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MID-PROJECT EVALUATION

PROJECT 608-0160

"AGRONOMIC INSTITUTE"

MOROCCO

AGENCY FOR INTERNATIONAL DEVELOPMENT

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EXECUTIVE SUMMARY

Project 608-0160

Agronomic Institute

Mid-Point Evaluation Report

USAID/Morocco's Agronomic Institute Project is implemented by the University of Minnesota under an AID-funded host country contract with the Hassan II Agronomic and Veterinary Institute (IAV). The project, which was approved in April, 1980, provides long and short-term participant training for master's and doctoral-level faculty from IAV and two associated four-year agriculture schools, and participant training to the master's level for a number of other agriculture sector agencies and organizations. It also provides U.S. technical assistance from senior and junior academics in a variety of agricultural fields, who assist IAV in institution building, as well as in supervision of faculty dissertation and master's thesis research projects. There has been some commodity support provided under the project, primarily for start-up of IAV's new Horticulture Complex at Agadir. A key novel element of the faculty participant training component is that doctoral-level faculty participants return to Morocco, after coursework at a U.S. university, to carry out their dissertation research. They continue to be supervised by their U.S. advisors--as well as by the resident TA team--while they are in Morocco. The advisors visit Morocco an average of three times during the research period, and serve as chairmen of the dissertation defense committees at IAV, since doctorates granted under the project are from IAV rather than from the U.S. universities.

This project, which is the third AID-funded project for institution building at IAV with the University of Minnesota since 1970, was designed as a ten-year activity, but could only be approved for five years, given AID's then-present rules. In 1983, at mid-point in the five-year LOP, the USAID decided to hold an indepth, collaborative evaluation, to determine if the project design was essentially sound, whether the project should be amended to add a further five years and some additional activities, and to see how implementation was conforming to the original design. The evaluation team was made up of representatives of IAV, Minnesota, the USAID, and AID/W. The team worked first for a month in Morocco, and then met briefly again at the University of Minnesota. The evaluation was completed in August, 1983.

The team interviewed Minnesota resident team members in Morocco, TDY faculty participants' advisors, administrators at IAV and at the associated National Agriculture School (ENA), and faculty at IAV who were not participants under the project. Intensive interviews were also held individually and collectively with returned faculty and non-faculty participants, and with participants who were about to depart for the U.S. Some interviews were also held with key end-users of IAV and ENA graduates, both participants and non-participants. At Minnesota, interviews were held with project office staff, new participants, and additional participant advisors.

Based on these interviews and workshops, as well as a thorough review of project documentation and discussions with USAID staff knowledgeable about the project, the team concluded that the project design is essentially sound, that implementation is largely on track or ahead of schedule, and that there was good reason to propose an amendment to the original project paper in order to extend the life of the project by five years. Further key recommendations were: 1) a substantial increase of funding to the IAV Documentation Center and related facilities at ENA and the National School.

for Forestry Engineers (ENFI); 2) Initiation of funding to the Department of Applied Mathematics at IAV for improvements and additions to the small Computer Center, and for computing facilities at IAV/Agadir and ENA; 3) a modest increase in the stipend for research equipment and supplies allocated to each returning doctoral-level faculty participant; 4) provision of a modest amount of funding to be available on a competitive basis at the department level for faculty and graduate student research; 4) addition of two positions on the Minnesota resident team to provide expertise in social/economic sciences and in library science/data management; 6) additional funding for U.S. expert consultants who can supplement advising services of TDY advisors, help solve key problems of organization, curriculum development, research farm management, and serve on doctoral committees; 7) provision of additional funds for non-participant faculty to visit U.S. institutions and International Centers to become acquainted with different styles of academic and research administration and instruction, and check progress of participants.

In examining the priorities in institution building, the team found that perhaps too much stress was being placed by U.S. advisors and some resident team members on research as opposed to outreach, although IAV has an excellent approach to, and record of, outreach activities. Similarly, it was felt that the USAID could do more in facilitating the strengthening of library and documentation resources by providing AID and USDA publications. The team applauded IAV's recent reorganization, which decentralizes considerable authority to sections and departments, as well as inclusion under the project of some participants in veterinary medicine. One of the unique features of IAV is that agronomic, social and veterinary sciences are combined at one institution, and the project is now placing some emphasis on the social as well as the veterinary science elements of the IAV program. While the team felt that Minnesota has generally done well in graduate student and doctoral faculty participant supervision, with the new IAV reorganization, more emphasis should be placed on working with and through the respective departments of which team members are members.

A key institutional development priority of IAV is the establishment of department-to-department linkages between its new departments and equivalent ones at U.S. centers of excellence. Minnesota has recently done well in placing faculty participants at other U.S. universities--presently 20 universities are involved. However, the team felt that even more effort should be made in this direction given IAV's priorities and its concerns to avoid in-breeding. In 1981-82, 60% of doctoral participants were at UMINN, down from 67% the year before. IAV administrators now wish somewhat to alter the participant training approach for faculty. Instead of starting with a faculty member who needs to be trained to the master's level, providing that training under the project in the U.S. for 1-2 years, then having the faculty member teach for at least 2 years before being eligible to return to the States for a further two years of doctoral-level coursework, a "three year package" approach is desired. Each future faculty participant who performs well will be eligible for a maximum of three years of coursework in the U.S. leading to preparation for the IAV doctorate. These three years may be spent in a number of modules. The participant will no longer be likely to take the U.S. university's Ph.D. preliminary exams, or necessarily follow that university's normal course program for the Ph.D. Rather, individual programs will be designed with the cooperation of the U.S. department with which the participant's department is linked, so that the participant will get the maximum course grounding during his/her three years.

This new approach is likely to place an increased burden on project management at UMINN in forging these kinds of linkages with the departments

at the other U.S. universities. UMINN presently has some limited funds under the project to maintain relationships with the other universities that are involved under the project, and this process of inter-university collaboration is referred to as the "Partnership." If UMINN is asked to do more in its brokerage role with the other universities, project management tasks and expenditures will be commensurately greater. However, the team feels that the "three year package" approach is worth pursuing in terms of IAV's institutional development goals and needs.

The project as presently designed has an additional unique feature. Faculty doctoral participants, once they have been granted the doctorate at IAV, are funded to return to the U.S. to work with their dissertation advisor on a scientific publication, to attend professional meetings, develop a post-doctoral research project, and reinforce their contacts with U.S. agricultural science. These trips are projected to last up to three months. Given IAV's workload, and the increasing number of faculty who will be away in the U.S. and Europe under this and other-donor projects, the evaluation team agrees with the IAV administration that these trips should be limited to six weeks to two months. While this seems a very generous component of the program, the team also feels that it is a good one, since past experience with other AID participant training projects indicates that once the participants return, they are frequently cut off from all the kinds of support systems that will help them to realize their new professional expectations.

In terms of project management and the host country contract mechanism per se, the evaluation concluded that project management was essentially very good by all parties, and that the host country contract relationship worked well. However, some suggestions were made for improvements in communication among IAV, UMINN and the USAID, and IAV is encouraged to take a somewhat more energetic management role. UMINN is encouraged to look more broadly if necessary to recruit the appropriate members of the resident team, to ensure that they will have strong disciplinary backgrounds, but also experience in university administration if possible, and the kind of personal commitment to institutional development at IAV that is required.

In sum, the evaluation found that this is an excellent project, and one which should be used as a model for innovative, participant training projects which also have a strong institution-building component for the establishment of viable, up-to-date agronomic and veterinary training institutions in other countries. It also suggested that other USAIDs in Francophone countries be encouraged to send participant trainees to IAV where appropriate.

I. RECOMMENDATIONS

Given that there are three main institutional actors involved in implementation of Project 608-0160, the team decided that recommendations should be presented in four categories. These are, 1) general recommendations, that involve all parties to the project; 2) those suggested to IAV administrators and faculty for internal improvements to the Institute's development; 3) those that relate particularly to the role of the University of Minnesota, and 4) those within the manageable interest of USAID/Morocco. Clearly, there is some overlap among these four categories, and steps taken to implement one or another set of recommendations may impact upon implementation (or non-implementation) of others.

A. General Recommendations.

1. That Project 608-0160, Agronomic Institute, be amended to increase the LOP to ten years, and to increase funding to allow full funding of participant trainees, some additional commodities including library and computer center support, and two additional resident team positions.
2. That under an amended project, increased provision be made for financial support to research by faculty at IAV. This support would largely be in the form of commodities, but some would be in the form of local currency funds for related research expenses. These funds would be made available to all faculty members, through a competitive application process, which would be approved by an appropriate IAV faculty/administration/Minnesota resident team committee.
3. That some additional commodity support be provided to IAV's Horticulture Complex at Agadir, particularly in the area of computer facilities.
4. That funding for IAV, ENA and ENFI capital and operating expenses in support of project activities be provided through dirham generations from sales of PL 480 Title I commodities, and that these be included on a priority basis in the USG-GOM 1984 Title I Agreement.
5. That consideration be given by all institutional parties to the project to improving English language proficiency of participants before departure from Morocco.
6. That in support of the project's institution-building dimension, ways be found to assist IAV in procuring from the local market additional expertise in statistics, computers, management and educational administration.
7. That the junior scientist resident faculty component of the project be maintained for at least three more years, with decisions on fields and levels of training required for selection to be made jointly by IAV, the USAID, and the University of Minnesota.
8. That a growing proportion of 5th year (3rd Cycle) and Doctoral participants be sent to other land grant universities than the University of Minnesota over the remaining years of project LOP, and that funds be added for maintenance and expansion of the "Partnership" in order to facilitate this outcome.
9. That IAV's policy of linking its individual departments with relevant departments at U.S. land grant institutions be respected by the University of Minnesota and USAID project managements, and that steps be taken to establish--under

the Partnership--these key relationships which, in turn, will facilitate regular supervisory and advisory visits back and forth between staffs of these related Moroccan and U.S. departments.

10. That the new system of University Visits by IAV faculty who are not project participants be expanded, to increase the institution-building success rate of the project, and to enable these faculty to track the progress of participants while they are in the U.S.

11. That significantly increased funding be provided under the project to IAV's Documentation Center, which has recently been officially designated the National Agricultural Library, and that necessary associated technical assistance for a needs assessment, and subsequent acquisitions, be provided.

12. That funds be provided under the project for commodity and requisite technical assistance support to the Computer Center at IAV to facilitate participants' research on return from the U.S.

13. That there be more flexibility in implementing the present IAV policy that faculty participants under the project can only return to the U.S. to work with their advisors after they have been granted their Doctorates at IAV.

14. That in the near and medium term, the disciplinary spread of resident faculty be broadened given the numbers and variety of returned doctoral level participants they will need to supervise, and in terms of the relative growth of disciplinary departments at IAV, and that French language competence be required of resident faculty at least to the FSR 2 plus/3 level by the end of their first year of residence in Morocco.

15. That two additional regular project management review meetings be scheduled including IAV, U. of Minn. and USAID project managers and other relevant USAID staff to review project progress, resolve problems in a timely manner, and exchange information.

16. That all parties under the project energetically examine ways in which other means can be found to support IAV in its institutional development mission, including through AID's centrally-funded projects and programs, the International Research Center network, and other sources of research and training funding in the U.S. and connected with U.S. agricultural science.

17. That IAV department heads and members have a greater share in determining how the participant and resident team research support funds will be spent, so that the greatest benefit to the participant and his/her department can be achieved, and departments can develop and implement research agendas. It is also recommended that, due to inflation and price increases since 1979, the upper limit for participant research support funds be increased from \$10,000 to \$11,000.

18. That all parties to the project work together to achieve the necessary clarification of the status within Morocco of the IAV Doctor es Science degree in terms of the statute for teacher-researchers in higher educational establishments.

19. That under the amended project, funds be provided for the design and implementation of a manpower demand analysis for the Moroccan agriculture sector.

20. That under the amended project, funds be provided, and a mechanism established, for faculty participants' spouses to take short and degree coursework while they are in the U.S.

B. Recommendations for IAV Administrators and Faculty.

1. That a review of the teaching methods and curriculum now in effect at IAV be carried out as soon as possible, including the programming of initiation of third cycle programs in the various departments, elective courses, earlier specialization in the six-year program and the like.

2. That criteria for the success of the new reorganization of the Institute be established by the administration and the faculty, and that a formative evaluation be undertaken.

3. That consideration be given to providing some increased release time from teaching and administrative responsibilities to doctoral-level faculty participants during the first year after their return from the U.S. to facilitate progress on dissertation research, but that this be decided at the departmental level.

4. That the Institute continue to provide rewards for merit in research and outreach activities, but also develop a system for rewarding merit in teaching and administration.

5. That the IAV decentralize budget allocations to the Sections and Departments, at least on an experimental basis, and with a plan for evaluating the success of the experiment.

6. That some budget be allocated to the new Directors of Research and of Development to carry on their assigned activities, and to allow them actively to carry out fund raising activities in support of research and outreach projects.

7. That the Institute develop a plan for "mini-sabbaticals" for faculty who have served for seven years (not including time overseas seeking advanced degrees) and that some of these be included under the university visits component of the project.

8. That departments at IAV work more closely with Minnesota team to provide appropriate plans for third-cycle course work and research topics.

9. That the student stage program be maintained as a central focus for faculty and student research, and for the development of a national data base on Moroccan agricultural and rural development, as well as providing a more central role in regular course teaching and practical work.

10. That the Institute consider, in light of budgetary stringencies, not paying faculty participants their "prime de recherche" while they are in the U.S. under the project, and that funds saved in this way be placed in a central fund for research which will be available to all faculty on a competitive basis, or be allocated to the various department for departmental reallocation.

11. That consideration be given by IAV administrators and faculty to inviting faculty at ENA and ENFI to serve as at least associate members of Departments and Sections at IAV.

12. That sixth year students at IAV/Rabat continue to be encouraged to carry out field research in the public and private subsectors of Moroccan agriculture throughout the country, and that associated costs be, to some extent, borne by the recipient organizations, as is the case with fourth year students at IAV/Agadir.

13. That, to the extent possible, IAV administrators and faculty continue to work toward the implementation of a global system for Moroccan agricultural education.

14. That IAC accord adjunct faculty status to faculty doctoral participants' U.S. advisors to recognize and further encourage their participation in IAV's institutional development.

C. Recommendations for University of Minnesota Project Management.

1. That, at an early date, an expert in ESL from the Minnesota Summer Program visit IAV to assess the English language program for participants, and make recommendations for improvements.

2. That in recruiting the "junior scientists" for the resident team, attention be given to disciplinary representation, research and practical skills, gender, and level of academic achievement, so that these individuals will effectively complement the "senior scientists" in these areas.

3. That to a reasonable degree, the Rabat resident faculty team leader exercise more close supervision and more active leadership at Agadir, ENA and ENFI, as well as at IAV/Rabat.

4. Given the reorganization and development of IAV Moroccan faculty, that in evaluating the performance of resident team members, greater emphasis be placed on institution building functions other than the supervision of the research of individual participants.

5. That a better orientation system for participants prior to departure be implemented at IAV, including the input of returned participants.

6. That U. of Minnesota project management continue to ensure that faculty participants are placed at the best U.S. university in terms of discipline and/or subdiscipline, ecological location, presence of a willing and interested advisor, and IAV departmental preferences as to depth and spread of U.S. university contacts.

7. That a greater effort be made at the University of Minnesota to ensure that advisors at the universities included in the Partnership are fully aware that the doctoral-level participants are faculty members at IAV who, on their return, will have to allocate their time among teaching, administration and dissertation research--as well as supervision of sixth year student research--and assist participants in designing their research proposals accordingly. This might be done through an annual meeting of all advisors in the U.S., funded under the Partnership.

8. That greater use of opportunities at the International Research Centers and other Third-Country training and research opportunities be made by University of Minnesota project management in conjunction with participants' U.S. programs and on their way back to Morocco.

9. That resident faculty, including those at Agadir, work more closely with IAV administration to ensure that potential participants are not given false hopes of travel to the U.S. as has sometimes been the case in the recent past.

10. That U. of Minnesota project management assist the IAV Administration in taking a more active role in forward planning of administrative actions in connection with the Host Country Contracting mechanism.

11. That the U. of Minnesota Project Manager and Resident Team Leader work closely with IAC administrators and USAID project management to further clarify the selection criteria for fifth year and faculty participants, and the timing of participant departures to the U.S. Greater attention should be given to the relative merits of sending more participants at mid-year given IAV's activities and schedules, where this will not jeopardize programming at the U.S. university.

12. That U. of Minnesota present a plan to IAV and the USAID for the development of "administrative internships" in conjunction with faculty participants' postdoctoral trips to the U.S.

D. Recommendations for USAID Project Management.

1. Overall, the USAID project manager should become more familiar with the day-to-day workings of the project, and should have more regular and broader contacts with IAC administrators and nonparticipant faculty, and project participants.

2. Where there are differences of view within the USAID about what the rules are, for example, for invitational travel for university visits by IAV faculty under the project, a meeting should be held at which the resident team leader, the USAID project manager, the Program Officer, the Controller and other concerned staff resolve the issue clearly. This would preclude "crisis management," and delays in project implementation.

3. A determination should be made, with the advice of the Regional Contracting Officer, as to the proper role of the USAID in project monitoring/management given that this is a host country contract, and then this should be respected, so that mixed signals can be avoided. This should also help the University of Minnesota to implement recommendation C10.

4. A member of the Ag. Division staff other than the Project Manager should be appointed as the backstop manager of this project, and then the contractor should be encouraged to deal consistently with those two persons, rather than going to others for decisions on policy and implementation at will. USAID senior management should respect these assignments.

5. Given the institution-building nature of this project, the USAID should be more creative and active in assisting IAV through centrally-funded projects and other AID-sponsored programs and projects so that the overall institution-building impact of the AID/IAV relationship will be enhanced. Internal USAID concerns about additional management burdens should not be allowed to preclude creative assistance to IAV in conjunction with activities under the project.

6. The USAID project manager and senior management should find ways to actively encourage greater contact and collaboration among in-country U.S. project staffs of related projects. Such staff members can serve as co-research coordinators of IAV faculty and sixth year students carrying out research in Morocco, and can help each other to avoid duplicating mistakes that have been made under one or another project in the past. The meetings of all contractor chiefs of party with the USAID Director that were initiated last year should be renewed, and occur once or twice a year.

7. For purposes of project efficiency and cost-effectiveness, ways should be found by the USAID to assist in the quick forwarding from the U.S. of project-related materials--research supplies and equipment for returning participants, journals and scholarly materials, etc.

8. USAID project management should assist U. of Minnesota project management to obtain listings of AID-sponsored publications of a technical nature, and to procure them for the documentation center at IAV. The same is true for USDA publications, which are relevant and, in most cases, free.

9. USAID should explore possibilities for exerting constructive influence on the Ministry of Finance and the MARA in support of IAV activities under this project, both through the PL 480 route and other means. Where possible, for example, IAV faculty and students can be used to carry out surveys and other studies under other USAID projects as is the case under Project 0136. Under the proposed 0170 project, further steps can be taken in this direction if policy studies are included. Under the new 0182 project, DPAA/SSD staff should be encouraged to help IAV returned faculty participants in gaining access to appropriate computer hard and software.

10. Under the new project 0182, the U.S. consultant who comes to make the final assessment of computer hard and software needs for DPAA should also be asked to do an assessment of these needs at IAV, and if necessary, funds from 0160 should be attributed for that purpose.

11. While recommending an amendment to the present PP for 0160 to fully-fund planned participants, increase funding for commodities, etc., as under recommendation A.1., the USAID should explore the possibility of designing an agriculture sector training project to be implemented by IAV directly after 1990, or even before. A decision to implement this recommendation should be made on the basis of the results of the manpower assessment recommended in A.19., among other criteria.

12. The USAID project manager should work with U. of Minnesota project management to ensure that while faculty participants are in the U.S., they benefit from training and other opportunities available through AID/W and the USDA, and should help returned participants to follow up arrangements that may have been made with AID/W offices or divisions, such as that between the IAV Documentation Center Director and S&T/DIU for data-base sharing.

13. In designing participant training components of other projects, USAID should be careful to respect the current mandate of IAV for agriculture sector training in Morocco unless and until otherwise advised by MARA.

14. Within the bounds of proper standards of accountability, the USAID should encourage maximum flexibility in project implementation given the track record of IAV, and the University of Minnesota, and of the predecessor projects, and the evolutionary needs of IAV as an institution responding to changes in the Moroccan agriculture sector.

I. BACKGROUND

This report summarizes the findings of a special, mid-point evaluation of USAID/Morocco's Agronomic Institute Project (608-0160), which is implemented by the University of Minnesota under a Host Country Contract with Hassan II Agronomic and Veterinary Institute (IAV). Given the collaborative assistance mode under which the project was designed and is being implemented, the project's institution-building emphasis, and the host country contract relationship between the Institute and the University, it was decided to make this a collaborative evaluation. The team members were Mr. Larbi Firdawcy, IAV's Secretary General, Dr. Donald Johnson, Minnesota's Resident Team Leader, Dr. John Stovall, Research Director on the BIFAD Staff in AID/Washington, and Dr. Alice Morton, representing the USAID and serving as team leader.¹

The initial scope of work was quite broad (see attached original scope of work for Morton). The primary aim to determine whether the design of the project is essentially sound, and whether the project should be extended for an additional five years (from 1985-1990). However, this question was to be placed in the context of an examination of the project's contribution to GOM development needs and strategies, and to AID's assistance strategy as well as to the GOM's agricultural development policy and plans. An attempt was also to be made to determine IAV's capacity to meet the training needs of the Ministry of Agriculture and Agrarian Reform (MARA), using information available from a number of sources, including the results of a special "tracer study" funded under the project to trace the career development of all graduates of IAV.

It became apparent early in the evaluation process that some of these questions, although important, were too broad to be answered effectively in the time available, and with available data. In consultation with the USAID Project Officer and the USAID Director, the team decided to restrict itself mainly to questions about the

¹Peter Collins, a graduate student, participated as a part-time member of the team, and made a significant contribution to this report in terms of data analysis and presentation. Dr. Morton's services were obtained under contract # from Ronco Consulting Corp.

content and operation of the project itself, and to ways in which the design might be improved under a proposed Project Paper Amendment which would extend the LOP for a further five years.

Evaluation Methodology

Various members of the team were able to devote varying proportions of their time to the evaluation activity; this was taken into account in formulating a methodology (see schedule of team activities). The evaluation was carried out during Ramadan, when working hours are substantially shortened, and officials become harder and harder to see. The evaluation period also coincided with the end of the IAV academic year, when most faculty and administrators are heavily involved with preparing and marking examinations, and the review of individual student theses and final reports.

Despite these constraints, the team sought to make the evaluation process as participatory as possible, and to involve a representative sample of IAV faculty, including those who had not been participants under the project. A fairly representative sample of faculty members Section and Department were interviewed. It was also decided to interview as many Third Cycle (MS) and Doctoral-level participants as possible, separately and in groups. This was to be done at IAV's Rabat and Agadir campuses as well as at the National Agriculture School (ENA) at Maknes and ENFI, the National Forestry School at Sale, from which faculty participants are drawn under the project. (It was not possible to visit ENFI, but ENFI faculty participants and advisors were interviewed.)

The first few days were spent in sessions during which Mr. Firdawcy presented an analysis of the history and evolution of the Institute, its present structure and organization, the role of other donors, and the Institute's contribution to the project. The following weeks were spent in interviewing faculty and students, including Minnesota's resident team members,² and MARA end-users of IAV and ENA graduates.

Workshops with participants were held at ENA, IAV/Rabat, and IAV/Agadir, after participants had filled out written questionnaires. The team leader also was able to participate in the all-day "Deliberation" on students in the IAV Agronomy graduating class, from whom 5th-year (third-cycle) participants are chosen under the project. Discussions were also held with various members of the USAID staff who have been involved with the project, including the present Project Officer, the Program Officer, and the Training Officer.

At the University of Minnesota, Drs. Morton and Stovall met for two days with all members of the project staff, many faculty advisors, third cycle and faculty participants, and University administrators, including the President, after the Moroccan portion of the evaluation had been finished (see list of person interviewed). In Morocco and in Minnesota, team members read a considerable amount of project-related documentation (see Bibliography).

The fact that the evaluation team was in Morocco, working on the evaluation during the period when the Institute and the U. of Minnesota team--as well as the USAID Training Office--were under maximum pressure while participants were selected, processed, given orientation, and sent off to the U.S., posed some problems. Yet, it also made it possible to understand some critical aspects of project functioning.

There were advantages to seeing the project in action in Morocco first, rather than starting with an orientation at the University of Minnesota, as had been originally planned. There was a better chance to focus on certain questions about the operation and backstopping of the project at the home university which could then be posed and answered effectively after seeing project results and operations in the field. The late timing of the visit to St. Paul also meant that team members could see how the new participants were progressing, since they had first been interviewed prior to departure from Morocco.

²In Morocco, it was also possible to meet two U.S. advisors, Dr. Busta, from the University of Minnesota, and Dr. Gifford from Utah State University, who were on TDY visits to IAV to supervise their faculty participant doctoral students.

In all, the Morocco portion of the evaluation field work was carried out between June 22 and July 21, 1983. The visit of Drs. Morton and Stovall to St. Paul occurred between August 15 and August 17, 1983. Final report preparation was done by Dr. Morton in Minnesota and Washington, D.C.

The Context - The Predecessor Projects

The Host Country Contract with the University of Minnesota was signed by the IAV in June, 1980. At that time, AID had a five-year limit on life of the project, but given its objectives, this project was designed as a ten-year effort. By 1980, the institution-building relationship between the University of Minnesota and the Institute had been going on with AID funding under direct contract for ten years, under two predecessor projects (508-0134) and (608-088). The collaborative relationship was well-established, but the present project significantly expanded the scope of activities included.

The present project also differed from the prior ones in that it provided significant support to the development of the IAV's new Horticulture Complex at Agadir, in the south of Morocco. Through the provision of resident team members, and special funds for commodities, as well as through faculty participant training, this project was to have a significant impact on building up the new Complex. A further difference between this project and the prior ones was the increased emphasis on placing faculty participants at universities other than the University of Minnesota, so that returning participants would, as a group, have had a wider exposure to the U.S. land grant university community, and so that, as individuals, they would have received the most appropriate training possible in their respective disciplines and sub-disciplines. Placing faculty participants at a number of U.S. universities was also to assist the IAV in building collaborative relationships at the department level with a number of U.S. institutions.

IAV -- Its History and Development

At Independence in 1956, Morocco had an undergraduate-level school of agriculture, the National Agriculture School at Meknes, opened in 1947 to train the sons of French colonists. There was only a handful of Moroccan agricultural graduates who had gone abroad for their education. In 1964, the GOM announced its intent to establish a Moroccan college of agriculture. The Institut Agronomique Hassan II was established in 1966. It started with 12 students, no buildings, and no equipment. In its first years of operation, IAV depended heavily upon expatriates--primarily from France--to teach courses. The four-year program leading to the Diplome d'Agronomie Generale was taught in Morocco, using these expatriates and a very few Moroccan teachers. The last two years of the six-year program, leading to the degree of Ingenieur d'Etat (the Third Cycle program) was operated by sending students to France or another European country after their 4th year, for one year of coursework and one year of research. Anyone wishing to go on beyond the six-year program, to get a doctorat had to be accepted by a francophone European university. There was no doctoral program in agronomy or veterinary medicine offered in Morocco.

Several characteristics of the IAV program and philosophy in the early days make it significantly different from other agricultural colleges in former French colonies, as well as from the "Grandes Ecoles" dealing with agronomy and veterinary medicine in France. First, a relationship was forged between the new Institute and the University Faculty of Science, such that students had a combined program in the first years. Those students who passed two course programs were admitted to study agronomy at the Institute; those who only passed one were streamed to the University Faculty of sciences or elsewhere. Thus, from the beginning, an agricultural higher education in Morocco was more difficult to obtain than a university education. (This is very different from what is still the case in a number of former British colonies, where admission to an agricultural college is a last resort after a student has been refused in most university disciplinary programs.)

A second significant difference from the French model was that the Institute was a separate, quasi-autonomous entity, training cadres for the whole agricultural sector in Morocco, rather than serving as the training arm of one part of the Ministry of Agriculture per se, or just for the public sector. That is, there would be one Institute, rather than a series of small schools, each training cadres for one government service or another. (The exception is that there is a separate Forestry School, the National Agricultural School, which predated the establishment of the IAV, as well as a separate school for Agricultural Engineers.)

A further significant difference between IAV and other third-world agricultural colleges or institutes, is that agronomic sciences and veterinary medicine were combined at IAV in 1971. The Royal Decree which created IAV as an Agronomic and Veterinary Institute (no. 1-73-568) made the following points:

"Among the sectors of Moroccan agriculture that merit a particular development effort is, incontestably, animal husbandry....The training of senior cadres to organize and animate these efforts to develop the Moroccan livestock sector is an imperious necessity....The creation in 1966 of the Hassan II Agronomic Institute in Rabat permits the training in Morocco of agronomic engineers of whom some specialize in animal science at the Masters level. On the other hand, the training of veterinarians is still carried out overseas. In October of 1969, the governmental authorities indicated a wish to start this training in Morocco. The problem then was to define the type of establishment to be created to train Moroccan veterinarians....Emphasizing intellectual and economic considerations together, it was concluded that there was an opportunity to link agronomic and veterinary training. Intellectual considerations--the agronomic animal scientists and veterinarians share an essential part of their vocation that is the "rational and economic exploitation of animal species to satisfy human needs. To train them in the same physical context, to give them an education with the same general inspiration through a teaching faculty that is partly shared, should guaranty their harmonious and fruitful collaboration in professional life. Economic considerations--the creation of an independent veterinary school or faculty would have involved investment expenditures triple those that correspond to the construction of specific installations that complement the present Agronomic Institute, and the operating expenses would be considerably greater. The present Decree, by modifying the Royal Decree creating the Hassan II Agronomic Institute concretizes this option by:

- changing the name of the establishment in such a way as to show its dual mission: training of agronomic engineers and training of veterinarians
- modifying the composition of the administration and perfectionnement councils so that all the concerned organizations will be involved in decisions relating to that joint training."

There are two further significant features of the Institute that should be noted here, both of which relate to outreach. First, the Institute has involved, in its governing councils, representatives from private sector agriculture as well as from the public sector. Similarly, when students present their fourth-year final papers, and their Master's theses, the committees which examine them often have professionals and farmers as members. Second, a key instructional tool is the student stage or fieldwork system. Each year, each student, regardless of discipline, must participate in a fieldwork stage which exposes him or her to the Moroccan rural environment, and small and large farmer agriculture. The stages increase in difficulty and comprehensiveness year by year, but each one is designed to teach the students about some particular aspect of Moroccan agriculture and some variety of analysis techniques. The work students do in the stages is supposed to feed back into their regular classroom and lab work. The reports that they generate are being used by other students and by faculty in order to carry out research on applied problems in Moroccan agriculture. Students who fail their stage work in any given year, must repeat the year (in order to repeat the stage) regardless of their marks in other courses.

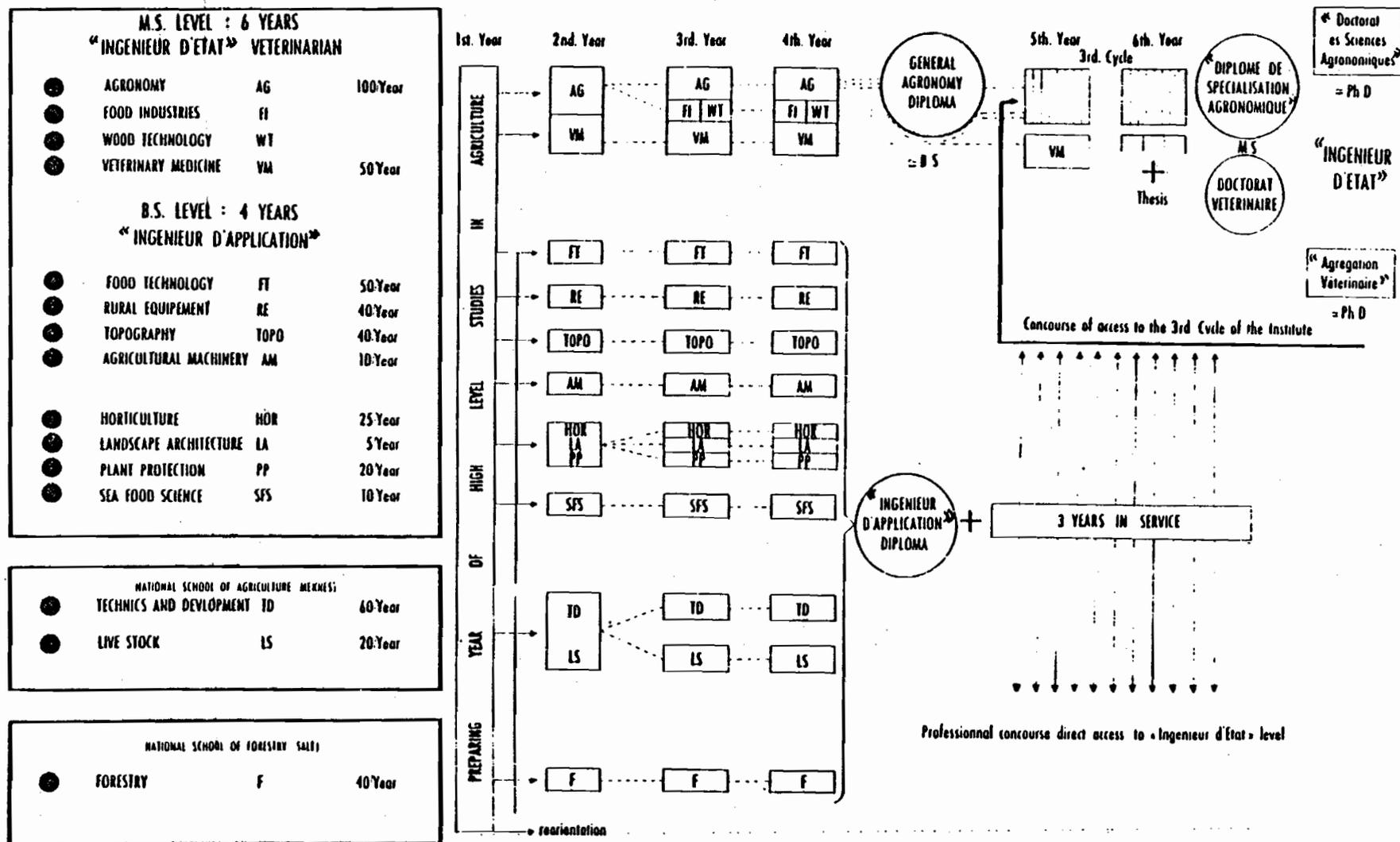
A final significant feature of training at IAV is the extent to which the Institute has managed to avoid accepting students that do not meet its high standards for admission. The intake for the first, joint year of study, the APESA, is significantly larger than the capacity of the Institute itself. Students who perform best on the end-of-year exam are chosen to join the six-year, Third Cycle program in Agronomy or Veterinary Medicine, in which places are limited to 150. The other 450 students who are accepted are streamed into the four-year programs either at the IAV campus in Rabat, its Horticulture campus in Agadir, to the National Agriculture School at Meknes (ENA), or the National Forestry School at Sale (ENFI). Students who have done less well are reoriented toward other non-agricultural higher educational training (see Charts 1A and 1B).

Chart 1A

KINGDOM OF MOROCCO

HASSAN II ND INSTITUTE OF AGRICULTURE AND VETERINARY MEDICINE

HIGHTRAINING OF AGRICULTURAL MANPOWER



Source: Firdawcy, M.L., A system of integrated education of trained personnel in Agriculture in Morocco, Association of Faculties of Agriculture in Africa, June, 1979.

ROYAUME DU MAROC

INSTITUT AGRONOME ET

VÉTÉINAIRE HASSAN II

CHART 1 B

NUMBERS OF STUDENTS IN TRAINING AT

LEVEL BY DISCIPLINE/FIELD

ANNEE	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
ANNEE	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
A.P.E.S.A (1)	33	48	94	88	110	194	225	240	294	594	594	601	599	589	
2° AGRO		12	18	37	44	42	42	44	45	50	100	106	103	114	
2° VETO						14	19	23	25	25	49	50	53	57	
3° AGRO			12	18	37	44	42	42	44	39	48	80	83	86	
3° VETO							12	19	23	25	31	42	42	52	
4° AGRO				12	18	37	46	43	42	42	38	50	64	84	
4° VETO								12	19	19	19	33	27	45	
5° AGRO					11	18	37	42	42	42	41	46	59	82	
5° VETO									12	19	21	17	26	30	
6° AGRO						11	18	37	42	42	43	44	56	68	
6° VETO										12	19	19	14	24	
TOTAL : AGRO		12	30	67	110	152	185	208	215	215	270	226	365	433	
TOTAL : VETO		-	-	-	-	14	31	54	79	100	139	161	162	211	
Formations convention											19	35	32	4	

(Suite)

4

TOTAL : Techniciens :	:	:	:	:	:	:	:	:	:	15	:	35	:	45	:	46	:	70	:
laboratoire (6) :	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

TOTAL Général	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
(1)(2)(3)(4)(5)(6) :	33	:	60	:	124	:	155	:	220	:	375	:	483	:	591	:	761	:	1154
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:

IAV's mission is to train appropriately, in Morocco, the college-level graduates in agriculture and veterinary medicine needed for the development of Moroccan agriculture. It is the only source of these graduates in Morocco and has a statutory mandate to provide all training in the fields for which it is responsible. It is incorporated as a public establishment, which means that it has a certain amount of autonomy, although it comes under the "tutelege" of the MARA.

Despite early and continuing dependence on foreign faculty (see Chart 2A and 2B), in its original conception and subsequent development, IAV has consciously tried to become a unique Moroccan institution. It was established with the idea "that emphasis (should) be placed on techniques which are most useful to the country as well as on problems which are of immediate importance" (Royal Decree of April 8, 1968 establishing the Hassan II Agronomic Institute). Further, its mission "is to teach the scientific, economic and social science disciplines related to agriculture and to contribute to the study and research necessary to this teaching. It is to train specialized agricultural graduates and veterinarians with the objective of meeting the needs of the different sectors of Agriculture. It is to contribute to the continuing education of the Ministry of Agriculture" (Royal Decree of 1968 as amended by Decree of January 2, 1974).

The present student body of 2300 is taught by a full-time faculty of 313. Additional part-time and visiting faculty are also recruited to teach particular courses and to supervise practicums and field work. IAV now also has a small administrative staff, in addition to the Director and the Secretary General. There is a Deputy Secretary General in charge of administration at the Complex at Agadir. ENA Meknes, and ENFI Sale, which are separate institutions reporting to the MARA, each have their own Directors, their own faculty, and their own internal organization and statutes.

Until quite recently, IAV was organized into a series of "blocs" which were multidisciplinary groupings of disciplines and specialities, corresponding to units

Chart 2A

NUMBER OF IAV FACULTY
1983

CORPS	MOROCCAN	NON-MOROCCAN	TOTAL
PROFESSORS	6	8	14
MAITRES DE CONFERENCE	36	22	58
MAITRES ASSISTANTS	123	24	147
ASSISTANTS	64	30	96

TOTAL: 313

CHART 2B

PROVISIONAL FACULTY RECRUITMENT PROGRAM

BRANCHES	TOTAL REQUIRED	PRESENT TOTAL MARCH, 1983	PLANNED RECRUITMENT					TOTAL
			1983	1984	1985	1986	1987	
Basic Sciences	45	23	10	10	2	-	-	22
Agronomy	197	96+30*	13+2*	13+2*	14+1*	13	13	71
Veterinary Medicine	53	36	06	06	05	0	0	17
Topography	14	14	-	-	-	-	-	0
Ingenieurs d'Application	81	57+5*+12**	03	03	01	-	-	7
English	10	6	2	1	1	-	-	4
TOTALS	400***	232+47*	34+2	33+2	23+1	13	13	121

Faculty posted at:

INAV	232	266	299	322	335	348
*ENA	35	37	39	40	40	40
**ENFI	12	12	12	12	12	12
TOTAL	279	315	350	374	387	400

*** Includes faculty of ENA & ENFI

of the teaching program. Each bloc had a secretary for instruction, and one for research, and these secretaries together formed Institute-wide committees on instruction and research respectively. The committees served in an advisory capacity to the Director and the Secretary General.

Within the last year, a new reorganization of the Institute has taken place, which organizes it into Sections (the equivalent of French "faculties" or American "colleges" or "faculties") and departments, which are either disciplinary or multidisciplinary in organization. Section directors are appointed by the Administration from a slate nominated by the faculty, and department heads are elected by the members of the departments. Some Sections have many departments, and inclusion within the section is determined by relationships to the teaching program which is implemented by the section. Thus, the eleven departments representing the traditional disciplines in veterinary medicine together form with other departments concerned (Animal Production, Human Sciences)* the Section of Veterinary Medicine. The various departments at the Agadir Horticulture Complex include faculty both at Agadir and IAV/Rabat. The Agronomy Section is presently the most inclusive, with most agronomy disciplines as well as the economic and human sciences departments. This reorganization is still in process, and there is a continuing dialogue about the role and function of departments and department heads, and an additional attempt to form groups of sub-departmental units who share a common need for certain laboratory and other kinds of equipment. Thus, the microbiologists working in Food Technology, Vet Med, and Plant Protection have formed a Group to share scarce resources. Their acronym is GERM.

Cross-cutting these vertical organizational structures are the "horizontal" Directorates for Instruction, Research, and Development and Extension, each of which has a Director who is also a faculty member (see Chart 3A and 3B). This organization is related in spirit to the organization of a land grant university in the United States. The Directors, however, have status as administrators, and to a

*Some departments are in more than one section.

CHART 3A

HASSAN II AGRONOMIC AND VETERINARY INSTITUTE

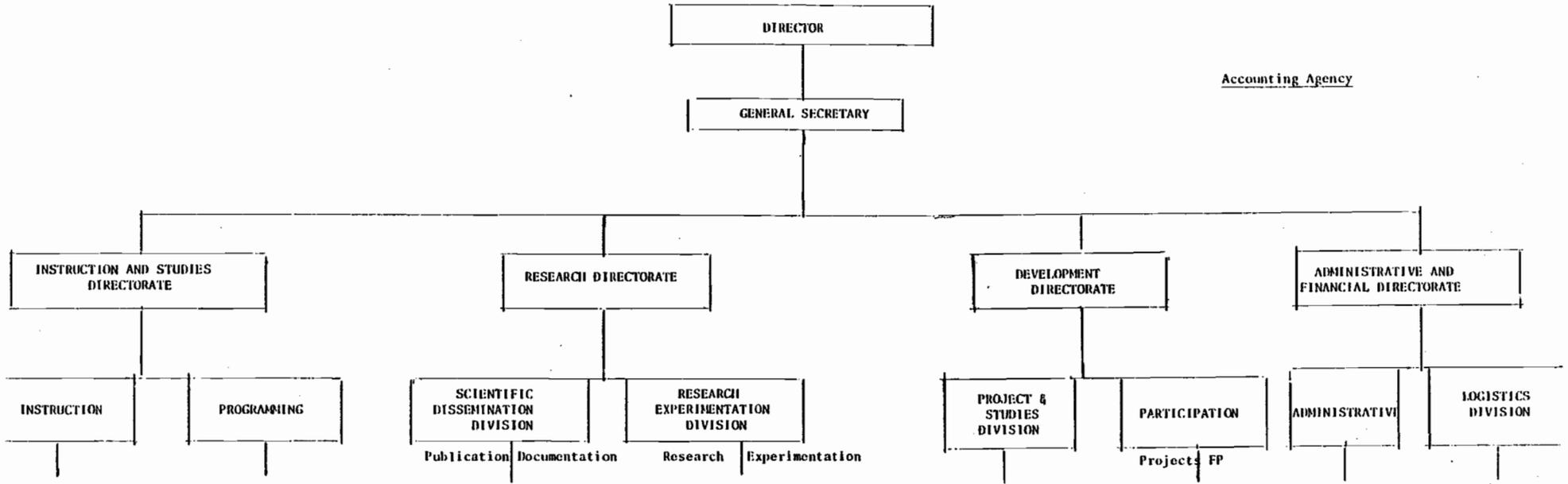
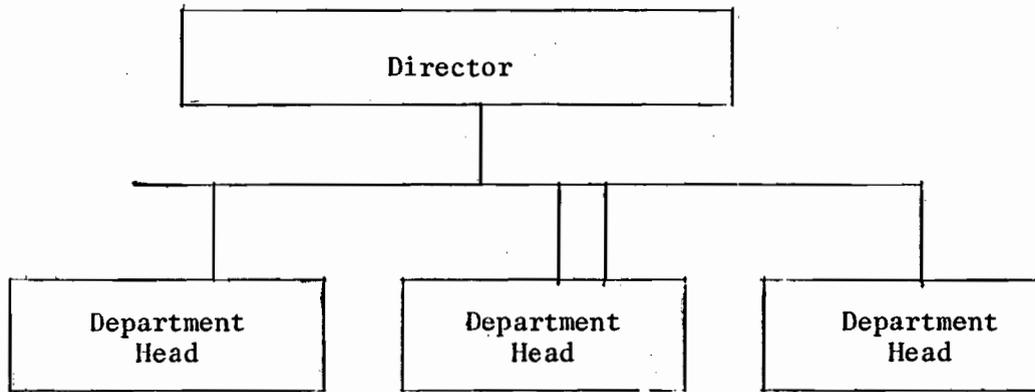


CHART 3B



SECTIONS:

- Agronomy
- Veterinary Medicine
- Food Technology
- Rural Works and Irrigation
- Topography
- Agricultural Machinery
- Plant Protection
- Landscape Architecture
- Sea Food Sciences

Agadir Campus

somewhat minimal extent, have been delegated powers--along with the Section Directors--by the Institute's Director. The Director of IAV is statutorily responsible for everything that happens at the Institute, and can make his own choices about delegating authority and responsibility within it. However, it is he who remains legally responsible in all cases.

At present, the Institute is still operating in terms of the manpower planning exercise in which it participated in the early 1970's. Conclusions of this exercise were updated in advance of the present 1981-85 Five Year Plan. The Plan outlines the training targets that the Institute seeks to achieve in terms of numbers of graduates with each degree, and specializations that these graduates will have followed. There is usually an annual meeting among the public and private organizations in the agriculture sector which further modifies the training targets for each year, based on new information and changing situations.

This year, for example, is the first in which incoming students are not automatically guaranteed jobs by the GOM upon graduation. Similarly, 19,000 students graduating at various levels from the Moroccan educational sector may for the first time not be guaranteed government employment. This has had an impact on student behavior at the Institute and elsewhere, but it is too early to say what the ultimate impact will be on the Institute itself and on other related institutions. The implication, however, is that there are likely to be significantly fewer public sector jobs for Institute graduates in the near term, and possibly more private sector jobs, although these may be filled fairly quickly.

III. THE PROJECT

The Agronomic Institute Project is an institution-building project. Its goal is to provide an "increase in trained managers, technicians and scientists to staff programs and projects and formulate development policy to aid Moroccan agriculture in the implementation of a broad-based participatory agricultural development program

Table 1IAV: Indicators of Modernisation and Relationship to AID
Guidelines

	Reach effectively and involve low income produces	Balance and linkages to Research and Extension	Understanding of two way Communication	Understanding of Broader Context
1. Applied Stages	x	x	x	x
2. Applied Research	x	x	x	
3. In Service Training		x	x	
4. Professional Associations		x	x	x
5. Agadir	x	x	x	x
6. Student Enrollment	x			
7. Fields of US Support	x	x	x	x
8. In Country Dissertation Research	x	x	x	x
9. National Extension Center	x	x	x	
10. Extension Agent Center	x	x	x	x
11. Institutional Philosophy	x	x	x	x

and aimed at increased output and employment."

The project purpose is the "creation of a 'modern' college of agriculture appropriate to Moroccan agricultural development needs, with appropriate linkages to the rest of the technology delivery system and involving low-income farmers and herders."

In the project paper, there is considerable discussion of what is meant by a "modern" college of agriculture, most of which relates to the AID Agriculture Development Policy Paper of 1978. Table 1, which is taken from the PP, gives some indicators of how IAV was evolving into a "modern" college of agriculture as of 1979, when the PP was written. The project activities are, then designed to help IAV to continue to evolve into a "modern" college of agriculture which will meet the agricultural and rural development needs of Morocco by higher-level training in agronomic and veterinary sciences, applied research in support of teaching, in-service training and continuing education, and outreach.

The anticipated outputs of the project in support of this institutional evolution are 1) trained faculty members, 2) linkages to U.S. agricultural science, and 3) linkages to GOM research and extension programs by faculty. The inputs to achieve these outputs are 1) Resident and TDY U.S. staff aiding the Institute's development, and 2) Participants identified and placed in U.S. universities through the Partnership.

This succinct presentation of the project's outputs and inputs, which is derived from the PP Logical Framework (Chart 4), summarizes essential project activities. However, it somewhat misses the spirit of institution building that the project seeks to implement. A better approximation is provided in the body of the 1979 PP: .

"Institution building is a complex business. It is the establishment of a process and an institutional capacity to develop necessary linkages to the development needs of Moroccan agriculture, that will be the hallmark of a successful Moroccan college of agriculture....

"The process of Moroccan agricultural development and hence its trained manpower needs...creates a continuing need for capacity to understand and interact with the development process (which by definition is dynamic, changing). It is for this reason that a successful institution of agricultural education has not only a teaching but also research and extension linkages....in order to interact with the development process. A college of agriculture which cannot 'perceive' the development needs of the industry it is supposed to serve cannot be successful even though it 'dispenses' a rigorous, scientific classroom education....The institutional linkages between IAV and the agricultural sector are already impressive and imbedded in institutional philosophy. This philosophy, perhaps differently articulated and differently programmed, is also the hallmark of U.S. land grant colleges. This is one of the reasons that this project is well suited to Title XII U.S. University implementation.

"A second characteristic of a successful institution is a capacity to 'process' information about the external world and to make internal allocative decisions, i.e., to respond to needs of Moroccan agriculture and hence to design and redesign curriculum and to allocate budget between teaching, research, extension and support services....This in turn depends on the development of an internal organizational structure which evolves and adapts to changing needs. Such a structure allows focus on such matters as establishment of incentive systems- or faculty and students, cooperative linkages with other institutions, as well as more mundane but necessary services such as reproduction, secretarial support, transportation, etc. Again, it will take a Moroccan faculty to accomplish these aspects of institutional development in the Moroccan context."

The PP goes on to explain how the project will assist, through an institution-building process, the institutional development of IAV:

"In the light of the foregoing, development of a Moroccan faculty means providing more than science competence to IAV. For faculty to play their necessary role in institutional development, science competence is necessary. However, young faculty members have to be provided with support (intellectual and physical) to enable them to continue to grow and mature as scientists, as teachers, as researchers, and as members of an institution. In other words, the faculty has to be able to contribute to the institutional understanding of the external environment and its internal 'interpretation' within IAV. This means they must have opportunity to conduct research, to contribute to extension functions and to develop administrative skills (planning, curriculum design and teaching improvement, interaction within the system). This project recognizes that attention must be given to this development process. The purpose of the project is one of institution building to serve Moroccan agriculture; although the principal project output is a Moroccan faculty which can bring this about, it is also necessary that the project ensures that the faculty have appropriate skills and experiences to participate fully in the building of a modern institution." (Italics added.)

This language from the project paper is quoted here at considerable length because most of both the critical and laudatory observations of the evaluation team relate directly or indirectly to this institution-building dimension of the project,

and also because it is this dimension, and criteria of success in measuring progress along it, that is the hardest task faced in evaluating a project of this kind. It is also important that the reader understand what underlies the choice of project activities which are then separately assessed in what follows, and about which conclusions are drawn and recommendations made in other sections of this report. Such an understanding is also critical to answering the fundamental question, whether the project design is essentially sound? In a formative evaluation of this kind, a distinction can and should be made between whether the design is sound, and whether project implementation is achieving the objectives specified in that design. Further, formative, midpoint evaluation allows suggestions and recommendations to be made concerning ways in which, during the remaining years of the project, implementation can be made more closely to conform to an essentially sound project design.

Provision of Inputs and Achievement of Purpose and Outputs to Date

The following discussion will relate to the measures of verification for achievement which are included in the Project Logical Framework. However, mention will also be made of some of the critical assumptions for purpose achievement and input/output provision. Judgments expressed will be based on quantitative achievement of targets, but also on qualitative criteria relating to the institution building dimension discussed above. The discussion should be read in the context of the evaluation team's overall view that the project design is essentially sound. What is at issue, in some cases, is the extent to which implementation is actually commensurate with design objectives, and ways in which achievement of these objectives may be better attained in the future, if certain relatively minor adjustments are made to the basic project design, under a proposed PP Amendment.

There are three types of long-term participants under this project--third cycle (master's) students who spend their fifth year of coursework in the U.S. and return to do their sixth year thesis research in Morocco, to receive a third-cycle degree at IAV (Ingenieur d'Etat); IAV faculty who are allowed to spend sufficient

time in the States (usually after passing their assistanat exam at IAV), to be granted a full U.S. Master's degree as well as an ingenieur d'Etat degree from IAV; and doctoral-level faculty participants, who spend about two years doing coursework and related research in the U.S., return to Morocco to do their dissertation research, and are eventually granted a Doctor es Science degree by IAV. In most cases, those who do a full U.S. MS degree program in the U.S. have already been hired by IAV as faculty members. IAV recruits the top students at the end of the third cycle for its faculty, and a high proportion of these recruits have been in the U.S. as participants under this project.

Input: Third Cycle Participants:

While the general objective in training third cycle participants is to provide faculty members to IAV, this is not the only objective that is being met under this component. In addition, a pool of master's holders who have had some U.S. educational experience is being created. These individuals, if not hired by IAV, will take other jobs in the Moroccan public and private sub-sectors of agriculture. There has been an evolving policy in joint project management over the three years of this project governing how many third-cycle participants will be sent. According to the Project Annual Reports, at each joint annual review meeting, it has been decided to allow increases in the number of these participants who will be selected and sent to the U.S. under the project. A sufficiently large pool is required so that there will be, down the line, enough doctoral-level faculty participants available in each targetted discipline to send in their turn. This is because any master's holder who is hired by IAV must work for a minimum of two years before being sent abroad for further training. This means, for example, that someone who is sent for a fifth year of coursework in the U.S. in 1983, cannot be sent again for doctoral level work until 1987.

The project is already ahead of the participant training schedule established in the PP on third cycle training, which called for 70 of these participant slots over the five fiscal years of project life. This has financial implications, since

more funds will have been spent for this input than was anticipated.

To date, 131 third cycle participants have been sent to the U.S. under this project, including those who were "inherited" from the predecessor project. Of these, 16 have received full U.S. MS degrees. Of the total number of third cycle participants trained, only 18 have gone to the U.S. again as doctoral-level participants. However, if only the 63 who were eligible are taken into account, 40% of all doctoral participants have had third cycle training in the U.S. (see Table 3).

Some departments have had disproportionately greater numbers of these participants than others. This is because the predecessor projects emphasized two departments, and for those departments which are new, an attempt has been made to staff them quickly with master's holders. For example, Human Nutrition and Agricultural Machinery have had a number of faculty trained to the full-MS level in the States, since there were no master's holders available to be sent at the doctoral level and/or those who might have been available were needed to teach, so their departure was postponed. Some departments, such as those in Vet Med, where the third cycle program is offered at IAV already, have had no fifth year students involved in this project component.

On the whole, the third cycle program appears to be running fairly smoothly. However, there are a number of problems that were raised by returned participants in individual and group discussions, and in answering written questionnaires. Some of these problems were underlined by faculty in the departments to which these participants returned, and by IAV administrators as well.

In general, participants expressed satisfaction with the experiences they had had. However, almost as many were dissatisfied as satisfied with the help they had received from the resident Minnesota team in selecting universities and departments to which to apply, and with their ultimate placement. A number were also critical of the length of stay allowed in the U.S.

While there has been an increasing attempt to place these participants at a

TABLE 2
THIRD CYCLE PARTICIPANTS BY DEPARTMENT, 1972 THROUGH 1983

<u>Basic Sciences</u>		1
<u>Environmental Sciences</u>		18
Soils	10	
Watershed Management	4	
Forestry	4	
<u>Fisheries</u>		8
<u>Plant Production</u>		52
Plant Improvement	23	
Plant Pathology	17	
Agronomy	12	
<u>Animal Production</u>		39
Animal Science	21	
Range Management	18	
<u>Horticulture</u>		25
<u>Hydraulics and Infrastructure</u>		4
<u>Topography Sciences</u>		1
<u>Food Technology</u>		1
<u>Human Nutrition</u>		10
<u>Social Sciences</u>		9
Agricultural Economics	7	
Business Administration	2	
<u>Total</u>		168*

* One additional sent back for poor health; one additional died.

TABLE 3

FACULTY PARTICIPANTS TRAINED TO BOTH THIRD CYCLE AND
DOCTORAL LEVELS

<u>Faculty Class</u>	<u>Faculty Participants</u>		<u>Special/Short Term</u>	<u>Took Part in Third Cycle Program</u>
	<u>Ph.D.</u>	<u>M.S./M.A.</u>		
1978	6	0	0	4
1979	14	4	4	6
1980	7	2	1	0
1981	10	4	0	2
1982	12	3	0	2
1983	14	7	1	2
Total	63	20	6	16

variety of U.S. universities, in accordance with individual preferences and with the selection criteria developed by the respective IAV departments, a number of difficulties arise. These participants take additional English at IAV before they are selected. There is an attempt to place twice as many in English classes as will be selected each year, so that effective performance on exams will be a criterion for selection, all other things being equal. It should be noted, however, that enrollment in English classes is voluntary, as is the declaration of interest in going to the U.S. rather than another country for third cycle training. In fact, in 1983, many more students indicated their interest in studying in the U.S. than had been the case in prior years. Of those selected, seven were from the first ten students in IAV's fourth year class, and none were below the 50th per centile. This is an improvement over prior years.

However, although progress is made in English in Morocco, all these participants attend an intensive English and orientation program at the University of Minnesota, which starts in late July. Given IAV's teaching schedule, participants are finally selected about one week before they must leave for the U.S. to attend this program. Once there, although further progress in English is made, about one-third require additional remedial English during the first quarter. Many U.S. universities are requiring increasingly high TOEFL scores for all international students--degree and non-degree. Those who are accepted by other schools, either as regular or as non-degree students, will be late in enrolling if those schools are on a semester system. The summer program at Minnesota doesn't finish until the second week of September, and semester programs start around the third week of August. (Minnesota is on a quarter system.) In most such cases, the participant is enrolled for the fall quarter at Minnesota, where he or she takes further English courses and some disciplinary courses. Then, in time for the spring semester at the other school, the participant transfers. (For a discussion of English language competence, see Appendix 2.)

Where the participant is scheduled only to remain in the States for one academic year, the fact of being entolled at two different schools, with two different systems, poses problems of adjustment, as well as course completion. Almost all participants interviewed said that they had great difficulty in understanding course content in the first quarter, and so they really only benefitted from two quarters or one semester of non-English language coursework. Those who had been allowed to stay for 15-16 months all indicated that this had helped them a lot, and that they thought this should be the norm.

In some cases, IAV departments are insisting that if a student is sent to the U.S. at the third cycle level, he or she should remain for a full two years. This is true, for example, in the social sciences, where language competence is very important. The IAV administration has agreed to this. These participants will either receive U.S. MS degrees or return to Morocco after two years to do an abbreviated research project, so that their third cycle program will last about 2 1/2 years instead of the more usual two.

There is some indication that third cycle participants who stay for the minimal one year do not make much progress in their discipline. Although most indicated satisfaction with the help they received from their U.S. advisors, they also indicated that they did not usually get in close touch with an active advisor soon enough in the year, and were not always able to make the advisor understand their backgrounds. In addition, in some cases at least, they have to take a number of undergraduate courses in order to get up to speed, since they have not specialized in a discipline or field as undergraduates at IAV until their fourth year.

Despite these problems, performance has been good. It is only in the past year that some of these participants have been placed on academic probation at U.S. universities, partly, we were told, because they hadn't been as serious as those in the past. Only one third cycle participant has ever been sent back for poor performance. On the other hand, the Institute has hired a few graduating third cycle students

whose U.S. academic performance makes it highly unlikely that they could be readmitted in the U.S. at the doctoral level.

Prior to this evaluation, the USAID had stipulated that there would be little or no further third cycle training under this project after FY 84. The IAV administration, however, would like to remain flexible on this issue, as well as on others. The team members were somewhat divided, but in general, felt that some flexibility to include a very few third cycle participants in later years should be allowed, but probably only if they were all sent for U.S. MS degrees, and were candidates who were already members of the IAV faculty. The reasoning behind this recommendation is that it is not necessary in all cases for a faculty member to have a doctorate. However, in general, all faculty members should have a full MS degree in order to teach at the MS level at IAV. Allowing this flexibility will provide IAV with the possibility of effectively building up some of the departments that have been most recently created with MS-holders, and adding MS-holders to departments that have sufficient Ph.D.'s, but lack the middle tier of faculty (see Table 2).

A major assumption on the part of the USAID staff has been that the third cycle participant component existed because two graduate school experiences in the U.S. were better than one. Since IAV could not afford to have its few Moroccan faculty members stay away from the job in the U.S. for three to five years all at once, training for faculty was to be in two stages, with an interim stage of teaching and research at IAV.

One of the findings of the evaluation, however, is that this assumption is incorrect, and was not part of the project documentation. What is now assumed by IAV administration is that each faculty member is entitled to a "three-year package" of overseas graduate training. This three years can be spent in one or more countries, and can take place in a number of different stages. For example, it is now felt that someone who had received a full U.S. Master's degree should be able, later, to take only one additional year of graduate coursework in the same field so as to be ready to carry out dissertation research in Morocco leading to an IAV doctorate. This would mean that the participant would no longer necessarily take the U.S. university's

doctoral preliminary exam. He or she would take what would be jointly determined to be a sufficient number and variety of courses to prepare for the doctorate. Since the doctorate is, in all cases under the project, an IAV degree, it is felt that it is not necessary that the candidate follow all U.S. departmental traditions--which are known to vary in any case--but rather to get legitimate doctoral-level training according to some set of standards that may be determined on a case-by case basis.

If this approach were accepted by all the parties, it would have serious implications for how the project is organized and run. For example, so far, U.S. graduate schools have been willing to accept doctoral-level participants under this project as regular, degree students, so long as they meet all the normal pre-dissertation requirements, including taking the preliminary exams. It is on this basis that advisors have been assigned to them, and have been made available to travel to Morocco several times to supervise dissertation research carried out there. This advising system is one of the unique features of this project, and should be maintained. However, it may be in jeopardy if the graduate schools cannot be persuaded to accept the new model that the Institute is suggesting--that they are training trainers, and not merely attempting to get a certain number of "ABD's" trained in the U.S.

There is also the potential problem of the credibility of the IAV Doctor es Science degree. So far, the logic has been that the degree will be credible since those granted it will, indeed, have fulfilled all the requirements for a U.S. Ph.D, and because they will be examined by an international committee, including at least two U.S. Ph.D.-holders. This may not be possible if the advisors and their graduate schools cannot be convinced of the new model's legitimacy.

IAV's response in discussions of these potential problems is that more and more, it is trying to establish, with assistance from this project, department-to-department relationships between its own new departments and equivalent ones at U.S. centers

of excellence in the respective fields. It is hoped that as these relationships are established and strengthened, faculty in the respective U.S. departments will be able to persuade their graduate school deans to continue to accept project doctoral-level participants. In fact, the University of Minnesota project manager has been very successful in the past in persuading other universities to participate in the program, and it is unlikely that even those universities that are already involved would be able to adjust to the new model.

Two further points should be made in this connection. First, the model IAV is proposing is in closer conformity with the current AID guidance on participant training than is the present system. That is, under the new model, the participant could be registered as a doctoral candidate the first time he/she is accepted in the U.S., and the program of study could be designed accordingly. A lower degree, if granted, would be "incidental" to being granted the higher degree. Second, IAV would, under this model, ideally have to program faculty training for each participant more clearly from the beginning. However, Minnesota project management would also have to make a final determination at the outset about where the participant should be placed, since it would be unlikely that participants could transfer from one university to another as readily as they have done in the past. Additionally, it might be less easy for IAV to send as participants faculty with non-U.S. master's degrees than it is at present. Since IAV's current approach is to provide U.S. graduate level experience to as many of its faculty members as possible, this would have definite implications for internal policy.

Input: Doctoral-level Faculty participants:

There are a number of issues that were raised in the course of the evaluation with regard to faculty doctoral-level participants. These are, 1) duration of stay in the U.S., 2) time necessary to complete doctoral dissertation research in Morocco, 3) problems encountered in carrying out this research, 4) funding for dissertation

research, and 5) appropriateness of dissertation topics and courses of study in the U.S. Although some of these issues would be resolved under the new model discussed above, others would require separate resolution.

On the whole, the doctoral-level faculty participants have had very positive experiences in the U.S., and have done well by U.S. standards. The project is ahead of schedule in terms of their departures to the U.S. Including those who just departed in July, 1983, 70 faculty members have been sent for training since the project began, as against the 65 departures that were scheduled. Like the increase in numbers of third cycle departures, this has implications for funding under the project, although here, the implications are less serious, since in later years of the project, if no additional slots are built in, departures can be decelerated. It should also be noted that of these 70 faculty participants, 54 have studied at the doctoral level, while 16 have studied at the Master's level.

Faculty participants have been returning to Morocco at the expected rate. By the end of FY 1984, it is expected that 56 (44 doctoral and 12 master's) will have completed their studies and left the U.S. The PP scheduled these returns to total only 40 at that point in time. Project annual reports indicate that the average length of time spent in the U.S. by the doctoral-level participants is 27 months. Some participants indicated that it would be helpful if they were encouraged to get some on-the-job training during vacations and summers during this duration of stay. Some were satisfied with the program as it stands, since they were apparently able to work with their advisors during vacations and summers on research projects. In only one case to date has a participant been allowed to stay in the U.S. for a full three years. In this case, the IAV Director was persuaded by the participant's U.S. advisor that this additional year would be very beneficial. This participant is now back in Morocco and is advancing well on his dissertation research.

Faculty doctoral participants are not, under the project, supposed to stay in the U.S. sufficiently long to complete all the requirements for the U.S. Ph.D. and

arrange to be granted such a degree before their return to Morocco. However, a few U.S. faculty members who serve as their advisors either do not understand this rule, or disagree with it. They then, apparently, often strongly encourage the participant to get around the rule. A greater effort on the part of the Minnesota project manager seems to be required here. The participants, who are essentially operating under an honor system in this regard, have all followed the rules so far.

While this will become less of an issue as a number of returned participants are awarded their doctoral degrees by IAV, it is a sensitive issue at present. This is one of the reasons why participants are not allowed to return to the U.S. with project funding before their IAV doctorate has been awarded. Rather, the project provides for an additional trip to the U.S. once the doctorate has been awarded, so that the participant can work on a scientific publication with his advisor, attend a professional meeting, and plan a new research project that he/she will complete upon his/her return to IAV. There is great reluctance to allow this trip to be advanced in time so that the participant can work with the advisor to solve persistent data analysis problems and use the U.S. university's computer facilities.

It was originally estimated that it would take two years for doctoral participants to complete their dissertation research in Morocco. So far, this has proved to be an incorrect estimation. To date, no participant has finished his/her dissertation research or been granted a doctorate by IAV. It was anticipated in the PP that 15 faculty participants would have been granted their degrees by the end of project life (FY 1985). In fact, despite the current delays participants are encountering in completing their research, a number are nearly finished, and six are likely to take their doctoral orals by mid-FY 1984.

Delays in getting dissertation research underway and completed are of three major types. First, there have been a number of cases where the weather has been responsible. Since this project began, Morocco has experienced three years of drought. Faculty participants whose research involves a series of field trials have been

stymied by the drought, since they don't get reliable and generalizable results.

Second, there are delays caused by lack of appropriate equipment or materials, unavailability of support staff, transport problems, and the like. This is particularly true for faculty participants from ENA and ENFI, who tend to receive less institutional support upon their return, and who get less day-to-day supervision from the Minnesota resident team. It is also true, however, for some IAV faculty in "poorer" departments. While the IAV administration is trying hard to provide requisite additional support for its returned faculty participants, it is not always able to do so on a complete, or completely timely basis, given shrinking resources and growing overall expenses.

Third, there is the factor of other demands on the time of the returned faculty participants. Unlike participants in many other AID projects, these participants are all already working faculty members. When they return to Morocco, they must become involved in teaching, the stage system, third-cycle thesis supervision, departmental administration, and other aspects of the life of the Institute, ENA, or ENFI. An assumption in project design was that they would be granted some release time while doing their dissertation research. As is shown in Table 5, this is not usually the case. (Unfortunately, it wasn't possible to obtain equivalent data for non-participant faculty members.)

Views differ about the gravity of the delays participants are encountering for one or a combination of these three reasons. In general, these first faculty participants are at a greater disadvantage than those who came later will be. As the project continues, more faculty will return from the States, and there will be more people to share the departmental workload. As more junior faculty return from third cycle programs in Europe, there will also be more people to share the work. IAV administrators are trying to delay starting more in-country third cycle programs as long as possible in departments where there are many faculty abroad or working on dissertations, so that they will not have an even heavier teaching load than they do now.

TABLE 4

TRAINING OF ELIGIBLE THIRD CYCLE PARTICIPANTS IN DOCTORAL PROGRAM

<u>Third Cycle Class</u>	<u>Third Cycle Participants</u>	<u>Eligible for Faculty Doctoral Training</u>	<u>Took Part in Doctoral Training</u>
1972	1	0	0
1973	4	2	2
1974	6	2	3
1975	8	5	5
1976	8	4	2
1977	13	4	1
1978	14	2	2
1979	19	8	1
1980	25	7	0
1981	23*	1	-
1982	23	--	-
1983	24	---	-
Total	<u>168</u>	<u>35</u>	<u>16</u>

* One additional sent back due to poor health; one additional died.

TABLE 5
RETURNED FACULTY PARTICIPANT ACTIVITIES AND RESPONSIBILITIES (Progress
Reports of October 1982 and April 1983)

<u>No. of Hours (1)</u>	<u>STUDENT CONTACT HOURS</u>	
	<u>10/82</u>	<u>4/83</u>
0 - 99	7	14
100 -199	5	2
200 -299	3	0
300 +	2	2
<u>No. of Activities (2)</u>	<u>EXTENSION ACTIVITIES</u>	
	<u>10/82</u>	<u>4/83</u>
0	3	1
1 - 3	10	17
4 +	5	3
<u>No. of Activities (3)</u>	<u>PUBLICATIONS</u>	
	<u>10/82</u>	<u>4/83</u>
0	9	16
1 - 3	7	4
4 +	2	1
<u>Type of Activity (4)</u>	<u>ADMINISTRATIVE RESPONSIBILITIES</u>	
	<u>10/82</u>	<u>4/83</u>
None	5	4
Curric. Plng.	3	1
Chmn. (4)	5	12
Other (5)	5	4

1. Per year. The minimum number of hours a maitre assistant must teach a week is 10, according to statute.
2. Examples given include meetings, seminars, and projects with public and private Moroccan agricultural organizations.
3. Includes papers presented at conferences.
4. Indicates participant is first or second in charge of campus, department, section, or main library.
5. Includes responsibility for departmental library or lab and committee membership.

This is a cost the Institute is willing to pay in the short-term to achieve the benefit of well-trained, doctoral-level faculty in the medium-term.

For this first group of doctoral level participants, it is more reasonable to assume that it will take 2 1/2-3 years for dissertation research to be completed. For later groups under the project, an estimate of 2 years may in fact be reasonable. The general consensus of those involved with the project-including participants interviewed-is that the two year estimate should be maintained as a target, but with the understanding that it may not be met by this first group of returnees.

It is primarily the U.S. advisors who are most concerned about quick research progress. To the extent that they have made investments in participants qua graduate students, they want them to finish promptly so that the advisor can get on to working with other students, so that they can publish some research results together, and so that the participant can move on to new, post-doctoral scientific research contributions.

The participants themselves, who are generally highly motivated, would like to move quickly so that they can be awarded their doctoral degrees and be promoted to maitre de conference rank, which brings with it a 30% salary increase. Despite this very real incentive, most participants interviewed indicated that they did not think it would be fair if they were given additional release time, since they had already received a lot more than some of their colleagues who were not, or were not yet, participants under this project, and because there simply was a lot to be done in connection with the new IAV reorganization, which decentralizes a good deal of authority to the section and department level. This is something the faculty has been militating for, and the participants want to be involved. A number have been elected as heads of departments, and they feel the extra work is worthwhile.

As has been mentioned, a number of returned participants have encountered problems in data analysis and data processing. IAV has a small computer center that is run by the Applied Mathematics department with assistance from Belgium. The center

is understaffed, given growing demand throughout the Institute, and has relatively little hardware and software. It was started in 1980, and the Belgian assistance will terminate in 1984. There are presently no computing facilities at Agadir, or at ENA or ENFI.

Knowing this, a number of returning participants have used part of their project financed \$10,000 research support funds to purchase personal computers. While this has helped, most of them do not have enough software, and/or haven't enough programming and analytical skills to solve all their own analysis problems. While they turn to the computer center staff for help, they indicate that there are often delays, and some problems remain unsolved for months.

As a result, several participants wish to return to the U.S. to work with their advisors on data analysis, and to benefit from the U.S. university's superior computing facilities. They argue that this will save them as much as six months. However, as has been noted above, there is great reluctance to sponsor such trips with project funds. In some cases, participants are willing to pay for such trips themselves; in others, they are applying for supplemental funds to cover the costs under the Fulbright program.

The evaluation team, while convinced that computer facilities and expertise are becoming real problems for the participants--both doctoral and third cycle returnees--feels that the solution is to build up the capacity at IAV and related institutions. Also, it is felt that U.S. advisors should be made aware before the participant designs his/her research project that this may be a problem, and the design should be modified accordingly, at least until capacity at IAV can be strengthened. Further, participants whose discipline requires a heavy emphasis on quantification should be advised to take appropriate statistics, methods, and computer courses while in the States. Purchase of a plethora of personal computers of different brands with individual research stipend funds should be discouraged. Those personal computers that have already been purchased in this way, and which belong to the project, not to the

individual, become the property of the respective departments or of the computer center when the participant has finished the dissertation research.

In general, with the new departmental structure now in place, the consensus of the evaluation team is that the faculty participant should be encouraged by his/her U.S. advisor, the Minnesota resident team, and departmental colleagues, to think of departmental needs when planning for the expenditure of the \$10,000 research support funds. In departments where there is more than one faculty participant, planning for expenditures on equipment and materials should be coordinated. The team agrees with the IAV administrators and the AID auditor that more careful clearance procedures should be instituted before expenditures are approved, although latitude should be allowed for sufficient input by the U.S. advisor and the participant, since they are most familiar with the dissertation research design and the needs it generates. The team also recommends that the limit be raised from \$10,000 to \$11,000, given increases in prices of equipment, chemicals, journals, and air freight since the PP was written in 1979.

It should be noted that most participants are already taking departmental needs into account when planning expenditures of the research stipend. This is particularly visible at the Agadir complex, where it is striking to see how much more equipment there is this year than last, partly because of judicious expenditures by returning participants who had these needs in mind. There is sharing of equipment among participant and non-participant faculty, and, as in Rabat, returned faculty participants are quite generous in letting their third cycle supervisees have access to the materials they have purchased with project funds. While there are similar examples at Rabat, and probably at ENA/Meknes also, the cooperation at Agadir is the most striking, perhaps because of the scale and level of development of the Complex to date. There, the before/after picture is very clear, and quite impressive.

In general, the doctoral dissertation research topics-and the third-cycle sixth

year thesis topics-chosen by project participants have been appropriate to the Moroccan context. Table 6 lists the dissertation topics for returned faculty participants at the doctoral level. Table 7 shows the regional spread within Morocco of dissertation research field sites. The balance of "pure" and "applied" topics is a good one, and is generally tilted toward the applied end of the continuum. Many participants' research projects involve other entities in the Moroccan agriculture sector, such as the National Agronomic Research Institute (INRA), and the Marketing and Export Office (OCE). Thus, there is an outreach component to a number of these projects. One recommendation, however, is that in the future, participants be required to include a discussion of the outreach implications of their proposed research topics. (Outreach is discussed further below, under the Outputs section.)

Credit for the appropriateness of research topics should go to the participants themselves, the Minnesota resident team, other IAV faculty, IAV administrators, and the U.S. advisors. It is perhaps the latter who-being furthest from IAV-have the greatest difficulty in understanding what is "appropriate". However, Minnesota deserves praise for explaining this aspect of the spirit of the project relatively effectively to faculty at Minnesota and at other universities.

Input: U.S. Resident Team

Discussions were held individually and in groups with all of the current members of the Minnesota resident team in Morocco, including the departing "junior scientist" who has been at the Agadir Complex for two years. These discussions were very helpful to the evaluation team.

Resident team members are responsible for identifying--with IAV administrators--potential third cycle and faculty participants, helping them to achieve English-language proficiency in Morocco, processing and orienting them for departure to the U.S., carrying out research funded under the project, supervising third cycle sixth-year student research and participating on sixth-year exam committees, day-to-day supervision of returned faculty participants given their respective scientific expertise, a certain amount of in-country project management, preparation of annual

TABLE 6
IAV-H II FACULTY PARTICIPANT THESIS TITLE

Participant Name	Specialization	Thesis Title	Advisor	Date of Advisor's visit to Morocco	Remarks
Merzouk, Aziz	Soil Conser- vation	"Erodibility of Selected Moroccan Soils as Related to some Physical, Chemical and Mineralogical Properties".	G.R. Blake	April 3, 1982 to April 16, 1982 16 Oct. to 30 Oct. '82	His research will involve physical and chemical measurements of certain soil properties
Aboulabbes, Omar	Watershed Management	"Infiltration Characteristics in a Small Watershed".	G.F. Gifford	8 Nov. to 17 Nov. '82	
Oussible, Mohamed	Agronomy	"The Effect of Soil Compaction on Nitrogen Uptake and Translocation and Grain Yield of Wheat"	R.K. Crookston +(Drs. Larson & Blake)	*16 Oct. to 30 Oct. '82 June 15 to June 25, 1982	
Walali, Louidy Dou	Horticulture	"Micropropagation of Olives".	C. Stushnoff		
Zahour, Ahmed	Plant Breeding	"The Effect of Semidwarf Character and Yield Component on Yield of Barley".	D.C. Rasmusson	May 3 to May 15, 1982	Present plans call for planting in four new locations with two of these under irrigation.
Boulif, Mohamed	Plant Pathology	"Pathogenic Separation of <u>Helminthosporium gramineum</u> and Inheritance of Resistance to Barley Stripe Disease Caused by Fungus".	R. Wilcoxon	October 24, 1981 to Nov. 13, 1981	
Hilali, Abderrahmane	Veg. Breeding	"Reciprocal Difference and Combining Ability in Crosses Between Phureja and Hapolid - <u>Tuberosum</u> Potatoes for Yield and Maturity".	F. I. Lauer	Avril 13, 1981 to April 26, 1981	The objective is the production of consumer potato from true seed.

Participant Name	Specialization	Thesis Title	Advisor	Date of Advisor's visit to Morocco	Remarks
Ouattar, Said	Agronomy	"Adaptation of Corn to Drought: (1) Physiological Effects on Seed Development; (2) Cultural Manipulation (defoliation) Effect on Water Efficiency".	R.K. Crookston X (Dr. Larson & Dr. Blake)	X 16 Oct. to 30 Oct. '82 15 June to 30 June '82	
Tayaa, Mohamed	Watershed Management	"Modeling a Storm Induced Erosion and Sedimentation in Northern Morocco".	K. N. Brooks X (Dr. Larson & Dr. Blake)	December 9, 1981 to December 19, 1981 X 16 Oct. to 30 Oct. '82	His work involves modeling and data collection on precipitation and run off. He will also collect data on soil and land use.
Berkat, Omar	Range Management	" <u>Artemisia herba-alba</u> Population Dynamics as Affected by Selected Environmental Factors".	D.D. Briske X F.E. Smeins	X 24 July 82 to 5 Aug. '82	
El Attir, Hassan	Horticulture	"Water Deficit Effect on the Tolerance of Tomato to Environmental Stress".	E.J. Stadelmann	June 24, 1982 to July 24, 1982	Environmental stress on tomatoes will involve both high and low temperature. His research will aim at variatal tolerance and ways to minimize decrease in yield due to high temperatures which sometimes reach as high as 80 %. Hardening tomato plants for heat is also an objective.

Participant Name	Specialization	Thesis Title	Advisor	Date of Advisor's visit to Morocco	Remarks
Bencheqroun, Najib	Plant Virology	"Insect Transmission of Stubborn Disease in Morocco - Immuno-electrophoresis Studies of Spiroplasmas".	D.J. Gumph	August 30, 1981 to Sept. 3, 1981	His work involves the identification of vectors in Morocco.
Hilali, Abdelali	Soil Microbiology	"Survival and Persistence of Selected Rhizobium Phaseoli Strains in Moroccan Coastal Acidic Soils".	J. Molina	March 7, 1982 to March 12, 1982 (Visit funded under other project)	
Essatara, M'Bared	Nutrition	"Zinc Deficiency Anorexia and Metals Metal Interaction" (Provisional title)	P.V.J. Hegarty	April 30 to May 7, '82	
Benessalah, Driss	Forest Inventory	"Alternative Design for Extensive Forest Inventories"	A.R. Ek	15 Nov. to 30 Nov. '82	
Ibnatty, Abdelhai	Range Management	"Effects of Quercus Suber's Canopy cover on Native Forage Production and Species Composition in Mamora Forest".	T.E. Bedell	December 9, 1981 to December 19, 1981 Oct. 17 to Oct. 29, 1982	Research on forage yields and species composition as affected by overstory tree densities.

Participant Name	Specialization	Thesis Title	Advisor	Date of Advisor's Visit to Morocco	Remarks
Ait Kadi, Mohamed	Irrigation Engineering	"Optimization of Water Distribution Networks Design and Layout".	Dr. Jack Keller	- 30 Oct. '82 to 13 Nov. '82	
Bensallah Zemrani, Abdelhouab	Animal Science	"Nutritional Evaluation of Ensiled Straw, Poultry Waste & Molasses as a Survival Feed for Moroccan Livestock During the Bad season".	Dr. G.E. Mitchell, Jr.	- 22 May to 4 June '82 - 5-20 March, '83	
Bourfia, Mohamed	An. Breeding	"Evaluation of the Genetic potential of two Moroccan Breeds of sheep as Breeds to cross with two Prolific Breeds".	Dr. R.W. Touchberry	- Feb. 12-20, '83	
El Bekkali, Abdelghani	Library Science		Dr. E.R. Deprospe	16 July to 10 Aug. '82	
Kabbali, Ahmed	Animal Science	"Compensatory Growth in Sheep: Effects on Body Composition and Food Conversion in Three Breeds".	Dr. C.E. Allen	- 16 Apr. - 7 May, '83	
Hallatou, Mohamed	Horticulture	"Studies of Graft Incompability Among Persea Species".	Dr. T. Murashige	- 4-10 Dec. '82	
Ababouch, Lahsen	Food Science	"Effect of thermal treatments in oils on bacterial spore survival"	Dr. F.F. Busta		

Participant Name	Specialization	Thesis Title	Advisor	Date of Advisor's Visit to Morocco	Remarks
DEBBARI, Abdelhafid	Civil & Min. Engr.	"Transit Ground Water Flow in a System of Two Aquifers Separated by a Compressible Layer".	Dr.O.D.Strack		
EZZAHIRI, Brahim	Plant Pathology	"Pestulation of Genes for Resistance to Stem & Leaf Rust in Wheat Cultivars & Lines from Morocco."	Dr. Alan P. Roelfs		
CHOUKR-ALLAH, Redouane	Horticulture		Dr. Paul E. Read	- 9/10-30/83	
BADDYR, Mohammed	Fresh Water Fisheries	"Ecology and Management of the European Shad, <u>Alosa alosa</u> in the Sebou River (Morocco).	Dr. Karl E. Lagler & Dr. Jim Diana		

TABLE 7
FACULTY RESEARCH IN MOROCCO

56.

<u>SPECIALIZATION</u>	<u>RESEARCH</u>	<u>LOCATION</u>
SOIL CONSERVATION	ERODIBILITY OF SELECTED SOIL TYPES	MIDDLE ATLAS NORTH OF FEZ
WATERSHED MANAGEMENT	WATER INFILTRATION IN SMALL WATERSHED	RIF MOUNTAINS
AGRONOMY	EFFECT OF SOIL COMPACTION ON NITROGEN UPTAKE AND WHEAT YIELD	TADLA
HORTICULTURE	MICROPROPAGATION OF OLIVES	RABAT & MEKNES
PLANT BREEDING	GENETIC IMPROVEMENT OF BARLEY	MERCHOUCH
PLANT PATHOLOGY	DEVELOPING BARLEY VARIETIES RESISTANT TO A FUNGUS DISEASE	MEKNES
VEGETABLE BREEDING	PRODUCTION OF POTATOES FROM TRUE SEED	AGADIR
AGRONOMY	ADAPTATION OF CORN TO DROUGHT CONDITIONS	SETTAT
WATERSHED MANAGEMENT	MODELING A STORM INDUCED EROSION AND SEDIMENTATION	RIF MOUNTAINS
RANGE MANAGEMENT	EFFECTS OF ENVIRONMENTAL FACTORS ON GROWTH OF A RANGE PLANT	HIGH ATLAS
HORTICULTURE	SELECTION OF TOMATO VARIETIES TO REDUCE EFFECT OF WATER & HEAT STRESS	AGADIR
SOIL MICROBIOLOGY	SELECTION OF STRAINS OF NITROGEN FIXING BACTERIA WHICH WILL SURVIVE AND PERSIST IN HIGH ACID COASTAL SOILS	LARACHE
HUMAN NUTRITION	ZINC DEFICIENCY IN MALNUTRITION AND DIARRHEA IN INFANTS	RABAT
FOREST INVENTORY	ALTERNATIVE DESIGN FOR EXTENSIVE FOREST INVENTORIES	RIF

RANGE MANAGEMENT	EFFECT OF TREE COVER ON COMPOSITION AND PRODUCTION OF NATIVE FORAGES	MAMORA FOREST
IRRIGATION ENGINEERING	DEVELOPMENT OF OPTIMAL WATER DISTRIBUTION NETWORK	LOUKKOS
ANIMAL SCIENCE	UTILIZATION OF WHEAT STRAW, MOLASSES AND POULTRY WASTE TO MAINTAIN LIVESTOCK DURING ANNUAL DROUGHT	EL KOUDIA
ANIMAL BREEDING	CHARACTERIZATION OF 3 BREEDS OF MOROCCAN SHEEP	MOGHRANE
LIBRARY SCIENCE	DEVELOPMENT OF AN AGRICULTURAL INFORMATION CENTER	RABAT
ANIMAL SCIENCE	EFFECTS OF COMPENSATORY GROWTH ON BODY COMPOSITION AND FEED CONVERSION IN 3 SHEEP BREEDS	MEKNES
FOOD SCIENCE & TECHNOLOGY	DEVELOPMENT OF HEAT TREATMENT TECHNIQUES TO DESTROY PATHOGENIC BACTERIAL SPORES IN CANNED FISH	RABAT
PLANT PATHOLOGY	DEVELOPMENT OF LEAF RUST RESISTANT VARIETIES OF WHEAT	RABAT
IRRIGATION ENGINEERING	TRANSIT GROUND WATER FLOW IN A SYSTEM OF TWO AQUIFERS SEPARATED BY A COMPRESSIBLE LAYER	RABAT
FRESH WATER FISHERIES	ECOLOGY AND MANAGEMENT OF THE EUROPEAN SHAD, <u>ALOSA ALOSA</u> IN THE SEBOU RIVER (MOROCCO)	SEBOU RIVER

AID 10-20-20-11-72

Chart 4PROJECT DESIGN
LOGICAL FRAME

Project Title & Number

NARRATIVE SUMMARY

Program or Sector Goal. The broader objective to which this project contributes:

Increase in trained managers, technicians and scientists to staff programs and projects and formulate development policy to aid Moroccan agriculture in the implementation of a broad based participatory agricultural development program and aimed at increased output and employment.

Project Purpose:

Creation of a "modern" college of agriculture appropriate to Moroccan agricultural development needs, with appropriate linkages to the rest of the technology delivery system and involving low-income farmers and herders.

Outputs:

Trained faculty members.
Linkages to U.S. agricultural science established.
Linkages to GOM research and extension programs by faculty.

Inputs:

Resident and TDY staff aiding development of Institute.
Participants identified and placed in U.S. universities through partnership.

OBJECTIVELY VERIFIABLE INDICATORS

Measures of Goal Achievement:

1. IAV graduates in action jobs in public and private sectors, effective and with necessary job skills.
2. IAV research and outreach effectively related to Moroccan ag. development problems.

Conditions that will indicate purpose has been achieved: End of project status.

1. Development of "modern" curriculum and departmental research programs under way.
2. IAV students on "firing line" with appropriate training.
3. IAV doctoral system working.
4. Limited reliance on foreign technicians and faculty (U.S. and other donors) in teaching.
5. Trained faculty engaged in teaching, research and extension.

Magnitude of Outputs:

1. Forty (40) faculty members returned to Morocco.
2. Fifteen (15) faculty members completed the Doctorate.
3. Thirty (30) faculty in U.S. for training.
4. Seventy (70) 3rd cycle participants sent to U.S.

Implementation Target (Type and Quantity)

1. Resident staff of 5 senior scientists and 3 junior scientists engaged in 3rd cycle and dissertation programs.
2. Establishment of partnership.
3. 90 person-months provided on TDY.
4. 65 faculty departed for training.
5. 2 resident staff and equipment operating at Agadir.
6. Specialized training programs for faculty offered.

**SUMMARY
FRAMEWORK**

Life of Project:
From FY 80 to FY 84
Total U.S. Funding \$10.4 million
Date Prepared: 7/10/79

MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<ol style="list-style-type: none"> 1. Tracer study of IAV graduates (positions held, appropriateness of training received at IAV). 2. Analysis of IAV research programs and extension activities (Annual Reports of IAV). 	<p>Assumptions for achieving goal targets:</p> <ol style="list-style-type: none"> 1. COM provides incentives and job related support to agricultural sector personnel.
<ol style="list-style-type: none"> 1. Changes since 1979 in curriculum (study). 2. Number of 3rd cycle programs and students fully handled in Morocco. 3. Decreased number of Moroccans going abroad for 5th year (IAV Annual Report). 4. Numbers of visiting/resident foreigners on faculty at IAV reduced (IAV Annual Report). 	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> 1. Maintained support of IAV by GO (operating and capital budget). 2. IAV continues development of management and incentive system and retains trained faculty.
<ol style="list-style-type: none"> 1. Head count of number of participants in U.S. for PH.D. training, working on dissertation and completed degrees. 2. Dissertation research completed and under way with U.S. advisors. 3. Survey of returned participants contributions to extension research linkages of IAV. 	<p>Assumptions for achieving outputs:</p> <ol style="list-style-type: none"> 1. Training in U.S. can be complete in 2 years (average) 2. Doctoral dissertation in Morocco of quality expected and complete in 2 years (average). 3. IAV supplied release time and other resources to do research on dissertation.
<ol style="list-style-type: none"> 1. Research team in place (head count). 2. Departure of participants (records). 3. Admissions obtained to U.S. graduate programs for IAV candidates (Annual Reports). 4. TDY reports. 5. Survey of students and U.S. advisors. 	<p>Assumptions for providing inputs:</p> <ol style="list-style-type: none"> 1. IAV recruiting and retaining faculty members. 2. U of M able to mobilize appropriate faculty in U.S. universities resident and TDY assignments necessary professional and language skills.

reports, and providing assistance to the departments/sections of which they are members. They also play a key role in advising pre-participants about the range of departments and universities available to them, helping them prepare applications for admission and goal statements, and in placement backstopping.

Partly as a result of the activities of the resident team, in conjunction with those of the Minnesota project office at St. Paul--as well as the efforts of the Institute in supervising the University of Minnesota under the Host Country Contract--this is as "self-managed" a project as may be possible with AID funding. (Some issues specifically relating to project management effectiveness are discussed below.)

On the whole, the current resident team members seem to be quite successful in carrying out their multiple tasks, coordinating with each other and with backstopping in St. Paul, and with the Institute's administration and faculty. This is an indication that the broadening of the scope of resident faculty activities under this project--in comparison with the narrow range and specificity characteristic of the predecessor projects--has been a success.

Nonetheless, performance in some areas has been uneven, and there are some additional problems that should be anticipated at this point in time and resolved quickly. Among these are selection and evaluation criteria for resident team members, the number that will be needed over the next few years given increases in participants returning to Morocco, the range of expertise represented among them and the balance of relationships to individual participants as against relationships to the departments, sections, and the Institute as a whole. A final, but somewhat pressing, problem relates specifically to orientation and placement of participants in the U.S. Since this is chronologically the first main task of the resident team leader and other team members, it will be discussed first.

Under the present project, the University of Minnesota has placed increasing numbers of third-cycle and doctoral-level participants at other U.S. universities.

At present, of those already in the States (not including those departing July, 1983), 20 are at universities other than Minnesota (see Table 8). The "Partnership" is the name given to the process through which arrangements are made by University of Minnesota project staff at St. Paul with the other universities in the Title XII community for acceptance of participants under the project, their proper supervision, etc. A limited amount of funding was included in the PP budget, but has not been forthcoming for maintenance of the Partnership.

It is the resident faculty members in Morocco who have first-line responsibility for advising pre-participant students and faculty members as to what is the best university and department for them, given their backgrounds, interests and--for faculty--the orientation coming from the department of which they are members. The resident Minnesota team attempts to do this for all fields represented at the Institute and for all the relevant U.S. universities. (They presently have only one complete set of catalogues for those universities that they have dealt with in the past, but even some of these are significantly out of date.)⁸ They tend to concentrate on disciplinary and sub-disciplinary specializations, but appear to have little knowledge of, or exposure to, multi- or interdisciplinary programs except those that may be run at Minnesota. Given the fact that on the present resident team, there are, for example, no social scientists, no ag engineers, no agronomists, one former university administrator, and a majority who have spent most of their faculty careers at the University of Minnesota, they do a remarkably good job.⁹ (The project office at St. Paul does about 75% of the placement job according to the Minnesota project manager.

However, there are a number of instances in which opportunities have probably been missed for placement of particular participants in the optimal department at the optimal university, given their specializations and/or sub-specializations, the

⁸Under this project, the USAID/Morocco Training Office is primarily involved in expediting participant departures. It forwards to IAV packets of forms to be filled out by pre-participants, and works closely with the Embassy Consular section to obtain visas for them. Given the annual 48-64 hour notice from IAV of the final participant lists, the office's performance is nearly miraculous. (cont. on next page)

availability of potentially interested advisors, the kind of departmental/school/extension mix at the university, and the ecological zone in which the university is located.

There are a number of other variables which must be taken into consideration, however, before a judgement is made about these instances. One reason given for placing some participants at Minnesota who, on the face of it, would be better off elsewhere, is the unquantifiable benefit to the participant and IAV that derives from the fact that Minnesota is the Contractor under this project, and that it has had a relationship with the Institute for 13 years. Thus, there are more faculty at Minnesota who are aware of the project goal and purpose, and who have visited Morocco, than at any other institution in the Partnership. This is, indeed, an important factor. Meetings with Minnesota faculty who are advisors to third cycle and faculty participants tended to demonstrate a good understanding of the project and in many cases, a high level of commitment to the IAV advisee. While this was especially notable for advisors of doctoral participants, it should also be noted that at an internal meeting in 1982, when advisors were told that the third cycle component of the project might be terminated, the majority indicated that they hoped it would be continued.

Another argument given for placing a large proportion of the participants at Minnesota has to do with basic philosophies about higher agricultural education. Thus, many Institute administrators and faculty, as well as Minnesota resident team members, feel that what counts is that the participant be given a first-class and

⁸(cont:) The internal AID documentation requirement is met with one global PIO/P.

It has been suggested by some concerned AID personnel that an individual PIO/P should perhaps, be prepared for each participant under this, as under other projects. This would, however, significantly increase the burden on the USAID Training Office. Since it is not possible significantly to expand the time period during which processing is done, this burden might well be greater than the informational benefit to AID that would be achieved.

⁹The balance of Minnesota versus non-Minnesota team members is a direct response to criteria established by AID, but is subject to change from year to year.

broad understanding of the basic principles and methods in his/her discipline, and be exposed to high-quality scientific research. Such an approach maintains that this can essentially be done anywhere at a "good" department of "x" in the U.S.-- including at Minnesota. Thus, even if the eco-environment of Minnesota has little or nothing to do with that in the Sous--where the Agadir Horticultural Complex is located--the argument goes that no problem arises if a majority of participants in horticulture do their work at Minnesota, since they will certainly be trained as good horticulturalists.

Still, there are cases where it seems anomolous that one or another participant or group of participants should be at Minnesota rather than elsewhere. Here again, there are often extenuating circumstances when the case is examined. Thus, Minnesota is willing to admit students who have TOEFL scores of 450, rather than the 550 or more that may be required by other land grant universities. Some other universities have refused, so far, to accept the principle that the faculty participant must receive his doctoral degree from IAV, and not from the U.S. university of record. Some universities and/or graduate schools are less willing than others to accept non-degree foreign students. Some potential advisors at some universities are not sufficiently interested to work with participants given the requirement to come several times to Morocco.

Any one or combination of these circumstances may be sufficient reason to keep a participant in the program, but send him to Minnesota rather than to some other university which might seem an obvious first choice and the one his department and the IAV administration would have preferred for institution-building purposes, or from the point of view of scientific excellence. However, it appears that there are sufficient instances where other options are overlooked, or where Minnesota project management decides to bypass them once they are available, that the evaluation team members external to the project believe that greater efforts should be made in the

future further to diversify the range of universities at which doctoral and third cycle participants are placed.

Reasons why a majority of third cycle participants might best be placed at Minnesota have been discussed above. Minnesota project management apparently also made a decision to have the majority of the first wave of faculty participants enroll at Minnesota to assist in building up institutional commitment to and understanding of the project on campus, and this seems largely to have been achieved.

One question that has been raised within the USAID is whether Minnesota really has a comparative advantage in placing participants under this project elsewhere than at Minnesota. Certainly, there are specialized placement institutions that could be used. However, it can be argued that by being involved throughout the process, from the point at which potential participants are recruited for special English classes at IAV, to the point when faculty doctoral candidates are examined by a committee of which they are members, the Minnesota resident team members are better able to relate to the participant as a whole person--and as an element of IAV as an institution--than would be the case if they only played an advisory and more general institution-building role.

Another option which has been raised in discussions by the IAV administration is that progressively, as relationships between each growing department at IAV and a counterpart department at U.S. university develop, separate agreements might be reached for placement and programming by the university at which the counterpart department is located. This would mean that in those cases, the University of Minnesota would eventually no longer play a broker role, and would also not receive overhead on activities related to the "care and feeding" of the participant while in the U.S. Rather, this overhead would go to the university in question, as would the tuition.

The resident team's track record seems quite positive in the area of participant research despite the fact that a large number of disciplines is involved which are

really outside the competence of any of the current team members, and the fact that a good knowledge of French is really required for effective third cycle supervision, a characteristic which some of them lack. What remains of concern is how this track record can be maintained when, as is pointed out in the last Annual Report, there will be as many returned faculty participants in Morocco as there are faculty participants in the U.S. Already, resident faculty indicate that their supervisory responsibilities are becoming onerous, especially given that they also have their own research to carry out, not all of which involves the same students/participants as those that they officially advise under the project. It seems clear that very soon, there won't be enough resident team members, and resident team member available hours, to go around. As the range of disciplines increases, there will also be a greater problem of relevance of expertise, unless it is broadened commensurately almost immediately. (Given the lead time necessary to recruit and place either a "senior" or "junior" resident faculty member under the project, this is a matter which warrants immediate attention by all parties to the project.)

The evaluation team explored a variety of ways to resolve this problem with those interviewed. Almost all the Moroccans--and some of the Americans--quickly pointed out that even though it might be desirable in an ideal world to recruit more full-time resident Minnesota team members, and have them stay in Morocco for two to three years, in reality this was the most expensive approach, both to the USG and the GOM. Further, the overall direction of institutional development at IAV--strongly supported by the training component of this project--is away from a dependence on full-time expatriate faculty.

Nevertheless, there appears to be some sympathy with adding one or two resident team positions to cover those disciplines and fields where there has been no American representation so far, and/or where U.S. models are accepted as being particularly relevant. Key areas are those of the social and economic sciences ("human sciences") and human nutrition. As Table 9 shows, these departments are only recently being

involved through the participant training component. Yet, as the IAV Director has indicated, they represent disciplines and fields for which there is increasing demand in the Moroccan job market, and where there may be some comparative advantage in the U.S. higher educational system's approach.

In addition, evaluations of performance of faculty and students of the Department of Human Sciences under another USAID/Morocco project, (608-0136) indicate that there is a need for U.S. TA to the Department in the area of methodology and research design. Further, a new USAID project, 608-0182, will depend on IAV turning out eight M.S. students with backgrounds in agricultural economics, management, rural sociology, and related fields to be sent for later doctoral training in the U.S. At present, it is unlikely that these students can receive the appropriate kind of training solely at IAV given the fact that there is no 5th year coursework offered in these disciplines.

The head of the Human Sciences Department, as well as the Director of the Development Directorate, have indicated preliminary willingness to accept a U.S. technical assistant to work with the Department and the Direction provided under one or another USAID project. The head of the Department of Human Nutrition and Nutrition Economics has also indicated a desire to have the benefit of a U.S. resident TA presence in the area of agricultural economics or rural sociology to provide backup in survey design and analysis if it is not possible to provide someone specifically in human nutrition.

Provision of resident team members in the social/economic sciences was a strong recommendation of the 1978 Evaluation of the predecessor project, as was the provision of a person expert in the design and administration of university-level teaching and research programs, and broader issues of institutional development and organization. It is not clear why these recommendations were not implemented in the design of the existing project, but the present evaluation team strongly seconds them.

There are, however, a number of ways of fulfilling the spirit of these recommendations. One is to add one or two positions to the full-time resident faculty

TABLE 9
FACULTY PARTICIPANTS BY DEPARTMENT, INSTITUTION, AND DEGREE
1978-1983

<u>Department</u>	<u>INAV Rabat</u>	<u>INAV Agadir</u>	<u>ENA Meknes</u>	<u>ENFI Sale</u>	<u>Other</u>	<u>Total</u>
Basic Sciences	1/0/0 ¹					1/0/0
Envi. Sciences						
Soils	4/0/1		1/0/0			5/0/1
Watershed Mgmt.	1/0/0			1/0/0		2/0/0
Forestry				2/0/0	1/0/0	3/0/0
Fisheries	1/0/0					1/0/0
Plant Prod.						
Plant Imprvt.	4/1/0					4/1/0
Plant Path.	1/0/0		1/0/0		0/1/0	2/1/0
Agronomy	2/0/0		2/0/0			4/0/0
Animal Prod.						
Animal Sci.	3/1/0		2/0/0		1/0/0	6/1/0
Range Mgmt.	2/0/0		1/0/1	1/0/0		4/0/1
Horticulture	1/1/0	6/2/0				7/3/0
Hydraulics	5/3/0				1/0/1	6/3/1
Food Tech.,	3/6/1		0/1/0			3/7/1
Human Nutr.	2/1/0					2/1/0
Vet. Med. & Sci.	10/0/1		1/0/0			11/0/1
English	0/2*/1					0/2*/1
Lib. Sci.	1/0/0					1/0/0
Ag. Econ.	1/0/0		1/0/0			2/0/0
<u>Total</u>	<u>42/15/4</u>	<u>6/2/0</u>	<u>9/1/1</u>	<u>4/0/0</u>	<u>3/1/1</u>	<u>64/19/6</u>

¹ Ph.D./Master's/Short-term

* One additional participant did not complete the program due to poor performance.

team, both for supervision of individual participants returning in social science fields, and for broader institution-building purposes. Another is to provide short- or medium-term consultant services under the project from several U.S. experts, from the University of Minnesota and elsewhere.

Some use of discrete consulting services has already been made under this project, as reported in the 1981-82 Annual Report.

"...consultants were called in to provide assistance in new professional areas (disciplines) in which the project had limited previous experience particularly in Animal Science and Veterinary Medicine and to reinforce the resident staff, especially in Rabat. All consultants gave one or two public lectures and were widely available to faculty at IAV and to other Moroccan scientists for discussing teaching research and outreach activities in their disciplines. Particular attention was also given to interviewing and screening potential future faculty participants and to acquiring understanding of the nature of needed and feasible applied research topics under Moroccan conditions."

The solution suggested is a variant of the consultant approach combined with a variation on the TDY advisor approach as follows:

Each department will have a counterpart department or departments at a U.S. university or universities. However, not all participants from that department will necessarily be routed to those counterpart departments, since there is also a desire to diversify exposure of participants from any one department. The counterpart department relationship is designed to help the IAV department to establish itself qua department, and to maintain a core of overseas scientific contacts and relationships that can then expand to include others. Ultimately, it is hoped that collaborative research efforts will be developed between the counterpart departments, and that faculty exchanges can take place.

Thus, each department needs the services, from time to time, and for varying periods, of a senior person or persons from the U.S. counterpart department(s) to come to Morocco, and work with IAV department members in departmental structuring, student and participant research supervision, curriculum development, and design of a departmental research agenda. The idea would be that the same persons would come

each year over a period of several years, to create strong and enduring relationships. These visits could be coordinated with those of TDY faculty participants' advisors, so that mini-conferences could be organized, at which members of the department, and some 6th year students, could also present papers based on on-going research.

To implement this approach, some sort of memorandum of understanding would probably have to be developed with each counterpart department and its home university, so that the aims and objectives would be clearly understood by both parties, and so that some commitment from the department--rather than merely some of its individual members--could be obtained.¹⁰

Costs of this approach to solving the problem of representativeness of expertise on the resident team would be considerably lower than the full-time team member alternative. There would be the added benefit of the departmental commitment, the diversification of institutional relationships with U.S. institutions, more people would be available to give advising and supervision services when needed in Morocco, and the development of the fifth year coursework programs in the newer departments could be accelerated. Some combination of this approach with the consultant approach relating more toward the Institute as a whole, would help to solve a number of problems, and have a variety of institution-building pay-offs. The existence of the Partnership would help Minnesota to broker relationships under this approach effectively.

Some comments should be made about levels of competence, roles, durations of stay, and evaluation criteria for performance of resident team members. To date, all but one member of the resident faculty team have been "senior" faculty. A "junior scientist" (faculty) component was designed into the project, but so far, only one "junior" scientist has been recruited. Having spent two exceedingly useful

¹⁰The Minnesota Project Manager indicates that a formal MOV approach may not be desirable, and stresses the success that has been achieved so far by getting a leading faculty member involved in the project without formalizing the relationship.

years at the Agadir Complex, he is now returning to the U.S. There is universal agreement among all parties that this individual has been of outstanding service to IAV, 'has played a key role in institutional development at Agadir, having set up a diagnostic clinical lab for plant diseases, supervised students, taught lab courses, revolutionizing the lab approach. It is generally felt that he has contributed at least as much as any of the "senior" faculty, although he does not have an advanced degree, had a smaller research budget (and earned about half as much in salary and fringes.)

Nevertheless, the USAID has strongly suggested to Minnesota that the component be deleted from a proposed amended project. The feeling seems to be that this individual was a fluke, and that the component as really designed is a "payoff" to Minnesota and to pay for U.S. graduate student research in Morocco, something which is felt by some to be an inappropriate use of AID funds.

In fact, the justification of the component in the PP is quite persuasive, as is the evidence provided by the only case to date:

"Junior Scientists - These will be young U.S. doctoral students or post doctoral students who, at moderate cost, can provide peer support to Moroccan faculty engaged in dissertation research, teach courses in 2nd cycle and/or 3rd cycle and provide support to the scientists (sic). They will also and most importantly, provide for linkages and continuity to TDY personnel.

"Junior scientists will be recruited from advanced doctoral candidates or post doctoral students with strong interests in Moroccan agriculture. (They may have had prior Peace Corps experience, etc.) An additional benefit, but not the purpose of the project, is that this will create a pool of experienced young scientists useful to future U.S. AID agricultural programs. They will not receive the level of salary and allowances paid to other scientists. They will cost the project less than half that of a senior scientist yet can provide enormously useful services."

In addition, the junior scientists, if recruited according to this set of criteria and objectives, will also provide a key missing element at IAV--the middle-level skilled person who takes a very "hands-on" approach, is closer in age and experience to the faculty participant, and can serve as a more proximate role model than may the older "senior" scientist. His/her activities, if well structured, can effectively

complement those of the more senior scientist in the same or a related field, thus exposing all those involved with the IAV department--including undergraduate students who are not participants--to a more realistic image of what a full-fledged American department structure looks like and how it functions. From what could be ascertained from observation and discussions, the evaluation team would second these views. The latest addition to the resident team is a faculty member at another university, and this will be his second tour in Morocco at IAV. His re-recruitment poses some difficulties in terms of balance on the team, since he is a plant pathologist, of which the team already has one. Senior faculty interviewed at St. Paul were quite frank in admitting that although they were sympathetic with the project's goals, they would have difficulty finding, say, ten equally senior Minnesota faculty to serve on the resident team in Morocco. They encounter the same disincentives to working abroad over the long-term as do colleagues at other U.S. land grant institutions, but may be more open about admitting it than is sometimes the case elsewhere. Some evaluation team members feel that a greater effort should be made by Minnesota to recruit qualified resident team members from other land grant universities, especially where issues of disciplinary balance are concerned.

The next anticipated "junior scientist is an M.S. student in animal science. She will do a particular survey of animal nutrients available in Morocco, and will receive an M.S. from Minnesota as well as a degree from IAC. This is a new departure that may prove very successful, although it doesn't conform precisely to the language of the project paper. The idea of sending a U.S. student for a degree at IAV is certainly appropriate given the institution-building and collaborative assistance approaches of the project. Whether this individual should be billed as a member of the resident team, however, is open to question, since she is senior only to undergraduate students at IAV, who are not part of the project. It is to be hoped that if the junior scientist component is continued, some more senior graduate students and group post docs will be selected.

Input: TDY Advisors

One of the innovations under the present project is the system of TDY advising for faculty participants when they return to Morocco. Table 10 shows the frequency of visits and the fields of study of TDY advisors from October, 1981 to June, 1983, including short-term consultants who were not advisors of participants. As is noted in the Annual Report for 1981-82, the TDY advisor system seems to be working well. The table shows that a number of advisors have now been to Morocco who are based at universities other than Minnesota. The proportion of these advisors is likely to increase rapidly as the project progresses over time, building greater understanding of the project and the Institute at the home universities of these faculty members.

"During FY'82 TDY visits were made by 15 faculty advisors of returned INAV faculty....This is double that of FY'81. The numbers of such visits, as the number of returned faculty participants increases, will double again in FY'83. These TDY visits are an essential input into the project for the assurance of the timely conduct of quality dissertation research. Equally importantly, they are laying the foundations of the permanent institutional linkages which are being built between INAV and U.S. agricultural science....

"The TDY faculty advisors spend between 2 and 3 weeks in Morocco. They are encouraged to travel to all the field sites of the research being conducted by their student and to make extensive contacts with other Moroccan agricultural scientists and subject matter specialists. TDY faculty give at least one (and usually 2) public seminars to which faculty from INAV as well as colleagues from INRA, Mohammed V University, the Ministry of Agriculture and Agrarian Reform etc. (sic) are also invited.

"Given the infrequent direct contact between faculty advisors and doctoral students engaged in research, TDY advisors and consultants are also encouraged to provide advice and counsel to other INAV faculty (sic) engaged in dissertation research in related fields and to discuss matters such as curriculum and research management with other colleagues (sic) at INAV. In other words, TDY faculty are required to perform a larger role than that of advising their student (sic) as important as this is to project implementation. In the future, as third cycle (5th year) teaching increases at INAV there will be increased need and opportunity to use visiting TDY advisors in the teaching of the third cycle program in Morocco."

As was noted above, the evaluation team had the opportunity to talk with two TDY advisors in the presence of their advisees. This was extremely useful; both made very constructive remarks about the program, the problems and benefits to the participant (and the advisor) of carrying out dissertation research in Morocco,

TABLE 10
 U.S. FACULTY MEMBER VISITS BY FIELD
 OF STUDY:
 OCTOBER 1981 TO JUNE 1983

<u>FIELD OF STUDY</u>	<u>NO. OF U.S. FACULTY VISITS</u>	<u>NO. OF VISIT MEMORANDA</u>
Agronomy	2	1
Animal Science	3 (2)*	2 (1)*
Cereals Breeding	1	1
Cereals Pathology	1	0
Forestry	1	1
Horticulture	5	4
Hydraulics	1	0
Library Science - -	1	1
Nutrition	1	0
Plant Pathology	1	1
Plant Physiology	2	0
Rangeland Resources	1	0
Range Management - -	3	0
Range Science	1	0
Ruminant Nutrition	1	0
Soil Conservation	1	1
Soil Microbiology	2	0
Soil Science	1	1
Veterinary Medicine	3 (1)*	3 (1)*
Watershed Management	1	0
Total	<hr/> 36	<hr/> 18

* Additional visits/memoranda by consultants

advantages of the TDY visit other than strictly for advising (e.g., encouraging the participant's outreach activities in the relevant industry/sub-sector of Moroccan agriculture), as well as problems to be anticipated when the doctoral degrees are to be granted at IAV.

Some non-participant faculty who are otherwise sympathetic to the project indicated that in reality, there were a number of advisors who failed to interact with anyone but their advisees, placed much too much pressure on the advisees to concentrate only on accomplishing his/her dissertation research project, and did not have a beneficial impact on institution building as a result. While this may be true, it is difficult to see what more can be done in general by Minnesota to improve the selection process for advisors.

Increasingly, the project personnel are making the faculty participant himself responsible for educating the advisor, programming his visit to Morocco, and hosting him at IAV. This is a good thing, and should be encouraged more in the future. However, resident team members should perhaps spend more time with the participant in some cases in helping him/her to orient the advisor when he arrives, and to make sure that the proposed schedule of activities is appropriate in terms of all project objectives. Timing of visits should also be improved. Everyone seemed to agree that it is important that the advisor pay his first visit to IAV within six months after the participant's return. This is helpful to the advisee but also to the advisor, in terms of making sure that the latter understands what the environment for research at IAV does and does not provide. This is a good time for reworking of the dissertation research proposal, given the realities of this environment, and the participant's performance to date in getting started. Advisors should be encouraged to be open to such revisions, rather than trying to change the whole IAV system to accommodate a research design that was elaborated in the U.S. and thus, out of context.

In some cases the TDY advisor lets the resident team member who is the research coordinator know directly what has been discussed and determined during the visit and sometimes, he doesn't. This has created some problems of communication, and of expectations on the part of participants, the resident team, and TDY advisors as well. In future, it should be made clear to the TDY U.S. advisors that written communications to the participant advisee that are relevant to project supervision and project performance, should be copied to the resident research coordinator. This is not to be understood as a "control" mechanism, or some sort of breach of academic freedom, or as a basis for punitive action, but rather as a way of facilitating the jobs of all parties involved.

In general, the evaluation team has the impression that U.S. advisors are given very broad latitude under the project, and that they are placed in a very key position in everything relating to the participant's academic life after his return to Morocco. As has been noted, this is thought in some ways to be a necessary trade-off for advisor participation and commitment. However, in some instances, the degree of latitude and influence seems to be disproportionate. It is sometimes argued, in support of this latitude, that this is the way it is done in the U.S.

While this may be true in many of the science disciplines in the U.S., where the graduate student's acceptance to the department may even be conditional on fitting into a place on a faculty member's research project, it is not always the case. In any event, the option of alternate visits from the main advisor and another faculty member should be kept open, especially as a number of faculty participants already have co-advisors in the U.S.

One of the things that IAC administrators and senior faculty have repeatedly stressed in discussions is that they are--in adopting a U.S.-style model--trying to get away from the European model in which the doctoral candidate is a sort of dependent of the professor for years, with very few rights, and very little other faculty

input. The whole emphasis on department building at IAV bears this out. The idea is to create U.S.-style departments rather than to replicate the French "chaire" system where there is one professor and two or three students working on doctoral research for as much as ten years.

It would seem that in some ways, the project is reinforcing the European model by granting more authority to the single U.S. advisor than may be warranted. The suggestion that a Moroccan co-resident coordinator be appointed, even if such a person is not in a field that is directly related, seems to be a good one, and should be encouraged by the Minnesota team leader and project manager. This is especially true given that the doctoral committee formed in Morocco for the IAV doctoral defense will be international and will include Moroccan members as appropriate as well as U.S. and other-country members. It would be as well to set the precedent earlier than when the committee finally, and briefly, assembles for the defense.

During discussions of this matter during the St. Paul visit, the point was made that the project should work toward keeping IAV to set up a graduate school structure. Were this done, a number of issues that will begin to arise as faculty participants receive their doctorates could be resolved quickly, and appropriate precedents set. This is another area in which consultant services on university administration are desirable under an amended project.

Input: Commodities:

The present project has included a modest amount of commodity support relative to the proportion for participant training and associated activities. Particularly, there was a significant amount for equipping departments at the Horticulture Complex at Agadir, which has now all been expended. The other main commodity items are project vehicles, and those commodities that are purchased with the \$10,000 research support funds for returned faculty doctoral participants, and by the resident faculty in support of their research. In general, these commodities seem to have been

carefully and well selected, and to have had maximal impact on IAV institutional development objectives as well as on individual participant progress. Understandably, there have been some exceptions, but these are minor, and it is likely that in the future, fewer mistakes will be made.

It has been argued by the Minnesota team that the line item for the \$10,000 research support funds should be included under the general commodity line item, since in general, it is used for purchase of commodities, largely in the U.S. and of U.S. manufacture, and because to do so would increase flexibility given the rules governing exceeding line item allocations by more than 10%. The team sees no difficulty with this approach, but would encourage stricter monitoring of expenditures by the Minnesota resident team and by the USAID if this is to be done.

The recent AID Audit Report indicated that there had been some difficulty and delay with expenditures of the commodity line item for Agadir. This seems to have been an error in understanding on the auditor's part. The auditor however also recommended that additional special support to the Agadir Complex be maintained under the project, rather than cancelled as was the stated AID intention. The team feels that some additional commodity support should, indeed, be provided to the Complex at Agadir, but also to the main campus at Rabat, and to ENA and ENFI. This is certainly not a "bricks and mortar" project, but that does not mean that some additional support for laboratory and other research equipment is not appropriate.

It is suggested that some funds be provided under proposed amendments to the PP and the contract for an experienced person to come on TDY from Minnesota to make an overall assessment of these needs in cooperation with the Research Director. Alternatively, such a person might be obtained from INSAR in the Hague, possibly at no cost to the project or to IAV. Pending the findings of this TDY specialist, funds could be included under the proposed amendment, but not expended, for additional commodity purchases in the U.S. Similarly, it is strongly suggested that in the

context of the negotiation for the 1984 PL 480 Title I Agreement, consideration be given to including local currency funds for commodity procurement in Morocco for items needed in support of project activities at the Institute. There is a precedent from the 1983 Agreement in the case of Project 0136 which can be followed. IAV has already prepared a needs list in this connection, that should be reviewed with IAV administrators at an early date.

However, it is suggested that if the PP and the Minnesota contract are to be amended to include additional funds for the purchase of commodities, care should be taken to ensure that the contract provides for fuller and more frequent financial reporting to IAV and to AID. This was a recommendation of the 1982 internal AID evaluation of this project. Minnesota has made progress in meeting this 1982 request, but additional changes in supporting documentation that is presented to the USAID might further clarify issues and prevent USAID misapprehensions.

The evaluation team leader found that it was virtually impossible to tell, for example, how much a participant cost to the project, from data available in Morocco. Similarly, it is difficult to determine what the decision-making process is for purchase of commodities. The request by Minnesota to have even greater flexibility in this area should be accompanied by provision of clear statements to IAV and to AID about how these decisions are made, when, and by whom. Some of these can be included in the PP amendment. It is also suggested that IAV administrators might wish to take a more active role in forward planning and in assessing the wisdom and/or legitimacy of certain proposed expenditures (see below).

Input: Short-term and Third Country Training:

The project provides for some short-term and third country training. To date, this seems to have been under-emphasized. Minnesota should be encouraged to explore useful ways in which this source of institutional development-oriented activity can be utilized, especially in collaboration with various programs at the International

Centers. Such opportunities should be provided in conjunction with university visits for non-participant faculty and administrators from IAV, as well as in conjunction with trips to the U.S. for participants. CGIAR staff should probably be included in Partnership meetings if this is not already done.¹¹

A recommendation from the 1978 evaluation of Project 608-0134 should be reiterated here in this connection:

"Another possible area of assistance is in the administrative area. The rapid growth of the institution in faculty members, student enrollment and an additional campus at Agadir may well create new administrative problems. Assistance should be expanded to permit a rather substantial program of 'administrative interns'. These would be present or prospective administrators who would serve as interns with counterpart administrators at the department head level or higher in Colleges of Agriculture in the U.S."

This seems to be a good way of introducing a number of IAV faculty and administrators to U.S. land grant (and other university) styles of administration. All participants interviewed indicated that they had really not had time or attention to spare while they were in the U.S. to understand the way the university and university systems operated, and now that they are getting involved in administration, they felt that they missed an important opportunity. Administrative internships could be arranged in conjunction with doctoral coursework (during one quarter part-time), with university visits, or as a separate short-term training option.

Output: Trained Faculty Members:

Much of the information gleaned during the evaluation about the anticipated outputs under the project has already been discussed above in relation to each input, especially with regard to faculty participants. Here, a few further points about research will be made, before proceeding to discussion of the other anticipated outputs.

¹¹ A constraint to more creative use of third country training opportunities has apparently been the U.S. Embassy's policy of only granting project participants single entry visas.

One of the hardest aspects of this project to understand-and thus to evaluate-is the selection criteria for faculty participants. As has been noted above, the selection criteria are likely to change somewhat if the "new model" is adopted.

Up to now, IAV, Minnesota and USAID/Morocco have established targets for numbers of faculty participants to be trained in each discipline that is needed for the teaching program at IAV. These targets were established on the basis of the overall IAV faculty recruitment plan (Chart 2B), known availability of graduate-level scholarship from other donors, participants already trained under predecessor AID projects, and assumptions about the number of faculty who would be willing to study in the U.S. rather than in Europe.

As the project has evolved, more IAV faculty have begun to express interest in graduate training in the U.S. than was the case at the beginning. This is a generous project. Returned participants have obviously been good publicists for it, as have the resident team members, and returned participants clearly have more research funding when they return than do faculty studying in other countries. Given this increased demand - which is an indicator that the institution building process is working - IAV is trying to provide some U.S. experience to as many of its faculty as possible. This is one reason why, of 24 faculty participant who departed for the U.S. in July, 1983, only 2 had U.S. experience at the master's level.

In some cases, faculty who have done a fifth year or a full M.S. in the States are being asked to delay a year or so before going again at the doctoral level, so that equity considerations at the department level can be met. In the view of the evaluation team, this does not represent a serious departure from the spirit of the project, which is to help IAV develop as a modern college of agriculture with benefit of exposure to the U.S. land grant model.

However, the team would suggest that at the next annual review meeting, the matter of faculty participant selection criteria be discussed in detail, so that

a better understanding can be achieved by the USAID and Minnesota of what IAV currently wants to achieve by the end of an expanded LOP.

It is also suggested that this discussion include the matter of female participants. IAV has taken major steps in recruiting female undergraduate and graduate students, and the proportion of female students in the student body averages about 10% in any given year. There are a number of women faculty members, including expatriates, but still relatively few given the proportion of female students. It is strongly recommended that IAV administrators and the resident team leader make every effort to see that the desire on IAV's part to send as many faculty members to the U.S. as possible does not prejudice the career chances of those few women faculty who are or have been participants. It should be emphasized that to make this effort would conform to the Institute's stated policy, and to its strong performance outside the project context.

A somewhat related concern that should be thoroughly discussed is the impact of the faculty participant program on participants' spouses. Increasingly, Moroccan male participants under USAID/Rabat's projects have wives who are also professionals. Some female participants under this project are married, and like their male counterparts, choose to bring their spouses with them to the U.S. at their own expense.

Once in the U.S., the spouse usually has little opportunity to pursue professional development goals either for lack of funds, or lack of English language skills, or both. This is a waste in itself, but may have, additionally, a deleterious impact on the participants' performance. A recent paper co-authored by the Minnesota project manager for AID suggests a corrective approach that might well be adopted by the parties to this project:

"It has been observed frequently that spouses (wives, in the main) of participant trainees are a greatly under-utilized resource during the period of training in the U.S. Many are capable professionals whose career development is interrupted, though they could become more involved professionally with modest financial support and guidance. It is proposed, therefore, that AID provide a small amount of money...for the support of proposals from spouses of participant trainees that would further their

professional careers. Monies would not be used for regular degree-related training...but, for attending, for example, short courses, workshops, and seminars and for the requisition of essential materials for research or professionally related activities. Awards of the order of \$2,000 to \$5,000 per spouse are envisaged, though further attention will need to be given to policies relating to the selection of awardees and the scale and use of awards."

It is suggested that Minnesota and IAV work out a plan for such an award program and that funds for that program be included under an amended project.

Another issue that was raised during the evaluation is what really is an appropriately trained faculty member. As one resident team member put it, "We are supposed to be training educators, not just researchers." This is certainly the sense of the project design. Yet, many U.S. advisors and some resident team members appear to be stressing research skills above all others. The project has done little specifically to reinforce what the participant may learn by exposure to U.S.-style teaching methods as a graduate student. Similarly, it has done nothing in the area of administrative skills, and apparently little in the area of structured exposure to outreach functions while the participant is in the U.S.

These are areas that should be strengthened under a proposed amendment, as should the IAV organization for, and funding provided to, research. Some specific recommendations are made below for ways in which this could be done. The Institute's new reorganization provides an excellent venue for these kinds of project innovations.

Output: Linkages to U.S. Agricultural Science:

Interestingly, the logical framework includes no "verifiable indicator" for this output, appearing to lump it with those for trained faculty members. Indeed, it is hard to quantify. Almost everyone involved with the project indicates that one of its main benefits is the international contacts it permits for participants and, through them, for other members of the faculty, students, and the Institute as a whole. What is, perhaps, questionable, is the extent to which these contacts are exploited, and how they will be maintained after the end of project life. A number

of aspects of these questions have already been discussed above, and some suggestions have been made for improvements that will hopefully make these linkages more useful and more permanent.

So far, the main linkage has been in terms of research, although the resident team members also do some teaching. There is justifiable concern that the expectations about continuing research activities and opportunities at IAV for returned participants and other faculty may be less than realistic given current budget stringencies. In discussions, the evaluation team made several proposals to help enhance the realism of these expectations over the medium term. These met with a fair amount of approval.

Before they are reiterated here, some contextual remarks about the budget crisis the IAV is facing should be made. While the evaluation team was in Morocco, all public-sector institutions were receiving cuts to their capital and operational budgets. However, the impact of these cuts on IAV's operations is disproportionately negative if IAV is compared to some other institutions with which the USAID has assistance relationships. One reason for this is that the IAV administration has apparently consistently refused to inflate its budgetary proposals, as is common in Morocco as elsewhere. Thus, any cut sustained is more severe than if the original proposal had been inflated. A second reason has to do with the Institute's role and function as an educational institution. It has no reasonable way of reducing its student body in mid-year if budget cuts are suddenly introduced. It cannot simply close the dormitories, expell some proportion of the students, or close down some of the labs. It cannot sell its few research animals, or make a greater profit on the sale of crops produced on the Institute's farms.

While the team was carrying out the evaluation, the electricity was cut off at IAV, albeit briefly. This was because for several years, the budget allocation for electricity has been about 50% of actual expenditures, and IAV has consistently

been unable to pay its full electricity bill. The IAV representative on the evaluation team in fact had to abbreviate his participation substantially in order to be able to go to the Ministry of Finance on numerous occasions to argue that funds saved by IAV in other budget categories be approved for expenditure for electricity so that the electricity could be kept on. (This occurred during the two weeks when students were studying for their end of year exams, and preparing their final year papers. Clearly, electricity was important at this stage, and more important than this evaluation.)

Without going into all the dismal details, the Institute is operating at a deficit for a number of reasons that largely are beyond its control. It carries out all the higher level training in agronomy and veterinary medicine in Morocco with .002 of the MARA budget, and somehow has continued to do so despite a rate of inflation over 10%, and expanding horizons and activities. Meanwhile, other donor funding is on the decline (see Table 11), and is likely to continue to decrease over the next few years, despite the creative efforts of the Director and various faculty members.

The new reorganization of the Institute includes an evolving system for the fair allocation of limited funds for research materials, transport, labor, etc. It is also supposed to aid the IAV as a whole to seek outside sources of funding for research, both within Morocco and from international sources. However, as it is presently organized and operating (it is still very new), some potential problems become obvious. The Research Director does not yet have a budget. He has no authority, but serves the IAV Director in an advisory capacity. There is no advisory committee of faculty members with particular research expertise and needs, as well as international contacts. So far, there are no contacts with potential international funding sources. Nevertheless, the Director is supposed to be in charge not only of research coordination, but also scientific publications and information, acquisition of scientific equipment, and the underfunded and understaffed research farms.

TABLE 11
 CONTRIBUTIONS OF FOREIGN
 DONORS TO IAV IN
 1983

DONOR	TOTAL PROJECT FUNDS IN US DOLLARS	TIME SPAN OF PROJECT	NATURE IF AID GIVEN & RECIPIENT INSTITUTION
USAID 608-0160 Institution Building	\$9,750,000.00	1980-1985	5 advisors, U.S. training 15-25 5th yr. students, 15-25 faculty participants per yr. Commodity support.
Institutional agreement University Lavayl (Canada)	No funds at present.	1983-?	3 participants/year. 6 visiting professors.
Vet. Med. W. Germany	\$60,000.00	1983-1985	Funds to finalize 5 participants in Vet. Med.
Ag. Technolo. W. Germany	?	1981-1984	5 experts, 5 participants in Agr. engineering.
Aid to IAV Belgium	\$40,000.00	Will end in 1984	for logistic support only. 3 participants, 20 visiting professors, 12 experts.
United Kingdom	?	1983-?	2 participants/year, 3 visiting professors.
Sweden	?	1983-?	1 visiting professor, 1 participant.
France	\$10,000.00 \$45,000.00 \$15,000.00	1983-?	19 civil experts, 14 VSNA (2 yrs.), 30 scholarships, 60 man months participants, 65 visiting professors. 15 short visits of Moroccan staff. logistic support, (chemicals, lab supplies...) Library.

DONOR	TOTAL PROJECT FUNDS IN US DOLLARS	TIME SPAN OF PROJECT	NATURE IF AID GIVEN & RECIPIENT INSTITUTION
IFS	\$10,000.00/grant	1983	10 research grants. These are one time funds, must be applied for annually, awarded in competition with others.
		1983	1 scholarship.
AIEA	\$8,000.00/grant	1983-?	4 researchers grants. These are one time funds, must be applied for annually, awarded in competition with others.
CIHEAM		1983-?	6 scholarships; Italy - 2 Spain - 2, France - 2.
CRSP	\$6,000.00	1983	
		1982-1985	Nederlands development project.
UNESCO	\$3,000.00		4 visiting professors. 1 scientific course by Spanish ecologists.
	\$12,000.00		1 international course of soil microbiology.
AUPELF			

The Director of Development, on the other hand, for historical reasons, already has some grant funds from international donor organizations (including USAID/Morocco), the ability to travel to seek new funding opportunities, wider connections within the Moroccan official bureaucracy which may generate some additional grant funds, and some staff. Like the Research Director, he can draw, at least in theory, from all faculty resources to design and implement projects. However, there is as yet no evident complementarity between his functions and those of the Research Director, or a relatively clear division of labor between them. Yet a disquieting tendency seems to be emerging in some quarters to think of "science" "research" and "equipment" as being synonymous or at least closely related, while "development", "applied research" and "projects" are somehow also closely associated but are somehow "not research".

Meanwhile, various departments and their members--including participants under this project--have their own national and international contacts through which they may be able to raise funds for basic and applied research, and are in fact successfully doing so. However, at the moment it is not clear whether, with the new centralization of research and development/outreach under the new Directorates, these kinds of departmental and individual contacts will be encouraged and/or able to thrive. Tensions have already arisen, and are not yet resolved.

The evaluation team's proposals for strengthening research possibilities at IAV under the aegis of the project were as follows: 1) To create a small fund for research aside from the budgets now allocated to the resident team, and aside from the individual participant \$10,000 stipends. This fund would be administered collaboratively and competitively, and would be open to all faculty members, providing support for individual and/or departmental projects. 2) To provide some funds for a small budget for the Research Director, to enable him to carry out his mandate quickly and effectively. This would, in a sense, be an investment in creating the capacity within the middle levels of the IAV administration to seek outside research

funding, and would have a distinct and broad institution building impact. 3) To provide some funds to the individual departments--in conformity with the general move toward decentralization of responsibility and authority to the departments and sections. Department members would have to compete for funds by preparing research proposals that would then be reviewed by a committee including resident Minnesota faculty, department heads and section directors, and some outside referees from the appropriate discipline/field. 4) Simply to increase either the resident faculty research budget line item, or the commodity line item, and to let the resident faculty--with the advice of the IAV administration--allocate the funds on some sort of "as-needed" basis.

Clearly, each of these proposals has different institution-building implications as well as project management and accountability implications. Adoption of any one or combination of them should depend on careful examination of management systems and institution-building implications, both by IAV administration and faculty, the Minnesota project team, and the USAID.

Output: Linkages to GOM REsearch and Extension Programs by Faculty:

In previous sections, a considerable amount of attention has been given to the role of research at IAV, and ways in which it is being encouraged under the project. Suggestions have been made for some ways in which further support may be given to IAV's research programs under the project, and AID's potential role in this area will be discussed below.

As to linkages between IAV's research program and that of INRA--as well as other GOM ministries and entities that carry out agriculture-related research, the team would, on the whole, support the comments made by Dr. Stovall in Appendix I:

"I am convinced there is a legitimate role for both Institutes and there is plenty of room to work on the science and technological problems of Moroccan agriculture such that they will not be duplicative. I would suggest that INAV not await a definitive deliniation of the responsibilities between the two institutes (because in my view such a deliniation is unlikely to be forthcoming, and even if it were it would not be long-lasting and would

require modification over time;) Rather, I would suggest a pragmatic approach, in which the INAV identifies some areas in which it has the strongest capability and forge ahead."

In fact, this is what is happening at present; there is considerable collaboration between returned participants doing research on plant breeding, for example, and some individual researchers at INRA. Faculty of the Department of Human Sciences, with funding under the USAID's Project 0136, have been working closely with INRA and a U.S. technical assistance team doing agronomic research, to carry out the companion socioeconomic research component. At present, INRA's only agricultural economist is on deputation from INRA to IAV in connection with this work.

Up to the present, for a number of reasons, IAV has been a much more attractive place to work, and to carry out research than was INRA. Now that INRA's statute creating it as a semi-autonomous public establishment is nearly ratified, there may be more incentives to work at INRA than has been the case. Still, IAV faculty and administrators should probably be encouraged to have more patience with INRA and INRA colleagues generally, and to avoid "raiding" INRA of its best people.

The INRA Director and the Director of the ENA at Meknes have been discussing the possibility of creating a joint research-outreach program. The USAID should probably do whatever it can to support this potential effort. A similar relationship might eventually be formalized between the IAV and INRA for certain specific research areas. At present, the major research funding available to IAV's Soil Science Department comes from an INRA grant which is based on IBRD funding.

Efforts are also being made through the Development Directorate at IAV to carry out feasibility studies for the Plant Production Directorate at MARA in the context of its planned IRD projects. Here, unfortunately, the only obstacle to date has been donor attitudes toward using local institutions to carry out these kinds of studies. In other contexts, as has been noted, this new part of IAV's administration has been quite successful in obtaining donor funds directly, and

is increasingly likely to obtain some domestic project funding. It may be suggested, however, that more coordination between this Directorate and that for Research take place at an early date.

Outreach at IAV has always been a high priority for the Administration and a large proportion of the faculty. Starting with the student stage program, all students and faculty are meant to maintain close touch with real-world problems of Moroccan agriculture and rural development, and to try to help to solve them. However, there is a division of labor between and among IAV and the MARA Extension Directorate that could be improved, and there are some options being discussed within the Ministry to do this. The role of the Ministry of Interior in rural areas is also significant for IAV's ability to carry out outreach functions at the farmer level, especially with smaller farmers. However, with bigger farmers, there is less cause for reticence, and IAV has done quite well in involving larger farmers in its activities, through its governing committees, as members of thesis defense committees, and in the context of applied research.

Here, special mention should be made of the role of the Veterinary Medicine Section in both outreach and research. The Livestock Directorate of MARA has no research mandate at all, and while INRA has one for livestock, it does much less in this area than it does in terms of research on crops. The considerable slack is taken up by the Vet Med Section at IAV, even though resources are extremely tight. For example, Vet Med faculty and students, as well as those in the Animal Science Department are heavily involved in research programs dealing with prolific sheep. The outcomes of this research can have very significant positive impact on the livestock industry in Morocco--for small-scale herders as well as for feed-lot, commercial production. The Vet Med Section's Clinic is open to the public, and is constantly treating sick animals belonging to private owner. The Livestock Directorate's Rabat office is located at IAV, which further assists in outreach linkages.

Under the project, special effort is being made to support the original philosophy of integration of Vet Med and Agronomy within one Institution, and to emphasize preventive animal health care as well as curative approaches which have been more common in the past. Lab and coursework emphasizes a "hands-on" approach to diagnosis and treatment that has been lacking in the past. Research is also being carried out on ruminant nutrition and the socioeconomic factors in small ruminant production under funding from AID's Small Ruminant CRSP. This involves multi-disciplinary work with Animal Science, Human Sciences, Vet Med, the IAV research farms, INRA and MARA.

There are some questions raised by USAID/Morocco relating to the funding of participants in Vet Med under this project, since in the recent past, Vet Med, though an integral part of the Institute, was excluded from project assistance. The evaluation team feels strongly that the inclusion of Vet Med under the project was the correct approach, and that it should be maintained. However, care should be taken to ensure that the level of effort in training faculty doctoral participants for Vet Med--the third cycle is already given at IAV, so there are no third cycle vet med participants--be related to a realistic needs assessment. The fact that there are eleven traditional disciplines involved in veterinary medicine curricula world-wide does not, necessarily, mean that there must be eleven separate departments in Vet Med at IAV as there are at present, if this creates additional overhead expenses. At Minnesota, for example, there are presently only four departments in which the eleven disciplines are combined. Given the present budgetary stringencies at IAV, and the apparent lack of additional budgetary posts (FTE's) for Vet Med, a review of the present departmental structure would appear to be in order. For purposes of the project, it is the disciplinary spread that should be taken into consideration, not the present number of departments.

The target for participants in veterinary sciences--as opposed to animal science, which is a Department in the Agronomy Section--is 10. Counting those faculty

participants who left for the U.S. in July, 1983, there is now a total of eleven in veterinary sciences. IAV has proposed an additional seven, given that the LOP and funding will be extended from 1985-1990. This appears to be a reasonable target, and should be maintained, especially given the unique nature of the integration of Vet Med and Agronomic Sciences at IAV, the needs for training of M.S.-level DMV's at IAV, and the fact that the need for trained personnel in the livestock sector in general is acute. Further, more and more students on completion of the first, combined APESA year, are opting for Vet Med as their specialization. This is partly because more private sector jobs are available in livestock-related fields than in any other except horticulture. The proportion at present of those accepted to the long-term, six-year program in Vet Med is 50 out of a total of 150. This is the subject of some controversy within IAV, given student expressions of demand; some think more should be accepted in Vet Med.

Overall, the situation with regard to outreach at IAV is encouraging. This is especially the case, perhaps, at the Agadir Complex, where local horticulturalists genuinely see the Complex as an organization that can help them solve the problems of the industry. Horticultural exports--especially of tomatoes--are a source of scarce foreign exchange for the GOM, despite problems of competition with EEC countries. Faculty participants at Agadir are closely involved with local producers, help in identifying disease problems, work closely with the Office de Commercialisation des Exports (OCE) which is in charge of export marketing, and with another, associated, parastatal organization. The role of horticulture products in human nutrition is also receiving attention at IAV.

Here, special stress should be placed on the role of the Minnesota resident team members--including the "junior" scientist--in ensuring that this outreach function was generated and is maintained. One of the clearest demonstrations of the institution-building role of the project has been in the creation and staffing--

as well as the equipping--of the Agadir Complex. A high degree of morale has been sustained, relationships with other-donor expatriate faculty and with non-participant Moroccan faculty have been excellent, and a real effort to "do more with less" has been made with successful results. It is not insignificant that it is a returned faculty participant who is serving as the Deputy Secretary General of IAV in charge of administration of the Agadir Complex.

The evaluation team agrees with the recommendation of the AID audit that some limited special assistance should continue to be given to Agadir, despite changes in the USAID/Morocco agriculture sector strategy (see below).

Output: Institution Building:

As was stressed at the beginning of this report, the purpose of the project is to create a "modern" college of agriculture in Morocco, and there is strong emphasis on overall institution building efforts of which the specific inputs and outputs discussed above are critical parts. The evaluation team has been impressed with the Contractor's approach and achievements in this context, as well as with the acuity of IAV management in orienting the project in this direction, while maintaining a balance between activities under this project, those of other donors, and the desire to create a genuinely Moroccan institution.

Yet, as has been mentioned in various of the foregoing sections, more could be done now that the participant training component is well under way, more resident faculty are present, and the Institute has put in place the basic elements of its internal reorganization. While the team recognizes that this particular project cannot, and need not, meet all of IAV's new and continuing needs for further institutional development, there are two areas in which significant additional emphasis can appropriately be placed under this project--documentation and library facilities and computer facilities. Such efforts would be in direct support of other project

components, and would substantially contribute to enhanced success of the achievement of the project purpose and objectives.

Library and Documentation:

In the earlier years of the project, some funds were provided for library facilities. A faculty participant has been trained in Library Science at Rutgers University, and is presently both Director of the Documentation Center and serving as a general information specialist for the Institute. He is in the process of completing his dissertation research, which is closely linked to his responsibilities at IAV. However, the Documentation Center--which has recently been designated as the National Agricultural Library--is seriously under-funded, and also understaffed given reasonable criteria for documentation and library facilities for an institution such as IAV. In addition, there are considerable needs in this area at ENA and at ENFI, as well as at the Agadir Complex.

A number of discussions have been held between the IAV administration, the participant in question, and his advisor and the USAID about ways in which more can be done to strengthen the documentation center under this project, and through other means. There is strong support in the USAID for such an increased effort and there is a strong commitment toward library and documentation improvement at IAV. Unfortunately, funds for this element of the Institute's program are dirisory, and may become even more scarce given the latest budget cuts.

By any standard, there are not enough print materials available either to students or to faculty. Given the fact that efforts are being made to improve teaching methods, including using reference materials and assigned readings, the lack of such materials is a real problem. Returned faculty participants who come back with creative ideas for improved course content and methods are stymied due to the almost complete lack of supporting resources.

Meanwhile, their efforts to keep abreast of developments in their respective fields are rendered extremely difficult by the lack of access to journals, reviews, and new publications in book form. Under the project, there is a small book allowance for participants, and each returning faculty participant is provided with a professional association membership which includes a journal subscription. While there is a general trend toward sharing these resources within the individual department, there is a reluctance to confide these very precious materials to the IAV documentation center. Yet, there are not sufficient funds to supplement these resources, let alone to duplicate them.

The center's director has placed great emphasis on trying to develop data base system which will help support faculty in carrying out research, as well as in improved teaching. Progress on this dimension is encouraging, and a new computer facility is about to be installed. However, there is some feeling, including on the part of the evaluation team, that in a sense, the cart has been put before the horse. In a cultural ambience where students are accustomed to learning aurally rather than to reading, where there is no tradition of assigned texts or readings, and little tradition of pleasure or leisure reading, it would appear that the first focus should be on getting students to read and providing them with the appropriate materials.

The development of modern data base facilities is an excellent idea, and the computer facility at the center will also be used for programming management systems for the entire Institute. However, it is discouraging to students and faculty alike if they are able to do a computer search of various data base lists--AID, FAO and others--only to find that they are unable to find the materials in question anywhere in Morocco, let alone at the Institute. Given the fact that there is a very sophisticated set up for information retrieval of this kind at the National Documentation Center at the Ministry of Planning, literally up the street from the Institute,

it would appear that more emphasis should now be placed on acquisition of print materials rather than, for example, on microform equipment which is available at the NDC.

The evaluation team suggests that the amendment fund sufficient TDY consultants to assist IAV by helping the faculty participant who is in charge in completing a short-term needs assessment for print materials. (His own advisor has been very active in helping him in carrying out his dissertation research with is a longer-term, more inclusive needs assessment for all kinds of documentation for IAV.) Under a proposed PP amendment, a significant portion of the cost estimate formulated by this joint needs assessment exercise should be funded.

Computer Facilities:

The situation with regard to computing facilities has been discussed above. At present, there are only three people working in the computer center, one of whom is an expatriate provided under an other-donor project. Both hard and software are being slowly acquired, but there is still a great need for more appropriate software, and more hardware. Programming expertise is also badly needed. There is always a backlog of work to be processed, and returned faculty participants are experiencing serious delays, both in processing and in analysis tasks.

Under another USAID/Morocco project, a U.S. technical/consultant will be coming to Morocco in early FY '84 to finalize the needs assessment for computer hard and software at the MARA Planning and Economic Affairs Directorate (Project 608-0182). It would seem that a cost-effective way of seeing that an appropriate needs assessment for computer facilities in support of other activities under this IAV project is carried out, would be to have this consultant remain in-country long enough to do the related needs assessment at IAV. Supplementary funds for this purpose would come from Project 0160 if required.

There are presently no computer facilities whatsoever at the Agadir Complex. As has been mentioned, needs for facilities of this type, as well as for library materials, are most acute at Agadir, and are also acute at ENA and ENFI. If possible, special support in these areas should be directed under an amended project to these two areas at these three campuses.

In terms of participant training, special effort should be made to train some third cycle or U.S. M.S.-level faculty/staff in statistics and biostatistics, computer science, and research methods at the earliest opportunity; these training slots should be additional to those already included under the project, not substitutive. If additional participant training slots cannot be provided in these areas, PL 480 dirhams might be provided to IAV to contract for these services from the local market. Short-term training and university visits are also components of the project that can be utilized in support of creating additional IAV expertise in these fields. Further efforts should be made to expose faculty participants to relevant analysis techniques and to general statistics courses as part of their regular curriculum.

The Research/Experimental Farms:

The situation with regard to the Institute's farms--and those belonging to ENA/Meknes--is very difficult. There is a move, sponsored by the Ministry of Finance, to take the farms away from the Institute and ENA, apparently because they are not profit-making. In fact, they are not meant to be profit-making; they are meant to support students and faculty in teaching and research, and for extension. GOM subsidies to these teaching/research farms have been reduced in recent years. The IAV farms now come under the aegis of the new Research Director but no additional staff expertise has been provided as yet. There is one farm manager at present at each of IAV's farms. There is no coursework available in farm/station management at IAC, or elsewhere in Morocco. Yet, the State-managed farm sector, which is considerable, has a serious need for farm managers, as do larger farmers in the private sector.

The Director of ENA asked over a year ago if some Peace Corps volunteers experienced in farm management could be provided to help improve the situation of the ENA farms. Questions about support for these volunteers have so far not been satisfactorily answered. If IAV and/or ENA could provide the necessary back-up to make volunteers useful, the team believes one or more could be provided.

Part of the strength of IAV is its attempt to teach students in the field as well as in the classroom, and to involve them in "hands-on" applied research. The farms are critical to success in this area, but there are many constraints. Transport is extremely scarce, as are barns, stables, agricultural machinery, inputs, and animals for use in applied research. Given that the U.S. land grant system is the "home" of the experiment station and research farm, some guidance could be provided under this project in this area.

The evaluation team suggests that project management give early attention to possibilities of cost-effective support to the farm program at the Institute in connection with teaching and applied research. At a minimum, appropriate consultants from Minnesota and/or other state experiment stations could be brought out short-term to review the situation. The Peace Corps could be approached to see whether volunteers could be made available to assist in farm management and in training for farm management.

Other AID Support:

There is general agreement among USAID/Morocco personnel that the IAV project is an excellent one, and that the Institute is a key element in the development of Moroccan agriculture, one which is extremely successful according to any standard. However, to date relatively little has been done to use other AID resources to assist the Institute in meeting its development goals. There are a number of centrally-funded projects, for example, under which the USAID could request short-term consulting services--largely from U.S. land grant institutions and the Inter-

national Centers--to supplement the TDY advisor and consultant program under the project. This would be appropriate from now on, as the project generates the need for highly-qualified members to serve on the doctoral committees of returned faculty participants. Such consultants could also give seminars, supervision, and carry out other activities in support of the institution-building goals of the IAV project.

Similarly, it would be easy--and virtually cost free--for the USAID to ensure that the mass of documentation generated by various AID projects is routinely forwarded to the IAV Documentation Center. Some project officer time would have to be allocated initially to screen the publications lists available from AID/W, but this would be minimal, and could be done together with the center's director. A similar attempt could be made regarding USDA publications, by involving the office of the Agricultural Attache at the Embassy. There is a wealth of relevant USDA publications, most of which are free.

While there is some resistance to centrally-funded activities within USAID/Morocco--as in every AID field mission called on to "do more with less"--because of the additional management burdens that are inevitably involved, greater emphasis should be placed on finding out whether CRSPs other than the Small Ruminants one could involve IAV. The Nutrition and Soils CRSPs seem the most obvious ones to investigate. At a minimum, the USAID could inform IAV faculty about whom to contact in AID/W and at the respective CRSP management entities about possible involvement.

There is also the possible supplemental funding that is available through the programs of the Office of the Science Advisor. One grant application from a member of the IAV faculty who is also a participant under the project has now been short-listed. AID/W has informed the USAID that in order for a grant to be awarded under this program, there must be an AID manager to backstop it. However, it is possible that this person be a project officer in AID/W if there is really no management time available in the USAID Mission. The total number of grants under

this program is very small and it is likely that only two or three would ever be awarded to Moroccan applicants. However, the USAID should encourage participants-- and other faculty--who are sufficiently well advanced in their dissertation research, to apply and facilitate their applications. There are also some other centrally-managed funds for applied research which should be investigated, so that IAV faculty can apply if appropriate.

The evaluation team is not arguing that the USAID should spend a very large portion of scarce management time available in the Agriculture Division and elsewhere in support of these kinds of activities. Rather, the team wishes to make the general point that a project which is as important and successful as this one is should be further strengthened wherever possible.

IAV and the USAID Agriculture Sector Strategy:

Since this project was initiated, the USAID has prepared an Agriculture Sector Strategy in conjunction with submission of the FY 1984 CDSS. This approved strategy focuses on rainfed cereal production, although not to the exclusion of all other agricultural subsectors and activities. AID/W has asked the USAID to revise its agriculture projects when appropriate, to make them conform more closely to this approved Strategy.

A "strict constructionist" view of the agriculture strategy posits that this USAID should only be active in support of rainfed cereal production. However, as has been argued by the USAID itself, and virtually every expert consultant who has visited the Mission since the strategy was approved, cereal production in Morocco is part of a whole farm system which also includes livestock and forestry activities. Further, cereal production in rainfed areas is only one of many GOM priorities for agricultural development.

The evaluation team feels strongly that the spirit of Project 0160, Agronomic Institute, is correct in that it provides for institution building across the

board in terms of targets and goals set by IAV itself. The Institute's mandate is a broad one, and it is responsible for the coordination and execution of higher level agricultural education and training for the whole of Morocco. This is as it should be, and it is remarkable what the Institute has been able to achieve in this much with minimal funding. But there is real question whether it will be able to continue to maintain its standards of excellence and its level of performance given the current budgetary crisis.

The fact that the USAID has a particular approved strategy document should not, in the view of the team, mean that assistance to IAV under Project 0160 as presently designed, or as amended in the future, should depart from the present, balanced approach. Any of the disciplines presently being supported under the project--including the veterinary sciences--is relevant in some real sense to rainfed agricultural production activities. Some may appear more immediately relevant than others, it is true. And in fact, it is these that are being stressed. However, it is crucial to recognize that this is not a rainfed agriculture project, but rather an agriculture manpower and institutional development project, predicated on the mandate and needs of one of Morocco's most successful institutions. This should be stressed when possible changes and amendments to the project are discussed and negotiated (see Table 12).

This project is also one which demonstrates all the elements and characteristics called for in projects of this type in the new draft AID policy determination on participant training. The USAID, IAV and the University of Minnesota are, in the view of the evaluation team's external members, to be congratulated on having designed and implemented such a relevant and successful project. Where possible, other USAIDs in francophone countries should be encouraged to place participants at IAV. Costs per student are very low, about \$14,000 for 4 years. At present, about 10% of IAV's student body is made up of foreign students.

TABLE 12
OVERALL PROFESSIONAL BREAKOUT OF GRADUATES
OF IAV TO DATE

TITLE	TOTAL	MINISTRY OF AGRICULTURE AND AGRARIAN REFORM				OTHER MINISTRIES	PRIVATE SECTOR
		CENTRAL DIRECTORATES	D. P. A. s	OFFICES	SOCIETIES		
AGRONOMIC ENGINEER	410	200	80	75	26	13	16
VETERINARY INSPECTOR	146	37	42	32	9	9	17
ENGINEER-TOPOGRAPHY	383	78	177	86	5	30	7
HORTICULTURAL ENGINEER	101	32	25	20	10	13	1
PLANT PROTECTION ENGINEER	86	34	40	4	2	5	1
FOOD TECHNOLOGIST	225	46	77	17	37		48
TOTAL:	1,351	427	441	234	89	70	90
		32%	33%	17%	7%	4%	7%

Some suggestions for improved project management which the team feels will further strengthen effective performance, are discussed in the next and final section.

Project Management Effectiveness:

General:

In reviewing the quantitative outputs of this project, it is obvious that project management by all parties--1) USAID, 2) IAV, 3) University of Minnesota, and 4) other universities--has functioned at a relatively high level of efficiency. In practically all aspects of the project to date, outputs are ahead of the project paper plan. This includes all aspects of the project which involve 1) development of teaching programs and curricula; 2) trained Moroccan agriculturalists and faculty for IAV, (Rabat and Agadir), ENA and ENFI; 3) outreach to all sectors of Moroccan agriculture and 4) the gradual growth and dynamic development of a "modern college of Agriculture and Veterinary Medicine". Since the project was innovative, it has required a "learn as you go" philosophy. A dynamic approach to project management has been devised, using the annual review meetings to deal effectively with issues as they arise. These meetings are characterized by thorough discussion, communication, and decisive action taken. To supplement the annual review and ensure adequate communication, there is another session each year of an informal nature at which all of the collaborators meet, and which allows each of the principals to raise key questions of difficulties and problems in project management. Annual visits by the team leader and an IAV administrator to the University of Minnesota and other U.S. universities have provided ways to achieve good quality project management and to keep the project on target in meeting its goals and objectives. A positive attitude by all principals toward the project has proved invaluable in allowing for rapid development and achievements to date.

However, there are areas where fine tuning would further improve project management effectiveness. These areas will be indicated under the headings of

A) USAID B) IAV C) University of Minnesota 1) IAV based resident team 2) St. Paul project office and other universities.

A. USAID - Rabat.

The AID officers involved at USAID/Rabat have always had a cooperative and helpful attitude. A useful modification in their mode of operation would be to establish a more consistent attitude in providing assistance in dealing with contractual matters; at times decisions appear to be more stifling of achieving project goals and objectives than constructive. This has occurred in areas of commodity procurement; invitational travel for faculty to U.S.A.; English language proficiency; qualified participants; design for tracer study, and other areas. To have these administrative problems on top of dealing with antiquated GOM bureaucracy is at times a very discouraging and frustrating situation, not only to the resident Minnesota team but to returned participants and those being considered for participation.

To bring about better support by USAID, the following recommendations are offered:

1. As a general recommendation, a policy of having an annual or semi-annual meeting of all in-country team leaders would prove valuable to assist in developing better ways of project management relative to a) changes in AID regulations; b) dealing with GOM; c) problems facing resident team members as to housing, health, etc.
2. To improve communication of problems and specific progress being made on the project and implementation of items delineated in the work plan, it is recommended that two additional meetings per year between USAID officials concerned with the project, Minnesota resident team and IAV administrators and selected faculty would be helpful. To be sure these meetings have a fruitful nature it is recommended that the U of M team leader and the Agricultural Officer of AID or his representa-

tive develop an agenda, and that the meeting location be alternated between IAV and the AID mission office.

3. The USAID in consultation with U of M and IAV, should develop definite policies regarding management of the contract in areas of commodity procurement, participant travel, invitational travel of IAV administrators, etc. When these guidelines are developed there should be agreement among all officials in AID Agriculture Division Program Office Comptroller's Office, regional contract officer's office, etc.

This will help reduce delays when requests are made and acted on. One individual--the Project Officer--should approve a request. These policies should then be utilized for decision-making and not modified or altered without informing the U of M or IAV. This would avoid excessive time being spent in project management, administration and crisis situations which produce additional delays and stress.

4. It is recommended that the USAID make available to IAV and U of M additional ways in which AID/Washington, other American agency or other International agency funding may be obtained by the faculty at IAV to carry out research, teaching and outreach to a more effective level than is available under the current project. This becomes increasingly important as participants in the project finish their dissertation research and begin to search for ways in which they can creatively apply their acquired research, extension and teaching skills.

B. IAV:

In general it would be advantageous to all concerned if an increased level of forward planning was initiated by IAV, so that this information could be incorporated into work plans and the agenda for the proposed two additional meetings with the USAID. 1. It is recommended that IAV facilitate project management through communication of their forward planning needs so item A.2. will be more workable for USAID and the U of M.

C. University of Minnesota/Rabat

1. It is recommended that the University of Minnesota continue to improve their communication to USAID in the area of program needs, participant training progress and problems, commodity needs, etc. to insure that all items A.1,2,3 and 4 can be productive to all parties involved.
2. It is recommended that the U of M resident team leader clarify to USAID project management the nature of the teams budget for research, and criteria for its disbursement.
3. It is recommended that resident team members provide more precise and clear direction in assisting the U of M/St. Paul in placing participants at universities other than the U of M. This should include the appropriate faculty contacts, as well as complete documentation on area program specialization and departmental planning.
4. It is recommended that, to improve third cycle and faculty participant awareness, areas of agriculture specialization and general information about U.S. college life and activities be presented to prospective students as part of their on-going English training during the year prior to going to U.S. This could possibly best be done by former participants through slide-illustrated talks.

D. University of Minnesota/St. Paul:

The backstopping and general support provided to the resident team in Morocco has been excellent in commodity procurement and shipment, budgetary and accounting information, back-up support in participant training matters, travel information on TDY personnel and participants, and a generally cooperative and facilitating attitude. This has been extremely important in maintaining returned participant morale and progress toward the goals of institution building.

1. It is recommended that additional effort be made in the area of participant placement at universities other than the U of M. An important step in bringing this improvement about will be by the in-country team members fulfilling item C.2. Then,

the St. Paul office can act rapidly in forwarding the requests to the appropriate universities.

2. It is recommended that an increased effort be made to up-date and improve the supply of information available from other U.S. universities at the project office in Rabat.

APPENDIX 1
OBSERVATIONS & ISSUES
RELATING TO RESEARCH AT INAV BY JOHN STOVALL

1. Preface

It is important that my observations be qualified in several ways. In the first place my experience in Morocco spans a total of only 2 weeks, and therefore is subject to errors of misinterpretation and incomplete or erroneous conclusions. Nevertheless, I will depend on the readers or reader to correct for such errors and make the appropriate modification.

Before going into any substantive comments I would like to compliment the faculty, staff and students at INAV for their hospitality and courteous treatment and their willingness to take time out of their busy schedules to visit with me about the project and the Institute. They were all very frank and open and willing to discuss candidly issues that less mature people might find sensitive. This kind of atmosphere greatly assisted our understanding of the issues and also speaks well for the quality and sophistication of the staff.

One final comment to preface my observations. Some of my comments that follow may sound far afield and unrelated to project 160. In one sense that may be true, but in another sense these issues all relate to the growth and development of the Institute and the speed with which it moves forward, and that as I understand, is the real purpose of project 160.

2. Role of Research at the Institute.

One of the most important issues facing the administration and the faculty at INAV in my judgement relates to the role that research will play - its purpose, its content, and its relation to other activities. For example, one point of view might be that research at the Institute is only for the purpose of supporting and strengthening the teaching program but not an end in itself; after all, the primary purpose of the Institute is education. A somewhat contrary point of view however, is that research, in addition to complementing the teaching program, is a legitimate objective in and of itself, on a par with the objective of educating young men and women. I believe the administration

and the faculty should seriously consider the inclusion of research as an important mission of the Institute. I say this because I sincerely believe that INAV can make an important contribution to Moroccan agriculture and revitalization of rural areas. Moreover, the contribution that the Institute could make through applied research could help provide the kind of base political support needed to gain financing and other assistance needed over the long run. The research program undertaken to meet this objective should be problem-oriented and applied rather than basic. It should draw upon the unique strengths of the institute and focus on the most important problems facing Moroccan agriculture.

3. Relationship of INAV to INRA.

If the INAV sets out to develop a legitimate research role as I have suggested, questions about its relationship to INRA will undoubtedly arise. Such questions will relate to an appropriate division of labor between the two institutes, whether or not one is duplicating the other and whether or not it is efficient to have two public institutions engaged in agriculture research. Without attempting to define the role of each, let me just say I am convinced that there is a legitimate role for both institutes and there is plenty of room to work on the science and technological problems of Moroccan agriculture such that they will not be duplicative. I would suggest that INAV not await a definitive deliniation of the responsibilities between the two institutes in the field of research (because in my view such a deliniation is unlikely to be forthcoming, and even if it were it would not be long-lasting and would require modification over time.) Rather, I would suggest a pragmatic approach, in which the INAV identifies some areas in which it has the strongest capability and forge ahead. Given what I understand to be the fairly weak position of INRA in research, it should not be difficult for INAV to identify such areas without duplicating what is already underway somewhere else.

In selecting the areas it will be important to insure that there is a critical mass of human resources in INAV and that the problems selected are important to Moroccan

agriculture as well as having a reasonable probability for a solution to emerge in a relatively short period of time. For example, it would seem that animal health or the development and introduction of improved cereal varieties or the solution of selected nutrition problems may fit these criteria.

In forging ahead in some of these areas I would encourage INAV to collaborate to the extent possible with INRA. This collaboration should as a minimum, involve sharing of information. Where mutual interests and capabilities exist, joint efforts may be in order. Finally, I would suggest that if INAV moves in this direction, that it be very selective in the departments and problem areas selected so that the likelihood for success would be high and could be realized as quickly as possible.

4. Linkage with U.S. Universities.

Project 160 has made excellent progress in establishing a linkage between INAV and the University of Minnesota, and to some extent other universities. I believe that there is much to gain by going much further in diversifying the institutions with which INAV relates. This is not to say that the lead role of the University of Minnesota, which has provided the primary linkage in the past, should be abandoned or reduced. Rather, the U of M and INAV should jointly undertake to determine the most appropriate U.S. university with which each INAV department should establish a relationship. The department in a U.S. university selected as "the counterpart" to the INAV department should be selected on the following criteria; a) the disciplinary strength, b) similarities and/or complementarity of the state or regional ecological system, commodities produced, climate, topography etc., c) the interest of the department and the university in international development. The relationship established between the Moroccan and U.S. departments should be flexible and not predetermined in some rigid fashion. It should be negotiated based on the interest of the two departments and might involve a) exchange of faculty members, b) participant training, c) collaborative research efforts, d) the conduct of seminars and/or workshops.

Such an arrangement would offer several advantages to the INAV departments. It

could speed up the development of their research program, and it could be used to provide some of the technical assistance that might be needed in devising a strategy for extending the results of research to farmers in Morocco.

Another kind of collaboration should not be overlooked. AID has 7 Collaborative Research Support Programs (CRSP) in operation. These programs are designed to focus U.S. university and developing country institutions on those developing country problems most amenable to collaborative research effort. INAV is a participant in one of these - the Small Ruminant CRSP. Other CRSPs that INAV might attempt to establish a relationship include, a) human nutrition, b) beans and cow peas, c) sorgum and millét, d) soils. If not a formal participant, the Institute might at least want to maintain contact or establish liason. The AID mission in Rabat can provide additional information.

5. Linkages with International Agricultural Research Centers.

Several donors including AID provide support to a system of international agricultural research centers that focus their efforts on problems of developing countries. The philosophy of the centers is that they conduct applied research and attempt to have the research further modified tested and adopted in developing countries. They depend on the national system of research and extension in developing countries to perform this later function. The INAV should keep abreast of the work at these centers and where appropriate, establish a linkage with them. It is not clear to me just how much of a relationship already exists, but I have found in my questioning that it seems to vary from department to department and individual to individual. The newly created division of research should take the lead role in reviewing the programs of the international centers and deciding the extent to which a relationship should be developed. It would appear that IITA in Nigeria, ICARDA in Syria, CIMMYT in Mexico, and ICRASAT in India have programs of most relevance. Again, AID and BIFAD can provide additional information and assistance in establishing these relationships or further exploiting those that already exist.

6. Organization of Research in INAV.

Research in INAV is organized around the basic agricultural disciplines and that indeed is as it should be, particularly at this stage of the institution's development. The Institute has recently installed a Director of Research with certain responsibilities for coordination, planning and providing general leadership. Apparently, the specific responsibility has not been developed and many questions about the organization remain to be resolved. It would appear that this new office has the potential for providing a focal point for research, for providing overall support for certain support and planning activities. I would suggest that it also should be responsible for developing a long term strategy for research in INAV as I suggested in no. 2 above.

However, this office can do very little without some resources at its disposal. It is my understanding that there are no funds allocated to this office and indeed budgets are centralized at the very apex of the Institute. It seems to me that the new research directorate can do very little unless it has some budget that can be used at its discretion. Therefore, I would urge the administration to provide some amount of budget to this office and give it the wherewithall to carry out the responsibilities that it has been given. The Institute should also consider providing some professional technical assistance in research management, research organization, planning and coordination. A place to start would be the International Service to National Agriculture Research, (ISNAR) an international center located at the Hague. The USAID and the U.S. Department of Agriculture are other possible sources for assistance.

7. Research Priority Setting.

In visiting with faculty I detected a wide variety in the extent to which priorities are established for research within departments and varying emphasis or importance given to this activity. Although at the present time there is little opportunity to undertake new research, it would be prudent for the Institute to ensure that a current prioritized list of the most important research topics be developed for each department for use in thesis research and for use as other sources of funds are forthcoming. The

Director of Research should take the lead in developing a set of criteria for establishing priorities. These might include; a) the importance to agricultural development in Morocco, b) the probability of pay-off or solution from research, c) relevance to the teaching program, d) the extent to which other agencies such as INRA are already conducting similar work.

8. Thesis - Dissertation Research.

Time is the requirement to do the thesis project in Morocco and accounts for most of the research in INAV at the present time, and the \$10,000 provided by the Minnesota project is the major source of discretionary research funds. It would appear to me that the approach is sound and the procedures followed are satisfactory. The research conducted in connection with these theses and dissertations appears generally to be directed to relevant problems and is contributing greatly to the development of a sound long term research program. While it appears that the procedures used for selecting a topic vary, there is in fact a process in most instances for insuring that the topic is relevant and that it fits into some kind of overall scheme. I would make one specific suggestion; it should be a requirement that the plan for the dissertation research project contain an outreach component. That is, the student should be required to outline a plan by which the findings of the research are disseminated to those in the agriculture community through the research it is designed to benefit. This plan should include a description of what is to be done, and who is to carry it out. It may or not include a role for the student or INAV.

9. Operating Budget.

As was indicated earlier, it is my understanding that no funds are allocated to departments for their discretionary use. Although there may be good reasons for a policy of centralization there should at least be some discretionary funds that can be used at the operating level, namely the department, even a modest amount of budget would enable department's to purchase supplies for small items of equipment as needed. This would appear to be a very cost-effective move and I recommend its implementation.

10. The 5th Year Student - U.S./INAV/France vs. the Ph.D.

This rather scrambled title denotes a number of issues that revolve around the alternative for the 5th year student; whether or not it should be done in Morocco, the U.S., France or some other institution; how long and how much emphasis should be placed on the MS and whether or not a strengthened MS should be a substitute for the Ph.D (in some instances). This is a complicated set of issues which I will not attempt to deal with in any comprehensive way. Let me simply state some hypotheses that I have developed as a result of limited information; a) the one-year MS degree experience in the U.S. is a high risk and relatively low benefit-cost ratio activity, b) a 2 year (or some period longer than one year) "beefed up" master's degree experience in the U.S. would be a better use of project funds than the current 1 to 1 1/2 years (with thesis still in Morocco) and could be a satisfactory substitute for Ph.D's in some instances, c) an MS in France and a Ph.D in the U.S. might be a combination offering several advantages and should be encouraged more often, d) the goal of providing the 5th and 6th year in Morocco is sound and its attainment should be accelerated. One way to accelerate it is to increase the resident Minnesota staff to assist during this interim period with the 5th and 6th year. On a cost basis, it would appear that about 5 U.S. trained 5th year students would equal 1 full time resident senior staff, which appears to be a reasonable trade-off.

11. Technology Dissemination/Outreach Function at INAV.

Another important issue INAV faces is the extent to which it will include "outreach" as a legitimate responsibility of the Institute. As the research program matures and produces useful technology or information that will contribute to the solution of Moroccan agricultural problems, the Institute must decide how it will disseminate this information and what role it will play in technology transfer. I believe outreach should be a continuing, legitimate function of INAV, complementing the research and teaching functions. Although it may be some time before significant findings are forthcoming, the Institute should begin now to develop a strategy. To the extent

possible, this strategy should be developed in collaboration with extension in DPAs and other agencies with an outreach responsibility.

12. Library

One of the essential ingredients for a successful research program or higher education in general is the availability of both contemporary and classical literature. This is especially critical in the Agricultural Sciences, where the state of knowledge is rapidly changing. There is an appalling lack of such material at INAV and it is surprising that the Institute has made as much progress as it has under this handicap. This handicap will surely impede further growth and development and may represent the single most limiting factor at this time.

I recommend that high priority be given to strengthening the Library capability and that some way be identified soon for providing budgetary support.

ENGLISH PROFICIENCY OF MOROCCAN PARTICIPANTS
(3RD CYCLE & FACULTY) IN PROJECT 608-0160
APPENDIX 2

Background:

Moroccans appear to have an ability to master different languages. Part of this is brought about by the necessity to have more than one language to effectively communicate in their own country. At the present time there are at least 3 berber languages (Rif, Middle Atlas and Southern Berber), Moroccan Arabic, Classical Arabic, French, Spanish and English spoken by native Moroccans.

During the French colonial period and since independence in 1956 French has been the official language, however, governmental discussions are frequently conducted in Arabic. English is offered in the Lycee so all students who pass their baccalaureat have had some English training and can speak some English and read English at a basic level. Thus all the students who are accepted into the IAV have this minimal English skill.

English Training Offered by IAV:

All students at IAV have additional English training. Students who enter the 3rd cycle program in Agronomy continue English classes during their 2nd, 3rd and 4th year. Students who go into the 3rd cycle program in Veterinary Medicine, however, do not have English training in their 2nd-4th year because of an intensive course schedule they must have in the various disciplines of Veterinary Medicine. The students who do not enter the 3rd cycle program but go into the 4th year Ingenier d'Application program at IAV, ENA and ENFI also have further English training, but at a very limited level.

English Training Under Project 608-0160:

In the initial year of this project a limited English training program was initiated under the project. This program offered English training to prospective faculty participants beginning in February and continuing through May. However there was insufficient direction in the course and thus it had limited impact on improving English skills. Some participants enrolled in English language courses at the American Language Center and the British Council. There was no training offered for the 3rd cycle students.

In 1981-82 a 3rd cycle English training program was initiated and the faculty training program was made more formalized.

The program for the faculty started in December 1981 and continued through June 1982. Placement and post testing was done, attendance was monitored and all potential participants were continually counselled on the need to develop their English skills. This program provided 3 hour/week for a 28-week period. Students were also counselled and informed that they had to achieve TOEFL proficiency prior to going to the U.S. Again some participants took English courses at the American Language Center and the British Council at their own expense. Any interested faculty were encouraged to attend as training was provided for senior faculty who

will not be long-term participants but may be sent to the States in the future to develop contacts with faculties in their specific fields. It also included first year junior faculty who are not eligible to go to the States until an additional year of service. The teacher in this course had a master's degree in teaching English as a second language.

The 3rd cycle program was initiated and offered to the top 30 students who had indicated an interest in going to the U.S. for studies during their 5th year. Two instructors were hired for this program: one was an individual with bachelor's degree and 3 years of teaching experience in English as a second language at the University of Minnesota, the other was a Moroccan with a master's degree in English as a second language from England and 3 years of experience in teaching. Again in this program the importance of learning English was enforced by an IAV administrative decision that students who would be selected for study in the U.S. would come from this group. A placement test and a post test were given to determine students progress and attendance was monitored.

The program for 1982-83 was similar to that offered in 1981-82 except that it was of longer duration for both 3rd cycle and faculty. The faculty program began the first of November and continued through June; thus faculty received 32 weeks of English, 3 hours per week. A total of 49 faculty participated in this course. This year an English program for faculty participants was initiated at Meknes and at Agadir. At Meknes 12 faculty participated in this course and they received 4.5 hours of instruction per week.

In the 3rd cycle program the top 50 students in the class were offered English. This program began the first of December and continued through the end of June. When the students were on stage in March for 2 weeks one of the instructors provided a 3-hour course at the middle of this period. This year all students who were selected to go to the U.S. under this program had regular attendance in the English classes and had demonstrated definite improvement in their test scores.

In addition to the above training all participants who leave in July each year undergo a 6-week intensive English orientation course at the U of M prior to beginning their scientific field of study.

An analysis of the performance of the Moroccan students in the intensive English program at the University of Minnesota in 1982 is attached. This analysis shows that at the end of the intensive English training program at the U of M average TOEFL score was 474 for the 3rd cycle students and 506 for the faculty participants.

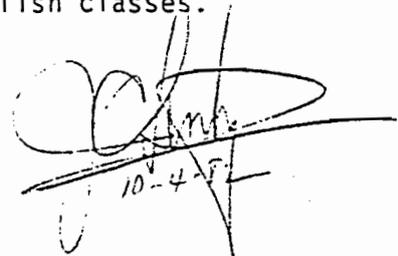
There has been consideration of utilizing the American Language Center for the in-country English training of participants. However, after thorough analysis of this possibility it was decided that an English program under the supervision of the project could achieve the same level of proficiency at a lower cost and allow greater leeway to deal with scheduling problems created by both faculty participants and 3rd cycle students having very demanding teaching and class schedules.

Analysis of student academic records does indicate that some students have had some problems with English in their first quarter or semester of study. However, it is hoped that with the 1982-83 program from which no data is available that this problem will be reduced. On the other hand if you look at the final results of the training of both 3rd cycle and faculty participants their academic achievements have been remarkable and it appears that English proficiency did not have a severe impact on their ability to achieve top quality academic success in their chosen field of study.

SUMMARY OF ENGLISH LANGUAGE STUDY RESULTS -
MOROCCO PROJECT
1982

Following are general comments which I would make regarding English Language Study experiences in 1982.

- 1.) Improvement as measured by the Michigan Test scores decreases as Participants approach the 80 score level, indicating that improvement becomes more difficult as proficiency is achieved.
- 2.) Achievement in Morocco of Michigan Test scores in excess of 65 does not appear to result in more rapid acceleration of academic program in the U.S.A. The rationale for this comment is that many Participants coming to the U.S. with a Michigan Score of 65 or better either achieve proficiency or near proficiency by the beginning of Fall Term so that they will not take more than one E.S.L. course during Fall Term. Those students who do achieve proficiency during the intensive Summer Program do not usually take a "full" academic load during their first term since it is a period of adaptation and therefore not only have the additional time but also can profit from ongoing English Language Studies in adapting to the new educational environment.
- 3.) Those students who have not achieved a Michigan Test score of 65 prior to coming to the U.S. do appear to be handicapped in making maximum use of their program time for academic study because they, in most cases, will be required to take two or more E.S.L. courses during Fall Term to achieve language proficiency for full time study. This delays their academic programming through through (a) less time for academic courses and (b) inability to assimilate all material offered in academic courses due to language limitations.
- 4.) Recommend utilization of the Minnesota English Test battery which includes Michigan Test for evaluating Participants in Morocco in order to select students who are or can be adequately prepared for English study in the U.S. and also to provide a measure of English proficiency which has some meaning and significance in the overall system.
- 5.) Difficult to measure directly the impact of English instruction in Morocco because no beginning evaluation was given to 3rd Cycle students and different scoring systems were used. Attendance also evaluated by different schemes. However, it is noted that most of these coming to U.S. with low scores either did not participate or had poor attendance in English classes.


10-4-82

Evaluation Team Schedule and Itinerary

June 22, 1983	Rabat:	Discussions with Mr. Firdawcy, Dr. Johnson and Dr. Morton and Peter Collins about schedule, procedures and division of labor
June 23		Discussions with team about sample of faculty and Participants; workshops, interview schedule; organization of the Institute.
June 24		Discussions continued, interviews with Section heads begun.
June 27		Discussion history, philosophy and reorganization of the Institute, plus particular budget problems.
June 28		Further discussions on background topics. Documentation.
June 30		Morton participated in Third Cycle Oral Exam Committee meeting, interviewed candidates.
July 1		Team visit to ENA/Meknes. Meetings with Director and past and future participants' workshop.
July 6		Interviews, arrival in Rabat of Dr. Stovall from AID/W; Meeting on Evaluation Outline with Director, Dep. Dir., Program Officer; Project Officer, Morton & Stovall
July 7		Discussions with full team; site visit to Kenitra and meeting with ORMVA/Ghrarb Director and staff. Visit to Institute Research Farm at Moghrame.
July 8		Interview with faculty and section heads continued.
July 9		"
July 11		" Meeting with Research Director
July 14		"
July 14-16		Visit to IAV Agadir Horticulture Complex, Meetings with resident faculty, workshop with faculty and participants.
July 16		Morton, Johnson participate in 4th year agronomy <u>deliberation</u> ; Stovall interviews resident faculty.
July 17		Morton-Stovall Discussions
July 18		Stovall seminar on Research Priorities and Funding in AID at IAV, meeting with AID Project Officer, Workshop with Faculty Participants; Meeting with Director, Development and Extension; Meeting with team and Rhodes, new USQID Program Officer.
July 19		Stovall Departs Rabat, meetings with Section heads.

July 20 Meetings with AID staff involved in clearing on newly-selected participants.

July 21 Meetings with additional faculty, and head of Documentation Center

July 22 Morton begins report drafting. Reception for participants.

July 23 Report drafting - First Part to Firdawcy, Johnson.

July 24 Report drafting

July 25 Draft Report Finished - Second Part to Firdawcy, Johnson.

July 26 Morton Meeting with Doc. Center Director, Computer Center Director. Team meeting to discuss draft.

July 27 Draft report plus Firdawcy, Johnson comments and written contributions distributed to USAID Project Officer; Program Officers; Evaluation Officer and Director for review. Meeting with M. Bekkali.

August 15 - 17 Morton and Stovall visit to U. of Minnesota, St. Paul.

List of Individuals Interviewed

Rabat Campus - IAV

Mr. Abdellah Bekkali, Director IAV
 Dr. Frank Busta, U. of Minnesota
 Dr. Fred Gifford, Utah State University
 Dr. Rich Arro, Utah State University
 Prof. Mohamed Besri, Director, Agronomy Section
 Mr. Mohamed Aikadi, Dept. of Agricultural Engineering*
 Mr. Abdelhafid Debbarh, Director, Agricultural Rural Works Section*
 Mr. Mohamed Stitou, Chair, Soil Science Dept.
 Mr. Mohamed Hammoumi, Chair, Dept. of Plant Ecology
 Mr. Abdellah Hammoudi, Dept. Human Sciences
 Mr. Md. Raki, Chair, Dept. of Human Sciences
 Prof. Paul Pascon, Director, Development and Extension
 Mr. Abdelrafour Tantaoui-Elaraki, Director, Research
 Mr. Lahsen Ababouch, Food Technology Dept.*
 Ms. Aicha Lemtouni, Human Nutrition Dept.*
 Mr. M'baret Essatara, Chair, Human Nutrition Dept.*
 Mr. Allah Dakkak Director, Vet Med Section
 Mr. Abdellatif Lahlou-Kassi, Chair, Reproduction Dept. (Vet Med)
 Mr. Said Ouattar, Chair, Plant Production Dept.*
 Mr. Fouad Guessous, Chair Animal Science Dept. and Small Ruminant CRSP Site Coordinator
 Mr. Abdelghani El Bekkali, Director, Documentation Center*
 Mr. Redouane Taousse, Director, Computer Center Dept. of Applied Mathematics
 Mr. Abdelaziz Eddebbarh, Agricultural Engineering Dept.*
 Mr. Mohamed Oussible, Agronomy Dept.*
 Mr. Mohamed Badraoui, Soil Science*
 Mr. Abdelhai Guerouali, Vet Med*
 Mr. Mohamed Baddy, Sea Food Sciences*
 Mr. Landscape Architecture
 Mr. Mohamed Bourfia, Animal Science*
 Mr. Ismail Baujenane, Animal Science*

Dr. Lynn Gallagher, U. of Minn. Resident Team

Agadir Horticulture Complex - IAV

Mr. Abderrahman Hilali, Plant Breeding, Dep: Sec: General, IAV*
 Mr. Mohamed Hallatow, Tissue Culture*
 Mr. Nouredin Cheikh, Plant Physiology*
 Mr. Hassan Ouabbou, Floriculture*
 Mr. Rachid Dahan, Horticulture (vegetable crops)*
 Mr. Ali Lansari, Plant Breeding*
 Mr. Allal Chibane, Plant Nutrition*
 Mr. Hassan Elattir, Plant/Water Relationships*
 Mr. Ahmed Ait Oubahau, Bananas*

Dr. Ben Lockhart, U. of Minn. Resident Team
 Dr. Aly Lasheen, U. of Minn. Resident Team
 Mr. Nick Verstegen, U. of Minn. Resident Team

* participant

Ecole Nationale d'Agriculture (ENA) - Meknes

Mr. Ahmed Abouyoub, Director
 Mr. Mohamed Boulif*
 Mr. Abdel Illah Ilham, Animal Production*
 Mr. Mohamed BenBellah, Agronomy*
 Mr. El Haj Tayouga, Soil Science*
 Mr. Abdelwahab Filali, Irrigation Engineering*
 Mr. Halouat Abdelhag, Food Technology*

ORMVA du Gharb

Mr. Othmane Lahlou, Director
 Five Service Directors

USAID/Morocco

Mr. Robert Chase, Director
 Mr. Harry Petrequin, Deputy Director
 Mr. William Erdahl, Program Officer
 Mr. Stacy Rhodes, Program Officer
 Ms. Monique Biddaoui, Training Officer
 Mr. Arlan Mc Swain, Food and Agriculture Officer and Project Officer
 Mr. Donald Walls, Controller

Minnesota/Morocco

Ms. Amal Bouhlel, Administrative Assistant
 Mr. Habib Qounin, Project Coordinator

ENFI - Sale

No visit was possible. Met with one participant, Mr. Omar Abboulabbes and his advisor, Dr. Gifford.

University of Minnesota, St. Paul and Minneapolis

R. Sauer, Deputy Vice-President for Agriculture and Director of Agriculture Experiment Station
 R. Dunlop, Dean, College of Veterinary Medicine
 K. Wharton, Dean, College of Agriculture
 J. Bartz, Head, Department of Horticultural Science
 V. French, Head, Department of Plant Pathology
 E. Schuh, Head, Department of Agriculture and Applied Economics
 R. Goodrich, Head, Department of Animal Science
 D. Sorenson, Assistant Dean, College of Veterinary Medicine
 R. Jones, Head, Department of Entomology
 H. Harris, Acting Head, Department of Food Science and Nutrition
 W. Larson, Head, Department of Soil Science
 J. Sentz, International Training Office
 M. Purvis, Assistant Dean for International Agriculture Programs, College of Agriculture

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Agronomic Institute 608-0160

18. The contractor, with the assistance of other evaluation team members, USAID/Morocco staff, AID/W staff, and staff and faculty of the Agronomic Institute and the University of Minnesota, will serve as team leader and:
1. Assess whether project design is essentially sound;
 2. Assess the contribution of the project and its continuation to GOM development needs and strategies, and to AID's assistance strategy; and GOM's agricultural development policy and plans.
 3. Review, in this connection, available projections of present and future agricultural sciences manpower needs of the GOM;
 4. Assess appropriateness of Agronomic Institute's structure and staffing plans over the next decade, including disciplines, new faculty and direction divisions, and development projections;
 5. Assess Institute's capacity to meet MARA's objectives in training third cycle and PhD students within the in-country system, and determine comparative advantages of this approach as compared to other approaches pursued under other AID-sponsored participant training projects;
 6. Assess appropriateness of in-country staffing by U. of Minnesota, including disciplines and professional profiles of team members and of commodities provided under the project;
 7. Assess U. of Minnesota's conformance with USAID and Host Country regulations as specified in its HC contract, and appropriate changes that may be introduced in this regard;
 8. Review USAID/Morocco's proposed project amendment.
 9. The assessments made under points 1-8 above will include special attention to: 1) effectiveness of participant training and selection/performance of professorial advisors; 2) appropriateness of MS and PhD dissertation research in Morocco and US, and implications for Morocco; 3) appropriateness of project mechanism in achieving project purpose, including proposed extended LOP; 4) effectiveness and timeliness of operationalization of trained faculty participants; their placement at IAV with regard to linkages with other MARA entities and purposes.
 10. The contractor will prepare a preliminary, draft report before departure from Morocco that will include written input from other team members, and that will over be reviewed by the full-team and by the USAID project officer, and will, upon completion of the visit to the U. of Minnesota, prepare a final report which will be submitted to AID/NE/TECH/AD in behalf of the USAID. The report will be submitted in English, and once approved by AID/W and the USAID, will be translated into French by the contractor's firm.

Questions for Participants

1. Are you satisfied with the help you received before leaving Morocco in the following areas, and from each relevant organization ?

a) University of Minnesota Team in Morocco ? _____

b) INAV ? _____

c) USAID/Rabat ? _____

- Choosing universities to apply to _____

- Choosing a department in a particular university _____

- Writing goals statements and completing applications to universities

- Making travel arrangements _____

- Choosing specialization (for MS) including flexibility in changing

2. If not, what changes would you suggest for future participants ? _____

3. Did the orientation program prepare you for life as a student in the U.S. ?

What Changes would you make ? _____

In Morocco ? _____

In U.S. ? _____

4. Did the participants' handbook answer your questions about your responsibilities in the training program ? _____

What new information should be included, if any ? _____

5. Did you understand the participants' handbook ? _____

6. Did you speak with returned participants before you left Morocco ? _____
Did this help you choose a university and/or department ? _____

7. How would you rate the English language training you received ? _____

- What it useful for daily life, for school work ? _____
Was it too short, too long ? _____
Were the classes too large, too small ? _____
In Morocco ? _____
In U.S. ? _____
8. Did the on-campus orientation answer your questions about university life,
community life ? _____
If not, what new information should be added ? _____
9. Did you use the campus international student office ? _____
10. Did you live in a dormitory or apartment ? _____
Were you happy with the choice ? _____
11. Are you satisfied with the help you received from your faculty advisor
in the U.S. ? _____
Changes ? _____
12. Should the program be made longer, shorter ? _____
Why ? _____
13. Would it be helpful for future students if returnees wrote up their
experiences ? _____
14. Spouse's experiences and problems or benefits ? _____

15. Did you have problems in adjusting when you returned to Morocco ? _____

Did the problems involve

- family ? _____
- research ? _____
- Teaching ? _____
- Other ? _____
- Language proficiency ? _____

16. Did your training in the U.S. adequately prepare you to do your research in Morocco ? _____

What are the major obstacles to setting up your research program.
Have there be adequately handled ? _____

17. Have you had any difficulty in relating to your faculty advisor after your return to Morocco ? _____

18. Compare your self to those who have not participated in the program.
Are you better off, worse off, the same ? How ? _____

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