- B. In order to successfully implement the field effort the theme of maintenance programs and effective service support has been emphasized by all concerned, especially the Project Coordinator who now conducts weekly meetings of all field staff to discuss plan activities and needs. All governorates have been formally requested to provide a governorate level maintenance counterpart (2 have them now: Minia/Sharkia) who are working with and being trained by the short term advisors to establish maintenance systems in all areas. Also, as clarified in the recent Project paper on machinery management, the staff, facilities and necessary support to ensure prolonged and effective use of Project equipment have been requested or are being established in Project villages. Several training courses on mechanics (3 levels), welding, machining, machinery management and parts and service administration have been or are being established to support this effort.
- C. Other Meetings/Field Trips
1. Numerous Project technical committees and a few MOA procurement committee meetings were attended to evaluate/approve/process the outstanding procurement orders.
  2. Several meetings were held with Dr. Young and Dr. Tawil of the FAO to discuss, plan, evaluate, their research/training sessions on drilling of linted cotton at the Nawai village.
  3. Meetings continued throughout the quarter between the training staff and the administrative manager of the Project to discuss and rediscuss pending participant training programs and candidates.

## III PROBLEMS

- A. Ongoing fuel and vehicle limitations.
- B. Project/dealer servicing support of Project vehicles is slowly resulting in their unavailability. At present Mr. Engstrom's wheel bearings, Mr. Beheri's distributor, Dr. El Baz's engine and Mr. Schantz's transmission are failing without recourse to repair them. At the present rate at least half of the Project vehicles will not be operating by January, 1985.
- C. The local dealers' unreliable support of Project equipment and poor stock of spare parts is harming and will damage the overall

success of the implementation effort. Numerous letters and complaints have been made to all dealers concerned with little or no results.

IV PLANS FOR NEXT QUARTER:  
-----

1. Continue planned extension/training activities.
2. Secure approval of IFB 83/02 to announce bid awards in the U.S.A.
3. Secure approval of local procurements Group 10 and Group 7 equipment to announce bid awards and receive equipment.
4. Finalize/process Group B, 2, 82/01 and 11 equipment orders.
5. Finalize the 1984 Training Plan draft for approvals.
6. Establish maintenance programs/charts in Project areas.
7. Complete construction of at least one equipment shed/co-op workshop in each district.
8. Receive/settle 11 hay balers (Group 5) in the field.
9. Plan for the bi-annual mechanization extension workshop for Project extension specialists.

MONTHLY ACTIVITIES OF THE EXTENSION ADVISOR

PREPARED BY R. ENGSTROM

For the Months of Jan. - Feb., 1984

Date 29 Feb., 1984

A. SUMMARY

Much time/fuel spent for nothing on cotton preparation at Kom El Naggar. Promises of lazer and machinery from Research Alex. never materialized. Machinery transferred from S.A. never came. Tool bars are not made, ridger bodies for planter not made, shaper not made. Now some miracle will level the field and extra miracles will allow cotton to be planted on 15 March. To add to the problem the underground drain tile is actually underground irrigation as most of the field was saturated after irrigating the onions in the next field. Dr. Arahi again did a fine job of soil profile and sampling. Our thanks to him.

PROJECT PROGRESS:

We had some very productive farmer/extension meetings. Also some very good hands-on repair/adjustment workshops. In most places machinery is stored well - other places plans are made for proper storage. Still some poor drivers - who don't keep bolts tight, pins in, allow wheel bearings to run loose, without dust caps, with wire wrapped around axels, etc. Repairs are carried out in some places, other places only complaining and talking - but the machinery is still broken. Almost all of the wheat looks good.

GABEL ASPHAR PROGRESS:

Finally found all the pieces to the rolling cultivator and it did a good job of inter row weeding in the beans where the weeds were small. However because I was not there daily, I could not control all factors, and coordinate them, such as irrigation takes a long time because of unlevel land which results in cultivation waiting until soil is dry in the total area which results in weeds which are too big. Even so cultivation did take place and was acceptable. However the last cultivation was started by me and I could not continue so allowed the driver to continue the next day - upon return very few weeds were killed - when I looked at the cultivator the driver had it out of adjustment so it was impossible to kill weeds. I readjusted the cultivator but in the past month we have not been able to get it to the field - now the weeds are terrible. I took the mower to the berseem but was told to take it out after one pass. I was not allowed to take the rake or chopper to the berseem. The baler was tried on rice straw and preliminary adjustments are OK. The combine has some damage remaining. Also an ICON man damaged the cylinder for reel control which is now unsatisfactory. Also the automatic header control doesn't work. We added 4 bottles of water to the dead battery. Shop looks good and everyone is working well. No progress on levelling. Baler at G.A. still is not in shed.

B. PROBLEMS

1. Fuel

ANNEX 1 a/b

2. Repair of machinery - i.e. seed drills, mowers, mowerbinders, scrapers
3. No one has identified cotton seed for Kom El Naggar

C. PLANS FOR NEXT MONTH

Continue with research on cotton if they want to, but if they don't, let us do as we had originally planned. It is best not to plan as everyone says it is too early - wait till tomorrow. Spare parts? Lazer? Tractors? Building tool bars, shaper, ridger bodies.

ORIGINAL SIGNED BY R. ENGSTROM & DATED 29 FEB., 1984

ANNEX 1 a,b

MONTHLY ACTIVITIES OF THE AG. ENGR. EXTENSION ADVISOR

PREPARED BY R. ENGSTROM

For the Month of March, 1984

Date 15 April, 1984

A. SUMMARY

Much worry about getting lazer for levelling at Kom El Naggar. Never did get it from Research Alex. Finally completed ridger/bedformer/planter combination and used it to plant 1 feddan - all that was left (22 March) of our 5 feddans - Research planted the rest with seed drill. Soil tillage was not proper for planter - very hard and lumpy, planter and seed drill worked OK it will be a good experiment to follow to see results.

Good progress at S.A. on storage, etc.

Had some good demonstrations on cotton planting/planter adjustment - possibilities - seed drill adjustment - problems : ridger : ridger/bedformer/planter combination.

David Brown oil leak at S.A. Needs repair again after 2 months, also transmission and oil filter leaks.

Back hoe damage but most are doing well, and being used much.

B. PROBLEMS

1. Fuel & car repairs
2. Moving machinery/timing
3. Tractors at demonstrations waste a lot of time and are unsatisfactory
4. Always late

C. PLANS FOR NEXT MONTH

Follow up on cotton - cultivator - irrigation - spraying - plant soyabeans, corn - get ridger/bedformer ready. Mowerbinder - twine - balers for combine - mower - windrower - prepare for harvest. Prepare for seed drills on rice.

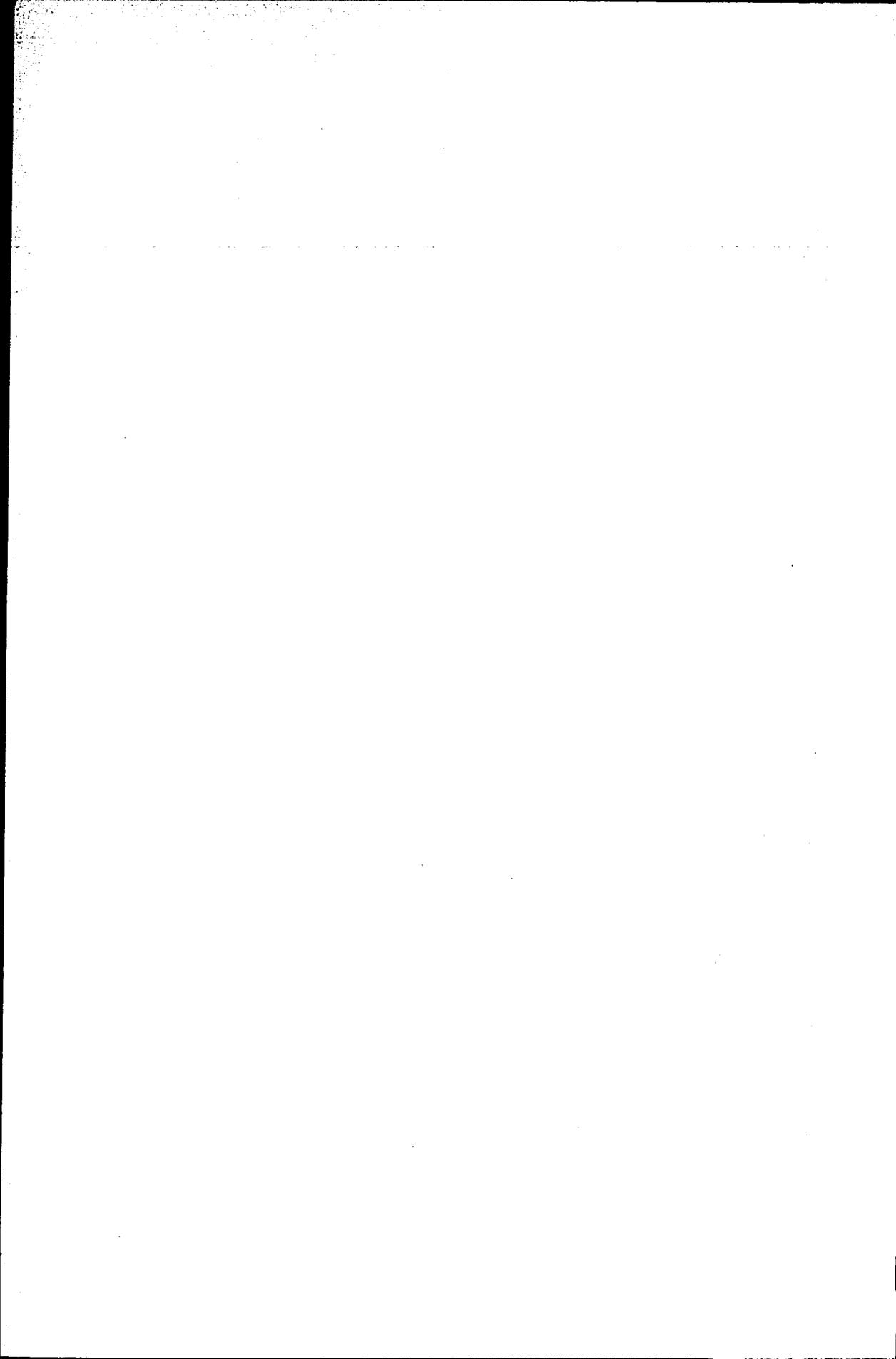
ORIGINAL SIGNED BY R. ENGSTROM & DATED 15 APRIL, 1984

EXTENSION TUESDAY WORKSHOP/NIGHT MEETINGS

<u>Date/Time</u>	<u>Location</u>	<u>Subject</u>	<u>Speakers</u>	
10 Jan	Shapshir El Hessa (Garbya)	Equipment Workshop/ Night Meeting	Extension Staff	
17 Jan	Ezab Besentwai (BEHERA)	"	"	"
24 Jan	Beltan (Qualibya)	"	"	"
31 Jan	Teline (Sharkia)	"	"	"
7 Feb	Selia (Minia)	"	"	"
8 Feb	Beni Abait (Minia)	"	"	"
14 Feb	Waked (Behera)	"	"	"
21 Feb	Koniset Damshit (Garbya)	"	"	"

MOTORCYCLE DISTRIBUTION (Suzuki 125)

<u>NO.</u>	<u>NAME</u>	<u>AREA(Village)</u>
1.	Ahmed Sharaby	Shiek Ahmed
2.	Sardani	Shiek Ahmed
3.	Essam Abd Momam	Behera/Garbya
4.	Moustafa	Deseya
5.	Mahalawi	Ezab Besentwai
6.	Abd Salam	Darawaia
7.	Morsi	Dessounes
8.	Helmi	El Gorn
9.	Abd Zar	Kom El Naggar
10.		Kafr Dima
11.	Taha	Saardine
12.	Moustafa	Teline
13.	Moh. Naggar	El Gosaq
14.	Ibrahim	El Gosaq
15.	Nasser	Shamut
16.	Hafez	El Hessa
17.	Mohammed	Beltan
18.	Sobri	Toulk district
19.	Soppi	Kafr El Hosafa/Namu
20.	Hesmat	Matai district
21.	Abd Mois	Abu Korkas district
22.	Galal	El Itlat
23.	Adlie	Selia El Garbya
24.	Osman	Beni Abait
25.	Abdel Kader	Beni Moussa
26.	Moustafa	Berba El Kobra
27.	Said Farid (Maintenance)	El Behera governorate
28.	Morhi (coordinator)	Garbya
29.	Sharif (maintenance)	Sharkia
30.	Ali (coordinator)	Qualibya
31.	Shapshir	El Hessa
32.	Konishet	Damshit
33.	Alib Biar	
34.	(Minia-land improvement)	



COTTON PICKING EXPERIMENT  
USING  
SELF-PROPELLED COTTON PICKER

Engr. Anwar Nada  
( Team Leader )  
Engr. Ahmed Ali Ibrahim  
" Adel Abdel Hadi

Introduction:

Cotton is the most important crop for export in Egypt for the profit it brings to the country. Cotton picking is still being made manually which needs an enormous quantity of laborers as picking is made two or three times. There is also the problem of high wages.

Therefore, to solve this problem, the Agricultural Mechanization Project ( Research & Development Subproject ) started making a mechanical cotton picking experiment to substitute the manual conventional method.

Objectives :

The main objective is to make a comparison between the conventional and the mechanical methods.

Two cotton pickers will be used in this experiment .:

1. John Deere, it works in a distance of 100 cm between rows.
2. Russian picker and it works in a distance of 60 cms. between rows.

con't

Experiment location :

1. A 5 feddans area in Kom El Naggar village in Gharbia Governorate which is one of the Extension villages that belongs to the Project.
2. A 10 feddans area in Karada Farm in Kafr El Sheikh Governorate which belongs to the Agricultural Research Station.

Experimental Design :

The area is randomly divided to 3 replications each is divided to 4 treatments as follows :

1. Planting on 100 cm between rows and crop is mechanically picked.
2. " " " " " " " " manually picked.
3. " " 60 " " " " " " mechanically picked.
4. " " " " " " " " manually picked.

In four replications rate of seeds per feddan is fixed and other treatments are the same, only the method of picking is changed.

N.B. A separate area, planted in the same way ( 60 & 100 cm between rows ) will be used to adjust and test the two machines to maintain the optimum speed and number of spindle drum rotations. It will also be needed to make a complete test to both machines as will be shown.

Test procedures :

1. Penetrometer readings will be taken to the depths of 30 cm in each treatment. At least 5 readings should be taken for each rep-

con't

- lication. Relation between the needed energy and depth should be drawn.
2. Soil samples should be taken; 5 readings for each replication and each reading should consist of 5 depths to know moisture content.
  3. Tillage will be made by the chisel plow to a depth of 25 cm, making three passes.
  4. Harrowing the land will be done by the heavy disc harrow.
  5. Leveling will be done by the 14 feet leveler, the lazer equipment can be used to obtain better leveling.
  6. Seed drill will be adjusted to 50 kg/fed., distance between rows is 60 & 100 cms.
  7. It is advisable to use the Sweep Cultivator in cultivation when picking is mechanically done. Cultivation will be done more than 3 times in the season. Using the high clearance tractor in cultivations requested.

#### Testing the two self-propelled cotton pickers :

The John Deere and Russian machines will be tested as follows :

1. Defoliation will be done first by using a special chemical.
2. Three different speeds of the machine will be experimented - from 3 to 5 km/hr. Each speed will have three different numbers of spindle drum rotations. ( The total of 9 tests ).
3. Picking will be done in different moisture contents to know the optimum.
4. Picking will be done in the speeds of No. (1); results of each test should be recorded.
5. Loss and loss percentage in each test will be measured.
6. The influence of mechanical picking on the cotton quality will be con't.

measured.

7. An estimation of mechanically picked cotton cleanliness is needed.
8. The machine capacity ( fed./hr. ) in the different speeds will be measured.

Procedures of mechanical picking :

1. After testing the self-propelled machine, a test is required to decide the optimum picking speed, the best type of spindlers and the best number of spindle drum rotations.
2. A certain block will be picked by the machine and time will be measured ( fed./hr. ).
3. Another similar block will be picked manually.
4. A comparison between manual and mechanical picking will be made to decide the optimum method.
5. Results will be recorded in tables.
6. A statistical analysis of the final results will be put in the final report.

Requirements per feddan :

1. Triflan will be sprayed before planting.
2. Seeds : approx. 50 kg./fed.
3. Fertilizers :

(A) Phosphate :

100 kgs of calcium phosphate; 15% phosphoric acid, will be added after the final tillage. Drilling can also be made in rows before irrigation. It will be made in a distance of 5 cms from plant row.

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or Yoria.

- 79 -

Nitrogen will be added in drilling on a distance of  
5 cms in the plant rows

4. Decreasing herbes growth :

This can be done by using " Pix " in the rate of 500 cm<sup>3</sup>/fed.  
when flowering starts.

5. Defoliation :

When cotton bolls are 80% grown defoliators are added by using :

(a) Harvade

(b) Dropps : 30 kgs/fed., added to 400 - 600 liters of water.

Required Instruments & equipment :

(1) Instruments :

- (a) Penetrometer
- (b) Soil sampler and plastic bags
- (c) Measuring tape ( 30 m. )
- d) (2) Stop watches.
- (e) (100) wooden sticks

(2) Machinery & equipment :

- (a) Chisel plow 7 or 9 knives
- (b) Offset disc harrow
- (c) Land scraper

con't

- (d) Seed drill
- (e) Sweep cultivator
- (f) Rotary hoe
- (g) Ditcher
- (h) 65 hp tractor
- (i) High clearance tractor
- (j) Self-propelled cotton picker on 100 cm
- (k) " " " " " 60 "

Laborers

Laborers needed only for manual picking.

Working Team :

Engr. Anwar Nada - Team Leader  
" Ahmed Ali Ibrahim  
" Adel Abdel Hadi

SCOPE OF WORK for the 13 March, 1984

Field Extension Specialists/Advisors

(Garwig, Armstrong, Carlisle)

**Overview:** The extension specialists are needed to work in project areas to assist in demonstration/training activities with the counterpart staff who were recently trained on various basic farming equipment (grain drills, drag scrapers, mowers, ridgers (bedders), etc.). Included in the various activities are the following needs:

1. Scheduling of demonstrations.
2. Preparation of maintenance schedules.
3. Training of field staff on scheduling and demonstration methods.
4. Assist in reception, inspection and testing of new equipment.
5. Supervising first-time demonstrations of equipment new to field staff.

**Accommodation** The specialists are expected to spend their working hours in the field. This will entail spending 3 to 4 nights a week in project areas.

**Transportation** Vehicles will be shared with the extension staff, specifically within the areas of work, i.e. Jim Carlisle will be assigned to the Behera/Garbya area to work principally with Mohammed Abla Aziz and Craig Garwig with Abdel Hamid Soiden in the Sharkia/Qualibya areas. Both specialists should arrange to travel to the Minia area separately at least once a month for a 3 or 4 day period to assist Mr. Hassan in that area.

**Reporting** Their direct supervisor will be Mr. Roger Engstrom, the Extension advisor for the project. Monthly reports should be prepared for him and include a summary of activities, problems encountered, and plans for the following month. These are needed by the first week of the month and should be copied to Fred Schantz and Dr. David Gaiser.

On Sundays, when necessary, are staff meetings which allow all concerned to meet in the main office to discuss operations. If there is a need to discuss/share ideas or problems during this period, these meetings can be attended. Since there is a lot of activity during these peak seasons (March-May and Oct.-Dec.), attending these meetings more than once a month is optional.

EXTENSION/TRAINING STAFF MEETINGS

JAN. - FEB. - MARCH, 1984

(Dr. Z. El Haddad, Chairman)

1. Staff Meeting 15 Jan., 1984

w/Dr. Z and ext/trg staff

- Will shift most D/trg eg. from k/El Hosafa to Mishtohor village since poor results and problems and growing in k.El Hosafa.
- Instructed coordinators in priority for seed drills to plant cotton and rice in the spring.
- Naway Malawai district village in Minia: has used seed drill for cotton need to check area & arrange for trng. for specialists.

---

2. Staff Meeting 22 Jan., 1984

1. Discussion on training for Minia need seed/cotton planting.
2. Combine drum change plan.
3. Need chisel plow on local order.

---

3. Staff Meeting 29 Jan., 1984

1. Discussion on equip. shed construction with cement training program status. Have 3 co-op in Qalubia with existing sheds which need cement floor.
2. Need equip. arrival schedules for areas for specialists.
3. Nadel is in charge of equipment distribution system. Discussion about mower binder & seed drill distribution; Nadel will give a monthly report on equipment in the field (in Arabic).

---

4. Staff Meeting 5 Feb., 1984

(Dr. Zakaria Directing)

1. Push for concrete floors in sheds & workshops (some do not want to put iron in floor).
  2. Motorcycles: dist. them & register them within governorates.
-

5. Staff Meeting 12 Feb., 1984

1. Mousa completed a form for requesting project e.g. spare parts which have to be approved for procurement here in the office before purchasing.
  2. Need to shift some equip. from Soodi village to another in the Minia Kamp dist. due to presence of mech. station which can handle most of the area.
  3. Spare pts. will be located in the governorates in the hands of the gov. level mech. engineers - meeting with them on Mon. 20 Feb.
- 

6. Staff Meeting 19 Feb., 1984

- Need Behera scraper in all villages.
- 

7. Staff Meeting 26 Feb., 1984

- All present.
  - Plan for Minister's to project village on 5 March.
  - Passed out Beheri's maint. forms to coordinators.
  - Had maint. meeting with all coordinators/meeting to discuss maint. forms & monthly meetings with maintenance engineers.
- 

8. Staff Meeting 11 March, 1984

- Announcement of Carlisle/Garwig coming in on this 13th.
  - Mr. Farok now in charge of "follow-up" of project villages.
  - Zakaria: Need to est. book (store) keeping system in each village before end of project.
  - Discussion about using row crop equip., planting on flat, etc. "We are taking a chance with planting cotton w/drills & don't mistakes".
- 

9. Staff Meeting 18 March, 1984

Ahmed Beheri presiding.

- Jim & Craig will go to Minia w/Hassan to see area/grain drilling of cotton method at Nawai (FAI).
  - Will plant w/drill on flat ground since average tractor in field will not adjust to row spacing needed.
-

Dr. Ahmed Muntaz  
Project Director  
EMCIP  
Cairo, Egypt

and

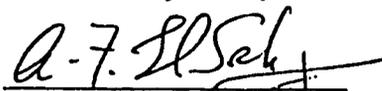
Dr. Keith Roberts  
Team Leader  
EMCIP  
Cairo, Egypt

Over the past year our staff have been working with your field staff in a joint effort to successfully implement research findings among farming populations. In order to formalize this relationship and jointly plan an intensive field effort this spring season, we would like to invite your extension staff to a meeting in our office/FAO bldg, 5th floor, Rm 503, Dokki on 5 March 1984 at 1000. We hope that the following individuals, and others, if possible, attend:

Dr. Abdel Wahab Mustafa  
Dr. Dorman Brookey  
Dr. Richard Dobson  
Dr. Floyd Matthews

We would like to plan to utilize your improved seed varieties with our newly placed agricultural machinery in selected village areas.

Sincerely Yours,



Dr. Ahmed F. El-Sahrigi  
Project Director

Dr. Zakaria El-Haddad  
Project Coordinator



Dr. David Gaiser  
Team Leader, Project  
Technical Director



cc. Fred Schantz  
Roger Engstrom  
Ahmed El Beheri  
Dr. Mandouh El Baz  
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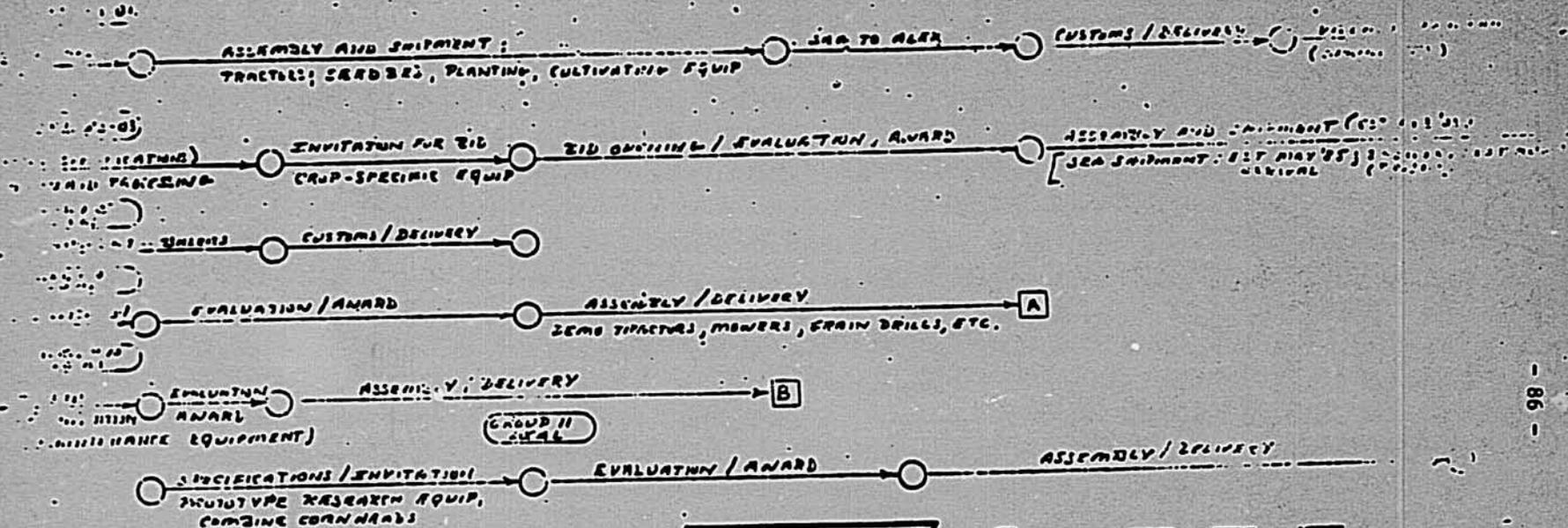
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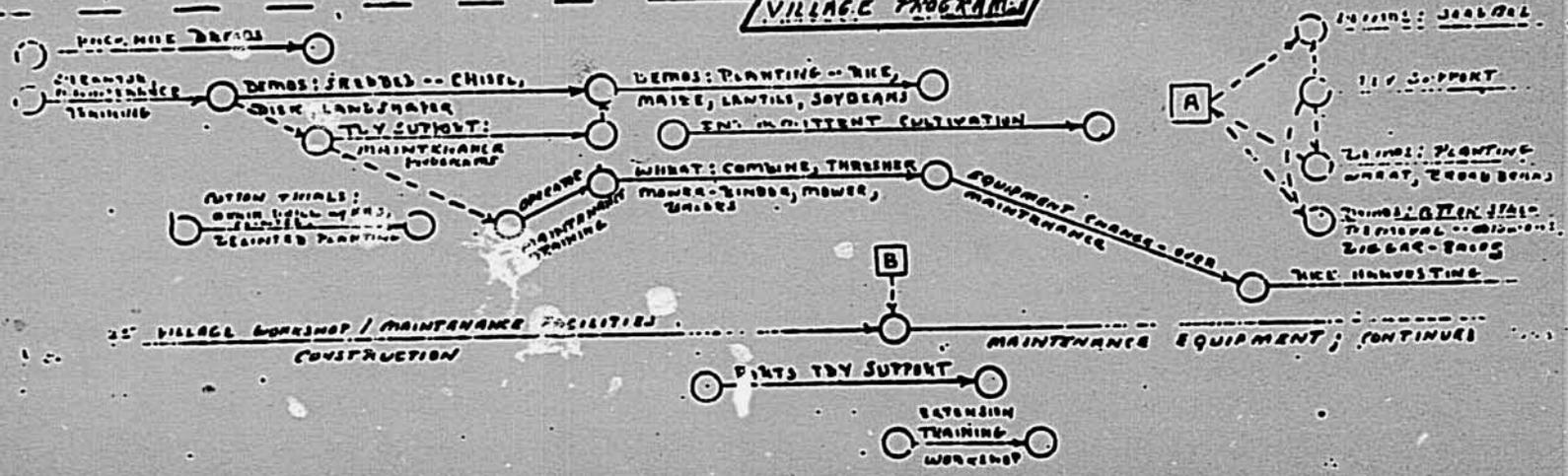
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### PROCUREMENT



### VILLAGE PROGRAM



# KHD-Consulting Office Cairo, Egypt



Agricultural Mechanization Project  
Ministry of Agriculture & Food Security  
Government of the Arab Republic of Egypt  
FAO BUILDING, 5th Floor  
Sharie Wezaaret El Zeraa

Cairo, 11.2.1984

Dokki - Cairo / A. R. E.

Attn.: Dr. Zakaria Haddad.

Dear Sirs,

to all our satisfaction we noticed that all the 11 combines DEUTZ FAHR M 980 finished the 2nd harvesting season without major problems and with a high efficiency in the harvesting rate. So you have the proof that our combines are very suitable for all the different crops in Egypt and very reliable even under the severe ambient conditions.

During the last field trip we mentioned some minor failures in different combines:

- To prevent breakage of the grain tank distributing auger, we will install another auger with an increased diameter to withstand the heavy load when rotating in the filled up tank of rice.
- For the faulty bearings of the straw walker KHD delivered and changed already all the broken bearings free of charge and checked all bearings for the proper adjustment.
- Due to trouble in the primary fuel filter we replaced the filter cartridge with the glass pot by the normal filter which is used mainly with the engine. Because when draining the glass pot it could happen that air was coming into the system causing malfunction for the engine. For bleeding the fuel system it is necessary to fill up the primary filter and the suction lines completely with diesel from the top.

./2

- 2 -

- We found an overheated disc brake completely closed and covered by dirt and moisture. This dirt clogged all the gaps between the brake disc and the caliper, causing high friction and overheating for the linings and sealings. So it is necessary together with the daily maintenance to check the brakes and make it free of contamination. Another brake we found already completely disassembled by your staff, so it was not possible to find the right reason for overheating.

- Most of the trouble you have in the threshing drums drive chain were caused by unproper handling and tightening.

For good operation the chain needs to be tightened and lubricated well. Specially for changing the sprockets and tightening the chain, for each combine a toolset was delivered. But when we checked the combines in the field, most of them were operating without the tools. The driver had no chance if he found the chain loosened, to tighten it. So he continued operating with a loosened chain, causing high vibration, wear and breakages in this chain.

- The combines are equipped with an emergency warning device existing of sensors and switches to give a signal in case of malfunction to the indicator light in the instrument panel and to the horn to give a sound to the driver to show him there is something wrong and he has to stop the machine immediately and look for the reason of failure.

But in some of the combines the horn is missing, that means the emergency warning system is not working anymore. You must replace the missing horns immediately. It would be the best if you install it in a safe place i.g. underneath the instrument panel, so that it cannot be stolen easily.

Meanwhile, all the ordered spare parts arrived and you can use them immediately for solving the problems. Please make sure that you put the spare parts in a good organized store, otherwise you never have short access to this parts and they would not help you for some repairs to be expected in future.

# KHD-Consulting Office Cairo, Egypt



- 3 -

Please do try to finalize a certain service contract with our local agency ECTRA that makes sure that you always will have good maintenance and repair in your combines. Because for the next harvesting season ECTRA has to charge you for every repair and maintenance job.

For sure, KHD Consulting Office will give you also for the next harvesting season technical assistance and other short training courses for the combines, if requested. Do not hesitate to contact us.

Yours sincerely,

KLÖCKNER-HUMBOLDT-DEUTZ AG  
Consulting Office Cairo

A handwritten signature in cursive script, appearing to read "P. C. ...".

AGRI. MECHANIZATION PROJECT

EL SHARKIA-MINIA EL KAMH  
EL SAADINE

MONTHLY ACTIVITY  
by  
TAHA YOUNIS MOUSTAFA FOR  
THE MONTH OF OCT. 10/1983

REPORT SUMMARY

FIRST:COTTON STALK CUTTING

Stalk cutting in an area of a 100 feddan during the month of October 1983. as indicated in the list below.

	Feddan	
1. El Sayed El Sayed Wase1	"	1
2. Mohamad Younis Moustafa	"	1
3. Abdel Fatah Arafah Hagag	"	1
4. Atteya Aly	"	1
5. Ahmad Sharaf El Din	"	3
6. El Sayed Aly Mohamad	"	,12
7. Hussein Rizk	"	1
8. Abdel Rahman Awad	"	1
9. MOhamad Gouda Aly	"	1
10. Hosny Abdel Salam	"	,12
11. Abel Rahman Mohamad	"	1
12. Gouda Obeid	"	1
13. Farag	"	,12
14.	"	,12
15. Abdel Rahman	"	1,12
16. Gouda Abouel Fotouh	"	1,12
17. Salah El Din Khalil	"	2
18. Aly Metwaly Aly	"	1
19. Gouda Aly El Agamy	"	12
20. Khalifa Abdel Fatah Hassan	"	1
21. Tawfik Abdel Khalek Abo El Naga	"	1
22. Gama1 Mohamad	"	,12
23. Mohamad Shahat	"	1,12
24. El Sayed Mohamad	"	2
25. Masoud Said Abdallah	"	1,12
26. Abdel Moneim Rezk	"	1
27. Hassan Hassan	"	1,8
28. El Sayed Hassan	"	1 6
29. Said Sayed	"	1
30. El Sayed Ismail Abo Zeid	"	1,6
31. El Sayed Abdallah Salam	"	3
32. Khairy Fayed	"	1
33. Mohamad Abdel Rahman Ak1	"	3
34. Mohamad Saad Ahmad	"	1
35. Hanem Mohamad Abo Zeid	"	1
36. Mohamad Amer	"	3
37. Mohamad Shehata	"	3
38. Abdel Halim Mohamad Awad	"	1
39. El Sayed Abdallah Salam	"	2
40. Mohamad Shehata	"	1

41	Hamed Attwa Badawy	Feddans	1
42	Abdel Mohsen Attwa Badawi	"	2
43	Mohamad El Kasas	"	3
44	Salah Abdel Rahman Darwish	"	25
45	Abdel Halim Salem Mashhour	"	19
46	Abdel Latif Salem Mashhour	"	10
47	Mohamad Naguib Salam	"	3
TOTAL area			<hr/> 100

SECOND: LEVELLING

Leveling an area of 41,12 feddans to be cultivated with lentils, wheat, berseem. Levelling has been carried out by the scraper of the Behera Co.

The list of names are:

1	Salah El Sayed Sanad	Feddans	,12
2.	Mohamad Hassan El Molla	"	,12
3.	Gamal Abo	"	1
4.	Salah Tohamy Diab	"	3,12
5.	Mohamad El Tayeb Hassan Mashhour	"	5
6.	Mohamad Hafez	"	10
7.	Soliman Beshir	"	8
8.	Mohamad Hassan Mashhour	"	5
9.	Abdo Abdel Hafez	"	2
10	Abdel Hamid Khalifa Imam	"	1
11	Abdel Salam Mashhour	"	4
			<hr/> 41,12

PLAN FOR NEXT MONTH

- Combine harvesting rice crop
- Beginning cultivation of maize by drilling for season 83/84
- Continuation of cotton stalk cutting
- Continuation of canals and drains.

TRAINING

- Three trainees were trained on maintaining and driving of the ditcher. Operating the ditch digger during the course of 17/10/83 their names are :
  - 1) Ibrahim Fouad Ismail
  - 2) Magdy Rashad Abdo
  - 3) Abdallah Karim Abdel Hamid.

PROBLEMS DURING THE MONTH OF OCTOBER 1983

- Due to the unavailability of a tractor, we were unable to carry on the process of cotton stalk cutting. Only one unit was used.

PLAN FOR NEXT MONTH

- Planing for a field day, Combine harvesting of rice on 4/11/1983
- Two level mechanics were sent to El Maamoura, Alex. Training course.
- Cotton stalk cutting in an area of 70 fed.
- Levelling of an area of 80 fed with the scraper for planting it with wheat crop.
- An area of 100 fed. was drilled for the plantation of wheat

Eng.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

**AGRICULTURAL MECHANIZATION PROJECT**

**A. I. D. Proj. NO. 263 - 0031**

**EGYPTIAN MOA/USAID**

**5 th, Floor - Building of the  
General Society For Land Reform**

**P. O. B. 256 Dokki - Giza, ARE.**

**704660 - 704720**

**704364 - 707247**



مشروع المكنة الزراعية  
وزارة الزراعة المصرية - وكالة التنمية الأمريكية  
الدور الخامس - مبنى الجمعية العامة للإصلاح الزراعي

صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠ ع

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



DATE FEB. 20, 1984 التاريخ

**PROJECT ACTIVITY REPORT AT  
MINIA EL KAMH DURING OCT. 1983**

**REPORT SUMMARY**

- The follow up on Rice crop, Drying the area that will be combine harvested. The above area has been previously drilled.
- Transfer of the Saadine Combine for begining of harvesting and the preparation for rice field day.
- Holding a training course on the digger(ditcher) 9 labour were trained.
- Cleaning field canals and drains in project villages at a length 2000 meter.
- Levelling an area for the cultivation of lentils and other crops. The area is 45 feddans.
- Experimenting on maize spreading and stripping or(peeling), This equipment has been transferred from the tractor experminent station, in Alexandria.
- A loan for a 9 irrigation units was approved by the project.

- Approval is needed for 4 cultivator, 1 ditcher, 1 loader, 3 mowers

**PRPBLEMS**

- Plastic covers have been provided and sheds in each village for machinery.
- A guard has been chosen to watch the machinery in each village an incentive was given to him.
- A portable workshop during operation seasons was provided also. It included maintenance crew, spare parts needed during operation process.

AGRICULTURAL MECHANIZATION PROJECT

OCTOBER ACTIVITY REPORT

Toukh Farm Management  
Kafr El Hasafa Village

1. Cotton stalk cutting carried in an area of 35 feddans, the rest of the area is being cut.
2. Land is being prepared prior to cultivation of wheat by using the seed drill system.

PROBLEMS

1. Transportation to and from field is very difficult.
2. The unavailability of storage area for the machinery.
3. The machinery has not been received to be able to continue our complete machinery line.
4. Two Extension seminars in the coop was held.
5. The provision of spare parts are needed, repairing the machinery is difficult.
6. Regular maintenance has been carried out for the machinery in this area. A plastic cover is needed for this machinery to prevent from dust and rain etc.
7. The backhoe is ready for operation after its greasing.

Extension Officer  
Sabry El Sayed Abdallah

AGRICULTURAL MECHANIZATION PROJECT

OCTOBER ACTIVITY REPORT

Toukh Markaz-Beltan Village

- Servicing an area of 25 feddans for cultivating of wheat (Seed drill)
- An Extension seminar at the coope premises with farmers for chosing area for cultivation of wheat mechanically. The discussion indicated also the early service for land and preparation. This seminar took place on 13/10/1983
- The maintenance of the mower, furrower, and trying the backhoe after notifying the maintenance unit.
- Another Extension seminar was held on 22/10/1983 for chosing land that are already prepared, it is 20 feddans divided on 4 area and 3 basins,
- Field demonstration to farmers on the utilization pof the scraper
- The preparation of the training plan for farmers, and submitting the plan before the training unit.

PROBLEMS

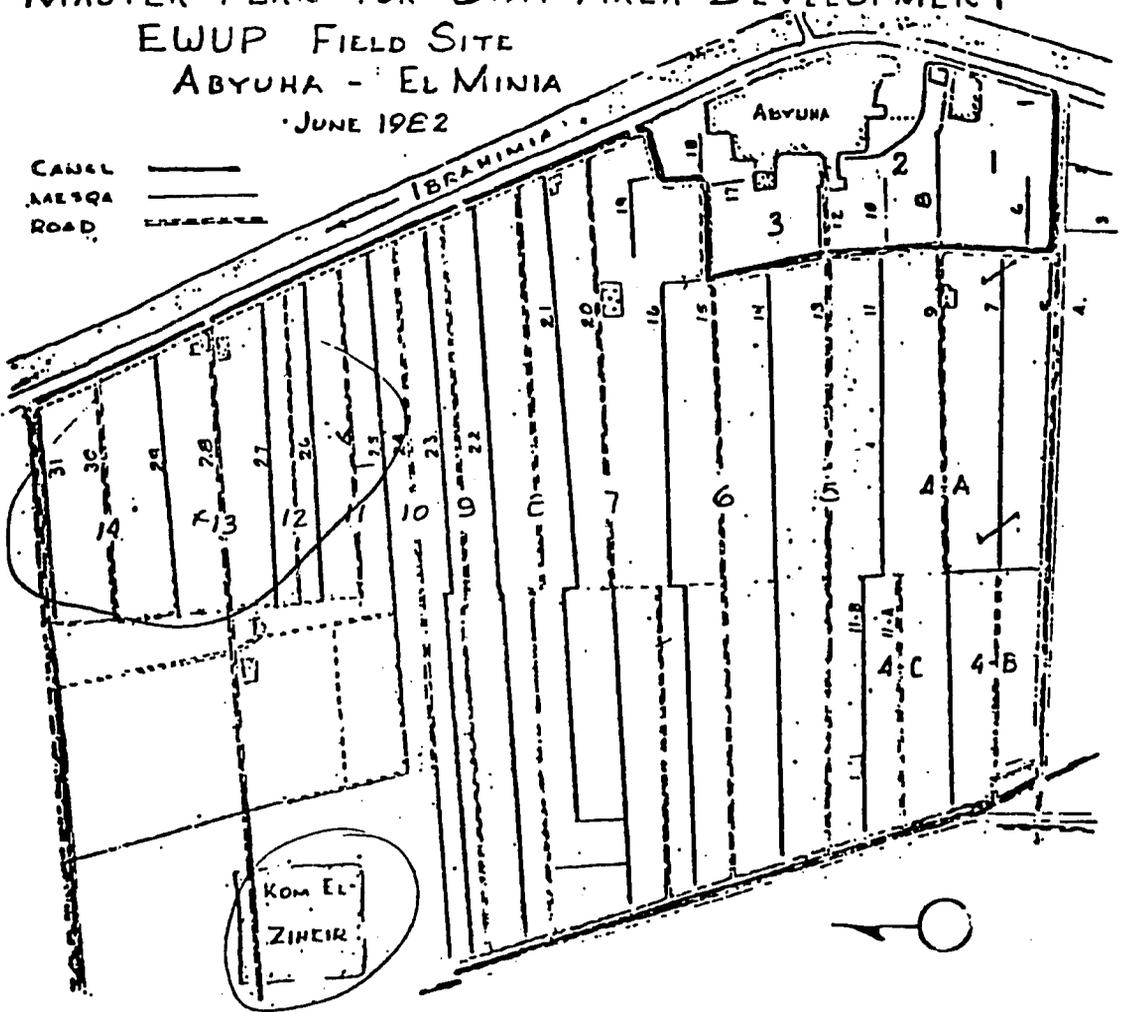
- No regular maintenance of machinery
- No transportation, to be able to contact farmers.

Eng. Mohamad El Said Marzouk.

# MASTER PLAN FOR UNIT AREA DEVELOPMENT

EWUP FIELD SITE  
ABYUHA - EL MINIA

JUNE 19E2



Agricultural Mechanization Project

MONTHLY ACTIVITIES OF THE January Ext Officer  
PREPARED BY Ahmed El-Behery  
For the Month of January 1984

A. SUMMARY:

- 1- We attend Two night meeting in Behera Governorate.
- 2- Several visites to sharkia at Dr. El Fa Form to check the possibility of using combine for Harvesting Rice.
- 3- Two Tripes to to check cotton plots
- 4- We checked the nordeston seeddrill at the dealer wearhouse.
- 5- We had a mmeting with the council of central mechanization coop in Behera helping them for pickup baler.
- 6- night meeting at Belton in Benha.
- 7- night meeting at talin village
- 8- Following up machinery mintanance.
- 9- at our villages.

B. PROBLEMS:

- 1- Shortag of fuel for travelling.

C. PLANS FOR NEXT MONTH

- 1- Continue a night meeting with the farmer
- 2- Follow up of pouring concrete.
- 3- prepare machinery log book.
- 4- Discussing summer crop plan.
- 5- Explan Ext. Activities to key farmers at sedi Beshher Training Center.
- 6- Arrange a meeting with FAO programe.

ANNEX 2.1.2.a1

Agricultural Mechanization Project

MONTHLY ACTIVITIES OF THE Ext. Officer  
PREPARED BY Ahmed El-Behery  
For the Month of February 1984

A. SUMMARY:

- 1- Several trips to sharkia and Qalubia.
- 2- 3 Trips to Behera and Garbia
- 3- Superviseing the concret Training.
- 4- 3 Trips to sedi Basher in Alex to Explane. The ext. Activities to key farmers.
- 5- 2 trips to Minia and Malawy center.
- 6- Field visit to Gabel Asfar.
- 7- We attened several meeting with the farmer.
- 8- Two Tripes to Kom El Nagar in Garbia.
- 9- Two visit to Icon Company

B. PROBLEMS:

- 1- Shortage of Fuel.

C. PLANS FOR NEXT MONTH:

- 1- Cotton area selection
- 2- Seed Drill Adjustment
- 3- Complete concert powing at our village.
- 4- Drow program for international fiar.

ANNEX A. 1.2. a2

MONTHLY ACTIVITIES OF THE

PREPARED BY *Mohamed Abdel Aziz*

For the Month of January, 1984

A. SUMMARY

We held about 24 farmers meetings on operating different machines and about 300 farmers attended these meetings.

B. PROBLEMS

1. Tractors are needed.
2. Repairs machinery fund.

C. PLANS FOR NEXT MONTH

1. Cotton fields preparation.

ANNEX 1.2 b

**MONTHLY ACTIVITIES OF THE**

**PREPARED BY MOH. ABLA AZIZ**

**For the Month of Feb., 1984**

**A. GARBYA GOVERNORATE**

**KOM EL NAGGAR**

2 field days for levelling and 20 farmers using backhoe.

Sent 7 farmers to Alex. training center for using seed drill for planting rice.

**KONISSET DAMSHET**

Sent 10 farmers to Alex. to attend training course on rice drilling.

Two farmers meetings, 30 farmers, cotton, rice.

A tractor is needed.

**SHAPSHIT EL HESSA**

Sent 7 farmers to Alex.

Two farmers meetings, 35 farmers, backhoe, rice.

Backhoe still working.

**QULIB ABYIAT**

Sent 2 farmers to Alex.

Two farmers meetings, 20 farmers, backhoe, cotton.

A tractor is needed, also seed drill & planter.

**KAFR DIMA**

Two farmers meetings for backhoe, disc harrow. 50 farmers.

**BEHERA GOVERNORATE**  
-----

**WAKED**  
-----

One farmers meeting for using disc carrow. 20 farmers.

Sent farmer to Alex. (Rice, key farmer).

**DESSOUNES**  
-----

Two field days for long furrow, using scraper - 60 farmers attended.

Sent 8 farmers to Alex. (Rice).

A tractor is needed.

**EL DARWIA**  
-----

Sent 6 farmers to Alex.

Two farmers meetings on using scraper, long furrow - 40 farmers attended.

A backhoe is needed.

**DESYA**  
-----

Two farmers meetings on using backhoe, rice direct seeding method - 50 farmers attended.

Eight farmers sent to Alex.

**EL GORN**  
-----

Two farmers meetings - backhoe - scraper, 45 farmers.

Eight farmers sent to Alex (Rice) training c.

A tractor is needed.

**EZAB BESENTWAI**  
-----

Six farmers sent to Alex (Rice) training c.

Two farmers meetings (Backhoe, drilling rice), 60 farmers.

**GENERAL NEEDS IN THE AREA**  
-----

1. Tractors, we cannot use disc harrow, scraper to full capacity because we have no tractor.
2. Sets of wrenches, big size.

3. A maintenance fund is needed for some spare parts.
4. Water lifting pump fund.
5. We need Jon Deer set of books FMO and FMS.

GENERAL INFORMATION

1. All backhoes are working in very good condition, the operators are becoming skillful now, we try to train at least 3 operators for each machine.
2. The key farmers and the specialist attended 2 courses - Rice drilling - Cotton drilling.

PLANS FOR NEXT MONTH

1. Land preparation for cotton fields.
2. Long furrow irrigation system in each village of at least 5 feddans.
3. We shall try drilling cotton.

ANNEX 1.2 b 2

Agricultural Mechanization Project

MONTHLY ACTIVITIES OF THE SHARKIA.

PREPARED BY *SOIDEN*

For the Month of Jan, 1984

A. SUMMARY:

- Cleaning for 9.1 Km at Qalubia Canals
- Cleaning for 12 Km at Sharkia Canals
- Extension meeting at Taleen village in 13-1-1984
- Preparation for Rice Training Course for Sharkia farmers at Alex.
- Follow up for wheat Fields.
- Extension meeting at Magoul in 24-1-1984
- Training for 3 workers with Back Hoe. at El Gask.
- Making for Shelter Machines at El Taleen.

B. PROBLEMS:

- 1- No Tractors
- 2- No Motorcycles

C. PLANS FOR NEXT MONTH:

- Cleaning for the canals
- Land preparation for Cotton land.

ANNEX 1.2.C1

AGRICULTURAL MECHANIZATION PROJECT

---

MONTHLY ACTIVITIES OF THE Extension Activity

PREPARED BY HASSAN ABDEL RAZEK

FOR THE MONTH OF JANUARY 1984

A. SUMMARY: The Work

The backhoes were used in several villages to clean mescas and canals. At Matay village the back-hoe worked 2000 m; at Syla 800 m; at Abou Korcas the back hoe worked 1400 m at Beni Mousa only. The problem at Berba was that there was not a good operator in this village.

The Meetings

Saturday 29/1/84 the meeting with the group of the agricultural society of mechanization and the mechanization group of their governorate to explain the method of buying machines and agricultural implements with our Project money and showing them our implements and their usage.

Monday 23/1/84 meeting with the farmers of Syle El Garbya to explain the work of the back hoe and the method of operating.

B. PROBLEMS:

1. There are no places in some villages to store machines.
2. The training of the operators of the back hoe is not enough.
3. There are no tractors to operate our machines.

C. PLANS FOR NEXT MONTH

1. Preparing for planting 10 feddans of cotton in every village.
2. Making umbrella for machines in El Atlate village.

ANNEX 1.2.D1

AGRICULTURAL MECHANIZATION PROJECT

---

MONTHLY ACTIVITIES OF THE Minia

PREPARED BY Hassan Abdel Razeq

For the Month of February 1984

A. SUMMARY:

The work in February was run with the back hoe in all villages. In Beni Ebaid 600 m; Beni Mousa 7.25 m; El Berba El Kobra 1275 m; Sylva El Garbya 500 m. The back hoe in El Atlat village has been broken for about a month.

Night Meetings: Wednesday 22/2 night meeting with the farmers of Beni Ebaid and Beni Mousa. At Beni Ebaid I explained "How the farmer can change his cultivation system for machine work", 105 farmers attended. Night meeting at Sylva El Garbya on 28/2, I explained -

- a. The effect of soil levelling on machinery.
- b. The comparison between manual cultivation and the use of machines.
- c. How the farmer can use the implements.

B. PROBLEMS:

1. There are no tractors in the villages.
2. The back hoe in Atlat village is broken.
3. There is no car for the Extension officer for Minia.

C. PLANS FOR NEXT MONTH:

1. Cultivation of 10 feddans of cotton by planter in every village.
2. Work by back hoe.
3. I hope to repair the back hoe of Atlat in March.

MONTHLY ACTIVITIES OF THE Qalubia  
PREPARED BY Aly Ibrahim Mohamad Moussa  
FOR THE MONTH OF 2, 1984 DATE: March 14, 1984

A. SUMMARY:

- Scraper plates were removed and fixed for the seed drill at Beltan.
- A reciprocating handle was made similar to the one present in Magoul. Also 2 covers were manufactured for the seed drills in Beltan.
- The lubrication of the blades or shares belonging to mower (Ogastini in Beltan.
- The seed drill was also lubricated by removing old grease,
- Dust were removed from storage areas to prevent it from reaching the machinery.
- The mower disc was then sent with the mower to be fixed at El Magoul village to Benha. The digger handle was welded in Benha for it was broken during operation.
- The machinery at Shamout are in good condition but the ground is not.
- Seed drill gate at Magoul was fixed.

B. PROBLEMS

1. A catalogue is needed for each machine or equipment.
2. Storage grounds are in bad condition.

C. PLANS FOR NEXT MONTH

- Manufactured parts are assembled.
- Renewal of all storage area grounds.
  - Continuation of the cleaning of canals belonging to the project.

Aly Ibrahim

March 1, 1984

ANNEX 1.2.ez

MONTHLY ACTIVITIES OF THE : Gharbia

PREPARED BY: Mohie El Din Mohamad Morsi

FOR THE MONTH OF: January 19

DATE: 2/12/1984

A: SUMMARY

- The operation of the backhoe in the following project villages
- 3 Kilometers off the canal was cleaned at Kafr Dima.
  - Shabshir El Hessa 7,5 kilometers
  - Keniset Damshit 4,½ kilometers

All Project village backhoes were maintained  
A regular maintenance of all drilling machines in all project villages.

The storage of all Project machinery and equipment in cooperative village stores. or in farmers stores.

B. PROBLEMS

- 1) Tanta Motors are still repairing the seeder blades of Kafr Dema.
- 2) Tanta motors are still fixing the Mower binder of Shabra Kas.

C. PLANS FOR NEXT MONTH

- 1) The continuation of cleaning project village canals
- 2) Servicing of cotton area by using disc harrows and scrapers.
- 3) Preparing the land for irrigation services in lon rows.

Mohie El Din Morsy  
Signed

12/2/1984  
Date

ANNEX 1.2.f1

MONTHLY ACTIVITIES OF THE Gharbia

PREPARED BY Mohie El Din Mohamad Morsi

FOR THE MONTH Feb 1984 DATE March 1st, 1984

A. SUMMARY

- Continuous operation of all backhoes in all project villages
- Regular maintenance for all backhoes in all project village
- Carrying out the maintenance on the harvester(Augustini) & the seed drill in Keniset Damshit area.
- The maintenance of Cotton stalk mower at Shobra Kas village
- The maintenance of the seed drill(Italian) at Kafr Dima.
- Maintenance of the Cotton Stalk Mower and the harvester Augustini at Shabshir El Hessa village.

B. PROBLEMS

The Augustini Harvester was fixed or repaired at Tanta Motors but not yet received.

Tanta motors has been informed of the need of a cotton stalk mower at Shabshir El Hessa. that is one governorate.

The need of more cotton stalk cutter blades instead of the old ruined ones.

Tanta Motors has no spare parts for the water mower, also the the mower at Kafr Dima has been previously welded.

The need for telescopic pole to conect the mower with tractor at the rear. The previous pole has been broken and repaired  
Roller bearing are in bad condition.

C. PLANS FOR NEXT MONTH

- Backhoes are to continue operation at the project villages.
- Servicing cotton field by using disc harrow and scraper
- Land preparation for Long Furrow Irrigation

Mohie Morsi

Signed

March 1st 1984

Date

ANNEX 1.2.f2

AGRICULTURAL MECHANIZATION PROJECT

MONTHLY ACTIVITIES OF THE M. Management extension information unit

PREPARED BY Dr. A. Mamdough El-Baz

For the Month of January, 1984

A. SUMMARY

- This month was characterised with office administrative work, rather than field work. Meetings were held to prepare for:
  - a) Symposium about applicable small technology appropriate to Egyptian agriculture.
  - b) 14th Cairo International Fair will be held between 10 March and 23 March.
- Receiving 30 extension signs for Soil Improvement Unit and transporting them to Minia Governorate.
- Following up correction and printing of the Agricultural Almanac.
- Bidding to print 3 new extension bulletins about mechanized agriculture of wheat, corn and cotton and start preparing their drafts.

B. PROBLEMS

1. New regulations and complications of stores system, as well as the Governmental restrictions in this concern, make movements much less effective than before, and consume incredible amounts of time.

C. PLANS FOR NEXT MONTH

- Completely engaged with Cairo International Fair.
- Following up printing of the 3 new extension bulletins, and Mech. Agriculture Almanac.
- Lectures for 4 training courses for key farmers from Project villages.

AGRICULTURAL MECHANIZATION PROJECT

**MONTHLY ACTIVITIES OF THE Machinery Management Information Unit**

**PREPARED BY Dr. Ahmed Mamdouh El-Baz**

**For the Month of February, 1984**

**A. SUMMARY**

- This month I spent a long time outside the Cairo Office. 11 days at Sidi Beshir Training Center for delivering lectures, attending opening and evaluation sessions of 4 progressive farmers training courses.
- Highly engaged in preparation of models and specimens for Cairo International Fair.
- Following up printing 3 extension bulletins about mechanization of many Egyptian crops (wheat, corn and cotton).
- Following up correction and printing of the agricultural almanac (527 pages already finished).

**B. PROBLEMS**

1. Fuel limitations for service car.
2. Many time consuming ad

**C. PLANS FOR NEXT MONTH**

- Staying at the premises of Mechanization Projects in Nasr City, Cairo International Fair supposed to be held from 10 to 25 March, 1984.

AGRICULTURAL MECHANIZATION PROJECT

MONTHLY ACTIVITIES OF THE M. Management Extension Information Fund

PREPARED BY Dr. Ahmed Mamdouh El-Baz

For the Month of March, 1984

A. SUMMARY

From the beginning of the month to the 10th of the month was highly engaged with collecting samples of machines, manufacturing models for other, and shifting all of them to the agricultural fair at Nasr City, Cairo International Fair.

From this date on, displaying products of mechanization projects and then returning them.

Receiving progressive farmers accompanied by our village extension officers.

B. PROBLEMS

1. Difficult to regulate Financial allowances.
2. Very slow actioned storage system.

C. PLANS FOR NEXT MONTH

- Following up printing of 3 specialized extension bulletins.
- Following up printing of the agricultural almanac.

TO: Fred Schantz  
SUBJECT: Gabel Asphar (Feb., Mar., Apr.)  
FROM: Paul Armstrong

The report describes the various state of progress and condition of the three major areas of work at Gabel Asphar: that is field work, equipment and spare parts work shop.

#### FIELD WORK

Approximately 36 feddans have been cleared of debris for levelling operation. Preliminary levelling and training proceeded for three days until tractors developed problems and are now idle. Trainee Engineers have had a little exposure to laser set-up and tractor operation. Barley planted in November is entering ripening stage and looks good but has been falling over which will make use of the combine very difficult on about half of the field. The berseme is being cut for the second time and has few weed problems. The fava beans which covered the majority of the crops planted were plowed under due to very bad weed and aphid problems. The beans had not been cultivated and spraying was ineffective for the aphids. Some cultivation work has been done in Fayoum for corn planting preparation.

#### EQUIPMENT

1. Three of the four Ford tractors have developed bad hydraulic leaks.
2. One laser scraper has a leaking hyd. cylinder and hose.
3. Corn head for silage chopper has not been received.
4. Marker arms on both seed planters require a 3-way valve for proper operation. ICON has been reluctant to rectify this.
5. Large JD 4250 tractor working well after ICON repair.
6. JD combine, wheat platform and corn head are received.
7. Welding machine is inoperable due to broken carburetor.

#### SPARE PARTS WORK SHOP

The storekeeper has had problems with management under the present system of organization of tools and parts. Much time has therefore been devoted to alleviate some of this problem. A tool room has been built up where workers have easy access to tools but are responsible for what they use. All tools have designated places in the room and missing tools are easily recognized. To date the vast majority of spare parts have not been received but there is movement on this. A filing system for parts is being sought after at present. Some shelving has been completed and a parts room has been built.

ANNEX 3 a,b,c

AGRICULTURAL MECHANIZATION PROJECT

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صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠ ع

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



Feb. 16, 1984

DATE \_\_\_\_\_ التاريخ

MINUTES OF THE  
SIXTEENTH CREDIT COMMITTEE MEETING FOR THE  
PURCHASE OF AGRI. MACHINERY

The meeting was held on Sunday 13/2/1984 with all members present except Mr. Engstrom. The committee began by examining requests submitted by farmers and cooperatives as follows:

EL. BEHERA GOVERNORATE

- The committee approved the request submitted by Mr Ahmad Abdel Salam Selim of the Zafaran area-Kom Hamada Markaz concerning the purchase of Loader(Sweedish model) 2300 bucket for his Liland Tractor 272.

The following requests were approved:

1. Mohamad Abdel Rahim Sherif Omran- Ahmad Bahnasy Khedr of Kafr Bolin area-Kom Hamada Markaz for the purchase of a Loader (Foshforence Model 405 for each of them) and for the purchase of a cultivator(Krawn German). Refused was the purchase of a mini tractor(Eziky, Japanese since loans are not allocated for the purchase of tractors.
2. Mr. Mohamad Aly Karkar - Mr Abdel Gawad Hassan Karkar of Danshal area- Damanhour Markaz for the purchase of stalk cutter(Gaspardo for each of them).

The following requests were postponed until cataloges for the Bob cat. are received:

1. Benha Monshat cooperative specialized in Animal Production of El Monshaa area- Kom Hamada Markaz, and
2. The agricultural cooperative for the developmeny of Animal Resources of Bolin El Fawayed, Kom Hamada Markaz

ANNEX

SA

EL GHARBIA GOVERNORATE

Postponed was the request submitted by Mr Lotfy Abo El Khair of the Karansho area, Basyoun Markaz for the purchase of a mower binder until the cataloge is received.

EL MINIA GOVERNORATE

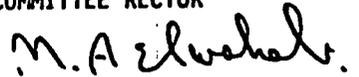
The committee approved the request submitted by Mr. Mohsen Mohie El Din Shafik of Abalwakt, Maghagha Markaz for the purchase of a mower with a 1.5m ~~seven hydraulic blade~~ <sup>7 horse chisel</sup> plough and a hydraulic subsoiler.

The ~~postponed~~ was the request of a 3 blade <sup>short</sup> ridger and a rotary thresher until the cataloge is received.

COMMITTEE MEMBERS



COMMITTEE RECTOR



AGRICULTURAL MECHANIZATION PROJECT  
MACHINERY INTRODUCTION CREDIT STATUS  
AS OF 31.12.1983

Area	Amount alld.	% of total	Amount apprvd & in pro- cess w/bank	Amount spent			of amnt. alld.	Amount in pro- cess in proj.
				person- nel	co-op	total		
Behera	332556	45.45	74648	108535	162827	271362	81.6	72600
Gharbia	114334	15.63	12192	40398	64721	105119	91.94	11168
Qualubia	42954	5.87	7200	16200	--	16200	37.71	30000
Sharkio	179397	24.52	152867	22320	--	22320	12.44	12178
Minia	62439	8.53	18100	6530	--	6530	10.46	19352
Total:	731680 =====	100	265007	193983	227548	421531 =====	57.61 =====	145298
							(29% of total \$2million)	

The amount of L.E.35,145 has been expended in other governorates.

The amount of L.E.20,000 of the Qualubia Gov. endorsed. This amount is of the surplus loan, which makes the total amount L.E.62,954

AGRICULTURAL MECHANIZATION PROJECT

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مستودع بريد ٢٥٦ - الدقي - ج. ٢٠

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



DATE Feb. 29, 1984 التاريخ

MINUTES OF THE  
FIFTEENTH CREDIT COMMITTEE MEETING FOR THE PURCHASE  
AGRI. MACHINERY

- The committee met of Sunday 29/1/1984 with all members present
- The committee reviewed loan status concerning the purchase of the Agricultural machinery. Attached is the amounts spent of this loan upto 31/12/1983.
- Then requests were then examined as follows :

FIRST : BEHEIRA GOVERNORATE

- The approval of the request submitted by Mr. Mahmoud Abdel Rehim Omran for the purchase of a backhoe-cultivator-planter-
- The following requests were approved :
  1. Ebeid Iskander Shenouda-of Besentwai village-Abo Homos Markaz
  2. Aly Mohamad Sherif Kadih of Besentwai village-Abo Homos Markaz
  3. Agricultural cooperative-Abo Homos village-El DELingat Markaz.
  4. Said Ahmad Shabaan-Zawiet Ghazal village-Damanhour Markazfor the purchase of a backhoe for each of them (Argentrio Model)
- The request submitted by Mr Salem El Sakhawy of Edco Markaz the purchase of a sprayer Engine was approved; his request for the purchase of a plough was not approved.
- The committee also approved the request submitted by Mr Fatahallah Morsy Fatahallah of Desounes village, Abo Homos for the purchase of a thresher (El Beheira Co.).
- The request submitted by Mr. Esam El Din Abdel Meguid Selim of El Zaafarani Village, Lom Hamada Markaz for the purchase of a Local trailer was approved.
- The request submitted by Ms Samia Abdel Meguid Selim of El Zaafarani Village-Kom Hamada Markaz for the purchase of a locally manufactured trailer and a Mower (Model Bozatsy, German) was approved.

ANNEX 56

- The request submitted by Mr. Abdallah Hamec El Tahar of Netma village, Kom Hamada Markaz for the purchase of the German Mower Bozatsy was approved.
- The committee approved the following requests :
  - 1) Abdel Hady Ibrahim Mostafa of El tod village, Kom Hamada Markaz
  - 2) Mahmoud Youssef Beltagy, El Beltagy, El Delengat Markaz
  - 3) Hanem Mohamad Allam, Daght El Gorn Abo Homos Markaz
  - 4) Monira Shehata Hamad, Adilet Ezab El Hagar El Mahrouk El Delingat Markaz for the purchase of a Mower (Gaspardo, Italian) for each of them.
- The request submitted by Mohamad Ahmad El Messiry of Dessounes village, Abo Homos Markaz for the purchase of a 16 Hp Japanese tractor ~~16 Hp Japanese tractor~~ was refused; the reason is that loans are allocated for the purchase of agricultural machinery with the exception of tractors and water pump sets.

#### SECOND : EL GHARBIA GOVERNORATE

- The request submitted by Aly Ahmad Naama of Shabshir El Hessa village, Tanta Markaz for the purchase of Italian made Mower (Gaspardo) was approved.
- The committee approved the request submitted by Abdel Rahman Salama of Kafr Abry village, Zefta Markaz for the purchase of a cultivator (18 Hp Baspo).
- The request submitted by Bayoumi Amer El Feky Kom El Naggat village, Basoun Markaz for the purchase of a 10 Hp Baspo cultivator was approved.
- The request submitted by Abo El Fotoh Mohamad Sowalam for the purchase of 18.Hp Grillio Cultivator was refused. The reason was its unusually high price.

#### THIRD : QALUBIA GOVERNORATE

- The following requests were approved.
  - 1) Aly Hassan Na-el Abo El Rish of Degwa village-Banha Markaz
  - 2) Ahmad Abdel Makoud Abdel Rahman of Degwa village-Banha Markaz
  - 3) Ahmad Abdel Ghany Abo El Rish of the same area
  - 4) Shahin Farag Shahin Mansour Beltan village-Toukh Markaz for the purchase of an auger garden cultivator for each of them.
- Also the following requests were approved :
  - 1) Abdel Razik Abdel Gawad Edmous Salam of Kafr El Mahala village Banha Markaz
  - 2) Mohamad Abdel Salam Sayed Zaghloul of the same area
  - 3) Mohamad Mahmoud habib as above
  - 4) Abdel Salam Mohamad Aly same address
  - 5) Mohamad Mansour Ahmad Mansour Same address
  - 6) Ahmad Mohamad Eid of Meet El Attar village-Banha Markaz
  - 7) Abdel Gelil Ibrahim Salem of Barsoum village-Toukh Markaz for the purchase of a cultivator (Kouper Model) for each of them.



AGRICULTURAL MECHANIZATION PROJECT

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 صندوق بريد ٢٥٦ - القلي - ج ٢٠  
 ٧٠٤٦٦٠ - ٧٠٤٧٢٠  
 ٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE March 15, 1984 التاريخ

MINUTES OF THE  
EIGHTEENTH CREDIT COMMITTEE MEETING FOR THE PURCHASE  
AGRICULTURAL MACHINERY

- The Committee met on Sunday 11/3/1984 with all members present except Mr Fred Schantz and Eng. Moussa Shafik. The committee began its meeting by examining the following requests.

EL GHARBIA GOVERNORATE

- The request submitted by Mr Abo El Fotouh Mohamad Sowalam of Kafr Abry, Zefta Markaz for the purchase of Grillo cultivator 18 Hp was approved.
- The request submitted by Abdel Moneim Aly El Dahrawy of Abyar, Kafr El Zayat Markaz, and Yehia Abdel Salam El Sheikh of Kofour Belshay, Kafr El Zayat Markaz for their purchase of a Grillo cultivator 14Hp for each of them.
- The request submitted by Hazaa Abbas El Halwagy of Berma, Tanta Markaz for the purchase of a Baspo cultivator, 14 Hp. was approved.
- The request submitted by Mahmoud Mohamad Abdel Rahman of Kafr Dima, Kafr El Zayat Markaz for the purchase of the FM cultivator was refused because this type was not recommended by the project.
- The request submitted by Mamdouh El Menshawy of Kafr Damanhour Kafr, Zefta Markaz for the purchase of a Grillo cultivator, 18 Hp was refused because it is expensive.
- The request submitted by Talkhan Ahmad Moussa Hussein of Shobra Malas, Zefta Markaz for the purchase of a Grillo cultivator 14 Hp was refused because this type was not recommended by the project.

١٤ ٣ ١٨  
 م. ش. ش.

ANNEX 11.5C.1

EL BEHEIRA GOVERNORATE

- The request submitted by Mandia Makram Saad of Batra, Daba Markaz for the purchase of a Grillo cultivator 18 Hp was approved.
- The request submitted by Mohamad hassen El Garem of El Gadya Rashid Markaz for the purchase of Swedish Loader arm, Model quick, 2300 and a Micar model Trailer, was approved.
- The request submitted by Abdel Salam Selim of El Zaafarani, Kom Hamada Markaz for the purchase of a 10 ft hydraulic scraper, was approved.
- The request submitted by Mohamad Hamdy Galal Badr of Waked, Kom Hamada Markaz for the purchase of a German made mower, (Bo-atshy) was approved.

EL MINIA GOVERNORATE

- The request submitted by the Cooperative of Deem, Abo Korkas Markaz for the purchase of a combine harvester, Augustini, was approved.
- The request submitted by Yehia Mohie El Din Shafik of Aba El Wakf El Balad, Maghagha Markaz for the purchase of a thresher, trailer, ridger harvester was approved.
- The request submitted by Fayez Saber Ahmad of Menbal, Matay Markaz for the purchase of a scraper(6 ft) was approved.
- The request submitted by Mohamad Othman Aly Tantawy of Kalousna Samalout Markaz for the purchase of Ferary cultivator was approved.

EL QALUBIA GOVERNORATE

- The request submitted by Yehia Soliman Morad of El Deir, Toukh Markaz for the purchase of Boskowaly model cultivator was refused because it has no brakes.

COMMITTEE MEMBERS

COMMITTEE RECTOR.

*M. A. El wishe*

*RA*

**AGRICULTURAL MECHANIZATION PROJECT**

A. I. D. Proj. NO. 263 - 0031

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٧٠٤٦٦٠ - ٧٠٤٧٢٠  
٧٠٤٣٦٤ - ٧٠٧٢٤٧

April 3, 1984

DATE

التاريخ

**MINUTES OF THE  
NINETEENTH CREDIT COMMITTEE MEETING FOR THE  
PURCHASE OF AGRICULTURAL MACHINERY**

- The meeting was held on Sunday 25/3/1984 with all members present except Mr. Roger Engstrom. The committee began its meeting by examining the following requests.

**EL GHARBIA GOVERNORATE:**

- The request submitted by Mr El Sayed Bakr for the purchase of a Grillo cultivator, 18 hp was refused because its price was the highest among all proposals.

**EL MINIA GOVERNORATE**

The request submitted by Mrs Nagia Aly Sadek of Abo El Makf El Balad, Maghagha Markaz for the purchase of a disc mower Duetz, and an Agricultural trailer, Micar model was approved their request for the purchase of a thresher and winnower was postponed.

**EL QALUBIA GOVERNORATE**

- The request submitted by Mr Mohamad Aly El Sayed Aly Mansour of El Degwy, Banha Markaz for the purchase of an Italian cultivator was approved.

**EL SHARKIA GOVERNORATE**

- The request submitted by Abdel Fatah Aly Maky of Abo Tawala Minia El Kamh Markaz for the purchase of a Grillo cultivator 14 hp was approved.

The request of Abdel Wahed Ghonemy Aly of Kafr El Ghonemy Minia El Kamh Markaz for the purchase of a 14 hp Grillo cultivator was also approved.

- The request of Mostafa Mohamad Lotfy of El Telin, Abdel Rahman Abdalla Mashhour of El Saadyen, Minia El Kamh Markaz for the purchase of a Turkish made thresher and winnower was approved.

ANNEX

5.C.2

EL BEHERA GOVERNORATE

- The request submitted by the agricultural cooperative of Lakana, Shabrakit Markaz for the purchase of an Argentrio backhoe, 2 mowers, Gaspardo was approved but the request for the purchase of a combine Augustini was refused.
- The request submitted by the following cooperatives were approved. They requested a Dutch made baler for each of them.
  - 1) Bani Mansour Agricultural Mechanization Cooperative  
Itay El Baroud Markaz.
  - 2) El Rahmania Agricultural Mechanization Cooperative  
El Rahmania Markaz
  - 3) El Sharnoub Cooperative for Agricultural mechanization  
Damanhour Markaz
  - 4) Kafr Mosaed Agricultural Mechanization Cooperative  
Itay El Baroud Markaz
  - 5) Nadeba Cooperative for Agricultural mechanization  
Damanhour Markaz.
  - 6) Zawiet Ghazal Cooperative for Agricultural Mechanization  
Damanhour Markaz
  - 7) El Tod Agricultural Mechanization Cooperative  
Kom Hamada Markaz.
  - 8) Abo El Seoud Cooperative for Agricultural Mechanization  
El Delengat Markaz
  - 9) Berket Ghatas Cooperative for Agricultural Mechanization  
Abo Homos. Markaz

COMMITTEE MEMBERS

COMMITTEE RECTOR

A handwritten signature in black ink, consisting of a stylized, cursive script that is difficult to decipher. It appears to be a personal signature, possibly of the committee rector.

SUMMARY

QUARTERLY TRAINING ACTIVITIES

JAN./FEB./MARCH, 1984

<u>No.</u>	<u>Dates</u>	<u>Course No.</u>	<u>Course Title</u>	<u>Location</u>	<u>No. of Trainees</u>
------------	--------------	-------------------	---------------------	-----------------	------------------------

MACHINERY MANAGEMENT EXTENSION AND TRAINING

Training Center Courses

1.	12 Nov 83-5 Jan 84	3 EX 12.1	Mechanic Level I	Moaamoura Training Center	13
2.	3 Dec 83-26 Jan 84	2 EX 79	Mechanic Level III	"	5
3.	24 Dec 83-26 Jan 84	3 EX 10	Tractor Operator	"	11
4.	28 Jan 84-22 Mar 84	4 EXT 2	Mechanic Level I	"	15
5.	8 Jan - 8 Mar 84	4 EXT 1	Welding	G.Asphar Demo/Trng Center	5
6.	31 Dec 83-5 Jan 84	3EX44.11	Rice Mechanization	Kallin	15
7.	7 Jan - 12 Jan	4 EXT 3	" "	"	17
8.	14 Jan-19 Jan	4 EXT 4	" "	"	16
9.	21 Jan-26 Jan	4 EXT 5	" "	"	20
10.	28 Jan-2 Feb	4 EXT 6	" "	"	20
11.	4 - 9 Feb	4 EXT 8	Agr. Mechanization Practices:Key Fmrs	Sidi Beshr Trng.Ctr.	20
12.	11 - 16 Feb	4 EXT 9	" "	"	36
13.	18 - 23 Feb	4 EXT 10	" "	"	36
14.	25 Feb - 1 Mar	4 EXT 11	" "	"	36
15.	26 Feb - 1 Mar	4 EXT 12	Cotton Drilling	Nawai	12
16.	4 - 9 Feb	4 EXT 13	" "	"	13
17.	11 - 16 Feb	4 EXT 14	" "	"	26
18.	18 - 23 Feb	4 EXT 15	" "	"	13
19.	25 Feb - 1 Mar	4 EXT 16	" "	"	9
20.	3 - 8 Mar	4 EXT 11a	Agr. Mechanization Practices: Key Farmers	Sidi Beshi Trng. Ctr.	25

ANNEX 6

21. 9 - 15 Mar	4 EXT 17	" "	"	32
22. 4 - 8 Mar	4 EXT 18	Cotton Drilling	Nawai	12
23. 11 -- 15 Mar	4 EXT 19	" "	"	9
24. 18 - 22 Mar	4 EXT 20	" "	"	7
25. 24 - 28 Mar	4 EXT-21	" "	"	9
26. 31 Mar - 4 Apl	4 EXT 22	" "	"	15
27. 17 Mar - 5 Apl	4 EXT 23	Welding	Maamoura Trng.Ctr.	7
28. 17 Mar - 10 May	4 EXT 24	Tractor Operator Instructor	"	13
29. 17 Mar - 19 Apl	4 EXT 25	Tractor Operator	"	2
30. 10 - 20 Mar	4 EXT 26	Ford Trac.Op/Maint.	Ragab T.C.	7
31. March	4 EXT	Cairo Int'l Fair	Cairo	81

Field Site Courses

		No. Demos	No. Feddans/ Kls	No. Trainees	
		---	-----	-----	
1.	Jan/Feb/Mar	Ag. Backhoe Op/Maint	49	44	1,015
2.	"	Land Smoothing	11	52	165
3.	"	Cotton Drilling	4	6	125
4.	"	Disc Harrowing	1	5	15
			<hr/>	<hr/>	<hr/>
			65	107	1,320

RESEARCH AND DEVELOPMENT

1.	Jan 84 - June 86	3 RMI 1	MS degree: Agricultural Production	USA	1
2.	Aug 83 - Feb 84	3 RD 1	Tech. Trng.: Instrumentation	USA	1
3.	Aug 83 - June 84	3 RD 2	Tech. Trng.: Soil Science	USA	1

PLANNING AND EVALUATION

1.	Aug 83 - Jan 86	3 PE 1a	MS: Agri-Economics	USA	1
2.	Jan 84 - Aug 86	3 PE 1b	MS: " "	USA	1
3.	Mar 84 - July 86	3 PE 1c	MS: " "	USA	1

LAND IMPROVEMENT

1.	12 Nov 83-5 Jan 84	3 Li 9	Field Instruction in Land Levelling	Minia	5
2.	7 - 26 Jan	4 Li 1	" "	"	5
3.	28 Jan - 16 Feb	4 Li 2	" "	"	5

SERVICE CENTERS

(No trainees identified for training; several requested courses are available for scheduling pending names of trainees.)

LOCAL MANUFACTURING

1.	Jan/Feb/Mar	4LM 1.1	Grain thresher Development	Alex.	4
----	-------------	---------	-------------------------------	-------	---

TOTALS: A. TRAINING CENTER/UNIVERSITIES:

	<u>COURSES</u>	<u>NUMBER OF TRAINEES</u>
1. In-Country	35	576
2. Participant	6	6

B. FIELD SITES (EXTENSION/TRNG.)

1. Number of demonstrations	:	65
2. Number of feddans/Kls	:	107
3. Number of trainees	:	1,320

MONTHLY ACTIVITIES OF THE IN COUNTRY TRAINING UNIT

PREPARED BY ZAGHLOUL EL SAYAD

For the Month of January, 1984

Date 18 Feb., 1984

A. SUMMARY

MACHINERY MANAGEMENT EXTENSION & TRAINING

						<u>No. Trainees</u>
12 Nov - 5 Jan	3 EX 12.1	Mamoura	Mechanic Level I			13
17 Dec - 5 Jan	3 Li	Minia	Field Instructions in Land Levelling			5
3 Dec - 26 Jan	2 EX 79	Mamoura	Mechanic Level III			70
24 Dec - 26 Jan	3 EX 10	"	Tractor Operator			11
7 Jan - 26 Jan	4 Li 1	Minia	Field Instructions in Land Levelling			5
28 Jan - 22 Mar	4 EXT 2	Mamoura	Mechanic Level I			15
28 Jan - 16 Feb	4 Li 2	Minia	Field Instructions in Land Levelling			5
18 Jan - 8 Mar	4 EXT 1	El Gabal El Assfar	Forging and Welding			5
31 Dec - 5 Jan	3 EXT 44.11	Kallin	Rice Plant Mechanization			15
7 Jan - 12 Jan	4 EXT 3	"	" " " "			17
14 Jan - 19 Jan	4 EXT 4	"	" " " "			16
21 Jan - 26 Jan	4 EXT 5	"	" " " "			20
28 Jan - 2 Feb	4 EXT 6	"	" " " "			20

PLANS FOR NEXT MONTH

4 Feb - 8 Mar	3 EXT 10	Mamoura	Tractor Operator			10
4 Feb - 9 Feb	4 EXT 8	Sidi Beshr	Key Farmers			20
11 Feb - 16 Feb	4 EXT 9	" "	" "			30
16 Feb - 23 Feb	4 EXT 10	" "	" "			36
25 Feb - 1 Mar	4 EXT 11	" "	" "			36

ORIGINAL SIGNED BY ZAGHLOUL EL SAYAD & DATED 16 FEB, 1984

MONTHLY ACTIVITIES OF THE IN COUNTRY TRAINING UNIT

PREPARED BY ZAGHLOUL EL SAYAD

For the Month of February, 1984

Date 19.4.84

A. SUMMARY

MACHINERY MANAGEMENT EXTENSION & TRAINING

					<u>No. Trainees</u>
28 Jan - 22 Mar	4 EXT 2	Mamoura	Mechanic Level I		8
28 Jan - 16 Feb	4 Li 2	Minia	Field Instructions in Land Levelling		5
8 Jan - 8 Mar	4 EXT 1	El Gabal El Assfar	Forging and Welding		5
28 Jan - 2 Feb	4 EXT 6	Kallin	Plant Mechanization of Rice		20
4 Feb - 8 Mar	3 EXT 10	Mamoura	Tractor Operator		3
4 Feb - 9 Feb	4 EXT 8	Sidi Beshr	Key Farmers		20
11 Feb - 16 Feb	4 EXT 9	" "	" "		36
18 Feb - 23 Feb	4 EXT 10	" "	" "		36
25 Feb - 1 Mar	4 EXT 11	" "	" "		36
26 Feb - 1 Mar	4 EXT 12	Nawy V (El Minia)	Cotton Plant Mechanization		12
4 Feb - 9 Feb	4 EXT 13	Kallin	Rice Plant Mechanization		13
11 Feb - 16 Feb	4 EXT 14	"	" " " "		26
18 Feb - 23 Feb	4 EXT 15	"	" " " "		13
25 Feb - 1 Mar	4 EXT 16	"	" " " "		9

ORIGINAL SIGNED BY ZAGHLOUL EL SAYAD & DATED 19.4.84

ANNEX 6 B

MONTHLY ACTIVITIES OF THE IN COUNTRY TRAINING UNIT

PREPARED BY ZAGHLOUL EL SAYAD

For the Month of March, 1984

Date 19.4.84

A. SUMMARY

MACHINERY MANAGEMENT EXTENSION & TRAINING

						<u>No. Trainee</u>
26 Jan - 22 Mar	4 EXT 2	Mamoura	Mechanic Level I			8
8 Jan - 18 Mar	4 EXT 1	Elgabal El Assfar	Forging and Welding			5
4 Feb - 8 Mar	3 EXT 10	Mamoura	Tractor Operator			3
25 Feb - 1 Mar	4 EXT 11	Sidi Beshr	Key Farmers			36
3 Mar - 8 Mar	4 EXT 11a	" "	" "			25
9 Mar - 15 Mar	4 EXT 17	" "	" "			32
25 Feb - 1 Mar	4 EXT 16	" "	" "			9
26 Feb - 1 Mar	4 EXT 12	Nawai	Cotton Plant Mechanization			12
4 Mar - 8 Mar	4 EXT 18	"	" " " "			12
11 Mar - 15 Mar	4 EXT 19	"	" " " "			9
18 Mar - 22 Mar	4 EXT 20	"	" " " "			7
24 Mar - 28 Mar	4 EXT 21	"	" " " "			9
31 Mar - 4 Apr	4 EXT 22	"	" " " "			15
17 Mar - 5 Apr	4 EXT 23	Mamoura	Welding			7
17 Mar - 10 May	4 EXT 24	"	Local Instructors			13
17 Mar - 19 Apr	4 EXT 25	"	Tractor Operator			2
10 Mar - 20 Mar	4 EXT 26	Alex.	Tractor Operation and Maintenance			7
<u>PLANS FOR NEXT MONTH</u>						
8 Apr - 11 Apr	4 EXT 27	Nawai	Cotton Plant Mechanization			15
14 Apr - 16 Apr	4 EXT 28	Mamoura	Operating & Maintaining Straw Balers			12

ANNEX 6c

17 Apr - 19 Apr	4 EXT 29	"	"	"	12
24 Apr - 26 Apr	4 EXT 30	"	"	"	12
April	4 EXT 31	"	"	"	

ORIGINAL SIGNED BY ZAGHLOUL EL SAYAD & DATED 19 APR. 1984.



**SPEED MEMO**

- 131 -

INSTRUCTIONS: Composed by HAND & TYPE  
Originator: Retain yellow copy and forward original and pink copy to addressee  
Addressee: When replying retain original and return pink copy  
NOTE: This set is printed on NO-CARBON-REQUIRED paper

To: (Name and Title) <i>A. J. ...</i>	Division, Room/Project & Country	Originator <i>A. J. ...</i>	Division, Room/Project & Country
--	----------------------------------	--------------------------------	----------------------------------

Subject: **TRAINING Schedule, USAID Group (For FARMERS)**

MESSAGE **Cotton Mechanization TRAINING** Date:

Day No 1

- INTRODUCTION 08:30 - 10:00
- Project Area TOUR 10:00 - 12:00
- Workshop TOUR 12:30 - 13:30
- Seed Preparation 13:30 - 14:30

Day No 2

- Discussion 08:30 - 09:00
- Extension field visits 09:00 - 11:00
- AWAY FARMERS Mtg 12:00 - 14:00
- Cotton Irrigation 14:00 - 14:30

Day No 3

- Discussion 08:30 - 09:00
- Cotton Mechanization 09:00 - 14:30

Day No 4

- Livestock Programme 08:30 - 10:30
- Mechanization Costs 10:30 - 12:30
- HIRE Service for Cotton 13:00 - 14:00
- FINAL DISCUSSION 14:00 - 14:30

REPLY

*A. J. ...*

*Mustafa El-Tantawi*

अधीन प्रमाणित किया गया है

TRAINING PROGRAM OF FLEETING  
SECTION, WEST BENGAL II.  
NAME: WILLIAM MINIA

Serial	Date		No. of trainees	Category	governorate
	From	To			
1 <u>st</u>	26/2/84	1/3/84	16	specialist	Behera-Gharbia-Minia
2 <u>nd</u>	4/3/84	8/3/84	17	"	sharkia-Qalubia, Minia
3 <u>nd</u>	11/3/84	15/3/84	15	Farmer	Behere
4 <sup>th</sup>	18/3/84	22/3/84	15	"	Gharbia
5 <sup>th</sup>	25/3/84	29/3/84	15	"	Sharkia
6 <sup>th</sup>	1/ 4/84	5/ 4/84	15	"	Qalubia
7 <sup>th</sup>	8/ 4/84	12/4/84	15	"	Minia

Total 108

*elgata*

10 minia guest house  
purchase contract

MONTHLY ACTIVITIES OF THE PARTICIPANT TRAINING UNIT  
PREPARED BY IBRAHIM EL GATAS/HUSSEIN HEIZA

for the Month of Jan/Feb, 1984

Date 27/2/1984

SUMMARY

Three candidates for academic training continued academic programs as following:

- a) Atef Abdel Razek      3PE/a      MSC - Agri. Economic      Aug 83-Jan 86
- b) Zaki Helmy              3PE/b      MSC - Agri.Economic      Jan 84-Aug 86
- c) Ayman H. El Mofty      3RMil      MSC - Agri.Production      Jan 84-Jun 86

2. Three candidates for academic training have been cancelled:

- a) Nader Sawzi                              MSC - Agri.Mechanization
- b) Sohair Abd El Rahman                  MSC - Rural Sociology
- c) Hassan Khabil                             MSC - Agri.Economic

3. One candidate for academic training passed away:

Adel Mahmoud El Gouhray      Phd

4. One candidate has been in the USA for 6 months for the research and development subproject, she will remain another 3 months.

5. Four candidates for MSC degrees are in processing as follows:

- a) Omr Mohamed El Shiekh                  MSC - Soil Science
- b) Gouda Ycusef El Nagar                  MSC - Soil Science
- c) Ali Kamal                              3PE1c      MSC - Agri.Economic      March 84-Jul 86
- d) Nabil Helmi                              MSC - Agri.Education

ANNEX 7 a,b

6. Three candidates for a short term technical participant are in processing:
- a) Eng. Mohamed El Nagar                      Tractor and Mach. Testing
  - b) Eng. Mohamed Ismail                      Establishing data bases and analytical system for economic decision making in agriculture
  - c) Eng. Rafat Lotfy

MONTHLY ACTIVITIES OF THE PARTICIPANT TRAINING UNIT

PREPARED BY HUSSEIN HEIZA

For the Month of March, 1984

Date 11/4/1984

A. SUMMARY

1. Three candidates for academic training continued:
  - a) Atef Abdel Razek MSc Agr. Economics (from Aug.83 - Jan 85)
  - b) Zaki Helmi MSc Agr. Economics (fr.Jan 5,84 - Aug 86)
  - c) Ayman El Mofty MSc Agr. Production(fr.Jan 5,84 - Jun 86)
  
2. One candidate for academic training continued:

Ali Kamel MSc Agr. Economics programmed from March 21, 1984.
  
3. Three candidates for MSc degrees are in processing as follows:
  - a) Nabil Helmy MSc Agr. Education
  - b) Gouda El. Nagar MSc Soil Science
  - c) Omar El Sheik MSc Soil Science
  
4. One candidate for a short term technical training Ms. Nazk A.G. stay another 3 months to receive full benefit from the program.
  
5. Three candidates for a short term technical participant for 3 months are in processing:
  - a) Mr. Mohamed El Nagar On Tractor and Mach. Testing
  - b) Mr. Mohamed Ismail Establishing Data Bases and Analytical Systems for Economic Decision-Making
  - c) Mr. Rafaat Amain in Agriculture.

ANNEX 7c

C. PLANS FOR NEXT MONTH

1. Complete the processing:

- a) Mr. Nabil H. Mostafa )
- b) Mr. Gouda El Nagar ) Academic Training
- c) Mr. Omar El Sheik )
  
- d) Mr. Mohamed El Nagar )
- e) Mr. Mohamed Ismail ) Short Term Technical Participant
- f) Mr. Rafaat Amain )

2. Two Trainees English language training starts April 9, 1984

3, Fifteen candidates will take Align test in April.

ORIGINAL SIGNED BY H. HEIZA & DATED 11/4/1984



FISCAL REPORT  
OF THE TRAINING AND EXTENSION SUB-PROJECT  
for the MONTH of Feb 1984

The following is a summary of the fiscal report No. \_\_\_\_\_ in Local Currency (L.E.) related to the referenced Training and Extension Subproject.

<u>LINE ITEM</u>	<u>BUDGET</u>	<u>EXPENDITURE</u>	<u>BALANCE</u>	<u>QUARTERLY BALANCE</u>
1. Instructors Fees	_____	<u>496.500</u>	_____	_____
2. Equipmental Rental	_____	<u>2182.250</u>	_____	_____
3. Petroleum, Oils, Lubricants	_____	<u>256.700</u>	_____	_____
4. Training Aids, Equipment	_____	<u>957.520</u>	_____	_____
5. Machine Operator Fees	_____	<u>149.000</u>	_____	_____
6. Room/Board	_____	<u>2570.000</u>	_____	_____
7. Transportation	_____	<u>1757.000</u>	_____	_____
8. Expendable Training Materials	_____	<u>2487.780</u>	_____	_____
9. Incidental Living Expenses	_____	<u>7336.000</u>	_____	_____
10. Training Center Fees	_____	<u>4475.820</u>	_____	_____
11. Administrative Expenses	_____	<u>1418.690</u>	_____	_____
<b>TOTALS:</b> (Receipts)	_____	<u><u>24,083.260</u></u>	_____	_____
<b>Outstanding Petty Cash/Checks:</b>	_____	<u>40,170.000</u>	_____	_____
		<u><u>GRAND TOTAL: 64,253.260</u></u>		
*****				
<u>DEMONSTRATION/TRAINING EQUIPMENT</u> <u>(COMMODITIES)</u>	_____	<u>50,903.200</u>	_____	_____

Amir  
(finance) \_\_\_\_\_ 19  
(date)

ANNEX A-86

FISCAL REPORT  
OF THE TRAINING AND EXTENSION SUBPROJECT  
for the MONTH of March 1984

The following is a summary of the fiscal report No. \_\_\_ in Local Currency (L.E.) related to the referenced Training and Extension Subproject.

<u>LINE ITEM</u>	<u>BUDGET</u>	<u>EXPENDITURE</u>	<u>BALANCE</u>	<u>QUARTERLY BALANCE</u>
1. Instructors Fees	_____	<u>617.200</u>	_____	_____
2. Equipmental Rental	_____	<u>- 0 -</u>	_____	_____
3. Petroleum, Oils, Lubricants	_____	<u>27.00</u>	_____	_____
4. Training Aids, Equipment	_____	<u>603.320</u>	_____	_____
5. Machine Operator Fees	_____	<u>- 0 -</u>	_____	_____
6. Room/Board	_____	<u>8590.00</u>	_____	_____
7. Transportation	_____	<u>3675.00</u>	_____	_____
8. Expendable Training Materials	_____	<u>163.85</u>	_____	_____
9. Incidental Living Expenses	_____	<u>3709.00</u>	_____	_____
10. Training Center Fees	_____	<u>3649.96</u>	_____	_____
11. Administrative Expenses	_____	<u>4005.34</u>	_____	_____
TOTALS: (Receipts)	=====	<u>25,040.67</u>	=====	=====
Outstanding Petty Cash/Checks:		<u>31,390.00</u>		
<b>GRAND TOTAL:</b>		<u>56,630.67</u>		
*****				
<u>DEMONSTRATION/TRAINING EQUIPMENT</u> <u>(COMMODITIES)</u>	=====	<u>34,229.00</u>	=====	=====

Amal \_\_\_\_\_ 19  
(finance) (date)

Cash available for Training  
to march 31, 1984. C

184,311.00 L-E

commodities:

657,962.00 L-E.

To march 31, 1984.

ANNEX A.8c

IFB 83/02

(3,053,000  
+ 610,600 =  
3,663,000)

BID NUMBER

FOR DEMO/TRNG. EQUIP. FOR VILLAGES

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	July 83	F. Schantz/Mousa
2.	Obtain Specs Approvals		
	a) Management	Aug 83	Ali Kamel
	b) Technical Committee	Aug 83	" "
	c) USAID	Sept 83	" "
3.	Type/process specs list	Sept 83	" "
4.	Prepare specs for bids	Sept 83	" "
5.	Invite/advertise for bids	Oct 83	" "
6.	Receive bids (bid opening)	22 Nov 83	" "
7.	Register bids	Dec 83	" "
8.	Bid technical evaluation		
	a) Advisors	19 Dec 83-8 Jan 84	F. Schantz
	b) Counterpart staff	Jan 84	Mousa
	c) Technical committee	Feb 84	Committee
9.	Bid approvals		
	a) Management	Feb 84	Moh. Hassan/
	b) Procurement committee	Feb 84	Ali Kamel
	c) USAID	Feb 84	" "
10	Award bids/processing		" "
11.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location		Roger Engstrom/
	b) Operational inspection at field site		Mousa
	c) Field operations trials		"
12.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

IFB 83/03

BID NUMBER

FOR CROP SPECIFIC DEMO/TRNG. EQUIP.

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	Sept 83	F. Schantz/
2.	Obtain Specs Approvals		
	a) Management	Nov 83	Moh. Hassan/
	b) Technical Committee	Nov 83	Ali Kamel
	c) USAID (Legal review)		"
3.	Type/process specs list		"
4.	Prepare specs for bids		Ali Kamel
5.	Invite/advertise for bids		" "
6.	Receive bids (bid opening)		" "
7.	Register bids		" "
8.	Bid technical evaluation		
	a) Advisors		F. Schantz
	b) Counterpart Staff		Mousa
	c) Technical committee		Committee
9.	Bid approvals		
	a) Management		Moh. Hassan/
	b) Procurement committee		Ali Kamel
	c) USAID		"
10.	Award bids/processing		Ali Kamel
11.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location		R. Engstrom/
	b) Operational inspection at field site		Mousa
	c) Field operations trials		"
12.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

LOCAL GROUP B

(600,000)

BID NUMBER

FOR GABEL ASPHAR FARM DEMO/TRNG. EQUIP.

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	Oct 82	G. Stringer
2.	Obtain Specs Approvals		
	a) Management	Nov 82	G. Stringer
	b) Technical Committee	Dec 82	"
3.	Type/process specs list	Dec 82	"
4.	Prepare specs for bids	Dec 82	Ali Kamel
5.	Invite/advertise for bids	11 Dec 82	"
6.	Receive bids (bid opening)	28 Dec 82	"
7.	Register bids	28 Dec 82	"
8.	Bid technical eveluation		
	a) Advisors	Jan 83	G. Stringer
	b) Counterpart staff	--	---
	c) Technical committee	Jan 83	G. Stringer
9.	Bid approvals		
	a) Management	Jan 83	"
	b) Procurement committee	Jan 83	"
10.	Award bids/processing	Jan 83	Ali Kamel
11.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location	Feb 84	Roger Engstrom/ Paul Armstrong/ Maher Iskander
	b) Operational inspection at field site	Feb 84	"
	c) Field operation trials (Spare parts clearance)		"
12.	ISSUE CHECK FOR APPROVED EQUIPEMENT		Ahmed \$

LOCAL GROUP 2

(840,000)

BID NUMBER

FOR PROJECT VILLAGES DEMO/TRNG. EQUIP.

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	June 82	F. Schantz
2.	Obtain Specs Approvals		
	a) Management	Aug 82	"
	b) Technical Committee	Sept 82	"
3.	Type/process specs list	Oct 82	F. Schantz/ Katie
4.	Prepare specs for bids	Nov 82	Ali Kamel
5.	Invite/advertise for bids	11 Dec 82	"
6.	Receive bids (bid opening)	28 Dec 82	"
7.	Register bids	28 Dec 82	"
8.	Bid technical evaluation		
	a) Advisors	Feb 83	F. Schantz
	b) Counterpart staff	March 83	---
	c) Technical committee	April 83	Committee
9.	Bid approvals		
	a) Management	April 83	Ali Kamel
	b) Procurement committee	May 83	"
10.	Award bids/processing	June 83 (11 combines - Jan 83)	"
11.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location		R. Engstrom/ Mousa
	b) Operational inspection at field site		"
	c) Field operations trials		"
12.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

LOCAL GROUP 5

(88,000)

BID NUMBER

FOR HAY BALERS (11) FOR PROJECT VILLAGES

<u>TEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
.	Develop Specifications	June 82	F. Schantz
.	Obtain Specs Approvals		
	a) Management	Aug 82	"
	b) Technical Committee	Aug 82	"
.	Type/process specs list	Sept 82	F. Schantz/ Katie
.	Prepare specs for bids	June 83	Ali Kamel
.	Invite/advertise for bids	July 83	"
.	Receive bids (bid opening)	11 Aug 83	"
.	Register bids	11 Aug 83	"
.	Bid technical evaluation		
	a) Advisors	Sept 83	F. Schantz
	b) Counterpart staff	Sept 83	Mousa
	c) Technical committee	Oct 83	Committee
.	Bid approvals		
	a) Management	Nov 83	Ali Kamel
	b) Procurement committee	Nov 83	"
0.	Award bids/processing	Jan 84	"
1.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location		R. Engstrom/ Mousa
	b) Operational inspection at field site		"
	c) Field operations trials		"
2	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

LOCAL (L.E.) IFB GROUP 7  
(857,000)  
BID NUMBER

FOR SMALL FARMER PRODUCTION PROJECT AND  
AG. MECH. PROJECT (JOINT)

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	July 83	F. Schantz/ R. Gollehan
2.	Obtain Specs Approvals		
	a) Management	Aug 83	F. Schantz
	b) Technical Committee	Aug 83	"
3.	Type/process specs list	Sept 83	F. Schantz/ Katie
4.	Prepare specs for bids	Oct 83	Ali Kamel
5.	Invite/advertise for bids	14 Jan 84	"
6.	Receive bids (bid opening)	21 Feb 84	"
7.	Register bids	21 Feb 84	"
8.	Bid technical evaluation		
	a) Advisors )	April 84	R. Armstrong/ F. Schantz
	b) Counterpart Staff )	Bid is all	Mousa
	c) Technical committee )	non-responsive	Moh. Hassan
	)	Cancelled	
9.	Bid approvals )	To be rebid	" "
	)	as RFQs in	" "
	a) Management )	May 84	" "
	b) Procurement committee )		" "
	c) USAID )		" "
10.	Award bids/processing		Ali Kamel
11.	RECEIVE EQUIPMENT		SFPP Staff/ F. Schantz/ Mousa
	a) Visual inspection at dealer location		"
	b) Operational inspection at field site		"
	c) Field operations trials		"
12.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed S

BID NUMBER  
LOCAL GROUP 10

(454,120 +  
 =  
 534,000)

FOR MAINTENANCE DEMO/TRNG. EQUIP.  
 (LAND IMPROVEMENT & EXTENSION)  
 -----

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	July 83	Jim McClung/ F. Schantz
2.	Obtain Specs Approvals		
	a) Management	Aug 83	"
	b) Technical Committee	Sept 83	"
3.	Type/process specs list	Oct 83	F. Schantz/ Katie
4.	Prepare specs for bids	Dec 83	Ali Kamel
5.	Invite/advertise for bids	7 Jan 84	"
6.	Receive bids (bid opening)	7 Feb 84	"
7.	Register bids	7 Feb 84	"
8.	Bid technical evaluation )	March 84	
	a) Advisors )	(tractor, chisel	J. McClung/ F. Schantz
	)	plow, service	Mousa
	b) Counterpart staff )	trucks, etc.	Committee
	c) Technical committee )	cancelled)	
9.	Bid approvals )	OKed: welders,	Moh. Hassan/ Ali Kamel
	a) Management )	air compressors,	"
	b) Procurement committee )	hand tools.	"
10.	Award bids/processing	March 84	Ali Kamel
11.	RECEIVE EQUIPMENT (Air comp. & welders)	April 84	J. McClung/ F. Schantz
	a) Visual inspection at dealer location		"
	b) Operational inspection at field site		"
	c) Field operations trials		"
12.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

LOCAL (L.E.) IFB GROUP 11

(1,040,000  
+ 200,000 =  
1,240,000)

BID NUMBERS

FOR RESEARCH DEMO/TRNG. EQUIP.

<u>STEP</u>	<u>ACTIVITY</u>	<u>DATES</u>	<u>RESPONSIBLE</u>
1.	Develop Specifications	Feb 84	F. Schantz
2.	Draft/type specs		Moh. Hassan/Zizi
3.	Obtain Specs Approvals		
	a) Management	15 Feb 84	F. Schantz
	b) Technical committee		Moh. Hassan
4.	Type/process specs list		" "/Zizi
5.	Prepare specs for bids		Ali Kamel
6.	Invite/advertise for bids		"
7.	Receive bids (bid opening)		"
8.	Register bids		"
9.	Bid technical evaluation		
	a) Advisors		F. Schantz
	b) Counterpart staff		Mousa
	c) Technical committee		Committee
10.	Bid approvals		
	a) Management		Moh. Hassan/
	b) Procurement committee		"
	c) USAID		"
11.	Award bids/processing		Ali Kamel
12.	RECEIVE EQUIPMENT		
	a) Visual inspection at dealer location		R. Engstrom/ Mousa
	b) Operational inspection at field site		"
	c) Field operations trials		"
13.	ISSUE CHECK FOR APPROVED EQUIPMENT		Ahmed \$

**A.4 Service Center/Village Workshop Subproject**

Monthly Report  
Service Center Subproject

Date, January 1984

Submitted by Graham G. Sparrow. Technical Advisor

USAID'S approval was received this month for the application of Mr Raghaa's Service Center, which is to be built in Beni Suef, Beni Suef Governorate. The project is now awaiting the formal approval of the local bank. This procedure was necessary as Beni Suef is not within the working area as defined in the letter of Understanding.

My vehicle has been off the road since Dec. 22nd for repairs, so there has been no field work, except for two trips: one to Alexandria and one to Sharkia. The car was returned to me and used to go to Alex but is still suffering from engine trouble. I tried to get it repaired whilst there but to no avail.

This month has not been productive as the allocation of responsibilities between the project and the Bank, as clarified in the letter of Understanding, does not seem to be understood by the Bank. The Bank still wants to impose its normal loan criteria. As Dr. Sahrigi pointed out, it is important to protect the project. Until this is cleared, it is difficult to make commitments with our clients. If the present trend continues, we run the risk of clients withdrawing, as a number of them have complained to us about the present state of affairs and one threatened to cancel his project. Even the Service Center that has been erected has been affected: We submitted to the bank in November '83 the bid evaluation for machinery which still has not been purchased. And the supplier wants to know if the equipment is going to be bought or not, as he can't afford to store it. He would of course like to sell it to someone else, in that case, any new equipment imported for our client will be at an inflated price.

A new client did provide the project staff with transport to inspect some land that he proposes to use for a Service Centre. But on our return we were informed that we should not inspect sites because, if we agree that it is a suitable location, then that would leave the project responsible should any problems develop at a later date.

The situation is such that I felt it necessary to ask Dr. Gaiser if the Service Centre staff can have written instructions as to what we can or cannot do, as every week there are changes being made.

In January we were informed by Dr. Sharigi that the Bank is to set up a regional loan committee consisting of Technical and Financial coordinators. The Bank will supervise the construction process, the machinery required to support them, the financial representative would review the project's cost estimates financial analysis and projections. Some changes have already taken effect, such as the building Bid Evaluation this has been transferred to the Bank as in the case of Abu Khir Alla's offers for the technical report and construction of his Service Centre in Mamoudia. The Project will provide the financial analysis, the the Bank will set the loan terms.

MONTHLY REPORT  
Service Center Subproject

Feb.1984

Finally this month we started to receive some machinery for Mr.Azmy's Service Center at Beni Mazar. The total value is just under L.E.100,000.

This month I attended two meetings with the project management and representatives from the PBDAC bank. The purpose of these meetings was to clarify the letter of Understanding between the project and the bank, It would appear that until this is concluded the bank is not prepared to prepared to process any more applications, which they are at present holding. This is the reason for the sudden stoppage of finalizing loans for the small workshops and service centers since last December.

My vehicle was impounded by the police<sup>e/</sup> because of an infringement of the law by one of our staff. This has meant that for February the Service Center section was without a project vehicle.

During the meeting between project management and the bank, it was quite clear that the bank was under the impression that the money in the Service Center Credit Fund belonged to the bank, So this is why the bank wishes to apply it's own regular terms and conditions for loans to the project's clients, instead of the soft terms originally agreed upon in the letter of understanding.

MONTHLY REPORT

March 1984

Service Center Subproject.

Submitted by Graham G.Sparrow.

We have made only two visits to clients this month, mainly due to the lack of transport, although Dr. Zakaria did refuse a request to visit two more clients.

Over the past two or three months the management has been re-drafting the letter of Understanding with the Bank. So during this period it would appear that the banks have stopped processing loan applications pending the clarification of the Letter of Understanding. This could be supported by the fact that there have been no loan applications completed for the small workshops since Dec. 1983.

On the 28th March 84, the bank, in the first meeting of the new loan committee, informed us that they had advanced Shoukry's Co. L.E.189,000 for machinery against his letter of guaranty of L.E.250,000. Although the bank claimed this is a commercial loan separate from the project, there may be a deviation from project procedure with this application if it becomes a project loan. But this is not clear at the present time. Under the circumstances, I feel that I must withhold my signature of approval until the procedure is clarified. The question I raise is why the client wishes to purchase the machinery before the remodeling of the buildings have been started, or approved by the Bank, In fact, the new loan committee agreed with the Bank to set up another committee to inspect the buildings and to review the loan application, which it would appear the Bank has already approved.

Although I was unable to attend this meeting (loan committee), I understand that it was all in arabic with no input from either of the Technical Advisors.

Hopefully some positive action will develop from all the indecisions in the past as the result of the new loan committee

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

AGRICULTURAL MECHANIZATION PROJECT

A. I. D. Proj. NO. 263-0031

EGYPTIAN MOA/USAID

5 th. Floor - Building of the  
General Society For Land Reform  
P. O. B. 256 Dokki - Giza, ARE.  
704660 - 704720  
704364 - 707247



مشروع المكننة الزراعية  
وزارة الزراعة المصرية - وكالة التنمية الأمريكية  
الدور الخامس - مبنى الجمعية العامة للإصلاح الزراعي  
صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠٠٠  
٧٠٤٦٦٠ - ٧٠٤٧٢٠  
٧٠٤٣٦٤ - ٧٠٧٢٤٧

DATE \_\_\_\_\_ التاريخ

To : Dr. David Gaiser  
From : R.E. Snyder *R.E. Snyder*  
Subject : Monthly Report, January 1984

GENERAL

On 10 Jan. our management staff had a meeting with USAID. Supposedly to let AID know what our subproject had accomplished, what we are doing now and what our plans are for the future. Evidently AID was not dissatisfied, as we are still in business, at least for the immediate future.

On 11 Jan. (at the request of PBDAC) we had a meeting with the bank officials at our office. From all appearances it seemed to be primarily an exercise to familiarize the new bank manager with our project. The fact has arisen again that the terms and conditions of our loans are so different from any thing the bank has done before, that we are almost incompatible.

Supposedly our management staff is reviewing our letter of understanding and will produce a new letter with new or modified terms & conditions. As usual, neither myself nor my counter-part have been invited to forward any input on the matter.

Since Jan. 1983 we have had a reasonable working relationship with most of the banks. There have been slight deviations from the letter of understanding, but our system did in fact work.

Now it appears that our system was not entirely acceptable and changes are in order. I anticipate that considerable time will be consumed in determining new regulations and exactly how we shall function in the future. The ensuing delays and confusion will result in a slow down in loan activity and funds disbursements. I would suggest that we be permitted to function as before until a new set of rules are in place. I would further suggest that since our technical teams probably understands the problems encountered in the field that we may be of help if consulted.

### LOAN ACTIVITY

There was plenty of activity this months. Considerable travel, numerous contacts with old and new clients but not One L.E. in loan funds was disbursed.

Disbursements for jan. 1984	- 0 -
Total disbursements thru jan. 1984	393,970 L.E.
Loans with bank approval	106,500 "
Loans at bank but not approved	853,500 "
Loans being reviewed in our office	406,000 "

For details of the above, see attachment - A - of this report.

### PROBLEMS

We will without doubt be going thru a transition period for the next month or more. I expect that it will have a negative effect on loan activity during this period unless we are permitted to function as was suggested in the General section of this report.

On 19 Jan two of our engineers were taken from the subproject and sent to Jabal Asfar to take delivery of some green-house structures. At the time they were taken from our office, they were working and had not completed their tasks. We were informed that this would happen occasionally. I do not question anyone's authority to do so, but it is a very good indication of how much management is concerned about the success or failure of the service center Dev. subproject. As I see it, this is a full time job for every man on our staff and they should not be used to fill in for the deficiencies of other subprojects.

Giza governorate was added to the list of areas in which we can work about one year 590. As late as last month a client that we sent to the bank, returned saying that the bank still hasn't the necessary information from our office to begin processing loans for our project.

Attachment -A-

Service centers and small workshops loans

Month of Jan 84      Feb 1,1984

First: Service Centers

1. Loans approved by the bank

<u>No</u>	<u>Name</u>	<u>approval date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	A.Azmy	11/1/1983	Beni Mazar, Minia	250,000

---

The client has got 110000 L.E. from the building Loan fund.

2. Loans under investigation at the bank

<u>No</u>	<u>Name</u>	<u>Delivering date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	M.El-Hamamy	11/1/1983	Abou Homos-Behera	195,000
2	A.Khair Allah	20/6/1983	Mohmodia-Behera	200,000
3	S.El-Egazy	16/2/1983	Kaluib-Qalubia	250,000
4	Shoukry Co.	1/3/1983	Nasrah-Kafer El-Sheik	250,000
5	Diabes Co.	16/5/1983	Aga-Dakahlia	250,000
6	M.El-Zomor	27/2/1983	Embaba-Giza	224,600
7	R.Abd El-Rehim	10/6/1983	Beni Suef-Beni Suef	250,000
8	Construction Equipments Co.	6/7/1983	Kafr El-Dawar-Behera	250,000
9	Saad Mohamed Saad	20/10/1983	Delingat-Behera	160,000
10	Mrs. Magdah	13/11/1983	El-Saff - Giza	125,000
11	M. Harhash	4/12/1983	Kom Hamada-Behera	250,000
			Total	2,404,600

3. Loans at Project Level

<u>No</u>	<u>Name</u>	<u>Application date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	K.Korrah	11/9/1983	El-Nobaria Behera	250,000
2	M.El-Gazzar	1/12/1983	Kotor-Gharbia	-
3	M.Abd-El-fatah	12/1/1984	Belbes-Sharkia	-
		Total		<hr/> 250,000 L.E

\* Service Centers total L.E. 2,904,600

Second : Small workshops

1.- Developed Workshops:

<u>No</u>	<u>Name</u>	<u>Delivering date</u>	<u>Location</u>	<u>Value L.E</u>
1.	I.Ateyia	18/1/1983	Delingat-Behera	12,636
2.	H.Shalaby	15/3/1983	Damanhour- "	18,800
3.	M.Kohla	9/3/1983	Delingat- "	8,815
4.	Y.Emarah	9/12/1983	Itay El-Baroud Behera	16,649
5.	S.El-Nashar	9/12/1983	Abou Homos Behera	11,958.7
6.	M.El-Mahalawy	31/3/1983	Benha-Qalubia	44,000
7.	M.El-Bagoury	31/3/1983	" - "	37,950
8.	A.Afify	16/5/1983	Toukh - "	10,000
9.	A. Hafez	16/5/1983	Benha - "	38,780
10.	M.Yousef	11/9/1983	Toukh - "	27,000
11.	M.Zaky	13/10/1983	El-Kanater Qalubia	20,000
12.	H.Gaafer	25/11/1983	" "	9,323
13.	M.Selim	30/10/1983	Kafer El-Zayat Gharbia	50,000
14.	J.El-Shazly	31/10/1983	Bassioun-Gharbia	35,000
15.	A.El-Hadary	22/12/1983	" - "	17,743.3
16.	A.Ahmed	28/8/1983	El-Minia-El-Minia	8,916
17.	S.Ateyia	1/9/1983	" - "	15,000
18.	R.Mohamed	3/11/1983	Samalout - "	11,399
<b>Total</b>				<b>393,970</b>

El-Hadary has got 15703.3 L.E from the machinery loan fund.

2. Loans approved by the bank

<u>No</u>	<u>Name</u>	<u>approval date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	A.El-Basuony	22/2/1983	Sheben El-Kanater Qalubia	50,000
2	H.El-Gamal	6/11/1983	" "	25,000
3	A.Adly	12/10/1983	Hosh Essa-Behera	7,000
4	A.Nagib	25/12/1983	Abu Korkas - Minia	24,500
			Total	106,500

3. Loans under investigation at the bank

<u>No</u>	<u>Name</u>	<u>Delivering date</u>	<u>Location</u>	<u>Value</u> <u>L.E.</u>
1	A. Ahmed	21/6/1983	Samalout-Minia	24,000
2	S.Selim	5/7/1983	Malawi-Minia	40,000
3	A.Soliman	5/7/1983	Edwa-Minia	20,000
4	M.Motogaly	28/8/1983	Abu Korkas-Minia	50,000
5	M.Abd El-Malak	5/10/1983	Samalot-Minia	40,000
6	T.Mekaeel	28/11/1983	" -Minia	25,000
7	E.El-Garawany	2/8/1983	Tanta-Gharbia	20,000
8	A.El-Beyaly	15/11/1983	Mahala-Gharbia	20,000
9	A.Sahalsh	8/11/1983	Kafer El-Zayat Gharbia	25,000
10.	A.Abu Hamer	18/1/1984	Basun - Gharbia	25,000
11.	Y.El-Tanayhy	18/1/1984	Samanode - "	25,000
12.	R.Kshasha	18/1/1984	" - "	25,000
13.	S.Atta	18/1/1984	Kafer El-Zayat Gharbia	25,000
14.	B.El-Mowafy	18/1/1984	Zefta - Gharbia	5,000
15.	I.El-Samat	1/6/1983	Abou El-Matamer Behera	15,000
16.	S.Bakar	24/7/1983	Kom Hamada-Behera	20,000
17.	T.Okbbba	12/10/1983	" - "	15,000
18.	E.El-Deeb	12/10/1983	" - "	45,000
19.	I.Abd-El-Razik	12/10/1983	Abu El-Matamer-"	12,000
20.	S.Saker	17/1/1984	Abu Homos - "	18,000
21.	M.Kohla	17/1/1984	El-Delengat - Behera	4,000
22.	N.Morsey	17/1/1984	Kafar El-Dawar- "	25,000
23.	M.El-Anany	17/1/1984	Hosch Essa - "	25,000
24.	A.El-Sheak	17/1/1984	Kafer El-Dawar- "	25,000
25.	A.Mahmoud	17/1/1984	Itay El-Baroud-"	50,000
26.	H.Aly	29/11/1983	Giza - Giza	50,000
27.	A.Aly	17/1/1983	Osem - Giza	35,000
28.	S.Omar	17/1/1983	Osem - Giza	15,000

29.	S.Abu-Hamra	17/1/1983	Mansoraya-Giza	15,000
30.	A.Abd Alla	19/10/1983	Kafar Shaker- Qalub	40,000
31.	S.Abd El-Wahab	29/11/1983	Khanka-Qalub	12,000
32.	S.Saad	8/2/1983	Dyarb Nigem- Sharkia	20,000
33.	M.Abd El-Naby	23/8/1983	" "	25,000
34.	S.El-Said	29/11/1983	Hosoneya-"	50,000
				<hr/>
			Total	853,500

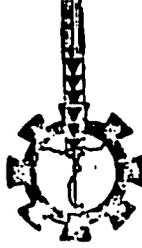
4. Loans at Project Level

<u>No.</u>	<u>Name</u>	<u>Application date</u>	<u>Location</u>	<u>Value</u> <u>L.E.</u>
1	H-El-Magdob	3/10/1983	Damshet-Gharbia	
2	M-Selem	15/11/1983	Kafer El-Zayat- Gharbia	50,000
3	A.Aly	11/8/1983	Zakazik-Sharkia	22,000
4	A.Gazy	25/10/1983	Abu Homos-Behera	50,000
5	H.Abd-El-Salam	8/11/1983	Kafer El-Dawar Behera	15,000
6	M.Sheref	15/11/1983	Kom Hamada-Behera	
7	M.El-Aghory	15/12/1983	Mahmoudia- Behera	15,000
8	A.Ghaled	25/12/1983	Kom Hamada- "	50,000
9	L.Fahmy	21/12/1983	Samalot-Minia	25,000
10	A.Abd El-Kawy	4/1/1984	Abu Homos-Behera	50,000
11	A.Abd-El-Gany	4/1/1984	" "	4,000
12	M.Abd El-Gany	29/1/1984	Kom Hamada-Behera	10,000
13	E.Ahmed	29/1/1984	Delengat - "	10,000
14	M.Hemeda	16/1/1984	Maryotuia-Giza	50,000
15	F.Magrash	22/1/1984	Kombera-Giza	25,000
16	A.Said	18/1/1984	Belbes-Sharkia	15,000
17	E.Rageb	18/1/1984	" - "	15,000
<b>Total</b>				<b>406,000</b>
<b>Total of S.C</b>		<b>2,904,600</b>	<b>L.E</b>	
<b>Total of S.W</b>		<b>1,759,970</b>	<b>L.E</b>	
<b>Grand total</b>		<b>4,664,570</b>		

-1627  
بسم الله الرحمن الرحيم

AGRICULTURAL MECHANIZATION PROJECT

A. I. D. Proj. NO. 263 - 0031  
EGYPTIAN MOA/USAID  
5 th. Floor - Building of the  
General Society For Land Reform  
P. O. B. 256 Dokki - Giza, ARE.  
704660 - 704720  
704964 - 707247



مشروع المكننة الزراعية  
وزارة الزراعة المصرية - وكالة التنمية الأمريكية  
المدرع الخامس - مبنى الجمعية العامة للإصلاح الزراعي  
صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠٢٠  
٧٠٤٦٦٠ - ٧٠٤٧٢٠  
٧٠٤٩٦٤ - ٧٠٧٢٤٧

DATE 1. 3. 1984 التاريخ

TO : Dr. David Gaiser  
FROM : R.E. Snyder *R. E. Snyder*  
SUBJECT : Monthly Report (February 1984)

GENERAL

We are still on what I hope is only a temporary shut-down while our manahement staff and the managers at PBDAC again make modifications to our letter of understanding. They had one meeting on 13 Feb. But it seems the results were inconclüsiive.

I was on leave from 12 thru 25 Feb. It would appears that I didn't miss much.

LOAN ACTIVITY

There were no loans completed in Feb. Or Jan. The accumulative loan figures are as follows :

Disbursements thru Dec. 31 1983	393,970 L.E.
Disbursements for Jan. 1984	- 0 - "
" " " Feb. 1984	- 0 - "
Loans with bank approval	206,500 "
Loans at bank, but not approved	858,500 "
Loans being reviewed in our office.	416,000 "

PROBLEMS

Seems here is still a question about the sharing of responsibility between the bank and the project. (this after 3 years?) Hopefully this will be resolved in the near future. As it stands we are in the embarrassing position of not knowing what we call our clients. Needless to say, some of those clients whom we have been working with for months are becoming irritated and discouraged with our lack of progress. Morale among our staff is at an all time low. I'm confident that if we received firm directives from management, so that we could get on with the project this would change rapidly. Of course the longer the project remains stagnant, the longer and more difficult it will be to regain momentum. I would like to mention here that the project is scheduled to terminate in less than 2 years.

Second: Small Workshops

Month of Feb 1984

Developed Workshops

Name	Delivering Date	Location	Value L.E.
Ibrahim Ateyia	18/1/1983	Delingat - Behera	12,636
Hassan Shalaby	15/3/1983	Damanhour - Behera	18,800
Mohamed Kohla	9/3/1983	Delingat - Behera	8,815
Musef Hassan Emrah	9/12/1983	Itay El-Baroad - Behera	16,649
Moliman El-Nashar	9/12/1983	Abou-Homos - Behera	11,956.7
Mohamed El-Mahalawy	31/3/1983	Behera - Qalubia	44,000
Morsy El-Bagoury	31/3/1983	Benha - Qalubia	37,950
Mofy Abd-Roshid Afify	16/5/1983	Toukh - Qalubia	10,000
Mhd El-Ghani Ali Hafez	16/5/1983	Benha - Qalubia	37,950
Mohamed Mohamed Yousef	11/9/1983	Toukh - Qalubia	27,000
Mohamed Emam Zaky	13/10/1983	El-Kanater El-Khairia Qalubia	20,000
Hassan Mostafa Gafer	25/11/1983	" " "	9,323
Mohamed Ali Allah Selim	30/10/1983	Kafr El-Zayat - Garbia	50,000
Mohamim El-Badary	22/12/1983	Bassioun - Garbia	17743.5
Abou Zeid El-Shazly Abou-Kohla	31/10/1983	" "	35,000
Abd El-Sattar Ali Ahmed	28/8/1983	El-Minia - El-Minia	6,916
Sobhy Yousef Ateyia	1/9/1983	" - "	15,000
Refaat Mohamed Mohamed	3/11/1983	Samalout - El-Minia	11,399
<b>Total</b>			<b>393,910</b>

2- Loans approved by the bank

<u>No</u>	<u>Name</u>	<u>Approval date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	Abdel El-Bary El-Basuny	22/2/1983	Qalubia	50,000
2	H. El-Gamal	6/11/1983	"	25,000
3	A.Adly	12/10/1983	Nosch Essa- Behera	7,000
4	A.Nagib	25/12/1983	Abu Korkas- Minia	24,500
5	M.El- Motagaly	26/1/1984	" "	50,000
6	A.Abu-Hamer	11/2/1984	Basun-Charbia	25,000
7	A.El-Sheak	14/2/1984	Kafer El-Dawar Behera	25,000
			<hr/>	
			Total	206,500

3- Loan under Investigation at the bank

<u>No</u>	<u>Name</u>	<u>Delivering date</u>	<u>Location</u>	<u>Value</u> <u>L.E</u>
1	A. Ahmed	21/6/1983	Samalot-Minia	24,000
2	S.Selim	5/7/1983	Malawi-Minia	40,000
3	I.Soliman	5/7/1983	El-Edwa-Minia	20,000
4	M.El-Malak	5/10/1983	Samalot-Minia	40,000
5	T.Mekael	28/11/1983	Samalot-Minia	25,000
6	E.El-Garwany	2/8/1983	Tanta-Gharbia	20,000
7	A.El-Beyaly	15/11/1983	Mahalla El-Kobra Gharbia	20,000
8	A.Shalash	8/11/1983	Kafer El-Zayat Gharbia	25,000
9	Y.El-Tanayhy	18/1/1984	Samanode-Gharbia	25,000
10	R.Keshasha	18/1/1984	" - "	25,000
11	S.Atta	18/1/1984	Kafer El-Zayat Gharbia	25,000
12	B.El-Mowafy	18/1/1984	Zefta - Gharbia	5,000
13	I.El-Samat	1/6/1983	Abu El-Matamer- Behera	15,000
14	S.Bakar	24/7/1983	Kom Hamada-Behera	20,000
15	T.Okba	12/10/1983	" " - "	15,000
16	E.El-Deeb	12/10/1983	" " - "	45,000
17	A.El-Razek	12/10/1983	Abu El-Matamer Behera	12,000
18	S.Saker	17/1/1984	Abu Homos-Behera	18,000
19	M.Kohla	17/1/1984	Delengat -Behera	4,000
20	N.Morsy	17/1/1984	Kafer El-Dawar Behera	25,000
21	M-El-Amany	17/1/1984	Hosch Essa-Behera	25,000
22	A-Mahmoud	17/1/1984	Italy El-Baroud Behera	50,000
23	H.Aly	29/11/1983	Giza - Giza	50,000
24	A.Aly	17/1/1983	Osem - Giza	3,500
25	S.Omar	17/1/1983	" "	15,000
26	S.Hamra	17/1/1983	Mansouria-Giza	15,000
27	M.Hemada	7/2/1984	Mansouria-Giza	50,000
28	F.Magrash	7/2/1984	Kombera	25,000
29	A.Abd Alla	19/10/1983	Kafer Shoker- Qalubia	40,000

30	S.Abd El-Wahab	29/11/1983	Khanka-Qalubia	12,000
31	S.Saad	8/2/1983	Dyarb Negru- Sharkia	20,000
32	M.Abd El-Gany	23/8/1983	" " "	25,000
33	S.El-Said	29/11/1983	Hosonia-Sharkia	50,000
34	A.Said	15/2/1984	Belbes- "	15,000
35	E.Ragib	15/2/1984	" - "	15,000
			<hr/>	
			Total	858,500

4- Loans at the Project Level

<u>No</u>	<u>Name</u>	<u>Application date</u>	<u>Location</u>	<u>Value</u>
1	H.El-Magdoub	3/10/1983	Kenesa Damshet Gharbia	-
2	A.Aly	11/8/1983	Zagazig-Sharkia	22,000
3	A.Gazy	25/10/1983	Abu Homos-Behera	50,000
4	H.Salam	8/11/1983	Kafer El-Dawar Behera	15,000
5	M.Sheref	15/11/1983	Kom Hamada-Behera	-
6	M.El-Aghoury	15/12/1983	Mahmoudia- "	15,000
7	A.Khaled	25/12/1983	Kom Hamada- "	50,000
8	L.Fahmy	21/12/1983	Sarcalat-Minia	25,000
9	A.El-Kawy	4/1/1984	Abu Homos-Behera	50,000
10	A.El-Gany	4/1/1984	" " "	4,000
11	M.El-Gany	29/1/1984	Kom Hamada- "	10,000
12	E.Ahmed	29/1/1984	Delengat - "	10,000
13	M.Dawaoud	6/12/1983	Malawy-Minia	30,000
14	F.Mahmoud	9/12/1984	" - "	15,000
15	F.El-Hakim	14/2/1984	" - "	25,000
16	H. Mahdy	12/2/1984	Abu Rawash-Giza	25,000
17	S.Saad	13/12/1983	Delengat-Behera	20,000

Total 416,000

Grand total of S.C 2,744,600 L.E

" " " S.W 1,874,970 L.E

Grand total 4,619,570 L.E

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

**AGRICULTURAL MECHANIZATION PROJECT**

A. I. D. Proj. NO. 263 - 0031

**EGYPTIAN MOA/USAID**

6 th. Floor - Building of the  
General Society For Land Reforma

P. O. B. 256 Dokki - Giza, ARE.

704660 - 704720

704864 - 707247



مشروع اليكنسة الزراعية  
وزارة الزراعة المصرية - وكالة التنمية الأمريكية  
الذور الخامس - مبنى الجمعية العامة للإصلاح الزراعي

صندوق بريد ٢٥٦ - الدقي - ج ٢٠ ع

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



DATE May. 2, 1984 التاريخ

TO : Dr. David Gaiser

FROM : R.E. Snyder *R.E. Snyder*

SUBJECT: Report, Monthly (March 1984)

GENERAL

March was very much like Jan. and Feb. except that in the latter part of the month we were able to complete one loan for slightly over 21,000 L.E.

The revision of our original letter of understanding & its amendments was completed in Feb. Management however felt that the language was so fuzzy that it should be rewritten before sending it to USAID for approval. The rewrite had not been completed as of this report.

Our management staff and representatives of the PBDAC had a meeting on 28 March with another scheduled for 4 April. It appears that both groups are consolidating their efforts to develop a set of terms & conditions, and a system that we can all work with.

LOAN ACTIVITY

Loan activity thru 29 Feb. is as follows.

Disbursements thru Jan. 1984	343,920
Disbursements for Mar. 1984	21,139
Total disbursements thru Mar. 1984	415,109
Loans with bank approval	230,500
Loans at bank, but not approved	848,500
Loans being review in our office	404,000

Cairo at: April 1, 1984

Small Workshops  
1- Developed Workshops Month of March

No	Name	Delivering Date	Location	Value L.E
1	I. Ateyia	18/1/1983	Delingate - Behera	12,636
2	H. Shalaby	15/3/1983	Damanhour - Behera	18,800
3	M. Kohla	9/3/1983	Delingat - Behera	8,815
4	Y. Emarah	9/12/1983	Itay El-Baroud-Behera	16,649
5	S. El-Nashar	9/12/1983	Abu Homos - Behera	11958.7
6	A. El-Shaek	29/3/1984	Kafer El-Dawar-Behera	21,139
7	M. El-Mahalawy	31/3/1983	Benha - Qalubia	44,000
8	M. El-Bagoury	31/3/1983	" "	37,950
9	A. Afify	16/5/1983	Toukh - Qalubia	10,000
10	A. Hafez	16/5/1983	Benha - "	38,780
11	M. Yousef	11/9/1983	Toukh - "	27,000
12	M. Zak-	13/10/1983	El-Kanater - Qalubia	20,000
13	H. Gaafer	25/11/1983	" - "	9,323
14	M. Selim	30/10/1983	Kafr El-Zayiat- Gharbia	50,000
15	I. El-Hadary	22/12/1983	Bassioun - "	17743.3
16	A. Abu-Kohla	31/10/1983	" - "	35,000
17	A. Ahmed	28/8/1983	El-Minia - Minia	8,916
18	S. Ateyia	1/9/1983	" "	15,006
19	R. Mohamed	3/11/1983	Samalout - "	11,399
			Total	415,109

\* Mr/El Hadary didn't deliver all of his machines yet, he still has a machine with a value of 2040 L.E

2. Loans approved by the bank

No	Name	Approved Date	Location	Value L.E
1	A.El-Bassiony	22/2/1983	Shibin El- Kanater Qaluibia	50,000
2	H.El-Gamal	6/11/1983	" "	25,000
3	A.Adly	12/10/1983	Hosch Esse - Behera	7,000
4	A.Nagib	25/12/1983	Abu Korkas - Minia	24,500
5	M.Abd El-Motagaly	26/1/1984	" "	50,000
6	M.Abd El-Malak	13/3/1984	Samalout - "	24,500
7	T.Meksael	13/3/1984	" "	24,500
8	A.Abu Hammer	11/2/1984	Bassioun - Gharbia	25,000
			Total	230,500

3. Loans under Investigation at the bank:

No	Name	Delivering date	Location	Value L.E
1	A. Ahmed	21/6/1983	Samalot - Minia	24,000
2	S. Selem	5/7/1983	Malawy - Minia	40,000
3	I. Soliman	5/7/1983	El-Adwa - "	20,000
4	M. Dawod	24/3/1984	Malawy - "	30,000
5	L. Fahny	24/3/1984	Samalot - "	25,000
6	I. El-Garawany	2/8/1983	Tanta - Gharbia	20,000
7	A. El-Beyaly	15/11/1983	El-Mahaia - "	20,000
8	A. Shalash	9/11/1983	Kafer El-Zayat Gharbia	25,000
9	Y. El- Tanayhy	18/1/1984	Samanod - "	25,000
10	R. Keshasha	18/1/1984	" - "	25,000
11	S. Atta	18/1/1984	Kafer El-Zayat Gharbia	25,000
12	B. El-Mowafy	18/1/1984	Zefta - Gharbia	5,000
13	I. El-Samat	1/6/1983	Abu El-Matamer- Behera	15,000
14	S. Bakar	24/7/1983	Kom Kamada-Behera	20,000
15	T. Okbba	12/10/1983	" - "	15,000
16	E. El-Deeb	12/10/1983	" - "	45,000
17	A. El-Razik	12/10/1983	Abu El-Matamer Behera	12,000
18	S. Sakr	17/1/1984	Abu Homos - Behera	18,000
19	M. Kohla	17/1/1984	El-Delengat-Behera	4,000
20	N. Morsy	17/1/1984	Kafr El-Dawar - Behera	25,000
21	M. El-Anany	17/1/1984	Hosch Essa - Behera	25,000
22	A. Mahmoud	17/1/1984	Itay El-Baroud - "	50,000
23	A. Aly	17/1/1983	El-Giza - Giza	50,000
24	A. Aly	17/1/1983	Osem - Giza	3,500
25	S. Omar	17/1/1983	" - "	15,000
26	S. Abu Mamrah	17/1/1983	Mansouraya - "	15,000
27	M. Hemeda	7/2/1984	Maruotaya - "	50,000

28	F.Magrash	7/2/1984	Kombara - Giza	25,000
29	A.Abd Allah	19/10/1983	Kafr Shoukr- Qalubia	40,000
30	S.Abd El-Wahab	29/11/1983	El-Khankah- Qalubia	12,000
31	S.Saad	8/2/1983	Dyarb Negm-Sharkia	20,000
32	M.Abd El-Ghany	23/8/1983	" "	25,000
33	S.El-Said	29/11/1983	Hosayneya-Sharkia	50,000
34	A.Sayed	15/2/1984	Belbes -- "	15,000
35	E.Ragab	15/2/1984	" "	15,000
			Total	348,500

4. Loans at the Project Level

No	Name	Application Date	Location	Value L.E
1	H.El-Magdoub	3/10/1983	Damshet-Gharbia	
2	M.El-Kabany	17/5/1983	Samanod- "	25,000
3	M.El-Soraey	17/5/1983	Zefta - "	18,000
4	A.Aly	11/8/1983	Zagazig-Sherkia	22,000
5	A.Ghazy	25/10/1983	Abu Homos-Behera	50,000
6	H.Abd El-Salam	8/11/1983	Kafer El-Dawar Behera	15,000
7	M.Sheref	15/11/1983	Kom Hamada-Behera	
8	M.El-Aghory	15/12/1983	Mahmodia - "	15,000
9	A.Khaled	25/12/1983	Kom Hamada- "	50,000
10	A.Abd El-Kawy	4/1/1984	Abu Homos - "	50,000
11	A.Abd El-Ghany	4/1/1984	" "	4,000
12	M.Abd El-Ghany	29/1/1984	Kom Hamada- "	10,000
13	E.Ahmed	29/1/1984	Delengat - "	10,000
14	S.Saad	13/12/1983	" "	20,000
15	A.Metwaly	29/3/1984	Kafer El-Dawar Behera	
16	M.Ahmed	1/3/1984	Hosh Essa-Behera	50,000
17	F.Mahmoud	9/12/1984	Malawy - Minia	15,000
18	F.Abd El-Hakem	14/2/1984	" "	25,000
19	H.Mahdy	12/2/1984	Abu Rawash-Giza	25,000
			Total	404,000

Grand total of Small Workshops: 1,898,109 L.E

**A.5 Land Improvement Subproject**

First Quarterly Report - 1984

Land Improvement Sub-project

Submitted by: Dr. H. Saif El Yasi  
Mr. J. McClung

I. Activity during the Quarter

1. Demonstration Program: During the period of January-April 1984 the land leveling demonstration program continued on an ad-hoc basis because a majority of fields were planted to winter crops. Later in the period, sugar cane lands became free, in February and March.

The fact that land leveling is so popular among the sugar cane farmers seems to flag an area where private sector involvement might begin. Table 1 summarizes the areas where precision land leveling was carried out.

Table 1: Areas Precision Land Levelled - Jan.- March 1984

Area (fdn)	Location	Land Use
45	Abou Quarkas	sugar cane
10	""	""
30	""	""
25	Samalut	grapes
<b>Total</b>	<b>110</b>	

Additionally, plans were made to level 125 feddan of land in Samalut to serve as a base for research in long furrow irrigation. Topographic surveys indicated that earthwork volumes were too large for the sub-project's equipment in about 75 of the 125 feddan. The sub-project therefore canceled the leveling of this area. This experience indicates that special design procedures and construction equipment may have to be adopted for leveling lands in sugar cane production.

2. Several preliminary visits were made to the Agricultural Department offices in Beni Suef and Fayoum in order to expand project activities in the spring with the arrival of the IFB equipment. During one of these visits, a seminar was presented to high level governorate and state officials who would be interested in land improvement activities. The participation of Dr. Zachariah El Haddad in the conference was highly appreciated. Four potential villages were selected and will shortly be the focus of survey activities to determine land improvement and operating needs.

3. Equipment Procurements: Assembly and site delivery of IFB equipment were primary activities during this quarter. In mid-January, the Ford tractors began to be assembled in Al-xandria. In late February, site delivery of the IFB equipment began with the delivery of 22 tractors in Minya. One land improvement field operating unit has been "loaned" to the Training and Extension sub-project. The tractors on loan were delivered during late March. Three tractors and a limited amount of "free of charge" spare parts remain to be delivered to the Land Improvement sub-project in El Minya Governorate.

Assembly of the laser equipment on 14 tractors in Minya went smoothly and these tractors were currently in the field. Assembly of the remaining units in Gabal Asfar and in Beni Suef is expected to occur in late April. The Behera scrapers arrived in early February and have been joined to the laser units. With respect to these units, it was necessary to order special drawbars from Behera in order to use the scraper with the Ford tractors. In both cases of John Deere and Ford tractors, Clevis pin assemblies for towed implements have had to be manufactured in Egypt since this item was considered an option.

Support equipment for the field units has continued through the procurement process. Bids have been received, evaluated and awarded. A limited amount of this procurement has been delayed because no bids were offered and/or because the offers did not meet specifications. These items will have to be re-bid.

4. Surveys, Design and Planning Activities: During the first quarter of 1984, a work plan was developed for implementation in the Spring of 1984. Due to the shortage of transport and personnel in the Fall of 1983 no surveys were carried out of potential work areas. Therefore the plan may be considered tentative at best. The second planned work area was the Egyptian Water Use and Management site in Abyuha.

Plans to carry out surveys in the Spring of 1984 for the design of areas for late 1984 and early 1985 have not gone on schedule. This lack can be attributed to lack of equipment and transport as well as to poor staff performance. Although transport will undoubtedly remain a problem, procurements are under way which will eliminate the shortage of equipment. Training of personnel, particularly in the areas of management and planning are critical. Using the large custom type operation adopted by the sub-project, a high degree of forward planning and design is critical to success of this activity.

A report which studies the first year's work of the sub-project and which carries out preliminary analysis of the private sector potential has been prepared. This report is to be distributed as a working paper of the project. An abridged version of the paper presented at an ARC conference is provided in Annex I for reference.

5. Training and Extension Activities: Training and Extension activities have been limited during the first quarter. Training has focused on tractor/laser unit driver training. All operators have been previously trained by courses offered under the auspices of the program of the Training and Extension Sub-project. Results of these courses are not impressive:

on the first day three out of three tractors were stuck crossing a small bridge due to poor driving. The sub-project's training programs have therefore been forced to concentrate on giving these drivers experience behind the wheel as opposed to actual land leveling training. The need to provide these drivers with extensive on-the-job training will undoubtedly delay the demonstration program and result in a certain amount of damage to equipment. By the same token, the simplicity of land leveling using laser equipment will allow a modicum of quality land leveling to be undertaken using inexperienced drivers. If the LISP were using traditional precision land leveling methods, few, if any, of these operators would be competent to level land.

A short mechanic program was carried out at Ford Motor Company representatives' facility in Alexandria. This course was provided as a part of the IFB purchase package.

Aside from the meeting in Beni Suef Governorate, only coordinating type extension activities have been undertaken. Although several meetings have been arranged with farmers, only one group presentation was held. A certain amount of coordination with the project mechanization extension specialists has been undertaken. This tie will be reinforced in the coming months. The shortfall of the sub-project's extension activities is particularly worrying because it affects both survey and field operation activities.

The poor performance of the extension activity may be attributed to lack of transport and to poor performance of personnel. The areas of management and coordination are the key requirements in this activity.

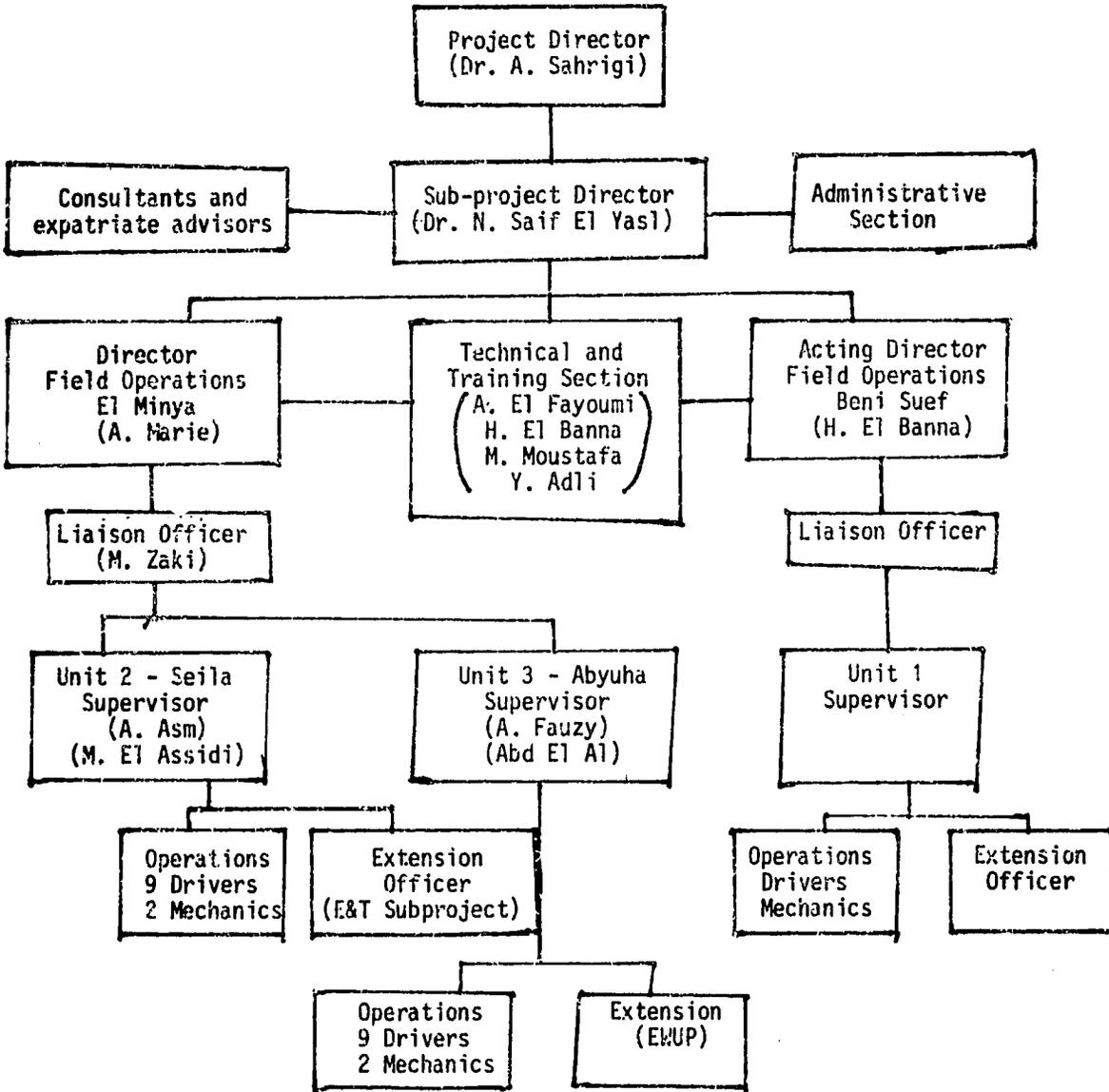
6. Summary: A review of this section indicates a good deal of progress has been made towards getting the field program implemented. The primary constraints to further the activities during the work season are:

- administration and finances
- transport
- management
- lack of equipment

The finance question has been particularly limiting. The sub-project has been operating on the basis of advances. These advances are sufficient for only one to two weeks' operation of the equipment currently in the field. Furthermore, replenishing these advances requires a 2 to 3 week period. Obviously this means field units come to a halt after only short periods of operation. Creation of an administrative section in LISP could solve this problem.

Lack of transport is limiting and with procurement of vehicles limited, it does not appear to have a solution. Reference to the governorates indicates that no solution may be expected from that source. While rental of vehicles may offer a short term solution, provision of living facilities on site, including tents, beds, cooking facilities, etc., would significantly reduce transport requirements.

Organization: Land Improvement Sub-project



The attached chart indicates the LISP organization. Unfortunately, the personnel of an administrative section does not exist. The persons who have been assigned mid-level management positions have not as yet been given the authority or the facilities they require. As this authority is given, the lack of experience and to a lesser extent, motivation, will limit the effectiveness of these persons. It is recommended that these persons attend a management training course and that their responsibilities be impressed upon them by project management.

Lack of equipment will become less and less of a problem as the various procurements come through the pipeline.

In conclusion, many of the problems flagged in this report may be attributed to start-up of a large equipment operation. Progress to date may be considered acceptable even though delays are expected to occur.

## II. Planned Activities

The following discussion outlines the proposed plans for the period of March through June of 1984. The plan includes discussion of the activities of each sub-section of the Land Improvement Subproject. The activities for field operations, technical activities and training and extension will be discussed separately.

### 1. Field Operations

With the arrival of the IFB equipment, the sub-project's activities are expected to expand. This will include a pre-test operation in Beni Suef, expanded activities in El Minya. Operations which will be added to the program include: meska and farm drain cleaning, mole drains and possibly sub-soiling. Nine of the sub-project's IFB tractors have been lent to the Training and Extension sub-project on an interim basis.

The equipment available to the sub-project has been divided into 4 field operating units as follows:

#### Unit 1: Beni Suef Demonstrations

- 3 John Deere 4240 tractors with scrapers and laser receivers
- 1 John Deere 204 tractor with chisel plow
- 2 Ford 7610 tractors with scrapers and laser receivers and/or chisel plow

#### Unit 2: Assigned to Matai

- 2 Ford 5610 tractors with chisel plows
- 7 Ford 7610 tractors with scrapers and laser receiving units
- 1 laser transmitter
- 2 Ford 7610 tractors with excavators
- 1 full bowser

**Unit 3: Assigned to Abou Quarkas**

2 Ford 5610 tractors with chisel plows  
7 Ford 7610 tractors with scrapers and laser receiving units

**Unit 4: On loan to Training and Extension Sub-project**

4 Ford 7610 tractor - Gabal Asfar with scrapers  
and laser receiving units  
3 Ford 7610 tractors - extension villages  
2 Ford 5610 tractors - extension villages

Additionally, 2 Ford TW35's with sub-soilers and mole drain equipment will be rotated among the four units. The sub-project is in the process of obtaining permission to use a tractor marshalling area and a storage room in El Minya. The storage room is expected to be used for storage of the spare parts available for the Ford tractors.

The total equipment capability of the sub-project is outlined in Table 2, as follows:

Table 2: LISP Equipment

<u>No.</u>	<u>Tractor</u>
6	Ford 5610
25	Ford 7610
2	Ford TW 35
3	John Deere 4240
1	John Deere 2040
3	Behera Scraper (2-wheel model)
25	Behera Scraper (4-wheel model)
8	Chisel Plows
3	Sub-soilers
1	Mole drain
1	Fuel Tank
24	Laser receiving units
4	Laser transmitters
2	Laser survey units
2	Automatic receiving rods
4	Laser set-up staffs and receivers

The equipment will be distributed to work in the following areas:

- Unit 1 - Pretest demonstration areas in Beni Suf Governorate
- Unit 2 - Matai Markaz - El Minya (Project villages)
- Unit 3 - Abou Quarkas Markaz - El Minya (EWUP Area or project village)
- Unit 4 - on loan

A work plan for areas in Beni Suf is currently being developed in conjunction with the Agricultural Department of the Governorate. It is estimated that this unit will begin field operations in late April following survey and extension activities. The Training and Extension Sub-project has trained 4 extension agents for Bush and Nasser Markaz.

Table 3: Unit 2 Work Plan

<u>Village</u>	<u>Area to be covered (feddan)</u>	<u>Estimated time (days)</u>	<u>Approximate date</u>
<u>Phase I</u>	326	20	March/April
Seila El Garbia			
<u>Phase II</u>	182	12	April
El Atlat			
<u>Phase III</u>	185	15	April/May
Seila El Garbia			
<u>Phase IV</u>	149	10	May
Seila El Garbia			
<u>Phase V</u>	219	17	May/June
El Atlat			

Table 4: Field Unit No. 2 Work Plan

Phase I	Basin	Village	Area/feddan	Time
	El Habema (part I)	Seila	20	
	Cat El Deyra	"	54	
	El Matpak	"	59	20 days
	El Barmams	"	78	
	Kam Omram	"	51	
	Kam Abo-Khalefa	"	66	
Phase II	El Bahare	El Atlat	93	
	El Gama	"	30	12 days
	Sharak El Fead	"	33	
	Labeap	"	26	
Phase III	Gindy	Seila	49	
	Bishera	"	41	15 days
	Sabakha	"	32	
	Kedi	"	63	
Phase IV	Hizara (part II)	Seila	47	
	El Hamiraya	"	47	10 days
	W. Hamiraga	"	37	
	E. Wend	"	18	
Phase V	Abid El Gawad	El Atlat	108	
	Abo Hosoab	"	52	15 days
	E. El Terah	"	59	

The sub-project will choose 2 villages in each of these markaz for initial activities. With the advice of the Governoarte officials, it is proposed that one village in the East and one in the western part of each markaz be selected.

Unit 2 has been assigned to work in the two project villages in Matai Markaz in the north of Minya Governorate. The total area to be leveled is 953 feddan by June 8, 1984. Of this total, 622 feddan will be in Seila El Gharbia Village and 331 feddan in El Atlas Village. This to the total has been divided inot a 5 phase plan according to cropping patterns. Each phase and its general details is outlined on Table 3. The basin names and areas are shown on Table 4. The detailed This unit will also undertake a limited amount of sub-soiling and ridging. A meska maintenance program using back-hoes will be undertaken in conjunction with the land leveling program. This plan should be used as a basis for planning and follow-up by the extension sub-project.

Unit 3 will be assigned to work in Abou Quarkas Markaz, primarily in the Abyuha area. This area is to be scheduled by the Egyptian Water Use and Management Project as governed by the attached letter of understanding. It is estimated that this unit will level approximately 800 feddan in the Abyuha area. In the event that the EWUP project cannot provide sufficient areas within an appropriate schedule or time frame, an alternate work plan in the project villages in the Markaz is currently under preparation.

## 2. Survey, Design, Planning and Monitoring

Activities: The technical unit will begin the surveys and designs necessary for preparing the work plans for June-December 1984. In Minya, this will entail carrying out topographic and soil survey in project villages in Abou Quarkas Markaz. By the end of 1984, all land in the project villages which requires or is practical to be leveled will have been precision-land leveled. New villages for sub-project work will have to be selected by the latter part of the year. Technical Report Number 3-A "Analysis of the Preliminary Basin Survey" which selected potential basins for survey will be used as a guide to selecting new basins. The sub-project will attempt to move into a new Markaz.

This process will spread the word about land leveling to new areas while at the same time, expand the sub-project's data base on earthwork volumes. This approach will however, require the training of additional irrigation/land improvement extension workers in these areas. Using training methods prepared earlier in the project training of this staff may be undertaken. In conjunction with this expansion of activities, an effort to create private sector operators in the Markaz which are left behind will be undertaken. Two papers considering aspects of land leveling of interest to private operators has been prepared. A certain amount of interest has already been expressed by private sector operators.

The technical section will begin efforts in the planning of a work plan for Beni Suef Markaz. In April, four villages to serve as extension centers for land leveling will be selected. The initial plan calls for surveys and leveling 2-3 basins in Beni Suef. Based on this work, a comprehensive work plan for Field Unit No. 3 will be developed in the four villages.

Concurrent with the activities in Beni Suef, initial work will begin in El Fayoum Governorate. As in the case of Beni Suef, several basins in selected villages will be used as pre-test areas. Due to the special circumstances in the Governorate, it is expected that development of a working system different from the other governorates may have to be made. In this respect, reconnaissance visits will begin in May and potential problems will be identified. Specialized expertise may need to be mobilized in view of these early visits.

A particular problem in understanding the design and survey activities is the shortage of survey equipment. At present, the sub-project does not have sufficient topographic survey equipment to effectively carry out and support its field activities. Similarly, to date no soil surveys have been undertaken due to lack of equipment. Procurements to fill these equipment gaps are currently being started.

To date, no monitoring program has been undertaken to effectively evaluate land leveling costs and benefits. In Technical Paper Number a methodology has been recommended. Funds to recruit enumerators and to purchase required materials will have to be budgeted. In cooperation with the Planning and Evaluation Sub-project, such a program can be undertaken.

### 3. Training and Extension Activities

A training plan for 1984 has been finalized and is presented in Table 5. A limited portion of this training will be undertaken directly by the sub-project. This will include the more specialized programs such as Land Leveling and Extension Training in Land Improvement and Irrigation. Materials for such courses have been developed and programs can be given during the slow periods of the work plan.

**Table 5: Agricultural Mechanization Project**  
**Land Improvement Subproject**

**SCHEDULED TRAINING ACTIVITIES OF 1984**

<u>Month</u>	<u>Course Title</u>	<u>No. of Trainees</u>
June	Shop Administration	4
June	Parts Administration	4
July	Mechanic Level II (Beni Suef)	10
July	Traotor Operator Course (Fayoum)	15
July	Mechanic Level III (Fayoum)	6
July/Aug.	Land leveling Operator Training (Fayoum)	15
May/June	Land Leveling Operator Training (Beni Suef)	15
July/Aug.	Welder	6
August	Ag. backhoe Operator Training	8
September	Technical Training	10
December	Technical Training	10
September	MSc. Soil Science	1
September	MSc. Irrigation Engineering	1
July	Extension Worker Training in Land Improvement and On-farm Irrigation	10
September	Extension Worker Training in Land Improvement and On-farm Irrigation	10
December	Extension Worker Training in Land Improvement and On-farm Irrigation	10

**A.6 Local Manufacturing Program**

بسم الله الرحمن الرحيم

AGRICULTURAL MECHANIZATION PROJECT

A. I. D. Proj. NO. 263 - 0031

EGYPTIAN MOA/USAID

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مشروع المكنة الزراعية  
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الدور الخامس - مبنى الجمعية العامة للإصلاح الزراعي

صندوق بريد ٢٥٦ - الدقي - جيزة ج ٢٠

٧٠٤٦٦٠ - ٧٠٤٧٢٠

٧٠٤٣٦٤ - ٧٠٧٢٤٧



DATE January 29, 1984 التاريخ

To : Dr. Ahmed F. El Sahrigi  
Project Director

c.c. Dr. David Gaiser ✓  
Team Leader / Project Technical Director

Dr. Zakaria El Haddad  
Project Coordinator

Dr. Abdel Mogeith El Kadim  
Head of Production Engineering Dept. - Alex. University

From : Richard K. Berky / <sup>رئيس قسم المكنة</sup> Allison W. Blanshine  
Manufacturing Advisor / Machinery Development Advisor

Subject : Update on Thresher 84 Drawings.  
Pre-production Prints of the Main Frame were released  
Dec. 7, 1983

In our memo of Jan. 14, 84 we stated that we would have drawings of cylinder, blower, lower concave, transmission drive and cover ready for release by Feb. 1 st. Those drawings are herewith released.

To date we now have approximately 250 drawings released. We have approximately 150 drawings to complete on the following - upper and lower cleaning screens, eccentric bell crank drive, grain auger, trailing caster wheels, and in addition drawings on optional equipment such as upper concave and bagging attachment. We estimate that we can complete these by Mar. 1 st.

con't

These drawings are not final checked drawings as we have no checking layout and no one to make such a layout therefore errors will be found and have to be corrected.

The time required to make drawing may seem very long to those not familiar with such work. We have one good draftsman and one trainee. Such a project requires 4 to 6 good draftsman. A good Egyptian draftsman can produce 2 - 3 average drawings per day or a total of 100 man days ( 5 months ) for 250 drawings completed to date.

And the manpower requirements for production tooling and fixtures will be double the machine design requirements. Therefore we must get many experienced people behind this project so we can move ahead toward production.

Monthly Progress / Activity Report - For March 1984

Submitted by : Richard K. Berky *AKB 8/31*  
Local Manufacturing Advisor

1. Completed checking and release of all thresher drawings and bills of material except for optional equipment groups.
2. Begin design work on a One Per Day Village Threshing Machine Manufacturing Plant. Included was specification of major tools required, definition of processes to be used and special tooling requirements.
3. Assisted in preparation and solicitation for bids for pre-manufacture of 1984 threshers.
4. Procured and organized six complete sets of manufacturing drawings along with bills of material.
5. Designed a " Process and Estimate Sheet " and " Part or Ass'y Production Costs " forms. Exhibits A & B.
6. Ran a pro-forma cost analysis of the 1984 thresher frame with hitch assembly.

Conclusions :

To manufacture the thresher for a break even cost ( factory door ) of 1700 L.E. will require a minimum output of one per day at one location and the design of all new methodology along with retraining engineers and workers. For these reasons it is more appropriate to locate as far from current manufacturing centers and as close to the user market as possible.

con't

The reasons for this is the tendency of interference by entrenched nearby backward manufacturers and workers. Raw materials are largely plate steel which can easily be stocked and transported.

Closeness to users for service and market expansion are of greater importance. Also considered are the difficulties of people transport in Alexandria and Cairo.



Monthly Progress / Activity Report - For February 1984

Submitted by : Richard K. Berky *A. W. B. 2/31*  
Local Manufacturing Advisor

The main occupation was drafting, checking and writing bills of material for the 1984 thresher. Other activities included investigation of sugar cane mechanization as potential for premanufacturing. This was conducted in the vicinity of Kom-Ombo. Design of various optional thresher equipment.

Problems :

1. Inability of local help to visualize complex drawings or assemblies.
2. Inability of local help in relating drawings to possible manufacturing processes.
3. Reluctance of local help to pursue any new idea with vigor.
4. Reluctance on part of local help to treat the thresher subproject as a paying customer.
5. Over-estimation on part of local help of their capabilities along with no contingency planning.
6. Poor attitude on part of local help re. carrying out instructions on timely basis to the extent of petty obstruction and politics.

Conclusions :

There evidently exist a tremendous need for practical training in factory communications and understanding blue prints, inspection, cost, procurement, delegation of authority and acceptance of responsibility.

ANNEX B

PRECISION LANDLEVELLING IN TWO MINIA BASINS

Peter Reiss  
Evaluation Advisor

January 1984

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**PREFACE**

Constraints to improving the irrigation system of Egypt may be identified as follows:

- (1) The preference of the majority of the farmers to continue their traditional methods of irrigation.
- (2) The fragmentation of land into small and separately worked holdings and the desire of each individual farmer to have his own delivery ditch.
- (3) The availability of irrigation water at no direct cost to the farmer, so there is no incentive for the farmer to economize on water use.
- (4) The very limited number of extension workers trained in soil and water management.
- (5) The difficulty in operating and managing modern and complex new irrigation systems.

The proven techniques of zero levelling and long furrows for each holding or group of holdings (basin) should be incorporated into improved on-farm water management systems. The introduction of this system, based on field demonstrations, should be highlighted to encourage all farmers to participate in the program.

This valuable field evaluation study points out eight issues for consideration in the planning stage of a precision landlevelling program. The most important element mentioned, which requires the first investigation, is a cost-benefit analysis of this technique. It must be kept in mind that farmer participation in the program depends upon its economic and financial viability.

Ali Nashat  
Secretary-General  
Agricultural Research Center

## SUMMARY

Despite radical changes in the system of water distribution during the past two decades, farmers have continued to cultivate and irrigate their land under roughly the same conditions. Problems with soil and drainage leading to salinity and waterlogging have become endemic. The Agricultural Mechanization Project has been charged, in part, with rectifying this situation through a Soil Improvement Component. Its activities, however, have wider implications because they also seek to establish a base which will make interrow mechanization possible.

To date, soil improvement activities have been largely limited to precision landlevelling using laser equipment. Also drainage improvement, tertiary canal rehabilitation, and improved field access are planned. Landlevelling was selected as a primary activity because of a need to improve irrigation efficiency and surface drainage. Although used by the Ministry of Agriculture elsewhere, only the Agricultural Mechanization Project is attempting to use it on a commercial basis for the private sector.

Yet, the appropriateness of laser equipment is still at issue. Conflicting estimates of its cost have circulated, but a convincing costs and benefits analysis has not been undertaken. If, as planned, the work is to be extended to the private sector by operators, such an investigation must be made. Otherwise, precision landlevelling risks being the sole responsibility to the Project and the Ministry which underwrite its costs by providing it as a free service.

Landlevelling by the Project has been largely carried out in Middle Egypt. Through the summer of 1983, 360 feddans had been levelled in Minia, and additional land is now being worked. This report is based on visits to two basins in Minia, Abu Askar in El Birba El Kubra and El Biik in El Atlas which were levelled in June and July 1983. The following points define the boundaries of the investigation:

- (1) the participation of farmers in planning and implementing landlevelling activities
- (2) the difficulty in levelling a number of contiguous plots at the same time and the problems associated with determining the original plot boundaries
- (3) the problems encountered moving topsoil across plots while levelling and the demands of farmers for compensation
- (4) the role of extension in landlevelling
- (5) the impact of landlevelling on planting techniques and the incidence and effectiveness of longer furrow use
- (6) the impact of landlevelling on irrigation time
- (7) the impact of landlevelling on crop yields
- (8) the existence of and need for an accurate data base for assessing the costs and benefits of laser equipment for precision landlevelling

This report is based on interviews with twenty-five farmers from each of the two basins with the following information solicited: crop variety, crop yield, furrow length, irrigation time, and method of irrigation before and after landlevelling. In addition, twelve farmers were interviewed in-depth.

Abu Askar and El Biik basins were selected, in part, because of their soil and water conditions. Farmers in the villages identified the basins as having severe irrigation and levelling problems.

Farmer participation in landlevelling activities has been passive thus far. Although invited to attend educational sessions, there has not been an ostensible effort to bring them into planning the activities. As long as the Component limits its work to landlevelling, it is unlikely that farmer participation will be significant. However, should the Component expand its work into drainage, road, and canal improvements, the active participation of farmers would be advisable. The work of another project, Egypt Water Use and Management, reveals that the organization of participating farmers into committees was an important and necessary part of planning and implementation.

Although some members of the Component feared that farmers would have some difficulty reestablishing the original boundaries of their plots after landlevelling, thus creating conflicts among neighbors, this was not the case in the two basins levelled. A system of boundary demarcation by sinking iron bars into the ground allows for the determination of boundaries. It is not certain if this system is universally used.

Farmers in the two basins indicated no serious opposition to the movement of topsoil across plot boundaries during the levelling operations. Given the estimated cost of compensation, it is not advocated.

Extension efforts in landlevelling were made independently of the Project's Machinery Extension and Training Component and the Extension Department of the Agricultural Directorate of Minia.

A comparison of the methods of planting and irrigating maize, the field crop grown in the two basins after landlevelling, reveals differences in preference for furrow and ridge length. Forty-nine of the fifty farmers interviewed indicated that they have increased the length of their furrows. However, in Abu Askar farmers had increased the length, on average, by only five meters, while in El Biik they had increased it by thirty-five meters. This difference may be explained, in part, by previous planting techniques. Farmers in El Biik have planted maize in somewhat longer furrows on ridges for many years, possibly because of a village labor shortage, while farmers in El Biik have planted maize in short basins with short furrows. At the encouragement of extension agents, farmers in Abu Askar planted maize in ridges, but continued their traditional basin technique. Still, the use of longer furrows and ridges appears to be gaining some acceptance. Farmers in both basins have

retained the ridges for growing fuul and will use them for cotton this summer. Several of the farmers in El Biik said that when they next construct ridges and furrows, they plan to extend them uncut the full length of their fields.'

The farmers were unanimous that landlevelling had shortened their irrigation time. Reductions ranged from 30 to 50%. Since irrigation time is measured by the period a pump is running, landlevelling has the potential of increasing profits for farmers by reducing their input costs.

Assessing the impact of landlevelling on crop yields has been problematic and, at this point, is uncertain. No records of agricultural inputs were kept and no samples were taken during harvesting. Further complicating the situation was the introduction of a high-yielding maize variety which had never been grown in the basins before. Through the work of the Egyptian Major Cereals Improvement Project and the village banks, Giza 2 maize was grown on nearly 28,000 feddans in Minia this year and is expected to be expanded to 70,000 next summer. As introduced by EMCIP, Giza 2 is part of an agronomic package which can be implemented by farmers. Production increases appear to be on the order of 100% when compared to the baladi varieties.

Little information has been collected, thus far, about the costs and benefits of precision landlevelling using laser equipment in Egypt. Two studies ought to be undertaken in the near future: the cost-effectiveness of precision landlevelling and the block testing of EMCIP's agronomic package with our own soil improvement and machinery introduction program. EMCIP staff are eager to work cooperatively with us.

Based on this report, the following recommendations are made:

(1) Thus far, farmers in the levelled basins have been invited to attend demonstration sessions but have played no role in the planning of the activities. As long as the work of the Soil Improvement Component is limited to precision landlevelling, it is unlikely that farmer participation will be any greater. However, it is strongly urged that if the work of the Component is extended to drainage improvement, tertiary canal rehabilitation, and improvements in access to fields, as planned, farmers be more actively involved. Work in landlevelling is necessarily fast moving, but these remaining activities will require large expenditures of capital, much time, and the cooperation of participating farmers.

(2) There is a concern by members of the Soil Improvement Component that if large tracts of land are worked as a single unit, farmers will have difficulty reestablishing the original boundaries, creating conflicts between neighbors. A system of boundary demarcation does exist in the first two basins worked which precludes such disputes. Yet, this system may not be universal. It should be the responsibility of those using the levelling equipment to determine how boundaries are determined before they begin their work.

(3) Farmers in the two basins levelled indicated no serious opposition to the movement of topsoil across boundaries. In any case, compensation to farmers would be unrealistic and

cannot be advocated. Rather, a concerted extension effort must be in place to allay farmers' fears as they arise.

(4) Landlevelling was carried out in the two basins largely independently of the Extension and Training Component. The perpetuation of artificial, institutional distinctions within the Project can only work to its detriment. Since one of the objectives of landlevelling is the facilitation of interrow mechanization, it is advisable that machinery demonstrations directly follow the work of the Soil Improvement Component in an integrated plan. It appears that seed drills have been used to plant wheat after levelling; this move ought to be encouraged and expanded.

(5) Extension efforts by the Soil Improvement Component, as well as by the Machinery Extension and Training Component, have been independent of the extension wing of the Agricultural Directorate of Minia. Its director, Ahmed Gedd El Karim, is extremely competent and ought to be encouraged to assist in Project implementation and help to coordinate the work of this project with that of others working in Minia.

(6) An examination of the planting techniques in Abu Askar basin in El Birba El Kubra reveals that farmers are essentially using the traditional method with a small change in furrow length. Basically, they have added ridges to their small basin techniques. The effects of landlevelling will not be realized if this situation persists. Again, a serious extension effort must be undertaken so that farmers make the adjustments necessary to gain the maximum benefits.

(7) Although farmers in El Biik basin in El Atlas did shorten their irrigation time by 30 to 50%, it is clear that they deal with difficult irrigation conditions. If the Soil Improvement Component extends its responsibilities into drainage and canal improvements, it is recommended that the basin be used as a demonstration site.

(8) Little information is available concerning the costs and benefits of precision landlevelling. Since private operators are to be encouraged to undertake the work at the conclusion of the project, a convincing costing of the activity must be undertaken as soon as possible. Given the plan to purchase an additional four units for the Delta, to be operated by the Machinery Extension and Training Component, indicating a significant increase in the Ministry's commitment to the work, such an investigation of costs and benefits must have the highest priority.

(9) Staff members of EMCIP are prepared to work with the Agricultural Mechanization Project in block testing their agronomic package with our landlevelling program. These tests hold the potential of combining an apparently successful agronomic package with our own machinery inputs. Dramatic increases in production are most likely to be realized with a combination of the two programs. Testing may begin as soon as summer 1984 with precision landlevelling and the planting of maize. The results are likely to have important policy making implications for the Ministry of Agriculture.

## ACKNOWLEDGEMENTS

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Minia  
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Mahmoud Ridi, Field Manager, Minia  
Rageb Marei, Village Monitor, El Atlas  
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## 1.0 INTRODUCTION

Despite radical changes in the system of water distribution during the past two decades, farmers in Middle and Upper Egypt have continued to cultivate and irrigate under roughly the same conditions. The requisite infrastructure to support a shift from seasonal to perennial irrigation was not in place when the Aswan High Dam began its operation in the 1960s. Since then, problems with soil and drainage leading to salinity and water-logging have become endemic.

The Agricultural Mechanization Project has been charged, in part, with rectifying this situation. However, its activities, through the Soil Improvement Component, have wider implications because they seek to establish a base which will make possible interrow mechanization, whereby agricultural activities from seedbed preparation through harvesting are tied together in one mechanized system.

Thus far, the Soil Improvement Component has limited its field activities to precision landlevelling, although it plans to broaden its work when additional machinery has arrived in country. Landlevelling was selected as a primary activity because of the need to improve irrigation efficiency and surface drainage. The Egyptian Water Use and Management Project has suggested that landlevelling improves irrigation efficiency by 38 to 62%, although these figures ought not to be considered final. Laser equipment was chosen as the means of precision landlevelling because, with it, less costly and more compact scrapers can be used on smaller land units. An estimated 25% increase in output may be gained with laser control. In addition, greater overall accuracy can be obtained with laser control equipment, giving accuracies of from .025 to .030 m.<sup>1</sup>

Laser equipment for precision landlevelling is a new technology in Egypt. Its use has been very restricted. In addition to the Agricultural Mechanization Project, laser equipment is being used by the Ministry of Agriculture's Soil Amelioration Organization (2 units), the Egyptian Major Cereals Improvement Project (3 units, used only on state farms) and by Spectrophysics, the local distributor, which has used it in demonstrations. Only the Agricultural Mechanization Project is attempting to use it on a commercial basis for the private sector.

Yet, the appropriateness of laser equipment for precision landlevelling in Egypt is still at issue. While it has been technically successful, the costs and benefits are uncertain. Estimations of costs range from an unlikely 6 L.E. per feddan<sup>2</sup> to 45.50 through 136.50 L.E. (economic) and 31 through 93 L.E. (financial), given the volume of soil moved.<sup>3</sup> Members of the Soil Improvement Component tentatively estimate a cost of between 50 and 60 L.E. per feddan, depending upon the precision desired and the volume of soil moved.

To date, the question of costs and benefits has not been central to the work since the project has undertaken to subsidize landlevelling by providing it as a free service to farmers. However, if the work is to be extended, as originally conceptualized, to the private sector, the suitability of laser technology, and landlevelling in general, must be squarely faced. Farmers will have to believe that landlevelling, as well as other soil improvements, are worth the expenditure, because of a shortening in irrigation time and increased production. Private operators, who would be doing the levelling, will have to expect a large enough profit to make it worthwhile. Until accurate and supportable figures for the costs and benefits of

precision landlevelling are determined, the activity is likely to be largely limited to the Project which underwrites it.

Landlevelling by the Component is to be carried out in the Middle Egypt governorates of Minia, Assiout, Beni Suef, and Fayyoun where soil and water problems are particularly serious and where little previous assistance has been given. Since the acquisition of equipment, the Component has worked largely in Minia, where 360 feddans have been levelled through the summer of 1983. Additional land is now being levelled. By arrangement with the Egypt Water Use and Management Project, 120 feddans were precision levelled in the village of Abyuha. With the exception of an extended period in Kom Ombo in the fall, the equipment is working in and near the Minia Project implementation villages. The first villages selected were El Atlat in Matai District and El Birba El Kubra in Abu Qurqas District. In each, one basin was chosen: El Biik in the former and Abu Askar in the latter.

The choice of the basin as the unit of implementation was made by the Soil Improvement Component and supported by the Evaluation Unit. Although originally a basic unit of taxation, the basin has achieved its own reality in the system of crop rotation instituted by the government. The basin tends to be that area designated for a particular crop. As such, the farmers working in that basin likely have similar planting schedules. With regard to the efficient operation of the levelling equipment, basins are large expanses which may be worked as a single unit over a brief period of time. Since the Component's activities are primarily focused on soil improvements rather than on canal renovations, the selection of basins, rather than, for example, the land irrigated by a tertiary canal, is a sound one.

During the summer of 1982, a number of visits were made to Minia by members of the Soil Improvement Component and the Evaluation Unit for the purpose of selecting the basins in which landlevelling activities would begin. The initial criteria for selection were that the basins reflect the median basin size for Minia (roughly 70 feddans<sup>4</sup>) and that they be totally or almost exclusively devoted to seasonal field crops. Based on data collected by village monitors in the Evaluation Unit and field trips to the villages, Abu Askar and El Biik were tentatively chosen. In the data provided by the monitors, basins in the five Project villages were ranked on the basis of salinity, alkalinity, levelling problems, weeds, irrigation, and drainage. Meetings with farmers and village cooperative agents to determine when the basins would be free for levelling preceded the final selection.

Precision landlevelling began in Abu Askar basin on 31 May and was completed two weeks later on 57 feddans and continued in El Biik on 23 June until the last week of July with 72 feddans levelled. Maize, planted in long furrows, was the first crop to follow levelling in both basins.

At the request of members of the Soil Improvement Component, the Evaluation Unit began its long delayed assessment in September 1983, while the maize was still in the basins. In December, Drs. Ahmed El Sahrigi and Zakaria El Haddad asked that the evaluation continue because they had heard that farmers in the levelled basins were indicating an increase in maize yields.

This report, however, goes beyond the question of a possible effect of landlevelling on crop production. It focuses on both the operation of the work done and the objectives to be

sought in the future. The following points define the boundaries of the investigation:

- (1) the participation of farmers in planning and implementing landlevelling activities
- (2) the difficulty in levelling a number of contiguous plots at the same time and problems associated with determining the original plot boundaries
- (3) the problems associated with moving topsoil across plots while levelling and the demands of farmers for compensation
- (4) the role of extension in landlevelling
- (5) the impact of landlevelling on planting techniques and the incidence and effectiveness of longer furrow use
- (6) the impact of landlevelling on irrigation time
- (7) the impact of landlevelling on crop yields
- (8) the existence of and need for an accurate data base for assessing the costs and benefits of laser equipment for precision landlevelling

This report is based, in part, on in-depth interviews with twelve farmers who cultivate land in Abu Askar and El Biik basins. In addition, twenty-five farmers in each basin were interviewed for the following information: maize variety, maize yield, furrow length, irrigation time, and method of irrigation before and after landlevelling. Their names were randomly selected from a list of basin landholders provided by the village cooperatives in El Birba El Kubra and El Atlas.

0 A DESCRIPTION OF THE BASINS LEVELLED

Abu Askar and El Biik were selected, in part, because of their soil and water conditions. Monitors working in the Evaluation Unit were asked to meet village agricultural agents and farmers in the five Project Minia sites in order to rank the basins for problems with irrigation, drainage, salinity, alkalinity, levelling, and weeds.

Of the twenty-six basins in El Birba El Kubra, Abu Askar was ranked twenty-fifth (second worst) in irrigation conditions, weeds, alkalinity, and levelling, twenty-fourth in salinity, and twenty-third in drainage. El Biik was ranked ninth of ten basins in irrigation and levelling, fourth in drainage, and second in weeds, alkalinity, and salinity.

The following table summarizes the basic characteristics of the two basins:

BASIC CHARACTERISTICS OF THE LEVELLED BASINS

Characteristic	Abu Askar	El Biik
Village	El Birba El Kubra	El Atlas
District	Abu Qurqas	Matai
No. feddans cultivated	66	91
No. landholders registered	58	124
Largest plot (feddans)	5	3
Smallest plot (qirats)	8	3
Area in gardens (feddans)	0	12
Tile drainage	no	yes
Neighboring open drains	none	none in use
No. tertiary canals	2	3
No. feddans levelled	57	72
Variety of maize and area (f.) grown after levelling	Giza 2: 66	Giza 2: 30 Baladi: 48 Pioneer: 1
Last previous year of maize	1980	1981
Current crops	bersim, fuul	bersim, fuul

### 3.0 FARMER PARTICIPATION IN SOIL IMPROVEMENT ACTIVITIES

Members of the Soil Improvement Component have remarked that, despite a series of demonstrations and lectures held in El Birba El Kubra and El Atlas before the levelling equipment entered the basins, farmers showed little interest in the work while it was actually being done. While some of the farmers interviewed attended the Project sponsored meetings, none witnessed the work in the basins nor indicated any regret in not having done so.

In any case, the participation requested of the farmers was passive in nature. They were asked to attend educational sessions. There has not been an ostensible attempt to bring them into the planning of the activities. As long as the work of the Soil Improvement Component is limited to landlevelling, it is likely that farmer participation will be minimal.

However, it is strongly urged that if the work of the Component is extended to drainage improvement, tertiary canal rehabilitation, and improvements in access to fields, as planned, farmers be actively involved. Work in landlevelling is necessarily fast moving, but the three remaining activities will require large expenditures of capital and much time.

The experiences of the Egypt Water Use and Management Project reveal a need to organize participating farmers into advisory councils to facilitate the work. That project tried a variety of ways of organizing farmers, from rigidly formed to informal units and found that the most successful were those which were loosely organized with no formal leader. Members of the project are convinced that their work could not have been carried out without the participation of farmers in some recognized bodies.<sup>5</sup>

#### 4.0 AGGREGATING PLOTS AND REESTABLISHING PLOT BOUNDARIES

Although the reasons for selecting the basin as the unit of implementation in soil improvement has already been discussed, it ought to be pointed out that working at the basin level does present some problems. Basins are tied into a rigid system of crop rotation which meant that some candidates for levelling were not selected because Project schedules could not be coordinated with planting and harvesting requirements. Nor were the basins completely free of crops when landlevelling began. The actual levelling was forced to follow harvesting in the basins, and so was completed in a patchwork.

Still, the levelling was done, as a rule, across a number of individually held plots. At the outset, there was a concern by members of the component that, as a result, farmers would have difficulty reestablishing their original boundaries, creating conflicts in the basins between neighbors.

In fact, a system of marking plot boundaries has long been in place in the villages visited. When they acquire land, through inheritance or purchase, farmers sink iron bars into the ground to a depth of roughly a half meter so they will not interfere with plowing and other operations. After the levelling, if necessary, farmers dug down to locate the exact edges of their plots.

A system of plot demarcation in some villages does not suggest that all Egyptian villages use this method. It should be the responsibility of those using the levelling equipment to determine how plot boundaries are determined before they begin their work. Since levelling is expected to be expanded to other governorates in Middle Egypt and the Delta, it is particularly crucial that the system for determining boundaries be understood first.

## 5.0 MOVING TOPSOIL ACROSS PLOT BOUNDARIES

Given the size of the landholdings in Abu Askar and El Biik basins, the landlevelling equipment has necessarily worked across individual plot boundaries. As the summary table of basin characteristics indicates, plots in the two basins range from a few qirats to a few feddans. In Abu Askar 58 landholders work 66 feddans, and in El Biik 124 farmers cultivate 91 feddans.

In levelling land, topsoil had to be moved to even the surface. It was of concern to the Component that farmers might oppose the work out of a fear of soil loss.

Farmers in the two basins indicated no serious opposition to the operation. However, one farmer from El Biik did request compensation for the lost topsoil in the form of manure. He asked for 200 ghabit (the equivalent of 25 m.<sup>3</sup>) of fertilizer per feddan, at a cost of .25 to .30 L.E. a unit. Were the Project to compensate farmers at this rate, it would cost 40 to 60 L.E. per feddan.

Given the cost, such compensation is unrealistic and cannot be advocated. Rather, a concerted extension effort must be in place to inform farmers about the expected benefits of landlevelling. That only one farmer indicated a desire to be paid in kind for the soil loss ought to be taken as a positive development.

## 6.0 THE ROLE OF EXTENSION IN LANDEVELLING

Precision landlevelling, done in conjunction with laser equipment, is a new technology to be used on farmers' fields. As such, a strong extension effort must be introduced and maintained so that farmers understand the objectives and benefits of the work. In Abu Askar and El Biik basins, the extension efforts, including demonstrations and discussions, were largely carried out independently of the Extension and Training Component although it has a full time machinery agent in each of the villages. The perpetuation of artificial, institutional distinctions within the Project can only work to its detriment.

One of the objectives of landlevelling is the facilitation of interrow mechanization. Machinery for planting then ought to be introduced following levelling. Although not done in Abu Askar and El Biik, it appears that seed drills are being used in some Minia basins this season. This move ought to be encouraged and expanded, since landlevelling ought not to be considered as an end in itself but as part of a mechanization package.

Extension efforts made by the Soil Improvement Component, as well as by the Machinery Extension and Training Component, have been independent of the extension wing of the Agricultural Directorate of Minia. The Director of Agricultural Extension in Minia, Ahmed Gedd El Karim, is extremely competent and ought to be encouraged to assist in Project implementation.

## 7.0 THE IMPACT OF LANDEVELLING ON PLANTING TECHNIQUES

Farmers in Abu Askar and El Biik basins were encouraged to use long furrows when planting maize following the landlevelling. Precision landlevelling provides greater irrigation efficiency through improved water distribution in the fields. Long furrows are the means by which irrigation water is more rapidly dispersed to the crops. While some doubts have been raised about the desirability of using long furrows, because of possible damage to the land at the end of the runs, there is no doubt that farmers have increased the length of their furrows. With this increase, farmers have either introduced ridges for planting maize or increased the length of the ridges they use.

A comparison of the methods of planting and irrigating maize in the two basins reveals differences in preference for both furrow and ridge length. Following landlevelling, 49 of 50 farmers interviewed indicated that the length of the furrows they constructed were longer than those in previous seasons. However, very consistently, the farmers in El Biik have increased the length considerably (on average by 35 meters), while in Abu Askar they have increased the length from only three to seven meters (an average of 5 meters for the twenty-five farmers interviewed). The table on the following page indicates this apparent hesitance on the part of the Abu Askar farmers.

Differences between the two basins may be explained by the previous planting patterns there. Maize in Abu Askar has traditionally been planted in small basins with sides measuring between five and seven meters ( $1\frac{1}{2}$  to 2 gasabaat). Seeds were planted in lines on the flat ground rather than in ridges. However, in El Biik, for at least the last seven years, and possibly longer, maize has been planted on ridges, also measuring

**THE IMPACT OF LANDEVELLING ON FURROW LENGTH**

Furrow length	Number of Farmers in					
	Abu Askar		El Biik		Total	
	Before	After	Before	After	Before	After
3 - 5 meters	24	-	19	-	43	-
6 - 10 meters	1	22	6	2	7	24
11 - 30 meters	-	3	-	7	-	10
31 - 50 meters	-	-	-	14	-	14
51 - 100 meters	-	-	-	1	-	1
more than 100 meters	-	-	-	1	-	1
<b>Total</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>50</b>	<b>50</b>
<b>Average furrow length</b>	<b>4.5</b>	<b>9.5</b>	<b>5</b>	<b>40</b>	<b>4.8</b>	<b>24.5</b>

between five and seven meters. Farmers in El Biik basin contend that the shift to planting maize in ridges grew out of a labor shortage in the village. According to them, hired agricultural laborers have demanded that maize be planted in ridges because it is less strenuous than planting on flat ground, but they are vague about how this technique was introduced. Whether this explanation is actually the origin of using ridges for maize or is a bit of folk mythology is uncertain. Still, the perception of a labor shortage in El Atlat may be realistic. Information collected earlier about the Project villages suggests possible constraints on the labor force in El Atlat. Although the population of El Atlat is only half that of El Birba El Kubra (2854 and 4917, respectively), El Atlat has twice as many emigrants (157 as opposed to 79 in El Birba).<sup>6</sup>

Experience with ridges in the past meant that farmers in El Biik were only introducing the innovation of long furrows into their cultivation system, following the still untested landlevelling. In contrast, long furrows and the use of ridges were two innovations, doubling the uncertainty of farmers in Abu Askar. At the encouragement of extension agents, Abu Askar's farmers constructed ridges running the length of their fields (approaching 200 meters), bordering long furrows. However, these ridges were cut at intervals of roughly seven meters as were the furrows. In fact, the farmers in Abu Askar are using the same system of irrigation with the exception that ridges now stand in the seven meter square basins. They have tried to keep the changes to their method of planting and irrigation to a minimum.

It appears that extension agents of the Egyptian Major Cereals Improvement Project (EMCIP) were largely responsible for encouraging farmers to plant with long ridges. The project has

a fifteen feddan demonstration site in each of these villages, although outside the two levelled basins. Through the village banks, Giza 2 was distributed to farmers in the villages. This is the first year that farmers planted this variety of maize in the two basins. A fuller treatment of the work of EMCIP with reference to Maize Giza 2 will be found in 9.0, The Impact of Landlevelling on Crop Yields.

The use of longer furrows and ridges appears to be gaining some acceptance. Farmers in both basins retained the ridges for growing fuul and say they will keep them for cotton, their next summer crop. They will level for wheat the following winter. Several of the farmers in El Biik said that when they next construct ridges and furrows, they plan to extend them uncut the full length of their fields.

## 8.0 THE IMPACT OF LANDEVELLING ON IRRIGATION TIME

Among the fifty farmers interviewed, there was universal agreement that landlevelling has shortened irrigation time. The reduction in time ranges, farmers estimated, from one to two hours, which means a savings of 30 to 50%. Since diesel pumps are rented by the hour, landlevelling has the potential of significantly increasing profits for farmers by reducing their input costs and their labor requirements.

Extrapolating from the time given by farmers for their plots to the standardized unit of the feddan, it appears that irrigation requirements vary considerably from El Biik to Abu Askar. While the figures from El Biik indicate that a feddan took between five and eight hours to irrigate using a pump, in Abu Askar it took between three and four hours before landlevelling. Following levelling, the time in El Biik had decreased to between three and five hours and in Abu Askar to between two and three hours. The table on the following page highlights these data. Certainly, farmers in El Biik, from the outset of the work, have complained vociferously about their irrigation conditions.

Farmers estimated their irrigation time according to the number of hours the pump is running or the number of hours they turn the handle of the tambour. As such, the decrease in time also means a decrease in the amount of water being used to irrigate the plot. This may have positive consequences on salinity, waterlogging, and, possibly, yields.

In nearly all of the fifty cases, farmers used the same method of irrigation before and after landlevelling. Only two farmers changed, both from Abu Askar: one from pump to gravity flow and the other from pump to siphons.

THE IMPACT OF LANDLEVELLING ON IRRIGATION TIME

Irrigation time for one feddan	Number of Farmers in					
	Abu Askar		El Biik		Total	
	Before	After	Before	After	Before	After
2 hours	-	23	-	-	-	23
3 hours	19	2	-	7	19	9
4 hours	6	-	-	12	6	12
5 hours	-	-	8	5	8	5
6 hours	-	-	12	-	12	-
7 hours	-	-	2	1	2	1
8 hours	-	-	2	-	2	-
9 hours	-	-	1	-	1	-
<b>Total</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>50</b>	<b>50</b>
<b>Average irriq. time</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>4.7</b>	<b>3</b>

## 9.0 THE IMPACT OF LANDEVELLING ON CROP YIELDS

Although Project Management has been informed that yields of maize were improved in the two levelled basins, assessing the impact of the landlevelling on production has been problematic. No records of agricultural inputs were kept during the growing season, and no samples were taken of the crops during harvesting. As a result, the figures provided here are farmers' estimates of production which, at best, are situational. Farmers inflate or deflate the figures for their own purposes and whether they think one has come to assist them or tax them. One ought not to place too much confidence in these or any other figures which are solicited after the fact.

Further complicating the assessment was the introduction of new high-yield maize varieties into the basins after levelling, unbeknownst to the Project. In Abu Askar, there was a complete shift to Giza 2 maize by the 66 farmers, and in El Biik 31 of the 72 feddans levelled were cultivated with Giza 2 and Pioneer. As previously mentioned, these seeds were introduced as part of a package which included the construction of ridges which may well also have effected yields.

Giza 2 was introduced in Minia three years ago by EMCIP and has increased in cultivated area each summer season. In 1983 27,900 feddans were cultivated with Giza 2 of a total 225,000 planted in maize, and in 1984 the figure is expected to be 70,000, according to Ahmed Maroun, Undersecretary of Agriculture in Minia.

Giza 2 maize was first introduced by EMCIP and is being spread by village banks. When used by EMCIP, the new variety is part of an improved agronomic package which includes

introducing or changing the following: cross plowing, preplanting fertilizer, planting dates (15 May to 15 June), irrigation schedules, application of commercial fertilizer, planting on ridges (one third of the way from the top), spacing (30 cm. apart), thinning, and weeding.

In twenty-five villages in each district there are demonstration plots of 15 feddans. Farmers during the first year of operation were given 20 L.E. in inputs, largely for tractor costs and seeds. That amount has decreased 5 L.E. per year to its present 10 L.E.; no cash is given. Using the package, EMCIP claims significant increases over the traditionally grown baladi varieties.

Samples were measured in and out of demonstration plots in the same villages with the help of the Statistical Sampling Administration. Non-demonstration plots may have Giza 2 as well as baladi maize. The following table indicates the maize yields in and out of demonstration areas for the past three summer seasons in Minia and in the entire EMCIP working area.

MAIZE YIELDS (ARDEBS/FEDDAN) IN AND OUT OF EMCIP AREAS<sup>7</sup>

Location	1981		1982		1983	
	In	Out	In	Out	In	Out
Minia	19.92	12.76	20.34	12.99	22.02	13.13
Total*	19.73	13.86	21.03	13.79	21.43	13.52

\*In 1981 EMCIP demonstrated Giza 2 maize in Kafr El Sheikh, Dakahlia, Gharbia, Minia, and Beni Suef. In 1982, Assiout and Sohaq were added to these governorates. In 1983 EMCIP demonstrated it in Kafr El Sheikh, Dakahlia, Sharqia, Gharbia, Beni Suef, Fayyoun, Minia, and Assiout.

These figures for Giza 2 production show a marked increase over yields for the traditional baladi varieties. Data supplied by the Farm Management Survey of the Agricultural Mechanization Project indicate a maize yield mean of 11.75 ardeb per feddan based on 198 plots, nearly all of which were planted with baladi.<sup>8</sup>

Based on interviews with fifty farmers, there is an apparent increase in production over the last time maize was grown in the two basins, although assigning responsibility to landlevelling alone is not possible. In Abu Askar basin, there was a complete shift from baladi maize to Giza 2 in 1983 with a subsequent increase in production. Farmers not only changed the variety of seed but also increased the amount they planted and increased the amount of fertilizer. Many of the farmers increased the seed amount by as much as 25%. Fertilizer was increased from four to five shikara (one shikara is the equivalent of 50 kilo.) to seven to nine for one feddan.

As the following table indicates, while baladi yields are greater in El Biik basin in six of eight cases, figures for Giza 2 are lower than those supplied by EMCIP. Average Giza 2 yields are 14.08 ardeb and 13.9 ardeb in Abu Askar and El Biik, respectively, well below the 22.02 ardeb average for Minia.

The discrepancy may be explained in a number of ways: the two levelled basins are outside the EMCIP demonstration areas and so only used their package selectively, the figures are only estimates and do not approach accuracy, and planting was delayed beyond the optimal period in both basins. It has been recommended that maize planting occur on or about 1 June,<sup>9</sup> however landlevelling was not completed until mid June in Abu Askar and the end of July in El Biik.

THE IMPACT OF LANDLEVELLING AND OTHER INPUTS ON MAIZE YIELDS

Maize variety	Y i e l d (Ardeb/Feddan)						EMCIP
	Abu Askar		El Biik		Total		
	Before	After	Before	After	Before	After	
Baladi	7.5	-	10.2	13.1	8.8	13.10	13.13**
Giza 2	-	14.08	-	13.9	-	14.02	22.02
Pioneer*	-	-	-	10.0	-	10.0	

\*Representing a single farmer who obtained the seeds from the Agrarian Reform bank

\*\*Assumed to be largely baladi with the presence of some Giza 2, although the exact proportions are not known

## 10.0 THE COST-EFFECTIVENESS OF PRECISION LANDEVELLING

Little information has been collected about the costs and benefits of precision landlevelling using laser equipment in Egypt. Some studies are in preparation, but they can give only approximations, at best, since some data are from other countries with different conditions. One clear objective of the activity is to encourage the private sector to undertake and expand the work after the completion of the Project. Without a convincing costing of the activity and a clear understanding of the range of benefits, it is unlikely that this transition in responsibility will occur.

Now that Project landlevelling activities are progressing in Middle Egypt, it is the time to begin a serious examination of their cost-effectiveness. Not to do so would be to lose the opportunity of providing the Ministry of Agriculture with an understanding of the value of the work and the justification, should that be the case, for its continuation. Given the plan to purchase an additional four units for the Delta, to be operated by the Machinery Extension and Training Component, such an investigation ought to have the highest priority.

In addition to a comprehensive costs and benefits study of precision landlevelling, the benefits of landlevelling ought to be examined when used in conjunction with other innovations. The work of EMCIP in introducing its agronomic package reveals that significant improvements in production may be realized. That they coincidentally worked in the two basins levelled by our project suggests the enhanced benefits that may be obtained when agronomy is integrated with machinery use.

In discussion with staff of EMCIP, a tentative plan for testing the effects of landlevelling and the agronomic package was made. Through the method of block testing with and without

landlevelling and with and without EMCIP's package, we would finally derive actual in-field costs and benefits which have important policy making implications for the Ministry of Agriculture.

Staff members of EMCIP are interested in beginning at the earliest possible time, preferably with maize during the summer 1984 season. Since landlevelling will be undertaken by the Project in the Delta, as well as in Middle Egypt, it is desirable that the experiment be done in both locations. It is recommended that coordination begin between the management of both Projects immediately since much time will be required to set up the experiments and select the plots. Supervision of the work will fall on both Projects, although it is possible that the Statistical Sampling Administration of the Ministry of Agriculture, which was responsible for previous EMCIP tests, will accept a role once more.

Since the EMCIP package uses machinery to a minimum, we might expand the tests to include machinery which is available to our Project through the Machinery Extension and Training Component. Certainly seed drills could be incorporated into the tests.

These tests, and their possible implementation throughout the Agricultural Mechanization Project areas, hold the potential of combining an apparently successful agronomic package with our own machinery field demonstrations. In the past, one fear voiced in some quarters was that our Project was too narrowly focused on machinery and was not making use of advances in seed varieties and cultivation techniques. Dramatic increases in production are unlikely without the latter in combination with the innovations our Project is offering.

## 11.0 RECOMMENDATIONS

(1) Thus far, farmers in the levelled basins have been invited to attend demonstration sessions but have played no role in the planning of the activities. As long as the work of the Soil Improvement Component is limited to precision land-levelling, it is unlikely that farmer participation will be any greater. However, it is strongly urged that if the work of the Component is extended to drainage improvement, tertiary canal rehabilitation, and improvements in access to fields, as planned, farmers be more actively involved. Work in land-levelling is necessarily fast moving, but these remaining activities will require large expenditures of capital, much time, and the cooperation of participating landholders.

(2) There is a concern by members of the Soil Improvement Component that if large tracts of land are worked as a single unit, farmers will have difficulty reestablishing the original boundaries, creating conflicts between neighbors. A system of boundary demarcation existed in the first two basins worked which precludes such disputes. Yet, this system may not be universal. It should be the responsibility of those using the levelling equipment to determine how boundaries are determined before they begin their work.

(3) Farmers in the two basins levelled indicated no serious opposition to the movement of topsoil across boundaries. In any case, compensation to farmers would be unrealistic and cannot be advocated. Rather, a concerted extension effort must be in place to allay farmers' fears as they arise.

(4) Landlevelling was carried out in the two basins largely independently of the Extension and Training Component. The perpetuation of artificial, institutional distinctions within the Project can only work to its detriment. Since one of the

objectives of landlevelling is the facilitation of interrow mechanization, it is advisable that machinery demonstrations directly follow the work of the Soil Improvement Component in an integrated plan. It appears that seed drills have been used to plant wheat after levelling; this move ought to be encouraged and expanded.

(5) Extension efforts by the Soil Improvement Component, as well as by the Machinery Extension and Training Component, have been independent of the extension wing of the Agricultural Directorate of Minia. Its director, Ahmed Gedd El Karim, is extremely competent and ought to be encouraged to assist in Project implementation and to help to coordinate the work of this project with that of others working in Minia.

(6) An examination of the planting techniques in Abu Askar basin in El Birba El Kubra reveals that farmers are essentially using the traditional method with a small change in furrow length. Basically, they have added ridges to their small basin techniques. The effects of landlevelling will not be realized if this situation persists. Again, a serious extension effort must be undertaken so that farmers make the adjustments necessary to gain the maximum benefits.

(7) Although farmers in El Biik basin in El Atlas did shorten their irrigation by 30 to 50%, it is clear that they deal with difficult irrigation conditions. If the Soil Improvement Component extends its responsibilities into drainage and canal improvements, it is recommended that the basin be used as a demonstration site.

(8) Little information is available concerning the costs and benefits of precision landlevelling. Since private operators are to be encouraged to undertake the work at the conclusion of this project, a convincing costing of the

activity must be undertaken as soon as possible. Given the plan to purchase an additional four units for the Delta, to be operated by the Machinery Extension and Training Component, indicating a significant increase in the Ministry's commitment to the work, such an investigation of costs and benefits must have the highest priority.

(9) Staff members of EMCIP are prepared to work with the Agricultural Mechanization Project in block testing their agronomic package with our landlevelling program. These tests hold the potential of combining an apparently successful agronomic package with our own machinery demonstrations. Dramatic increases in production are most likely to be realized with a combination of the two programs. Testing may begin as soon as summer 1984 with precision levelling and the planting of maize. The results are likely to have important policy making implications for the Ministry of Agriculture.

FOOTNOTES

- <sup>1</sup>E.D. Coles. 1982. "Landlevelling." Occasional Paper No. 1, Land Improvement Component, Agricultural Mechanization Project.
- <sup>2</sup>David M. Songer, Madison Broadnax, and Moha Saleh. 1983. "An Evaluation of the Agricultural Mechanization Project (263-0031)." U.S.A.I.D., Cairo, Egypt.
- <sup>3</sup>Steven Shepley and Zakaria El Haddad. 1982. "Economic Use Optimization of Tractor Power in Selected Land Improvement Operations." Agricultural Mechanization Project.
- <sup>4</sup>James McClung and Amr Marie. 1982. "Basin Survey, Minia Governorate, Results of the Preliminary Survey." Working Paper No. 4. Agricultural Mechanization Project.
- <sup>5</sup>Cf. Peter Reiss and Nour El Din Nasr. 1982. "Field Trip Report: Basin Selection in Minia." Activity Report No. 6. Pp. 45-47. Agricultural Mechanization Project.
- <sup>6</sup>Peter Reiss, Rafaat Lutfi, et al. 1982. "Agricultural Mechanization Project Villages Profile." Working Paper No. 6. Pp. 49, 63. Agricultural Mechanization Project.
- <sup>7</sup>A.M. Basheer. 1983. "Final Report of Yield Estimates for Maize, Sorghum, and Soybeans In and Out of EMCIP Production Demonstration Plots, Summer Season, 1983." Egyptian Major Cereals Improvement Project. And Robert Foote, Personal communication.
- <sup>8</sup>Steven Shepley, David Gaiser and Zakaria El Haddad. 1983. "Reducing Maize Losses Through Optimizing the Date of Planting: A Simulation Model and Economic Analysis." Working Paper No. 7. Agricultural Mechanization Project.
- <sup>9</sup>Ibid. P. 13.

**Agricultural Mechanization Project  
(January 1984)**

**ANNEX C**

**AGRICULTURAL MACHINERY MANAGEMENT  
SUITABLE FOR EGYPTIAN CONDITIONS**

**Fred Schantz  
Zakaria El Haddad**

PREFACE

The following paper has been prepared in order to formalize an agricultural machinery management program to be used in Egyptian agriculture. This is required due to the large influx of agricultural equipment into the country in recent years without a management or maintenance system to deal with the extensive needs of such machinery. The program is primarily designed to be used by farming populations in conjunction with the agricultural extension service working specifically on mechanized agriculture. The recent development of the service centers in the country has not been included in this report mainly because they are still in an organizing stage and are not seen at this time to be an effective way to deal with on-farm machinery operations which must be done primarily by the farmer and cooperative members. When major repairs are required or equipment replacement is needed, then the service centers will serve as a valuable resource to complement the necessary on-farm management activities.

Special note must be made to one of the referenced books entitled "Fundamentals of Machine Operation: Machinery Management" sponsored and published by Deere and Company since in many cases wording was used verbatim, especially when formulas and detailed information was used. This resource is a valuable tool to any new or experienced manager of agricultural machinery since it simplifies the basic concepts needed to properly and successfully manage a mechanized farming operation.

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## INTRODUCTION

In Egyptian agriculture over the past few years numerous types of agricultural machinery has been purchased by private farmers and cooperatives in addition to selected demonstration and training equipment recently placed in the field by the extension department of the Ministry of Agriculture. Most of the machinery has been managed by semi-skilled agricultural staff, tractor drivers or other persons untrained in machinery management resulting, in many cases, in expensive repairs or minor breakdowns which has resulted in inoperative equipment being unavailable when it has been needed in the field.

In an attempt to help deal with this situation the following paper is presented. Following an overview of the present state of agricultural machinery management in the field and a listing of the basic elements of both a general machinery maintenance program and maintenance requirements for agricultural equipment, an agricultural machinery management program specifically designed for Egyptian conditions is presented. It is intended for use by the farmer, the cooperative staff or the agricultural extension officer working in the field on agricultural machinery.

### PRESENT STATE OF AGRICULTURAL MACHINERY MANAGEMENT IN EGYPTIAN AGRICULTURE

Very limited management of agricultural machinery has been practiced in Egypt in the past for a number of reasons. The primary reason is that until very recently the main equipment used in the field have been tractors, chisel plows and trailers which require only seasonal or on-demand management. Another reason is that the size and type of machines available have been controlled by the government thus reducing the choice of a piece of equipment to availability rather than individual requirements.

There has, therefore, until very recently, not been a serious need for managing farming machinery beyond the tractor owner/operator agreeing when and where to chisel plow, pull a trailer or carry out other basic tasks such as using a tractor's belt drive to work local threshers or water pumps.

The recent interest in and influx of various types of agricultural machinery has, however, drastically changed the nature of agricultural mechanization in Egypt. It has also required that an organized and comprehensive machinery management system be designed and initiated in order to deal with the large quantities of equipment being placed in the hands of inexperienced personnel. Without a program to follow, the new equipment will not be selected properly,

used efficiently or operated correctly and could soon result in piles of broken down equipment awaiting simple repairs and job scheduling.

#### CONSIDERATIONS FOR AGRICULTURAL MACHINERY MANAGEMENT

In order to deal with a situation like that now developing in Egyptian agriculture where agricultural mechanization is in great demand and growing and management systems are necessary to economically and efficiently utilize the machinery, four basic elements of machinery management are normally considered by an owner or supervisor of agricultural equipment. These are:

1. Determine a machine's capacity by combining the unit's width, speed and field efficiency. This is necessary before a piece of equipment can be economically and efficiently used in operations and needs to be calculated.
2. Matching and selecting appropriate equipment is critical for the most cost effective and efficient use of machinery in defined conditions. The appropriate power unit chosen with the most efficient machine for a particular use/operation will yield maximum benefits. When selecting matching equipment both the field operating conditions and the additional use demands (such as custom work, etc.) should be included in the calculations.
3. Determining the fixed and operational (varying) costs for units. Calculations of the fixed costs (depreciation, taxes, shelter, insurance, interest) and operation costs (fuel, lubrication, maintenance, repairs, labor) of farm machinery must be carried out in order to determine the financial feasibility of a particular operation before purchases/operations begin.
4. Timing equipment replacement is necessary to determine whether or not a machine is obsolete, unreliable, worn out or too expensive to operate and has to be carefully observed to prevent loss of income to an equipment operator/user concerned with maximum productivity of his equipment.

These basic machinery management elements allow the average agricultural machinery management manager to effectively, economically and efficiently run a mechanized farming operation on the small, medium or large scale.

## MAINTENANCE REQUIREMENTS FOR AGRICULTURAL EQUIPMENT

Critical considerations when managing agricultural equipment in addition to establishing fuel, lubrication and repair costs (consideration 3 above) include: all the maintenance requirements necessary to successfully support the equipment and keep it available for field operations. These requirements are:

### 1. Personnel

A well trained staff is the most important maintenance requirement since only through correct service and repairs can machinery remain in operable condition. This staff is divided into two groups or the mechanical and the administrative personnel.

- a) Mechanical personnel include mechanics, welders and lubricators
- b) Administrative personnel include storekeepers, parts clerks, record keepers and personnel trainers

### 2. Tools and Equipment

In order to effect service and repairs correct tools and equipment are necessary.

- a) Tools include hand tools, special tools, lubrication and welding tools and required shop tools.
- b) Equipment includes stationary equipment such as lifting equipment, vices and turning machines as well as mobile equipment such as mobile workshops and service trucks to complete field equipment support.

### 3. Petroleum, Oils and Lubricants

Fuel for engines, oils for engines, gear boxes, etc. and lubricants such as grease and graphite are necessary to operate and maintain equipment in any operation.

### 4. Facilities

Protective and secure structures are required in order to house the items listed above and include workshops (village or coop level) and equipment storage sheds.

### 5. Administration

All operations which utilize machinery require schedules for periodic maintenance, equipment unit files to keep a history of each piece of equipment, parts card indexes for required spare parts and safety materials to prevent accidents.

### 6. Finances

The final item necessary to successfully support equipment is a source of funds which is easily accessible in order to purchase stock or emergency spare parts, tools, oils or other needed items.

Once these are in place and are functioning as a unit agricultural operations will run smoothly and on a timely basis resulting in a successful program.

## AN AGRICULTURAL MACHINERY MANAGEMENT PROGRAM SUITABLE FOR EGYPTIAN CONDITIONS

Utilizing the foregoing information detailing the considerations for agricultural machinery management and the general maintenance requirements for agricultural equipment support, an appropriate agricultural machinery management program suitable for Egyptian conditions is presented below. It is specifically designed for use in the field by individuals or groups which use, demonstrate or contract agricultural machinery for farming operations.

Although not usually included in detail for a machinery management program, the detailed maintenance requirements and scheduling methods have been integrated into this program. This is due to the lack of an established agricultural equipment maintenance system in Egypt in the field and is designed to fill this critical need.

### PHASE I: Selection of Equipment Suitable for Egyptian Farming (Years 0-1)

The first phase of the program is for the concerned individual or group to select a piece of equipment or several matching pieces of equipment which is/are appropriate to a particular condition. This selection may be based upon previous experience with certain types of equipment, results gained from on-going research trials on similar mechanized farming practices or successful field demonstration/training experiences gained by attending government sponsored extension activities. In order to best select a machine suitable for a particular condition the following guidelines should be followed:

A. DETERMINE THE MACHINE'S CAPACITY by calculating the feddans per hour or tons per hour depending on the machine.

1. Feddans per hour involves the speed, width and efficiency of a particular machine.

a) Speed is the average rate of travel expressed in kilometers per hour (KPH).

Since speed indicators may be affected by tire size, field conditions and other factors, the KPH of a unit should be checked in an actual field condition.

Therefore, speed or KPH =  $\frac{\text{Distance, Meters}}{\text{minute}} \times \frac{60 \text{ minutes}}{1 \text{ hour}} \times \frac{1 \text{ Km}}{1000 \text{ m}}$

b) Width is the distance in meters across the processing portion of the machine. This can be easily measured with a tape measure and then reduced by approximately 3 to 5 per cent since most implements cannot operate in the total area that they occupy.

Therefore, width (in meters) = total width - 5 per cent of total width

c) Efficiency or the feddans per hour a machine can/does work, is the ratio of the effective capacity of a machine to its theoretical capacity. It is an indication of how much time is spent working versus turning, filling hoppers and other jobs.

While calculating the theoretical capacity (by combining speed, width and field size), the effective or actual field capacity (EFC) needs to be carried out in a field operating condition or

$$\text{EFFECTIVE FIELD CAPACITY} = \frac{\text{total acres}}{\text{total hours}}$$

Therefore, once both the theoretical capacity and the effective field capacity are determined, the actual efficiency of a machine can be determined as follows:

$$\text{FIELD EFFICIENCY} = \frac{\text{Effective field capacity}}{\text{Theoretical capacity}} \times 100$$

This formula will yield a percentage which is what the machine actually does in a given condition compared to what it theoretically should be able to do. In all cases the actual field capacity is always less than the theoretical capacity which is determined from ideal condition.

2. Tons per hour involves hay and forage equipment. The basic formula needed is as follows:

$$\text{EFFECTIVE FIELD CAPACITY} = \frac{\text{total tons}}{\text{total hours}}$$

and

$$\text{FIELD EFFICIENCY} = \frac{\text{Effective field capacity (tons per hour)}}{\text{Theoretical capacity}} \times 100$$

- B. MATCH AND SELECT APPROPRIATE EQUIPMENT by carefully considering the capacity and field efficiency of each machine (as outlined in A. above) in conjunction with the size of farm and the time available for field operations. Equipment selection mainly involves the proper size machine which can be efficiently utilized in a particular situation for a definite period of time. This can be determined either by keeping records on previous operations or, especially in Egypt, consulting research results or extension staff knowledgeable about particular equipment working in similar areas.

Since farming operations are possible most of the year in Egypt (except mid-December until mid-February), the critical time factor would be the optimum dates of planting and harvesting with particular machines on different soils. Equipment selection and matching types of equipment would therefore be primarily a function of the cost and size of machine suitable for an area to be farmed more than the average number of days available for mechanized farming as is the case in weather limited countries. Careful consideration must be also given to other variables such as the limited road width in Egyptian villages where the equipment has to travel as well as the available equipment maintenance and spare parts support which is generally limited to existing machine populations in an area.

The final choice of the equipment best suited for a particular farmer or area is therefore the result of several factors including:

1. Machine capacity
2. Field efficiency

3. Time available for operations
4. Cost
5. Manuverability on narrow roads
6. Maintenance support availability
7. Suitability/acceptability for local conditions

Also, when selecting a power unit (tractor, etc.) the required tractor's power-take-off (PTO) and or drawbar (DB) horsepower should be calculated to ensure that the machines matched and selected will have a sufficient power source. The following formula applies:

$$\text{DRAWBAR HORSEPOWER} = \frac{\text{Draft(LBS)} \times \text{speed (MPH)}}{375}$$

and

$$\text{PTO HORSEPOWER} = (\text{refers to the horsepower of a tractor or } \\ \text{HP} = \frac{\text{force x pounds x speed (mph)}}{375})$$

as measured from the power-take-off shaft by a dynamometer)

In addition, the engine type, hydraulic system type and pressure, tractor size, matching implements and critical work sizing needs to be taken into consideration when selecting a power unit.

Special consideration should be given to the factors listed above if the machines to be purchased are to be used for custom-hire work which will involve extra travel time. This is often neglected by a farmer/contractor who would be better advised to purchase readable-type equipment instead of primarily on-farm machines. An example would be for a custom operator to consider purchasing an on-the-move (synchronized or power shift) transmission rather than a standard type unit which requires the tractor to stop to change from one gear to another for varying road condition.

- C. ESTIMATE THE FIXED AND OPERATIONAL (VARIABLE) COSTS by calculating all costs related to the equipment selected and the field operations requirements. These costs are then summarized and estimated by Egyptian pounds per hour per machine which is a comparable unit normally used to determine agricultural machinery expenses. Table la presents examples of the different costs per hour as they relate to hours of use.

On Egyptian farms the common method of determining wheter or not to purchase a machine is to consider the capital cost of the unit and what it can be rented (contracted) for without an in depth analysis of other "hidden" costs included in machinery operations. The following costs should be calculated before the equipment is purchased and monitored during the life of the units.

1. Fixed costs are the costs which depend on how long a machine is used rather than how much it is used. Included are:

a) Depreciation or the loss in the value of a machine due to time and use. The three common methods used to determine depreciation are

STRAIGHT-LINE DEPRECIATION where an equal reduction of value is used for each year the machine is owned,

SUM-OF-THE-YEARS-DIDGETS which involves --- adding up the numbers representing the years covered by the depreciation periods,

- dividing the total depreciation by the sum of the digits of the years for the depreciated period, and
- proportioning the depreciation in reverse of the years over which the depreciation occurs.

**DECLINING BALANCE** where a machine depreciates a different amount for each year but the annual percentage of depreciation is the same. The formula for the declining balance method which is the most accurate method to calculate annual depreciation is

$$R.V. = C \times \left(1 - \frac{r}{L}\right)^y, \text{ where}$$

R.V. = remaining value

C = cost

r = rate of depreciation compared to the straight line method

L = life in years

y = age at which depreciation is determined

- b) Taxes paid on equipment purchased,
- c) Shelter required to store the machines and support equipment, and
- d) Insurance obtained to cover accidents.

2. Operating costs are the costs which are required to operate the equipment and vary in proportion to the amount of machine use. They include:

a) Fuel costs which are determined by the tractor or other power unit's operation time. The amount used and therefore varying cost depends on the horsepower capacity, fuel type used and fuel consumption of the unit. The average annual fuel cost can be determined by the following formula:

$$\text{ESTIMATED ANNUAL FUEL COST} = \text{Estimated liters per hour used by the engine} \times \text{Estimated annual working hours}$$

b) Lubricants costs which include engine oil, grease, transmission oil and hydraulic fluid. These costs can be estimated in the following way:

$$\text{ESTIMATED LUBRICANTS COST} = .15 \times \text{Estimated fuel costs}$$

c) Repairs costs which include not only the actual cost of a replacement part but also lost operation time which directly affects productivity of a crop as well as lost labor time for both operations (operators and field hands) and maintenance personnel. The four main types of repairs which costs are estimated for are

1. Routien wear.
2. Accidental breakage or damage
3. Repairs due to operator neglect
4. Routien overhauls

Good management of the equipment will cut repair costs in half and should be a primary consideration for a maintenance program. Current estimated normal repair costs for some equipment with good management, sufficient maintenance support facilities and spare parts supplied are as follows:

MACHINE	COST PER HOUR (EG £)	HOURS OF USE	ESTIMATED ACCUMULATED REPAIRS COST IN TERMS OF A NEW MACHINE'S TOTAL COST
Tractor		2,500 (2-4 yrs)	10 o/o
		5,000 (4-6 yrs)	30 o/o
		10,000 (6-8 yrs)	90 o/o
Grain drill	6.17	250 (2-4 yrs) 500 (4-6 yrs) 1000 (6-8 yrs)	5 o/o
Seed Planter	5.26		10 o/o
			20 o/o
Mowers	4,10	250 (2-4 yrs)	6 o/o
		500 (4-6 yrs)	12 o/o
Discs	5.62	500 (2-4 yrs) 1500 (4-6 yrs) 2000 (6-8 yrs)	10 o/o
Cultivators	10.11		30 o/o
			39 o/o

d) Labor costs include the cost for tractor operators, maintenance personnel operations supervisors and field hands. This cost varies with season, equipment condition and farming plans.

**PHASE 2: Equipment Operations and Maintenance Systems(Years 0 through 10-and after)**

The second phase of the program involves the actual use and maintenance of agricultural equipment selected by following the guidelines outlined in Phase I above. As presented in Figure Ia and detailed in Figure Ib below, the equipment operations functions and maintenance requirements are integrated into a comprehensive agricultural machinery management program designed for Egyptian farms.

A. EQUIPMENT OPERATIONS which form the overall activities of the farming personnel include not only the process of selecting and training staff but also cover the vital relations between the equipment dealers and the agricultural extension staff and the farming community.

1. Select and train staff  
Before developing specific maintenance requirements necessary for efficient and effective management of selected equipment,

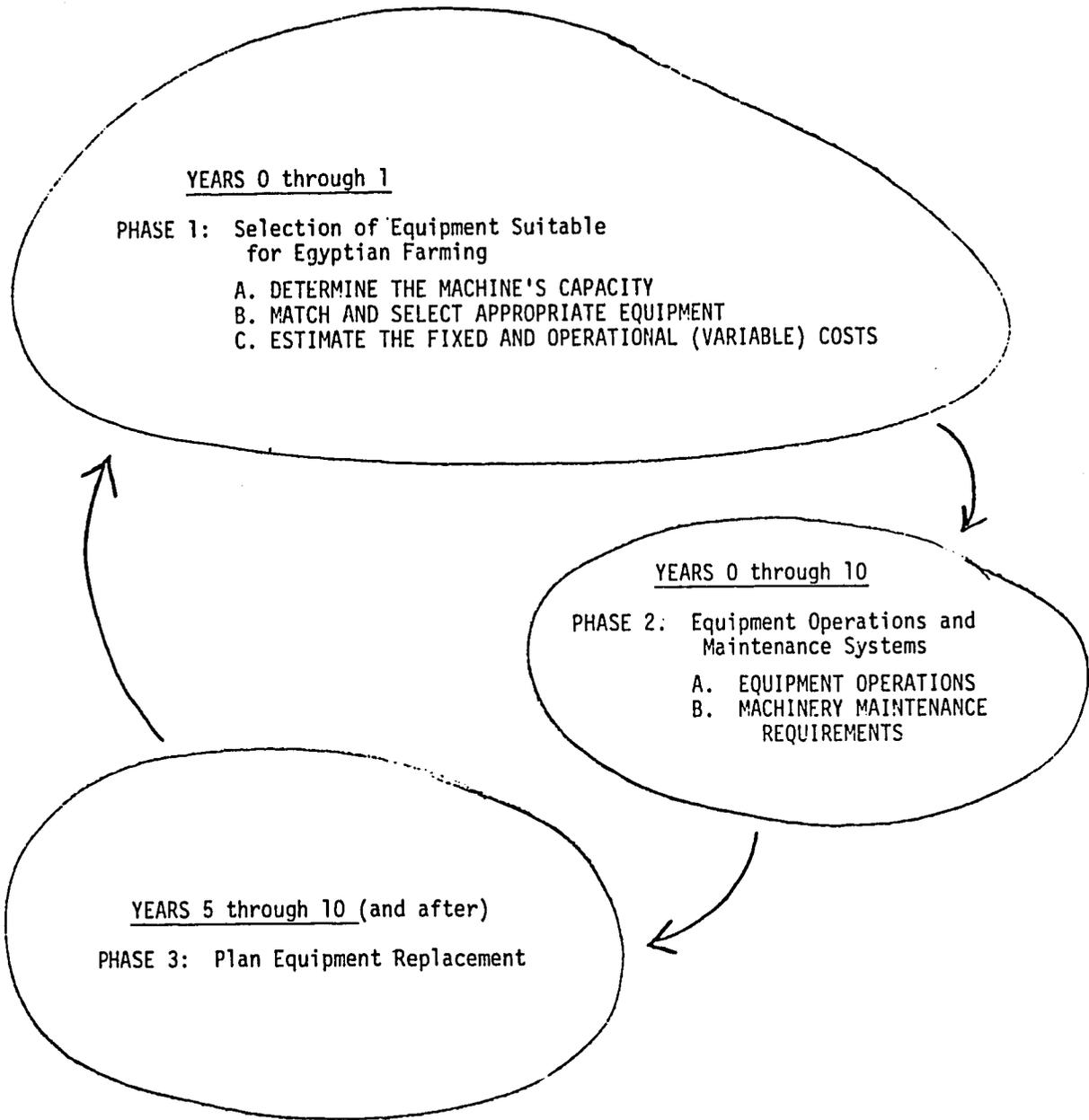


FIGURE 1a: An Agricultural Machinery Management Program Suitable for Egyptian Conditions

An Agricultural Machinery Management Program  
Suitable for Egyptian Conditions

		YEAR										
		0	1	2	3	4	5	6	7	8	9	10
<b><u>PHASE I : EQUIPMENT SELECTION</u></b>												
<b>A. <u>Determine Machine Capacity</u></b>												
1. Feddans per hour												
2. Tons per hour												
<b>B. <u>Match and Select Appropriate Equipment</u></b>												
1. Machine capacity												
2. Field efficiency												
3. Time available for operations												
4. Cost												
5. Manuverability on narrow roads												
6. Maintenance support availability												
7. Suitability and acceptability												
<b>C. <u>Estimate the Fixed and Operational (variable) Costs</u></b>												
1. Fixed costs												
2. Operational (variable) costs												
<b><u>PHASE 2 : EQUIPMENT OPERATIONS AND MAINTENANCE SYSTEM</u></b>												
<b>A. <u>Equipment Operations</u></b>												
1. Select/train personnel												
2. Dealer and agricultural extension specialists support												
<b>B. <u>Machinery Maintenance Requirements</u></b>												
1. Source of funds												
2. Mechanical and adminstrative staff												
3. Tools and equipment												
4. Petroleum, oils and lubricants												
5. Facilities												
6. Administrative supplies												
<b><u>PHASE 3 : PLAN EQUIPMENT REPLACEMENT</u></b>												
1. Lowest point of machine's cost												
2. Obsolete equipment												
3. Unreliable machinery												
4. Worn out equipment												
5. Require different or larger equipment												
* * * * *		*	*	*	*	*	*	*	*	*	*	*

Figure 1b: A Detailed Breakdown of an Agricultural Machinery Management Program Suitable for Egyptian Conditions

note must be made of the importance of the ability of the field staff, especially the front line supervisors, tractor operators and other support staff, to accept equipment responsibility and to carry out field operations requirements. Without responsible and properly trained staff and operators who are well paid for their positions, it is impossible to expect maximum performances of any machinery oriented program.

While in Egypt today there does exist a large agricultural equipment population in the field, very few of the operations staff have had sufficient training on recommended operation and maintenance procedures on their equipment which has resulted in excessive repair costs and down time to the owners or operators. Although attempts are being made to reach these personnel and up-grade their knowledge and ability, more individuals and equipment are presenting themselves than training facilities or qualified field staff necessary. This problem should eventually be solved as the required facilities are built and sufficient qualified staff reaches the field.

2. Dealers and agricultural extension support

For the present time the increasing amount of mechanized farming equipment operations taking place in Egypt requires intensive attention from the farming and agricultural extension community which is directly involved. The necessary support from the equipment dealers and back up assistance from the recently trained mechanization subject matter specialists form the backbone of the operations support system which is required if the newly developing mechanizing farming practices are to properly develop in the field.

- B. MACHINERY MAINTENANCE REQUIREMENTS, in addition to the important trained operations staff, are the critical elements for a proper maintenance support system for agricultural machinery in Egypt. In any machinery operation the success or failure of the equipment depends on the strength of the maintenance program which either serves to maintain an on-going operation or to allow massive equipment failures and cancel out whatever efforts were successful with initially new equipment.

In Egypt there exists the remains of obsolete equipment in various stages of repair from new implements awaiting simple welding repairs to extinct vehicles still operating after numerous local modifications. This condition demonstrates that the possibility exists for either an astounding success in utilizing farm machinery in farming operations or a miserable failure due to the lack of attention to field equipment. The answer lies with the successful or unsuccessful organization and implementation of an effective, viable machinery maintenance system which is the life blood of an on-going mechanized farming operation. The following requirements for such a system are presented as part of the overall needs of an Egyptian agricultural machinery management program and should serve to furnish the necessary elements required for a successful effort. They are as follows:

1. A Source of Funds.

The most critical maintenance requirement needed in order to implement a successful agricultural machinery maintenance system in Egypt are readily available equipment maintenance funds specifically designated to cover minor equipment service costs as well as major repair expenses. Very often a machine does not work due to the lack of funds to cover the costs of fuel, lubricants, spare parts, tools for repairs, administrative needs and other items critical to timely operations.

These funds need to be in the hands of front-line field supervisors or tractor drivers who are in a position to carry out needed maintenance activities. In addition, periodic training of all personnel also require a funding source which will serve to maintain a successful operation.

2. Mechanical and Administrative Staff.

Personnel capable of correctly carrying out required periodic maintenance activities, emergency machine or spare parts repairs and other major repairs in addition to personnel capable of administering a maintenance system are needed to implement an effective machinery maintenance system. The minimum staff required for an average farming operation with ten or more machines in operation during peak season should include:

MECHANICAL STAFF

- a) One mechanic
- b) One welder
- c) One lubricator/washer

ADMINISTRATIVE STAFF

- a) One storekeeper/record keeper to police the equipment
- b) One parts clerk/service administrator to check parts inventories and maintain unit files on each piece of equipment

3. Tools and Equipment

The amount of minimum tools and equipment needed for any mechanized farming operation is determined by actual need during peak season. In general, the following minimum needs should be considered:

- a) A complete set of hand tools and tool box
- b) A mobile service unit or pickup preferably equipped with a full set of the tools and equipment listed in this section
- c) Tools specially required to service particular units
- d) Basic shop tools and equipment including a workbench, table vice, large hammer, lifting device, etc. as required.
- e) Other equipment including a small air compressor and an electric and gas welder sets
- f) Safety materials and equipment necessary to prevent or deal with accidents

4. Petroleum, Oils and Lubricants

On the farm site should be drums of all needed oils (engine,

transmission, hydraulic, solvent) and lubricants (greases) in addition to a small tank (raised/gravity feeding) of fuel. This allows the equipment to easily service the units as necessary.

#### 5. Facilities

In order to properly house the equipment and support materials sufficient facilities are required. They include:

- a) An equipment storage shed with a concrete floor to protect the equipment and allow cleaning and repairs to be carried out, and
- b) A small workshop or tool shed which can house the basic tools, workshop equipment, administrative materials and personnel and spare parts supplies.

Inside the workshop should be one wall of shelving for spare parts storage, one wall with a workbench and a desk with a chair for an administrative officer

#### 6. Administrative Supplies

Up to date periodic maintenance schedules, equipment unit files, spare parts index cards and other secretarial supplies are needed to properly maintain a maintenance system. These materials will provide future valuable information on particular equipment required to replace or rebuild.

Once a farm or cooperative has acquired these six maintenance needs and succeeded in coordinating them as a functioning unit, a smooth running and profitable operation will result.

### PHASE 3: Plan Equipment Replacement (Years 5 through 10- and after)

The third and final phase of the program involves estimating when the best time will occur to replace or rebuild the machine or machines used over an extended period of time. The normal time to begin evaluation is from year five until year ten and in some cases after year ten.

In Egyptian agriculture this is seldom a consideration since most equipment owners/users attempt to utilize their machinery until they are no longer operable. The surprising ingenuity which is used to keep age old equipment running is easily observable in the field at present.

The cost effectiveness, reliability and obsolescence of these units are, however, constantly in doubt and more commonly than not the older machines are costing the owner more to operate than he is receiving in benefits. More importantly, there is often a loss of valuable production time to the farmer during peak seasons when the equipment is critically needed in the field.

There are five general rules of thumb which are normally followed for determining when to replace equipment which should be considered as follows:

1. The accumulated cost of the machine has reached its lowest point and is increasing,
2. The machine is obsolete in comparison th new models,
3. The machine is no longer reliable, meaning it is no longer dependable,
4. The machine is worn out, and
5. The increase in the size of the operation makes a machine too small for timely operations

#### SUMMARY AND CONCLUSIONS

In summary, the necessary elements for a suitable agricultural machinery management program in Egyptian agriculture need to include a comprehensive equipment maintenance system if the intensifying efforts to mechanizing Egyptian agricultural practices is to be successful. This will require a large effort on the part of a progressive farmer, an organized effort on the part of the mechanizing cooperatives recently formed in various parts of the country, and a coordinative support effort on the part of the agricultural extension staff actively participating in field demonstration and training sessions in various parts of the country before comprehensive agricultural machinery management programs are established on farms or cooperatives intending to establish mechanized farming in Egypt.

As pointed out above there is clear evidence to show that a mechanized system can be established and maintained in Egypt providing the incentives are sufficient to stimulate action which often submerges in an administrative and bureaucratic environment. Certainly the farm labor shortage pressures and high labor costs at peak seasons have already served to raise the interest of many to begin to utilize machinery for farming which is expected to continue to increase. But to what extent the equipment already on site or arriving will be successfully managed and maintained still remains to be seen. Recent evidence indicates that appropriately selected agricultural equipment which is cost effective and easy to maintain is beginning to be accepted and adopted on Egyptian farms and await only the supervision, planning and programming materials and training necessary to farm successfully and economically with agricultural machinery.

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ANNEX D

A PRELIMINARY STUDY OF A  
PRECISION LAND LEVELING SERVICE

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Cairo, March 1984

## 1. INTRODUCTION

This paper studies the records of one year's field work by the Land Improvement Sub-project (LISP) of the Agricultural Mechanization Project (AMP) in El Minya Governorate. The records were analysed with respect to appropriate volumes of earthworks, approximate time to complete given areas, machinery unit productivity and precision of land leveling. This program was carried out as a demonstration to farmers in several basin areas in El Minya Governorate, in the north in Matai Markaz, and in the south in Abou Qurkas Markaz. The farmers response and their perceptions about land leveling were studied. The two factors discussed above were combined to prepare a study on the costs involved in setting up a private sector precision land leveling service.

Land leveling is one of the principle operations which is necessary for the success of the current effort to spread mechanization and to maximize the utilization of the available machinery for performing various operations. Long basin or furrow systems over traditional ones are necessary for the effective use of machinery. Land leveling is required as an input for the adoption of such systems (Coles et.al, 1983). Because it is a critical factor in water distribution, land leveling may have a significant effect on crop yield.

Traditionally, farmers use a wooden scraper with two handles, drawn by animals or tractor. A log float is also used, but this fits the mode of land smoothing as opposed to land leveling. The field performance of such equipment is poor, and a full day or more may be required per feddan. Recently, farmers have begun to use hydraulic scrapers for land leveling. In all of the above cases, no effective grade control system is used. In the cases where an optical level and a survey crew is used, a very skillful operator is required to meet the  $\pm 2$ cm tolerances required for precision land leveling.

In the past two years, the AMP of the Ministry of Agriculture has introduced the use of laser control mechanisms. The purpose of this paper is to explain the system, some of the financial costs, the influence on irrigation time, as well as to discuss the opportunities for the private sector to continue and expand on this type of activity.

## II. THE LASER CONTROL SYSTEM

During 1983, the LISP undertook a precision land leveling program in El Minya Governorate based on the equipment available. This program consisted of surveys of two basins, extended meetings with the farmers, and land leveling using laser controls. As more equipment is made available, activities will expand.

The equipment used by the sub-project consisted of 3 John Deere 4240 tractors pulling 3-meter Behera drag-type scrapers mounted with laser equipment. One laser transmitter was used to control the elevation of each of the scrapers. The laser transmitter unit emits a single beam of light which is rotated at high speed. Each scraper is mounted with a laser receiving unit which in turn is mounted on an adjustable mast. Once the engineer has chosen a design elevation, he sets the desired height by adjusting the mast. The mast is connected through a control box to a solenoid valve which operates the hydraulic system of the tractor. In the automatic mode, the control unit automatically maintains the scraper blade at the height set by the engineer. As each unit is adjusted individually, each tractor may level to a different design elevation while working off the same transmitter.

Once a field has been chosen for land leveling and design prepared, work may begin simply by setting the desired elevation. The design cut and fill map is used by the driver to set directions for haul. Indicator lights on the control box are on when he is on grade, cutting or filling, therefore no surveys are needed after the initial one until a final check survey is carried out. The LISP as a policy carries out such a survey to ensure fields are leveled to grade. This check is done to eliminate driver misunderstanding and to ensure projects standards are met.

Several comments regarding project procedures should be made at this point. Laser equipment was chosen for precision land leveling in order to eliminate driver training and extensive surveying which is required by conventional methods. No detailed operational analysis comparing the costs of the two systems has been prepared. Experience in other parts of Egypt indicates that laser leveling offers benefits which relate both to equipment management and the final product, in this case, leveled land which would be difficult to achieve using conventional methods.

A second factor is the design system which the project uses. Because the program is geared toward small farmers using level basin irrigation, all fields are zero leveled. The possibility remains that due to field size, earthwork volumes, and general topography, larger equipment capacities or design configurations may need to be considered. This would be particularly true in the case of sugar cane lands. These factors are outside the scope of this paper but remain as concerns of the project which will only be resolved as more information becomes available during the course of the program. At present, it is safe to say that the project's field unit can handle the land leveling requirements in much of El Minya Governorate.

Precision Attained: The sub-project has set as a standard for leveled land: 80% or more of field rod reading on a 20 meter by 20 meter grid must fall within + 2 centimeters (Dedrick1979). If a random but generally grid type survey is carried out, a minimum of 24 readings per feddan were taken. Generally, the tractor operator was allowed to work a field until he was satisfied that the green "on grade" light was on most of the time and that his scraper bucket was half full most of the time. When the operator felt the field was level, a check survey was carried out. In most cases, no further leveling work was required. Some caution is required, as many drivers have a tendency to ignore if the scraper bucket is full or empty.

Surface roughness factors are one reason that a  $\pm 2$  cm range is considered acceptable. A certain amount of surface roughness cannot be eliminated in any case and is not of primary concern in water management. A small clod of earth on which a survey staff is placed may make a difference of 2 or 3 centimeters which explains this surface roughness.

The last factor to consider in evaluating the precision of land leveling is finishing work. Reference to check surveys indicates that high or low points tend to exist at the edges of fields even after leveling has taken place. This may be due in part the nature of the surveys, for example, readings might be taken on bunds. However, it is evident that soil build-up or deficit occurs at either end of the fields in tractor turning zones. In order to obtain a better finish, operators must be supervised carefully to ensure that poorly leveled end zones do not occur. In the case of finishing work, consideration must be given to the effects of irrigation and the shrinking and swelling nature of the Vertisol soils which predominate in the Nile Valley.

### III. AN ANALYSIS OF LISP 1983 RECORDS

This section consists of an analysis of LISP project records on land leveling. These records cover the activities of the small demonstration unit described previously. The period covered runs from the 26th of April until the end of July 1983. Grid survey data for a number of small farms in Abou Quarkas Markaz and for Abou Askar Basin in Birba El Khobra Village, Abou Quarkas, and El Biik Basin, El Atlat Village, Matai Markaz, were used to calculate approximate earthwork volumes. Other records give the number of tractor hours which were devoted to land leveling and transportation, respectively.

Earthworks Volume(s): A brief commentary is relevant with respect to earthwork calculation and precision land leveling design to which it is directly related. In designing engineered slopes for fields, the most common approach is to utilize the plane of "best-fit" design method. In the case of zero level fields, this involves simple calculation of the average of all field readings and that of the amount of cut or fill required from the survey data. Earth-work volume calculations were carried out using the "four-point" method of the U.S. Soil Conservation Service which is considered to be more accurate than the summation method of calculating earthwork volumes.

The results indicate that between  $22m^3$ /feddan and  $75m^3$ / feddan were moved. An average of  $41m^3$ / feddan was moved. Although check surveys were carried out, no survey data is available to calculate exactly how many cubic meters were moved. To clarify this point, even a precision leveled field requires a small amount of earthworks. The difference between the earthworks required on the leveled fields would represent the exact amount of earthworks. The figures presented may be considered as representative and closely match figures presented by EWUP. (Ley 1963, McClung 1982)

Machinery Unit Productivities: The productivity of individual tractors was determined in terms of volume of earthwork per unit of time and area per unit time. The times represented by the figures in Table (1) indicate when a tractor laser receiving unit has been set up and has begun operation. Table (2) indicates a range of transport times to and from fields or work areas. The amount of time required to carry out surveys and to set up the instruments was not recorded. This information was not collected primarily because the project staff was in a start-up training phase and the figures would not be repre-

Table 3: Machinery Unit Productivity

Location	Volumes of Cut (m <sup>3</sup> )	Area (feddan)	Tractor hrs.	Machine Unit: hour (m <sup>3</sup> /hrs.)	Machine Unit hour. (feddan/hr.)
Abyuha	168.3	2.5	13.3	12.7	0.2
"	105.6	2.0	7.9	13.4	0.3
"	128.5	3.9	10.4	12.4	.4
"	166.4	4.6	13.4	12.4	.3
"	290.2	5.5	10.4	27.9	.5
"	136.8	3.4	7.3	18.74	.5
"	581.3	15.5	22.7	25.6	.7
Abou Askar Basin	3241.7	72.0	165.6	19.6	.4
El Biik Basin	3433.6	72.0	141.3	24.3	.5
				Average=18.56	Average = .42

Table 2: Transport Hours

Location	Hrs. for transport	Hrs. for Precision Land Leveling	% of time in transport
Abyuha	2.4	13.3	18.0
"	.8	7.9	10.0
"	1.7	10.4	16.0
"	1.8	13.4	13.4
"	1.3	10.4	12.5
"	1.3	7.3	17.8
"	.5	13.8	3.6
"	.6	8.9	6.7
Abou Askar Basin	4.8	165.6	2.9
El Biik Basin	14.9	141.3	10.5

representative. Records are currently kept to determine this information now that project staff is fully trained.

An average of 2.4 hours was required per feddan; haul distances were always less than 300 meters. In the small farm situation in Minya Governorate, approximately 2.4hrs/feddan or 19m<sup>3</sup>/hr. could be considered normal for prevailing topographic conditions in Matai and Abou Quarkas Markaz. Volumes of earthworks higher than these may exist on the fringe areas and in isolated cases. At present, no conclusive statement may be made on actual earthworks in the whole governorate. By continuing to maintain records and working in other parts of Minya, the LISP hopes to provide guidelines to operators on earthwork conditions.

A study of the transport times indicates that in the individual farm cases, between 10 and 20 percent of the time the tractors are being transported to or from the field. In the case of working in one area for a protracted period of time, and including transport over approximately 40 kilometers, less than 10% of the time was spent in transport. The field experience indicates both that it is possible and more economical to concentrate equipment on the work site and to keep transportation time to a minimum.

In the above discussion, a cut to fill ratio of 1:1 was assumed. In actuality there will be some settlement in fill areas. Following one cropping season and the various irrigations associated with it, touch-up leveling work may be required. Scientific studies are required to determine how frequently precision land leveling needs to occur given the nature of Vertisol soils and the soil management practices of Egyptian farmers.

#### IV. FARMERS PERCEPTIONS ABOUT LAND LEVELING AND REACTIONS TO THE LISP ACTIVITIES

Land leveling is carried out to enhance water management concepts. Two potential direct benefits of land leveling are:

- reduced irrigation time, and,
- improved crop stands and yields due to better water distribution.

The second benefit is harder to evaluate because it includes the assumption of adopting "improved" or long furrow/basin techniques over traditional methods. A third and important benefit is the potential for mechanization that exists when long furrow/basin irrigation is the common practice. This section summarizes the results of a study carried by the project's evaluation unit.

The study carried out by the evaluation unit covers two basins which were previously discussed: El Biik and Abou Askar. (1) The first benefit, that of irrigation time, was evaluated by asking farmers how much their irrigation time for maize had decreased after precision land leveling from the previous time they had grown maize. The results of this survey are summarized in Table 3. It is granted that this is not a scientific method of determining if irrigation times had decreased. However, given that farmers had to pay for pump rentals, some order of magnitude may be deduced. In conclusion, farmers reported that their irrigation times were reduced by 30 to 50 percent.

The potential for yield benefits rests in part in adopting long furrow systems. Farmers in each basin were encouraged to use long furrows and in some cases, were introduced to the use of siphons as an irrigation technique. Granted that many farmers adopted longer furrows, only one farmer adopted furrows the full length of his field. No crop samples were taken to determine if larger areas were planted using the longer furrows. From the mechanization point of view, only one farmer adopted an irrigation system truly compatible to row-type mechanization activities. The apparent failure of these activities points to the high extension input on a one-to-one basis that will be required to convince farmers to adopt "improved" irrigation methods.

Although an attempt was made to evaluate the effects of precision land leveling on crop yield, the results are not significant as practices recommended by the Egyptian Major Cereals Project (EMCIP) were adopted by many farmers. What portion of crop yield increases are attributable to land leveling is not clear. A second factor which affected the evaluation is the late planting by all farmers due to the land leveling activity. In any case, no farmer reported yield reductions.

The project proposes to undertake a scientific evaluation of the costs and benefits of precision land leveling in the coming year. This proposal is discussed in the conclusion in more detail. The data presented previously does indicate on a rule of thumb basis, that the potential for significant benefits does exist.

Three factors of prime concern to the LISP group before leveling took place were:

- 1) Would farmers be willing to leave their land clear all at one time?
- 2) Would farmers object to top soil and/or weeds being moved from one farm to another?
- 3) How do farmers identify property boundaries after leveling took place?

Fortunately, each of these questions was resolved in a positive manner.

Given a total of 5 + 10 meetings with each group of farmers, they left their land clear. In one basin, farmers plowed their land previous to land leveling. In the first basin leveled, plowing was carried out by the LISP equipment. Experience later in the year, in Beni Mousa Village, after word about land leveling had gotten around indicates that farmers are both willing to wait a certain amount of time for land leveling and to plow their fields to allow leveling to take place.

While equipment was on site, farmers were requested to mark field boundaries using ranging rods provided by the project. In most cases, farmers identified groups of two or three farms together. The first potential problem of transfer to weeds from one farm to another was not considered objectional to a majority of the farmers. One farmer did suggest that some sort of compensation in the form of manure be provided to replace lost topsoil. In general strong objections were not voiced. The farmers identified farm boundaries by iron rods buried some distance beneath the soil surface. Whether this is always the case is not clear. In the future, the sub-project will attempt to encourage more farmer participation in identifying boundaries before leveling is carried out.

**Table 3:****THE IMPACT OF LANDELEVELING ON IRRIGATION TIME**

Irrigation time for one feddan	Number of Farmers in					
	Abu Askar		El Biik		Total	
	Before	After	Before	After	Before	After
2 hours	-	23	-	-	-	23
3 hours	19	2	-	7	19	9
4 hours	6	-	-	12	6	12
5 hours	-	-	8	5	8	5
6 hours	-	-	12	-	12	-
7 hours	-	-	2	1	2	1
8 hours	-	-	2	-	2	-
9 hours	-	-	1	-	1	-
<b>Total</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>50</b>	<b>50</b>
<b>Average irrig. time</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>4</b>	<b>4.7</b>	<b>3</b>

## V. AN ANALYSIS OF THE FINANCIAL COSTS OF A PRECISION LAND LEVELING SERVICE

Given the field experience gained by the sub-project, and using tractor cost models developed by the AMP, a first pass towards quantifying the costs of land leveling was made. Because one of the prime objectives of the project is to involve the private sector, only the financial analysis is presented. In the upcoming season, the project plans to undertake detailed studies in order to begin to quantify the economic cost and benefits of land leveling.

First, the basic capital costs for three operating units were laid out. Because a number of tractors can be operated from one transmitter, the cost per tractor hour or per feddan will drop by some percentage as the cost of the transmitter is split over a larger number of tractors. We have considered units ranging from 3 tractors/laser units to 7 tractors/laser units (7 representing the maximum number which could be easily managed under Egyptian conditions). In fact, this is the unit size used by the Delta Sugar Company in the Hamoul area in northern Egypt. The investment costs include support equipment such as vehicles and a modicum amount of tools to undertake an adequate maintenance program. The tractors are assumed to be American-type and the cost to include customs duties. The laser costs also reflect January 1984 price including duties.

The staffing requirements for each unit were projected to be the following: a full time manager responsible for all financial affairs and for locating work areas, an engineer responsible for technical aspects of the work and for certain amount of on-farm irrigation design, a mechanic for each group of equipment, and one driver per tractor. The salaries have been projected on a monthly basis for the five-year period of the units' operation as follows: Manager - 500LE; Engineer - 400LE; mechanics and drivers - 250LE. A working period of 10 months is assumed to be available for field work, so some flexibility for overtime, vacations and bonuses is available.

The project's Agricultural Mechanization Cost Model (Sheply and Wissa 1983) was used to develop operating costs for the tractors for a five year period. This model provides estimates on fixed costs, repairs, lubricants, energy, and total costs. The model was calibrated using data from the farm management survey and is considered to represent Egyptian conditions relatively well. The authors believe further calibration must be undertaken to adjust the costs in later years of tractor operation. In the computer runs generated for this paper, the manufacturer's rating of a lifetime of 10,000 hours was assumed. Given that a full time engineer and mechanic will be looking after 3 to 7 tractors, we believe this figure can be attained.

Fixed costs for interest and depreciation were calculated for the laser units and vehicles in the following manner:

Interest:  $(K+s/j)*i$

were: k = capital cost  
s = salvage value  
j = number of operating hours  
i = prevailing interest rate

Salvage value was assumed to be 10% of the capital cost and the prevailing interest rate was assumed to be 12%. A total of 10,000 hours per laser receiving unit was assumed. The suppliers of laser equipment have equipment which has been used for over four years in Egypt, therefore this lifetime is considered to be reasonable. A total of 125,000 kilometers was assumed to be travelled by each vehicle. Depreciation was calculated using the following formula:

Depreciation:  $k-s/t$

where:  $k$  = capital cost  
 $s$  = salvage value  
 $t$  = number of operating hours

Assumptions similar to those used in calculating interest were used. The capital costs and the variable costs were used to calculate a breakeven analysis using an HP 85 Computer program. This analysis was carried out for breakeven and for increments of profit on total cost ranging from 0-50% profit in 10% increments. The formula used in the computer analysis is the following:

$$p = u(s-v) - f$$

where:  $f$  = fixed cost (capital cost)  
 $p$  = profit  
 $s$  = sales revenue/unit  
 $u$  = the number of units sold  
 $v$  = variable cost per unit

In the computer runs, a unit represents one hour of tractor operating time. Ten percent of the potential tractor operating hours was assumed to be spent in transport. This reflects the data on transport times summarized in Section III of this paper. Table 4 presents the cost per hour for the various alternatives for comparison. Using cash flows based on the breakeven analysis and the capital cost, a separate computer program to calculate internal rate of return was run. A summary of IRR for the various profit margins is given in Table 5. This table indicates that this investment is sensitive to changes in the profit margin but is relatively insensitive to changes in unit size. In fact, increasing unit size barely affects the IRR. This would indicate that a private sector operator could vary his charge per hour according to demand with a given unit size and still have an attractive investment.

Using the cost per hour, a range of costs from 14.38 LE/hour to 25.52 LE/hour is evident depending on equipment configuration and profit. Discussions with several persons involved in contracting indicate that 50% profit on total cost is considered reasonable. In cost per hour at this profit margin, a range of 25.52 LE/hour to 21.57 LE/hour is evident depending on unit size. Using the average time per feddan and per cubic meter of earth moved from Section I, the relevant cost can be estimated. With an average of 18.56 m<sup>3</sup>/hr. and .422 feddan/hr., costs with a 50% profit margin are shown in Table-6 below.

Table 4: Summary Sales Cost Per Hour 1984 (LE)

Percent Profit (%)	3 Tractor/ Scraper Unit	5 Tractor/ Scraper Unit	7 Tractor/ Scraper Unit
0	17.01j	15.17	14.38
10	18.71	16.70	15.82
20	20.41	18.21	17.26
30	21.89	19.72	18.70
40	23.82	21.24	20.14
50	25.52	22.76	21.57

Table 5: Summary of Internal Rates of Return

Percent Profit (%)	3 Tractor/ Laser Unit	5 Tractor/ Laser Unit	7 Tractor/ Laser Unit
20	12.37	12.36	12.33
30	18.69	18.91	18.89
40	25.39	25.24	25.20
50	31.54	31.36	31.25

Table 6: Cost per cubic meter and per feddan at 50% profit

Unit Size	Cost per m <sup>3</sup> (LE/m <sup>3</sup> )	Cost per feddan (LE/feddan)
3x	1.38	60.76
5x	1.23	54.19
7x	1.16	51.36

Although no data is currently available on how frequently leveling needs to take place, private sector operators will be able to determine how much area they can service with a given unit size. With the assumption that leveling needs to take place every 2 years, the cost to a farmer in the above areas would be on the order of 30LE/year. In evaluating the benefits, some saving or yield increase worth more than 30LE/year would have to be determined to show that land leveling is worthwhile.

Although no data is available on using conventional leveling techniques, information on 2 conventionally leveled fields was provided to the project (Sheply & El-Haddad) In each case, the operating procedures using a 65-75 Hp. Tractor and drag scraper were as follows:

- a random grid type survey
- leveling by eye by the tractor operator
- smoothing
- irrigation
- touch-up work
- seed bed preparation, planning and irrigation

In each area, one of 12.5 feddan and one of 10 feddan, an average of 75m<sup>3</sup>/feddan was estimated. Areas were leveled to zero level in 5 feddan patches. The cost per hour for tractor/driver, etc., was 5 LE. 20 hours per feddan and 22 hours per feddan were reported. Cost per feddan ranged from 100 to 110 LE. Although leveling work productivity is closely related to field configuration and haul distances, and exact configurations are not known, experience with the LSIP equipment used by the Delta Sugar Company indicate that with laser equipment, 4 hours would be required per feddan. Using the maximum cost per hour for laser equipment by 25.52, these cases would cost about 102 LE.

This comparison is not of statistical significance, but it seems to indicate that costs using laser equipment are similar and possibly lower than costs using conventional methods.

## VI. CONCLUSIONS AND RECOMMENDATIONS

Using the records of the LISP, it is estimated that an average of .42 feddans per hour or 18.56 m<sup>3</sup>/feddan are required to precision land level fields smaller than 10 feddan in size and with earthwork volumes less than 65m<sup>3</sup>/feddan. This information provides some order of magnitude for future planning land leveling operations. Still more data from topographic surveys needs to be collected to provide a data base from which statistically significant conclusions can be made on earthwork volumes throughout the governorate and for selecting the most appropriate equipment and/or design configurations.

Preliminary studies indicate that farmers see benefits to land leveling in savings in irrigation times. An extension effort coupled with a basin rehabilitation program would seem to allow for changing on-farm irrigation practices to long furrow/basin systems. This in turn would open the door for mechanized agriculture practices. Yield effects were not apparent in the areas studied but potential for this may exist particularly if long furrow/basin systems are adopted.

Financial costs for land leveling have been considered and range between 50 and 100 LE/feddan for earthworks up to 75m<sup>3</sup>/feddan. These figures would apply to zero level designs and where areas less than 10 feddan were leveled. Haul distances did not exceed 300 meters. Future study of costs will be undertaken in coming years to further calibrate the computer model.

The recommendation from this preliminary study is that a detailed cost/benefit analysis of precision land leveling be undertaken. The project is planning to conduct such a study using block test methods. In undertaking such a study, cooperation with the Egyptian Water Use and Management Project (EWUP) and the Egyptian Major Cereals Project (EMCIP) will be elicited. This will allow evaluation of other improvements such as elevated meskas (EWUP) and farming/variety changes (EMCIP).

This study will include three different areas of data collection:

- 1 - irrigation times, methods and quantities
- 2 - farming practices and yield effects
- 3 - on-going sociological evaluation on farmer attitudes

The results of such a study will not be limited to a cost/benefit analysis but will consider if and how the private sector could pick up and market such a service.

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