CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Control Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Jordan Valley Agricultural Service Project	278-0241	USAID/JORDAN

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 85-5

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES	6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 81	A. Total $ 9,863	From (month/yr.) 3/84
B. Final Obligation Expected FY 81	B. U.S. $ 5,620	To (month/yr.) 7/85
C. Final Input Delivery FY 86		Date of Evaluation Review 6/27/85-7/15/85

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Mission is still considering a PACD extension, decision to be made upon completion of Agricultural Sector Assessment, CDSS and another internal review of project.	Director	3/86
2. If project is not extended final evaluation will be conducted o/a August 1987.	Project Officer, Ag.	9/87
3. USAID will continue monitoring of Project	Project Officer, Ag.	

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify)
- ☐ Other (Specify)

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☐ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

William Furtick, Agricultural Development Project, USAID/J
Nabil Katkhuda, Director of Research and Extension, MOA
Ousama Bulbeisi, Director of Evaluation, MOA
Hani Haddadin, Crop Protection Advisor, MOA

12. Mission/AID/W Office Director Approval

Signature: Gerald F Gower

Typed Name: Gerald F. Gower

Date: 30 December 1985

AID 1330-15 (3-78)

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NEAR EAST EVALUATION ABSTRACT

PROJECT TITLE(S) AND NUMBER(S)	MISSION/AID/W OFFICE
JORDAN VALLEY AGRICULTURE SERVICE PROJECT (278-~~0214~~) 0241	USAID/Jordan

PROJECT DESCRIPTION The project is designed to establish and institutionalize a viable mechanism capable of developing and disseminating appropriate agricultural technology for vegetable and fruit production in the Jordan Valley

AUTHORIZATION DATE AND U.S. LOP FUNDING AMOUNT	PES NUMBER	PES DATE	PES TYPE
9/27/81 $5,620 million	85-5		[XX] Regular [ ] Other (Specify) [ ] Special [ ] Terminal
ABSTRACT PREPARED BY, DATE	ABSTRACT CLEARED BY, DATE		
David Schroder Acting Evaluation Officer	PO:TRi[illegible] PROG:RBrown PRM:NHard[illegible]	DD:RJohnson DIR:GFGOWER PO:WFurtick	

The mid-term evaluation was conducted by a three member American team with expertise in administrative management, vegetable and citrus production. The mid-term evaluation was intended to document achievements with respect to inputs, outputs and the progress made towards project purpose. Using a combination of technical assistance, training, technology transfer, and an adaptive research program the team found the project had made some contribution toward both increased crop productivity in the Jordan Valley and to strengthening research skills of Jordanian staff. Project inputs as envisioned in the PP have been provided with little difficulty and delay. The quality of the expatriate staff is good but the arrival of the citrus horticulturalist and soil scientist were scheduled much too late in the PP to have maximum effect. The elimination of the vegetable horticulturalist by the JVASP Director was deemed to have been an error and has affected the development of the horticultural research program. Project outputs have not developed as well as envisioned. Problems encountered involved administrative arrangements for the center that reduced its viability as an institution and hampered the effectiveness of the research and extension programs, farm demonstrations, and the technical training of Jordanian staff. The establishment and equipping of four research sites including several laboratory facilities at the Deir Alla Station have developed well. However, progress made towards the project purpose at this stage of development is less than anticipated. This is understandable because important assumptions on which achievements were to be based did not come about such as incentive pay for local staff, and appropriate organization/administrative procedures were not developed. These factors contributed to a high staff turnover and the frequent changing of Project Directors. A noteworthy achievement of the project is its research towards control of the spherical mealy bug on citrus through biological methods. The original institution building purpose of the project has not been completely fulfilled, although significant contributions to institutional capacity are being made. For a variety of reasons, Washington State University has been faced with difficulty in their effort to develop appropriate Jordanian project management and administrative procedures. Adequate incentives for attracting and retaining qualified leaders and scientific personnel have not emerged

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leading to severe implementation and management problems throughout the life of the project. Efforts to remedy these are now being addressed by the GOJ, but this has come too late in the current life of the project to be a significant factor in achieving final outputs.

In summarizing, the main lessons learned are:

1. Building and strengthening institutional capacity takes time, patience and continuity of effort.

2. Projects that require installation of facilities should be designed to allow ample time for installation before the main body of technical staff arrive.

3. Administrative problems can easily overshadow substantive project achievements.

Mission Comments on JVASP Mid-Term Evaluation

On September 18, 1985 the Senior Review Committee chaired by the Director met and discussed the recommendations made by the JVASP mid-term evaluation team concerning the continuation of the project. The JVASP mid-term evaluation team felt it to be appropriate to consider making a recommendation for continuation of the project at this time period because the evaluation was a year late in occuring with only a year left before the project was scheduled to terminate.

During the Senior Review Committee meeting Dr. William Furtick, ADO, indicated the continual need to support agricultural development activities in the Jordan Valley. Dr. Furtick recommended that instead of considering funding a five year extension of the present project, a process be initiated to examine in more detail the constraints facing the agricultural sector in the Jordan Valley and potential solutions to these problems. This should result in identification of opportunities for USAID to assist in the further development of the Jordan Valley. The committee agreed that the constraints and potentials of the Jordan Valley should be studied as part of the planned review currently being discussed by the Ministry of Planning.

The decision on the continuation or redesign of the JVASP will be made after the Agricultural Sector Assessment study and the Jordan Valley Evaluation to be done in FY86. These two studies will provide information concerning constraints and problems facing the agricultural sector in the Jordan Valley. However, present Mission thinking is that a five year extension of JVASP, as recommended by the evaluation team, is not warranted.

Clearence:

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MID-TERM EVALUATION

JORDAN VALLEY AGRICULTURAL SERVICES

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LIST OF ACRONYMS

ACC	Agricultural Credit Corporation
AREC	Agricultural Research and Extension Center
DG	Director General
DRE	Director of Agricultural Research and Extension, MOA
DU	Dunum, A Jordanian unit of land equal to 0.1 hectare or 0.247 acres
FOA	Faculty of Agriculture
FY	U.S. Fiscal Year (October - September)
GOJ	Government of Jordan
HADP	Highlands Agricultural Development Project
IPM	Integrated Pest Management
JCO	Jordan Cooperative Organization
JD	Jordanian Dinar, a unit of money equal to about $2.50 U.S., July 1985
JV	Jordan Valley
JVA	Jordan Valley Authority
JVASP	Jordan Valley Agricultural Services Project
JVFA	Jordan Valley Farmers Association
LF	Logical Framework on Log Frame
MOA	Ministry of Agriculture
MOP	Ministry of Planning
NCARTT	National Center for Agricultural Research and Technology Transfer
PES	Project Evaluation Summary
PP	Project Paper
RASC	Regional Agricultural Services Center
SCRAD	Systematic Commodity Resources Analysis and Development Process
SMS	Subject Matter Specialist (Extension)
TDY	Temporary Duty
TOEFL	Test of English As a Foreign Language
TWF	Tobacco White Fly
TYLCV	Tomato Yellow Leaf Curl Virus
UOJ	University of Jordan
USAID/J	United States Agency for International Development in Jordan
USAID/W	United States Agency for International Development in Washington, D.C.
WSU	Washington State University, Pullman, WA 99164, U.S.A.

EXECUTIVE SUMMARY

Project Status

All land, buildings, vehicles, laboratories, instruments, farm equipment and supplies that were called for in the PP have been provided and in some instances exceeded. Both USAID and the GOJ/MOA have performed well in this respect, even though there were delays.

USAID expatriate staff has arrived essentially as scheduled, except for the vegetable horticulturist position, which was rejected by the first Director of the JVASP and ultimately eliminated. A virologist position was added by mutual agreement of WSU and the MOA. The quality of the expatriate staff is good. On the other hand, the scheduled arrival of both the citrus horticulturist and the soils specialist were much too late to have maximum effect. We consider this a fault of the WSU Design Team. We also consider the elimination of the vegetable horticulturist by the Jordanian Director of JVASP to be an error in judgement.

The MOA provided more than the number of staff called for in the PP but some were deficient in either their technical qualification or their ability to master English sufficiently to gain admittance to U.S. universities. The educational level generally has been low.

Turnover of Jordanian staff has been excessive. There have been four Project Directors in less than four years and only two of the 15 original extension agents remain.

The Jordanian staff members consider working in the JV to be a hardship and were promised salary incentives that were not forthcoming from the MOA.

The training schedule calling for short-term training or visits has been met; however, academic training involving university degree programs is considerably behind schedule, particularly with respect to training at U.S. universities. This has seriously inhibited the development of research staff and program.

A research program is in place and there have been some successes, notably biological control of the spherical mealy bug which threatened to cause severe damage to citrus. The agricultural economics and statistics work is also proceeding particularly well. There are, however, seriously weak areas and some programs have only recently gotten underway.

The extension program has been greatly hampered by organizational changes that were made after the program began to show considerable progress.

It appears to be extremely unlikely that a successful research and extension program in the JV, directed and manned by fully qualified Jordanian scientists and extension specialists, as was envisioned in the PP, will have been established by the end of the five-year project. Given the overly optimistic initial expectations, the lack of qualified Jordanian candidates for advanced training, the large turnover of Jordanian staff and the harmful organizational changes implemented by the MOA, progress has been as good as or better than could be expected.

The development of surpluses of certain vegetables has resulted in a crop control or cropping pattern program of the land area planted in certain crops. This is, to some degree, in conflict with the JVASP's objective of increasing production of crops grown in the JV. It is not in conflict, however, with increasing efficiency of production which is best solved through research.

Recommendations

Normally, a recommendation concerning continuance of project by a mid-term evaluation team would be premature; however, the delay in holding this evaluation leaves only slightly more than a year until termination. Thus, we feel it appropriate to recommend that the project be continued for another five years, recognizing, of course, that the final evaluation team may not draw the same conclusion. The reasons for this recommendation are that the need for an AREC functioning as an integral part of the JV still exists but it is unlikely such a center will have been developed by project termination. However, the project has reached a point although additional assistance is likely to achieve the original purpose and goal, assuming Jordanian staff with appropriate qualifications are furnished by the MOA. The lack of qualified Jordanian staff must be addressed if an extended project is to succeed.

We further recommend that WSU continue to be the USAID contractor because of its good performance to date. The WSU team has already established the needed physical facilities and developed a research program, although it is an incomplete one with certain weaknesses. They have not produced an adequately trained Jordanian staff but have done as well as could be expected given the existing constraints.

Failure to meet the project design schedule for training staff in the United States has been to an appreciable degree due to failure of candidates to pass the TOEFL exam. We recommend that students otherwise qualified but deficient in English be permitted by USAID to study for TOEFL in an English Language Center in the United States where the students' native tongue is rarely heard and the student is forced to use English outside as well as inside the classroom.

We have concluded that the design team erred in not including provisions for the training of staff at the Ph.D. level and therefore recommend that several at this level of training be provided. While the team understands that this recommendation cannot be implemented prior to the current project's termination, it believes that it would be advisable to incorporate a certain number of Ph.D. fellowships into a project extension, provided that qualified Jordanians can be furnished by the MOA.

In-service training should become more of an integral part of the program than it now is. Emphasis should be placed on the scientific process in solving problems, data collection, record keeping, and writing publications. Attendance at such training sessions should be mandatory or at least strongly encouraged.

We concur with the decision of the GOJ that the JVASP Deir Alla Station become the RASC for the JV and attached to the NCARTT.

We recommend that upon transfer of the JVASP to the NCARTT a review of the classifications of all professional positions at the JVASP take place in order to determine whether their salaries should be higher within the salary schedules of the government, owing to the degree of scientific and technical expertise and the level of responsibility of staff.

The current organizational structure in which research and extension units in the field report to District Directorates instead of the DRE does not work well. It is recommended that detailed implementation plans for the NCARTT stipulate that the RASC's will report to NCARTT and that all extension agents be administratively responsible to the supervisor of the RASC's in their district instead of to the District Agricultural Directorate.

Research should be heavily directed toward efficiency of production rather than production increases alone; i.e., research should provide ways of maintaining or increasing production per unit of land or commodity while decreasing or at least not increasing inputs. Biological control of pests, spacing studies, responses of various crops to water and fertilizer and new varieties are examples of where efficiency can be achieved.

Soils and water research should emphasize crop response to varying moisture levels. The JVA currently is better equipped and positioned to study reclamation of saline soils, drainage and irrigation systems. The JVASP's program should be coordinated with the JVA's.

There should be greater interdisciplinary or team research. For example, responses of crops to water and fertilizer should be investigated by teams of soil and horticultural scientists. IPM teams should consist of both pest control and crop specialists. The cost effectiveness of new practices suggested by research should also be a part of the research program, thereby requiring close cooperation with the economics section.

Cooperative research with the UOJ should be continued and expanded.

Each extension agent should be assigned a vehicle on a self-drive basis.

Extension SMSs should be restored as part of the staff of the JVASP. Publications for agents and farmers would be part of SMS responsibilities.

A system of periodic meetings of extension agents and research staff should be established in order to communicate research results and other information to the agents, and feedback farmer problems to the research staff.

Current information should be transmitted through a newsletter or some other rapid means of written communication that does not require going through formal procedures for publication.

Coordination between JVASP and such agencies as JFVA, JVA and UOJ should be encouraged regarding extension type activities.

I. EVALUATION METHODOLOGY

A. Reason for the Evaluation

This is the mid-term project evaluation described in the PP, Annex C., Section F. The evaluation purpose is to review implementation to date and plans for the future and to make recommendations on the continuing validity of the project design and any changes required in order to meet project purpose and goal.

B. Timing

The implementation schedule in the PP called for this evaluation to be made in early April 1984. Instead, it was held June-July 1985, about 14 months after it was scheduled and 14 months from the project termination date. This delay resulted because the first evaluation took place seven months after the planned date and because of the unusually crowded schedule of USAID/J in the last part of 1984 and the first part of 1985.

C. Methodology

The basic approach follows the conventional review of project documentation, reports and publications, interviews with both MOA and WSU JVASP personnel, staff of USAID/J and various agencies of the GOJ and associated agencies that relate to the project. Facilities and activities were evaluated at all research and selected extension sites through visual observation and discussion. Several individual reports by team members, which might be of value to certain staff members of JVASP, are included as attachments.

The LF of the PP (Appendix 5) was followed in relation to purpose, goal, inputs, outputs, expected results, verifiable indicators and assumptions.

D. Evaluation Team and Cost of Evaluation

The evaluation team consisted of Dr. A.H. Krezdorn, Professor Emeritus, Department of Fruit Crops, University of Florida (Team Leader); Mr. Takaaki Izumi, Director of Management Services, College of Tropical Agriculture and Human

Resources, University of Hawaii; and Dr. Norman Oebker, Professor of Horticulture and Extension Vegetable Crops Specialist, Department of Plant Science, University of Arizona.

Funds for the evaluation were furnished by USAID/J through a contracting agency, RONCO Consulting Corporation, Washington, D.C. at a maximum cost of $34,084 for salaries and other direct costs.

E. Documentation, Schedules and Visits

The reviewed are listed in Appendix 1, the schedule of interviews and visits in Appendix 2, the LF in Appendix 3, and a table showing the status of the academic training program in Appendix 6.

II. EXTERNAL AUDITS

A. Low Farm Prices For Vegetables

There has been a large increase in vegetable production and correspondingly low prices, according to Dr. Abu Sadr, Director of the newly formed MOA Marketing Directorate. Moreover, Jordan's export markets have been reduced and may shrink farther due to competition from Turkey, the development of vegetable production in the Gulf States, the war in Iraq and Iran and the entrance of Spain with the Canary Islands into the European Economic Community. As a result the MOA is initiating a system of cropping patterns or a system to limit the area planted to certain vegetables. The system is to be tested in the forthcoming crop year on fresh market tomatoes, which are to be reduced about 30%. In addition, the MOA is encouraging the planting of canning tomatoes and other crops, such as forage, by establishing support prices. There is also an attempt to discourage development of new citrus orchards through the requirement of a license for new plantings.

This attempt to control cropping patterns appears to be in conflict with the JVASP's objective of increasing production of certain crops, such as tomatoes and cucumbers, which are now apparently produced in surplus amounts in the JV. This new policy also appears to be in conflict with the

JVA's plans, already underway, to provide considerable new land with advanced irrigation and drainage facilities.

Increasing the efficiency of production, i.e., reducing the cost of producing a unit of a given crop is not, however, in conflict with the policy of reducing total production of certain crops. This can be done through such means as reducing inputs of pesticides, fertilizer and water through greater productivity per dunum of land without increased inputs. Obviously, the testing of new crops, such as low-chilling deciduous fruits, cereal and forage crops and increasing production of vegetable crops that are imported, such as potatoes and onions, is desirable.

This new policy will also impact on the JVASP's goal of developing an extension program in the JV because plans are to use extension agents to monitor the crop control program. This will not only involve agents in what might be an unpopular program with some farmers but it also reduces the time available for their primary responsibility of assisting the farmer through education and advice.

B. Organizational Changes

The MOA has placed the JVASP's research and extension function under the JV Regional Director. Thus, the JVASP is no longer a discrete project in the same sense it was before this change. There is a national DRE in the MOA in Amman that is in charge of the technological and educational aspects of research and extension but communication with extension agents is tenous at best both for the national DRE and the JVASP. Thus, it will be more difficult for the JVASP to develop an effective extension component.

The newly proposed HADP might correct these deficiencies if approved and implemented (see Appendix 8 and Attachment D). It is envisioned that both the JVASP and the HADP would be a part of the NCARTT. Under this organization the lines of communication and authority should be greatly improved; however, this is for the future to tell.

III. INPUTS

A. USAID

Technical assistance, commodities, and training is being provided by USAID through a contract with WSU.

Technical expertise has been provided as planned with the exception of a vegetable horticulturist. Candidates for this position were proposed but not accepted by MOA; as a result the vegetable crop research has been neglected.

A program of academic training for Jordanians has been pursued but has not brought about the desired results. It was proposed that 16 students be supported for advanced degrees but to date only two Jordanians have acquired MS degrees. The status of other students is shown in Appendix 6.

Satisfactory laboratory and office space has been developed in the JV for JVASP. Farm equipment and plastic green houses have been provided and appear adequate for research needed.

The vehicle problem has been overcome at the Center. Pickup trucks are expected soon for each extension agent.

B. GOJ

Personnel, facilities and operating budget.

The PP called for 28 professionals and 23 support personnel. This obligation has been more than met in number but level of training and performance is inadequate. Current MOA staff positions filled are listed in Appendix 7.

Four research sites, Deir Alla, El Karameh, Wadi Yabis and Abu Habiel, have been provided by MOA.

The operating budget has been met.

IV. OUTPUTS

A. An Applied Agricultural Research Extension Center Established and Operating in The Jordan Valley

Verifiable Indicator

Appropriate GOJ regulations issued and no less than 80% of management, research, and extension positions filled at the the end of the five-yeear project.

Verification

A cooperative effort has been made by USAID and the GOJ to develop a research-extension program for serving the fruit and vegetable industries of the JV. Even though a staff has been assembled, many workers are not qualified professionally at a level to make the project effective. To expect JVASP to be in full operation by the end of the five-year project is not realistic.

The personnel has much to learn about research and extension and has many adjustments to make in day-to-day operations.

As yet, JVASP is not the effective organization described in the PP and has a way to go before it will make a large impact on the JV.

B. Research Sites and Facilities Established

Verifiable Indicator

No less than three locations developed and a continuing research program underway.

Verification

The development of the physical aspects of this project has progressed well. Four research sites have been established in the JV (Wadi El-Yabis, Deir Alla, Abu Habiel and El Karameh). Land, facilities, irrigation, equipment, and greenhouses are available at each location for research.

C. Organized Research Program

Verifiable Indicator

Projects underway in all three areas (plant pests and diseases, production and management, and soil and water problems) identified as major constraints to production.

Verification

Research is underway in all three areas but in a limited way. IPM has been getting most attention while horticultural production practices have been ignored almost completely. Attempts to fill the vegetable position have not materialized and the citrus work was late in getting started, even though it took place according to schedule. The economics and statistics section is proceeding well. Although a short course on research methodology has been given, good planning and proper execution of research are not obvious. Continuity of projects has not always been exhibited, a system of recording and filing projects institutionally is lacking and systematic publishing of results has not been developed. There have been no research publications.

Emphasis is needed on good scientific investigation procedures for this project to achieve the results expected.

D. Laboratories Established, Equipped and Staffed

Verifiable Indicator

Two laboratories operating, plant and pest protection, and plant tissue, soils and water.

Verification

Laboratory facilities have been developed at the Deir Alla Station. These include soil and plant tissue testing, IPM, statistics, virology and horticulture. The soil and tissue testing laboratory while established is not yet functioning. Space and supplies seem adequate for the research desired. The virology and IPM laboratories and the statistical section are especially active. The competence of the staff should be upgraded continually.

The recently acquired Plant Protection Diagnostic Laboratory developed by the Dutch and recently assigned to the JVASP is expected soon to be functioning.

E. Farmer Demonstration Program

Verifiable Indicator

Twenty on-farm demonstrations held annually.

Verification

Only a limited number of on-farm demonstrations have been conducted. This is one of several weaknesses in the extension program that should receive attention. Both agents and farmers would learn much from this activity. Assistance of researchers in this regard in urged. Some on-farm research could also be used to demonstrate new production techniques and pest control.

F. Farmer - Extension Program

Verifiable Indicator

Each agent working directly with no less than 25 primary contacts and 150 total contacts.

Verification

Agents are making contact with farmers, however, meaningful records are not available. With survey contacts, farm visits with researchers and trouble solving calls, the agent is probably exceeding the goal of 25 contacts per month. This activity should increase as vehicles become more readily available. In order to reach more farmers, mass communications, grower meetings and other activities should also be explored.

G. Research, Extension, Farmer Seminar - Field-Day Program

Verifiable Indicator

A minimum of four one-day programs.

Verification

The project's effectiveness would be increased greatly by having more workshops, seminars and field days for farmers on and off the station. Records show not more than four field-days since the start of the project. A very serious attempt

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should be made to show via field-days what is being done on the experiment stations. These activities should be held cooperatively by extension and research.

H. Research and Extension Publications

Verifiable Indicator

Average of one per scientist per full work year.

Verification

Publications are a serious deficiency in this program. Researchers are failing to publish results and SMS's with the responsibility of preparing information for agents and farmers have been transferred to other duties. Only three extension publications have been completed and no research has been published. Part of the problem lies in the slowness of the bureaucratic regulations which the GOJ follows to process papers submitted for publication.

V. PURPOSE

A. Purpose Defined

The project purpose as defined in the LF of the PP is, "Establish and institutionalize a viable mechanism capable of developing and disseminating appropriate agricultural technology for vegetable and fruit production in the Jordan Valley."

B. Progress

Verifiable Indicator

An applied research and extension center with three substations staffed and operating.

Verification

The JVASP ARES at Deir Alla and the three substations (El-Karameh, Abu Habiel and Wadi Yabbis) were visited. The buildings and laboratories were inspected and the research underway was reviewed. All are well established and functioning as stations with adequate facilities and land. The stations are also fully

staffed but the scientific competence of the Jordanian staff is below that envisioned in the PP at this stage of development because the schedule for training has not been met and because the initial level of technical competence was low in many cases.

Verifiable Indicator

The Center functions as an important and integral component of the agricultural development efforts in the Jordan Valley.

Verification

An on-site review of research being conducted, including discussions with pertinent JVASP staff, both from WSU and the MOA, gave clear evidence that the center at Deir Alla and its substations are functioning and becoming increasingly important to the area's agriculture. The success of the IPM in controlling the spherical mealy bug with introduced parasites is in itself a notable achievement. More importantly, a total research program is developing. However, there are areas, particularly soils and water, that are weak. We do not feel that the station would continue to function as well as it does without the expatriate staff furnished by WSU, because of delays in training MOA staff. Given the relatively short period remaining before project termination, it is highly unlikely that an adequately functioning station will have been developed by then. Moreover, it is doubtful that a research-extension center functioning at the level envisioned in the PP could have been developed even if the training schedule had been met. Taking into account the overly optimistic expection of results and the constraints that have existed, progress has been more than could reasonably be expected.

Verifiable Indicator

Trained extension personnel provide research results and other technological information to farmers.

Verification

Meaningful progress in establishing a training program for extension agents was made during the initial stages of the project but the situation has deteriorated, primarily due to external factors. The four SMS positions provided for in the PP have been transferred. Extension staff is under the administration of a regional director and often called on to do things not normally considered an extension activity. There have been only three extension publications; however, staff at the JVASP has published a number of 35 mm slide sets, primarily of varieties and pests. Much of this work was done by the research staff.

Thus, this indicator of attainment of purpose falls well short of satisfactory.

Verifiable Indicator

At least 50% of Jordan Valley farmers use improved technology, cultural practices and management.

Verification

JV farmers are using advanced technology as evidenced by wide use of plastic houses and drip irrigation. However, since these practices can be attributed to other factors besides the JVASP, it is not an appropriate indicator for this purpose.

C. Summation

Although considerable progress has been made in accomplishing purpose, taken as a whole, achievement has been less than satisfactory. This is understandable because important assumptions on which achievement was based were inaccurate. As examples, incentive pay provided for in Special Covenants of the Project Agreement, Sec. 5.3, Personnel Incentives, have not been forthcoming. Appropriate organization/administrative procedures have not been provided and staff turnover has been high. In fact, there have been four Directors within four years and only two of the original 15 extension agents remain.

VI. GOAL

A. Goal Defined

The goal as defined in the LF of the PP is, "To increase the Jordan Valley's productivity, primarily vegetables and fruits, for local consumption and export, through increasing farmers' access to inputs and services.

B. Progress

Verifiable Indicator

Trend in rising yields and increased production of horticultural and field crops in the Jordan Valley.

Verification

The LF suggested that GOJ and JV/JFA reports and records could provide verification. There has been such a large increase in vegetable production that crop control programs are being put in place for those in over supply; however, this has been primarily due to increased land area utilized and increased production inputs, such as plastic tunnels and existing technology that goes with plastic housed tunnels, even though this technology is not highly refined. Thus, this means of verification is not apt.

There have been, however, some meaningful impacts by the JVASP. The foremost example is biological control of the spherical mealy bug. There is no way of accurately quantifying the impact of this work on citrus production; however, some growers in areas heavily infested were cutting down their trees in an attempt to prevent spread of the pest to other trees. Parasites released by the project brought a potentially devasting infestation under control and prevented yield loss, rather than adding yield.

Other direct impacts on yields have been meager; however, work refining and manipulating existing plastic tunnel and field technology is under way and should have an impact on production or efficiency of production within a few years, although not by the end of the project.

Introducing and developing new tomato varieties or selections is underway. The Columbia variety, for example, introduced from the United States shows some tolerance to TYLCV and seedling populations also are showing some tolerance. If a suitably tolerant selection is developed it would have a major impact on production efficiency because TYLCV decimates tomato production in the fall of the year. Such research is slow, however, and three or four years will be needed before an accurate assessment of progress can be made.

Also, low-chilling peaches and nectarines brought in from the United States appear to be adapted to parts of the Jordan Valley. Five to ten years are required to adequately test such fruit crops after they come into bearing. There is a strong chance, however, that these crops will prove adapted and that they would produce fruit that is in great demand during a season in which they are not produced in the Jordan highlands. It is also possible low-chilling pears and apples can be produced in the JV.

C. Summary

There has been little direct impact of the research and extension programs on the production of vegetables and fruits in the Jordan Valley, even though biological control of the spherical mealybug on citrus is a noteworthy achievement. It is unlikely there will be any additional major accomplishments by project termination. There is, however, a program in place that could achieve significant progress toward the goal within another five years.

VII. BENEFICIARIES

Because the purpose and goal of this project have not been reached as yet, only few have derived benefits from the facilities developed and activities conducted; however, through the introduction of biological control one problem has been averted. Fruit and vegetable growers should benefit from increased productivity, more efficient operations, better quality and an expanded crop selection as research and extension expands in the JV.

Jordanians working on the project are benefitting from the training and experience received at the Center and abroad.

The ultimate beneficiary will be the consumer who realizes a better quality product, sometimes at lower cost, and a wider selection of fruits and vegetables over much of the year.

Agricultural agencies operating in the Valley such as JVA and JVFA receive information and assistance from time to time from agents and research faculty. A more active program will improve this relationship.

VIII. LESSONS LEARNED

1. Some of the more serious problems encountered by institutional development projects are administrative and organizational in nature. The highest priority should be given to establishing proper organization, staffing and management, particularly during the crucial formative stages.

2. All projects should have an implementation period to staff key positions, develop plans for facilities, set up the organization and management system and prepare and at least partially equip facilities before the main body of the technical assistance staff arrives in the country.

3. The problems in developing an outlying research station are unique. Only institutions experienced in such endeavors should be selected as the contractor.

4. The typical project suffers from rules and regulations imposed by AID/W, USAID/Mission, the government of the host country and the contractor (often a university). This in itself is enough to doom the procurement of equipment and supplies to a low level of efficiency. Every effort should be made at the start to reduce constraints on purchases to a minimum.

5. USAID/W and the contractor should keep in mind that the scientific achievements of the United States give it an image of efficiency and achievement. It is a shock to the host country when simple laboratory glassware and equipment, which are available daily as off-the-shelf items, takes

months to order and obtain. Failure to meet purpose and goal within the allocated period of time is embarassing. If these projects are to benefit the United States, everything possible should be done to eliminate bureaucratic inefficiency and to achieve the expected efficiency.

6. Institutionalization is a lengthy and difficult process. So is the establishment and training of research and extension faculty. To expect a team in the United States to develop facilities, refurbish laboratories, train staff, get instruments and equipment in place, provide maintenance facilities and design and conduct a research program that has a major or even modest impact on the agricultural production of the area it represents within a five-year period is unrealistic. To expect a team to do this in a country where there is a paucity of qualified candidates for training and the constraints described in item 5 of this section is even more unrealistic. It is reasonable to expect a contractor to establish facilities, equip laboratories, establish experimental plantings, initiate a training program for staff and design and implement a modest program of applied research. It is unrealistic to expect a major or even modest impact on commercial production, except in rare cases.

7. The evaluation methodology as outlined in the PES is good, even though requiring a certain amount of redundancy. The schedule and procedures set up by USAID/J and WSU were also good but could have been improved by the following:

   (a) A briefing by USAID/W prior to departure from the U.S.

   (b) There could have been a better balance of group discussions and those with individual staff members, with more emphasis on the latter. This was, however, not a serious problem. The evaluation team had the prerogative of modifying its schedule if it wished.

   (c) There should have been discussions with individual farmers as well as discussions with representatives of farmer and farmer-related groups.

(d) More trips to the farms themselves would have been helpful. Fortunately, all members of the team had visited Jordan in recent years and could draw on those experiences to capture a feel for the agriculture of the JV.

(e) Undoubtedly, the largest problem was the late scheduling of the evaluation, which precludes the implementation of many of the recommendations.

(f) The time scheduled for the team to write the report after gathering data was short. Two additional days could have been used profitably.

IX. SPECIAL COMMENTS OR REMARKS

Support by USAID/J was excellent. Without this logistical support the evaluation would have been difficult.

The preparation of a considerable number of pertinent documents mailed to the team members prior to their arrival was extremely beneficial. The excellent PP prepared by WSU was particularly helpful.

We felt the composition of the evaluation team was appropriate. The two horticulturists, one specializing in fruit and one in vegetables, one with considerable experience in the field research and administration and the other in extension, gave balance from the technical standpoint. The presence of one team member with many years experience in organization, planning and institutional budgeting added an important dimension to the review.

Reviews of certain aspects of the project including specific suggestions for improvement are given by individual team members in Attachments A, B, C and D.

- Attachment A -The Vegetable Research Program, 3 pages
- Attachment B - The Fruit Crops Research Program, 7 pages
- Attachment C - The Extension Program, 1 page.
- Attachment D - Organization and Management Concerns, 11 pages.

APPENDIX 1

DOCUMENTS REVIEWED

- Butler, Robert O., and Rasmussen, Paul, memo to Ken Laurent dated 6/10/83, Subject: Comments from the JVASP Review.

- Harwood, Robert F., memo to Robert O. Butler dated 1/11/84, Subject: Some Current Description of Jordanian JVASP Personnel Regarding Research, with enclosures.

- Moneymaker, Maurice, Report on Status of JVASP Soils, Water and Tissue Analysis Laboratory, Deir Alla Station, Covering the Period April 1 to June 30, 1984, July 11, 1984.

- Jordan Valley Agricultural Services Project (Washington State University Contractor), JVASP Quarterly Reports for 6/15/82-9/15/82, 9/16/82-12/15/82, 12/15/82-3/31/83, 4/1/83-6/30/83, 7/1/83-9/30/83, 10/1/83-12/31/83, 1/1/84-3/31/84, 4/1/84-6/30/84, 7/1/84-9/30/84, 10/1/84-12/31/84, and 1/1/85-3/31/85.

- JVASP, Summary of Work Accomplishments, 1984-85 Growing Season, Agricultural Economics and Statistics Section.

- JVASP, Tentative Table of Training Schedule for 1985 and 1986.

- JVASP (by A.I. Dow, Soils and Water Specialists), Soil and Water Management Guide for the Jordan Valley, May 1984.

- JVASP, Trip Report by Leroy Rogers, May 16-22, 1985 (a report on the review of the Economics Section of the JVASP).

- JVASP, Methodology for Transferring Technology Appropriate to Small Farmers in the Jordan Valley, a research proposal submitted by Gordon Rodewald, undated.

- JVASP, JVASP Citrus Virology Program Needs, an outline by Mani Skaria dated 6/30/85.

- JVASP, Questions Concerning the Future of the Jordan Citrus Industry, an outline by John E. Fucik dated 6/15/85.

- Laurent, K.K., memo to Dr. Yousef Rushdi dated 12/1/82, Subject: Academic Training at the University of Jordan.

- Phillips, Richard, (undated), Fruit Crop Production in the Jordan Valley, A TDY Report.

- Rushdi, Yousef, memo to Dr. K. Laurent, dated 12/2/82, Subject: Academic Training at the University of Jordan.

- U.S. Agency for International Development, Project Paper for Jordan Valley Agricultural Services, 278-0241, 9/15/81.

- USAID/Jordan, Near East Evaluation Abstract and Project Evaluation Summary for the Period January 1982-May 1983, 7/5/83.

- USAID, Near East Bureau Evaluation Guidelines, NE/DP/Evaluation, August 1984.

- USAID, Subject: AID Support for Agricultural Extension, Cable from Secretary of State, Washington, D.C. to AID Worldwide, dated 6/11/85.

- USAID/Jordan, various memos relating to JVASP provided by the AID Mission for the evaluation team's information.

- University of Jordan Faculty of Agriculture, a listing of faculty by department indicating highest degree, rank, year and universities from which degrees earned, and areas of interest for each faculty member which was provided as a handout by the Dean of UOJ/FA during the team's visit on 7/6/85.

APPENDIX 2

EVALUATION TEAM AND OBSERVERS

NAME	TITLE & POSITION
EVALUATION TEAM	
A. USAID, RONCO	
1. Dr. Norman Oebeker	Extension Specialist, Department of Plant Science, University of Arizona
2. Dr. Alfred Krezdorn	Professor Emeritus, Department of Fruit Crops, University of Florida
3. Mr. Taka Izumi	Director of Management Services, College of Tropical Agriculture and Human Resources, University of Hawaii
OBSERVERS	
B. WASHINGTON STATE	
1. Dr. Bob Butler	Campus Coordinator of JVASP, Washington State University
C. MINISTRY OF AGRICULTURE	
1. Mr. Nabil Katkhuda	Director of Research and Extension, MOA
2. Dr. Hani Haddadin	Evaluation Unit, MOA
3. Mr. Usama Bilbaisi	Evaluation Unit, MOA
4. Dr. Yousef Rushdi	Research & Extension, MOA
D. UNIVERSITY OF JORDAN, FACULTY OF AGRICULTURE	
1. Dr. Mahmud Duwayri	Dean, FOA, Plant Breeding and Genetics
2. Dr. Mohammed Suwwan	Vegetable Production and Physiology

APPENDIX 3

INTERVIEWS AND VISITS

DATE	DAY	ACTIVITY
June 26	Wednesday	Evening: Arrive in Amman, check in at the Shepherd Hotel. No official activities.
June 27	Thursday	Morning: Meeting 11 a.m. at Shepherd Hotel with team members to review methodology. Afternoon: Meeting 12:30 p.m. with Mr. Saudi, Assistant Undersecretary of Agriculture, Dr. William Furtick, Mr. Fuad Qushair and Observers. Briefing: - Purpose of the JVASP - Relationship of JVASP to HADP - Future Role of JVASP - What MOA would like out of the evaluation
June 28	Friday	No official activities
June 29	Saturday	Tour Valley: South Station (Karameh) Plant Protection Diagnostic Lab JVA Soils Lab Deir Alla Station Abu Habiel Station Wadi Yabbis Station 2 p.m.: Picnic at Pella - sponsored by Dr. Bob Harwood, Chief-of-Party, JVASP
June 30	Sunday	Leave Amman, Shepherd Hotel at 7:15 a.m.. Arrive Deir Alla 8:30 a.m.

8:35 a.m.: Meet with Director Ghazi Kanaan, Assistant to Director, Zaki Nassar and Dr. Robert Harwood

Research:
9:00 a.m. - 10:40 a.m. - Mr. Zaki & Dr. Robert Harwood, Research Program/Administration

11:00 a.m. - 12:30 p.m.:
Sectional Reviews: Vegetable Horticulture, outline of presentatons attached

12:35 a.m. - 1:50 p.m.: Tree Horticulture and Citrus Virology

2:00 p.m.: Leave for Amman

July 1	Monday	Arrive Deir Alla: 8:30 a.m. SECTIONAL REVIEWS: 8:35 a.m. - 10:00 a.m. Plant Protection Entomology Plant Pathology Nematology Outline of presentations attached 10:20 a.m. - 11:05 a.m.: Soils & Irrigation 11:10 a.m. - 12:10 a.m.: Economics and Survey EXTENSION PROGRAM 12:15 p.m. - 1:00 p.m.: Introduction/Administration - Mr. Ghazi Kanaan, Mr. Zaki Nassar, Dr. Yousef Rushi 1:05 p.m. - 2:00 p.m.: Meet with Extension Agents - A. Tuhubson, A. Hamadneh, Mr. Ababneh, A. Salameh, N. Gharaybeh, J. Al-Rusheidat, R. Abu Zunaima, B. Arafat, A. Abu Al-Assal, A. Dabbas, S. Wishah, A. Al-Sheikh 2:10 p.m. leave for Amman.

July 2	Tuesday	Arrive Deir Alla: 8:30 a.m. 8:35 a.m. - 9:30 a.m. : Open discussion with Director, Dr. Harwood, Dr. Robert Butler, Dr. Y Rushdi, Dr. Hani Haddadin, Mr. Nabil Katkhuda, Mr. Ghazi Kanaan, and Mr. Zaki Nassar. - Laboratories - Library - Vehicles 9:35 a.m. - 10:00 a.m.: Break 10:00 a.m. : Open Discussion - Team members can follow up on questions or meetings with individuals previously met. (Various individual interviews and visitations conducted until 2:00 p.m.).
July 3	Wednesday	Meetings in Jordan Valley with Organizations: 9:00 a.m. - 10:00 a.m. - JVA Dr. Mohammad Bani Hani 10:15 a.m. - 11:15 a.m. - University Farm, Dr. Hussein Musa 11:30 a.m. - 12:30 p.m. - JVFA, Mr. J. Zureikat
July 6	Saturday	Meetings in Amman with Agricultural Organizations: 9:00 a.m. - 10:00 a.m. - ACC Dr. Sami Sunna, DG 10:15 a.m. - 11:15 a.m. - JCO, Mr. Hasan Nabulsi, DG 11:30 a.m. - 12:15 p.m. - Univ. of Jordan/FOA, Dr. Mahmud Duwayni, Dean; Dr. Naim Sharaf, Asst. to the Dean 12:20 p.m. - 1:20 p.m. - Directorate of Research and Extension, MOA, Dr. Yousef Rushdi
July 7	Sunday	Meetings with Ministry of Agriculture: - Cropping Pattern Program: Mr. Walid Abed Rabbo Dr. Rasmi Sweiti - Marketing: Mr. Mazen Abdul-Gader - Livestock/Range & Forage: Mr. Kamal Tadros

July 8 & 9	Monday and Tuesday	Team to work together in Hotel summarizing report
July 11 & 12	Thursday and Friday	Additional work on draft report
		Afternoon Briefing with Director of USAID and staff, 2:30 p.m.
July 10	Wednesday	Morning: Briefing with Ministry of Agriculture, (MOA) at 10:30 a.m.
		Afternoon: Briefing with Director of USAID and staff at 2:30 p.m.

APPENDIX 4

RESEARCH PRESENTATIONS BY JVASP STAFF

Topics within the research program are listed in tabular form by subject area and persons responsible.

A. Plant Protection

No. Project Title	Stations			
	Deir Alla	Abu Habib	Karameh	Wadi-Yabis
Harwood, R.F., Mohammed Zo'obi				
Cooperation with vegetable section.				
1. Reducing transmission and effects of tomato yellow leaf curl virus (TYLCV)				
I. Comparison of Columbia variety tomato with Claudia Raf.	X			
II. Evaluating tomato varieties tolerant/resistant to TYLCV	X			
2. Control of watermelon mosaic virus in cucurbits				
I. Use of muslin fabric and perforated plastic row tunnels	X			
Kamal Kheiralla				
3. Breeding program for tolerant tomato varieties.	X			
Harwood, R.F., M. Basheer, M. Bahdousheh				
4. Viological and integrated control of spherical mealy bug.				
5. Biological control of spider mites on vegetables.	X			

No.	Project Title	Stations			
		Deir Alla	Abu Habib	Karameh	Wadi-Yabis
J. Fucik, Obeiat, M., M. Fayyad					
6.	Weed control in citrus orchards.				X
7.	Weed control in onion fields.				X
Mufadi, S., Mona Salem, N. Musalheh					
8.	Identifying the wilting agents in selected vegetables.				
	I. Identifying the wilting agents in soil and in irrigation water.		Wherever Found		
	II. Controlling the agents	X			
9.	Evaluation in plastic houses of cucumber varieties tolerant or resistant to powdery mildew and downy mildew.	X			
10.	Evaluating selected fungicides (in cooperation with vegetable section)				
	I. Against downy mildew of onions	X			
	II. Against downy mildew of cucumbers under plastic houses	X			
	III. Against powdery mildew of squash	X			
	IV. Against botrytis rot of cucumber under plastic houses	X		X	
	V. Against sclerotinia rot of cucumber under plastic houses	X			

B. Soils & Irrigation

No.	Project Title	Stations			
		Deir Alla	Abu Habib	Karameh	Wadi-Yabis
	VI. Against powdery mildew of cucumber under plastic houses	X			
Said Zuraiqu, M., M. Dabbas					
1.	Studying the water requirements for vegetable crops.				
	I. Squash (open field)		X		
	II. Cucumber (under plastic)	X			
2.	Effect of irrigation methods on the yield of potato.		X		
Fucik, J., and Soils/Irrigation Section					
3.	Water and fertilizer requirements in citrus	Station and Farmer Orchards			
Rabadi, K. (to be transferred)					
4.	Programming of N fertilizer on vegetable crops.				
	I. Cucumber under drip irrigation system in plastic houses	X			
	II. Tomato under furrow irrigation in the open field	X			
	III. Squash under furrow irrigation in the open field	X			

C. Fruit Trees

No.	Project Title	Stations			
		Deir Alla	Abu Habib	Karameh	Wadi-Yabis
	Fucik, J., Samar Hadi				
1.	Evaluation of citrus variety fruit	X			X
2.	Bananas				
	I. Evaluation of varieties				X
	II. Development of wind breaks	X			X
3.	Introduction of new varieties of date palm (Dayat Station).		Dayat		
4.	Introduction of low chilling temperate fruits and nuts.	X			X
5.	Evaluation of different varieties of grapes (emphasis on early varieties and nematode resistance).	X			
6.	Introduction of tropical and sub-tropical fruits.	X			X

D. Vegetables

	M. Khudari, A. Rizk, H. Nijim, S. Abu Baker				
1.	Evaluation of potatoe varieties in the Jordan Valley.	X	X	X	
2.	Succession cropping of vegetables in plastic houses.	X	X	X	
	Staff & Harwood				
3.	Testing the value of alternative crops (rather than cucumber) under plastic houses.	X	X	X	

No.	Project Title	Stations			
		Deir Alla	Abu Habib	Karameh	Wadi-Yabis
.	Use of plant hormones on tomato squash and eggplant (Samieh and Y. Rushdi).	X			
.	Evaluation of tomato processing varieties (Z. Nasser, and S. Abu Baker); University staff.	X			
;.	Varietal evaluation of selected vegetables under plastic houses and tunnels (S. Abu Baker, A. Rizk, and H. Nijim)				
	I. Tomato	X			
	II. Cucumber	X			
	III. Eggplant		X	X	
	IV. Sweet and hot pepper		X	X	
	V. Sweet melon		X	X	
7.	Varietal evaluation of vegetable crops in the open field.				
	I. Tomato (Samieh)	X			
	II. Cauliflower (Khudari)	X			
	III. Cabbage (Khudari)	X			
	IV. Squash (Khudari)	X			
	V. Onion (Khudari)	X			
8.	Introduction of new vegetables; broccoli, sweet potato, lima bean, snap pea, celery, asparagus, New Zealand spinach, Jerusalem artichoke.	X			
9.	New cultural practices (S. Abu-Baker, Y. Rushdi)				
	I. Perforated plastic tunnels muslin				
	II. Pruning and trellising of cucumber in plastic houses				
	III. Pruning of sweet pepper				

LOGICAL FRAMEWORK

Project Title: Jordan Valley Agricultural Services

Project Number: 278-0241

Life of [illegible]
From FY 1981 to FY [illegible]
Total U.S. Funding $ 5,620,000
Date Prepared: September 20, 1981

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1)	Measures of Goal Achievement (A-2)	(A-3)	Measures for Achieving Goal Targets: (A-4)
To increase the Jordan Valley's agricultural productivity, primarily of vegetables and fruits, for local consumption and export, through increasing farmers' access to inputs and services.	Trend in rising yields and increased production of horticultural and field crops in the Valley.	GOJ and JV/JVFA reports and records	GOJ continues to emphasize agricultural development in the Jordan Valley. Absence of any significant force majeure. Project proceeds according to plan. Favorable market conditions and other infrastructure, particularly irrigation, function effectively.

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LOGICAL FRAMEWORK

Project Title: Jordan Valley Agricultural Services

Project Number: 278-0241

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Purpose: (B-1)	Conditions that will indicate purpose has been achieved: End-of-project status: (B-2)	(B-3)	Assumptions for achieving purpose: (B-4)
Establish and institutionalize a viable mechanism capable of developing and disseminating appropriate agricultural technology for vegetable and fruit production in the Jordan Valley.	One applied research and extension center with three substations staffed and operating.	Visual observation	Facilities, staff, budget, and transportation support continue to be available. Incentives adequate to attract and retain qualified staff.
	The center functioning as an important and integral component of the agricultural development efforts in the Valley.	MOA, USAID and contractor records and evaluations.	The organization/administrative procedures outlined in the draft Pro. Ag and PP are implemented and adhered to by MOA. Regional Ag Directors, other MOA personnel, Faculty of Agriculture, JVFA and related agricultural organizations are cooperating with the Center
	Trained extension personnel providing research results and other technological information to farmers.	USAID, MOA and contractor records and evaluations.	Committed and qualified MOA management, technical and extension staff are involved in the project.
	At least 50% of Jordan Valley farmers using improved technology, cultural practices and management techniques.	USAID, MOA, and contractor records and evaluations and farmer surveys.	A lower than historic staff turnover rate and staff vacancies are filled with qualified people. Farmers willing and able to cooperate with Center activities and staff

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LOGICAL FRAMEWORK

Project Title: Jordan Valley Agricultural Services

Project Number: 278-0241

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Inputs:(D-1)	Implementation Target (Type and Quantity): (D-2)	(D-3)	Assumptions for Providing Input: (D-4)
USAID: Technical Assistance Commodities and Training:			Expert advisors available on a timely basis.
1. Approximately 15.8 person-years of expert advisors.	Contract	Signed Contract	Qualified participants available.
2. Training for 28 participants	Participants selected	USAID documents	The organization/administrative procedures outlined in draft Pro. Ag. and PP are implemented and adhered to by MOA.
3. Laboratory, office, and farming equipment.	Requirements identified and ordered.	Procurement documents.	Expected funds are forthcoming in GOJ budgets.
4. Vehicles.	On order.	Procurement documents.	
GOJ: Personnel Facilities and Operating Budget:			
1. Professional and support staff.	Positions identified.	MOA documents in support of Pro.Ag. C.P.	
2. Research sites, laboratory, office space and staff housing.	Facilities identified and assigned to project .	MOA documents in support of Pro.Ag. C.P.	
3. Operating expenses	MOA budget approved.	MOA documents in support of Pro.Ag. C.P.	

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LOGICAL FRAMEWORK

Project Title: Jordan Valley Agricultural Services

Project Number: 278-0241

Life of Project:
From FY 1981 to FY 1986
Total U.S. Funding $ 5,620,000
Date Prepared: September 20, 1981

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Outputs:(C-1)	Magnitude of Outputs: (C-2)	(C-3)	Assumptions for Achieving Outputs: (C-4)
An applied agricultural research-extension center established and operating in the Jordan Valley.	Appropriate GOJ regulations issued and no less than 80% of management research, and extension positions filled at the end of 5-year project.	GOJ and MOA records.	Center operating with MOA contribution to adequate budget, transportation, facilities and qualified staff.
Research sites and facilities established.	No less than 3 locations developed and continuing research program underway.	MOA, USAID and contractor records and visual observation.	Research sites provided by GOJ.
Organized research program.	Projects underway in all 3 areas identified as major constraints to production.	MOA, USAID and contractor evaluations.	Research program is relevant and positive production recommendations are developed.
Laboratories established, equipped and staffed.	Two laboratories operating: plant and pest protection-plant tissue and soils and water.	MOA, USAID records and visual observation.	Researchers and extension agents work effectively as a team.
Farmer demonstration program.	Twenty on-farm demonstrations annually.	MOA, USAID and visual observation.	Designated laboratory and office space at Deir Alla provided.
Farmer-extension program.	Each agent working directly with no less than 25 primary contacts and 150 total contacts.	MOA and USAID records and farmer surveys.	Agents suitably reimbursed for driving own car or able to drive project car.
Research, extension, farmer seminar-fieldday program.	A minimum of 4 one-day programs	MOA and USAID records and visual observation.	Farmers willing to cooperate.
Research and Extension publications.	Average of one per scientist per full work year.	Project records.	Resources of the MOA Ag. Information Unit available to the Center.

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APPENDIX 6

LONG-TERM ACADEMIC TRAINING
MASTERS DEGREE

	United States	University Of Jordan	Total
Planned			
Projected in Project Paper	8	8	16
Actual to Date			
Returned with Degree	0	2	2
Returned, working on Thesis	0	2	2
Currently Enrolled	1	2	2
To Start Training	2	1	3
Unfilled Slots	5	1	6

Source: JVASP Project Paper, p. L-4 and interview on 7/8/85 with Dr. Robert Harwood.

APPENDIX 7

JVASP STAFFING

POSITION	PROJECT PAPER	AS OF 4/11/85
Project Director	1	1/2*
Tech. Asst. (Acting Ext. Supv.)	0	1
Research Supervisor	0	1
IPM Research Specialist	1	2
Production Research Economist	1	0
Horticulture Res. Specialist	1	2
Soil and Water Res. Specialist	1	5
Associates (Res. Assistants)	8	20
Ext. Training Spec.	1	0
SMS	3	0
SMS/IPM	1	0
Ext. Agents	10	11
	28	43 1/2

*Also Director, JV Agricultural Directorate

APPENDIX 8

بسم الله الرحمن الرحيم

THE HASHEMITE KINGDOM
OF JORDAN
MINISTRY OF PLANNING
AMMAN
Tel. 44468 – 44470
44381 – 44385
Tlx. 21319 - P.O.Box 555
Teleg. NPC - Amman

المملكة الأردنية الهاشمية
وزارة التخطيط
عمان
هاتف ٤٤٤٦٦ – ٤٤٤٧٠
٤٤٣٨١ – ٤٤٣٨٥
تلكس ٢١٣١٩ – ص.ب ٥٥٥

NO. 101/53/1616
DATE 9/4/1985
REF.

الرقم
التاريخ
الموافق

ACTION COPY

Mr. Gerald F. Gower,
Director,
USAID/Jordan.

PM
WF

Dear Mr. Gower,

Subject: Highlands Agricultural Development Project Paper

Reference is made to the meeting held on 10 March 1985 to discuss the subject Project Paper.

We have now studied the Project Paper in detail and our comments, contained in the attached memorandum, are offered for your consideration and should suffice for the purposes of the Project Paper. However, our main concern is for a detailed mutual agreement on the project components prior to the approval of the Project Agreement.

Sincerely yours,

Minister of Planning

Comments on

Highland Agricultural Development Project Paper

1. Organizational Approach: A single Agricultural Development Council, covering all types of agriculture (both irrigated and rainfed) to be chaired by the Minister of Agriculture, shall have a permanent secretariat with sufficient qualified staff and study capability to assist in policy determination and project follow-up. Similarly, the proposed National Agricultural Technology Center shall cover all types of agricultural research and extension for both the highlands and the Jordan Valley. It is therefore proposed that the center be renamed as the National Center for Agricultural Research and Transfer of Technology (NCARTT). The center would have a board of directors, chaired by the Minister of Agriculture or his appointed senior representative, which would be responsible for the planning, coordination, policy decisions and follow-up concerning all agricultural research and extension in Jordan.

The Agricultural Service Center (ASC) shall also include those in the Jordan Valley and all will be linked and coordinated through the single National Center for Agricultural Research and Technology Transfer. This would in effect be a major reorganization of the MOA in that the present Directorate of Research and Extension would be replaced by the NCARTT and the ASC's, which shall be the basic responsibility of the MOA; however, required coordination and cooperation with other public and private organizations will be built into the new structure.

2. Technical Assistance Requirements

General - All T.A. advisers, both long term and short term must work with a Jordanian counterpart.

Long Term

(a) Chief of Party/Planning and Management Specialist - probably should be an Agricultural Economist and emphasis should be on planning and management and not on the "chief of party" status.

(b) Administrative Specialist - this position is questionable and would require more justification.

(c) Extension Methods Specialist - required.

(d) Watershed Planning Specialist - not required at this stage.

(e) Range Development and Management Specialist - 24 person-months (p.m.) have been obligated under the UNEP Lajjun Project. The 24 p.m. is probably more than sufficient as after an initial residency period, short term consultancy visits should be sufficient.

(f) Private Sector/Credit Specialist - not required as long term consultancy. Some short term specialised T.A. may be required.

Short Term

The estimate of 202 p.m. of TDY consultants appears excessive. Suggest plan for 180 p.m. against tentative subject listings which can be firmed up as project progresses.

Other Requirements

Tentative requirements for other possible long term consultants include:

- Virologist specialist for stone and pome fruits to help develop virus free seedlings.
- Farming systems specialist.

On-Farm Demonstration Program Fund: This revolving fund should be creased from $1 million to $3 million as the on-farm demonstration aspect is itical to the success of the project. The primary emphasis for the HADP in s early years should be the basic technology for increasing production in e rainfed areas which is appropriate for at least 80 percent of the farms. his basic technology is well known, has been tried and proven to be uccessful when properly presented to farmers on an organized basis. The main tems of this basic technology are as follows:

- contour cultivation for moisture and soil conservation;
- proper tillage practices;
- drilling of seed in lieu of traditional hand sowing;
- application of fertilizer by banding with seed during drilling operation;
- herbicide spraying;
- new varieties introduction; and
- seed cleaning and certification of germination and purity.

Coupled with the above, the immediate basic research which is required during the early stages of the Project should cover:

- field trials on utilization of fertilizers under various ecological conditions;
- use of new varieties of cereals, pulses, vegetables, fruit trees and forages;
- optimum dates for planting of wheat and other crops; and
- livestock breeds better fitted to the Jordanian situation.

It is well known in many countries that the best farmers are successful entrepreneurs. It will gradually become the same in Jordan, mostly through leasing of large tracts of highland agricultural land by organized companies. Such companies will quickly accept the newest specialized technology available as they can readily recognize the benefits. However, this takes time and therefore acceptance of the more specialized technology is limited in the time frame of the Project, but the start is very important as it may be the portent of the future.

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4. Other Technical Assistance: It is proposed that the fund designated for ICARDA be allocated to NCARTT to be used as appropriate and that the fund be augmented by some of the savings from reduction in the proposed long term and TDY personnel. This would help serve the purposes of the proposed National Center for Agriculture Research and Technology Transfer mentioned in para 1 above.

5. Commodities and Facility Construction: In view of proposals in para 1 above, the distribution of costs between the NCARTT and the RASC's may require some adjustment in favor of the NCARTT, particularly in its proposed role as the overall directorate of agricultural research in Jordan. Also, considerable additional study will be required to establish the required laboratory equipment requirements, including advance technology such as tissue culture and seed production laboratories.

6. Land and Facility Construction: The estimated cost has been reduced by $3 million due to an inventory of existing facilities and this saving is to be used for a loan fund for on-lending to farmers, companies or cooperatives who are working to promote the project goals.

7. Training: Specific attention should be given to providing academic training for specialized areas which are presently required but lacking in Jordan.

ATTACHMENT A

THE JVASP VEGETABLE RESEARCH PROGRAM
By: Norman Oebker

RESEARCH

1. Because of the importance of vegetables in the JV, the culture and production of these crops should be given considerable attention. To date the program in this area is less than satisfactory. Unfortunately a vegetable horticulturist has not been approved for the project. This position should be given high priority in future activities.

2. Facilities, laboratories, greenhouses and land seem more than adequate for research on vegetables. There appears to be a need for emphasis on good techniques for scientific investigation. Better planning, execution, analysis and reporting of research is needed. At present no permanent files of research data exist. Good methodology is necessary to obtain reliable results. The attempts to develop a short course on research techniques are commendable.

3. Publications should be encouraged, if not required, from every professional staff member. This is not only important for recognition of the Center but for informing the agents, farmers and others interested in the progress on solving problems of the JV. The annual report is good and should be continued.

4. The JV and JVASP offer many opportunities for applied research in vegetable production. Because of the number of plastic greenhouses in the area, culture and systems in this environment should be studied. Weed control, mulching, drip irrigation, and fertility all need more study. New crops studies should continue in order to vary production and to replace over-produced crops.

   Post harvest handling, quality and processing should be under investigation which may lead to new markets, reduced handling losses, and increased consumption.

5. The problems of the JV offer JVASP challenges and opportunities. The physical aspects seem to be in place. Now is the time for giving attention to management, organization, planning, and execution of project. This should be a coordinated effort from all concerned.

ATTACHMENT B

THE JVASP FRUIT CROPS RESEARCH PROGRAM
A.H. Krezdorn

esearch in fruit crops, while heavily oriented toward orticulture, must be strongly supported by work in entomology nd IPM, pathology, nematology and virology, soils and water, otany and plant physiology and economics and statistics. orticulture is, indeed, all of these things and the orticulturist more than anyone must coordinate his or her work with the narrower disciplines.

IPM

Pest control is one of the most important areas of research in a fruit crop program. Entomologists learned, after many years, there is more to pest control than chemical sprays and dusts. Thus, the integrated pest management (IPM) concept developed. It is satisfying to note an active program with solid achievements is underway.

PATHOLOGY

Fungus Diseases

Arid areas, such as the JV, do not have the many fungal diseases of wet areas. Foot rot (Phytophthora sp), a soil-born disease, is a problem in the JV. The use of sour orange rootstock for virtually all citrus trees in the JV largely avoids foot rot because it is very resistant to this fungus. Foot rot does damage trees on sour orange, however, if they are budded low, thereby eliminating the value of a resistant lower trunk. Also, excessively vigorous growth from too much fertilizer will cause even resistant tissue to become infected.

Both Ridomil, produced by Ceiba Geigy, and Aliette, a French product, have been effectively used to control foot rot. Both materials are systemic. Ridomil is applied as a soil drench and Aliette as a foliar spray. Their effectiveness under JV conditions should be verified.

Nematodes

Nematodes are currently not being researched but a survey would likely show the citrus nematode (Tylenchulus semipenetrans) is reducing yields through their damage to roots.

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Rootstocks resistant to nematodes have not been very satisfactory because new nematode biotypes arise to which the rootstock is not resistant. Only a few selections of trifoliate orange and Swingle citrumelo have any meaningful resistance to current biotypes in Florida.

Temik, a systematic nematocide, offers excellent control. Moreover, this material controls mealy bugs and rust mites and even has an effect above any attributable to pest control. Fruits are one to two sizes larger following use of Temik.

The material is extremely toxic and must be incorporated in the soil. Birds eating granules of it are killed. There is, however, absolutely no danger in eating the fruit. Despite its toxicity, this material should be investigated. Growers will ultimately use it anyway. It is already being used in Egypt.

Stubborn Disease

This disease is caused by Spiroplasma citri, a mycoplasma, which is transmitted by leafhoppers. The disease is called stubborn because trees refuse to grow; i.e., limbs are stunted. The mycoplasma is not always distributed completely throughout the tree, making it possible in some instances to get stubborn-free buds from an infected tree. Trees infected with stubborn become almost valueless because they are stunted and much of the fruit malformed.

Stubborn may be the most immediately damaging disease in the JV. A survey is needed to determine its seriousness and extent. The JVASP virologist recognizes the need for this research.

The only effective control measures are to use stubborn-free budwood and grow nursery trees in isolated or protected nurseries. Trees are not usually infected after four years of age. Of course, growers should eliminate trees with stubborn disease.

One means of control that could be investigated is the production of nursery trees in polybags in a greenhouse or screenhouse that prevents entrance of leafhoppers. There are large commercial nurseries in the U.S. that produce citrus trees very economically in greenhouses.

Viruses

A trip through JV orchards and nurseries showed many trees declining from viruses. Mandarins in particular were succumbing to xyloporoxis virus. Psorosis, which doesn't usually express damaging symptoms until trees are about 15 years old or older, is beginning to be seen as trees in the JV reach this age.

ence of a virulent strain of exocortis in the Deir
s. Since the disease is transmitted mechanically
ears, etc.), it is undoubtedly in many trees
ging symptoms are not expressed in trees of most
own on sour orange, which is used almost completely
but history of other areas indicates 70 to 80% of
ill carry the virus. This eliminates use of certain
that are sensitive to it unless exocortis-free
used.

s not currently a problem and the incidence of this
ot known; however,its potential for damaging trees on
ge is so great that the program, which will soon be
to determine the incidence of tristeza virus and
t is spreading, is vital.

stion is that virus-free budwood of all varieties
t in the JV be introduced from either the registered
program in California or Spain. Both of these regions
imates similar to the JV's and excellent budwood sources
d over many years for high yields and quality. Damaging
have been eliminated from these budwood sources by
means and they are periodically monitored to make
n they have not been contaminated.

ntroduction of this budwood and the establishment of a
ation planting of high yielding, high quality virus-free
that would furnish superior budwood for the production of
ry trees would be a major achievement.

blishment of this foundation planting should be the
onsibility of the expatriate virologist and citrus
iculturist; however, a well-motivated Jordanian technician
uld be trained and placed in charge of the planting. A high
el of education is not necessary to learn the virus indexing
ocedures necessary for determining whether contamination has
curred and the procedures for eliminating viruses should
ntamination take place. On the other hand, this person must
alert, highly motivated and well trained in the techniques
eeded. He should be sent to the U.S. and or Spain to study
heir programs, but he can be trained by the JVASP's expatriate
irologist. Since there is no depth in the virology program,
it is important to have the cooperation of the UOJ virologists
as well.

Viruses can be eliminated from local budwood sources after the foundation planting is established from imported budwood; however, it would take longer than five years to free the local budwood from viruses and establish a foundation planting with it.

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HORTICULTURE

Varieties

There are impediments to citrus breeding that will not be discussed here. Mutations, however, arise frequently. For example, there are four distinct selections of Clementine, mandarin and several of Valencia and Navel oranges. Virus-free material of these selections should be introduced and tested as part of a long range program.

Rootstocks

Rootstocks influence yields, fruit size and quality, storage of fruit on the tree, vigor of growth, tolerance of various soil conditions such as salinity, adverse pH, texture, nematodes and phytophthora foot rot. They also relate to tolerance of certain viruses.

Rootstock research should have a high priority. Rootstock trials of the JVA are inadequate. They contain far too many scion varieties and the most promising tristeza-tolerant rootstocks aren't included. These are Carrizo and Troyer citranges and Swingle and a numbered Florida citrumelo. There are reports that these rootstocks are adversely affected by high pH soils, such as are found in the JV. However, I've found old trees of oranges on Troyer in the Awash River Valley of Ethiopia, the Nile Valley of Sudan and the Nile Valley of Egypt. There are several large old rootstock trials in Sudan with Carrizo, Troyer and Savage citranges. All of these locations have high soil pH. Trees on these rootstocks are performing well at all locations. I would not want to predict their performance in the JV but they, along with others, certainly merit testing. All of the above are tolerant of tristeze virus and resistant to foot rot. They induce fruit equal in quality to that induced by sour orange and yields are usually higher.

A rootstock trial should preferably be limited to one scion variety, one or two trees per plot, at least ten replications and a randomized block design. Yields should be collected for at least ten years but much information as to soil adaptability and influence on fruit size and quality can be determined after five years. One should use virus-free buds except in special cases.

Mineral Nutrition

It is likely that citrus in the JV will respond only to nitrogen (N), and certain minor elements, possibly iron and

zinc. Most similar areas of the world have found oranges and mandarins to respond profitably to no more than 100 to 150 kg N/hectare.

As a start I'd suggest a survey of the nutritional status of trees using leaf tissue analysis for the major elements. I question whether analysis of minor elements would be useful. Leaf deficiency symptoms of minor elements suffice. These analyses can be compared with those of other regions and correlations with fertilizer applied and yields determined. Such survey data can yield much information.

A longer range program can utilize field plot experiments to get more precise information. All such studies should determine the cost of materials and the increased value of fruit.

My understanding is that Dr. Fucik and others are beginning to obtain base-line data on the nutritional status of trees. I feel the project's Design Team erred in scheduling the arrival of the citrus horticulturist so late in the project. The expatriate soils specialist should have arrived sooner also. Actually he's not yet arrived.

Irrigation

There is a need to determine tree response to varying levels of soil moisture. Drip irrigation will be used more frequently in the future. In converting from furrow or basin irrigation to drip irrigation, the root system changes, roots being developed in great quantities in the cone of moisture formed by the emitter. The response to drip will change as a greater percentage of the root system is gradually kept continuously moist and the tops begins to conform to the root system and moisture available. In furrow and basin systems moisture fluctuates from optimum to stress levels while in drip the moisture level is kept more nearly optimum from day to day. All of the ramifications of this have not been determined and demands research. At present about the best the staff at JVASP can do is work out moisture requirements and optimum frequency of application. Generally speaking optimum response occurs when available soil moisture is depleted by no more than one-third. Below that stress occurs even though the plant may not wilt.

Weed Control

Weed control is always a factor in orchard management. A weed control program using herbicides has just gotten underway. Also, work is being conducted on an assessment of the weed problem and weed identification. This program should prove very beneficial.

Spacing and Tree Size Control

Citrus generally produces its fruit in the outer meter of the leaf canopy. As trees get larger there is a void in the trees' center where there is only large framework limbs. This space is not only wasted but food produced by the leaves goes to build the woody framework. Thus, yield of fruit per unit of land occupied by the tree declines. If follows that many small trees on a given area of land produces more fruit than fewer larger ones.

In Florida, oranges at 7.5 x 7.5 meters require 25 years to attain maximum production. At 4.5 x 6 meters maximum production is attained in 13 to 14 years. Many growers are presently moving to even closer spacings.

Trees must, however, be kept from crowding, which inevitably occurs, by pruning. Pruning can be done either manually or mechanically.

In my opinion, closer spacing and controlling tree size to prevent crowding and the development of parasitic limbs in the trees' center holds the only major opportunity of greatly increasing yields per unit of land and decreasing age of first profitable yields and age of maximum production. Those who borrow money in order to start orchards will recognize the advantage of decreasing age of first profitable production.

OTHER FRUITS

Banana, primarily Dwarf Cavendish, is grown profitably but uses large quantities of water. Thus, the possible advantage of using drip irrigation to reduce water losses is obvious.

Other things to determine are:

A number of stems per plant - Banana tops arise from a fleshly underground stem (a modified corm). Many aerial stems can arise from one corm but generally all but three of four should be removed. Moreover, they should be cut off in such a manner that the sizes of those remaining range from small to one bearing fruit. Once fruit is harvested that stem is removed. Also, pruning should be done so as to keep the plant from "walking, i.e., remove new shoots produced farther and farther from the spot of the original plant.

The fruit stalk of bananas develops from an indeterminate inflorescence, i.e., the inflorescence keeps elongating after first fruit are formed. There is a best time to cut off the terminal portion of the inflorescence so the remaining fruit will attain maximum size. Research must determine this.

Developing stalks of banana fruit in Central America are covered with polyethylene sleeves that have been impregnated with a pesticide. The sleeves also prevent blemishes caused by wind, Use of such sleeves might be beneficial in the JV.

Bananas usually require high rates of potassium (K_2O). The fruits are particularly high in K. Leaf analysis might determine whether this element is applied in sufficient quantities. In fact the continuous production of plant material and the continuous harvesting of fruits makes fertilizer particularly important.

Root knot nematodes can seriously reduce yields.

I've not studied banana production in Jordan as I have in Central America but the above points might be investigated as possible lines of research.

I will add that the Dwarf Cavendish is a good commercial banana, even though it has a somewhat tender skin. It's short stocky growth makes it less succeptible to wind. Thus, islands such as the Canaries and Cuba grow this variety, as does Egypt.

One grower in the JV had a few plants of a variety called Williams Hybrid. It looked much like Dwarf Cavendish. It may warrant investigating.

Grapes

There are limited plantings of table grapes that mature earlier in the JV than in other areas of Jordan. I've not had the opportunity to study these plantings but there is obviously a good potential for this crop. Rootstocks tolerant of grape root phylloxera are used. Crown gall (*Agrobacterium tumefaciens*) appears to be causing problems, suggesting that this as a priority research item.

Potential New Fruit Crops

Fruit crops that have meaningful potential for the JVA are:

1. Avocado
2. Mango
3. Loquat
4. Hybrid anonas
5. Low chilling deciduous fruits
6. Chinese Jujube
7. Kiwi
8. Papaya
9. Guava (already grown to some extent)

Fruit requiring acid soil, such as pineapple, do not warrant investigation.

Variety testing is too often done sloppily. There is evidence such is the case at the JVA. Variety testing requires good land, a systematic planting, an adequate number of trees (at least five) of each variety, proper cultural practices for each species, and a proper plant accession numbering system and records of quantitative and observational data. It is very helpful to have grower trials of those varieties or kinds of fruits with high potential.

ATTACHMENT C

THE JVASP EXTENSION PROGRAM
Norman Oebker

Extension is a very important part of JVASP. Extension is the chief means of educating the farmer and assisting him in problem solving. It should be understood that many of these activities are a result of a close working relationship between extension and research. With this assumption, the project in the JV was established. The project is worthwhile and will make an impact on agriculture of the Valley ~~if the organization~~ and procedures are properly developed and carried out. This is ~~especially true~~ for the extension part and deserves a critical eye in this evaluation.

During the review many criticisms were leveled at extension. Some claimed it was not effective; others said confusion prevailed in the organization and no link existed between the agent and research. A rapid turnover of personnel was given as a reason for poor performance of extension. Lack of transportation was another reason. These all appear to be valid.

Considering the extension agent and his activities, the following comments are made:

1. The present number of agents seems adequate. Emphasis should be placed on quality, not quantity. An effort should be made to hire well trained, motivated and competent people.

2. In-service training on methodology and subject-matter should be an important part of JVASP and should be continued especially for new employees.

3. Improvement in transportation should continue as this allows the agents to move around as needed.

4. Agents should organize and use local advisory committees, made up of representatives from the growers and the commercial sector. These groups can be used to determine problems and programs.

5. Field demonstrations should be an integral part of the agent program. This activity could be an extension-grower-commercial-research undertaking.

6. An agent can serve as secretary for growers' group - and this can give him opportunities to do good extension - but he should avoid service activities.

7. Agents should avoid regulatory activities and data survey work. These activities take time away from extension responsibilities and also develop mistrust among farmers.

In looking at the overall extension program in the JV, the following points appear significant:

1. The organizational arrangement is a problem. The agents are responsible to sub-directorates outside the project and have no direct link to JVASP research, as they did when specialists were present. These problems need attention before an effective extension program can be realized.

2. In view of the inadequate organization every attempt should be made to improve communications between researchers of JVASP and the agents. A monthly newsletter from the Center to agents is suggested. Bi-weekly meetings as in the past should be reinstituted. If there are to be no specialists some one at the Center should have the responsibility to keep agents informed of research progress and other useful facts.

3. Publications are needed badly by the agents. An organized effort by MOA with help from JVASP and UOJ should be initiated to fill this need.

4. The diagnostic laboratories play a very important part in the extension program. For this reason they should be operated in close harmony with the agents.

5. Agricultural agencies such as JVA and JVFA are involved in extension type activities. JVASP should try to coordinate all such activities for a more effective program.

6. Commodity committees are worth trying again for developing a more relevant program in both extension and research.

Recommendations in brief:

1. Reorganize

2. Communicate

3. Publish

4. Coordinate

ATTACHMENT D

ORGANIZATION AND MANAGEMENT CONCERNS
T. Izumi

Summary

The WSU contractor is to be commended for its efforts and the progress made despite the numerous problems that have been encountered since the project's inception. However, the prospect that the JVASP will achieve its major goal of institutionalizing an effective research and extension capability in the Jordan Valley must be considered problematical unless some fundamental changes are made by the MOA in the project's staffing, organization and management.

External Factors

As a response to the overproduction in tomato, cucumber and possibly other vegetable crops during the past growing season, the Jordanian Company for Agricultural Marketing and Processing has been formed and the MOA has instituted a mandatory crop allocation campaign to limit the acreage devoted next year to tomato production in the JV and highlands. The allocation system, which is likely to be expanded to other crops in future years, will result in the planting of more diversified crops in the JV and will bring new research and extension problems requiring the project's attention.

The most significant external factor that will have a major impact on the JVASP is the GOJ's decision to create a National Center for Agricultural Research and Technology Transfer (NCARTT) with a series of Regional Agricultural Service Centers (RASC), and to designate the JVASP/Deir Alla Station as the RASC for the Jordan Valley. NCARTT is expected to build capabilities in SCRAD, applied research, subject matter and extension methods specialists and in-house training. NCARTT is also expected to be given the authority to set appropriate personnel classifications, to administer its personnel policies according to merit and to enter into contracts with external agencies for applied research and training that it cannot provide through its own staff.

In this connection, both the DG of the ACC and the DG of the JCO indicated that there is no formal organizational mechanism for coordination of projects such as the JVASP with their respective organizations. They indicated that such coordination would be necessary in the future to avoid duplication of services. In particular, they believe that a

strong research and extension program in the JV could help farmers to maximize their profits. Also, extension agents could provide information that would be helpful to their credit officers.

Speaking further on the subject of coordination, both DG indicated that coordination of agricultural development projects must start at the top, through a high level committee in which all key agencies and organizations, including the private sector and farmers, are represented. Only then, they believe, will coordination consistently occur at the operating levels. The proposal for the NCARTT strongly advocates an Agricultural Development Council with the type of representation described as necessary by the two DGs.

Another external factor which would affect the JVASP's training program was brought to the team's attention. Jordanian trainees who are selected to study at U.S. universities are provided adequate monthly stipends from project funds to cover their living expenses. Jordanian trainees studying at the University of Jordan are provided a monthly stipend of JD 65, which they claim is not sufficient. A request has been submitted to USAID/J to increase the stipend to JD 100. However, USAID/J has discovered that although the MOA is authorized to provide a monthly stipend of JD 45 to its employees who are attending the UOJ, it has not done so. The USAID/J has questioned the future payment of stipends from project funds to trainees attending the UOJ unless the MOA also pays its share of the authorized stripend.

The team has found that the small number of Jordanians qualifying for Master's degree training in the United States has been a major shortfall of the JVASP training program. It is suggested that the project explore three basic alternatives, or a combination of them, in order to pursue improving the situation. These are:

1. To improve English language training in Jordan so that staff members can pass the TOEFL exam for study in the United States.

2. To selectively allow those who have outstanding academic qualifications and whose TOEFL scores are sufficiently close to passing to take one semester of intensive language training in the United States before enrolling in a Master's program.

3. To encourage qualified staff members to attend the University of Jordan by providing adequate stipends.

In order to facilitate the third alternative, the MOA and USAID/J should jointly determine what an equitable monthly stipend should be and enter into a cooperative payment arrangement of monthly stipends to trainees attending the UOJ. This would demonstrate in a tangible manner to the trainees that their government is committed to their professional improvement, and that this is truly a joint program that requires the contribution of both the USAID and the GOJ in order to succeed.

Inputs

Most of the project's administrative difficulties can be attributed to input factors beyond its direct control. The GOJ's refusal to provide expected incentives, the frequent changes and transfers of key personnel, the delays caused by the tight control exercised by the MOA over its operations, and the MOA's decision to place the project under the JV Agricultural Directorate have made it unlikely to achieve its goal of institutionalization within the remaining 14 months of the project.

The GOJ has not implemented the commitment that it made in the Project Agreement to provide salary incentives to project employees. This has made it difficult to attract and keep the most qualified people. Although more than the planned number of employees have been assigned to the project by the MOA, they are generally at a lower level and critical gaps still exist.

The project has not been delegated sufficient authority to make its own decisions. All appointments and transfers, purchases over JD 100 and other seemingly routine matters must be approved by the MOA in Amman. Frequent, unilateral changes in Project Director (four Directors in three and one-half years) and staff (for example only two of original fifteen extension agents remain) have disrupted continuity. Delays ranging from several months and up to nearly two years have occured on various decisions referred to the Ministry for approval. These delays have hampered progress in project activities.

A decision made by the MOA to jointly appoint the Director of the JVASP as the Director of the JV Agricultural District and to place the research and extension functions of the JVASP under the District Directorate has resulted in a loss of distinct identity for the project, and in disarray of the extension program. Extension agents have been divided and placed under three sub-directorates which has cut their critical link to research and has made it infeasible to maintain a cohesive extension program for the JV (see Figs. 1, 2, and 3). Agents are also used for non-extension functions, such as data collection and monitoring of regulatory functions, which further detract from the project's purpose.

FIGURE 1

CURRENT ORGANIZATION (NO DISCRETE UNIT FOR JVASP)

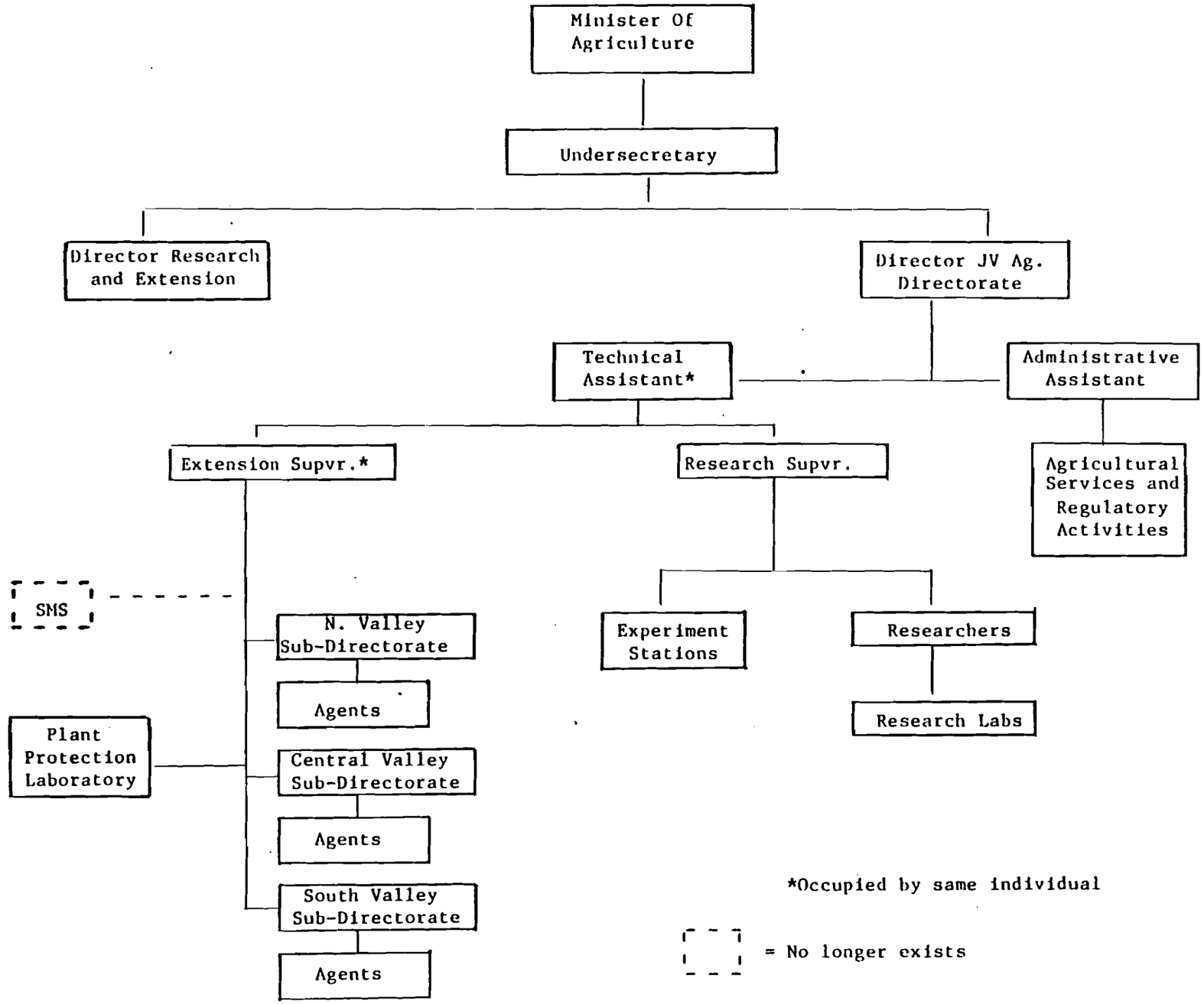
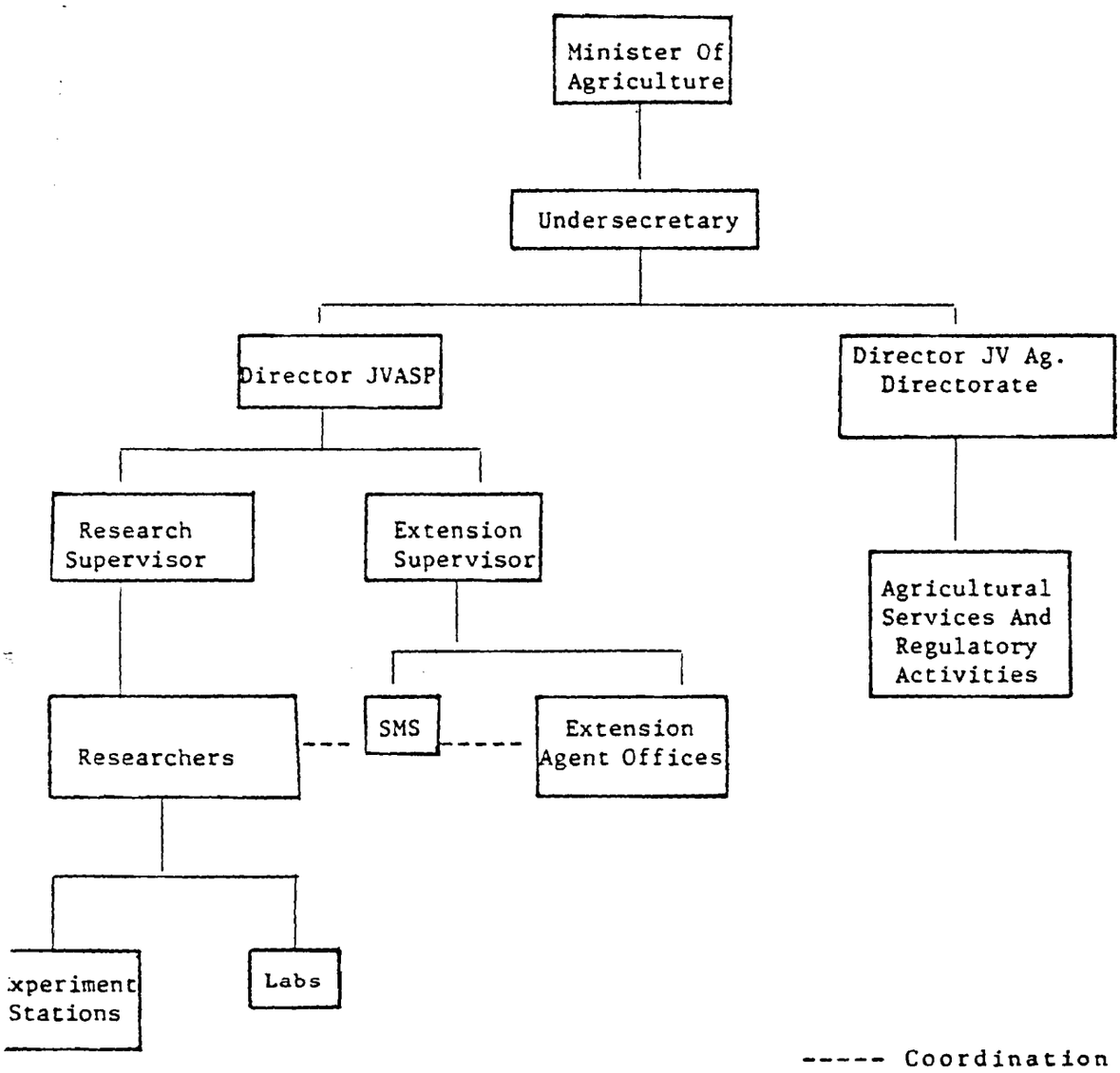


FIGURE 2

ORGANIZATION OF JVASP UNTIL 1984



----- Coordination

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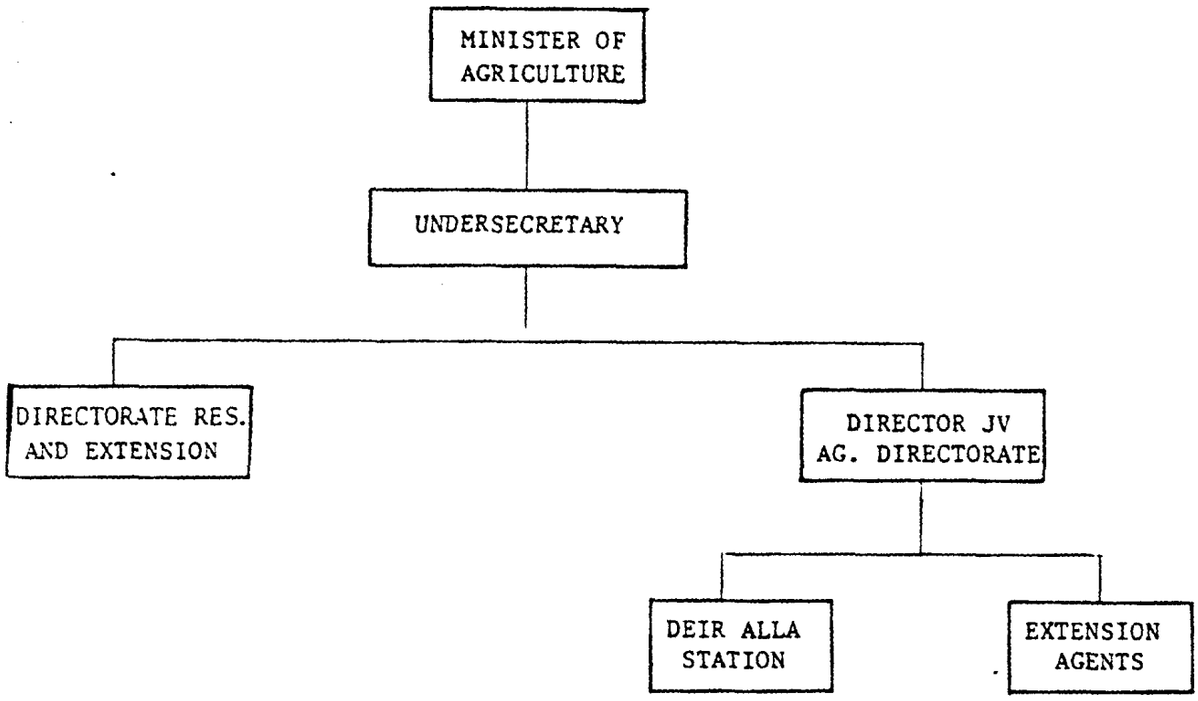
FIGURE 3

ORGANIZATION PRIOR TO ESTABLISHMENT OF JVASP



The project's planning and management system has not matured to the point that consistent interactions between research and extension personnel and systematic interdisciplinary approaches to problem solving take place. Such a planning system should involve all other key agencies and organizations in both the public and private sectors to ensure that coordination takes place.

There were delays on the part of both the contractor and the host country on various inputs that impeded the progress of the project. The most serious were the delays in renovating and equipping the laboratories, and in bringing adequate electrical power to the laboratory building.

The inability of otherwise qualified Jordanians to pass TOEFL exams as required by USAID has severely limited advanced degree training in the United States. The PP called for eight members to be sent to the U.S. for Master's degree training; so far only one has qualified and is enrolled at Washington State University. In addition, only six of eight Master's candidates projected for the University of Jordan have been enrolled. One more will start training at the UOJ and two more are expected to go to the United States this fall (see Appendix 6).

Outputs

As indicated above, the project has been adversely affected by management factors beyond its control and by delays in providing inputs. The most serious deficiency in projected outputs is the lack of sufficiently trained researchers and extension personnel to carry on an effective research and extension program for the JV at the present time. This problem can be alleviated if staff members currently undergoing or starting Master's degree training return and are allowed to remain on the project instead of being transferred to other units in the MOA.

Lessons To Be Learned

1. A project must be able to pay competitive salaries or incentives in order to attract and keep the most qualified people. This is a critical factor that can cause the failure of a project to achieve its most important objectives even if all other inputs are provided.

2. It is better not to promise any monetary incentives if they are not going to be provided. Once promised, however, the commitment should be kept in order to maintain credibility and prevent loss of morale and motivation among the project's employees.

3. All projects should have an expedited implementation phase to staff the key positions, initiate English language and other pre-service training, prepare and equip facilities, set up the organization and management system, and get the logistics in place before the main body of Technical Assistance staff arrives in the country.

4. Most of the serious problems encountered by institutional development projects are not scientific or technical but are administrative in nature. A project should give top priority to establishing proper organization, staffing and management during its crucial formative stages and give continuing attention to these matters throughout the life of the project.

5. Institutionalization is a lengthy process requiring a minimum of seven to ten years of intensive effort before lasting results begin to be realized. Project proposals should avoid overly optimistic goals and/or time-tables for achieving them.

6. Extension is basically a teaching activity which requires that agents in the field keep ahead of their clientele on the latest developments. Extension agents cannot be expected to function effectively if they are not backstopped by specialists who provide the crucial link to research.

7. Projects cannot function in isolation. Formal mechanisms for coordinating activities with other government agencies, farmers' organizations and private sector companies serving the same area and/or clientele must be agreed upon and followed. This will facilitate cooperation and help to avoid unnecessary duplication of services.

Special Comments or Remarks

Aside from foreign aid and remittances from its citizens working abroad, agriculture has been described to the team as having the greatest economic growth potential for Jordan and the JV has been cited as the most important of the country's agricultural producing areas. Viewed from this perspective, it was natural that the GOJ and USAID decided to proceed with the JVASP.

The emphasis in the JV during the past years has been on developing the irrigation systems and plastic houses and on increasing production. Already, however, problems of overproduction, diseases and pests, and soil salinity are

beginning to occur. These and other problems are bound to increase, and the project's mission to provide effective research and extension services in the JV will become even more important.

In retrospect, however, it was probably too much to expect that an effective research and extension program could be established for only a small region of the country without the presence of a viable research and extension system nationally. Also, the highly centralized and bureaucratic control exercised by the MOA over the project's personnel, budget, procurement and operational matters have made it impracticable to function efficiently.

In view of these problems, the review team would concur in the GOJ's decision that the JVASP become the Regional Agricultural Service Center (RASC) for the Jordan Valley, attached to the National Center for Agricultural Research and Technology Transfer (NCARTT). This would provide the framework for institutionalization of the JVASP if, as we understand it from discussions with Dr. William Furtick, the following conditions will be met.

1. NCARTT will have the authority to set appropriate classifications for its positions, administer personnel policies according to merit, and manage its own financial affairs without being overly shackled by bureacratic regulations and procedures.

2. NCARTT will implement the systematic commodity/resource analysis and development (SCRAD) process which directly involves farmers, private sector services, and governmental and parastatal agencies in a single planning process which results in a coordinated, prioritized action plan for development of a commodity or natural resource.

3. Advanced training for Jordanians will be given high priority so that there will be a sufficient number of qualified individuals after the departure of expatriate technical assistance personnel.

4. The NCARTT/RASC's will be provided with adequate resources to carry on an effective national research and extension program.

In the event that the NCARTT is unable to fulfill these conditions, position classifications of the JVASP staff should be reviewed within the present salary schedules for possible adjustment upward, and the project should be delegated

sufficient authority to handle its own budget and operational matters. The environment and problems of the JV are sufficiently unique from those of the highlands that the existence of a strong research and extension center at Deir Alla with greater capabilities than those of the RASC in the highlands would be justified.

Recommendations

The project's organizational and management problems should largely be alleviated when it becomes part of the NCARTT. Thus it is recommended that USAID funding for Phase II of the JVASP be renewed for an additional length of time to make the JVASP co-terminus with the proposed HADP. The JVASP can then be developed as the prototype RASC of the NCARTT/RASC network.

It is recommended that a review of the classification of all the professional positions in the project be conducted to determine whether, on the basis of more complex scientific and technical duties and responsibilities to be assigned, they should be placed higher within the salary schedules of the government.

It is recommended that the TOEFL examination requirement be reconsidered to allow Jordanians who otherwise have outstanding qualifications to go to the United States and enroll in an intensive English Language course for one semester before commencing degree studies. As alternatives, it is recommended that English language training conducted in Jordan be improved to enable more individuals to pass the TOEFL examinations, and that the problem of adequate stipends for trainees attending the UOJ be worked out by USAID/J and the MOA to encourage staff members to work for their Master's degree.

It is recommended that consideration be given to providing Ph.D. level training in the next increment of the project.

Experience with the JVASP confirms that it is extremely difficult to achieve research and extension capability for a region of the country without a strong national research and extension system. Furthermore, the current organizational structure in which research and extension functions in the field report to the District Directorates, rather than to a national center for research and extension, obstructs the attainment of a cohesive research program, cuts off extension's crucial link to research and perpetuates a weak and ineffective arrangement that cannot serve the needs of the kingdom. Thus it is recommended that detailed implementation plans for NCARTT clearly provide that the RASC's will report to NCARTT, and that all extension agents will be administratively responsible to the supervisor of the RASC in their respective district and not to the District Agricultural Directorate.

It is also recommended that a high level Agricultural Development Council with appropriate representation from the public and private sectors be implemented. This not only will provide a mechanism for coordinated planning and implementation on a national and regional basis among all of the organizations essential to the agricultural development of Jordan, but it will greatly increase the commitment that they make to work in concert to achieve this important and worthwhile goal.

MID-TERM EVALUATION

JORDAN VALLEY AGRICULTURAL SERVICES

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Contract #PDC-0000-I-24-3081

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LIST OF ACRONYMS

ACC	Agricultural Credit Corporation
AREC	Agricultural Research and Extension Center
DG	Director General
DRE	Director of Agricultural Research and Extension, MOA
DU	Dunum, A Jordanian unit of land equal to 0.1 hectare or 0.247 acres
FOA	Faculty of Agriculture
FY	U.S. Fiscal Year (October - September)
GOJ	Government of Jordan
HADP	Highlands Agricultural Development Project
IPM	Integrated Pest Management
JCO	Jordan Cooperative Organization
JD	Jordanian Dinar, a unit of money equal to about $2.50 U.S., July 1985
JV	Jordan Valley
JVA	Jordan Valley Authority
JVASP	Jordan Valley Agricultural Services Project
JVFA	Jordan Valley Farmers Association
LF	Logical Framework on Log Frame
MOA	Ministry of Agriculture
MOP	Ministry of Planning
NCARTT	National Center for Agricultural Research and Technology Transfer
PES	Project Evaluation Summary
PP	Project Paper
RASC	Regional Agricultural Services Center
SCRAD	Systematic Commodity Resources Analysis and Development Process
SMS	Subject Matter Specialist (Extension)
TDY	Temporary Duty
TOEFL	Test of English As a Foreign Language
TWF	Tobacco White Fly
TYLCV	Tomato Yellow Leaf Curl Virus
UOJ	University of Jordan
USAID/J	United States Agency for International Development in Jordan
USAID/W	United States Agency for International Development in Washington, D.C.
WSU	Washington State University, Pullman, WA 99164, U.S.A.

EXECUTIVE SUMMARY

Project Status

All land, buildings, vehicles, laboratories, instruments, farm equipment and supplies that were called for in the PP have been provided and in some instances exceeded. Both USAID and the GOJ/MOA have performed well in this respect, even though there were delays.

USAID expatriate staff has arrived essentially as scheduled, except for the vegetable horticulturist position, which was rejected by the first Director of the JVASP and ultimately eliminated. A virologist position was added by mutual agreement of WSU and the MOA. The quality of the expatriate staff is good. On the other hand, the scheduled arrival of both the citrus horticulturist and the soils specialist were much too late to have maximum effect. We consider this a fault of the WSU Design Team. We also consider the elimination of the vegetable horticulturist by the Jordanian Director of JVASP to be an error in judgement.

The MOA provided more than the number of staff called for in the PP but some were deficient in either their technical qualification or their ability to master English sufficiently to gain admittance to U.S. universities. The educational level generally has been low.

Turnover of Jordanian staff has been excessive. There have been four Project Directors in less than four years and only two of the 15 original extension agents remain.

The Jordanian staff members consider working in the JV to be a hardship and were promised salary incentives that were not forthcoming from the MOA.

The training schedule calling for short-term training or visits has been met; however, academic training involving university degree programs is considerably behind schedule, particularly with respect to training at U.S. universities. This has seriously inhibited the development of research staff and program.

A research program is in place and there have been some successes, notably biological control of the spherical mealy bug which threatened to cause severe damage to citrus. The agricultural economics and statistics work is also proceeding particularly well. There are, however, seriously weak areas and some programs have only recently gotten underway.

The extension program has been greatly hampered by organizational changes that were made after the program began to show considerable progress.

It appears to be extremely unlikely that a successful research and extension program in the JV, directed and manned by fully qualified Jordanian scientists and extension specialists, as was envisioned in the PP, will have been established by the end of the five-year project. Given the overly optimistic initial expectations, the lack of qualified Jordanian candidates for advanced training, the large turnover of Jordanian staff and the harmful organizational changes implemented by the MOA, progress has been as good as or better than could be expected.

The development of surpluses of certain vegetables has resulted in a crop control or cropping pattern program of the land area planted in certain crops. This is, to some degree, in conflict with the JVASP's objective of increasing production of crops grown in the JV. It is not in conflict, however, with increasing efficiency of production which is best solved through research.

Recommendations

Normally, a recommendation concerning continuance of project by a mid-term evaluation team would be premature; however, the delay in holding this evaluation leaves only slightly more than a year until termination. Thus, we feel it appropriate to recommend that the project be continued for another five years, recognizing, of course, that the final evaluation team may not draw the same conclusion. The reasons for this recommendation are that the need for an AREC functioning as an integral part of the JV still exists but it is unlikely such a center will have been developed by project termination. However, the project has reached a point although additional assistance is likely to achieve the original purpose and goal, assuming Jordanian staff with appropriate qualifications are furnished by the MOA. The lack of qualified Jordanian staff must be addressed if an extended project is to succeed.

We further recommend that WSU continue to be the USAID contractor because of its good performance to date. The WSU team has already established the needed physical facilities and developed a research program, although it is an incomplete one with certain weaknesses. They have not produced an adequately trained Jordanian staff but have done as well as could be expected given the existing constraints.

Failure to meet the project design schedule for training staff in the United States has been to an appreciable degree due to failure of candidates to pass the TOEFL exam. We recommend that students otherwise qualified but deficient in English be permitted by USAID to study for TOEFL in an English Language Center in the United States where the students' native tongue is rarely heard and the student is forced to use English outside as well as inside the classroom.

We have concluded that the design team erred in not including provisions for the training of staff at the Ph.D. level and therefore recommend that several at this level of training be provided. While the team understands that this recommendation cannot be implemented prior to the current project's termination, it believes that it would be advisable to incorporate a certain number of Ph.D. fellowships into a project extension, provided that qualified Jordanians can be furnished by the MOA.

In-service training should become more of an integral part of the program than it now is. Emphasis should be placed on the scientific process in solving problems, data collection, record keeping, and writing publications. Attendance at such training sessions should be mandatory or at least strongly encouraged.

We concur with the decision of the GOJ that the JVASP Deir Alla Station become the RASC for the JV and attached to the NCARTT.

We recommend that upon transfer of the JVASP to the NCARTT a review of the classifications of all professional positions at the JVASP take place in order to determine whether their salaries should be higher within the salary schedules of the government, owing to the degree of scientific and technical expertise and the level of responsibility of staff.

The current organizational structure in which research and extension units in the field report to District Directorates instead of the DRE does not work well. It is recommended that detailed implementation plans for the NCARTT stipulate that the RASC's will report to NCARTT and that all extension agents be administratively responsible to the supervisor of the RASC's in their district instead of to the District Agricultural Directorate.

Research should be heavily directed toward efficiency of production rather than production increases alone; i.e., research should provide ways of maintaining or increasing production per unit of land or commodity while decreasing or at least not increasing inputs. Biological control of pests, spacing studies, responses of various crops to water and fertilizer and new varieties are examples of where efficiency can be achieved.

Soils and water research should emphasize crop response to varying moisture levels. The JVA currently is better equipped and positioned to study reclamation of saline soils, drainage and irrigation systems. The JVASP's program should be coordinated with the JVA's.

There should be greater interdisciplinary or team research. For example, responses of crops to water and fertilizer should be investigated by teams of soil and horticultural scientists. IPM teams should consist of both pest control and crop specialists. The cost effectiveness of new practices suggested by research should also be a part of the research program, thereby requiring close cooperation with the economics section.

Cooperative research with the UOJ should be continued and expanded.

Each extension agent should be assigned a vehicle on a self-drive basis.

Extension SMSs should be restored as part of the staff of the JVASP. Publications for agents and farmers would be part of SMS responsibilities.

A system of periodic meetings of extension agents and research staff should be established in order to communicate research results and other information to the agents, and feedback farmer problems to the research staff.

Current information should be transmitted through a newsletter or some other rapid means of written communication that does not require going through formal procedures for publication.

Coordination between JVASP and such agencies as JFVA, JVA and UOJ should be encouraged regarding extension type activities.

I. EVALUATION METHODOLOGY

A. Reason for the Evaluation

This is the mid-term project evaluation described in the PP, Annex C., Section F. The evaluation purpose is to review implementation to date and plans for the future and to make recommendations on the continuing validity of the project design and any changes required in order to meet project purpose and goal.

B. Timing

The implementation schedule in the PP called for this evaluation to be made in early April 1984. Instead, it was held June-July 1985, about 14 months after it was scheduled and 14 months from the project termination date. This delay resulted because the first evaluation took place seven months after the planned date and because of the unusually crowded schedule of USAID/J in the last part of 1984 and the first part of 1985.

C. Methodology

The basic approach follows the conventional review of project documentation, reports and publications, interviews with both MOA and WSU JVASP personnel, staff of USAID/J and various agencies of the GOJ and associated agencies that relate to the project. Facilities and activities were evaluated at all research and selected extension sites through visual observation and discussion. Several individual reports by team members, which might be of value to certain staff members of JVASP, are included as attachments.

The LF of the PP (Appendix 5) was followed in relation to purpose, goal, inputs, outputs, expected results, verifiable indicators and assumptions.

D. Evaluation Team and Cost of Evaluation

The evaluation team consisted of Dr. A.H. Krezdorn, Professor Emeritus, Department of Fruit Crops, University of Florida (Team Leader); Mr. Takaaki Izumi, Director of Management Services, College of Tropical Agriculture and Human

Resources, University of Hawaii; and Dr. Norman Oebker, Professor of Horticulture and Extension Vegetable Crops Specialist, Department of Plant Science, University of Arizona.

Funds for the evaluation were furnished by USAID/J through a contracting agency, RONCO Consulting Corporation, Washington, D.C. at a maximum cost of $34,084 for salaries and other direct costs.

E. Documentation, Schedules and Visits

The reviewed are listed in Appendix 1, the schedule of interviews and visits in Appendix 2, the LF in Appendix 3, and a table showing the status of the academic training program in Appendix 6.

II. EXTERNAL AUDITS

A. Low Farm Prices For Vegetables

There has been a large increase in vegetable production and correspondingly low prices, according to Dr. Abu Sadr, Director of the newly formed MOA Marketing Directorate. Moreover, Jordan's export markets have been reduced and may shrink farther due to competition from Turkey, the development of vegetable production in the Gulf States, the war in Iraq and Iran and the entrance of Spain with the Canary Islands into the European Economic Community. As a result the MOA is initiating a system of cropping patterns or a system to limit the area planted to certain vegetables. The system is to be tested in the forthcoming crop year on fresh market tomatoes, which are to be reduced about 30%. In addition, the MOA is encouraging the planting of canning tomatoes and other crops, such as forage, by establishing support prices. There is also an attempt to discourage development of new citrus orchards through the requirement of a license for new plantings.

This attempt to control cropping patterns appears to be in conflict with the JVASP's objective of increasing production of certain crops, such as tomatoes and cucumbers, which are now apparently produced in surplus amounts in the JV. This new policy also appears to be in conflict with the

JVA's plans, already underway, to provide considerable new land with advanced irrigation and drainage facilities.

Increasing the efficiency of production, i.e., reducing the cost of producing a unit of a given crop is not, however, in conflict with the policy of reducing total production of certain crops. This can be done through such means as reducing inputs of pesticides, fertilizer and water through greater productivity per dunum of land without increased inputs. Obviously, the testing of new crops, such as low-chilling deciduous fruits, cereal and forage crops and increasing production of vegetable crops that are imported, such as potatoes and onions, is desirable.

This new policy will also impact on the JVASP's goal of developing an extension program in the JV because plans are to use extension agents to monitor the crop control program. This will not only involve agents in what might be an unpopular program with some farmers but it also reduces the time available for their primary responsibility of assisting the farmer through education and advice.

B. Organizational Changes

The MOA has placed the JVASP's research and extension function under the JV Regional Director. Thus, the JVASP is no longer a discrete project in the same sense it was before this change. There is a national DRE in the MOA in Amman that is in charge of the technological and educational aspects of research and extension but communication with extension agents is tenous at best both for the national DRE and the JVASP. Thus, it will be more difficult for the JVASP to develop an effective extension component.

The newly proposed HADP might correct these deficiencies if approved and implemented (see Appendix 8 and Attachment D). It is envisioned that both the JVASP and the HADP would be a part of the NCARTT. Under this organization the lines of communication and authority should be greatly improved; however, this is for the future to tell.

III. INPUTS

A. USAID

Technical assistance, commodities, and training is being provided by USAID through a contract with WSU.

Technical expertise has been provided as planned with the exception of a vegetable horticulturist. Candidates for this position were proposed but not accepted by MOA; as a result the vegetable crop research has been neglected.

A program of academic training for Jordanians has been pursued but has not brought about the desired results. It was proposed that 16 students be supported for advanced degrees but to date only two Jordanians have acquired MS degrees. The status of other students is shown in Appendix 6.

Satisfactory laboratory and office space has been developed in the JV for JVASP. Farm equipment and plastic green houses have been provided and appear adequate for research needed.

The vehicle problem has been overcome at the Center. Pickup trucks are expected soon for each extension agent.

B. GOJ

Personnel, facilities and operating budget.

The PP called for 28 professionals and 23 support personnel. This obligation has been more than met in number but level of training and performance is inadequate. Current MOA staff positions filled are listed in Appendix 7.

Four research sites, Deir Alla, El Karameh, Wadi Yabis and Abu Habiel, have been provided by MOA.

The operating budget has been met.

IV. OUTPUTS

A. An Applied Agricultural Research Extension Center Established and Operating in The Jordan Valley

Verifiable Indicator

Appropriate GOJ regulations issued and no less than 80% of management, research, and extension positions filled at the the end of the five-yeear project.

Verification

A cooperative effort has been made by USAID and the GOJ to develop a research-extension program for serving the fruit and vegetable industries of the JV. Even though a staff has been assembled, many workers are not qualified professionally at a level to make the project effective. To expect JVASP to be in full operation by the end of the five-year project is not realistic.

The personnel has much to learn about research and extension and has many adjustments to make in day-to-day operations.

As yet, JVASP is not the effective organization described in the PP and has a way to go before it will make a large impact on the JV.

B. Research Sites and Facilities Established

Verifiable Indicator

No less than three locations developed and a continuing research program underway.

Verification

The development of the physical aspects of this project has progressed well. Four research sites have been established in the JV (Wadi El-Yabis, Deir Alla, Abu Habiel and El Karameh). Land, facilities, irrigation, equipment, and greenhouses are available at each location for research.

C. Organized Research Program

Verifiable Indicator

Projects underway in all three areas (plant pests and diseases, production and management, and soil and water problems) identified as major constraints to production.

Verification

Research is underway in all three areas but in a limited way. IPM has been getting most attention while horticultural production practices have been ignored almost completely. Attempts to fill the vegetable position have not materialized and the citrus work was late in getting started, even though it took place according to schedule. The economics and statistics section is proceeding well. Although a short course on research methodology has been given, good planning and proper execution of research are not obvious. Continuity of projects has not always been exhibited, a system of recording and filing projects institutionally is lacking and systematic publishing of results has not been developed. There have been no research publications.

Emphasis is needed on good scientific investigation procedures for this project to achieve the results expected.

D. Laboratories Established, Equipped and Staffed

Verifiable Indicator

Two laboratories operating, plant and pest protection, and plant tissue, soils and water.

Verification

Laboratory facilities have been developed at the Deir Alla Station. These include soil and plant tissue testing, IPM, statistics, virology and horticulture. The soil and tissue testing laboratory while established is not yet functioning. Space and supplies seem adequate for the research desired. The virology and IPM laboratories and the statistical section are especially active. The competence of the staff should be upgraded continually.

The recently acquired Plant Protection Diagnostic Laboratory developed by the Dutch and recently assigned to the JVASP is expected soon to be functioning.

E. Farmer Demonstration Program

Verifiable Indicator

Twenty on-farm demonstrations held annually.

Verification

Only a limited number of on-farm demonstrations have been conducted. This is one of several weaknesses in the extension program that should receive attention. Both agents and farmers would learn much from this activity. Assistance of researchers in this regard in urged. Some on-farm research could also be used to demonstrate new production techniques and pest control.

F. Farmer - Extension Program

Verifiable Indicator

Each agent working directly with no less than 25 primary contacts and 150 total contacts.

Verification

Agents are making contact with farmers, however, meaningful records are not available. With survey contacts, farm visits with researchers and trouble solving calls, the agent is probably exceeding the goal of 25 contacts per month. This activity should increase as vehicles become more readily available. In order to reach more farmers, mass communications, grower meetings and other activities should also be explored.

G. Research, Extension, Farmer Seminar - Field-Day Program

Verifiable Indicator

A minimum of four one-day programs.

Verification

The project's effectiveness would be increased greatly by having more workshops, seminars and field days for farmers on and off the station. Records show not more than four field-days since the start of the project. A very serious attempt

should be made to show via field-days what is being done on the experiment stations. These activities should be held cooperatively by extension and research.

H. Research and Extension Publications

Verifiable Indicator

Average of one per scientist per full work year.

Verification

Publications are a serious deficiency in this program. Researchers are failing to publish results and SMS's with the responsibility of preparing information for agents and farmers have been transferred to other duties. Only three extension publications have been completed and no research has been published. Part of the problem lies in the slowness of the bureaucratic regulations which the GOJ follows to process papers submitted for publication.

V. PURPOSE

A. Purpose Defined

The project purpose as defined in the LF of the PP is, "Establish and institutionalize a viable mechanism capable of developing and disseminating appropriate agricultural technology for vegetable and fruit production in the Jordan Valley."

B. Progress

Verifiable Indicator

An applied research and extension center with three substations staffed and operating.

Verification

The JVASP ARES at Deir Alla and the three substations (El-Karameh, Abu Habiel and Wadi Yabbis) were visited. The buildings and laboratories were inspected and the research underway was reviewed. All are well established and functioning as stations with adequate facilities and land. The stations are also fully

staffed but the scientific competence of the Jordanian staff is below that envisioned in the PP at this stage of development because the schedule for training has not been met and because the initial level of technical competence was low in many cases.

Verifiable Indicator

The Center functions as an important and integral component of the agricultural development efforts in the Jordan Valley.

Verification

An on-site review of research being conducted, including discussions with pertinent JVASP staff, both from WSU and the MOA, gave clear evidence that the center at Deir Alla and its substations are functioning and becoming increasingly important to the area's agriculture. The success of the IPM in controlling the spherical mealy bug with introduced parasites is in itself a notable achievement. More importantly, a total research program is developing. However, there are areas, particularly soils and water, that are weak. We do not feel that the station would continue to function as well as it does without the expatriate staff furnished by WSU, because of delays in training MOA staff. Given the relatively short period remaining before project termination, it is highly unlikely that an adequately functioning station will have been developed by then. Moreover, it is doubtful that a research-extension center functioning at the level envisioned in the PP could have been developed even if the training schedule had been met. Taking into account the overly optimistic expection of results and the constraints that have existed, progress has been more than could reasonably be expected.

Verifiable Indicator

Trained extension personnel provide research results and other technological information to farmers.

Verification

Meaningful progress in establishing a training program for extension agents was made during the initial stages of the project but the situation has deteriorated, primarily due to external factors. The four SMS positions provided for in the PP have been transferred. Extension staff is under the administration of a regional director and often called on to do things not normally considered an extension activity. There have been only three extension publications; however, staff at the JVASP has published a number of 35 mm slide sets, primarily of varieties and pests. Much of this work was done by the research staff.

Thus, this indicator of attainment of purpose falls well short of satisfactory.

Verifiable Indicator

At least 50% of Jordan Valley farmers use improved technology, cultural practices and management.

Verification

JV farmers are using advanced technology as evidenced by wide use of plastic houses and drip irrigation. However, since these practices can be attributed to other factors besides the JVASP, it is not an appropriate indicator for this purpose.

C. Summation

Although considerable progress has been made in accomplishing purpose, taken as a whole, achievement has been less than satisfactory. This is understandable because important assumptions on which achievement was based were inaccurate. As examples, incentive pay provided for in Special Covenants of the Project Agreement, Sec. 5.3, Personnel Incentives, have not been forthcoming. Appropriate organization/administrative procedures have not been provided and staff turnover has been high. In fact, there have been four Directors within four years and only two of the original 15 extension agents remain.

VI. GOAL

A. Goal Defined

The goal as defined in the LF of the PP is, "To increase the Jordan Valley's productivity, primarily vegetables and fruits, for local consumption and export, through increasing farmers' access to inputs and services.

B. Progress

Verifiable Indicator

Trend in rising yields and increased production of horticultural and field crops in the Jordan Valley.

Verification

The LF suggested that GOJ and JV/JFA reports and records could provide verification. There has been such a large increase in vegetable production that crop control programs are being put in place for those in over supply; however, this has been primarily due to increased land area utilized and increased production inputs, such as plastic tunnels and existing technology that goes with plastic housed tunnels, even though this technology is not highly refined. Thus, this means of verification is not apt.

There have been, however, some meaningful impacts by the JVASP. The foremost example is biological control of the spherical mealy bug. There is no way of accurately quantifying the impact of this work on citrus production; however, some growers in areas heavily infested were cutting down their trees in an attempt to prevent spread of the pest to other trees. Parasites released by the project brought a potentially devasting infestation under control and prevented yield loss, rather than adding yield.

Other direct impacts on yields have been meager; however, work refining and manipulating existing plastic tunnel and field technology is under way and should have an impact on production or efficiency of production within a few years, although not by the end of the project.

Introducing and developing new tomato varieties or selections is underway. The Columbia variety, for example, introduced from the United States shows some tolerance to TYLCV and seedling populations also are showing some tolerance. If a suitably tolerant selection is developed it would have a major impact on production efficiency because TYLCV decimates tomato production in the fall of the year. Such research is slow, however, and three or four years will be needed before an accurate assessment of progress can be made.

Also, low-chilling peaches and nectarines brought in from the United States appear to be adapted to parts of the Jordan Valley. Five to ten years are required to adequately test such fruit crops after they come into bearing. There is a strong chance, however, that these crops will prove adapted and that they would produce fruit that is in great demand during a season in which they are not produced in the Jordan highlands. It is also possible low-chilling pears and apples can be produced in the JV.

C. Summary

There has been little direct impact of the research and extension programs on the production of vegetables and fruits in the Jordan Valley, even though biological control of the spherical mealybug on citrus is a noteworthy achievement. It is unlikely there will be any additional major accomplishments by project termination. There is, however, a program in place that could achieve significant progress toward the goal within another five years.

VII. BENEFICIARIES

Because the purpose and goal of this project have not been reached as yet, only few have derived benefits from the facilities developed and activities conducted; however, through the introduction of biological control one problem has been averted. Fruit and vegetable growers should benefit from increased productivity, more efficient operations, better quality and an expanded crop selection as research and extension expands in the JV.

Jordanians working on the project are benefitting from the training and experience received at the Center and abroad.

The ultimate beneficiary will be the consumer who realizes a better quality product, sometimes at lower cost, and a wider selection of fruits and vegetables over much of the year.

Agricultural agencies operating in the Valley such as JVA and JVFA receive information and assistance from time to time from agents and research faculty. A more active program will improve this relationship.

VIII. LESSONS LEARNED

1. Some of the more serious problems encountered by institutional development projects are administrative and organizational in nature. The highest priority should be given to establishing proper organization, staffing and management, particularly during the crucial formative stages.

2. All projects should have an implementation period to staff key positions, develop plans for facilities, set up the organization and management system and prepare and at least partially equip facilities before the main body of the technical assistance staff arrives in the country.

3. The problems in developing an outlying research station are unique. Only institutions experienced in such endeavors should be selected as the contractor.

4. The typical project suffers from rules and regulations imposed by AID/W, USAID/Mission, the government of the host country and the contractor (often a university). This in itself is enough to doom the procurement of equipment and supplies to a low level of efficiency. Every effort should be made at the start to reduce constraints on purchases to a minimum.

5. USAID/W and the contractor should keep in mind that the scientific achievements of the United States give it an image of efficiency and achievement. It is a shock to the host country when simple laboratory glassware and equipment, which are available daily as off-the-shelf items, takes

months to order and obtain. Failure to meet purpose and goal within the allocated period of time is embarassing. If these projects are to benefit the United States, everything possible should be done to eliminate bureaucratic inefficiency and to achieve the expected efficiency.

6. Institutionalization is a lengthy and difficult process. So is the establishment and training of research and extension faculty. To expect a team in the United States to develop facilities, refurbish laboratories, train staff, get instruments and equipment in place, provide maintenance facilities and design and conduct a research program that has a major or even modest impact on the agricultural production of the area it represents within a five-year period is unrealistic. To expect a team to do this in a country where there is a paucity of qualified candidates for training and the constraints described in item 5 of this section is even more unrealistic. It is reasonable to expect a contractor to establish facilities, equip laboratories, establish experimental plantings, initiate a training program for staff and design and implement a modest program of applied research. It is unrealistic to expect a major or even modest impact on commercial production, except in rare cases.

7. The evaluation methodology as outlined in the PES is good, even though requiring a certain amount of redundancy. The schedule and procedures set up by USAID/J and WSU were also good but could have been improved by the following:

   (a) A briefing by USAID/W prior to departure from the U.S.

   (b) There could have been a better balance of group discussions and those with individual staff members, with more emphasis on the latter. This was, however, not a serious problem. The evaluation team had the prerogative of modifying its schedule if it wished.

   (c) There should have been discussions with individual farmers as well as discussions with representatives of farmer and farmer-related groups.

(d) More trips to the farms themselves would have been helpful. Fortunately, all members of the team had visited Jordan in recent years and could draw on those experiences to capture a feel for the agriculture of the JV.

(e) Undoubtedly, the largest problem was the late scheduling of the evaluation, which precludes the implementation of many of the recommendations.

(f) The time scheduled for the team to write the report after gathering data was short. Two additional days could have been used profitably.

IX. SPECIAL COMMENTS OR REMARKS

Support by USAID/J was excellent. Without this logistical support the evaluation would have been difficult.

The preparation of a considerable number of pertinent documents mailed to the team members prior to their arrival was extremely beneficial. The excellent PP prepared by WSU was particularly helpful.

We felt the composition of the evaluation team was appropriate. The two horticulturists, one specializing in fruit and one in vegetables, one with considerable experience in the field research and administration and the other in extension, gave balance from the technical standpoint. The presence of one team member with many years experience in organization, planning and institutional budgeting added an important dimension to the review.

Reviews of certain aspects of the project including specific suggestions for improvement are given by individual team members in Attachments A, B, C and D.

- Attachment A -The Vegetable Research Program, 3 pages
- Attachment B - The Fruit Crops Research Program, 7 pages
- Attachment C - The Extension Program, 1 page.
- Attachment D - Organization and Management Concerns, 11 pages.

APPENDIX 6

LONG-TERM ACADEMIC TRAINING
MASTERS DEGREE

	United States	University Of Jordan	Total
Planned			
Projected in Project Paper	8	8	16
Actual to Date			
Returned with Degree	0	2	2
Returned, working on Thesis	0	2	2
Currently Enrolled	1	2	2
To Start Training	2	1	3
Unfilled Slots	5	1	6

Source: JVASP Project Paper, p. L-4 and interview on 7/8/85 with Dr. Robert Harwood.

APPENDIX 7

JVASP STAFFING

POSITION	PROJECT PAPER	AS OF 4/11/85
Project Director	1	1/2*
Tech. Asst. (Acting Ext. Supv.)	0	1
Research Supervisor	0	1
IPM Research Specialist	1	2
Production Research Economist	1	0
Horticulture Res. Specialist	1	2
Soil and Water Res. Specialist	1	5
Associates (Res. Assistants)	8	20
Ext. Training Spec.	1	0
SMS	3	0
SMS/IPM	1	0
Ext. Agents	10	11
	28	43 1/2

*Also Director, JV Agricultural Directorate

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بسم الله الرحمن الرحيم

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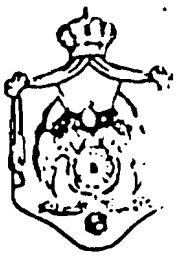

المملكة الأردنية الهاشمية
وزارة التخطيط
عمان
هاتف ٤٤٤٦٨ - ٤٤٤٧٠
٤٤٣٨١ - ٤٤٣٨٥
تلكس ٢١٣١٩ - ص.ب ٥٥٥

NO. 10/53/1616
DATE 9/4/1985
REF.

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الموافق

ACTION COPY

Mr. Gerald F. Gower,
Director,
USAID/Jordan.

PM
WF

Dear Mr. Gower,

Subject: Highlands Agricultural Development Project Paper

Reference is made to the meeting held on 10 March 1985 to discuss the subject Project Paper.

We have now studied the Project Paper in detail and our comments, contained in the attached memorandum, are offered for your consideration and should suffice for the purposes of the Project Paper. However, our main concern is for a detailed mutual agreement on the project components prior to the approval of the Project Agreement.

Sincerely yours,

Minister of Planning

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Comments on

Highland Agricultural Development Project Paper

1. Organizational Approach: A single Agricultural Development Council, covering all types of agriculture (both irrigated and rainfed) to be chaired by the Minister of Agriculture, shall have a permanent secretariat with sufficient qualified staff and study capability to assist in policy determination and project follow-up. Similarly, the proposed National Agricultural Technology Center shall cover all types of agricultural research and extension for both the highlands and the Jordan Valley. It is therefore proposed that the center be renamed as the National Center for Agricultural Research and Transfer of Technology (NCARTT). The center would have a board of directors, chaired by the Minister of Agriculture or his appointed senior representative, which would be responsible for the planning, coordination, policy decisions and follow-up concerning all agricultural research and extension in Jordan.

The Agricultural Service Center (ASC) shall also include those in the Jordan Valley and all will be linked and coordinated through the single National Center for Agricultural Research and Technology Transfer. This would in effect be a major reorganization of the MOA in that the present Directorate of Research and Extension would be replaced by the NCARTT and the ASC's, which shall be the basic responsibility of the MOA; however, required coordination and cooperation with other public and private organizations will be built into the new structure.

ATTACHMENT A

THE JVASP VEGETABLE RESEARCH PROGRAM
By: Norman Oebker

RESEARCH

1. Because of the importance of vegetables in the JV, the culture and production of these crops should be given considerable attention. To date the program in this area is less than satisfactory. Unfortunately a vegetable horticulturist has not been approved for the project. This position should be given high priority in future activities.

2. Facilities, laboratories, greenhouses and land seem more than adequate for research on vegetables. There appears to be a need for emphasis on good techniques for scientific investigation. Better planning, execution, analysis and reporting of research is needed. At present no permanent files of research data exist. Good methodology is necessary to obtain reliable results. The attempts to develop a short course on research techniques are commendable.

3. Publications should be encouraged, if not required, from every professional staff member. This is not only important for recognition of the Center but for informing the agents, farmers and others interested in the progress on solving problems of the JV. The annual report is good and should be continued.

4. The JV and JVASP offer many opportunities for applied research in vegetable production. Because of the number of plastic greenhouses in the area, culture and systems in this environment should be studied. Weed control, mulching, drip irrigation, and fertility all need more study. New crops studies should continue in order to vary production and to replace over-produced crops.

   Post harvest handling, quality and processing should be under investigation which may lead to new markets, reduced handling losses, and increased consumption.

5. The problems of the JV offer JVASP challenges and opportunities. The physical aspects seem to be in place. Now is the time for giving attention to management, organization, planning, and execution of project. This should be a coordinated effort from all concerned.

ATTACHMENT B

THE JVASP FRUIT CROPS RESEARCH PROGRAM

A.H. Krezdorn

Research in fruit crops, while heavily oriented toward horticulture, must be strongly supported by work in entomology and IPM, pathology, nematology and virology, soils and water, botany and plant physiology and economics and statistics. Horticulture is, indeed, all of these things and the horticulturist more than anyone must coordinate his or her work with the narrower disciplines.

IPM

Pest control is one of the most important areas of research in a fruit crop program. Entomologists learned, after many years, there is more to pest control than chemical sprays and dusts. Thus, the integrated pest management (IPM) concept developed. It is satisfying to note an active program with solid achievements is underway.

PATHOLOGY

Fungus Diseases

Arid areas, such as the JV, do not have the many fungal diseases of wet areas. Foot rot (*Phytophthora* sp), a soil-born disease, is a problem in the JV. The use of sour orange rootstock for virtually all citrus trees in the JV largely avoids foot rot because it is very resistant to this fungus. Foot rot does damage trees on sour orange, however, if they are budded low, thereby eliminating the value of a resistant lower trunk. Also, excessively vigorous growth from too much fertilizer will cause even resistant tissue to become infected.

Both Ridomil, produced by Ceiba Geigy, and Aliette, a French product, have been effectively used to control foot rot. Both materials are systemic. Ridomil is applied as a soil drench and Aliette as a foliar spray. Their effectiveness under JV conditions should be verified.

Nematodes

Nematodes are currently not being researched but a survey would likely show the citrus nematode (*Tylenchulus semipenetrans*) is reducing yields through their damage to roots.

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ATTACHMENT C

THE JVASP EXTENSION PROGRAM

Norman Oebker

Extension is a very important part of JVASP. Extension is the chief means of educating the farmer and assisting him in problem solving. It should be understood that many of these activities are a result of a close working relationship between extension and research. With this assumption, the project in the JV was established. The project is worthwhile and will make an impact on agriculture of the Valley if the organization and procedures are properly developed and carried out. This is especially true for the extension part and deserves a critical eye in this evaluation.

During the review many criticisms were leveled at extension. Some claimed it was not effective; others said confusion prevailed in the organization and no link existed between the agent and research. A rapid turnover of personnel was given as a reason for poor performance of extension. Lack of transportation was another reason. These all appear to be valid.

Considering the extension agent and his activities, the following comments are made:

1. The present number of agents seems adequate. Emphasis should be placed on quality, not quantity. An effort should be made to hire well trained, motivated and competent people.

2. In-service training on methodology and subject-matter should be an important part of JVASP and should be continued especially for new employees.

3. Improvement in transportation should continue as this allows the agents to move around as needed.

4. Agents should organize and use local advisory committees, made up of representatives from the growers and the commercial sector. These groups can be used to determine problems and programs.

5. Field demonstrations should be an integral part of the agent program. This activity could be an extension-grower-commercial-research undertaking.

6. An agent can serve as secretary for growers' group - and this can give him opportunities to do good extension - but he should avoid service activities.