PD-AAX-231
ISN 54403

AN EVALUATION OF THE AGRICULTURAL MECHANIZATION PROJECT (263-C031)

FEBRUARY, 1983

CAIRO, EGYPT

AN EVALUATION OF THE

AGRICULTURAL MECHANIZATION PROJECT

(263-0031)

FEBRUARY, 1983

CAIRO, EGYPT

Table of Contents

Summary.....1

Goals and Purpose.....1

Current Situation.....3

Evaluation Methodology.....5

Purpose.....5

Procedure.....6

External Factors.....7

Project Setting.....7

Validity of Project Paper Assumptions.....8

Inputs.....11

Outputs.....14

Planning and Evaluation Subproject.....14

Research and Development Subproject.....15

Local Manufacture Subproject.....16

Service Center/Workshop Subproject.....17

Machinery Management Extension and

Training Subproject.....19

Land Improvement Subproject.....21

Beneficiaries.....23

Summary of Conclusions and Recommendations.....41

Tables

Annexes

Glossary of Acronyms

I. SUMMARY

A. Goals and Purpose

The Agricultural Mechanization Project is a six year endeavor with life of project U.S. funding of $40 million. The Project is intended to contribute to the goals of increased agricultural production and higher farm incomes through soil improvement, better utilization of existing machinery, and testing and introducing new machinery. The Project Paper (PP) also states that the Project will directly raise livestock production.

The Project purpose is to build Egyptian capabilities to plan, support, and carry out appropriate mechanization efforts. The substantive measure of Project achievement will be well-formulated and effectively implemented farm equipment projects, programs and support services.

The PP stated that the ultimate result of the successful implementation of this project would be a comprehensive program of planned, inter-linked and mutually complementary parts capable of providing the farmer with the support he needs to produce his crops more efficiently.

The PP also stated that the project would achieve its purpose through the successful implementation of five

subproject activities. A sixth subproject has been added during implementation. These subprojects and their respective tasks are as follows:

1. Planning and Evaluation -- Institutionalize within the GOE a planning and evaluation unit that will specialize in gathering and analyzing data for program planning, evaluation, and policy formualtion.

2. Research and Development -- Investigate equipment alternatives, suitability, effects on yields, and develop (or modify) equipment specifically for use in Egypt.

3. Land Improvement -- Assist the Soil Amelioration Organization (SAO) with planned land improvement activities in Middle Egypt. These activities include drainage, subsoiling, and land leveling.

4. Machinery Service -- Establish a network of 20 private service centers throughout Egypt and develop a satellite network of 50 or more local workshops by strengthening existing private shops or establishing new ones.

5. Machinery Management Extension and Training -- Establish an effective machinery extension program within the Ministry of Agriculture and train local machinery operators and mechanics.

6. Local Manufacturing — Provide liason to and impetus for the local manufacture of selected project-proven equipment. The subproject also includes training in basic machinery production and modification.

B. Current Situation

The Project is in year three of implementation. The technical assistance team (TA) fielded by contractor Louis Berger International, Inc. is essentially in place and carrying out activities in each subproject. Strictly speaking, the Project is not on schedule if measured by the PP implementation plan or the contractor's inception report. (This evaluation, for example, was called for in mid-1982.) It is moving forward, however, with coherence and at an ever increasing rate. The subprojects in which the most progress has been made and which are considerably ahead of the rest of the Project are ones which are able to lay an effective base from which to achieve the other subproject objectives. This is particularly true in the Machinery Extension and Training subproject, which is making excellent progress in demonstrating and introducing some basic mechanization technologies to the small and not-so-small farmer. This in turn will create

a demand for the services that the other subprojects are intended to develop capabilities for -- land-leveling, service facilities, local manufacture, etc. The obvious danger inherent in this somewhat uneven progression of Project activities is that if the demand is adequately developed and the services are still not forthcoming, then the technologies themselves will be viewed as failures by the Project audience.

The next six months are going to be critical to achievement of the overall Project objectives. If the slower subprojects are not moving effectively by the end of 1983, then a serious look needs to be taken at how gains can be consolidated and institutionalized without the successful accomplishment of all of the subproject objectives. For example, if extension, training, and research and development are meeting their goals, how can these goals still be attained in the long run if local manufacture and land improvement are falling behind? Convincing farmers of the value of seed drills is not an accomplishment if they cannot easily obtain seed drills, or obtain service on equipment that they do obtain, or because of inadequate leveling or drainage the effectiveness of the new technologies is mitigated.

The accomplishment of Project purpose and goal within the Project implmentation period is a realistic possibility at this time. The Project is not without its problems, both from design and self-inflicted during implementation. But the problems appear to be almost generic in nature and not grave hindrances to goal achievement. As previously stated, however, what are only bothersome delays at present will be serious obstacles by the end of the year if they are not adequately dealt with. There is every indication that they can be dealt with through the concerted efforts of the GOE Project personnel and the TA team.

II Evaluation Methodology

A. Evaluation Purpose

This is a mid-project evaluation originally scheduled (in the PP) for early 1982. It is the first external evaluation to be conducted for this Project. Its aim is to provide USAID and the GOE with an objective interim assessment of Project implementation and progress towards achievement of goals and purposes, and to provide recommendations for possible changes in implementation technique.

B. Evaluation Procedure

The evaluation was conducted by a three person team, in Egypt, from January 27 to February 21, 1983. The team members and their respective responsibilities, as requested by USAID (Cairo 32244), were:

David M. Songer (NE/TECH/AD) -- project implementation and design issues, coordinating team findings, and drafting the evaluation report;

Madison Broadnax (on contract) -- review the mechanization extension and research components of the Project, review revolving credit funds, and review input-output status; and

Moha Saleh (on contract) -- examine beneficiary issues and other human impact aspects of the Project.

A copy of the team scope of work provided by USAID in Cairo 30439 (1982) is attached as an annex.

The team made extensive review of project documents and records, reports of the TA team, and USAID project files. Interviews were conducted with USAID officials, Ministry of Agriculture Personnel, TA team members and counterparts, and farmers and businessmen in Project implementation areas. Field visits were made whenever possible to Project sites and villages.

Interviews were generally of an informal nature and were structured around the assigned responsibilities of each team member. Due to limitations of time and other resources, no sample surveys or other statistical techniques were used. Data collection was limited to the information available in Project documents and was supplemented by first hand observation during field trips.

Persons interviewed and significant documents reviewed are included in annex II and III.

III External Factors

A. General Project Setting

There have not been any major changes in the Project setting. Agricultural mechanization appears to have become even more of a priority for the GOE than it was at the Project outset. GOE mechanization activities have been brought under a single dirctor who has the authority both in theory and reality to make and execute substantive mechanization decisions.

The present GOE Project Director (who is also Director of Mechanization) was appointed in 1982. The new Director has assumed a more active and authoritative role in directing the Project than his predecessor did. In the long term this could be a very positive factor for the Project since it assures that the TA team will not be taking the Project memory with them when their contract is ended.

One external factor that has directly delayed the Research and Development subproject, and indirectly effected other subprojects as a result, was that prototype cultivation equipment was ordered form Israel and held up in Egyptian customs procedures. The decision to order from Israel cannot be faulted either on grounds of the appropriateness of the equipment or on lack of foresight about getting the equipment into Egypt. The delay was due to political happenings that were unexpected and which changed somewhat the openness which had begun to characterize relations between the two countries. Nevertheless, this is one of the reasons that the research and development subproject has begun slowly.

B Validity of PP Assumptions

The assumptions as stated in the Logical Framework of the PP are treated individually below.

"GOE policies encourage agricultural production."

In the broadest sense and as they immediately relate to this Project, the policies of the GOE, with some qualifications, do encourage agricultural production. Increased productivity of the agricultural sector is a prominent and often stated goal of the GOE. However, it must also be said that there is a raging debate underway over the agricultural price policies of the government and

the extent to which the agricultural sector subsidizes the other sectors of the Egyptian economy. To go into all the relevant issues and implications of this assumption is beyond the scope of this evaluation report. If this assumption were restated in a narrower and more directly relevant (to this Project) way as "GOE policies encourage mechanized agricultural production" then its validity would be less subject to question and debate.

"Higher production translates into higher farm income."

Basically this assumption is valid. It suffers from many of the same weaknesses and controversies as the first assumption, but within the realm of this Project it can be considered valid.

"Relative prices of labor and equipment do not discourage farm mechanization."

This is true. The rural Egyptian labor situation is a major impetus for mechanization.

"GOE provision of necessary resources to build Egyptian capabilities to plan, support and carry out appropriate mechanization efforts."

This assumption cannot be evaluated at this time. Necessary resources are being provided in some areas in a timely fashion. In others, particularly as relates to land improvement, they are not.

"GOE is serious in its commitment to turn over certain responsibilities to the private sector."

It appears so, but, again, this assumption cannot be adequately evaluated at this time.

"Availability of AID/GOE resources."

Valid assumption

"Contracting and commodity procurement proceed according to implementation plans."

This assumption is essentially valid. All has not progressed according to the implementation plan, but things have progressed in a reasonable and workable fashion.

Inputs

Approved funding under the Grant Agreement, as amended, is summarized in table I -- Summarized Financial Plan. Shown are levels of inputs by categories, both dollars and Egyptian pounds (LE). The total amount obligated is $40 million. As of December 31, 1982 approximately $6.5 million had been disbursed, leaving a balance of $33.5 million.

The PP called for TA in the form of 14 long-term personnel for a total of 696 person-months and 17 person-months of short-term assistance. The long-term has been modified through consolidation of positions and is now called for in the form of 12 long-term positions for a total of 635 person-months. The Project has provided 267 person-months of long-term as of January 1983 and 10 person-months of short-term through September, 1982. The shortfall in long-term TA is not serious at this time, as it can still be made up by Project end.

The financial level of effort is represented in table II , reproduced from the contractor's Activity Report No. Six (July through September 1982).

One input that appears to be in some trouble is training. Long-term trainees have not been identified and sent for training as originlly planned. The primary reason for difficulty is the scarcity of candidates that

can meet AID requirements for English language proficiency. A secondary reason may be that the potential candidates are only solicited from within the ranks of the Ministry of Agriculture, and not from sources such as the university community or the private sector. Short-term in-country training has made good progress, particularly in the extension subproject.

The credit funds have not been committed according to the original schedule, but this is not too surprising considering the stage of implementation of the Project. If the Project progresses as it appears it will, the credit funds will take off in the next six months to a year.

Project commodities subject to U.S. source waivers have not arrived according to the PP implementation schedule. However, with the exception of the already mentioned Israeli equipment, this has not been a serious handicap to implementation. For the most part the commodities do appear to be appropriate for the Project. Tillage equipment procured from Germany is too light for use in delta soils. It is possible that this equipment can be used in "New lands" areas, but these lands are not principle Project target areas.

The Project has procured both Chevrolet Blazers and Chevrolet Suburban vehicles. The Blazers have standard transmissions which are not as reliable or as trouble free

as the automatic transmissions of the Suburbans. In addition, the Blazers, because of their size and limited seating capacity, are of much less value in the field than either a Suburban or a van-type vehicle. Four wheel drive is a valuable feature for vehicles which are to be used in the field and should be considered a standard item for future field vehicle purchases.

Outputs:

The Project consists of six subprojects, each carrying out independent activities that were designed to be mutually supportive. As might be expected, the various subprojects differ a great deal in their degree of completion and accomplishment at this stage. None of the subprojects appear to have fatal flaws, either in their design or execution. The TA advisors have approched their tasks with apparent flexibility and are generally working effectively with their GOE counterparts. There is, however, a marked tendency for the TA team members to consider themselves as something more than advisors and to take umbrage when GOE Project management does not concur in their advice. The terms of the PP, the Grant Agreement, and the host country contract are clear, however, that it is with the GOE that ultimate responsibility for decisions and Project success or failure must rest, provided that sound and reasonable advice has been offered.

Planning and Evaluation Subproject:

Accomplishments of this subproject include:

Testing of a water lifting system in Beheira, and recommendations for appropriately sized pumps;

Support to the Service Center/Village Workshop Fund program;

Working paper on water lifting costs, cooperative tractor costs in Beheira and Gharbia, societal and on-farm costs of irrigation water lifting, and evaluating economic and financial costs of tractor operations; and,

Compilation of data from area mechanization surveys.

This subproject provides services to the Project as a whole through data collection, analysis, and collation. It appears to be accomplishing its tasks in a reasonable fashion and is making strides towards the institutionalization of planning and evaluation functions in the GOE.

Research and Development Subproject:

This subproject, headquartered near Alexandria, is field testing, adapting, and evaluating agricultural implements. The physical plant has been renovated and appears to be adequate for Project needs to date. This subproject has suffered some delays due to late equipment delivery, but can still accomplish what it was designed to do.

There is a close functional fit between this subproject and the local manufacturing subproject. There should be continued consultation between the two

activities, in addition to the support being rendered to other project areas.

Nineteen applied research proposals have been received and eight have been screened and approved by the research screening committee, though no funds have been made available. The eight proposals are listed below:

Project No.	Project Title	Proposers University	Approved (LE)
1	Seedbed Preparation	Alexandria	49,779
2	Mechanization of Cotton Production in the Nile Valey	Mansoura	24,000
3	Solar Drying Farm Crops in Fields	Mansoura	42,480
4	Furrow, Trickle, Sprinkler Irrigation For Potatoes and Tomators	Mansoura	52,060
5	Development of A Grain Harvesting System	Alexandria	67,070
6	Evaluation of Different Systems of Irrigation For Vegetables	Cairo	100,000
7	Solar Drying For Reduced Post-Harvest Losses and	Cairo	
8	Preservation Of Grain Quality	Alexandria	50,000

Local Manufacture Subproject:

An all crop thresher prototype has been designed and tested. Four of the threshers have been produced and will be shown and demonstrated to potential manufacturers in the next year. Training has taken place in welding and machine shop skills.

Service Center/Workshop Subproject:

The service center subproject team (TA expatriate and counterparts) were working primarily in the Alexandria area until November 1982. At that time the TA expatriate was transfered to Cairo and a subproject office was established there. Resulting from this move was the loss of the counterpart workers in Alexandria who did not relocate, and the necessity of retraining new counterparts. In addition, the relocation seems to have resulted in less field activity, that is, on-site visits to prospective loan applicants have been reduced in favor of having the applicant come into Cairo to the subproject office.

The first disbursement of funds for a service center took place in January, 1983. This was in the amount of LE 55,000 for a service center in Minya. To date, no construction has been started, and this remains the only application to have reached the stage of disbursement.

A serious constraint to timely activity for this subproject has been the acquistion of sites in rural areas for the centers. The cost of land is high — from LE 50,000 to 65,000 per feddan, and it appears that land for workshops will have to be taken where it can be found, rather than in a satellite fashion around the service centers.

The move from Alexandria to Cairo of the subproject team appears to have diminished the effectiveness and field orientation of the team. It is highly questionable whether potential clients feel as comfortable about coming into Cairo, to a government office, to discuss a possible loan as they would if the team visited them. In addition, the team, by going to the applicant, can get a feeling for the viability of the applicant and field conditions in general that is simply not possible through forms, reports and interviews conducted in Cairo.

There is some question as to whether loan recipients will have sufficient expertise at the outset to inspect and evaluate shipments of equipment and supplies. Whether a lathe or other machine tool is being delivered with all component parts, for example. The project should be ready and able to provide personnel in the field that could assist the recipients in taking delivery of equipment. This is another argument for field oriented personnel at this stage of the project.

There is a natural reticence to be overcome when official or government personnel are dealing with businessmen and private enterepeneurs. Project personnel should make extra efforts to establish their own credibility with clients, and not to appear as desk-bound

bureaucrats, ill-groomed and unsympathetic to rural private sector realities.

This subproject is key to the overall accomplishment of project goals. Without repair facilities for agricultural machinery the mechanization of Egyptian agriculture will be stunted, at best. This activity should be closely followed by USAID, the Ministry, and the TA team leader to assure that it meets its objectives.

Machinery Management Extension and Training Subproject:

Forty four Extension technicians are assigned to the project. An organizational structure extending from the national level down to village level is in place and active. The work plan has consisted of program planning, execution and evaluation. Conventional teaching by demonstration has been followed in areas adjacent to farmer's fields. Initially 60 feddans of consolidated small holdings were organized for teaching proper techniques for tilling, planting, irrigating and harvesting. Once proven acceptable, these demonstrations will be expanded to all of the project villages. Aside from the demonstration technique, other methodologies such as farm trials, field days and bulletins are used to disseminate information about agricultural machinery and management.

Binders, harvesters, and threshers have been used on 3000 feddans in main villages and to a lesser degree in other areas. Thus far, farmer receptivity has been good.

The extension project has been making agricultural credit information available to farmers. Because of farm labor scarcities, farmers are replacing water supplying sakias with water lifting pumpsets which require borrowed capital for procurement. To this end a water lifting fund has been capitalized with $2,000,000. The first tranche has been approved, banked (PBDAC) and 81% disbursed to 317 farmers in four of the five governorates . As agreed upon, release of these funds will be in four equal tranches.

Training has been joined with the extension subproject. This linkage has been productive for both subproject components.

Output for training is manifested in the training of the extension personnel, a wide-range of government empoloyees, and individuals from the private sector. At the end of the 1982 calendar year, the training subproject had taught 150 courses, covering 21 subject-matter areas, to 1,872 trainees. Two senior officials went to the USA for observational training.

Academic training has not been as successful. The selection and screening process is on-going. To date, thirty-five candidates are being processed. The objective is to train 30 MSc and 5 PhD candidates. A long term training plan is included as Annex IV.

Also, under this subproject is a pilot demonstration farm at Gabel Asfar. When fully operational this farm will demonstrate improved cultural practices, cropping patterns, and water management in addition to serving as a mechanization training facility.

Land Improvement Subproject:

This output may fall short of its objectives. The supporting GOE institution (the Soil Amelioration Organization) is not as able to support activities in this area as the PP had assumed. There is a shortage of skilled tractor operators, technicians, and management expertise in general. The subproject has also been hampered by the lack of soil surveys and topographic maps in Project areas, another problem the PP did not anticipate.

The TA team is treating land-leveling as the primary land imprvement problem to be dealt with and has purchased laser leveling equipment and begun training operators. Technical data from other USAID projects (EWUP, for example) support land leveling as a priority. Subsoiling,

identified in the PP as a major activity of this subproject, is of secondary or tertiary importance at best.

Potential problems with laser land leveling are that it costs LE 6 per feddan versus LE 2 per feddan for traditional leveling operations (LE 2 was quoted as the price Sheikh Ahmed area farmers were paying) and that it will require the cooperation and coordination of all the small farmers in the particular basin area to be leveled.

This activity should be closely monitored by USAID and Project staff. If it encounters serious difficulties consideration should be given to folding its functional objectives into the Extension Subproject, which is making good progress in related endeavors.

Beneficiaries:

The evaluation team made field trips to Sheikh Ahmed village and Ezba Besentawi in Mahmoudia - Beheira, Shabshir El Hesa and Kanisat Damsheet in Tanta - Gharbia, El Teline and El Saadiine in Minia El Kamh - Sharqia.

Other trips were made to Alexandria, the Research Center in Sabaheya, the Beheira Manufacturing Company, and the three training centers in Gianaclis, Maamura and Sidi Bishr.

The observations given by the evaluation team will thus be a combination of the interviews undertaken with farmers, project staff and personnel, observations in the field and reports and documentation reviewed.

1. Outputs reaching farmers:

Initially, only farmers in demonstration areas such as the Sheikh Ahmed pretest area, will benefit from outputs. As the program progresses, larger numbers of farmers will benefit.

The Planning and Evaluation unit and the Extension unit are reaching farmers through field trials and demonstrations of suitable mechanical equipment. In August, 1982, discussions were held with farmers in Beheira/Gharbia/Qalubia/Sharkia governorates to assess their interest in using mechanical equipment for cotton stalk removal. The farmers were reluctant to have their stalks chopped to bits so a new double knifed silage mower was demonstrated in field trials and ten units were then purchased (500 feddans were mown for 100 farmers). Many farmers have purchased similar mowers as they are cost-effective and faster than methods now used.

The recommendations made for equipment selection and management arising from the analytical work of the Planning subproject are being conveyed to farmers through the Extension subproject. After the Research and Development subproject has identified the research priorities and carried out field investigations on new machines, the Extension Subproject

demonstrates them to farmers. The Research subproject thus reaches the farmer indirectly.

There was good cooperation between the Research and Extension subprojects during wheat planting season. They demonstrated 2 machines for seedbed preparation. Mechanized wheat planting with grain drills continued in December, 1982 covering 326 feddans in 11 plot areas for 541 farmers. Table IV shows the figures. Information was also provided to farmers about fertilizer application. Eight hundred feddans were covered in Beheira and Gharbeya.

Extension also reached farmers through advertising, extension materials, films and posters. Mechanization extension signs have been posted in 15 villages and a video-filming of the current condition in Gabal El Asfar Demonstration/Training station has been completed.

Machinery Management Extension and Training subproject staff have cooperated well together to achieve outputs and reach farmers. They have provided services, free of charge, during the harvesting of one crop and the planting of the following crop. Training reaches them directly. Key farmers attended 2 weekly seminars at Sidi-Bishr training center to understand the mechanization project and the financial and technical services resulting from it.

About 120-140 agricultural guides (farmers) are becoming extension agents for the project.

The soil improvement subproject will provide land leveling to farmers, free of charge, using laser leveling first in Minia in April, 1983 and then in Fayoum, Beni Suef and Assiut.

The service center subproject did not become operative until June 1981 because government banks insisted on applying their own terms and conditions for loaning money on behalf of the Project.

From the field trips taken by the evaluation team it was clear that water-lifting pumps were becoming very popular. Kaniset Damsheet for example took a loan of LE 25,000 to buy 19 water pumps (Kobota and Mitsubishi); 28 Indian water pumps were bought by the Sheikh Ahmed coop. Sharkia lately added LE 60,000 in loans for water lifting pumps.

The Sheikh Ahmed coop also bought a backhoe, which is very cost effective, since it can be rented for LE 60/day. The coop can get its investment back within 6 months. It cleans 150m of water ditch per day. Four hundred feddans have been mechanized

by seed drills, cotton mowers, and binders owned by 365 farmers. In Bisentawi, 130 feddan were mechanized for 160 farmers. The coop has disc harrows, and seed drills.

At Menya El Kamh in Sharkia, Saadiine village had 37 feddans owned by four farmers mechanized. Seed drills, planters and listers were demonstrated. Farmers also bought water-lifting pumps. In Al Taline village 72 feddans owned by 3 farmers have been mechanized. Seventeen laborers have applied for maintenance and workshop training.

The mechanization efforts requested and needed by the farming populations in order to help them solve their critical labor shortage problems are beginning to show positive results as farm practices are mechanized by Project, GOE and private efforts.

The direct beneficiary, the farmer, has actually accepted and utilized the technology transferred and has requested more of the same. The possible rewards of mechanization are apparent, substantial and attainable for the majority of farmers.

2. Including farmers in the Planning, Decision-Making Process:

Farmers participated directly in the decision making process related to mechanization. Farmers views, aspirations and needs were actively solicited in the development of the water-lifting and machinery introductory fund, credit fund terms and conditions.

Before a particular technology which has "passed financial and economic evaluative screening" is recommended for adoption, views and comments from farmers participating in the farm management survey are solicited

Data collection and reports consistently focus on farmer opinions and perceptions.

Prior to conducting topographic surveys, farmers are consulted. Before finalizing work plans, farmers' approval is obtained. As a result, they participate in the entire decision making process. Also, village leaders, machinery owners, workshop owners, and operators are interviewed.

Through the presence of Project monitors and constant communication, it is anticipated that the views and needs of farmers will continue to be included in Project planning and achievements.

The Research and Development advisory committee includes agricultural engineers from the major Egyptian agricultural universities, social scientists and farmers, so that a broad spectrum is represented in the final research grant evaluation.

Field trips were taken by the planning unit to existing non-Project workshops. In the Mahmudia District, for example, there are three workshops in El Mahmudia City. Area farmers commented that services of the kind to be provided by the Project are needed and long overdue. Tractor hours lost each year due to temporary down time or because machines have gone completely out of service represent losses in the field at harvest time.

It is through the ongoing development of the village mechanization Extension program that the farming populations are able to furnish the Project and the MOA with the information necessary to the development and implementation of the mechanization effort.

A high degree of coordination between farmers and technical staff is vital for the implementation of the land improvement program, which takes place only between cropping seasons, when land is clear.

3. Farm Size:

The nine districts chosen by the Agricultural Mechanization Project cover a wide range of Egyptian rural ecology. The total cultivated area of each of the twenty-three villages ranges from 486 to 3,817 feddans. Most cases, however, cluster in the middle range of 1,000 to 2,000 feddans. The man-land ratio gives an indication of the population density and also suggests the degree of population pressure in a given area.

An inspection of the breakdown of landholders reveals an imbalance in favor of small holdings. In every village most of the landholders have fewer than three feddans, and in many of the villages most holders have less than one feddan. Only 3% have more than ten feddans [90% hold 61% of land and 3% control 13%].

Large holdings present the same constraints for agricultural mechanization as the dominent small holdings, as they are most often clusters of plots in a variety of locations, even though registered in the name of a single farmer.

The smallest farm units will primarily benefit from subproject activities. The small farmer makes up the target group to which the Project is directed.

Providers of machinery services, family laborers, especially children, and consumers, tractor drivers, repair and service personel will also benefit.

It is not possible to analyze farm size in terms of income level or capital investment, but the evaluation subproject will provide analysis in terms of cost/production.

4. Project's Effects on Farm Employment:

The Agricultural Mechanization Project tackles only those operations where a farm labor shortage has resulted in reduced profitability to the farmer. It does not reduce farm employment. This labor supplementation effect is the most immediately perceived advantage of mechanization. Some farmers have left their land uncultivated (400 feddans in Sharkeya) because of lack of labor.

The Mechanization Project could increase off-farm employment by increasing leisure time. Farmers or landless laborers could go into the irrigation business, manufacture machinery, start a poultry farm, start their own workshop, or buy new lands through loans from the Bank, as most of the farmers interviewed in the project villages said they would do, if they had the time. In their opinion, mechanization could also ameliorate migration problems. The farmer can now cultivate 20 feddans by himself, without requiring the help of his children, which would free a portion of the labor force and possibly aid in industralization.

Unless the opportunities for off-farm and off-shore employment drop sharply from present levels, labor savings by farm mechanization will largely substitute for labor currently being lost through temporary and permanent migration.

Projected drop in employment due to mechanization, though anticipated to be 12% by 1990, will be offset by planned increases in cropping intensity.

Labor released from the monotonous, time consuming tasks of tending animal-powered water wheels or threshers could be used to increase production on the farm or in the household.

Impacts

1. Production and Labor:

With a properly developed management base and effective implementation of project activities, the project's inputs should contribute to increased crop production and alleviate labor shortages. However, it is difficult to say at this early stage of implementation whether the project has had an impact on production. It is anticipated that reducing the turnaround time between crops will improve cropping intensity and thus increase total production. It is anticipated that a 10-15% increase in yields of each crop will result from the use of grain drills and inter-row cultivators. Landleveling is expected to improve wheat yields in those areas where salinity exists. Subsoiling for severely waterlogged soils has been found to increase yields by 20-150%.

The principal impact of shifting from labor-intensive to mechanized cotton stalk removal is the enhancement of labor productivity. The labor required for the labor-intensive method

is 28 to 44 man-hours per feddan; this figure is dramatically reduced for the mechanical method to 1.5 man-hours in the case of the double-blade mower and to 2 man-hours per feddan for the single-blade unit. The mean cost of agricultural labor for the cotton stalk removal operation taken from the Project's Farm Management Survey is 46 piastres/hour; the mower thus saves LE 10-30 per feddan and only takes 1.5 man hours per feddan.

Field tests on wheat using the prototype thresher indicate an intake rate of 2.7 M.T. per hour of straw and .9 M.T. per hour of grain. The thresher produces 1 M.T. of rice per hour and 600-800 kilos of wheat/hr. It reduces labor time to 2 hours per feddan instead of 7 hours of manual work and takes half the labor required for the manual threshing operations. On-farm crop losses can be reduced through improved harvesting and winnowing techniques. Handling and losses can be reduced through improvement of post-harvest and related storage methods.

Mechanization improves output per work-hour, reduces on-farm labor costs and offsets production losses resulting from agricultural labor shortages in peak periods (such as during cotton harvesting).

Interviews were conducted with Farmers in villages in various regions. Farmers in Kanisat Damsheet in Gjarbia said that a feddan of wheat would cost LE 20 for cutting stalks, LE 10 for primary and secondary tillage, LE 16 for land leveling; whereas mechanical production would cost LE 9 . Labor costs are currently LE 4/day (8 am - 12 pm) per man and LE 2 per child or woman. West Nubareya yields of fully mechanized cotton have improved substantially to 4.5 bails/feddan instead of 2-3 bails/feddan, where manual labor is used.

Farmers at the co-op of the Sheikh Ahmed pretest village perdicted the following increases in production:

Cotton:	Increase	from	1 Kentare/feddan	to	1.5
Wheat:	"	"	12 Ardab/Feddan	to	17-18
Corn:	"	"	14 " /	" "	26
Rice:	"	"	2 M.T./	" "	2.5-3

which shows that they expect at least a 50% increase in yields, due to mechanization. The Project Paper gives a rough figures of current and national average yields of indicated crops and an estimate of animal days employed per feddan in order to calculate milk and meat savings.

[Sheikh Ahmed village farmers who used the Galliguani grain drill in 1981, indicated an average increase of approximately 4 ardabs in wheat production or an average of 6000 kgs/feddan.]

2. Land Tenancy Patterns

Under the Agrarian Reform laws, large holdings were limited in size; the amount over the limit was divided among landless laborers. Holdings gained this way would have been further divided because of the Islamic laws of inheritance. These laws also protect tenants from being thrown off the land as long as the rent is paid.

Thirteen of the project villages have Agrarian Reform land, which has played an important role in keeping the man-to-land ratio high. Rented land is usually apportioned in units of fewer than two feddans, it is often a significant proportion of the total cultivated area of a village, and renters constitute a significant part of the farmers (14-57% of total number of farmers).

Over 40% of the cultivated land in Egypt is worked by tenant farmers. The high profits resulting from mechanized operations could result in the displacement of tenants from the farms, since owners could cultivate all of their own land, rather than renting some of it out. However, it is not known at present that any change in land tenancy patterns might be the result of this project, since laws protect the tenants.

3. Cropping Patterns:

The twenty three villages potentially affected by the Project grow a variety of crops, reflecting the agricultural diversity of the country. As long as government controls the variety and extent quantity of some crops, such as cotton, rice and wheat, the constraints of the crop rotation system are imposed upon farmers. Crops of major importance as cotton, wheat, bersim, corn and rice dominate. The mechanization project had to take into consideration the particular qualities and requirements of these crops, and orient its activities accordingly.

It is unlikely that this project will produce changes in cropping patterns; these patterns are largely set by the MOA, and are tied in with irrigation water rotations set by the MOI. Large farming units occurring in the form of consolidated blocks or basins (25-125 feddans), mandated by the cooperative societies for crop rotation purposes, offer the greatest opportunity for large-scale mechanization efforts.

Project activities have been arranged to fit the cropping pattern and work load of the farmers. As the farmers see it, the primary advantage of mechanization would be the shorter turn-around time between crops, which could be reduced by 15-20 days. They will not be late for planting wheat or cotton and will avoid paying a fine of LE 20 to co-op. Because of mechanization they will always be on time for the cropping schedule set by the co-op. Also, feed costs wil be reduced as mechanization replaces animal traction and land now planted to berseem clover may be reallocated to other crops.

Conclusion:

The Agricultural Mechanization Project has set the foundations for Agricultural Mechanization in Egypt,

Each of the subprojects has been working very hard at achieving its objectives, mainly reaching the farmers.

The American advisors and MOA staff have been cooperating to make this project successful.

The field trips that have been undertaken by the evaluation team, with the advisors, and Egyptians' help were very impressive, as a vital proof of their efforts and satisfactory coordination and progress of the subunits of this entire project.

Summary of Conclusions and Recommendations.

The logical framework included in the project paper states the goal towards which the project will contribute as increased agricultural production and higher farm incomes. The subgoal is to provide Egyptian farmers with adequate power to carry out needed agricultural operations in a timely, effective and economic manner. The most that can be said at this time about accomplishment of the goal and subgoal is that the project, though behind schedule, is making good progress, and it appears that its contribution to the mechanization of Egyptian agriculture will be substantial.

The indicators of project achievement (End of Project Status) detailed in the logical framework still appear to be valid and reasonable criteria by which to judge the project's final contribution.

Recommendations and evaluation team comments are included throughout the text of this report. They are summarized below.

1.) Every effort should be made to bring about more equal progress among the various subprojects. The subprojects are interlinked and will soon reach the point where the slower ones will seriously hinder the success of the more progressive ones.

2.) A more efficient and effective means for selecting and processing training candidates is needed. Consideration should be given to widening the pool of potential trainees by allowing individuals outside of the Ministry of Agriculture to apply. (pp. 11, 12).

3.) Four wheel drive Suburban or van-type vehicles are much better in the field than smaller two wheel drive vehicles. Automatic transmission is more reliable under Egyptian conditions than manual. (pp. 12, 13).

4.) The Research and Development and the Local Manufacture subprojects should coordinate their respective activities and explore ways to combine common functions. They should remain in close physical proximity to one another. (pp. 15,16).

5.) A comprehensive accounting system should be devised for project parts, tools, and machinery. A system for tool sharing and issuance would be beneficial.

6.) Field visits to farmers and entrepreneurs are effective and should be encouraged over having these individuals visit project offices in Cairo. (pp. 17, 18).

7.) The project should provide assitance and oversight to loan recipients when they take delivery of equipment and supplies. (p. 18).

8.) The Service Center subproject is crucial to the overall success of this project. USAID, the GOE, and the TA team should expend every effort to overcome the constraints of site locations and the processing of loans. (p. 19)

9.) The Machinery Management Extension and Training subproject is making excellent progress. The TA position of extension advisor should be extended for the life of the project, with the incumbent remaining in that position if at all possible.

10.) The Land Improvement subproject appears to be in danger of not accomplishing its objectives. If substantial progress is not made in the coming months, consideration should be given to folding its functional objectives into the extension subproject. (pp. 21, 22).

11.) Road improvement for machinery access to fields is going to be required at some stage if mechanization is to advance. The TA team should provide guidance on and analysis of this matter to the GOE.

12.) Linkages with other related USAID projects should be encouraged and strengthened.

13.) Renovation and use of the Nubariya training center should be considered by the GOE project staff.Since USAID-provided project funds are fully earmarked, GOE counterpart funds would be desirable for this endeavor.

Overall, the evaluation team was impressed with the degree of commitment evidenced by the TA team and the GOE project management and staff. The project is behind shedule, to be sure, but is now making obvious progress and should be able to make up for lost time to a considerable extent. Care should be taken that the weaker subprojects not be allowed to flounder and bring down the entire project. If it is felt that a subproject cannot achieve its goals or is lagging too far behind, then the entire project should be adjusted accordingly. It may very well be that certain activities will have to be abandoned in their present form.

This evaluation is somewhat premature in terms of being able to measure mid-term project progress. USAID should consider another evaluation towards the ends of 1983. Future evaluation teams should have as members an agricultural engineer (or development mechanization expert) and an agricultural economist, in addition to any other specialties needed.

Tables

Approved funding under the Grant Agreement, as amended is summarized in Table 1 - Summarized Financial Plan. This shows level of inputs by categories, both with US and Local Currency (LE). The $US input is $118.8 million plus a $21.2 million equivalent in Egyptian Pounds. The combined input is $40 million, obligated in the Grant Agreement.

On December 31, 1982, about $6.5 million (165) had been disbursed leaving a balance of $33 million unliquidated. An analysis of the funding categories discloses, on percentage basis that 33% is for the revolving credit fund, 29% for commodities, 21% for technical assistance, 8% for research support, 8% for training, and the remaining balance for studies and evaluation.

TABLE I - SUMMARY FINANCIAL PLAN

	AID*		GRANTEE		TOTAL
	FX	LC	FX	LC	
Technical Assistance	6,424	2,302	--	1,284	10,010
Commodities	9,133	2,000	828	--	11,961
Training	2,023	1,000	--	--	3,023
Operating Expenses	--	100	--	617	717
Facilities	--	70	--	2,155	2,225
Credit	--	13,000	--	--	13,000
Research Support	1,005	2,000	--	--	3,005
Special Studies & Evaluation	215	728	--	--	943
Contingency & Inflation	--	--	219	2,018	2,237
TOTAL	18,800	21,200	1,047	6,074	47,121

* Contingency and inflation costs have been calculated into each category or line item for AID funds only.

TABLE II : Financial Level of Effort : Foreign Currency and Local Currency from September 15, 1980 through September 30, 1982.

	(1) GRANT AGREEMENT	(2) USAID SUBOBLIG-ATION	(3) EXPENDIT-URES, FUNDS IN PROCESS	(4) FUND AVAILABLE BALANCE	(5) FUND EXPENDED	(6) PIPELINE (3+4+5) & EXPENDED FUNDS
Foreign Currency :						
1. Technical Assistance	6,424,000	5,955,418	216,775	3,939.152	1,799,691	5,955,618
2. Commodities	9,133,000	9,133,000	1,500,000	-	385,336	1,885,336
3. Training	2,023,000	2,023,000	-	-	8,900	8,900
4. Research Support	1,005,000	1,005,000	84,699	-	127,329	212,028
5. Special Studies & Evaluation	215,000	215,000	-	-	-	-
6. Total :	18,800,000	18,331,618	1,801,474	3,939,152	2,312,356	8,061,832
7. % in Pipeline expended						43%
Local Currency (US$ Equivalent)						
1. Technical Assistance	2,302,000	1,688,361	47,191	1,176,497	518,882	1,805,570
2. Commodities	2,000,000	2,000,000	250,584	-	-	-
3. Training	1,000,000	267,117	120,590	45,532	41,527	210,649
4. Vehicles operating expenses	100,000	100,000	20,290	-	-	-
5. Facilities	70,000	70,000	-	-	-	-
6. Credit Funds	13,000,000					
a. Service Center	5,000,000	5,000,000	-	1,500,000	-	1,500,000
b. Water lifting	2,000,000	2,000,000	-	429,012	70,988	500,000
c. Machine Introduction	4,000,000	2,000,000	-	1,000,000	-	1,000,000
d. Uncommitted	2,000,000	-	-	-	-	-
7. Research Support	2,000,000	2,000,000	-	-	-	36,433
8. Special Studies & Evaluation	728,000	728,000	-	-	-	-
9. Total :	21,200,000	15,853,478	475,088	4,154,041	694,397	5,323,526
10. % in pipeline/expended						25%
Overall						
1. Total	40,000,000	34,185,096	2,276,562	8,093,193	3,006,753	13,376,508
2. % in pipeline/expended						33%

Notes :

1. Expended through 31,July,1982.

Annexes

PAGE 01 CAIRO 30439 01 OF 02 021313Z 0638 035755 AID9201
ACTION AID-00

ACTION OFFICE NEHO-01
INFO NEHO-04 NEDP-03 PPCE-01 PDPR-01 PPPB-03 C-01 CHE-02
CPC-02 STAG-02 SACT-01 NEE-03 AGRI-01 CTFA-01 RELO-01
MACT-01 /031 A4 36

INFO OCT-00 COPY-01 INR-10 EB-08 NEA-07 /051 W
----------153511 021323Z 70

R 021303Z DEC 82
FM AMEMBASSY CAIRO
TO SECSTATE WASHDC 5466

UNCLAS SECTION 01 OF 02 CAIRO 30439

AIDAC

E.O. 12356: N/A
SUBJECT: EVALUATION OF AGRICULTURAL MECHANIZATION

REF: CAIRO 30029

1. FOR NE/TECH/AD

2. PER REFTEL, THE FOLLOWING IS THE SCOPE OF WORK FOR SUBJECT EVALUATION 263-0031
A. INPUTS

1) HAVE ALL OF THE INPUTS BEEN ACHIEVED? IF NOT, WHY NOT? IN RETROSPECT ARE THE INPUTS NECESSARY AND SUFFICIENT FOR ACHIEVEMENT OF THE OUTPUTS?

2. HAVE THE INPUTS BEEN ACHIEVED AS SCHEDULED ORIGINALLY? HAVE THERE BEEN DELAYS IN ACHIEVING SOME INPUTS AND NOT OTHERS? IF SO, WHY? WHAT HAVE INPUT DELAYS MEANT TO FURTHER PROJECT PROGRESS?

3. WHAT IS THE STATUS OF PROJECT COMMODITIES SUBJECT TO U.S. SOURCE WAIVERS? HAVE THESE COMMODITIES ARRIVED IN A TIMELY FASHION? IF NOT, WHY NOT? HAVE THEY BEEN APPROPRIATE COMMODITIES FOR THE PROJECT?

4. WHAT IS THE STATUS OF THE VARIOUS REVOLVING CREDIT FUNDS? ARE THEY EFFECTIVELY LENDING AND TO THE INTENDED RECIPIENTS? IF NOT, WHY NOT?

B. OUTPUTS

1. WHAT IS THE STATUS OF EACH OF THE OUTPUTS (SUBPROJECTS)? ARE THEY PROGRESSING SATISFACTORILY? IF NOT, HOW DO THE DIFFERENCES IN THEIR STATUS AFFECT THE OVERALL PROJECT'S PROGRESS?

2. ARE THESE SUBPROJECTS NECESSARY AND SUFFICIENT TO ACHIEVE THE PLANNED PURPOSE?

3. ARE THEY BEING IMPLEMENTED AS PLANNED IN THE ORIGINAL DESIGN? IF NOT, WHY NOT? AND HOW DO THEY DIFFER FROM THE DESIGN?

4. TO WHAT EXTENT DOES THE PROGRESS TOWARD COMPLETING THESE OUTPUTS APPEAR TO BE LEADING TOWARD ACHIEVEMENT OF THE PURPOSE?

C. PURPOSE

1. TO THE EXTENT POSSIBLE AT THIS STAGE OF IMPLEMENTATION, WHAT IS THE POTENTIAL FOR PURPOSE ACHIEVEMENT?

2. TO WHAT EXTENT CAN ACHIEVEMENTS AT THE PURPOSE LEVEL

CAIRO 30439 01 OF 02 021313Z 0638 035755 AI
BE ATTRIBUTED TO PROJECT OUTPUTS? TO NON-PROJECT FACTORS?

D. IMPLEMENTATION/ADMINISTRATION

1. WHAT ARE THE EXPECTATIONS/UNDERSTANDINGS OF THIS PROJECT BY THE GOE/MOA, BY THE CONTRACTOR AND SUBCONTRACTORS? BY USAID? DO THESE EXPECTATIONS COINCIDE? IF NOT, WHY NOT? DO DIFFERENCES AFFECT THE PROJECT'S PROGRESS?

2. HOW APPROPRIATE/EFFECTIVE IS THE HOST COUNTRY CONTRACT? DOES THIS MODE OF CONTRACTING APPEAR TO BE AFFECTING THE PROJECT, EITHER POSITIVELY OR NEGATIVELY?

E. BENEFICIARIES

1. TO WHAT EXTENT IS ACHIEVEMENT OF THE OUTPUTS REACHING FARMERS?

2. TO WHAT EXTENT ARE FARMERS BEING INCLUDED IN THE MOA'S PLANNING/DECISION-MAKING ON MECHANIZATION?

3. TO WHAT EXTENT IS THE MOA (AND, WITHIN THAT, THE EXTENSION SERVICE) ADOPTING APPROPRIATE MECHANIZATION INTO ITS PLANNING PRIORITIES? HOW EFFECTIVE ARE THESE EFFORTS? WHAT IS THE POTENTIAL FOR "INSTITUTIONALIZATION" OF AN EGYPTIAN (MOA) CAPABILITY TO PLAN, SUPPORT AND CARRY OUT MECHANIZATION ACTIVITIES?

4. WHAT SIZE FARMS (IN TERMS OF AMOUNT OF LAND AND/OR INCOME LEVEL AND/OR CAPITAL INVESTMENT) ARE BEING REACHED

Annex I

PAGE 01 CAIRO 30439 02 OF 02 021313Z 4793 005756 AID0765
ACTION AID-00

ACTION OFFICE NETC-04
INFO NEPD-04 NEDP-03 PPCE-01 PDPR-01 PPPB-03 C-01 CME-02
CPS-02 STAG-02 SAST-01 HEE-03 AGRI-01 STFA-01 RELO-01
MAST-01 /031 A4 86

INFO OCT-00 COPY-01 INR-10 EB-08 NEA-07 /061 W
----------215253 031452Z /44
R 021303Z DEC 82
FM AMEMBASSY CAIRO
TO SECSTATE WASHDC 5467

UNCLAS SECTION 02 OF 02 CAIRO 30439

BY THE SUBPROJECTS (OUTPUTS)? ARE THESE THE ORIGINALLY INTENDED BENEFICIARIES?

5. IS THE MECHANIZATION BEING DEVELOPED APPROPRIATE TO AND CULTURALLY ACCEPTABLE IN EGYPT?

6. WHAT HAVE BEEN THE PROJECT'S EFFECTS ON FARM EMPLOYMENT TO DATE, IF ANY? HAVE THERE BEEN ANY EFFECTS ON OFF-FARM EMPLOYMENT?

F. IMPACTS

1. TO DATE, IS THERE ANY DISCERNABLE (AND/OR POTENTIAL) PROJECT IMPACT ON PRODUCTION AND LABOR?

2. HAS THE INTRODUCTION OF MECHANIZATION CAUSED ANY CHANGE IN LAND TENANCY PATTERNS THAT MIGHT BE ATTRIBUTABLE TO THIS PROJECT?

3. HAVE THERE BEEN ANY CHANGES IN CROPPING PATTERNS THAT MIGHT BE ATTRIBUTABLE TO THIS PROJECT? ATHERTON

Annex II

Interviews

Date	Name	Title	Place	Interviewers
2/1/83	Errell D. Coles**	Land Improvement Adv.	Cairo	Songer, Mohah, Broadnax
2/1/83	Jim McClung***	Soil Improvement Specialist	Cairo	Songer, Mohah, Broadnax
2/1/83	Ahmed Adel Orabi	Counterpart, Soil Improvvement	Cairo	Songer, Mohah, Broadnax
2/1/83	A. H. Abu-Sabe	Consultant/Mechanization	SAO & Alexan.	Songer, Mohah, Broadnax
2/2/83	Azab-Bontuy	Extension Ag Mech. Officer Agrarian Reform Coop.	Mahmoudia Vil.	Songer, Mohah, Braodnax
2/2/83	Kamal A. Kuruma	Farmer, AFC	Mahmoudia Vil.	Songer, Mohah, Broadnax
2 2/83	Fati Mahmound	Farmer, AFC	Mahmoudia Vil.	Songer, Mohah, Broadnax
2/2/83	Mahmoud S. El Kumery	Mech. Ag Extension Officer	Mahmoudia Vil	Songer, Mohah, Braodnax
2/2/83	Sayyad Abdu	Farmer, ARC	Sheikh Ahmed Vil.	Songer, Mohah, Broadnax
2/3/83	Carl Reaves	Research&Dev. Center Adv.	R&D-Sub-Proj/ Alex.	Songer, Mohah, Broadnax
2/3/83	Samir Younis	Counterpart R&D Center	R&D Sub-Proj.	Songer, Mohah, Broadnax
2/3/83	Richard Berky	Local Manufacturing Adv.	Behera Co. Alex.	Songer, Mohah, Broadnax
2/3/83	Abdel S. El-Geishy	Workshop Gen. Mgr.	Behera Co. Alex.	Songer, Mohah, Broadnax
2/9/83	Samir Showky	Training Oficer	Cairo	Songer, Mohah, Broadnax
2/9/83	Ibrahim El Ghattas	Training Officer	Cairo	Songer, Mohah, Broadnax
2/9/83	Hussein	Training Officer	Cairo	Songer, Mohah, Broadnax
2/9/83	Ahmed Saiid	Supervisor	Gianaclis Ctr.	Songer, Mohah, Broadnax
2/9/83	El Wakeel	Supervisor	Mamura Ctr. Alex.	Songer, Mohah, Broadnax
2/9/83	Nabil Helmi	Instructor	Mamura Ctr. Alex.	Songer, Mohah, Broadnax
2/9/83	Mohed I. Khattab	Supervisor	Sidi Bisher Ctr. Alex.	Songer, Mohah, Broadnax
2/13/83	Osman Yasin	Under Secy/MOA	Fayoum	Songer, Broadnax
2/14/83	Amr Marrie	Soil Imp. Trainer/Mgr.	Gabal Asfar Dem/Basin	Mohah, Broadnax
2/14/83	Hassan A.B. Bana	Dir. of Training Soil Improvement Project	Gabal Asfar Dem/Basin	Mohah, Broadnax

Annex II

Annex II

Interviews

Date	Name	Title	Place	Interviewers
1/22/83	Robert Morrow	Project Officer	AID/W	Songer, Broadnax
1/21/83	William Knight	Contracts	AID/W	Broadnax
1/26/83	Ray Fort	AD/AGR	Cairo	Songer, Broadnax
1/26/83	Frank Moore	PAD/AGR	Cairo	Broadnax
1/26/83	Ernie Wilson	Controller	Cairo	Braodnax
1/26/83	Elizabeth [illegible]tella	Project Officer	Cairo	Broadnax
1/26/83	John Swanson**	Project Officer	Cairo	Songer, Mohah, Broadnax
1/27/83	Emily Baldwin	Evaluation Officer	Cairo	Songer, Mohah, Broadnax
1/27/83	David Gaiser***	Chief of Party Louis Berger	Cairo	Songer, Mohah, Broadnax
1/27/83	Fred Schantz***	Extension/Training Louis Berger	Cairo	Songer, Mohah, Broadnax
1/27/83	Steve Shepley**	Tech/Dir/Res/Dev. Louis Berger	Cairo	Songer, Mohah, Broadnax
1/27/83	Jeffrey Lee**	Project Officer	Cairo	Songer, Mohah, Broadnax
1/27/83	Jocelyn Reed	IDI Generalist	Cairo	Songer, Mohah, Broadnax
1/30/83	Zakaria El Haddad	D/Dir/Agr. Mech.	Cairo	Songer, Mohah, Broadnax
1/31/83	Ahmad Beheiry***	Counterpart/Ag-Mech	Cairo	Songer, Mohah, Broadnax
1/31/83	Mohad A. Aziz***	Extension Officer	Cairo	Songer, Mohah, Broadnax
1/31/83	Mandouh El Baz	Extension Info Officer	El Telline Vil.	Songer, Mohah, Broadnax
1/31/83	Haj Abadalla Latif	Agr. Cooperative	El Telline Vil.	Songer, Mohah, Broadnax
1/31/83	Ahmed Fuad	Extension Mech. Engr.	Sharika Gov.	Songer, Mohah, Broadnax
1/31/83	Village Citizen	Farmers (150)	El Telline Vil.	Songer, Mohah, Broadnax
2/1/83	Ahmad El Sahrigi	Director, Agr. Mech.	Cairo	Songer, Mohah, Broadnax
2/2/83	Robert E. Synder	Equip. Repair Adv. Louis Berger	Cairo	Songer, Mohah, Broadnax
2/2/83	Morad M. Fawzy	Supervisor Service Center	Cairo	Songer, Mohah, Broadnax
2/1/83	Mousa Shafik Mousa	Mech. Engr. Counterpart	Cairo	Songer, Mohah, Broadnax
2/1/83	Nagih Abo Zied	Service Center Unit	Cairo	Songer, Mohah, Broadnax

*Accompanied Team on Field Trips
**Frequent interviews
***Frequent interviews and accompanied Team on Field Trips

Annex II

Documents & References Used

1. -- Project Paper 9/15/1979
2. -- Grant Agreement 11/4/79
3. -- Scope of Work
4. -- Project Files
5. -- Project Work Plans by LBI
6. -- Inception Report by LBI
7. -- Training Plans, 1981/82 by LBI
8. -- Monthly Reports by LBI
9. -- Memoranda of Understanding/Revolving Credit Fund LBI/USAID/MOA
10. -- Analysis of Comparative Water Lifting Costs in Lower Egypt by MOA/LBI/PED
11. -- Agricultural Mechanization Project Villages Profile by LBI
12. -- The state of Agricultural Mechanization in Egypt Results of a Survey: 1982 by Cairo and Assyut Universities
13. -- Fifty Interviews by Evaluation Team
14. -- Six Field Visits

PROJECT TRAINING PLAN PROPOSAL 1981/82

Subproject	Type of Training					Number	$ (000) Cost
	No. in-country	No. third-country	No. MSc	No. PhD	No. OBS		
Planning & Evaluation	169	0	12	0	5	186	175.7
Research & Development	23	0	3	0	9	35	76.4
Machinery Management Extension 1/	1572	15	6	3	3	1599	250.76
Soil Improvement	133	2	10	1	0	146	136.4
Service Centers	21	6	0	0	6	33	68.8
Training	86	19	0	0	6	111	111.1
Total	1934	45	31	4	29	2,110	819,16

SOURCE: 1981/82 Training Plan

1/ Machinery and Training subproject management extension - trainees make up 76% of the total number, and 92% of that number will be locally trained.

Annex IV

Glossary

of

Acronyms

GLOSSARY

ACC	Agricultural Credit Cooperative
ARC	Agricultural Reform Cooperative
AID	Agency for International Development
ARE	Arab Republic of Egypt
COP	Chief of Party
FAO	Food And Agricultural Organization
GOE	Government of Egypt
LBI	Louis Berger International, Inc.
LIT	Letter of Intent
LOU	Letter of Understanding
MME	Machinery Management Extension
LMP	Local Manufacturing Project
MOA	Ministry of Agriculture
PBDAC	Principal Bank for Development & Agricultural Credit
MOW	Memorandum of Understanding
PED	Planning and Evaluation Division
PIO/P	Project Implementation Order/Participants
PP	Project Paper
PIL	Project Implementation Letter
R&D	Research And Development
SAO	Soil Amelioration Organization

SC	Service Centers
SIP	Soil Improvement Project
SOW	Scope of Work
USAID	United States Agency for International Development
UAR	United Arab Republic
VW	Village Workshops
WLC	Water Lifting Credit