SDSU FOUNDATION

Agriculture for Bedouin Communities of Israel and Egypt

A Demonstration and Technology Project

Cooperatively Prepared
by
Leading Scientists
from
Egypt, Israel and the United States

Submitted to
U.S. Agency for International Development
by
The Cooperative Arid Lands Agriculture Research Program
San Diego State University Foundation

A Request for Supplemental Funding for

Contract No. NEB-0170-A-00-2047-00

The Cooperative Arid Lands Agriculture Research Program

AGRICULTURE PROGRAM FOR THE BEDOUIN COMMUNITIES OF THE NEGEV DESERT OF ISRAEL AND THE WESTERN DESERT OF EGYPT

A Demonstration and Technology Transfer Project

Collectively Prepared by Scientists from

THE COOPERATIVE ARID LANDS

AGRICULTURAL RESEARCH PROGRAM (CALAR)

Submitted by

SAN DIEGO STATE UNIVERSITY FOUNDATION

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ABSTRACT

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Supplemental funding to the United States Agency for International Development Cooperative Arid Lands Agricultural Research (CALAR) Program (Contract Number: NEB-0170-A-00-2047-00), is requested to demonstrate and teach agricultural methods to the Bedouin in Israel and Egypt. The proposed program will utilize and directly apply agricultural techniques developed by CALAR scientists, and address a growing need to aid Bedouin peoples in the two nations.

The introduction of the Bedouin--a relatively homogeneous population in both nations who share a common heritage and common problem--into the CALAR Program will further strengthen peaceful interactions between scientists in Egypt and Israel. Cooperative efforts between the Israeli and Egyptian Bedouin, as they begin a unique program to address their unsettled situation, adds new unity and dimension to the CALAR Program.

For nearly four decades in the Middle East, major changes in government, differences in culture, and rapid modernization have affected millions of people. The Bedouin are among them, for the above processes have all played a role in significantly restricting, and even destroying, their traditional subsistence bases. To survive, the Bedouin are making sweeping transformations in their way of life.

Once a nomadic people largely dependent upon camel caravan traffic for income and seasonal grazing lands for the breeding of livestock, the Bedouin are in the process of establishing more sedentary agricultural tracts as a major means of livelihood. At the same time, they are retaining elements of their traditional pattern of life, such as sheep and goat grazing. Yet, because of poor and outdated animal husbandry and agromanagement methods and less than optimum crop selection, the Bedouin standard of living remains extremely low and highly variable. As a result, the Bedouin are beset by a host of socioeconomic problems resulting from their low income levels and influenced by the standards of living and education in the jet-age society now surrounding them in their established and permanent homesteads.

Through the USAID-funded Cooperative Arid Lands Agricultural Research (CALAR) Program now underway in Israel and Egypt, a unique opportunity exists to assist the Bedouin peoples in these countries. By directly applying research knowledge gained through the present program, a demonstration project can be established as a supplemental component to the CALAR Program to educate by example. Using program-proven ideas and techniques in their own communities, the Bedouin can update obsolescent agricultural practices, as a first step towards economic stability. It is also the first step in beginning to solve their diverse socioeconomic problems.

For efficiency and expertise, agricultural scientists participating in the CALAR Program will be utilized to conduct the Bedouin component. The present CALAR management structure in Israel, Egypt and the United States will provide experienced direction for the program. The proposed Bedouin Agricultural Program will enhance production capability through the optimal use of their own agricultural and animal husbandry systems. The demonstration project will exhibit better methods of fodder and animal production; wheat, cereals and grazing management and associated irrigated and advanced rainfed agromanagement. Intensive horticultural management will also be demonstrated as an adjunct, and part of the overall agricultural system. All are techniques being developed through, or associated with, the CALAR Fodder Program.

Important products of the proposed program are the introduction of new interaction between the Bedouin in both nations, as well as the increased level of cooperation between Egyptian and Israeli scientists through an additional program component. Expanding their mutual interest, CALAR Program participants will further coalesce joint research efforts already under way.

THE PROBLEM

Bedouin. The name itself--literally translated from the arabic *al badawiyah*--means "those who live nomad lives." Such has been the way of existence for these desert dwellers for more than 5,000 years. Yet, today, the traditional role of the Bedouin is diminished, and some even say, disappearing. Where once the rhythm of nomadism in the arid Middle East was determined by seasonal variation and the inconsistency of rainfall, the modern Bedouin are now becoming a more sedentary people who are developing permanent farming communities.

This large-scale shift in life-style has been attributed to a number of changes, both direct and indirect, that began to occur following the end of the Second World War. Among these factors are:

- New national boundaries limiting nomad freedom of movement.
- The development of a supra-tribal administration limiting the independence of tribal leaders and their peoples.
- New methods of transport that reduced the need for camel caravan traffic, eliminating a major source of nomad income.
- An increase in the amounts of arable land through modern agromanagement techniques, leading to a reduction of traditional nomad grazing areas.

These alterations have all played a role in reducing centuries-old Bedouin subsistence bases, and consequently, have influenced change in the basic living patterns of these peoples.

In Israel and Egypt, as elsewhere in the Bedouin world, agriculture is rapidly emerging as the major source of income for these once-nomadic peoples. Yet, Bedouin income levels remain extremely low and highly variable because their time-worn agricultural systems are almost exclusively dependent upon many of the natural events--particularly the climatic environment--that once influenced their nomadism.

Technologies which have been handed down for generations, venerable plant varieties, and dated agromanagement techniques are widespread. Due to this lack of experience with modern techniques, the Bedouin have undergone both social and economic decline and their standard of living has remained low. As a result, many socioeconomic problems pervade these poor farming communities. Bad nutrition, widespread health problems, and a lack of education persist in adversely affecting the well-being of the Bedouin. Clearly, an adjustment in the dated patterns of agriculture and animal husbandry techniques is needed before an impact can be made on other conditions affecting these proud but poor peoples.

Up to this point, there has been no concentrated effort in either Egypt or Israel to assist the Bedouin in their transition to a more settled way of life. And yet, this

transition that began nearly four decades ago--and its related economic and social decline--pervade the overall environment of a growing number of Bedouin communities throughout the Middle East.

Clearly, if the Bedouin are to survive and prosper in modern society, a well-defined and established program is needed to aid these peoples. Such a program should address agromanagement techniques and related problems hindering the well-being of the Bedouin: it should also offer long-term solutions to help ease their integration into modern-day society in Israel and Egypt.

BACKGROUND

BACKGROUND

Underway since 1982 in the United States, Egypt and Israel, the USAID-funded Cooperative Arid Lands Agricultural Research (CALAR) Program is addressing problems common to the three countries. The research areas are: the use of saline water in crop production; the development of high nutrient, arid lands plants grown with minimal amounts of water for use as fodder; and the examination of a wide variety of arid lands species that show promise as industrial products.

During the second meeting of the CALAR Steering Committee (April 16-18, 1983), initiatives were developed to immediately and directly apply the results of this research--particularly in the areas of fodder and animal production.

The result of these initiatives is a proposed "add-on" to the present CALAR Program that will assist the Bedouin in optimizing their use of land resources for agricultural production. The proposed program will provide technology through a model demonstration project so that Bedouin farmers can observe: the functions and operation of fodder improvement; its success and the magnitudes of progress over timeworn methods, as well as the interface of new techniques with traditional procedures. At the same time, the facility will train appropriate

members of the community in the new techniques; as a result, the Bedouin community at large will acquire the knowledge to begin to modify farming and animal production practices. Such a method encourages change from within rather than imposing it from without.

The proposed program directly applies new techniques and expanded knowledge being gained from the present CALAR Program. The utilization of existing expertise--scientists and managers already working together in the three participating nations--not only heightens cooperative pursuits, it also economically and effectively uses existing and proven resources. A further expansion to the program will also come from the addition of Bedouin leaders and farmers who will interact with each other and with CALAR scientists from the three countries. The end result will assist the Bedouin in Egypt and Israel in their growing transition from nomad to sedentary farmer.

The Bedouin, a proud but troubled people with a common heritage and a uniform problem, present a number of unique opportunities for the U.S. Agency for International Development and the CALAR Program. Direct application of CALAR research is a programmatic goal and is important to participating scientists--and critical for the Bedouin. The Bedouin participation will strengthen the Program in a

number of ways: Interaction between Egyptian and Israeli scientists will intensify, while the Bedouin in both nations will begin an innovative program to cooperate in addressing their common problems.

PROGRAM MANAGEMENT

PROGRAM MANAGEMENT

In order to maximize the efforts and effects of the agricultural program to assist Bedouin communities in Egypt and Israel--as well as to assure the quality of the research personnel involved--it is proposed that this program be attached as an additional element of the Cooperative Arid Lands Agriculture Research Program, which is being funded by the Bureau for Near East: U. S. Agency for International Development (Contract Number: NEB-0170-A-00-2047-00).

The proposed organization will assure achievement of the program goals and will also provide an optimum opportunity for the direct application of the research from the Cooperative Arid Lands Agriculture Program.

The management of the Cooperative Arid Lands Agriculture Research Program will be expanded to include this new component. An organization chart showing the new component as it relates to the existing CALAR organization is shown in Figure 1, on the following page.

The Organizations Involved

The primary changes for the Bedouin agriculture component of the CALAR Program will occur under the section dealing with co-principal investigators and the technical consultant panel. Leading institutions are involved from three countries--the United States, Egypt, and Israel.

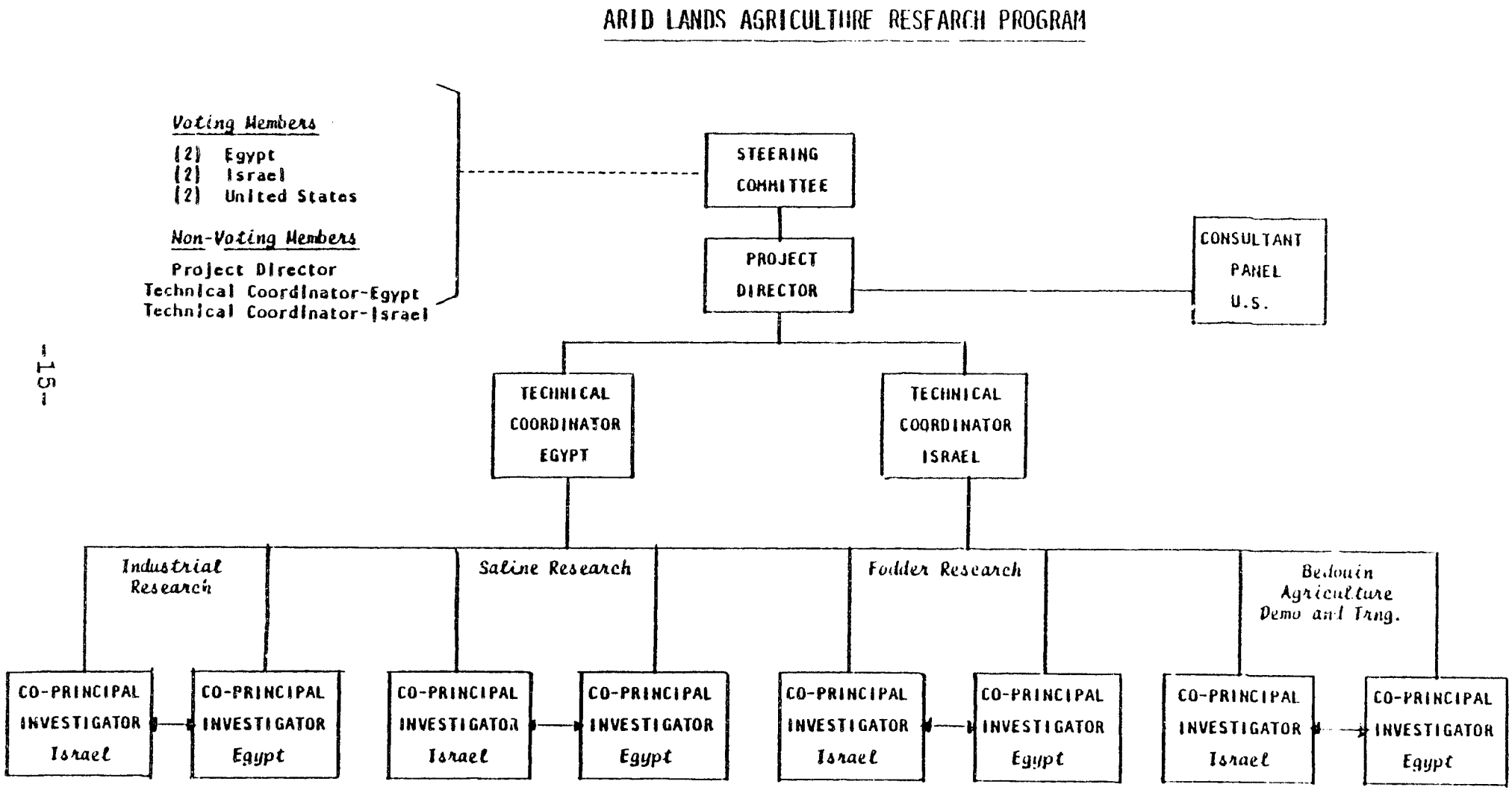


Figure 1. Organization Chart Showing Incorporation Of The Bedouin Agriculture Supplement.

In the United States:

Program funding is provided from the Bureau for Near East of the Agency for International Development. the cooperation and advice of AID representatives is solicited throughout the program; information is regularly collected and provided; and--as opportunities arise--efforts are made to coordinate the research activities of the proposed program with ongoing AID assistance programs in the Near East.

The contractor for the program is the San Diego State University Foundation, located in San Diego, California. The capabilities and experience of the SDSU Foundation are described in a separate section of this proposal.

Cooperating institutions include United States universities with strong interests, experience, and capabilities in arid lands research. Faculty from the University of California, Davis, the University of Arizona, and Utah State University have made commitments to continue their participation throughout the term of the program. Funding for their technical expertise is accomplished through direct payments from the SDSU Foundation to the researchers, or by reimbursements to the institutions for their faculty members' time.

In Egypt:

Leading institutions involved include Ain Shams University and the Agriculture Research Center of the Ministry of Agriculture (for fodder production and also for arid land species as a source of industrial raw materials). Other institutions will be involved as appropriate. The subcontracting agency for research conducted in Egypt will be the Ministry of Agriculture of the Arab Republic of Egypt. Bedouin participants will include members of the Ari tribe, who live near the Maryut Agriculture Station in the Western Desert.

In Israel:

Leading institutions involved include the Research and Development Authority of the Ben-Gurion University of the Negev, the Hebrew University at Rehovat College of Agriculture, and the Volcani Center of the Agricultural Organization Research. Other institutions will be involved as appropriate. The subcontracting agency for research conducted in Israel will be the Ministry of Agriculture of the State of Israel. Bedouin participants include the Abu Rabia brothers and their families, who reside near Beer Sheva.

The Individuals Involved

Individuals from the institutions named above assume various responsibilities for the progress of the program. Primary roles in the management plan include the Key Contacts/Initiators, the Steering Committee members, the Project Director, the Technical Coordinators, the Technical Consultant Panel members, and the Co-Principal Investigators. An organization chart is presented in Figure 1. A brief description of each role and its duties follows.

Key Contacts/Initiators:

Several persons have been instrumental in the development of cooperative activities to date. They are His Excellency, Dr. Yousef Wally, Minister of Agriculture from Egypt and Dr. Samuel Pohoryles, Director of the Rural Planning and Development Authority from Israel. Mr. Harry Albers, General Manager of the SDSU Foundation, has assumed fiscal responsibilities for the Cooperative Arid Lands Agricultural Research Program. Because of their intimate involvement with the program, these professionals are designated in this proposal as the "Key Contact/Initiators." Immediately after notification of funding, they will start the Bedouin agriculture program.

The Steering Committee:

The policy-making entity will be the CALAR steering

committee with two voting representatives each from Israel, Egypt and the United States. The other non-voting members of the Steering Committee are the Project Director and the Israeli and Egyptian Technical Coordinators.

The Steering Committee will have overall responsibility for the planning and policy direction of the work program. The Committee will meet periodically, using a six-month time frame as a target baseline with which to plan meetings. The principals have agreed that the meetings will be rotated among the countries involved.

Current voting members of the CALAR Steering Committee are:

EGYPT:
Mr. Mohamed M. Dessouki
Undersecretary of State
Foreign Agricultural Relations

Dr. Adel El-Beltagy
Associate Professor of Horticulture
Ain Shams University

ISRAEL:
Dr. Samuel Pokoryles
Director, Rural Planning and Development Authority
Ministry of Agriculture

Mr. Joel Schechter
Director
Commercial Applications Division
Ben-Gurion University of the Negev

UNITED STATES:
Mr. Harry Albers
General Manager
San Diego State University Foundation

Dr. Jack D. Johnson
Director
Office of Arid Lands Studies
University of Arizona

The Project Director:

The Project Director will assume responsibilities for the day-to-day operations of the Bedouin agriculture program. His duties will include (but not be limited to): ensuring coordination of projects; facilitating trilateral cooperative efforts; establishing and maintaining communications with AID representatives; procuring equipment, travel, and United States technical expertise for the Egyptian and Israel-based projects; arranging international meetings of the Steering Committee; conducting symposiums and workshops; disseminating research results; planning training activities; recruiting and supervising personnel; arranging for program review and evaluation; and collecting and forwarding to AID contract-required technical reports. The Project Director will be based in San Diego where he has adjunct faculty status in the College of Sciences at San Diego State University. He will coordinate his work closely with the San Diego State University Foundation staff to ensure the smooth operation of the contract.

Currently, the Project Director for the Cooperative Arid Lands Agriculture Program is Mr. Michael Norvelle. Mr. Norvelle will continue as the Project Director during the coming calendar year, until a qualified replacement is found for him. Mr. Norvelle plans to return to the University of Arizona to pursue a Doctorate of Philosophy in

Agriculture. A recruitment for a new project Director is presently underway to assure that there will be no interruption of either the CALAR Program, or this addition to the CALAR Program. A posting for Project Director position is shown as Attachment C.

The Technical Coordinators:

Research and Cooperative Program activities in Egypt and in Israel are coordinated by Technical Coordinators assigned from among the Principal Investigators by the lead institution in each country. The Technical Coordinators report to the Program Administrator in their respective organization who has program oversight authority and responsibility and to the Project Director in matters of technical coordination. The Technical Coordinators are responsible for ensuring that Project activities are carried out in accordance with the agreed upon work plans and that project activities meet program objectives. They coordinate the purchase and use of equipment, the training programs both in-country and international and their country project's cooperative activities both internal and external. They also coordinate the preparation of their respective annual reports.

Currently, these Technical Coordinator positions are held by Dr. Adel El-Beltagy, Associate Professor of Horticulture at Ain Shams University for Egypt and Dr. Dov Pasternak, Head Division of Desert Agriculture,

Applied Research Institute, Ben-Gurion University for Israel. Both sit on the CALAR Steering Committee along with the Project Director as nonvoting members.

The Technical Consultant Panel:

A Technical Consultant Panel has been appointed by the Steering Committee. Nominations for distinguished scientists to serve on the Panel were solicited from the United States, as well as from the Agency for International Development, the U. S. Department of Agriculture, and the National Academy of Science.

The Consultant Panel includes representatives from leading institutions with expertise in arid lands research, such as the University of Arizona, the University of California at Davis, San Diego State University and the University of California at Riverside. Members will be available for technical assistance and advice to the Co-Principal Investigators for each of the research elements. Technical consultants will serve on a short-term or intermediate-term basis. They will be reimbursed for their efforts either directly or through subcontracting arrangements with their institutions. Their assistance will be sought for training, dissemination, and other formal and informal cooperative efforts.

Members of the Consultant Panel include:

Dr. Mohamed El-Assal
San Diego State University

Dr. Walter Oechel
San Diego State University

Dr. Anthony Hall
University of California, Riverside

Dr. LeMoyne Hogan
University of Arizona

Dr. Calvin Qualset
University of California, Davis

Dr. W. R. Gardner
University of Arizona

Dr. Cyrus McKell
Native Plants, Incorporated

Dr. William Weir
University of California, Davis

Evaluation Panel:

Specific members of the Technical Consultant Panel have been asked to maintain a permanent, on-going relationship with the CALAR Program as Program Evaluators. The current members of the Evaluation Panel are: Dr. Mohamed El-Assal, Professor of Sociology at San Diego State University; Dr. W. R. Gardner, Head of the Soils Water and Engineering Department, University of Arizona and a member of the National Academy of Sciences; Dr. Cyrus McKell, Vice President for Research at Native Plants Inc., formerly of Utah State University and member of the National Academy of Sciences; and Dr. William Weir, Associate

Program Director, Small Ruminant CRSP at the University of California at Davis will evaluate these various aspects of the program from an internal evaluation perspective for the CALAR Program: cooperative activities, saline water research, fodder shrub production, plants research and animal production, and fodder research respectively.

The technical evaluators will assess their respective components of the program, and will keep the Project Director advised of overall program progress and research orientation, as well as on methods of application for selected areas of research to address specific areas of concern in the Sudan and in Egypt. The technical evaluators will advise Principal Investigators in each nation to keep project research at the state-of-the-art level. One additional member of the Technical Evaluation Panel is currently being recruited to assist in the development and oversight of the Industrial Plants research component. Upon notification of approval for funding for the program, another additional member of the Technical Evaluation Panel will be added to assist the Project Director in the oversight of the Bedouin Agricultural Program in general.

The Co-Principal Investigators:

Egyptian and Israeli Co-Principal Investigators are designated for each of the three proposed research areas: saline water, fodder production, and industrial materials. The Co-Principal Investigators for the CALAR Program and the Bedouin supplement are:

Research Topic	Co-Principal Investigator Arab Republic of Egypt	Co-Principal Investigator Israel
Saline Waters	Dr. Adel El-Beltagy Ain Shams University	Dr. Dov Pasternak Institute for Applied Research Ben-Gurion University
Fodder Production	Dr. Adel Aboul-Naga Animal Production Research Institute Ministry of Agriculture and Dr. Ahmed M. Rammah Agriculture Research Center Field Crops Research Institute	Dr. Amos Dovrat Hebrew University
Industrial Materials	Dr. Mahmoud El-Barkouki Al Azhar University	Dr. Meir Forti Institute for Applied Research Ben-Gurion University
Bedouin Demonstration	Representative of the Ari Tribe	Dr. Yunis Abu Rabia

Responsibilities of each Co-Principal Investigator include: detailed planning and design of the research program, coordinated in close communication with his counterpart Co-Principal Investigator; requesting

support (equipment, international travel, United States technical assistance) from the San Diego-based Project Director as needed; recruiting and supervising personnel; procuring supplies and other resources for the program; assisting the Project Director with training, dissemination, and other cooperative efforts; keeping his respective technical coordinator and colleagues informed of research progress; collaborating with his Co-Principal Investigator to write an annual technical research report; and preparing and forwarding subcontract-required reports to the Project Director.

Each Co-Principal Investigator will assist with arrangements for a subcontract between the San Diego State University Foundation and his country's subcontracting institution. The Co-Principal Investigator, working closely with staff of the subcontracting institution, will be responsible for the fiscal management of funds in his research area.

DEMONSTRATION AND TRAINING

DEMONSTRATION AND TRAINING

Major goals for the Agriculture Program for the Bedouin Communities of the Negev Desert of Israel and the Western Desert of Egypt are to develop models to demonstrate agricultural methods as a means of:

- Improving the standard of living of the Bedouin communities in the Negev Desert of Israel and the Western Desert of Egypt.
- Enhancing and facilitating the transition of the Bedouin from a nomadic to a settled way of life.

Objectives

Major objectives for the program will include:

- Improve existing traditional Bedouin farming cultivation practices, agromanagement and animal husbandry techniques.
- Introduce new techniques, where appropriate, in the areas of water management, horticulture, agronomy and animal husbandry.
- Develop the capability of the Bedouin, their farm advisors, and selected farmers to implement new techniques and improved agromanagement technology.

Important also, are the increased levels of interaction between Israeli and Egyptian scientists, as well as the introduction of new levels of cooperation between the two nations through their Bedouin participants.

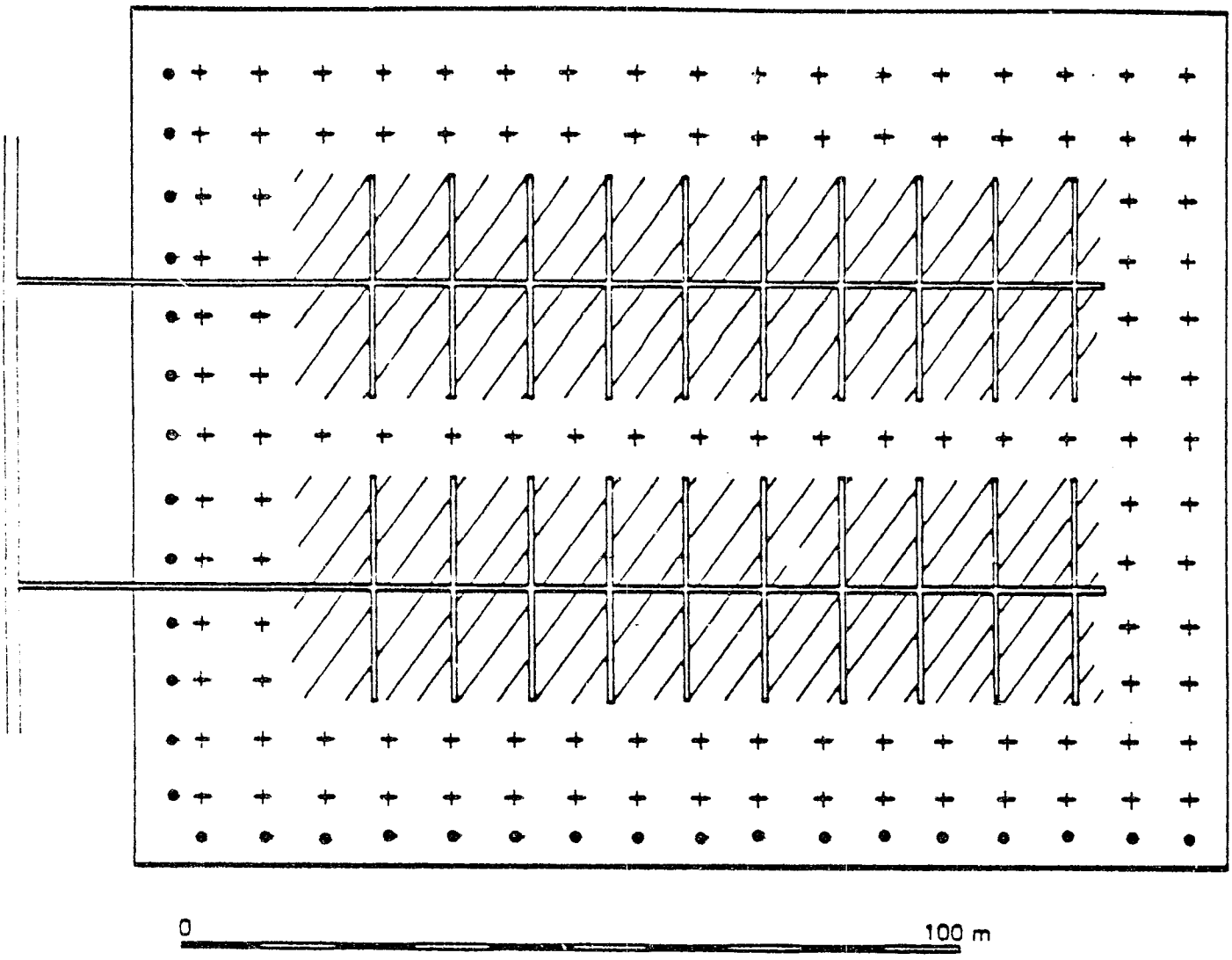
Location

Demonstration centers will be developed near the Maryut Agriculture Research Station near the Western Desert of Egypt and in the Northern Negev Desert of Israel between Arad and Beer Sheva. Both locations are representative of the physical environments in which the Bedouin live. Both locations have sedentary Bedouin peoples who have agreed to participate in the program.

Plan of Work Methodology

To achieve the program objectives, the approach will emphasize training, demonstration, education and the development and application of these improvements in the transition of the Egyptian and Israeli Bedouin as they adapt to a new lifestyle.

We propose the establishment of teaching and demonstration centers for Bedouin agriculture, which will include facilities for training, extension and demonstration fields. A model demonstration plot and farm are shown as Figures 2 and 3. A center will be established in Egypt and in Israel.



Model of a Demonstration Agricultural Plot

Figure 2.

Teaching and training will be provided to primary school students, high school students, in teacher's seminars, and to extension workers and selected farmers. Students will be given classes on basic agricultural principles and will receive agricultural training at the center. In addition, the demonstration fields will be open for public exhibition as examples of both production and technology.

Instruction on specific subjects such as livestock management, fodder and cereals production, and irrigation will be provided to extension workers and selected farmers, using both the classroom facilities and the demonstration fields of the center. Wherever possible, the permanent teaching and extension staff of each center will be employed from among the Bedouin community itself.

The proposed program to enhance the agricultural practices of Bedouin communities in transition has been designed to address the issues from a farming systems perspective. As such, it will direct itself to the major, integrated areas of agricultural production that comprise the agricultural production system of the settled Bedouin Communities of the Northern Negev in Israel and the Egyptian Western Desert. These areas are dryland cereals (wheat and barley), animal production and husbandry, natural pasture and fodder

shrubs, and cereals, pasture and fodder shrubs produced by run-off agriculture, and intensive irrigation. As an adjunct, a variety of horticultural type crops will also be demonstrated to show the practices and advantages of a broadly-based system.

The system has three primary outlets or uses for the production: livestock graze the natural and improved pasture and the cereals aftermath, home and local markets are served by the cereals, and livestock enhancement. Since all components are so closely integrated, addressing one without the others would not provide significant improvements throughout the system.

Therefore, animal husbandry and production improvement will be as important to the outcome of the project as crop improvement which will ultimately improve animal production through higher yields of better quality feed and forage.

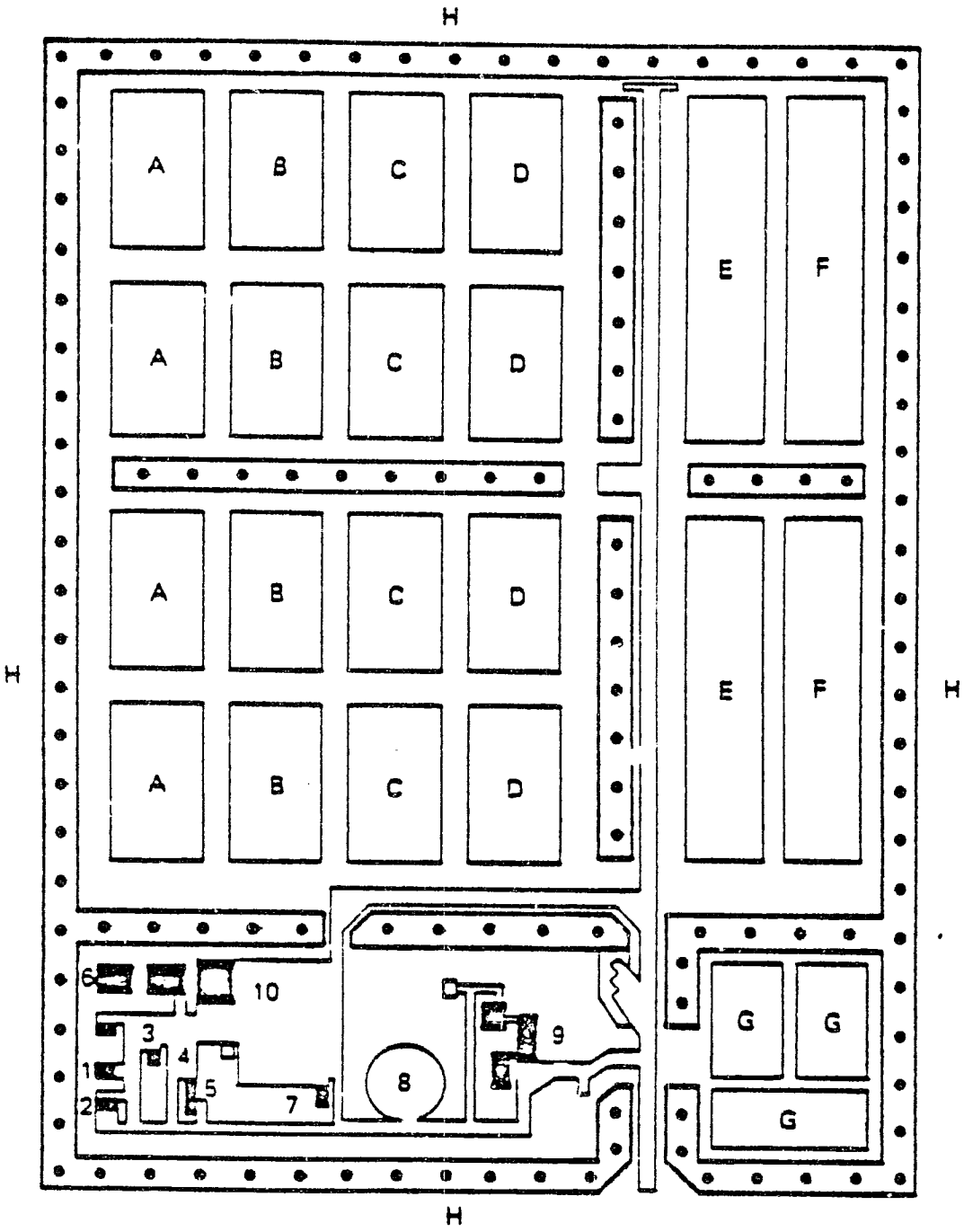
Animal production will include breed improvement, husbandry improvement such as animal health and improved grazing rotation keyed into improved pasture-fodder shrub-aftermath production and sequencing. Crop improvement will provide higher yielding and higher quality grain crops which, in turn, will both provide better feed for livestock as well as higher value on the commercial market. Pasture improvement will also produce higher yielding, higher quality forage ard the

addition of fodder shrubs to both fill in the nutritional balance of the feed complex and also replace costly supplements in the drought-rainfall production sequence.

The agronomy, forage and animal science specialists of the CALAR Program will provide the research base for the demonstration project in association with the trainers/research assistants who will be working directly with the Bedouin communities.

Program-Community Interaction

Interaction with the Bedouin communities will take place from a number of directions. The first will be that the entire community will have access to the demonstration plots and fields (see Figures 2 and 3). Any technology they are interested in will be explained both in person and through extension activity notes. Interested people may then participate in the second type of interaction: adult specialized courses. These courses will be on-going in different aspects of the technology being demonstrated: the use of shrubs in the animal feeding sequence, grazing management, animal health, irrigation science and efficiency, run-off/terraced farming system management, integrated farm management, agronomy and horticulture, post-harvest storage and market factors. These courses will be offered to the



1. Dynamo room
2. Transformer room
3. Well
4. Pump room
5. Desalination unit room
6. Reservoir
7. Warehouse
8. Meteorological observation device
9. Laboratory
10. Seedplot

A Field
B Field
C Field
D Field
E Orchard
F Orchard
G Small seedplot
H Windbreak

Model of an Agricultural Demonstration Farm

Figure 3.

general community; however, the target will be farmers and farm extension advisors from within the community. They will be taught by members of the CALAR Program and others from both universities and the ministries until such time as members of the Bedouin community have acquired the knowledge of the system and the presentation and are teaching the courses themselves. The next method of interaction is the training of teachers/farm advisors from within the Bedouin communities. Frequently, Bedouins have received training in agricultural sciences or are competent farmers using outmoded systems of production. Both of these groups will be approached as potential teachers/farm advisors and will be trained.

The Expected Outcome

The many benefits envisioned can be divided into four categories:

1. Increased interaction and cooperation between Egyptian and Israeli scientists and Bedouin.

2. Improvement of the standard of living of the agricultural Bedouin communities in Israel and Egypt.

3. Facilitation of the transition from a nomadic to a settled lifestyle through:

a. Enabling the Bedouin to earn their livelihood from the rural environment in which they are now living.

b. Increasing Bedouin capability for the ownership of houses and land.

c. Increasing the participation of the family in the work force in the vicinity of their homes (cash crop production and intensive animal production).

4. Future use as a model for projects in neighboring countries whose Bedouin populations are undergoing similar changes to those now underway in Israel and Egypt.

Bedouin Participants

In Israel, the Abu Rabia brothers and their families have agreed to participate in the program. The Abu Rabia brothers reside in sedentary farming communes near Beer Sheva.

In Egypt, members of the Ari tribe have indicated that they will take part in the program. Participants will be sedentary farmers who reside near the Maryut Agriculture Research Station near the Western Desert.

PROGRAM INTERACTION AND COOPERATIVE ACTIVITIES

PROGRAM INTERACTION AND COOPERATIVE ACTIVITIES

The demonstration and training project is an applied extension of much of the work being conducted under the current Cooperative Arid Lands Agricultural Research (CALAR) Program. Most directly, the demonstration will affect the results of the fodder-livestock production component of the CALAR Program.

Currently, Bedouin grazing patterns are of the extensive type incorporating both natural pasture and grain aftermath. Productivity follows the variations in the precipitation-climatic environment which occur from year to year. Supplements are currently a necessary ingredient if the variance in available feed is to be smoothed out. These are costly and not always economically feasible.

The replacement of expensive supplements by fodder shrubs in addition to providing a balanced nutritional intake can lessen the impact of natural rainfall variability on grazing practice in arid areas. Not only will the project enhance the well-being of the Bedouin communities, it will also demonstrate the usefulness of fodder shrubs in grazing systems to a much wider audience.

Cooperative Interaction

As a component project of the CALAR Pro-

gram, a strong feature will be the expanded cooperation and interchange between Egyptian and Israeli scientists working on the project. Important, too, is the new interaction between the participating members of the respective Bedouin communities.

Although the circumstances of the two Bedouin communities are not exactly the same, there are many parallels and similarities. Interaction will begin at the planning stages when detailed work plans for implementation are drawn up. A planning workshop will be held on a trilateral basis so that the participants can exchange views and plan to bring about as much parallelism between the two programs as possible.

At various stages throughout the project and no less than once per year, a project workshop will be held to discuss progress and the status of various components of the project. At the same time, an internal evaluation of the effects of the project by the recipient communities can be discussed in order to suggest alterations which may make the project more effective.

As frequently as possible, exchanges and visits by participants will be encouraged and sponsored so that the various methods and circumstances will become familiar to all.

IMPLEMENTATION

IMPLEMENTATION

The work for the first year of the Agriculture Program for the Bedouin in Israel and Egypt will be accomplished as follows.

Inasmuch as one primary objective of this project is the continuity of regional cooperation, the approach to be taken in developing the implementation plan as one of the first activities will be to initiate the project by conducting a planning session for participants from the countries at which detailed work plans will be prepared for each demonstration or educational component. These work plans will be the guide for operation throughout the course of the project. The preparation of detailed research methodologies, site plans and schedules by the researchers who will be working together as Co-Principal Investigators, and associates and colleagues is critical to the success of this program. The diversity of backgrounds makes this planning essential if there is to be unanimity of purpose and direction throughout the duration of the research program.

Specific activities to be undertaken follow.

Planning and Initiation

- Invite participants to meeting and planning session.

- Arrange for travel, accommodations, meeting materials, other logistics.
- Convene meetings.
- Develop and approve detailed plan.
- Prepare and approve site plans.
- Develop and approve detailed demonstration plans.
- Develop and approve final educational curriculum.
- Select other Bedouin participants.
- Develop logical frameworks for project implementation.

Implementation

During Year 2 of the program, the following will occur:

- Construct demonstration plots and fields.
- Construct temporary classrooms.
- Purchase equipment.
- Prepare educational curriculum.
- Purchase demonstration animals.
- Seed and plant demonstration plots and fields.
- Prepare program description brochure.
- Arrange exchange visits.
- Arrange regional and U. S. training.

- Begin demonstration and training for Bedouin.
- Hold program workshop.
- Conduct internal program evaluation.
- Conduct external program evaluation.
- Prepare program newsletter.
- Convene Steering Committee.
- Publish and disseminate Arid Lands Cooperative Research Reports.
- Collect, review and forward to AID contract-required technical reports.

Years 3 through 5 of the program will encompass the following:

- Arrange exchange visits.
- Arrange regional and U. S. training.
- Continue demonstration and training program for the Bedouin.
- Continue development and the refining of educational curriculum.
- Hold program workshops.
- Conduct internal and external evaluations.

- Publish program newsletters.
- Convene Steering Committee.
- Publish and disseminate Arid Lands Cooperative Research Reports.
- Collect, review and forward to AID contract-required technical reports.

Throughout the Bedouin component of the CALAR Program, maximum effort will be given to the direct application of new agricultural techniques and knowledge gained through CALAR. Demonstration projects and educational curriculum will be refined, where necessary, to meet the specific needs of the Bedouin farmers in both nations.

EVALUATION PLAN

EVALUATION PLAN

The Project Director, in consultation with the Steering Committee, will be responsible for the internal evaluation of the work program. As mentioned in the Program Management Section, an Evaluation Panel has been established to conduct the internal evaluation of each existing program component. An additional evaluator will be added to the panel to assist in monitoring the technical aspects of the Bedouin component of the program.

Technical evaluation will be conducted three times during the life of the project at approximately 18 month intervals. A United States scientist will be asked to visit with the research teams at their research sites and comment on the progress of research from a technical perspective. This scientist will be assigned to develop specific evaluation criteria that will provide both short and long-term evaluative materials.

The evaluation, per se, will serve primarily to assist the research scientists in evaluating their research and suggest possible alternative directions for progress.

The Logical Frameworks which will be developed during the planning meeting will be the basis for developing the criteria for evaluating the technical progress of the Bedouin component.

SAN DIEGO STATE UNIVERSITY FOUNDATION CAPABILITIES

SAN DIEGO STATE UNIVERSITY FOUNDATION CAPABILITIES

The San Diego State University Foundation will serve as the contractor for the proposed trilateral research program. Incorporated in 1943 as an auxiliary ouganization authorized by the Education Code of California, the Foundation is especially well qualified to administer the proposed applied Bedouin Agriculture Research Program. Serving as fiscal agent for approximately S25 million of external funds received annually on behalf of San Diego State University, the Foundation has extensive experience in developing and administering international programs as well as other research and educational grants and contracts.

Experience Administering International Programs

Since 1961 the San Diego State University Foundation has been actively involved in developing and administering international programs and conferences.

Examples of two recent successful international research conferences are the Oceanographic Research Conferences held in San Diego in the summer of 1980, involving researchers from the United States, Israel, and Egypt and the international symposium on the Dynamics and Management of Mediterranean-Type Ecosystems, involving over three hundred international

researchers and conducted in San Diego on June 22-26, 1981 (simultaneously with the Conference on Arid Lands Agriculture).

As a direct result of these conferences, the SDSU Foundation acquired a new U. S. Agency for International Development-funded program. Currently under way is the Cooperative Arid Lands Agriculture Research (CALAR) Program being conducted between scientists from Israel, Egypt, and the United States. This five-year program, begun in 1982, focuses upon integrated research in three common problem areas: the use of saline waters for production of crops in arid lands, fodder production and utilization by small animals in arid lands, and arid lands agriculture species as a source of industrial raw materials. The integrated program has already proven highly successful and the long-term benefits from this cooperative effort far transcend the Program itself. A good example is the proposed Agriculture for Bedouin Communities for Israel and Egypt Program, which is requested as a supplemental component to the CALAR Program (Contract number NEB-0170-A-00-2047-00).

Other U. S. Agency for international Development-funded programs have included two large technical assistance contracts:

1965-1976 Technical Assistance to the Brazilian Ministry of Education (AID 1a-414)

1968-1969 Technical Assistance to the Jamaican Ministry of Education (AID 1a-332)

As a result of the AID-funded programs in Brazil, the Foundation has subsequently conducted many short-term and middle-term training programs funded by Brazilian organizations.

In addition, Peace Corps training programs have been conducted annually between 1961 and 1974 in Jamaica, Barbados, Bolivia, Peru, and many other Latin American countries. The Foundation administered the year-round Escondido Peace Corps Training Center during the late 1960's and early 1970's.

The University's College of Extended Studies has developed numerous cooperative projects (primarily training, some curriculum development and technical assistance) with Japan, Saudi Arabia, and Brazil--funded by private organizations and governmental entities within these countries.

Throughout the past twenty years, San Diego State University scientists have actively collaborated with their international colleagues. Often their research has taken them to other countries--and, during these periods, the Foundation has administered the research

funds necessary for the successful completion of their projects. In addition, research symposiums and workshops have been held in San Diego, with program development and logistics initiated and coordinated by San Diego State University faculty and Foundation staff.

Administration of Other Grants and Contracts

The San Diego State University Foundation annually administers between 300 and 400 research and educational projects, in addition to the other fiscal activities it engages in. Some of the projects involve a considerable amount of subcontracting, with subprojects headquartered at locations throughout the United States and in other countries. Foundation administrative staff have developed and refined methods for facilitating procurement and subcontracting for "off-site" projects, whether they be off-site as near as Arizona or as far as Yugoslavia.

A complete listing of sponsors is included in Attachment A.

FINANCIAL PLAN

FINANCIAL PLAN

Additional funding for the Agriculture Program for the Bedouin Communities of the Negev Desert of Israel and the Western Desert of Egypt will be incorporated into the existing and yearly Cooperative Arid Lands Agricultural Research Program (Contract Number: NED-0170-A-00-2047-00). Detailed budget for the proposed program follows and is presented in a year-to-year format.

BEDOUIN PROJECT

	Estimated Person Months	Total	Management/ Coordination	Bedouin
I. PERSONNEL				
Project Director	3.0	$ 12,378	$ 12,378	
Administrative Assistant	3.0	4,554	4,554	
Temporary Assistance	1.0	1,040	1,040	
Fringe Benefits		5,194	5,194	
Total/Personnel		$ 23,166	$ 23,166	
II. CONSULTANTS				
Steering Committee 6 x 2 days @ $50	.5	$ 600	$ 600	
Principal Investigator honoraria 2 x 5 days @ $500	.5	500	500	
Eval. Consultants (U.S. & other)/Egypt	.25	750		$ 750
Eval. Consultants (U.S. & other)/Israel	.25	750		750
Total/Consultants		$ 2,600	$ 1,100	$ 1,500
III. TRAVEL				
Project Director Travel				
(2) Round trips, U.S./Egypt/Israel @ $2,500		$ 5,000	$ 5,000	
Per diem, 20 days @ $94/day (Cairo)		1,880	1,880	
Per diem, 20 days @ $100/day (Israel)		2,000	2,000	
Steering Committee Travel				
(2) Round trips, U.S./Egypt @ $2,000		4,000	4,000	
(2) Round trips, Israel/Egypt @ $215		430	430	
Per diem, 6 members x 7 days @ $94/day		3,948	3,948	
Administrative Travel				
(1) Round trip, U.S./Egypt/Israel @ $2,500		2,500	2,500	
Per diem, 7 days @ $94/day (in Cairo)		658	658	
Per diem, 7 days @ $100/day (in Israel)		700	700	
Principal Investigator/Researcher Travel				
(2) Round trips, Israel/Egypt @ $215		430	430	
(2) In-country transportation, avg. $100		200	200	
Per diem, 3 days @ $94/day x 4		1,128	1,128	
In-Country Transportation				
30 Days @ $30/day		900	900	
Other (taxis, buses)		200	200	
Consultant Travel				
Bedouin/Egypt		2,110		$ 2,110
Bedouin/Israel		2,110		2,110
Total/Travel		$ 28,194	$ 23,974	$ 4,220
IV. SUPPLIES				
Office supplies		$ 100	$ 100	
V. TRAINING				
(4) Long-term participants, per diem & expenses (Egypt)		$ 13,000		$ 13,000
Total/Training		$ 13,000		$ 13,000

		Estimated Person Months	Total	Management/ Coordination	Bedouin
VI.	OTHER DIRECT COSTS				
	Telephone		$ 1,000	$ 1,000	
	Telex		600	600	
	Postage/Shipping		200	200	
	Meeting Rooms Rental/Cairo		200	200	
	Duplicating/Printing/Reports		595	595	
	Total/Other Direct Costs		$ 2,595	$ 2,595	
	Subtotal/Direct Costs (excluding subagreements)		$ 69,655	$ 50,935	$ 18,720
VII.	SUBAGREEMENTS				
	Bedouin/Egypt	106.0	$ 184,140		$ 184,140
	Bedouin/Israel	44.0	197,140		197,140
	Total/Subagreements		$ 381,280		$ 381,280
	Total/Direct Costs		$ 450,935	$ 50,935	$ 400,000
VIII.	INDIRECT COSTS @ 41% MTDC (41% of $119,655)*		$ 49,059	$ 49,059	
	TOTAL COSTS		$ 499,994	$ 99,994	$ 400,000
	TOTAL PERSON MONTHS	158.5			

Note: Proposed Subagreement Budgets are presented on the following pages.

*(Indirect costs are calculated at 41% of Total Direct Costs less Subagreements ($ 69,655) plus first $ 50,000 of Subagreements, i.e., $ 69,655 + $ 50,000.)

BEDOUIN PROJECT

MANAGEMENT COORDINATION

I. PERSONNEL	PERSON MONTHS	SUBTOTALS	TOTALS
Project Director, 12 mos., 25% 3 mos. @ $4,126/mo.	3.0	$ 12,378	
Admin. Asst., 12 mos., 25% 3 mos. @ $1,518/mo.	3.0	4,554	
Temporary assistance 1 mo. @ av. $6.00/hr.	1.0	1,040	
Total Salaries		$ 17,972	
Fringe Benefits Regular positions $16,932 @ 30%		$ 5,080	
Temporary positions $1,040 @ 11%		114	
Total Benefits		$ 5,194	
Total Personnel			$ 23,166
II. CONSULTANTS			
Steering Committee Honoraria 6 persons x 2 days @ $50	.5	$ 600	
Principal Investigator Honoraria 2 persons x 5 days @ $50	.5	500	
Total Consultants			$ 1,100
Total Person Months	8.0		
TRAVEL			
Project Director Travel (2) Round trips, U.S./Egypt/Israel @ $2,500		$ 5,000	
* Per diem, 20 days @ $94 (Cairo, Egypt)		1,880	
Per diem, 20 days @ $100 (Israel)		2,000	

* *Rates are budgeted according to the Government Standardized Regulations.*

III. TRAVEL (continued)	PERSON MONTHS	SUBTOTALS	TOTALS
Steering Committee Travel			
(2) Round trips, U.S./Egypt @ $2,000		$ 4,000	
(2) Round trips, Israel/Egypt @ $215		430	
Per diem, 6 committee members x 7 days @ $94		3,948	
Administrative Travel			
(1) Round trip, U.S./Egypt/Israel @ $2,500		2,500	
Per diem, 7 days @ $94 (Cairo, Egypt)		658	
Per diem, 7 days @ $100 (Israel)		700	
Principal Investigator/Researcher Travel			
(2) Round trips, Israel/Egypt @ $215		430	
(2) In-country transportation @ av. $100		200	
Per diem, 3 days @ $94 x 4		1,128	
In-Country Transportation			
30 days @ $30/day		900	
Other (taxis, buses)		200	
Total Travel			$ 23,974
IV. SUPPLIES (Office)			$ 100
V. OTHER DIRECT COSTS			
Telephone, 3 mos.		$ 1,000	
Telex, 3 mos.		600	
Postage/shipping		200	
Meeting rooms rental/Cairo		200	
Duplicating/printing/reports		595	
Total Other Direct Costs			$ 2,595
TOTAL DIRECT COSTS			$ 50,935
VI. INDIRECT COSTS @ 41% MTDC			20,883
TOTAL COSTS, YEAR 1			$ 71,818

BEDOUIN PROJECT

Arab Republic of Egypt

	PERSON MONTHS	SUBRECIPIENT BUDGET	COOPERATIVE AGREEMENT BUDGET
I. PERSONNEL			
Principal Investigator, 100%	9.0	$ 7,840	
Research Investigators, 100%	8.0	4,646	
Research Associates, 100%	9.0	1,568	
Site Operators/Field Technicians, 100%	9.0	4,646	
Education Specialist/Teachers	9.0	1,310	
Extension Specialist	9.0	1,500	
Local Consultants (plant physiology, range management, soil & water conservation)	9.0	1,650	
Temporary Laborers (4), 100%	36.0	4,380	
Secretary, 100%	8.0	700	
Total Salaries		$ 28,240	
II. FRINGE BENEFITS			
30% of salaries for workers' insurance		N/C	
III. TRAVEL			
Maintenance & fuel for vehicles		$ 1,500	
Local travel to field sites		550	
Project Staff Travel (regional)			
Airfare		900	
Per diem		1,100	
Consultant Travel			
Airfare			$ 1,150
Per diem			960
International Travel (for P.I.)			
Airfare		2,000	
Per diem		750	
Total Travel		$ 6,800	$ 2,110

	PERSON MONTHS	SUBRECIPIENT BUDGET	COOPERATIVE AGREEMENT BUDGET
IV. EQUIPMENT			
Laboratory equipment		$ 5,000	
Irrigation & field equipment		8,000	
Purchase of field vehicle		15,000	
Personal computer		5,000	
Classroom furniture		3,000	
Construction of prefabricated classroom/ office building		100,000	
Total Equipment		$ 136,000	
V. SUPPLIES			
Office		$ 200	
Books, journals		100	
Scientific & research materials		500	
Laboratory supplies (glassware, hoses, etc.)		1,000	
Training manuals		250	
Instructional supplies		250	
Total Supplies		$ 2,300	
VI. TRAINING			
(4) Long-term participants			
Airfares, 4 @ $2,000		$ 8,000	
Per diem, 4 @ $1,000/mo. x 3 mos.			$ 12,000
Training expenses (supplies, instruction, etc.)			1,000
Total Training		$ 8,000	$ 13,000
VII. OTHER DIRECT COSTS			
Eval. Consultants (U.S. & other) @ $150/day			$ 750
Field trips		$ 1,000	
Duplicating/printing		200	
Communications (telephone, telex, postage)		500	
Management/coordination/meeting rooms		100	
Total Other Direct Costs		$ 1,800	$ 750
VIII. CONTINGENCY			
To cover unforeseen costs and inflation		$ 1,000	
TOTAL PERSON MONTHS	106.0		
TOTAL SUBRECIPIENT BUDGET		$ 184,140	
Total Reserved in Cooperative Agreement Budget			$ 15,860
TOTAL PROGRAM COSTS			$ 200,000

BEDOUIN PROJECT

Israel

	PERSON MONTHS	SUBRECIPIENT BUDGET	COOPERATIVE AGREEMENT BUDGET
I. PERSONNEL			
Principal Investigator, 100%	9.0	$ 16,940	
Research Associates, 100%	9.0	13,060	
Site Operators/Field Technicians, 100%	9.0	10,800	
Education Specialist/Teachers	9.0	10,950	
Secretary	8.0	9,680	
Total Salaries		$ 61,430	
II. FRINGE BENEFITS			
(Included in Salaries.)		N/C	
III. TRAVEL			
Maintenance & fuel for vehicles		$ 2,000	
Local travel to field sites		1,010	
Project Staff Travel (regional)			
Airfare		1,200	
Per diem		2,000	
Consultant Travel			
Airfare			$ 1,150
Per diem			960
International Travel (for P.I.)			
Airfare		2,000	
Per diem		700	
Total Travel		$ 8,910	$ 2,110
IV. EQUIPMENT			
Laboratory equipment		$ 1,000	
Irrigation & field equipment		5,000	
Purchase of tractor		9,000	
Personal computer		5,000	
Classroom furniture		3,000	
Construction of prefabricated classroom/ office building		100,000	
Total Equipment		$ 123,000	

		PERSON MONTHS	SUBRECIPIENT BUDGET	COOPERATIVE AGREEMENT BUDGET
V.	SUPPLIES			
	Office		$ 200	
	Books, journals		100	
	Scientific & research materials		1,000	
	Laboratory supplies (glassware, hoses, etc.)		1,000	
	Total Supplies		$ 2,300	
VI.	OTHER DIRECT COSTS			
	Eval. Consultants (U.S. & other) @ $150/day			$ 750
	Duplicating/printing		$ 200	
	Communications (telephone, postage, telex)		200	
	Management/coordination		100	
	Total Other Direct Costs		$ 500	$ 750
VII.	CONTINGENCY			
	To cover unforeseen costs and inflation		$ 1,000	
	TOTAL PERSON MONTHS	44.0		
	TOTAL SUBRECIPIENT BUDGET		$ 197,140	
	Total Reserved in Cooperative Agreement Budget			2,860
	TOTAL PROGRAM COSTS			$ 200,000

BEDOUIN PROJECT

SUMMARY BUDGETS

	Estimated Person Months*	TOTAL	MANAGEMENT/ COORDINATION	BEDOUIN
Total/Year One	158.5	$ 499,994	$ 99,994	$ 400,000
Total/Year Two	150.5	500,000	100,000	400,000
Total/Year Three	140.0	500,000	100,000	400,000
Total/Year Four	135.0	500,000	100,000	400,000
Total/Year Five	130.0	500,000	100,000	400,000
TOTAL/FIVE YEARS	714.0	$ 2,499,994	$ 499,994	$ 2,000,000

* Assumes reduction in level of effort due to inflation.

ATTACHMENTS

ATTACHMENT A

LIST OF SPONSORS

FOLLOWING IS A LIST OF THE VARIOUS AGENCIES FROM WHICH THE FOUNDATION RECEIVED SUPPORT DURING FY 1981-82.

FEDERAL

HEALTH RESOURCES ADMINISTRATION
HEALTH SERVICES ADMINISTRATION
INTERNATIONAL COMMUNICATION AGENCY
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
NATIONAL CENTER FOR HEALTH SERVICES RESEARCH
NATIONAL ENDOWMENT FOR THE HUMANITIES
NATIONAL INSTITUTE OF EDUCATION
NATIONAL INSTITUTE OF MENTAL HEALTH
NATIONAL INSTITUTES OF HEALTH
NATIONAL SCIENCE FOUNDATION
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
OFFICE OF HUMAN DEVELOPMENT SERVICES ADMINISTRATION ON AGING
PUBLIC HEALTH SERVICE
REHABILITATION SERVICES ADMINISTRATION
SMALL BUSINESS ADMINISTRATION
U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
U.S. DEPARTMENT OF AGRICULTURE
U.S. DEPARTMENT OF AIR FORCE
U.S. DEPARTMENT OF ARMY
U.S. DEPARTMENT OF EDUCATION
U.S. DEPARTMENT OF ENERGY
U.S. DEPARTMENT OF NAVY
U.S. FISH AND WILDLIFE SERVICE
U.S. FOREST SERVICE
U.S. MARINE CORPS

LIST OF SPONSORS

STATE AND LOCAL GOVERNMENT

AREA AGENCY ON AGING
CALIFORNIA ARTS COUNCIL
CALIFORNIA COUNCIL FOR THE HUMANITIES
CALIFORNIA EMPLOYMENT DEVELOPMENT DEPARTMENT
CALIFORNIA POSTSECONDARY EDUCATION COMMISSION
CALIFORNIA STUDENT AID COMMISSION
CITY OF SAN DIEGO
CITY OF POWAY
COUNTY OF SAN DIEGO
SAN DIEGO ASSOCIATION OF GOVERNMENTS
SAN DIEGO REGIONAL EMPLOYMENT AND TRAINING CONSORTIUM
SAN DIEGO WATER AUTHORITY
STATE OF CALIFORNIA, DEPARTMENT OF ECONOMIC AND BUSINESS DEVELOPMENT
STATE OF CALIFORNIA, DEPARTMENT OF EDUCATION
STATE OF CALIFORNIA, DEPARTMENT OF HEALTH SERVICES
STATE OF CALIFORNIA, DEPARTMENT OF MENTAL HEALTH
STATE OF CALIFORNIA, DEPARTMENT OF PARKS AND RECREATION
TRUSTEES OF THE CALIFORNIA STATE UNIVERSITY

FOUNDATIONS

CALIFORNIA METABOLIC RESEARCH FOUNDATION
CHARLES LEE POWELL FOUNDATION
PUBLIC WELFARE FOUNDATION
SECURITY PACIFIC FOUNDATION
UNITED STATES-JAPAN FOUNDATION

LIST OF SPONSORS

CORPORATIONS

ARAMCO SERVICE CORPORATION
CALIFORNIA CRUSTACEAN CULTURE
COGNITRONICS CORPORATION
COX CABLE, SAN DIEGO
CUBIC CORPORATION
FIRST INTERSTATE BANK
FLUID SYSTEMS DIVISION, UOP, INC.
GAMMA-METRICS
GENERAL DYNAMICS-CONVAIR
HOMSERV, INC.
HOUSE OF STEEL, INC.
INTERAMERICA RESEARCH ASSOCIATES, INC.
KESSLER AND GEHMAN ASSOCIATES
OWEN GEOTECHNICAL CONSULTANTS, INC.
REES-STEALY MEDICAL GROUP
SCIENCE APPLICATIONS, INC.
TELEDYNE MICRONETICS
TELEDYNE RYAN ELECTRONICS
UPJOHN COMPANY

LIST OF SPONSORS

OTHER

ADVERTISING CLUB OF SAN DIEGO
AMERICAN CANCER SOCIETY
AMERICAN CHEMICAL SOCIETY
AMERICAN DIABETES ASSOCIATION
AMERICAN HEART ASSOCIATION
AMERICAN PHILOSOPHICAL SOCIETY
BANCOMER, S.A.
BATELLE PACIFIC NORTHWEST LABORATORIES
BROADCASTERS PROMOTION ASSOCIATION
BROOKHAVEN NATIONAL LABORATORY
DR. ROBERT BURT
CALIFORNIA PUBLIC TELEVISION CENTER
CENTRO DE ENSENZA TECNICA Y SUPERIOR
CHICANO COMMUNITY CENTER
COLEGIO DE BACHILLERES DE BAJA CALIFORNIA
CORPORATION OF PUBLIC BROADCASTING
EASTER SEAL SOCIETY
ECOLE DES PARTICIENS DE COMMERCE
INTERNATIONAL, FRANCE
ELECTRIC POWER RESEARCH INSTITUTE
ESTATE OF SEYMOUR CLONICK
FRED J. HANSEN INSTITUTE FOR WORLD PEACE
KAISER PERMANENTE MEDICAL CENTER
MESA COORDINATING AGENCY
MUSCULAR DYSTROPHY ASSOCIATION
NEVADA STATE DEPARTMENT OF HUMAN RESOURCES
PACIFIC MOUNTAIN NETWORK
PROFESSIONAL SPEECH AND COUNSELING SERVICE
PUBLIC BROADCASTING SERVICE
SAN DIEGO COMMUNITY COLLEGE DISTRICT
SAN DIEGO COUNTY DEPARTMENT OF EDUCATION
SAN DIEGO COUNTY EMPLOYEES' CHARITABLE
ORGANIZATION
SAN DIEGO ECOLOGY CENTRE
SAN DIEGO UNIFIED SCHOOL DISTRICT
SCIENTIFIC RESEARCH SOCIETY, INC.
TEXAS A&M UNIVERSITY
TOBACCO RESEARCH COUNCIL
UNITED NATIONS EDUCATIONAL SCIENTIFIC CULTURAL
ORGANIZATION
U.S. MILITARY ACADEMY AT WEST POINT
U.S. OLYMPIC COMMITTEE
UNITED WAY
UNIVERSIDAD AUTONOMA DE BAJA CALIFORNIA
UNIVERSITY OF CALIFORNIA, SAN DIEGO
UNIVERSITY OF NEW MEXICO
UNIVERSITY OF WASHINGTON
WOODS HOLE OCEANOGRAPHIC INSTITUTION

ATTACHMENT B

REFERENCES AND BIBLIOGRAPHY

Amin, H. (1973), "Notes, Reports and Comments on Nomadic Settlements in Some Arab Countries," Geogr. Rev. of Afghanistan, Kabul, 12, 2:18-30.

Awad, Md. (1954), "The Assimilation of Nomads in Egypt," Geogr. Rev., 44:240-252.

_____ (1962), "Nomadism in the Arid Lands of the Middle East," in The Problems of the Arid Zone: Proceedings of the Paris Symposium, Arid Zone Research, UNESCO, 18:325-339.

Carter, J. (1974), "Changes in the Bedouin Way of Life," The Arab World, 42 (N.S.):4-7.

Cordez, R. (1980), "Bedouins, Wealth, and Change," The United Nations University.

Dickson, H.R.P. (1951), "The Arab of the Desert," George Allen and Unwin, Ltd.

Gautier, E. F. (1921), "Nomad and Sedentary Folks of Northern Africa," Geogr. Rev., 11:3-15.

Katakura, M. (1974), "Socioeconomic Structure of a Bedouin Settlement: A Case Study of Bushur, Saudi-Arabia," Bull. of the Departm. of Geogr., University

of Tokyo, 6:41-91.

Katakura, M. (1977), "Bedouin Village," University of Takyo Press.

Nutting, A. (1965), "The Arabs," New American Library

Quilici, F. (1979), "Children of Allah," Chartwell Books, Inc.

ATTACHMENT C

PROJECT DIRECTOR
INTERNATIONAL TRILATERAL ARID LANDS
AGRICULTURE RESEARCH PROGRAM

San Diego State University Foundation is seeking a Project Director for its Arid Lands Agriculture Research Program funded by the Agency for International Development (AID). The five-year Program is a trilateral program among Egypt, Israel, and the United States. The major elements of the research program are: Use of Saline Water in Crop Production; Rainfed Fodder Production in Arid Lands Environment; and Development of new Arid Land Species that show promise for use as industrial crops.

Research efforts are based in Egypt and Israel under the direction of Egyptian and Israeli Technical Directors. International headquarters for project administration is the SDSU Foundation which is responsible for administration and coordination of the Program including achievement of scientific objectives, enhancing cooperation between participants, and coordination of U.S. scientific advisors and evaluators with research participants. The Program is commencing its second year of operation after a highly successful start.

Position requires strong administrative skills, frequent travel to the Middle East, and development of new program opportunities. Candidates must have strong interpersonal skills and the ability to successfully relate to program participants and senior officials of participating countries as well as AID officers and staff. Candidates should possess degree(s) in agriculture or a closely related field, or have equivalent experience. Experience working in the Middle East and/or some knowledge of Arabic or Hebrew is desirable but not mandatory. This is a full-time position with SDSU Foundation with concurrent adjunct appointment to the faculty of the College of Sciences of San Diego State University. Applicants desiring the position on the basis of a leave of absence from another institution will be considered.

ATTACHMENT D

ADEL EL-BELTAGY

Born: 1944

Education: M.S.C., Agricultural Science
Ain Shams University, 1965

M.S.C., Horticulture
Ain Shams University, 1968

Ph.D., Plant Physiology
University of Wales, 1974

Experience:

1965 - 1972 Dominstrator, Department of Horticulture, Ains Shams University

1972 - 1973 Assistant Lecturer, Department of Horticulture, Ain Shams University

1973 - 1974 Postdoctoral Fellow, Department of Botany, School of Science, University College of Wales

1974 - 1976 Research Associate, Department of Botany, University College of Wales

1976 - 1980 Lecturer, Department of Horticulture, Ain Shams University

1980 - present Associate Professor, Department of Horticulture, Ain Shams University

Special Interests:

- Stress physiology, adaptive mechanisms with special reference to the possible role of plant hormones in these areas.
- Supervision of graduate students in field of stress physiology.

CURRICULUM VITAE

Dov Pasternak

Born : Brazil, January 16, 1940

Education :

1958 : Completed high-school education at the Agricultural College, Kfar Galim.

Educational Qualifications :

1964 : B.Sc. degree, Faculty of Agriculture, The Hebrew University of Jerusalem

1968 : M.Ag.Sc. degree, University of Queensland

1971 : Ph.D. degree, University of Queensland

Professional Background :

1964-1965 : Worked on the subject of trickle irrigation and vegetable production in the Arava as an employee of the Volcani Institute.

1965-1966 : Worked in the Soil Conservation Section, Goverment of New Zealand.

July 1971-to date : Institute for Applied Research, Ben-Gurion University of the Negev, (formerly Negev Institute for Arid Zone Research) as a Senior Research Scientist.

1977-1978 : Worked at the Glasshouse Crops Research Institute, England on the interaction between carbon dioxide concentration and temperatures in melon plants.

1977- Consultant to the Pascual Hermanos Co. in Spain on vegetable production and drip irrigation.

1978 : Visited New Mexico, California and Arizona on a Consultation assignment for TAHAL. Advised on the agricultural uses of saline waters in New Mexico.

Membership in Professional Associations :

1. Australian Society of Plant Physiologists
2. American Society of Agronomy
3. Israel Society of Botany
4. Israel Society of Agroplastics

Other Activities :

1. 1972-1973 : Lectured in the Department of Biology, University of the Negev on the subject of "Plant-water relationships" to third year students and Master's Students.

2. 1974 : Organizing Committee, International Symposium on Brackish Water as a Factor in Development.

3. 1975 to date : Head, Division of Desert Agriculture, Research & Development Authority, Ben-Gurion University of the Negev.

4. 1975 to date : Board of Directors, Research & Development Authority, Ben-Gurion University of the Negev.

5. 1978 to date : Board of Directors, The Ramat Negev Experimental Station.

Contributions to Applied Research and Development

1. Use of brackish water in agriculture - In 1971 became responsible for an R&D project aimed at the utilization of brackish (2,500 ppm TDS) water for agriculture in Ramat Negav. More than fifteen papers and five reports have been written and more are in preparation on this subject. The work supported the resumption of settlement in Ramat Negev which will be based on brackish water agriculture.

2. Use of low-heat waters in agriculture - In 1972 initiated (together with the engineer, Mr. E. Rappeport) the development of systems for the utilization of warm waste waters for soil and air heating in agriculture. Five papers and three reports have been written so far on this subject. Three pilot plants will be constructed next winter. The systems will enable the utilization of large amounts of relatively cheap geothermal energy for the production of exportable, out-of-season, crops.

3. Desert gardening and landscaping - Initiated, together with M. Forti and J. Ben-Dov, brackish water gardening projects in the Dead Sea Works at Sedom and at Nueiba. Helped to establish a commercial nursery which propagates and sells drought- and salt-resistant ornamental plants.

4. Use of sea water in agriculture - In 1976 started a preliminary trial at Eilat to investigate the possibility of sea-water irrigation. Of 39 species which were tried so far, seven plant species grew extremely well. This project is aiming at the largescale use of sea-water for irrigation of deserts.

5. Introduction and development of new foliage plants, flowering branches, pot plants and cut flowers - This project was just started and aims at the development of new plant-species for the export market. The project is led by Mr. J. Ben-Dov.

CURRICULUM VITAE

1. Personal Data:

Name : Dr. A.M. Aboul-Naga
Date & place of birth : 1/9/1941 - Dakahlia, Egypt.
Nationality : Egyptian
Address : Animal Production Research Institute, Ministry of Agriculture, Dokki, Cairo, Egypt.
Marital Status : Married No. of children : One.

II. Academic Qualifications :

- B.Sc. Agric. Sci. (Anim. Prod.) Ain-Shams Univ. Cairo (1960).
- M.Sc. " " " " " " (1966).
- Ph.D. " " (Sheep Breeding) " " " (1970).
- Advanced courses in statistics and computer science, Statis. & Comput. Sci. Inst., Cairo, 1969-1970.
- Advanced courses in Animal Breeing & Genetics, Anim. Genet. Inst., Edinburgh, U.K., 1971.

III. Employment Record and Scientific Experiences:

- Animal Production Specialist at Sakha and Mehalet-Mousa Animal Production Farms, Ministry of Agriculture, 1960-1965.
- Research Assistant in Sheep and Goat Production Div., Anim. Prod. Res. Inst., Agric. Res. Organ., 1965-1970.
- Research Officer in Sheep Breeding, & Sheep & Goat Res. Div., Anim. Prod. Res. Inst., Agric. Res. Org., 1970-1974.
- Counterpart Expert for sheep breeding, FAO, Animal Production and Training Project, 1968-1973.
- FAO Fellowship member, ABRO, Edinburgh, U.K., 1972-1973.
- Assistant Prof., Biological Science Inst., Constantine, Univ. Algeria, 1974-1975.
- Senior Research Officer in sheep breeding, Sheep & Goat Div., Anim. Prod. Res. Inst., University, Iraq, 1975-1978.
- Head of Sheep & Goat Res. Div., Anim. Prod. Res. Inst., 1978 up to now.
- Project Leader of Improving Production of Local Sheep & Goats, Ministry of Agriculture; 1978 up to now.

- Sheep Breeding Expert in the Intensive Lamb Production Project, National Academy of Scientific Res., 1978 up to now.
- Project Leader of The Finnish-Egyptian Sheep Breeding Projec 1981.
- Member of the Inter. Workshop on Prolific Sheep, SR, CRSP.
- Supervised 9 M.Sc. and 5 Ph.D. Thesis in the field of sheep and goat breeding and production.

Signature

Dr. A.M. Aboul-Naga

PROFESSIONAL RESUME OF DR./ AHMED RAMMAH.

I. PERSONAL:

1. Name : AHMED MOHAMED MAHROUS RAMMAH.
2. Home Address : 40 OMAR IBN EL KATTAB ST. DOKKI, GIZA.
3. Business Address : AGRICULTURE RES. CENTER, FIELD CROPS RES. INSTITUTE, GIZA.
4. Nationality : Egyptian.
5. Date of Birth : Dec. 2 nd 1938.
6. Family Status : MARIED, 4 Children.

II. EDUCATION:

Institution					
Ain Shams Univ.	1956	1961	Field Crops	Forage Crops	B.Sc
Cairo Univ.	1965	1969	Forage Crops	Berseem Breeding	M.Sc
Hungarian Academy of Sc.	1970	1975	Forage Crops	Alfalfa Breeding	Ph.D
UNEP-USSR	1981	6 weeks	Range land Ecology Caurse	Deploma.	

III. Honors, Membership and Awards-Professional and other Organisations:

Member of ASA (USA)
" " National alfalfa commety (USA).
" " Egyptian Society of Genetics.

IV. Work Experience (most recent first)

Title	Employer	Period	Brief Description of Duties
Assist professor of forage Crops.	Field Crops Res. Institute	Since 1961 Started as Forage sepcialist.	Planning and carrying out the agronomy and breeding programs of Forage Crops in the irrigated and dry lands.

IV. Foreign Residence and Travel:

1- Hungary From 1970-1975 for Ph.D.
2- Scientific trips USA, and joined the meeting of ASA and National alfalfa conference in 1979 and 1980.
3- Scientific Trips to Denmark (1980) and France (1980 and 1981) to visit institutes of Forage breeding.
4- Training course in Range land Ecology and management in USSR-UNEP May-June 1981.

האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM
THE LEVI ESHKOL SCHOOL OF AGRICULTURE · FACULTY OF AGRICULTURE
REHOVOT 76-100 · P.O. Box. 12 · ISRAEL

AMOS DOVRAT

1920	Born in Rotterdam (Holland).
1938	Secondary School, Rotterdam.
1943-48	Ingenieur Agronom from the Faculty of Agriculture, Federal School of Technology, Zuerich (Switzerland).
1949-54	Research Agronomist, Volcani Center of Agricultural Research, Neveh Yaar.
1953	F.A.O. Fellowship with Commonwealth Scientific and Industrial Research Organization, Australia and New Zealand.
1954-75	Research Agronomist, Volcani Institute of Agricultural Research, Rehovot.
1959-74	Head, Forage and Pasture Division, Agricultural Research Organization, Beit Dagan.
1959	Lecturer in Forage and Pasture Crops, The Hebrew University of Jerusalem, Faculty of Agriculture, Rehovot.
1963	Ph.D., The Hebrew University of Jerusalem. Title: Nitrogen and potassium fertilizer in Rhodes grass (Chloris gayana Kunth) and overseeded legumes.
1963	Visiting Lecturer and Assistant Research Agronomist, University of California (Davis), on sabbatical leave from the Hebrew University.
1964	Senior Lecturer.
1969	Visiting Lecturer, Agricultural University, Wageningen (Holland), on sabbatical leave ~~from~~ the Hebrew University.
1970	Associate Professor.
1977-78	Scientific Coordinator, Project for Arid Zone Research U.N.D.P./B.I.D./Israel, Santiago (Chile), on Sabbatical leave form the Hebrew University.

CURRICULUM VITAE

NAME :Mahmoud Hashem El-Barkouki.
Birth Date :March 1, 1928. Cairo, Egypt.
Citizenship :Egyptian
Qualifications :B. Sc. "Agric",1951, Cairo University.
M. Sc. "Hort" ,1955, Cairo University.
Ph. D. "Hort" ,1959, Cairo University.

POSITIONS HELD:

1-Teaching Assistant Department of Botany, Faculty of Agriculture Cairo University 1953-1954

2-Teaching Assitant, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 1955-1959

3-Lecturer, Department of Horticulture, Faculty of Agriculture, Ain Shams University, 1959-1964

4- Associate Professor, Department of Horticulture, Faculty of Agriculture, Al Azhar University, 1965-1970

5-Professor and Chairman, Department of Horticulture, Faculty of Agriculture, Al Azhar University, 1971 to date.

- Consultant to the Agrarian reform committe for Horticulture-Cairo, Egypt.

- Advisor to the Arab Organization for Agricultural Development-Khartoum, Sudan.

EXPERIENCE AND ACTIVITIES:

1- Special technical course on Agricultural marketing of Fruits and Vegetables, sponsored by the F.A.O. and the Egyptian Government, 1960.

2- Scholarchip in post harvest, handling and packing of Fruits, one year, Rome, Italy, 1961.

3- Conferences:
a) Attended several local conferences for the progress of horticulture production.
b) First Agricultural Conference of Muslim Scientists, Faculty of Agriculture, Riyad University, Saudi Arabia, 1977.
c) Fifth African Symposium on Horticultural crops, sponsored by the Faculty of Agriculture, University of Khartoum and the International Society for Horticulture Science, Khartoum, Sudan 1977.

d) A A A S A 3rd General Conference.
Food Crisis and Agricultural Production in Africa.
Faculty of Agriculture, University of IBADAN and the Association for the advancement of Agricultural Sciences in Africa, IBADAN, Nigeria, 1978.

4- Received award for research paper presented at the first Horticultural conference, held in Cairo, 1962.

5- Memberships:

a) Member of the executive committee of the Egyptian Society of Horticulture.

b) Member of the American Society for Horticultural Science.

c) Member of the Mediterranean Applied Plant Physisolog roup.

d) Member of the Association for the advancement of Agricultural Sciences in Africa.

e) Member of the International Society for Horticultura Science.

CURRICULUM VITAE

Meir Forti

PERSONAL

Born	:	Bologna (Italy) - January 16, 1921
Immigrated to Israel	:	1948
Marital Status	:	Married, two sons

EDUCATIONAL QUALIFICATIONS

1943-1947	:	Faculty of Agriculture, University of Milan (Italy)
1962-1963	:	International Centre for Advanced Mediterranean Agronomic Studies, Bari (Italy) and Montpellier (France).
1964-1965	:	Faculty of Sciences, Institute of Botany, University of Montpellier (France). D.E.A. (Diploma of Advanced Studies), Plant Ecology.

PROFESSIONAL BACKGROUND

1943-1953	:	In charge of cut-flower nurseries, Givat Brenner
1953-1958	:	Responsible for the olive groves, Givat Brenner
1958 to date	:	Department of Plant Introduction and Ecology, (now Division of Agriculture & Applied Biology), Negev Institute for Arid Zone Research, Beer-Sheva (now, Applied Research Institute, Ben-Gurion University of the Negev).

1958-1965 : Agricultural Technician
1965- to date : Research Scientist
1968-1975 : Head, Division of Plant Introduction and Applied Ecology (later Division of Desert Agriculture)
Sept. 1975 : Resigned from above mentioned task
1975 to date : Head of the Research Project for *Simmondsia* (Jojoba) Development.

1971	:	Visited Latin American countries (Chile, Argentina, Brazil, Mexico) to study and consult on Range Management problems. Tour sponsored by the Center for International Cooperation in Agriculture, Israel Ministry of Agriculture.
1976	:	Visited Chile as member of the Israeli staff in charge of preparing a master plan for research and development of arid zones under the sponsorship of the Center for International Cooperation in Agriculture, Israel Ministry of Agriculture.