608-0145 /42

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UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY

AGENCY FOR INTERNATIONAL DEVELOPMENT

WASHINGTON, D.C. 20523

PROJECT PAPER

MOROCCO: RANGE MANAGEMENT IMPROVEMENT (608-0145)

July, 1980

0 5 JUN 1980

ACTION MEMORANDUM FOR THE ACTING ASSISTANT ADMINISTRATOR

FROM : NE/TECH, Mr. Lewis P. Reade LPR

SUBJECT: Approval of USAID Morocco's Range Management Improvement Project

Problem: Your approval is required to authorize the Range Management Improvement Project for Morocco (608-0145), a grant of $5,075,275.

Discussion: Increased meat production in Morocco is hindered by the mismanagement of the range resources in that country. The overstocking of the range by more than twice its carrying capacity and removal of range land into crop production has exacerbated the problem. The increasing meat and live animal imports since the early seventies and a need to improve livestock production have led USAID/GOM to the development of this project.

The project seeks to improve the institutional infrastructure for range management and to increase range production. Five technicians will provide technical assistance at five range demonstration perimeters and one seed multiplication center to be established under the project. The technicians will include three range management scientists, one pastoral anthropologist and one seed multiplication expert for a total of 21 person-years of technical assistance. They will work closely with the Service of Feed and Range Management and other related GOM entities.

A research component in cold and warm forage crop species will be conducted and adapted forage seeds multiplied to seed the range.

Also, the project will fund participant training, short courses, and field and research equipment.

The NEAC met on March 27 to discuss this project. At your instruction the following actions have been taken to satisfy approval conditions set forth in Rabat 2877 and 2936 as attached.

1. The project is approved for implementation under a host country university contract, collaborative assistance, in accordance with AIDPR Subpart 7-4.58.

2. The budget has been reworked in line with discussions at NEAC in some detail from a total $4.4 million to $5,075,275 to reflect increased costs of long and short-term participant training, funding for project evaluation, and the provision of contingency funding.

3. Responsibility for project implementation will be under the Service of Feed and Range Management but coordinated with other relevant GOM ministries and agencies and with the AID-sponsored Dryland Agricultural Research and Higher Education projects.

4. Both cool and warm season species will be researched, tested, and multiplied at the seed center.

5. A resident social scientist will be assigned to ensure that livestockmen with small herds are the primary beneficiaries of the project.

The foregoing revisions were agreed to in principle by USAID and appropriate changes in the Project Agreement have been concurred in by GOM.

Following the NEAC review of the PP, USAID requested via Rabat 3196 that it be permitted to initiate participant processing and commodity procurement up to $250,000 prior to the signing of the host country contract, in accordance with normal direct contracting procedures. Initiation of these project elements immediately after obligation will significantly reduce the start-up time required once the host country contract is executed and permit timely participant enrollment at universities. The Project Authorization has been prepared to permit such activity.

The project was among those reviewed last October and cleared by the Interagency Working Group on Human Rights. There are no current human rights issues under Section 116 of the Foreign Assistance Act which would preclude provision of this assistance to Morocco.

A Congressional Advice of Program Change was forwarded on May 15, 1980 and the waiting period expired on May 30, 1980 without objection.

Recommendation: That you approve this project by signing the attached Project Authorization.

Attachments:
1. Project Authorization
2. State 94516 and 103227
3. Rabat 2877 and 2936

Clearances:
NE/TECH:KMacManus KM
NE/TECH/AD:RMorrow RM
GC/NE:JMullen
PPC/PD:JSegal GS
NE/PD:JWilliams/LBrown JW/LB
NE/NENA:MHuntington/GLewis MH/GL
NE/DP:BLangmaid/GDonnelly BL/GD

NE/TECH/AD:VLateef:cae:6/2/80

PROJECT AUTHORIZATION

Name of Country: Kingdom of Morocco Name of Project: Range Management Improvement

Number of Project: 608-0145

1. Pursuant to Part I, Chapter 1, Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Range Management Improvement Project for the Kingdom of Morocco ("Cooperating Country") involving planned obligations of not to exceed $5,075,275 in grant funds over a five-year period from date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project consists of providing technical assistance, training and commodities to improve and protect the range and to develop a cadre of agricultural experts necessary for the expansion of services and support to Moroccan small livestock persons.

3. The Project Agreement(s) which may be negotiated and executed by the officer(s) to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate:

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the project shall, except as A.I.D.-may otherwise agree in writing, be financed only on flag vessels of the United States.

b. Initial Disbursement

Prior to disbursements or to the issuance by A.I.D. of documentation pursuant to which disbursements will be made, with the specific exception of disbursements up to $250,000 for A.I.D. direct contracts for certain project start-up activities, the Cooperating Country shall, except as the parties may otherwise agree in writing, furnish in form and substance satisfactory to A.I.D. an acceptable contract with a U.S. university for the project.

c. Covenants

(1) At all times that the technical assistance team is in the Cooperating Country, the Cooperating Country will assure that qualified counterpart personnel are assigned to work with each advisor.

(2) During the life of the project, the Cooperating Country will consider the feasibility of adopting administrative and legal changes in order to facilitate the creation of grazing associations in the collective grazing lands.

Alfred D. White
Acting Assistant Administrator
Bureau for Near East

05 JUN 1980
Date

Clearances:
NE/TECH: Lewis P. Reade _____ Date: 5/30/80
NE/DP: Bradshaw Langmaid _____ Date: _____
NE/NENA: Mary Huntington _____ Date: 5/30/80
GC/NE: John E. Mullen _____ Date: _____

Drafted:GC/NE:SECarlson:paj:5/28/80

1. AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

TRANSACTION CODE: A = ADD, C = CHANGE, D = DELETE — A

PP

2. DOCUMENT CODE: 3

3. COUNTRY ENTITY: MOROCCO

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 608-0145

6. BUREAU/OFFICE: A. SYMBOL: NE; B. CODE: 3

7. PROJECT TITLE (Maximum 40 characters): RANGE MANAGEMENT IMPROVEMENT

8. ESTIMATED FY OF PROJECT COMPLETION: FY 84

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 80; B. QUARTER 3 (Enter 1, 2, 3, or 4); C. FINAL FY 84

10. ESTIMATED COSTS ($200 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 80 B. FX	C. L/C	D. TOTAL	LIFE OF PROJECT E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL	800			5,075		5,075
GRANT	800					
LOAN						
OTHER U.S.						
HOST COUNTRY		1,300	1,300		6,770	6,770
OTHER DONORS						
TOTALS	800	1,300	1,300	5,075	6,770	11,845

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	D. LOAN	E. 1ST FY 80 F. GRANT	G. LOAN	H. 2ND FY 81 I. GRANT	J. LOAN	K. 3RD FY 82 L. GRANT	M. LOAN
FN	100	095		800		993		1,430	
2									
3									
TOTALS				800		993		1,430	

A. APPROPRIATION	N. 4TH FY 83 O. GRANT	P. LOAN	Q. 5TH FY 84 R. GRANT	S. LOAN	LIFE OF PROJECT T. GRANT	U. LOAN
	960		892		5,075	
2						
3						
4 TOTALS	960		892		5,075	

12. INDEPENDENT EVALUATION SCHEDULED: MM 06 YY 83

13. AGENCY OFFICIAL APPROVING PROJECT PAPER AND ANY CHANGES MADE IN THE INITIAL PROJECT DATA BLOCKS 12, 13, 14 OR 15 OF THE PID FACESHEET

Harold S. Fleming
Mission Director

14. DATE PROJECT PAPER APPROVED BY AID/W OR DELEGATED AUTHORITY

DATE SIGNED: 0 0 0 9 8 0

RANGE MANAGEMENT IMPROVEMENT 608-0145

PID SUBMISSION DATE 7/5/79

PID APPROVAL DATE (NEAC) 7/19/79

PP SUBMISSION DATE 3/14/80

PP APPROVAL DATE (NEAC) 3/27/80

PROJECT COMMITTEE

Marion Ford, Agriculture Officer, Chairperson
Jonathan Sleeper, Agricultural Economist
Eric Griffel, Assistant Director
Mark Ward, Program Officer

ADVISORY COMMITTEE

Harold Fleming, Director, Chairperson
Donald Walls, Controller
Thomas Eighmy, Program Economist

PROJECT REVIEW COMMITTEE

NE/NENA: George Lewis
NE/DP : Geraldine Donnelly
NE/PD : Stephen Lintner
NE/PD : Larry Brown
NE/GC : Steve Carlson
SER/CM : Philip Casteel
DS/AGR : James Oxley
NE/TECH: Victor Lateef, Chairperson

Currency Equivalents

U.S. $1 = DH 3.7

Abbreviations

DMV	Division of Agricultural Development (Mise en Valeur)
DRA	Division of Agronomic Research (Recherche Agronomique)
GOM	Government of Morocco
INAV	National Agronomic and Veterinary Institute (Institut National Agronomique et Veterinaire)
MARA	Ministry of Agriculture and Agrarian Reform
SNDE	National Livestock Development Society (Societe Nationale de Development de l'Elevage)
SONACOS	National Society for Seed Marketing (Societe Nationale de Commercialisation des Semences)

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I. PROJECT DESCRIPTION

A. Introduction

1. Project Summary

The prime concern of this project is the improvement of range vegetative conditions in Eastern Morocco, a semi-arid 100-350 mm rainfall zone. This is not a comprehensive Livestock Sector project involving breeding, animal health, intensive feeding, etc. Improvement of range conditions is to be brought about by some reseeding and by the introduction and implementation of range management concepts and practices through the development of a range extension program. This program is described in Section I.B The Project and in Section IV.C Technical Analysis.

While there are some 7,000,000 hectares of rangeland in the project area, the program will actually operate on five range perimeters totaling 100,000 hectares. A range perimeter is designated area of communal grazing land which has been set aside for improvement and is utilized by grazing associations. There is a sufficient number of grazing associations operating in a de facto manner in the perimeters for the technical assistance team to work with. Communal grazing lands, local municipal organization and the grazing associations are described in Section IV.B, Social Analysis.

In recent years considerable interest has developed in the GOM for the improvement of range conditions. This is due largely to the positive benefits derived from a former AID project and a genuine GOM desire to develop programs for the dryland areas. As a result of this former AID project, there is a well demonstrated program of range management already functioning on one range perimeter and there is a small but well trained cadre of Moroccan range management technicians around which to build a program.

The project will be implemented through the Service of Feeds and Ranges, which is a department of the Livestock Service. Implementation will be under the host country contracting mode following competitive selection procedures with a US western land grant university with expertise and experience in the management of arid natural rangelands. The project will provide 21 person years of long-term US technical assistance through a western US land grant university, long-term participant training for eleven Moroccan participants and some commodity support.

The goal of this project as stated in the logical framework is to increase incomes of the poor herders of Eastern Morocco. It should be pointed out however that the greatest long range benefit to Morocco will be the reversal of its range deterioration and the restoration and conservation of its natural resource base in the project area.

US funding has been increased from 2.9 million at the PID stage to 3.9 million in the PP before inflation. This is due primarily to an increase in US technical assistance from 15 to 21 person years in order to include one additional perimeter in the project area and to provide a pastoral anthropologist.

2. Background

Agriculture in Morocco currently accounts for about one quarter of total Gross Domestic Product and employs about half of the economically active population. Livestock production comprises forty per cent of total agricultural output, and is the major source of income for about a half million families, or about one fifth of the rural population. Most of the income from livestock production derives from the sale of animals for meat and hides. Of this income sheep production contributes a major portion.

Historically, Morocco has been self-sufficient in meat production, albeit at low consumption levels. Prior to 1970, exports exceeded imports. But during the 1975-78 period, about 9,000 metric tons of red meat, and 25,000 slaughter animals were imported in response to shortages in urban areas.

The gap between supply and demand for red meat is widening due both stagnating production and rising population. Production of beef and mutton increased an average of only 1.6 per cent per annum from 1971 to the present. However, wholesale prices in constant Dirhams (i.e. discounting inflation) increased by almost twice as much. Annual population growth is estimated to have been 2.9 per cent over the same period.

The stagnation of livestock production may be attributed to Morocco's deteriorating range resources, upon which the majority of livestock depend for feed. Since 1930, the population of both sheep and goats has doubled, while the number of cattle has increased by more than half. However, during the same period, more than two million hectares of the better grazing land have been shifted into barley and wheat without any visible increase in cereal production. For the last ten years, average sheep carcass weights have stagnated (about 12 kg). It has been estimated that the country's range resources — twelve million hectares of semi-arid range and four million hectares of forest range— are overstocked by two to five times.

It is clear that future increases in meat production must originate in higher carcass weights, rather than processing more animals. This can be achieved by reducing numbers of grazing animals on the collective ranges, and by the introduction of improved range management practices, including the utilization of adapted forage species for both range reseeding and inclusion into rotations in non-irrigated areas.

However, Morocco currently lacks the technical and administrative capability for grass seed research and production and for range improvement and management. Despite the great importance of range livestock production, the science of range management is practically unknown. There are only seven professional range managers in the country. Because of the emphasis upon traditional European curricula, there is a very limited program of range education in both the Hassan II University and the Meknes Agricultural School. Because of the lack of qualified personnel, there is little range extension and education in the field.

Nor is there much research directed at improving the sources and quality of grass species specifically adapted to Morocco's ranges. While the farm-gate cost of imported seed is estimated to be twice its FOB price in the country of export, experience has shown that the import of seed is unsure because of the difficulties of obtaining it in sufficient quantities and in a timely fashion.

Furthermore, extension efforts aimed at getting livestock producers to reduce animal numbers have been ineffective. Because rainfall on the ranges is unevenly distributed from year to year, producer strategy is one of security and risk avoidance. Size of herd or flock, not the condition of the animals, is the principal measure of success applied by most owners. When droughts arrive, lack of reserve forage and inadequate cash resources to buy supplemental feed forces producers to sell their animals at depressed prices or suffer massive mortality in the herd. Finally, vegetative response to range rehabilitation measures is slow because of the low productivity potential of the rangelands. As a result it has made it difficult in the past to convince producers of the benefits of regeneration.

3. The Former Range Management Project

Faced with the problems of over-grazing on the collective lands and the lack of technically qualified personnel, the GOM requested assistance from USAID in 1966 to set up range management perimeters, perform forage adaptability trials, provide technical assistance and some participant training. The project was initiated in 1968 and a half a million dolars had been expended by its completion in 1974. Six Moroccans were sent to

the US for twenty weeks of training and one was sent for an MS degree. It was initially planned to develop twelve range management perimeters covering an area of 325,000 hectares over a period of three years. After eighteen months of operation, however, the project scope was reduced to two areas covering some 70,000 hectares (Perimeters Aarid and Tafrata).

Independent evaluations 1/ of the project determined that its primary problem was the failure to obtain the understanding, consensus and participation of the local livestock producers and their leaders at the provincial level. The project was reduced in scope primarily because of its failure to involve herders in the decision-making process. Nor were qualified Moroccans available to negotiate with local herders and direct project activities in the perimeters. Consequently attempts to set aside land for improvement by the Livestock Service were in some cases met with resistance. Because their needs were ignored, herders failed to perceive the benefits which could be expected to accrue from the project. This situation continued to plague the project even after its scope was reduced to two perimeters.

Nonetheless, the project was able to accomplish several important things. Project personnel assisted the GOM in the formulation of Dahir (royal proclamation) No. 1-69-71, which the government passed in 1969. This law provided for the local establishment of grazing associations on range improvement perimeters and thus gave a legal basis for the management and development of the country's communal grazing lands. In the Midelt area, the project quite clearly demonstrated the feasibility of range reseeding and deferred grazing and the resultant increases in production and carrying capacity. It also gave a concrete introduction of range management potential to the GOM, which set up the Service of Feeds and Ranges by the time the project was terminated in 1972.

4. GOM Request for Assistance

Despite termination of the old project, interest in improved range management methods continued to grow on the provincial level. This is in no doubt due in part to the demonstration effect of the Aarid perimeter in Midelt, where liveweight production of meat per hectare has more than doubled. Whereas, by the end of the former project there were only two such areas, there are now over twenty areas where local herders have

1/ V. Nancy, A Review of the I.V.S. Range Management Team in Morocco, 1973 Project Appraisal Report, Livestock and Rangeland Improvement (608-11-130-098), 1970.

formed together to petition the government to set aside some of their land for improvement and to provide them with technical assistance in its management.

The GOM again requested technical assistance in a range management project in October, 1975. USAID fielded a contract team which completed a feasibility study for a forage seed production project in August, 1977. The GOM responded favorably and offered an outline version of a project proposal in October, 1978. The proposal was subsequently modified by both USAID and GOM and approved in PID form by AID/W in August, 1979.

The PID called for a total of fifteen person years of resident technical assistance: two range extension specialists and a forage seed production specialist.

However, the GOM has since requested that two more resident specialists be added to the project. Another range extension specialist (5 person years) would be assigned in the Beni Mellal area. This area has assumed a high priority in the GOM range management program in view of its severe over-grazing and resultant erosion problems.

A second specialist in the anthropology of pastoralist peoples (3 person years) would be assigned to the project. The GOM Director of the Livestock Service felt that both the GOM and US staff of the range management project had to have more knowledge about the farmers and herders in the project area to ensure their participation in the project. The Director pointed out that this was particularly important in the Beni Mellal area, where in December, 1979, there were several people reportedly killed in conflicts over grazing rights to the collective lands.

5. Project Area

The proposed project will involve six locations: five range extension perimeters and one seed production center. The range extension perimeters are located within larger geographically defined areas utilized by tribes who have begun the legal process of forming grazing associations. The perimeters roughly fall on a line drawn from Marrakech to Oujda. They represent major range eco-systems in Morocco and are presented in Table 1. Thelocation of the seed center is yet to be determined. A more detailed discussion of the perimeters, grazing associations and location of the seed production center is found in the

TABLE 1

Phase I Range Extension Perimeters

Perimeter	Admin District	Province	Ecological Zone 1/	Area (ha)
Timahdite	Azrou	Meknes	II	25,000
Beni Mathar	Oujda	Oujda	III	20,000
Aarid	Midelt	Kherifra	III	25,000
Ouch Laghrab	Missour	Boulemane	III	20,800
Ait Rahaa	Beni Mellal	Beni Mellal	IV	7,191
				97,991

1/ Ecological Zones: II Middle East (300-800 mm precip.)
III Northeast Oriental High Plateau (150-300 mm precip.)
IV Southwest Occidental Semi Arid (300-400 mm precip.)

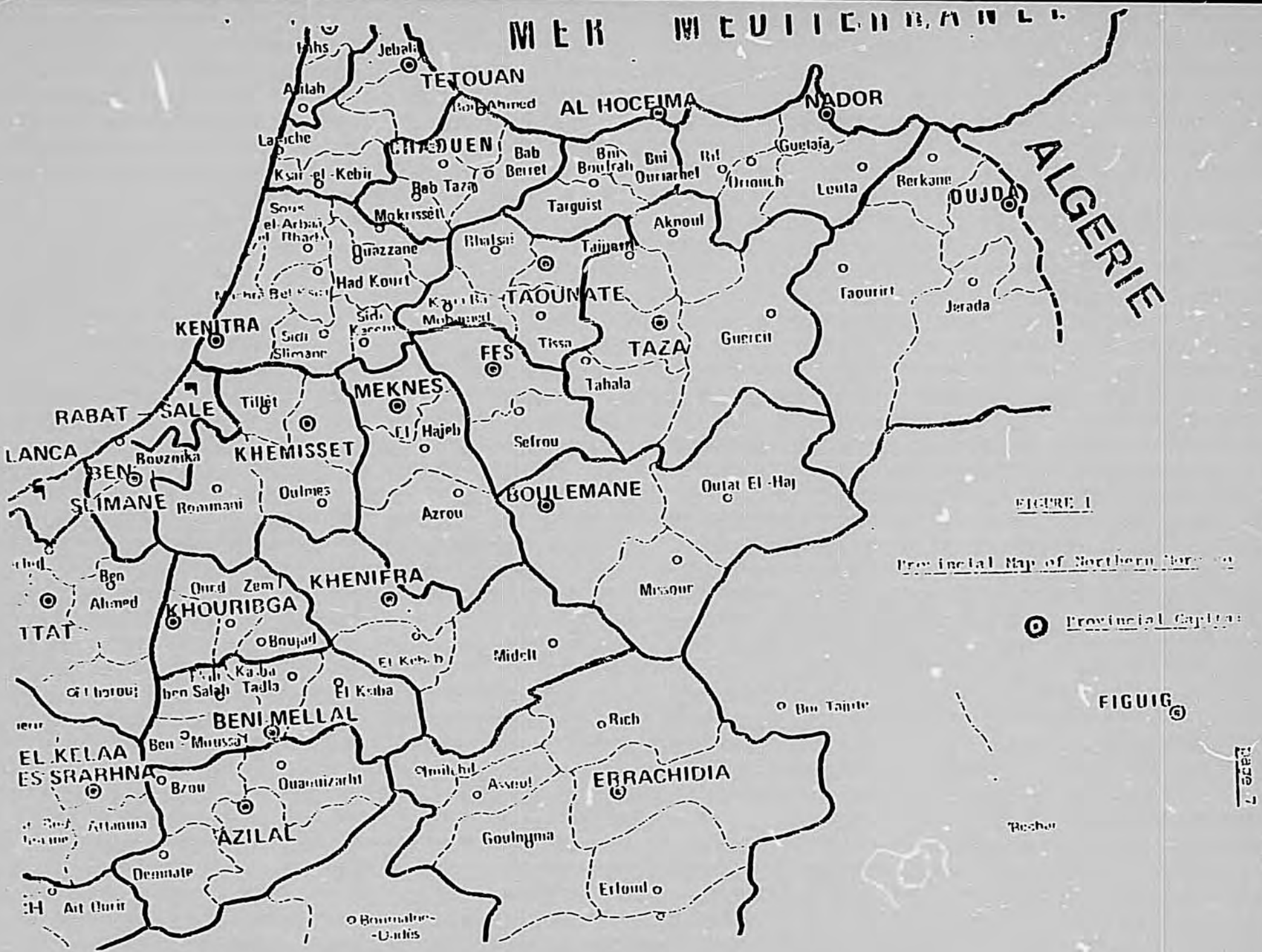

FIGURE 1

Provincial Map of Northern Morocco

Provincial Capitals

Social and Technical Analyses.

The total Project area comprises the Eastern Region (Maroc Oriental). It is located between the Middle Atlas mountains and the Eastern border with Algeria, and extends southwestward as far as Errachidia. It includes the watershed of the Upper and Middle Moulouya River (including the eastern slopes of the Middle Atlas) and the Eastern High Plateau. The region has an estimated five million hectares of natural range.

The Eastern Region was proposed as the phase I project area for several reasons. It is one of the poorer regions in the country (see Social Analysis). The region is ecologically important because it forms much of the watershed of the Moulouya River, which feeds important irrigation developments downstream (Moulouya and Triffa projects, both financed in part by USAID). Some progress in the adoption of improved range management practices in the region has already been made by the formation of several range perimeters (Ouch Laghreb, Saarid, Ghelbane, Boutaoult) near the Aarid perimeter. And finally, the GOM feels that the idea of grazing associations will diffuse more rapidly in the region because the old tribal structure has remained relatively strong in comparison to other regions in the country.

The Eastern Region is characterized by plains, tablelands, valleys and depressions that are remnants of former lakes. It has a steppe vegetative cover of esparto, jujubier and armoise which grows more sparse as one moves southward into drier areas. The region does not benefit from westerly winds which bring rain to the windward slopes of the Atlas. Consequently the region's climate is continental. Winter is a long cold period when the temperature can descend below 0 degrees Centigrade with violent winds. By contrast, the summers are very hot though bearable because of the aridity. Average annual rainfall normally does not exceed 350 mm and is highly variable in both distribution during the season and amount during the year.

The Eastern Region is made up of the following provinces: Oujda Province; northern Figuig Province; northeastern Errachidia Province; and the eastern portions of Khenifra, Boulemane and Taza Provinces (See Figure 1). Two perimeters (Timahdite and Ait Rabaa) do not fall in the Eastern Region ecological zone, but are otherwise similar to the other perimeters in local pattern of land-use.

6. Beneficiaries

The Eastern Region is part of Morocco's poor dryland sector. Of the estimated 270,000 families in the region, about 200,000 are

subsistence cultivators of rainfed cereals and produce incomes far below the national average. They raise sheep and goats for home consumption of meat, milk and wool. The remaining 70,000 families are dependent to varying degrees upon cereal cultivation and sheep and goat husbandry for their livelihood.

Most inhabitants of the region graze their animals on tribally-owned, geographically delimited "collective" grazing lands, access to which was traditionally controlled through the old tribal structure. With the encouragement and technical assistance of the GOM Service of Feeds and Ranges, some tribal groups are forming grazing associations which, based upon the traditional tribal structure, limit the number of stock per member and practice improved range management techniques (such as rotational grazing), on tracts of land which have been set up as "range improvement perimeters".

7. Project Purpose and Goal

The purpose of the proposed project is to strengthen the technical and administrative capability of the Service of Feeds and Ranges of the GOM Livestock Service to conduct research in range management and to implement its range improvement program. The range improvement program is primarily a program of technical assistance to the grazing associations and extension and demonstration of the benefits of improved range management techniques on their perimeters in the effort to get other tribal groups interested in forming grazing associations.

The goal of the proposed project is to increase incomes of poor farmers and herders on arid rangelands. The adoption of improved range management practices by grazing associations can increase income of farmers and herders in terms of saleable meat and wool from fewer animals. More important, a decrease in stocking rates and improvement of range conditions will slow down the destruction of plant cover, arrest undue erosion and provide protection to watersheds now carrying excessive sediment loads to downstream irrigation developments.

8. Strategy

The strategy of USAID assistance to the Service of Feeds and Ranges is four-fold: 1) develop a program of extension and demonstration of improved range management practices by working with existing grazing associations and encouraging the formation of new associations; 2) set up and operate a multiplication center to develop and produce forage seeds

of adapted species; 3) sensitize the staff of the Service to the social and cultural needs of the extension audience; and 4) provide increased training in range management and extension.

Under the proposed project, USAID will provide: 1) technical assistance in the three disciplines of range management and extension, forage seed production, and the anthropology of pastoralism; 2) both short and long-term participant training in these three disciplines; and 3) commodities for the seed multiplication center.

The Service of Feeds and Ranges is the sole institution concerned with management of stock on the open ranges and the provision of extension assistance in range management and improvement. This project will strengthen the institutional capacity of the Service for Feeds and Ranges to carry out these functions. The project is therefore in direct line with the proposed assistance plans in the CDSS to improve productivity in the dryland areas and to strengthen host country institutional capacity to carry out development plans aimed at helping the poor. It reinforces and complements project components of other on-going USAID efforts in the rainfed areas: participant education in range and watershed management (Agronomic Institute 0160) and dryland agronomic and social research (Dryland Applied Agronomic Research 0136).

B. The Project

1. Extension and Demonstration

a) Extension and demonstration program.-- The proposed project has in part resulted directly from increased requests to the Service of Feeds and Ranges from tribal groups in the Eastern and Southeastern rangelands for extension assistance in setting up grazing associations on perimeters within their tribal lands. The extension program will attempt to provide requested technical assistance to these associations. The process of forming grazing associations and the role of the Service of Feeds and Ranges in providing technical assistance to them is described in the Social Analysis section.

The associations have also agreed to permit the Service of Feeds and Ranges to use their perimeters as points of extension and demonstration of improved range management practices. A possible approach to the extension and demonstration program has been described in the Technical Analysis section.

The following practices will be demonstrated upon the perimeters: 1) grazing management with emphasis on systems of grazing (animal density), seasonal grazing (seasonal use and deferment) and grazing with various classes of animals; 2) distribution of animals over the range and water systems; 3) herd management for increased production (breeding and lambing time, weaning, docking, supplementation); 4) site potential with the use of exclosures (integration of climatological factors, soils, and vegetation in determining land capability); and 5) rangeland treatments to control undesirable plants, alter soil surface characteristics and increase production of forage plants.

Other extension programs both on and off the perimeters will include: 1) field days; 2) short courses; 3) workshops; 4) other educational programs.

Final details of the extension program must await the formulation of work plans by the US contractor. Preliminary work plans for the extension organization and strategy for the life of Phase I will be submitted 90 days after arrival in country. A STM specialist in agricultural extension has been budgeted to assist in development of the extension program.

b) US and GOM Staffing.--- Under the extension program there will be three US range extension specialists (15 person years) each assigned to one or more extension perimeters. Their jobs will be to: 1) assist their counterparts in the Service of Feeds and Pangues in giving technical and management recommendations to the perimeter grazing associations; 2) assist the Service to design and implement a comprehensive extension and demonstration program in order to get other tribal groups interested in forming associations; and 3) as part of their work plan for the first year in country, assist the Service to perform range inventories of the Phase I perimeters (vegetation, soils, animal distribution patterns, forage production).

The project "headquarters" will be located in or near the Livestock Service offices of the Provincial Directorate of Agriculture (DPA) in Meknes (see Administrative Analysis). The GOM has agreed to supply office space and secretarial assistance.

One range extension specialist will act as Project Coordinator and live and work in Meknes. He will be responsible for the coordination of logistic support for other US personnel in the project, monitor participant training, and act as official representative of the Contractor. He and his counterpart will also be responsible for

technical assistance and the extension/demonstration program at the Timahdite perimeter. The GOM has already named the Timahdite counterpart (Mr. M. Atiqui). The US specialist will also attempt to develop a range extension training program at the nearby Meknes Extension Center at the Meknes Agricultural School. Both counterparts will be directly responsible to the Head of the Livestock Service of the Meknes DPA and ultimately to the Director of the Livestock Service at Rabat.

A second US extension specialist will be assigned to the Oujda DPA. The GOM has already named his counterpart (Mr. M. Laraisse). They both will be responsible for the technical assistance and extension/demonstration program on the Ain Beni Mathar and Ouch Laghreb perimeters. They will also coordinate training programs at the Missour Range Management School, assuming that the GOM completes its construction and staffing during the Phase I period.

The final US range extension specialist will be assigned to the DPA in Beni Mellal. The GOM has agreed to name his counterpart, who will have third cycle (MS) training in range management. They both will be responsible for the technical assistance and extension/demonstration program on the Ait Rbaa and Aarid Perimeters. The GOM has already named the Aarid counterpart (Mr. M. Faqouri).

The US and GOM counterparts in the extension program will have two or more technicians (BS level or associate degree) assigned to them. These individuals will assist them in perimeter activities (inventories, evaluations, demonstrations, etc.).

Once it is deemed appropriate by the GOM and US counterpart staff, individuals from a volunteer agency (supplied under a separate contractual arrangement) may be assigned to selected perimeters to work with the BS and associate degree level technidans. However, the GOM has requested that the question of volunteers not be addressed until at least a year to a year and a half after project implementation has begun, by which time the extension program will be well-formulated and solidly on the ground.

2. Forage Seed Production

a) Seed multiplication center.-- The purpose of construction and operating a forage seed multiplication center is to produce seed of adapted species in quantity for eventual use by the GOM, grazing associations, interested farmers, cooperatives and private ranchers. Once proper range forage species are identified, plantings of breeder (basic) seeds will be made then followed by larger foundation seed increases.

Primary forage seeds which have been recommended for seed production in Morocco fall into two groups: cool season and warm season grasses. Therefore, two seed production centers are envisaged; one to commence production of cool season species in Phase I; the other to commence production of warm season species in Phase II.

The Phase I center will be located in either Meknes, Beni Mellal or El Jadida (see Technical Analysis). Land and buildings will be furnished by GOM. The seed production and processing equipment will be furnished by the contractor.

b) Species evaluation.— The staff at the multiplication center will also coordinate range forage species evaluation and adaptability trials on the range perimeters. Species of forage which have shown good results in field adaptation and use trials (in terms of productivity, palatability, persistence and ease of establishment) will be produced by the Center for planting in selected perimeters or distribution to interested farmers and stockmen.

c) Seed certification.— The center will also work with officials of the Service of Seed Control of the DRA to develop seed certification field and laboratory standards for the production of certified seeds. Seed center staff and DRA will then work with the National Society for Seed Marketing (SONACOS), who will attempt to interest cooperating private growers of certified cereal seeds to grow forage seeds. These seeds will be marketed through SONACOS.

d) Extension and demonstration.— Center staff will also promote extension and demonstration activities with other project staff and the Division of Agricultural Production (DMV) in the production and utilization of range forage seeds. Educational demonstrations of new and potential range forage species will be held on the perimeters. Periodic field conferences will be arranged with the US and GOM range extension specialists to invite local livestock people to the sites to explain the objectives and findings of the evaluation plots. Periodic conferences will also be planned with grass and legume seed growers to explain the future implications for seed production and distribution in Morocco. Publications and information techniques could be employed to explain and popularize the range improvement programs.

e) US and GOM staffing.— One US technician in forage seed production (3 person years) will assume direction of the center in Project Year 2. A counterpart from Feeds and Ranges with a third cycle (MS) training and at least one technician (BS level) will work with him.

The US technician and GOM counterparts will assist the Service of Feeds and Ranges to: 1) design, construct and operate the center; 2) coordinate species adaptation trials on the perimeters and in other areas of the country; 3) work with the DPA to develop a forage seed certification program; and 4) develop an extension and demonstration program based upon species evaluation and seed production technique.

3. Social Analysis Program

a) Rationale.-- Although the Agency has not yet elaborated a formal strategy for the livestock sector in its projects, there has been increasing concern in AID and other donor agencies about the poor social soundness of past livestock projects. Many projects in West Africa and elsewhere have not achieved their goals because the social needs of herders were ignored.

It is essential that the social needs of both herders and farmers be well understood by the Livestock Service staff if its range management improvement program is to benefit the poor livestock-raisers. It is also necessary to ensure herder participation in the project. For this reason and at the request of the GOM, a US anthropologist has been integrated into the implementation of the project. He will provide continuing social and ecological analysis of the herders in the Eastern and Southeastern regions and serve to sensitize US and GOM staff to the realities of the semi-pastoralist economy.

Under the guidance of this anthropologist, USAID plans to draw to the maximum extent possible on the capacity already existing in Morocco for rural social analysis--particularly at the National Agronomic and Veterinary Institute--to insure that the implementation of this project takes adequate account of the social and cultural practices of the inhabitants in the project area.

b) US and GOM staffing.-- The pastoralist anthropologist (3 person years) will be assigned to the DPA at Meknes in Project Year 1. The GOM will name two counterparts from the Livestock Service for participant MS training in the US. The US and GOM counterparts will first construct cultural and sociological inventories on the five Phase I extension perimeters. They will then provide to USAID and the Livestock Service periodic reports concerning: 1) the dynamics of the grazing associations, tribal and municipal structure and the Local Commissions for Range Improvement (see Social Analysis section), with particular emphasis upon equitable assignment of grazing rights; 2) any transhumance exchange relationships and how they may be affected by grazing deferment; 3) the extent and importance of grazing-by-contract; 4) relationships between farmers, semi-migratory farmer/herders

and migratory herders; and the economic incentives of these three groups to sell their sheep; 5) the economic role of women in the livestock-producing enterprise; and 6) the identification of socially sensitive approaches to accomplishment of project objectives. The livestock anthropologist will attend all project staff meetings and advise on the social soundness of extension and demonstration activities.

4. Participant Training

Training under this proposed project consists of short term and long term training, as well as short term in-country training and an international seminar on range management. Table 7 presents the breakdown of training within disciplines for the five-year period.

a) Short term training.— Short term training will be for approximately six months in range management and extension. A total of 17 participants are proposed for short term training. This type of training is suggested for technicians (agents techniques) and engineers (adjoints techniques or ingenieurs d'application), who will be assigned to perimeters as extension agents.

As the contractor will be western university with a large department of range management with international expertise, the six month training will be designed and coordinated by the contractor. The contractor will also either: a) contract with USDA which periodically offers an in-country range management seminar in French; or b) design and coordinate its own annual range management and extension short course in French in-country, possibly using facilities such as the Meknes Extension Center.

b) Long term training.— Advanced degree training refers to third cycle level (MS equivalent) and requires under most circumstances a minimum of two years. It is therefore essential that the initial participants in this category of training in the US begin prior to or upon initiation of the project. A total of eleven advanced degree participants are proposed for training over a five years period.

Only a limited amount of candidates for short and long term training are available from Morocco's educational institutions (see Administrative Analysis section). The Livestock Service therefore intends to recruit candidates from graduates of the two agricultural colleges who are already employed by the Livestock Service.

TABLE 2

Participant Training During Phase I

Project Year	1 LT	1 ST	2 LT	2 ST	3 LT	3 ST	4 LT	4 ST	5 LT	5 ST	Total LT	Total ST
Range Management and Extension	2	4	1	3	2	4	1	6	1	-	7	17
Seed Forage	1				1						2	
Anthropology	1				1						2	
Total 1/	4	4	1	3	4	4	1	6	1	-	11	17

LT = Long-Term (advanced degree)
ST = Short Term

1/ represents departures of long term advanced degree (MS) and short term participants by year. Eleven MS candidates at two years per participant represents 22 person years of training. Seventeen short term participants at six months per participant represents 102 person months.

c) International seminar.— In addition to advanced degree and short term training, participation in professional meetings and conferences by Moroccan and American specialists will be provided for the purposes of presenting professional papers and stimulating interest in rangeland problems and solutions. For this reason, an international seminar on range management and improvement has been budgeted under the project.

5. TDY Assistance

TDY consultants will be available under the contract in five specialities (range management, seed production, anthropology, extension and animal science). The TDY seed specialist will consult with the Livestock Service on thedesign of the seed center. The TDY extension specialist will assist the range management specialists design the extension strategy. TDY personnel may also provide assistance in commodity equipment procurement and organization and coordination of the in-country range management seminar.

II. FINANCIAL PLAN

The budgetary requirements for the project are presented in Table 3. Technical assistance costs for the US resident team are based upon 21 person years at $90,000 per year, and includes salary, overhead, allowances, travel, shipment, etc. TDY assistance is estimated at two two-month visits per year ($9,000 per month). Costs for campus logistic support and coordination of participant training include one half-time campus coordinator ($20,000 per year) and one full-time secretary ($16,000 per year).

Participant training totals 22 person years of long term study ($16,000 per year) and 102 person months of short term training ($1,500 per month). One in-country short course per year ($10,000) for up to 20 range workers and technical assistants have also been budgeted. Commodities are described in more detail in annex I. Other costs include a local secretary or assistant, miscellaneous operational expenses (gasoline, repairs, etc.), US and in-country French language training, a mid-project evaluation, and an international seminar in range management.

Of the total project costs approximately $1,5 million will be local currency costs. The large portion of local costs will go towards logistical, administrative and operating expenses for the support of the technical assistance team. A determination under Section 612 B of the Foreign Assistance Act is requested to permit dollars to be spent for local costs for this innovative project.

TABLE 3

Budgetary Requirements in 1980 Prices

($000)

	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
Technical Assistance						
US Resident Team (21 person yrs) 1/	360	450	450	360	270	1,890
TDY Staff 2/	32	32	32	32	32	160
Campus Support 3/	50	50	50	50	50	250
Total	442	532	532	442	352	2,300
Participant Training						
Long Term (MS degrees) 4/	64	80	80	80	48	352
Short Term 5/	36	27	36	54	-	153
Other (in-country) 6/	10	10	10	10	10	50
Total	110	117	126	144	58	555
Commodities 7/	188	200	272	-	-	660
Other						
Local Costs (incl.secretary)	30	40	40	40	30	180
French language training	30	30	20	-	-	80
Evaluation 8/	-	-	48	-	-	48
International Range Seminar	-	-	40	-	-	40
Total	60	70	148	40	30	348
GRAND TOTAL	800	919	1,078	626	440	3,863
Inflation factor (8%)	1.00	1.08	1.17	1.26	1.36	
Total with inflation	800	993	1,261	789	598	4,440

1/ $90,000/year including all benefits and overhead.
2/ Two two-month visits per year at $8,000/month.
3/ includes one half-time coordinator ($20,000/year) and one full-time secretary ($16,000/year)
4/ $16,000/year
5/ 17 6-month courses ($1,500/month)
6/ One in-country short course per year ($10,000/course)
7/ See Annex I for detailed list.
8/ six person/months ($8,000/month)

TABLE 4

GOM Costs - 5 Years

(000)

Personnel	DH	$US
5 MS level (ingenieurs d'Etat)	2,100	568
5 BS level (ingenieurs d'Application)	1,800	486
10 Assoc.degree level (adjoints Techniques)	1,200	324
10 Voc.high School (agents Techniques)	750	203
30 Workers (main-d'oeuvre)	200	54
	6,050	1,635
Range Program Operating Budget 1/	19,000	5,135
TOTAL	25,050	6,770

1/ Estimated portion of annual planned allocation to the Service of Feeds and Ranges under the Interim Three Year Plan 1978-80 (DH 5 million/year) invested in the Phase I perimeters. Cost includes: perimeter development (construction of shelters, ponds, access roads, brush cleaning, re-seeding, etc.); construction of seed multiplication center (DH 1.0 million); and payment of indemnities for deferred grazing (DH 3.6 million)

III. IMPLEMENTATION

A. Implementing Agencies

The project will be implemented by the Service of Feeds and Ranges of the Division of Livestock Husbandry with the cooperation of the following other offices and division of the Ministry of Agriculture and Agrarian Reform (MARA): 1) the local offices of Provincial Direction of Agriculture (DPA); 2) the Division of Water and Forests; 3) the input services and extension sections of the Division of Agricultural Development (DMV); the National Agronomic and Veterinary Institute (INAV) and the Meknes Extension Center of the Division of Agricultural Education; and the forage research and seed certification sections of the Division of Agronomic Research (DRA). Project staff will also collaborate with certain parastatal agencies: National Society for Seed Marketing (SONACOS); National Society for Livestock Development (SNDE) and Ranch Adarouch. The Administrative Analysis section briefly describes these organizations and explains how each is related to the proposed project.

B. USAID and Contractor Roles

1. USAID

USAID's role will be to monitor the implementation of the project, schedule and arrange for planned evaluation exercices, and otherwise assist in the resolution of major problems that may arise to threaten the success of the project. Upon meeting the conditions precedent, the USAID will issue certain Project Implementation Orders so as to set into motion the processing of participant training and commodity orders (final specifications for the latter have already been drawn up in Annex I). These will be funded from the line items presented in Table 3 of the Financial Plan. This will allow the project to get off to a timely start as contract negotiations get underway. However, after the contract team arrives, processing of participants and ordering of commodities will be the sole responsibility of the contractor.

2. Contractor

US assistance will be implemented under contract following normal bidding procedures with a US western land grant university which has evidenced expertise and experience in the management of arid public rangelands and the extension of improved range management methods on natural ranges. Because range-reseeding is only one (but important) component of this project, expertise and experience in grass seed production and range re-seeding alone is not sufficient for selection

of contractor. The contractor will provide all necessary administrative and logistical support services, including commodity procurement and the processing of participants. The contractor will be self-supporting and will perform called for services in accordance with annual work plans which will be approved by both USAID and the GOM. The contractor will also report annually, and in writing, to the USAID and GOM on project activities. The resident contract staff must have sufficient proficiency in the French language in order to communicate effectively with their associates and other GOM officials. As already indicated, the role of the US contract team will be that of senior but temporary associates in the establishment of the extension program and seed production center. Under no circumstances will they be allowed to function as substitutes for Moroccan staff.

3. GOM

This project will be administered as a host country contract. The contractor will be the Direction of Livestock Husbandry of the MARA.

C. Staffing Pattern

US specialist time requirements are projected to be as follows with the assumption that individual contracts would be two-year renewable contracts. The three range management specialist positions are perceived to be needed for the entire five-year duration of Phase I. One rural sociologist/anthropologist position will be needed for the first three years of Phase I and one forage/seed agronomist position will be needed for the three years beginning in Project Year 2 (see Table 5).

D. Implementation Plan

PP submitted to AID/W	February 1980
PP approved	March 1980
Project Agreement Signed	April 1980
First Group LT Participants Selected	April 1980
RFP Sent out by Livestock Service	May 1980
Selection of Contractor	July 1980
Host Country Contract Signed	September 1980
First Group LT Participants depart for US	September 1980
Project Commodities Ordered	September 1980
Three Range Specialists and Anthropologist arrive Post	October 1980
TDY Seed Specialist arrives	November 1980

Seed Center Site Selected and Construction Begins	November 1980
First Year Work Plan Submitted	November 1980
TDY Extension Specialist Arrives	November 1980
Extension Strategy Submitted	January 1981
Second Group LT Participants Selected	January 1981
Contractor Completes Arrangements for ST Training	February 1981
Second Group LT Participants Depart for US	February 1981
Contractor has First In-Country Seminar	March 1981
Seed Center Construction Completed	April 1981
Resident Seed Specialist Arrives	August 1981
Second Year Work Plan Submitted	September 1981
Third Group LT Participants Selected	October 1981
Third Group LT Participants Depart for US	January 1982
Contractor has Second In-Country Seminar	February 1982
Fourth Group LT Participants Selected	February 1982
First Group LT Participants Return to Morocco	August 1982
Fourth Group LT Participants Depart for US	August 1982
Third Year Work Plan Submitted	September 1982
Second Group LT Participants return to Morocco	January 1983
Contractor has Third In-Country Seminar	February 1983
International Range Seminar Held	August 1983
Fourth Year Work Plan Submitted	September 1983
Anthropologist Leaves Morocco	September 1983
Evaluation Team Arrives	November 1983
Third Group LT Participants Return to Morocco	January 1984
Contractor has Fourth In-Country Seminar	February 1984
Resident Seed Specialist Leaves Morocco	August 1984
Fourth Group LT Participants return to Morocco	August 1984
Fifth Year Work Plan Submitted	September 1984
Contractor has Fifth In-Country Seminar	February 1985
Balance of Team Leaves Morocco	August 1985

TABLE 5

Staffing Pattern for US Resident Team

	Project Year 1	2	3	4	5	Total Year
1. Range Specialist (Meknes)	x	x	x	x	x	5
2. Range Specialist (Oujda)	x	x	x	x	x	5
3. Range Specialist (Beni Mellal)	x	x	x	x	x	5
4. Seed Specialist		x	x	x		3
5. Pastoral Anthropologist	x	x	x	---	---	3
TOTAL	4	5	5	4	3	21

IV. EVALUATION PLAN

The project will be internally monitored by the project team on a periodic basis and externally evaluated in the middle of the fourth project year.

A. In-House Project Evaluation Plan

Each quarter after the implementation of the project begins, each of the team members and counterparts will gather in Meknes to review and analyze progress and identify obstacles to progress at their respective perimeters. The USAID project manager will also attend these meetings. Regional quarterly reports of perimeters will be made and considered in terms of the overall goals of the project. Remedial actions for a region will be incorporated where needed based upon successful techniques used elsewhere and on team innovation designed for the particular problem and region. Team members may invite any GOM, USAID or other agency representatives to attend any quarterly meeting to share their input.

B. Outside Project Evaluation

By the end of the third project year an outside evaluation team made up of an anthropologist, a seed multiplication specialist, a range management specialist and a small ruminants specialist will evaluate project results to that time and make its recommendations to USAID as to whether the project should be continued into Phase II (a second five year period).

If the project is to be continued the evaluation team will make suggestions for the design of the second phase (second five year period) in terms of the activities, scope and specific goals of a possible second seed multiplication center, expansion of project area to include perimeters in the southern region of the country, socio-cultural aspects, and the feasibility of increasing the off-take of cull ewes and lambs through intensive feeding operations.

If the project is to be terminated at the end of the first phase, the final project evaluation will be expanded to a scope adequate for preparation of the full project termination report.

IV. PROJECT SPECIFIC ANALYSES

A. Economic Analysis 1/

1. Introduction

A financial internal rate of return (IRR) was computed for range re-seeding and rotational grazing in the 100,000 hectare Phase I area. The IRR represents the average earning power of funds used in a project. A general rule is to implement projects having an IRR greater than the prevailing opportunity cost of capital. The opportunity cost of capital may be viewed as that rate of return which the project entity would earn if it invested project funds in some other activity.

Three assumptions were made in the analysis. First, as the project is essentially aimed at vegetative regeneration and improvement, benefits from the project in terms of increased production must necessarily be considered in a long term perspective. It was therefore assumed that life of project is ten years. Secondly, it is not possible to estimate a rate of adoption of improved practices on the five million hectares in the Eastern Region from what is essentially a pilot demonstration project. Therefore, the analysis is based upon per hectare incremental benefits and costs, with the exception that fixed costs are spread over the 100,000 hectare Phase I project area. Finally, the entity for whom the analysis is undertaken is the GOM Service of Feeds and Ranges rather than a herder or commune. This is because the GOM is meeting almost all infrastructure, personnel and veterinary costs, as well as costs in the form of subsidies to the communes for the construction of sheep folds and supplementary feed.

2. Assumptions for IRR Analysis

a) Increased production.— Preliminary research in Morocco indicates rather spectacular production increases from the adoption of improved range management practices. A grazing trial was performed for six months at the Aarid Perimeter near Midelt in 1971 (Table 6). The

1/ For a brief discussion of sheep and goat production and marketing in Morocco, see Annex VI.

TABLE 6

Ewe-Lamb Production Under three Different Management Systems 1/

Management System	Total Ewe-Lamb Meat Production (Kg/ha Liveweight)	% Increase
Fairway Crested Wheatgrass, Rotationally Grazed	45.7	508
Small Sagebrush Range, Rotationally grazed	16.0	78
Small Sagebrush Range Under Traditional Management	9.0	0

1/ Six month grazing trial (4/19-9/19/71) on the Narid Perimeter. Under both improved systems animals received health care (treatment for parasites and vaccination). Range site is mainly shallow, stony and gravelly, with some deep silty clay loam.

Source: W.L. Graves et al., "Increasing Animal Production in Morocco through Rangeland Renovation and Animal Management," Proceedings of the First International Rangeland Conference, Denver, Colorado, 1978

study found that liveweight meat production increases per hectare were over 500 per cent on range seeded to crested wheatgrass and 77 per cent on natural sagebrush range under rotational grazing.

Considerable caution must be used in extrapolating these preliminary results to year-round grazing and to other areas within the Eastern Region with different range sites and climatic conditions. Nonetheless, it was assumed in the analysis that range re-seeding would increase per hectare liveweight meat production by 100 per cent and rotational grazing on natural range would increase it by 50 per cent. These estimates are conservative in view of the fact that the CCA predicts a quadrupling of liveweight production in the Phase I area. Current per hectare production in the Phase I area is estimated to be 9 kg/hectare (Table 7).

Improved feed resources and other management practices may also increase wool production, currently at one kg/hectare raw wool in the Phase I area. Wool production was assumed to double under range re-seeding and increase by 50 per cent under rotational grazing.

Increased production of goat meat and milk from areas under improvement was not computed. Recent studies indicate that goats are poor grazers and do not excel in rate of growth on improved ranges when compared to sheep. There is little data available as to the potential to increase goat milk yields (currently 30 litres) in Morocco from improved feed resources. As sheep raising is more profitable it is likely that most operators who raise goats will raise more sheep instead in improved areas.

b) Development costs.— These are extremely difficult to estimate, as range site conditions, development needs, schedule of deferments and other required management practices will differ from one range site to another.

Infrastructure costs have been estimated at DH 13.38 million and are incurred over years 1-3 (Table 8). Infrastructure costs under rotational grazing exclude the cost of the seed center (DH 1.0 million).

TABLE 7

Estimated Per Hectare Liveweight Mutton and Lamb Production

	Phase I perimeters 1/	Eastern Region 2/	Total Morocco 2/
grazing area (000 ha)	98	3,000	16,000
No. sheep (000 head)	100.8	2,695	14,300
off-take (%)	35%	30%	30%
liveweight production (Kg/ha) 3/	9.0	4.0	6.7

1/ Source: GOM/USAID estimates

2/ Source: Annex VI

3/ Assumes average retail liveweight of 25 Kg.

TABLE 6

Estimated Infrastructure Costs, 1980
(100,000 ha)

	000 DH
Seed center and other buildings	1,000
Vaccination station	500
Livestock dips (20)	800
Small houses (10)	1,000
Classroom building (centre de formation)	30
Wells (3)	1,500
Ponds (10)	600
Sheep folds (200)	500
Access roads (925 Km)	5,100
Windbreaks and other trees	2,360
Total	13,390

Source of estimates: G. Jaritz and F. Kuba, La Production Fouragere au Maroc, GTZ, August, 1978; M. Carter, Range Management Recommendations for Morocco, SCS, October, 1966; Direction de l'Elevage, Projet de Plan Quinquennal 1978-1982: Amelioration Pastorale, June, 1977; and USAID/Rabat. The latter GOM document calls for a total of DH 64.4 million to be invested in thirteen perimeters over a five year period.

The cost of foregone production from deferred grazing is estimated at 4 kg/hectare liveweight, which is the average per hectare production for the Eastern region (Table 7). This estimate is about 20 per cent higher than the actual amount reimbursed by the GOM to the communes for grazing deferrment. The GOM pays the value of 30 kilograms of bread wheat at the official price (currently DH 1.05/kg) per hectare deferred. Thirty kilograms of cereal is enough supplementary feed (at 250 grams/day/head) for 120 days. One hectare of newly seeded range is assumed to need three years deferrment. The area under rotational grazing on natural range is assumed to be deferred for the first year, followed by one fourth deferrment each consecutive year.

Extension and veterinary personnel costs were estimated at one MS level technician (ingenieur d'Etat), one BS level technician (ingenieur d'application) and two associate degree technicians (ingenieur adjoint) at DH 252,000 per year per 50,000 hectare area.

Veterinary costs (treatment for parasites, vacinations) were estimated at DH 2.0/hectare. Other estimates by the GOM and other agencies vary from DH 1.0 to 1.5 per hectare.

Range re-seeding costs for planting in year one (DH 232/ha) are based upon custom rates by the Work Center in Midelt and include labor, depreciation and repairs (Table 9). This estimate is conservative in comparison to the GOM estimate (adjusted for inflation) of DH 207/ha for re-seeding.

Operating costs for one year of the seed center are based upon estimates for crested wheatgrass (Table 10). Under very conservative yield assumptions, one hectare on the seed multiplication center can produce enough seed (350 kg/ha seed) to replant about 30 hectares of range (at 12 kg/ha). Therefore, 1/30 of the operating costs for the seed multiplication center were charged for one hectare of re-seeded range. In an attempt to be conservative, additional profit from the sale of crop residue for roughage at the seed multiplication center (estimated at DH 335/ha in 1977) was not computed in the analysis.

c) Prices.— Liveweight sheep prices are based on historical price increases and include inflation. Retail liveweight prices for sheep in the Casablanca market (where 20-25 per cent of all livestock slaughter in the country takes place) increased by 12.9 per cent annually from 1970 to 1977 (see Annex VI). Government salaries, infrastructure

TABLE 9

Estimated per Hectare Costs of Re-seeding Range Grasses, 1980 1/

	DH/Hectare
Land Preparation	
plowing with disc plow	30
discing (2 times)	80
harrowing, with spike tooth harrow	27
Seeding	
Drilling	40
Two men to help with seeding, 4 hours	5
	232

1/ Costs are custom rates adjusted for inflation charged by the Work Center (Centre de Travaux) in the Midelt area and include labor, depreciation and repairs. Based upon estimates in: Washington State University, Technical and Economic Feasibility of Commercial Range Forage Seed Production in Morocco, 1977

TABLE 10

Estimated Per Hectare Costs of Production, Crested Wheatgrass Seed, 1980 1/

(100 hectare seed farm)

First Year Establishment	DH/hectare
plowing, discing, harrowing, culti-packing	293
planting	319
weed control	193
fertilization	133
cultivation at end of growing season	40
technician	480
	1,458
Average Yearly Costs, Years 1-4	
harrowing and cultivating	67
weed control	193
shallow cultivation	40
sacking and hauling	133
fertilization after rains	260
cultivation, late fall	40
technician	480
	1,233
Average Annual Cost (5 years)	1,278

1/ For detailed break-down of costs and assumptions, see: Washington State University, Technical and Economic Feasibility of Commercial Range Forage Seed Production in Morocco, 1977. Costs are custom rates adjusted for inflation charged by the Work Center (Centre de Travaux) in the Midelt area and include labor, depreciation and repairs. Costs for construction of the seed center are included in Table 3.

construction and (subsidized) veterinary medicine are assumed to increase at 8 per cent per year. The price history for wool was not available so wool prices were kept constant at DH 5.0/kg wool.

3. Conclusion

The analysis indicates a financial return of 18.4 per cent for range re-seeding and 19.4 per cent for rotational grazing (Tables 11A-11B). These may be considered to be quite favorable returns on GOM investment in range improvement activities were it assumed that the opportunity cost of capital was 15 per cent. An opportunity cost of capital of 15 per cent exceeds bank savings rates and the combined rates of inflation and population growth.

However, it must be immediately pointed out that the return from rotational grazing on natural range is very dependent upon the number of years required to keep land out of production to permit vegetative regeneration. Deferment for the first two project years lowers the IRR from 19.4 to 9.4 per cent (Table 11c). Many areas in Eastern Morocco may require up to five years rest before vegetative improvement may occur.

It is also evident that the high return from investment in range improvement is due in part to the rapidly rising price of lamb and mutton. Most of the price increases are due to constricted supply (see Annex VI). However, it is not expected that production increases in the Phase I project area will be large enough to off set price increases of meat over the next ten years.

Sensitivity analysis also indicates that the profitability of the project depends a great deal upon substantial production increases. If production increases are reduced to 75 per cent for range re-seeding, the IRR is reduced to 11.9 per cent (Table 11c). There exists the danger that producers in the Phase I area will go for short-term production gains, ignore grazing association rules and increase stocking rates. Project personnel will therefore have to pay particular attention to stocking limitations and to the culling of older animals and timely selling of lambs. At this time, interventions under the project to encourage higher off-take (such as intensive feeding of cull ewes and lambs) do not appear necessary given the rapidly rising meat prices and a relatively competitive marketing system. However, the possibility that producers will increase stocking rates underlines the importance of the pastoral anthropologist's work in studying the economic incentives

TABLE 11A

Financial IRR, Range Seeding 1/

(per hectare)

	1980	1981	1982	1983	1984	1985	1986
Incremental Benefits							
(9 Kg meat, 1.0 Kg wool)	-	-	-	158.9	178.7	200.3	322.7
Incremental Costs							
Infrastructure	44.67	48.24	52.10	-	-	-	-
Foregone production	47.60	53.60	60.40	-	-	-	-
Personnel	4.60	4.96	5.30	5.79	6.25	6.75	9.18
Veterinary	2.00	2.16	2.33	2.52	2.72	2.93	4.00
Seed production	42.60	-	-	-	-	-	-
Range seeding	232.00	-	-	-	-	-	-
Total	373.47	108.96	120.19	8.31	8.97	9.68	13.18
Net Returns	(373.47)	(108.96)	(120.19)	150.59	169.73	190.62	309.52

IRR = 16.4%

1/ Space limitations prevented the presentation of years 86, 87, and 88.

TABLE 11P

Financial IRR, Rotational Grazing 1/

(per hectare)

	1980	1981	1982	1983	1984	1985	1989
Incremental Returns							
(3.8 Kg meat, 0.5 Kg wool)	-	47.73	53.46	60.21	67.63	75.74	121.64
Incremental Costs							
Infrastructure	41.30	44.60	48.17	-	-	-	-
Forage production	37.60	13.80	15.10	17.10	19.30	21.70	35.30
Personnel	4.60	4.96	5.36	5.79	6.25	6.75	9.10
Veterinary	2.00	2.16	2.33	2.52	2.72	2.93	4.00
Total	85.5	65.12	70.96	25.41	28.27	31.38	48.40
Net Returns	(95.5)	(17.39)	(17.50)	34.80	39.36	44.36	73.16

IRR = 19.4 %

1/ Space limitations prevented presentation of years 86, 87 and 89.

TABLE 11C

Sensitivity Analysis

Range Re-seeding

	IRR
Expected	18.4
Livestock prices increase at 3/4 projected rate (10%)	13.3
Increase in production by 75% rather than 100%	11.9
Infrastructure costs reduced by 33%	20.1
USAID grant assistance costed (Years 1-5) 1/	14.0

Rotational Grazing

Expected	19.4
Deferred grazing for first two years (instead of first)	9.3
Livestock prices increase at 3/4 projected rate (10%)	9.4
Infrastructure costs reduced by 33%	27.6

1/ US $4.3 million = DH 15.9 million

of livestock producers to sell their sheep (see section B.3).

The sensivity analysis also shows how important it is to keep infrastructure investment down to a minimum. Reduction of infrastructure investment by one third increases the IRR for range improvement considerably (Table IIc). The GOM has extremely ambitious plans to invest DH 64.4 million (about $17 million) into infrastructure on thirteen perimeters over the next five years. Some of this investment is necessary to obtain production increases from improved animal nutrition, health and management (ponds, dips, sheep folds, windbreaks, etc.). But it is possible to greatly reduce some investments which may not be absolutely necessary to project success, such as deep wells, access roads and residences for COM personnel. Project personnel will have to pay close attention to keeping infrastructure construction down in order to insure a successful project.

Because it is in effect a transfer of funds to the GOM, USAID grant assistance would not normally be included in a financial return analysis. As part of the sensitivity analysis, it was included and still yielded a positive IRR.

B. Social Analysis

1. Introduction

The Eastern Region (Maroc Oriental) is one of the poorest agricultural areas within the country. The majority of its residents live below an annual expenditure level of $250 a year 1/. Rates of illiteracy, non-enrollment in primary school and infant malnutrition in the region are all higher than the national average (Table 12).

Agriculture is by far the most important economic activity among the estimated 270,000 rural families in the region. About 200,000 farmers are subsistence cultivators of rainfed cereals on plots averaging about six hectares. Another estimated 35,000 are semi-migratory herder/farmers who cultivate grain but who also raise livestock for cash income. An additional 25,000 are families who subsist entirely upon sheep and goat husbandry.

The Eastern Region comprises part of Morocco's rainfed agricultural sector. The social and economic characteristics of the dryland sector have been described elsewhere and need not be examined here 2/. However, two factors differentiate the Eastern Region from other dryland zones in the country: the importance of livestock husbandry; and the survival of the collective system of tenure to tribal grazing lands.

2. The Livestock-Raisers

Sheep and goat husbandry play a greater role in the subsistence economy than elsewhere in the country. Over ninety per cent of the cultivators in the region own sheep and goats, compared to the national average of eighty per cent. The proportion of individuals who depend upon livestock husbandry for their livelihood is double the national average (Table 12).

1/ E. Eighmy, A Statistical Description of Morocco's Poor, USAID/Rabat, 1979.

2/ MIAC, Applied Agronomic Research Program for Dryland Farming in the 200-400 mm Rainfall Zone of Morocco, 1977

TABLE 12

Demographic Data, Project Area, 1977

	Total, Morocco	Eastern Region
Total Pop (000)	18,359	2,248
% Pop Economically Active	30%	34%
% Pop Econ Active in Livestock Husbandry	8%	14%
Pop Density (inhab/Km2)	40%	17%
% Rural	60%	70%
% Illiterate	75%	79%
% Enrollment	34%	32%
% Infant Malnutrition	44%	48%

Source: T. Eighmy, A Statistical Description of Morocco's Poor, and Division de la Statistique

Distribution of ownership of sheep and goats in the region does not differ substantially from the national average. About eighty per cent of the livestock-raisers have herds of 50 head or less, accounting for approximately half of the sheep and goats. (Tables 13 and 14).

In the Eastern Region of Morocco and unlike in other parts of Africa, there is no strict division between sedentary farmers and nomadic herdsmen. Almost everyone raises livestock and cultivates cereals simultaneously. However, three general groups of livestock-raisers can be distinguished on the basis of their mobility: sedentary farmers; semi-migratory herder/farmers; and migratory herders.

a) Sedentary farmers.-- Sedentary farmers comprise the majority of residents within the region. Some still inhabit the ancient ksars, the fortified ramparts built for grain storage and protection from invasions from other tribes. As the oldest of the settled inhabitants, many own irrigated lands, where they grow vegetables, some fodder (luzerne) and even cereals (wheat and corn). Outlying rainfed holdings are put into barley. Most farmers have small herds of 20 sheep and goats, which are raised primarily for home consumption of meat, milk and wool. The animals are grazed on crop stubble, fallow and adjacent tribal grazing lands. In the fall supplementary feed is given to the animals, barley, cereal bran, and hay.

The animals may be managed by a younger family member, or in the case of larger herds, by a professional herder whose services are reimbursed by salary or by some other contractual arrangement. Often a group of douars or a fraction of a tribe (see below) may group together and hire a herder to manage their animals.

b) Semi-migratory herder/farmers.-- Another group of cereal cultivators may be considered to be semi-migratory. These are often individuals who are descended from once predominantly migratory tribes but with the advent of the Protectorate were forced to become sedentary. Many are salaried herders who are aspiring to become proprietors of large herds. They are more mobile as their herds are generally larger than those of sedentary farmers. Unlike sedentary-farmers, they market a certain amount of their sheep.

Most possess a house located within a douar of their tribal fraction, which they use for cereal storage and where they stay during peak labor periods of the cropping season (planting, harvesting) and during visits to the local souk. Tents are used at other times of the year while grazing neighboring pastures. During good rainfall years they may not move their herds at all. A typical example of the herder/

TABLE 13

Sheep: National Distribution of Ownership, 1975

Herd Size (head)	No. Herders/Farmers %	No. Sheep %
1-4	16.4	1.9
5-10	25.4	7.7
11-20	23.4	14.4
21-30	12.4	12.7
31-50	11.2	17.7
51-100	7.8	21.6
101-150	2.0	9.5
151-200	1.0	6.9
201-300	0.3	3.5
301-400	-	0.8
401-500	-	0.4
501 and above	0.1	2.9
Total	100.0 %	100.0%

1. Total No. Herders/Farmers = 576,700

2. Total No. Sheep = 14,270,300

Source: Direction de l'Elevage.

TABLE 14

Goats: National Distribution of Ownership, 1975

Herd Size (head)	No. Herders/Farmers %	No. Goats %
1-4	29.2	4.5
5-10	20.9	8.3
11-20	21.4	16.4
21-30	9.8	12.4
31-50	10.3	20.3
51-100	6.6	23.1
101-150	1.2	7.1
151-200	0.3	2.2
201-300	0.2	2.0
301-400	0.1	1.9
401-500	..	0.7
501 and above	-	1.2
Total	100.0 %	100.0%

Total No. Herders/Farmers = 290,285

Total No. Goats = 5,746,406

Source: Direction de l'Elevage.

farmer category is the Beni Mathar, a tribe who occupy one of the Project's five extension perimeters. The individuals who were queried had an average herd size of 100-150 sheep. Their seasonal movements are generally limited between the tribe's irrigated lands, their rainfed cultivations, and their collective grazing lands. They generally locate their tents no more than 20 kilometers from their houses at any one time of the year, though they would move further away during bad years.

c) Migratory herders.-- Traditionally, these are the "rich" of the region. While they account for only about ten per cent of the rural population, they own about one-fourth of the area's sheep. Herds generally run over 200 head. In Eastern Morocco the majority of the migratory tribes reside in the High Plateau region directly south and southeast of Oujda.

Some herders rent lands in areas with favorable rainfall to pasture their animals over the summer and may transport their animals by truck. Some unload their animals on their own or cooperating farmers' fields to glean harvest aftermath. This is the case of some herders in the Guercif area who take their animals to the Fes and Meknes farming areas after harvest. Some have purchased 2-3,000 litre tank trucks to water their animals.

When on the move, the typical migratory herder lives in a tent made from goat hair, owns several camels and mules to carry drinking water and dogs to accompany his sheep. Few raise poultry. They carry enough reserves of tea, sugar and wheat for several weeks, but generally attend a souk once a week for exchanges of animals, money and victuals. A good part of their revenues from the sale of animals is invested in the purchase of houses, irrigated lands and stocks of barley for bad years. They have a specialized vocabulary for sheep husbandry, pastoral plants and meteorology.

d) Exchange Agreements.-- Both migratory herders and herder/farmers have transhumance exchange agreements with other tribes. These agreements are usually between tribes residing on the plains or plateaus with low elevation and those residing in the Atlas moutains. Grazing begins with the October rains in areas of low elevation and continues all winter until March when the crops begin to ripen in the fields and forage reserves have been exhausted. The animals are then taken to higher altitudes. This is typical practice, for example, of the Houara tribe residing on the Tafrata Plain (Guercif) who in April move their animals to the mountaneous Taza area.

Similarly, some tribes in high altitude areas will move their animals to the plains for one to three months of the year when cold temperatures and heavy snows suspend vegetative growth and prevent grazing. For example, herding groups in the Timahlite area descend to the Guigou Plain during the coldest winter months.

The tribal group wishing to emigrate to the lands of another tribe has usually established the necessary agreements by sending a delegation to meet with the naib or tribal representative. They then conclude a verbal contract concerning the number of individuals and animals and the duration of their stay. There is no payment when tribes have reciprocal arrangements. When the arrangement is one-sided the visiting herders may pay a head tax on their animals, the proceeds from which are distributed among the recipient tribe. The central government is in no way involved in these arrangements.

e) Incentives to raise livestock.— In the Eastern Region, sheep are the primary income producing livestock. Goats are kept almost exclusively for home consumption of meat and milk products.

Farmers and herders may have both social and economic reasons for increasing the number of sheep they own. For sedentary farmers, decisions on the sale of sheep are often determined by the financial needs of the farming operation. Animals or wool may be sold to meet an urgent need for liquid assets. In this respect, the sheep herd may be thought of as a savings account. The number of sheep a farmer has is an index of his available capital. Ownership of sheep also plays an important role in determining the social status of a farmer and is a source of considerable prestige. While there is yet much to be learned about economic incentives of migratory herders, it is possible that they retain an excess number of older males in their herds for Aid El Kebir (see Annex VI).

It would therefore appear logical that with improved grazing resources, farmers and herders would be inclined to increase stocking rates. However, farmers and herders who benefits from improvements of their collective grazing lands under the project are required by charter of the Local Commissions for Range Improvement to limit the number of animals per individual. Furthermore, because of rapidly rising meat prices and a competitive marketing system, there is grounds for believing that herders will not build up their flocks.

f) Role of women.— A review of the available literature pertaining to the role of women in the dryland agricultural zones is contained in the IFC study cited above.

In farm operations, women commonly tend livestock, weed the crops and assume responsibility for getting firewood and water. In

herding operations, women rarely accompany the men when stock is trekked to more favourable grazing areas in the dry summer months. During this period women manufacture traditional items from wool (clothing, bedding and rugs).

Within both sedentary and herding family groups, women are generally in charge of providing milk from the goats for family consumption and cash sale at the local souks. Proceeds from the sale of goat's milk as well as wool products such as rugs belong exclusively to the woman. There is no data available as to the potential to increase milk yields of the local hardy Barbare goat breed from improved feed resources. Nonetheless, it is possible that under the proposed project, goat milk yields can be increased from their extremely low level of thirty litres/year, thereby increasing women's cash incomes. Fifty to 100 per cent increases in wool yields (currently at one kilogram wool in grease) can also be expected under the project.

The contribution of women to the livestock-producing enterprise will be more closely examined by the pastoral anthropologist (see section B.3.b.) The role of women in the dryland farming enterprise is currently being studied under the Dryland Agriculture Applied Research project (0136). Other USAID activities which contribute to the improvement of women in Morocco are: Non-Formal Education for Women (0139); Family Planning Support (0155); and Nutrition Systems Study Unit (0135).

3. The Collective Lands

Tribal tenure is the oldest system for use and occupancy of the land in Morocco. Tribal claims to land were first made definite in terms of allotted areas, then these were gradually carved away by other claimants over the centuries of change and development. One of the most fundamental changes was the emergence of the French Protectorate (1912-1956).

The Protectorate confiscated some of the tribal lands for distribution to Europeans, with remnants still held by the government. The forest lands were taken from the tribes and put under Eaux et Forets management to establish improved conservation practices. Much of the collective lands were declared melk (private) by individual tribesmen who were afraid that the central government would confiscate their land. The rest remained under "collective ownership". The collective lands were put under the tutelage of the Ministry of Interior to preserve their inalienable character.

There are today about 6.3 million hectares of collective land under tribal tenure today, comprising about 40 per cent of all agricultural land in Morocco.

Only about a million hectares of this land are cultivated. Formerly, parcels were assigned in usufruct to individual families by the naib (see below). In principle, the assignments are to be made anew each year. In practice, the allotments are held for an average of three or four years, and even generation to generation. The better lands especially are allotted on a continuing basis and often to the most influential members of the tribe.

The collective grazing lands comprise about 5.3 million hectares and are used primarily for grazing sheep and goats. Most of the collective grazing lands are located in Eastern Morocco.

Grazing rights on the collective lands are defined geographically by tribal membership and are established through a long history of occupation and use of the land by the tribe. In many areas a pattern of cultivation, fallow and non-farmed grazing land exists side by side. Boundaries of some collective grazing lands are often precisely defined and others are not. Where not precisely defined or recognized, overlapping use and encroachment from outsiders creates trouble and unrest.

There is much confusion within the government and at the Municipal level about how to solve the disputes over tenure to the collective lands. Part of this is a result of the breakdown of traditional tribal structure, and part is due to the inability of the government to take unilateral action where collective land is involved.

Nonetheless, there exists at the municipal level an organizational structure which can potentially deal with tenure problems involving the collective lands. The following is a discussion of the municipal organization.

4. Tribal and Municipal Organization.

Throughout rural Morocco the municipal administrative structure is based more or less upon the traditional organization which existed before the advent of the Europeans. Under tribal organization, decisions involving such matters as relations with other tribes or the assignment of grazing rights on tribal lands were made through a democratic system of representation at each tribal level.

Put simply, a few families form a douar. Several douars form a fraction. The totality of fractions who are descended from a common male ancestor form the tribe. Several tribes may form a confederation.

Under the traditional tribal system, the heads of families in a douar elected an individual to represent them at the level of the fraction. From these individuals were elected representatives to the level of the tribe. The representatives of the fractions formed a Council of Elders, which elected an individual to represent the tribe at the level of confederation.

With independence, the central government attempted to align the territorial limits of the tribes with those of the municipal administrative units, called communes (townships). This evidently was not possible in many cases, as tribal boundaries were ill-defined and some tribes "owned" thousands of hectares. Nonetheless, in Eastern Morocco, a commune today can contain several tribes, but it is rare that a commune boundary separates members of the same tribe. Unlike in the rest of Morocco, the tribal structure in Eastern Morocco has remained relatively strong, particularly among the nomadic tribes.

Today, the modern municipal structure at the commune level is somewhat similar to the old tribal structure (Table 15). Each douar elects a representative to a body of individuals who then elect a representative for their fraction. The fraction representatives form a Commune Council and elect a president and vice-president. The Commune Councils also elect representatives to both the Provincial Assembly and the Parliament. Through their president, the Commune Councils represent the interests of their commune to the caid, who is the appointed official of the central government. The Provincial Assembly in turn represents the provincial interests to the governor of the province, who is chosen by the King.

Many of the communes in Eastern Morocco are composed of tribes which have retained considerable amounts of collective land. In these communes, there currently exists the vestiges of a traditional system of centralized decision-making involving the collective lands. The individual who is charged with this responsibility is the naib.

In Eastern Morocco, the naib is likely to be the fraction representative or the commune president. His primary duty is to act as judge in deciding upon all rights of use on the collective lands.

TABLE 15

Municipal Administrative Organization in Morocco

Administrative Level	Appointed Positions (Ministry of Interior)	Elected Positions
Government	Minister	Parliament
Province/Prefecture	Governor	Provincial Assembly
Cercle	Super-Caid	—
Commune	Caid Khalifa (Asst. caid)	President of the Commune Vice-President
Fraction	Sheikh	Fraction Representative
Douar	Moqqadem	—

He also acts as the administrative liaison between the users of the tribal lands and the sheikh or caid. The latter, as officials of the Ministry of Interior, handle all questions of land tenure.

In cases of conflicts over the collective grazing lands, it is the advice and help of the naib which is solicited by the sheikh or caid. Typical conflicts are: infractions upon another tribe's land; crop damage caused by grazing animals; and disputes over cultivation rights.

To be elected, the naib must be known for his good knowledge of the geography of the collective lands, genealogy of the tribe, and have a broad understanding of his commune. His length of office varies from tribe to tribe but is generally 1-4 years.

5. The Local Commissions for Range Improvement

In the belief that over grazing on the collective lands was becoming a serious problem, the government passed the Dahir (Proclamation) No. 1-69-171 in 1969, which created a legal base for the improvement of the collective grazing lands. The Dahir was designed along the same lines as the US Taylor Grazing Act of 1934, which established a system of grazing districts and leasing of grazing rights on public lands in the US.

The Dahir was also an attempt to formalize tribal tenure on the collective lands, and many Moroccan officials welcomed the law because they thought it would arrest grazing and farming encroachments. The law was subsequently inscribed in the Agricultural Investment Code, which was one of several legal and political steps taken by the government to remedy some of the land tenure problems after independence.

The Dahir defined the Local Commissions for Range Improvement and authorizes them to set up grazing associations on range improvement perimeters. The law authorizes the Commissions to fix the stocking rate on the perimeters, prohibits the grazing by contract of non-members' stock, and sets out the punishment for those who violate the Dahir. A subsequent Dahir (No. 2-72-312) defines the membership of the Commissions and how they are to go about setting up the grazing associations.

The procedure of forming an association is a lengthy and elaborate one involving the reconstitution of the tribal assemblies and obtaining their consent to government intervention and the redefinition of land use rights. The procedure provides for a convenant

between the commune, the provincial governor (on behalf of the Ministry of Interior), and the Ministry of Agriculture. There follows a brief discussion of this process.

The Commissions are comprised of the following persons:

a) the governor of the province or his representative. This individual is usually the secretaire-general (vice-governor).

b) a magistrate of the province.

c) the president of the provincial assembly and two other members of the assembly.

d) three representatives of the Ministry of Agriculture. These are usually selected by the head of the provincial directorate of agriculture (DPA) and generally include a technician from the Service of Feeds and Ranges.

e) the local representative of the agricultural credit bank (CNCA) who may coordinate any requests for group credit from the commune.

f) the local controller from the Ministry of Finance, who coordinates with the Service of Feeds and Ranges any government expenditure for a perimeter.

g) the super-caid(s) or caid(s) of the commune(s) involved.

h) two representatives of the agricultural chamber of commerce.

i) and finally, the president of the commune(s) or naib.

The caid and the naib or president of the commune must come to agreement over the list of members of the grazing association who will have rights to the land. In some cases, where members of the association are permitted to include private land within the perimeter, it is the caid who approves their nomination for membership. But when collective land is involved, it is the naib or the president of the commune who approves the nominations.

The Commission ratifies the list of members, and with the technical assistance of the Service of Feeds and Ranges, comes to agreement upon how much land to set aside, stocking rate, period of deferment, modalities of payments for any investments, etc. The Commission then drafts a Ministerial Bill, which describes the boundaries of the perimeter, the name of the tribe(s) involved, and so forth. The bill is then submitted for signature to the Ministers of Agriculture, Interior and Finance. The document is

then submitted to the Prime Minister, whose signature makes the bill a royal decree.

This Process can take up to several years. However, if the president of the commune or the naib so agrees (with the approval of the Commune Council), the Service of Feeds and Ranges is authorized to begin perimeter development activities before actual finalization of tenure arrangements by the royal decree.

Each member of the grazing association permitted to use the perimeter is issued a card with his name and photograph as well as the number of animals he is permitted to graze in the perimeter. A card-holder has the right to sell or rent his card to someone else, provided conditions of the card are met.

The GOM currently finances the large part of perimeter development (reseeding, road construction, etc.). It is hoped that by the example of the first pilot perimeters other interested communes will undertake to form perimeters with their own means.

One phase I perimeter (Marid) has completed the procedure described above. The remaining four are close to completion and are operating in a de facto manner. For a brief description of the perimeter development activities already underway on these perimeters, see Table 17, p.58.

6. Reactions to the Idea of Grazing Associations

It has become clear that a great deal of interest now circles around membership in the range management associations in the Eastern region, because of the recognition of the future opportunity to graze animals on the relatively rich protected range, because participation in the associations permits members to purchase winter forage at a discount, and because herders are beginning to see the effects of range-land protection.

Interviews with herd owners, local officials and the herders te th selves conducted by the anthropologist of the PP design team all point to a growing sensitivity to the condition of the range and the relationship of increasing numbers of men and animals to its productivity.

To gain a better idea of local herders' reactions to the idea of forming a grazing association, the Ministry of Agriculture had a small survey performed with 25 herders in the Eastern region. Selected results of the survey are presented in Table 16.

The survey indicated that many herders may be willing to form grazing associations, permit the State to legalize their tribe's tenure

TABLE 16

Selected Responses from Herder Opinion Survey in Eastern Morocco 1/
(N=25)

Questions	Response	%
1. Would you be willing to form an association, uniquely comprised of members of your tribe, for the improvement of production and marketing of sheep?	yes	68%
2. Would you want the State to legally recognize tribal tenure to your tribes collective lands?	yes	76%
3. Would you want State assistance in regulating the extension of cultivation in your tribe's collective grazing lands?	yes	80%
4. Would you want the State to regulate transhumance on your tribal grazing lands?	yes	52%
5. When certain zones within your tribal lands become severely over-grazed, would you accept mandatory deferment from these zones for a short period of time (up to a year) ?	yes	64%
6. Should the grazing associations prohibit the grazing of animals belonging to a non-member of the tribe by a member of the tribe?	no	84%
7. Do you believe that herders should receive technical assistance by extension agents?	yes	88%
8. Would you want an extension agent to visit you regularly?	yes	88%
9. Would you be willing to attend a field demonstration on souk day or even a training session for a 2-3 day duration?	yes	88%

1/ 25 herders in the Beni Mathar, Tendrara and Merija area, broken down accordingly: 12 herders with herds of 70 head sheep and goats; 6 with herds of 70-150 head; and 7 with herds of over 150 head.

Source: Etudes et Realisations Economiques et Sociales and Division de la Mise en Valeur, Enquete d'Opinions et d'Attitudes en Milieu Nomade et Semi-Nomade du Maroc Oriental, 1971.

to the land, put certain areas of their land under deferment, and accept some form of extension assistance.

However, there were two areas over which the respondents did not agree with the government: government control of transhumance and grazing by contract.

A large proportion of respondents did not agree that the government should regulate transhumance. This attitude no doubt has a historical basis, as the government unsuccessfully tried to control transhumance during the Protectorate years. The respondents felt that it should be left solely up to the tribe to regulate transhumance arrangements with other tribes. Respondents would, however, welcome government assistance to keep out those tribes who did not have traditional transhumance exchange arrangements with their own tribe.

The survey also showed that herders were unwilling to limit the grazing of non-tribal stock by contract (in direct contradiction of the Decree 1-69-171). They felt that contract grazing was a means for the herder with only a few animals to earn extra cash income.

7. Conclusion.

The information presented above represents what is available to the USAID at the present time. There are definite gaps in this information relating particularly to the need for a comprehensive description of local grazing and migration patterns and how they may be affected by the formation of grazing associations. The GOM itself has little research material which would throw light on herding practices and life styles in the semi-arid areas.

But it does appear that the conditions for a successful introduction of a program of improved range management based upon the formation of grazing associations exist in the project area. A recent survey 1/ of AID-sponsored range management projects in Africa has concluded that the introduction of grazing associations for improved range management has a high probability of success if two factors are present beforehand. These are: 1) the unique exploitation of a large geographically-delimitable territory by a specific social group; and 2) the existence of an authority structure, which at least potentially, centralizes managerial decisions relating to access to grazing lands and water. It is evident from the

1/ D. Horowitz, The Sociology of Pastoralism and African Livestock Projects, PPC/AID/TI, 1979.

preceding discussion of the nature of collective grazing lands and the function of the naib within the local municipal organization, these two factors exist (at least potentially) that.

Nonetheless, the process described above of formalizing grazing rights to the collective lands has great potential for abuse, particularly as government officials are in a position to influence the adjudication of grazing rights. For example, once the genealogy of a particularly wealthy proprietor with a large allotment of grazing stock in a perimeter was examined closely, it became quickly apparent that he had descendants in the local caid's office and in the local provincial directorate of agriculture. Furthermore, some members of an association who own private parcels within a perimeter may attempt to sell their parcels once their value has been increased by the seeding of improved forage species or some other land improvement. It is also evident that future grazing associations must make legal provisions in their charter to respect the existing transhumance exchange agreements with other tribes. Furthermore, an equitable way of handling the grazing-by-contract problem will have to be found. These issues will be addressed by the project anthropologist (see section B.3.b).

C. Technical Analysis

1. Progress of Range Rehabilitation in Morocco

At present, Morocco's grazing lands are heavily used and many of the native perennial forage grasses, forbs and shrubs have nearly been depleted. Thus there may be little that improved grazing management practices can do to restore the more productive perennial vegetation, particularly on semi-arid rangelands where forage productivity is low and overstocking is severe.

For the last decade, surveys have been conducted and improved range rehabilitation practices have been suggested. Some authorities conclude that with knowledgeable range management practices, much of the range vegetation can be improved. Others advocate the more direct approach by reseeding to adapted species of grasses, legumes and forbs, as has been done on the Aarid perimeter. Both approaches will be utilized in the proposed project.

Major range reseeding programs are not without serious problems. Range reseeding require at least three to four years grazing deferment for removal of the native vegetation, cultivation of the soil, and the planting and establishment of adapted forage species. During this period of time long-established grazing practices may be disrupted and the stockman must find alternative grazing or supplementary feed. The actual time for establishment of a productive new seeding depends upon selection of the best species for the area, the success in seeding and establishment, and favorable environmental conditions for growth. Currently, little adaptability information is available on most of the improved range forage species for Morocco.

a) Status of Research and Demonstration Activity on the Perimeters.— A "range improvement perimeter" is a tract of communal grazing land set up by agreement between a municipality and the GOM (see Social Analysis section). A grazing association is formed and the development of the land (road construction, reseeding, provision of supplementary feed with grazing deferment, etc.) is financed by the GOM. The perimeters are utilized by the GOM for both research and demonstration of improved range management practices in an effort to get other municipalities interested in better management of grazing lands.

To date, twenty-four perimeters ranging from 4,000 to over 50,000 hectares each have been established over the last ten years. Projections for six more are foreseen for the immediate future. However, there is little activity on all but six perimeters: Ain Beni Mathar; Timahdite; Aarid; Ait Rhea; Ouch Laghrab; and El Hadraa. The first five are the only perimeters that have technicians from Feeds and Rangers assigned to them and comprise the Phase I perimeters.

Research and demonstration activities are briefly summarized in Table 17. The availability of trained personnel and the absence of an organized extension and demonstration program continue to be the limiting factor in perimeter development.

b) Progress in Range Reseeding.— Range reseeding was begun in Morocco in the late 1960s on both private holdings and communal grazing lands. Two outstanding areas on communal lands where some reseeding progress has been made are the Aarid and Beni Mathar perimeters.

The Aarid perimeter is in the Upper Moulouya River watershed near Midelt and has shown real progress in reseeding of Moroccan rangelands. The GOM plans to reseed 3,000 hectares per year at this perimeter until the entire 25,000 area has been reseeded. While planned reseedings are behind schedule (averaging about 900 ha/year since 1970), it is generally considered that this project has been a success. Livestock producers interviewed on the perimeter are pleased with the results even though return to grazing has been delayed for nearly ten years.

The completion schedule for the perimeter has been delayed partly because of lack of information on the best adapted species and the inability of management to acquire seed of the needed varieties.

The successful seedings were made in October-November after the seedbed was prepared by first burning the dominant native non-palatable species Stipa tenacissima (Alfa grass), plowing and cultipacking the soil, and drilling the seed with fluted grain drills. Seeding rates of twelve to fifteen kilograms per hectare were adequate with high quality wheatgrass seed.

The Ain Beni Mathar perimeter near Oujda is a 20,000 hectare site within the Northeast Oriental High Plateau area with a low and variable annual precipitation of 150-300 mm. A 250 hectare planting was made in 1976 but due to drought and possibly late seeding, this operation failed. In February of 1978 another 50 ha planting of A. desertorum, A. elongatum and E. curvula was made. As of November 1979, no wheatgrasses were noted and a very light stand of E. curvula was noted. No species adaptability trials were made.

TABLE 17

Authorized Perimeters, 1980

Name and Province	Hectares (000)	Elevation (m)	Annual Precip. (mm)	Activity
Ain.Beni Mathar (Oujda)	20	930-1500	200-240	Seeding trials water development, deferred grazing, supplementary feeding trials, establishment of demonstration research station, sociological studies, supplementary forage cropping.
Timahdite (Meknes)	25	1600-2100	400-600	Seeding trials, fertilizer trials, grazing rate trials, pitting trials, sheep diet studies, exclosures, sociological studies, fenced demonstration research area.
Plaine d'Arid (Khenifra)	25	1500-1800	270	Seeding trials, large area seedlings, sheep breeding trials, improved pasture livestock gain trials, sociological studies, exclosures, grazing management.
Ait Rbaa (Beni-Mellal)	10.3	600	370	Seeding trials, sociological studies brush control trials.
Ouch Laghrab (Boulemane)	20.6	630-1050	150-200	Sheep breeding trials, contour furrowing, fenced demonstration research area.
El Hadraa (K-des-Sraghna)	7.0	400-450	250	Cactus plantation, grazing management
Bouarfa (Figuig)	4	900-1000	100-160	———
Tafrata (Taza)	64.7	500-550	150-200	Old seeding trials (unprotected)

TABLE 17
(continued)

Name and Province	Hectares (000)	Elevation (m)	Annual Precip. (mm)	Activity
Bahra (Boulemane)	50	700-1000	150-200	
Angil (Boulemane)	10	1000-1200	200-250	
El Borouj (Casa)	14	500-600	305	
Sidi Chiker (Safi)	16	480	169	
Chichaoua (Marrakesh)	12.5	480	187	
Sidi Hamd Moussa (Agadir)	10	1500	100-160	
Maader (Tiznit)	10	500	100-160	
Taganr (Coulimine)	10	1000-1200	200	
Saarid (Khenifra)	10	1500-1800	270	
Boutaoult (Khenifra)	7	1500-1800	270	
Aghelbane (Khenifra)	10	1500-1800	270	
Tassnirte (Ouarza)	9	1700	200-250	
Imidire (Ouarza)	7	1200-1500	200-250	

TABLE 17
(continued)

Name and Province	Hectares (000)	Elevation (m)	Annual Precip. (mm)	Activity
Nzala (Errachidia)	9	1500-1800	200-250	
Ait Hani (Errachidia)	9	800-1600	200	
Talsinnt	9	1500	200	Alfa clipping trials, sagebrush productivity trials, pitting trials, material available for fencing demonstration research area.

2. Forage Species Evaluation and Seed Production 1/

a) Current Forage Species Evaluation Programs.— Currently forage species evaluation trials are being conducted at numerous locations within Morocco by the Divisions of Agronomic Research (DRA), Livestock Husbandry and Water and Forests. To date, there is apparently little coordination of their activities.

Evaluation trials involve both annual and perennial forage grasses and legumes. At its research station near Rabat, the DRA has demonstration plantings of more than sixty species of cool and warm season grasses and legumes. Sixty eight cultivars of Medicago sativa alone are being evaluated at this site. Elsewhere in Morocco on some thirty locations the DRA is testing mostly annual species on irrigated soils. The following grass genera are being evaluated under irrigated conditions for possible production in Morocco: Dactylis; Lolium; Festuca; Setaria; Chloris; Eragrostis; Oryzopsis; Paspalum; Digitaria; Phalaris; Sorghum; Panicum; and others.

The Livestock Service has made several kinds of forage evaluation in the range areas. One non-replicated planting of about seventy species was performed at the Aarid perimeter in 1966. The Agropyron species were prominent in observation seedings and have been a source of information for large scale plantings. Many other plantings have been made by the Livestock Service but most either failed or were overgrazed. Seed samples of numerous species of grasses and legumes were distributed in the fall of 1979 for evaluation plantings.

Currently forage species evaluation trials for Water and Forests are conducted under the auspices of the FAO. Sixty different species of forage are being evaluated at the M'da station under 600-700 mm of precipitation. Species of particular outstanding interest in November, 1979 were: A.elongatum; P.tuberosa; E.curvula; A.trichophorum; B.inermis var, "manchar"; D.geomerata, var. "palestini"; H.lyrta (Andropogon); H.conorarium; F.elatior; and M.sativa. These plantings were seeded in November 1978 and forage and seed yields were recorded in 1979. Information from these plantings will be valuable for forages produced under high rainfall.

1/ For a more detailed review of species evaluation and a proposed seed production program for Morocco, see: Washington State University, Technical and Economic Feasibility of Commercial Range Forage Seed Production in Morocco, 1977.

At the SNDE Zouada Ranch near Larach, FAO personnel established small observational plots in 1975 of Agropyron, Lolium, Phalaris, Eragrostis and Festuca species with Trifolium sub-terraneum. They have been heavily grazed and by November 1979 only E.curvula and T. sub-terraneum has persisted.

Other grass and legume species have been evaluated at other locations under various conditions throughout Morocco. Moroccan and foreign technicians are to be complimented for striving to better understand the adaptability of a vast number of native and introduced species of forage plants in the highly variable soil, climatic and topographic conditions of the country. These programs have indicated the tremendous potential of many forage species for Morocco.

b) Proposed Species Evaluation and Seed Production Program.— Paramount to and before any large scale range reseeding program, it is necessary to conduct intensive species adaptability trials for both forage and seed production.

The forage seed production agronomist under the proposed project should thoroughly review past and current evaluation trials with Moroccan research personnel and from information already summarized by them and others. He must then design future plantings in projected areas of range reseedings.

These trials should be protected and replicated 15-20 meter row plantings for general adaptability evaluations. Those species and cultivars having potential for future reseeding should be planted in replicated 3-5 hectare plots under various livestock management systems for evaluation of adaptability, persistance, and palatibility. These trials must be conducted jointly in cooperation with perimeter range livestock specialists. Special attention should be given to improved species and cultivars within species as well as native species which now persist under intensive grazing pressures. The latter include Dactylis, Phalaris, Andropogan, Oryzopsis, Festuca, Medicago, Trifolium and other species reported by Bryssine (1969), Giscard (1961), Iomesco (1960), Muttonson (1961), Schoenenberger (1977), Schenberger and Fay (1977), Villex (1963), and others.

Germination tests should be conducted on all seeds planted to assure that uniform viable seeds are used in making comparisons. Seeds should also be treated with appropriate pesticides to assure protection

during seedling establishment. All legumes should be inoculated with appropriate rhizobia species before seeding. Known planting depths for each species should be followed or failures in establishments may be expected. Similar procedures in planting the trials should be uniformly followed at all locations. Planting time is dictated by climatic conditions but October-December planting periods appear most desirable for most non-irrigated range conditions.

All experimental trials should be fenced and protected from non-scheduled grazing. Experiments should be planned for 3-5 years or as required to properly evaluate species under differing environmental conditions. Complete and thorough note collection and data records must be maintained and properly analyzed periodically. These data will be the basis for future range forage production and management programs.

c) Seed Production Center.— The following criteria have been established for the location of the seed multiplication center.

The center should be located in an area that possesses climatic and edaphic conditions for the growth and development of most cool season and some warm season non-irrigated grasses and legumes. It is expected that cool season species will be of greatest demand Phase I of the proposed Project.

Continental climatic conditions are needed for the initiation of seed reproduction of most cool season grasses. Winter periods of temperatures of 0 degree to 5 degrees Centigrade have a vernalizing effect on the developing seeds and seedlings and therefore enhance seed production in the new plant. Gradual warming spring temperatures, free of late spring frost, are also required. During late stages of seed maturation, dry conditions will enhance seed ripening and mechanical harvesting. Also, water is necessary for the developing plant. In areas of less then 550 mm of precipitation, supplemental irrigation will be necessary. Finally, the seed producing area should have well-drained sandy to silt-loam soil free of toxic salts with a Ph of 6.5 to 7.5

The center should also be accessible to the major reseeding areas. It should be accessible to major dealerships of farm and building equipment and agricultural chemicals. The site should be served by improved roads, be accessible to electric power and other services. Finally, a location in a progressive agricultural community would be an advantage.

After visiting several sites proposed by the Livestock Service, the project design team recommended Meknes for the following reasons: 1) climatic conditions for the production of most cool season and some warm season grass forage species are present; 2) the community is large enough to supply agricultural equipment and other services; 3) the Meknes Agricultural School presents some added training opportunities; 4) Meknes is planned to be the Project headquarters.

An alternative site could be either the Beni Mellal or El Jadida areas. These have warmer climates and may not be as conducive to seed production of some cool season grass genera such as Agropyron, Festuca and Dactylis. However, many warmer season species likely will do better there.

Consideration might also be given to developing small satellite stations for selected species. For example, areas in the Aarid perimeter near Midelt could serve as an additional seed producing area for some Agropyron species if demands for foundation seed exceed production at the central seed center. It is necessary however to concentrate the seed center facilities at one location at first and expand at a later date as needs arise.

3. Possible Extension Methods

Agricultural extension activities have historically served to link improved technology to agricultural producers, and to publicize the beneficial effects realized by those producers and society. The publicity function tends to arouse interest in new technology, increase awareness and encourage its acceptance and generally increase participation in its implementation. Great increases in agricultural productivity such as those experienced in US agriculture are linked in part to effective educational programs carried out through extension activities.

The objectives of any range extension program are general: 1) increase off-take of products through the promotion of proper range use and management; 2) integrate proper range livestock use with other land uses, such as watershed or production of other natural resource products (wood, paper); and 3) preserve the productive capacity of the rangeland. Although these program objectives are general and to some extent interrelated, the activities must be directed at specific audiences, from individual consultation through educational programs for large groups possibly including mass media educational techniques.

For this reason, all extension planning should be based on identifying answers to the essential questions of any planned activity: The who is our perception of specific audiences toward whom our educational efforts are to be addressed. The why is our perception of their educational needs. Activities directed toward meeting goals or objectives within those perceived needs are defined as the what. For each activity a specific time frame is adopted for when and major responsibility for activities and evaluation techniques are assigned as the how. The where of a range extension program is determined through identification of location of existing interest, need, and availability of resource information necessary as a technical basis for educational efforts.

A number of target audiences have been identified for the proposed range management Project. Table 18 presents a suggested plan for addressing the various audiences through extension programs.

TABLE 18 Possible Extension Strategy

Audience	Need	Objective	Activity	Responsibility
Range livestock owners and hired herders	Greater use of range management techniques for increasing efficiency of livestock	Demonstrate use of improved management practices and techniques	Establish applied research and demonstration areas on range perimeters	Extension range specialists and GOM counterparts
		Educate livestock producers in range management principles and practices	Conduct field days workshops, and use audio-visual aids	same
		Encourage control of grazing use on rangelands	Work with Local Commissions to develop range management plans	same
Young people in range livestock based rural areas	Basic appreciation of rangelands as source of future livelihood	Educate young people in basic range management principles and management techniques	Audio-visual programs	Extension range specialists and GOM counterparts
			Special educational programs for young people on the perimeters (visits to demonstration areas personal communication with project staff)	same
Farmers	Understanding of the value of sub-marginal land for forage production rather than cultivation of crops	Demonstrate increased forage supply from sub-marginal crop lands	Establish applied research and demonstration areas on range perimeters	Extension Range Specialists and GOM counterparts, agronomy/seed specialist and perimeter staff
		Contrast production of crops and livestock from sub-marginal cropland (rangeland)	Conduct field days, workshops, and use audio-visual means to extend information about benefits of wise land use	same

TABLE 18 Possible Extension Strategy
(continued)

Audience	Need	Objective	Activity	Responsibility
Potential seed growers	Knowledge of market for seed produced	Demonstrate marketability of range forage breeder seed source & certification procedures	Identify desirable species for range seedings and establish seed production center	Agronomy/seed and specialist and counterpart
		Demonstrate range forage species seed production and certification	same	same
Lower-level technicians with MinAg	Increased technical background and experience in the disciplines of range management, range forage/seed production, rural sociology, and extension	Supply training and work experience or examples in these disciplines	US and in-country short term training, short courses, workshops, conferences, field days	Entire project staff
		Demonstrate application of practices and techniques	Apply technical research and demonstration practices on project areas	same
Higher-level professionals within MinAg	Increased technical background and training in application of improved technology	Supply training and worker experience or examples in the fields of range management, range forage/seed production, extension and rural sociology	US and in-country short-term and advanced degree training, short courses, workshops, field days, and conferences	Entire project staff
		Demonstrate application of practices and techniques	Application of practices and techniques in project areas	same

TABLE 18 Possible Extension Strategy
(continued)

Audience	Need	Objective	Activity	Responsibility
Local community leaders (caids, shiekhs, etc.)	Basic understanding of range management goals of the project for improving community stability and economy	Demonstrate use of improved range management practices for increasing amount and efficiency of livestock production Encourage control of grazing use on rangelands	Establish applied research and demonstration areas on range perimeters and extend results through field days, reports, audio-visual programs, meetings and other means Work with local offic officials and leaders in development of range management plan on the perimeters	Extension range specialists and counterparts Counterparts, extension range specialists and perimeter staff
Ministry Officials and administrators	Greater understanding of rangelands and their importance to Morocco	Demonstrate the potential for increasing meat production through management of rangelands Encourage support of range management and controlled use of range resources in Morocco	Extend results of range management applied research and demonstration through reports, conferences, field days, and audio-visual means same	same
International Community	Increased flow of experience and information about rangelands	To provide a facility for exchange of information concerning rangelands	Organize a rangeland symposium in Morocco under the proposed Project	Project Administrators

D. Administrative Analysis

Range management in Morocco is dealt with by a number of organizations, all within or associated with the Ministry of Agriculture and Agrarian Reform (MARA). This section briefly describes these organizations and explains how each is related to the proposed project. Reference should be made to Table 19 to clarify relationships between organizations at the Ministry level.

1. The Service of Feeds and Ranges

The Service of Feeds and Ranges is a lower-level administrative unit within the Animal Production Division of the Livestock Service (Table 19). The Service provides technical and administrative support to the range perimeters in the country. It has continued the range management program initiated by the former USAID-assisted project. The Service of Feeds and Ranges is less than ten years old and until 1975 was never composed of more than five people, due to trained personnel leaving the activity nearly as quickly as they were trained. Up to 1975, the main activity ofthe Service has been the distribution of forage and agro-industrial by-products to the provinces for emergency livestock feed purposes. However, the Livestock Service has recently been given a mandate from the Minister of the MARA to accelerate its range management program. Staff personnel and the program budget have been increased, and the Service is now attempting to step up field activities with the communes.

The administrative staff of the Service in Rabat is now comprised of three individuals with American training in range management (Table 20). There are three more with similar training assigned to the provincial offices of the Livestock Service in Meknes, Oujda and Midelt. In addition, there are eight more individuals with BS level specializations in either range management or animal science from the Meknes Agricultural School assigned to emergency feed distribution or to other perimeters.

The annual budget allocated to the range development program in the current Interim Plan (1978 80) to the Service is about 1.3 million dollars, up from about a million in the last five year plan. However, the Service has been unable to spend the funds allocated to it, primarily because of the lack of qualified technical and administrative personnel to carry the program forward in the field. In the 1968-72 five year plan, only about ten percent of funds projected for

ANNEX 13

Outline of the Ministry of Agriculture and Agrarian Reform (MARA)

(with reference to the Service of Feeds and Ranges)

A. Minister

1. Cabinet
2. General Inspection

B. Vice Minister (Secretaire General)

1. Division of Agricultural Development (Mise en Valeur)
2. Division of Water and Forests (Eaux et Forets)
3. Division of Agricultural Education (Enseignement et Formation Professionnelle)
4. Division of Land Management (Conservation Fonciere)
5. Division of Agricultural Works (Equipement)
6. Division of Agronomic Research (Recherche Agronomique)
7. Division of Livestock Husbandry (Elevage)

   a. Animal Health Section
   b. Horse Management Section
   c. Animal Production Section

      1) Poultry Service
      2) Meat Service
      3) Genetics
      4) Feeds and Ranges

TABLE 20

Current Staff of the Service of Feeds and Ranges, 1979

Name	Year Employed	Education	Location
Mohamed Ismaili	1975	US/Morocco - 3rd cycle in Range Management	Rabat
Mohamed Atiqi	1977	US/Morocco - 3rd cycle in Range Management	Meknes
Abdelouahad El Gharbaoui	1978	US/Morocco - 3rd cycle in Range Management	Rabat
Esserhin Laraisse	1978	US/Morocco - 3rd cycle in Range Management	Oujda
Abdelaziz El Maghraoui	1979	US/Morocco - 3rd cycle in Range Management	Rabat
M'Bark Fagouri	1971	US/Morocco - Meknes Agricultural School in Animal Science - 2 Mo. in US	Midelt
Boujaimaa Bourass	1978	Morocco-Meknes Agri.School in Animal Science Range Management Memoire	Agadir
Ahmed El Abassi	1979	Morocco-Meknes Agri.School in Animal Science Range Management Memoire	Ouarzazate
Fahal Kouriri	1979	Morocco-Meknes Agri.School in Animal Science	Beni-Mellal
Touiss	1978	Morocco-Meknes Agri.School in Animal Science	Errachidia
Abdellah Essemrouni	1978	Morocco-Meknes Agri.School in Animal Science	Missour

TABLE 20 (Cont'd)

Brahim Kabdi	1976	Morocco-Adjoint Technique in Animal Science	Ain Beni Mathar
Mohamed Faoui		Morocco-Adjoint Technique in Animal Science	Beni Mellal
Abdelhaj Smouni		Morocco-Adjoint Technique in Animal Science	Kasba Tadla

range improvement (seeding, road construction, etc.) were actually expended. At the end of the recent five year plan, it is estimated that less than one fifth of the allocated funds had been expended.

One of the Service's most important activities is coordinating requests from a commune for technical and administrative assistance in setting up a grazing association on a perimeter. The Service makes the administrative arrangements for a Local Commission for Range Improvement and offers technical advice when a Commission must decide upon stocking rate, etc. (see Social Analysis section). The Service also offers technical advice to the grazing associations on selection of improved range management practices and supervises the distribution of supplementary feed when grazing areas are put into deferment. As it is part of the Livestock Service, Feeds and Ranges is responsible to the Provincial heads of the Livestock Service and may work with other branches when the need arises (e.g., in the case of a request from a commune for veterinarian assistance). The Service also performs research on the perimeters which is generally limited to forage adaptability trials on small fenced plots.

There are currently some thirty proposed perimeters to be given technical assistance by the Service of Feeds and Ranges. The latter will be staffed with BS and/or MS-equivalent technicians from the Livestock Service and trained under the project.

The current staff in place is young, ambitious but inexperienced. The Service now lacks a strategy for a comprehensive extension and demonstration program, as well as enough qualified extension personnel to carry the program forward. It could greatly profit from technical assistance and advice from a few experienced range managers.

2. Provincial Direction of Agriculture (DPA)

The MARA is represented in each province of the country by the ORMVA (Regional Agricultural Development Offices) or the DPA. The ORMVA are responsible for nine irrigated zones in the country, while the DPA is in charge of the dryland areas.

The DPAs were created in 1975. The responsibility of the DPA is to coordinate and control all activities of the MARA in the dryland areas. They are relatively autonomous and have their own budgets accorded by the MARA.

The Director of each DPA is nominated by the Minister of MARA is considered to be the "delegate of the Minister" at the provincial level. However, he is in turn responsible to the Vice-Minister (Secretaire-General), and in technical matters, he is responsible to the Director of each technical division in the MARA.

The DPA is located in a provincial capital. Its offices include technicians from each division in the MARA (Water and Forests, DMV, etc.) Where necessary, the DPA coordinates their respective activities with the local representatives of the Ministry of Interior (governors, caids) and the local municipal authorities (delegates, commune presidents).

The Livestock Service office within the DPA is usually run by an Ingenieur d'Etat (MS equivalent) or a veterinian. Most offices have several veterinarians and their assistants. In addition, there are animal husbandry technicians and at least one member of Feeds and Ranges, who is assigned to a range management perimeter within the province. American technicians under the Range Management Improvement project will likely have a counterpart relationship with the local head of the Livestock Service but will be directly responsible to the Director of the DPA.

It is generally believed that progress among tribal groups in setting up range management perimeters did not really begin until the DPAs were established in 1975. This is because the operations of different divisions of the MARA (e.g., DMV) on a perimeter were difficult to coordinate before 1975, and because the DPAs now give more autonomy to local regions.

3. Division of Water and Forests

About fifteen per cent of the available range forage in Morocco comes from forest lands under the administration of Water and Forests. These areas are principle producers of wood, cork and Alfa grass for cordage and paper pulp. Grazing is restricted and largely eliminated from reforestation areas. Some areas have unstable soils on steep slopes not suitable for grazing. None of the land under Water and Forests administration has been reseeded to forage-producing plants.

With the notable exception of some FAO assistance, range management activities within Water and Forests have generally been poorly directed and therefore ineffective. Adaptability trials of

promising forage species, fertilization trials and brush or tree thinning demonstration research trials have all been so badly designed, analyzed and located that they are ineffective in an extension effort. Efforts to use these trials on organized field days as demonstrations to farmers of improved range management practices have had negative effects. This has been due to inadequate technical guidance and lack of experience and training given to the Moroccan staff.

The FAO has had two very positive programs with Water and Forests: herder sociological studies and the establishment of two small forage seed multiplication centers. The latter are presently producing limited amounts of perennial forage seed for use under rangeland conditions.

The FAO/Water and Forests work in range managment will serve as a valuable source of data for the Range Management project. It is hoped that project personnel will be afforded the opportunity to provide technical guidance for development of an extension program in the forest lands suitable for grazing.

1. Division of Agricultural Development (DMV)

The DMV is assigned agricultural extension responsibility within the Ministry of Agriculture. This branch is divided into three areas of activity: extension; input services; and agrarian reform.

The extension or vulgarization branch has historically concentrated efforts in the area of cultivation agriculture. Since range management in Morocco has a very brief history (ten years), no infrastructure or specialized expertise in this field exists or can be expected within DMV.

However, facility in extension techniques and methods does exist and is available to complement and serve extension activities in the Range Management Project once these have fully developed. The extension branch has produced a number of audio-visual programs for media presentation and is involved with such activities as photography and color slide shows, publication of a bimonthly magazine (Le Vulgarizateur) and production of other printed material.

The branch of the DMV which supplies input services provides through its regional Work Centers fertilizer, herbicides, custom services such as cultivation, planting, etc., as well as design and

construction of physical facilities. Much of the development work that has taken place on range perimeters coordinated by the Service of Feeds and Ranges has been performed by the Work Centers. This work includes fences, buildings, water systems, roads, as well as plowing and seeding activities.

5. Division of Agricultural Education

All agricultural education in Morocco is handled by this division. There are one university and two colleges under the division which provide some training in range management: Hassan II Agronomic and Veterinary Institute (IAV); Meknes Agricultural School; and the Sale Forestry School.

The IAV is the only post-graduate institution in the country. It graduates both Ingenieurs d'Application (BS equivalent) and Ingenieurs d'Etat (MS equivalent) in several disciplines. BS level students may either take qualifying exams to continue to the MS level or they may leave the institute and work for the Ministry of Agriculture. Through the Higher Agricultural Education Project, USAID has provided support to develop MS programs in certain disciplines at the MS level which, until recently included range management. However, BS level students at IAV will not be able to continue to the MS level in range management until 1982, at which time the Moroccans in the US for advanced degree training will return to IAV to teach the MS level program.

Under the Higher Agricultural Education project, eight individuals have graduated with MS level degrees from IAV with a specialization in range management: two have stayed on with IAV to teach range management; one has joined the SNDE; and the remaining five are employed by the Service of Feeds and Ranges.

The two colleges are four year schools which graduate Ingenieurs d'Application (BS equivalent) technicians. Graduates generally work for the Ministry of Agriculture several years before being given the option of continuing in the MS program. The GOM intends to recruit participants for both long and short term training under the Range Management Project from the ranks of BS level graduates of these two colleges already employed by the Ministry of Agriculture.

It can be seen from Table 21 that the amount of contact hours (classroom, laboratory and field) in range management in all

TABLE 21

Contact Hours in Range Management in Moroccan Institutions

(compared to the average American BS Program)

Institutions	Contact Hours (classroom, laboratory and field)	Total Annual Number of Graduates in All specializations
American BS program in range management	324	—
Agronomic and Veterinary Institute (BS level)	50	100
Meknes Agricultural School (BS equivalent)	50	20
Sale Forestry School (BS equivalent)	105	20

three institutions at the BS level is not at all comparable to a US program. Graduates of the Moroccan schools only receive an introduction to range management as compared to the basic core of courses for the American BS graduate in range management.

The Division of Agricultural Education has recently begun construction of an Agricultural Extension Center at the Meknes School under IBRD funding. The Center will not be completed and staffed before 1981 or 82. In support of the government's new efforts to improve earnings of poorer rural families, the center will be a backstopping facility to develop and expand extension worker in-service training, develop mass instructional materials for farmer training, and improve broad extension methodologies to accelerate rural development through experimentation and new techniques. The Center will provide a critical linkage between the DAV and the extension function of the DAV. The Range Management project staff will seek to institute a range managment improvement seminar and explore possible ways of including range management topics in mass media presentations.

Plans have also existed for two years to establish an adjoint technique (associate degree equivalent) school in range management in Missour. To date no construction has begun and it appears that this school is at least five years from realization.

6. Division of Agronomic Research (DRA)

The DRA is the only division of the Ministry of Agriculture with the responsibility for research. Since no range researchers are or have ever been on the DRA staff, no research has been directed toward rangeland productivity. Some forage trials and research has been carried out by the DRA, but its emphasis has been placed upon forage crops adapted to irrigated areas or areas with precipitation in excess of 350 mm. Nonetheless, they have done some work on species adaptability which may be pertinent for some rangelands areas under the Range Management Project. The German Foreign Assistance Organization (GTZ) is currently considering the possibility of supporting the DRA in expanding its forage reseach to include dryland range species.

The DRA is in charge of performing research into high yielding seed varieties of cereals adapted to different areas in Morocco. They are in charge of growing foundation seed. When a variety is proven to have the desired characteristics, they sell the seed (F7 or F8 generation) to National Society for Seed Marketing (SONACOS). SONACOS is a

parastatal organization and sells the seed to private certified seed growers. SOTACOS then buys back seed from the growers and sells it to regional agricultural cooperatives (SCA, CT.) who sell it to the public. The Service of Seed Control of the DPA controls the production quality and distribution of seed varieties, works closely with SOTACOS and periodically verifies that private growers are producing seed according to specifications. The staff of the seed production center under the proposed range management project will be working with the DPA and SOTACOS to certify production of forage seeds.

7. Ranch Adarouch

This ranch was formed in 1969 in a cooperative venture between the SCA and the King Ranch of Texas. The ranch of 12,000 hectares is located near Meknes. Some thirty-six species have been planted in the ranch, some of them increasing forage production by over 100 per cent. Although the ranch has not effectively served an extension role in Morocco, valuable information is available to project/concerning adapted plant species and seeding technology. personnel

8. National Society for Livestock Development (SNDE)

The SNDE, organized in 1975, has established four range livestock ranches (one for sheep) in Morocco to demonstrate efficient range livestock production techniques. The SNDE staff expressed a great deal of interest and enthusiasm towards the prospects for cooperation with the Range Management Project in demonstration of range improvement techniques.

9. Upcoming Projects

a) USAID Dryland agriculture applied research (Project 0136).— Primarily a research related project with the Division of Agronomic Research, the thrust of this effort is directed toward the dryland cereal production zones in the Central Plateau area of Morocco. Since most farming operations are closely intertwined with livestock raising and crop aftermath usage, a range science specialist is planned for this US resident team. Collaboration between personnel of this and the Range Management Project will be particularly important for the s success of both projects.

b) Agronomic Institute (Project 0130).— A continuation of the Higher Agricultural Education project with IAV, the goal of this project is to both develop a Moroccan faculty in agricultural

disciplines and continue development of the IAV third cycle (MS) program. IAV has a small but growing staff of researchers in animal science and related disciplines. As the IAV is part of the Ministry of Agriculture and has only a small number of research stations, IAV researchers and American counterparts often utilize stations within other divisions of the Ministry, especially the Livestock Service. IAV researchers have also performed research on some of the range improvement perimeters. Continued collaboration is expected under the Range Improvement Project.

c) World Bank.— Planning is presently underway for large scale community development programs with range livestock components in both the Meknes and Khenifra areas. Although there is some overlap with the project proposal in this paper, the Director of the Livestock feels that IBRD funds will be used on such a wide variety of projects that little direct effort will be available for range management programs.

d) Title XII small ruminants (CRSP).— Entirely a research thrust, the small ruminants group envisions cooperative research both in the US and in Morocco by a combination of staff and graduate students from both countries. In range management the majority of the research conducted will be on presently established Livestock Service and proposed Water and Forests research stations, as well as on some of the range improvement perimeters.

e) UNESCO/IAV Missour Station.— Another project still in the planning stages, this will involve Moroccan scientists from IAV in basic biology and ecology, with support from UNESCO. The site selected includes the range perimeter and Livestock Service demonstration research station near Missour.

E. Environmental Concerns

1. Project Description

The purpose of this project is to upgrade the technical and administrative capability of the Service of Feeds and Ranges to conduct research in range management and to implement its range improvment program. Proposed activities for the first five-year phase are : construction and operation of a forage seed multiplication center on a 100 hectare area, some of which may be irrigated; the improved management of about 100,000 hectares of rangeland; and organization of an extension and demonstration program of range management using the 100,000 hectare pilot area as the project extension center.

The target area for the extension program comprises about five million hectares within the Eastern region of Morocco. This region includes the Northwest High Oriental Plateau and most of the watershed of the Upper Moulouya River. Rainfall is 150-300 mm per year. Soils are generally shallow and gravelly with some areas of clay loam. Vegetative cover is comprised of low annual forbs, annual grass and spring perennial shrubs.

The major land use in the region is extensive grazing. Where land is not privately owned, grazing rights are defined by tribal membership and administered by tribal leaders within more or less geographically delimited area. In coordination with the Service of Feeds and Ranges and other government agencies, the tribal leaders meet and decide upon the timing and amount of land to be deferred from grazing, distribution of supplementary feed, and the allocation of rights to it after regeneration. The project will assist the Service of Feeds and Ranges to set up these grazing perimeters at the request of tribal users and carry out an information and extension program to generate interest in setting aside land for improvement in adjacent tribal grazing areas.

Slight changes in soil character and the physical state of water in the five million hectare region will result with grazing deferment. These changes will in the end have a benefidal impact upon the Moulouya watershed region, by nature a high sediment yield watershed. Areas set aside for regeneration will provide protection to watersheds now carrying excessive sediment loads downstream as a result of overgrazing. Stocking rates may increase slightly in areas adjacent to the grazing perimeters during deferment but are expected to have little detrimental impact on the area. The project will not finance the construction of stock wells. The project will utilize the services of a specialist in the anthropology of pastoralism to ensure that the establishment of grazing perimeters will not conflict with traditional transhumance exchange relationships between tribes.

Changes in soil character and physical state of the water will be greater in areas to be plowed up and planted to new species of forage. Soil susceptibility to accelerated erosion in seeded areas will be slightly increased for four to five months while the grasses take root. Once they are established, however, the end result will be a net decrease in sediment yield from planted area.

Because of its relatively small size, the use of irrigation, chemical fertilizer and insecticides on the 100-hectare seed multiplication center will have little impact upon water location and quality or the functioning of unique local eco-systems.

2. IEE Recommendation

As described in this annex and throughout the narrative of the PP, this project will encourage the setting aside of relatively small amounts of rangeland for mostly vegetative regeneration and some reseeding. Although minimal because of the relatively small project area size, the environmental impact of the project will in the end be beneficial because it will restore vegetative cover and reduce sediment run-off from overgrazing. A negative determination in the Initial Environmental Examination was therefore recommended.

F. Conditions Precedent, Covenants and Negotiating Status

Apart from several usual or obvious conditions precedent (such as the designation of GOM representatives and approval of host country contract) there are no special conditions precedent proposed prior to the initial disbursement of AID grant funds.

However, the Project Agreement will include a provision that before AID funds are disbursed for commodities for the Seed Multiplication Center, the following conditions must have been met:

1. An acceptable site for the Center has been selected by the GOM.
2. GOM funds are available for the construction of the Center.
3. Plans and specifications for the Center have been developed.

The following special covenants are proposed for inclusion in the Project Agreement:

1. Counterparts

At all times that the technical assistance team is in Morocco, the Grantee will assure that qualified counterpart personnel are assigned to work with each advisor.

2. Grazing Associations

During the life of this project, the grantee will consider the feasibility of adopting administrative and legal changes in order to speed up and facilitate the creation of grazing associations in the collective grazing lands.

Although the specific wording of these CPs and covenants has not yet been formally negotiated, the underlying concepts have been fully explored with the GOM. We anticipate no difficulties in the negotiation of these provisions for inclusion in the Project Agreement.

ANNEX I. Detailed Commodity List

A. Seed Center Equipment

	Item	Approx. Cost $
1.	portable pump, irrigation pipe and hand line sprinklers capable of irrigating 20 ha	15,000
2.	two MF 290 or [illegible] farm tractors 70 h.p. with PTO, three point hitch	50,000
3.	two small wheel 30-40 h.p. tractors with PTO, three point hitch	30,000
4.	two IH (chamrues) 135 MF 140, MF 260 or equivalent	7,000
5.	two SH 400 seeding drills with double disk furrow openers having depth regulator bands and press wheels	10,000
6.	"sulky" rotor 400 fertilizer spreader, three point hitch, PTO	1,000
7.	sickle bar mower FA 372 or equivalent	1,500
8.	two heavy duty cover crops (notched disk)	4,000
9.	disk harrow IH 370 or equivalent	2,000
10.	hay rake, PTO Kuhn GA 300H	2,000
11.	New Holland 370, JD 342, or MF 126 Hay Baler	10,000
12.	2-cultirollers, 3 sets	6,000
13.	IH 1420 "Axil Flow" 3m wide combine with windrow pick-up attachment	60,000
14.	self-propelled 3m, IH or John Deere wind rower (O.E.)	8,000
15.	fork lift 4500 capacity FD30 Misubish (O.E.)	25,000
16.	"Portaweld" welder AC & DC	4,000
17.	weed spraying equipment complete with spray booms, hand hose, PTO (GB frorozion diserbo) 500 lt 10 MT	6,000
18.	2 duck foot cultivators 4m wide	3,000
19.	rod weeder 6m wide	1,500
20.	spike-tooth harrow 5 sections; 6m wide	700
21.	assortment of small tools; wrenches; hammers, shovels, hoes, sickles, pitch forks, rakes, small motors, grinders, etc.	5,000
22.	2-3/4T pick-up trucks with shell-canopy for each PU box equipped with HD rear bumpers, ball hitch 5cm (2 in) for bumper, electric light & brake attachments for trailer 10,000 HD ranch tires	30,000
23.	1-2 ton truck, flat bed with removable racks, ball trailer hitch, HD all weather tires	20,000
24.	transport equipment trailer approx. 2.2m wide, 3.5m long, HD tires, 5cm ball hitch electric brakes & running lights adequate to haul 40-50 h.p. farm tractor	10,000
25.	3 roote-tillers (7-10 h.p.)	21,000
	Total	332,700

B. Equipment for Seed Building

Item		Approx. Cost $
1.	air lift elevators with connectors to storage bins & cleaners, with fan & dust collectors	30,000
2.	3-screen fanning mill cleaner with screens for various grasses, AT ferrel & Co.	8,000
3.	model M-2B "Burrows" clipper-cleaner with bagger, motor	3,000
4.	slurry treater M-1215 with motor. Burrows or Gustafson model G-1	600
5.	seed scalper	1,200
6.	debearder similar to AT Ferrel "Clipper" variable speed model. Complete with motor and dust collecting system	3,000
7.	Large size Carter Disk	6,000
8.	portable air compressor with electric motor and 10m hose Dar 1, DEC 200-400	2,500
9.	two 1000 kg electric balances	3,000
10.	portable platform scales, double beam, "Fairbanks-Morse" 1130	400
11.	Tornado 420 Industrial cleaner 184 CFM	600
12.	portable electric tornado, M 850 blower	500
13.	Sack-sewers (hand portable) single thread	1,200
14.	2-sack trucks "Minneapolis" bag type	1,500
15.	20 fabricated heavy metal seed bins with lids approx. size 1.5m x 1.5m x 1.5m stackable with fork lift	10,000
16.	moisture tester, "Steinlite" M 400 G	600
17.	assortment of tools i.e. open-end, socket, box-end wrenches, pliers, screwdrivers, hammers, small grinders, etc.	5,000
	Total	77,100

C. Field Equipment

Item		Approx. Cost $
1.	5 small project vehicles (Renault R4 or equivalent)	50,000
2.	3 30-50 h.p. tractors with PTO, 3 pt. hitch and auxiliary attachments IF 240	30,000
3.	3 Int'l Harvester chartues 100 (moldboard plow) with 3 pt. hitch attachments	10,000
4.	3 heavy duty cover crop notched disk	6,000
5.	3 cultipackers (rollers)	9,000
6.	3 500 lt. weed sprayer	6,000
7.	3 rod weeders, 6m length	3,000
8.	3 spike-toothed harrows, 9m	2,100
9.	assortment of small tools, shovels, forks, wrenches, saws, axes, hammers, etc.	2,346
10.	3 1000 gr scales (lab)	1,500
11.	3 sickle bar mower, FA 372 or equivalent	4,500
12.	3 "sulky"/rotor 400 fertilizer spreader, PTO, 3 pt. hitch	3,000
13.	3 large Vogel nursery plot thrasher	7,500
14.	3 small plot drill, 1.5m	4,500
15.	4 weather stations	2,000
16.	10-50 meter tapes	500
17.	30 slippers	900
18.	10 forage scales (field)	1,000
19.	7 animal scales	21,000
20	5 miles fencing material (barbed wire, woven wire, staples, fence stretchers)	50,000
	Total	215,346

D. Office Equipment and Supplies

	Item	Approx. Cost $
1.	3 IBM selectric typewriters or Olympic electric typewriters (cloth ribbon type)	2,700
2.	3 desks & 3 chairs (swivel-type, upholstered)	1,550
3.	12 side chairs	1,200
4.	6 5-drawer lockable file cabinets	1,500
5.	6 metal bookcases	900
6.	4 metal waste baskets	80
7.	12 desk top metal or wooden organizer boxes	120
8.	6-5" x 8" metal file card boxes	90
9.	6 sets of file cabinet dividers and permanent files	120
10.	1 coffee table (secretaries reception area)	195
11.	5 3-drawer letter file (locking)	1,200
12.	2 electric adding machines with tape	1,200
13.	2 electric clocks	100
14.	photocopier with service agreement	4,000
15.	small table	350
16.	2 refrigerators for vaccines	1,000
17.	1 3/8" plastic label maker	15
18.	4 pencil sharpeners (wall mounted)	60
19.	3 light weight staplers 1/4"	50
20.	1 heavy duty stapler, 1/2"	30
21.	1 slide/map tracing light table (table top model 3' x 3')	285
22.	1 super 8 film projector	650
23.	1 map file (floor model with 10-20 drawers)	800
24.	1 Kodak projection screen	310
25.	1 Kodak 35 mm (100 or 80 load) slide projector (500 watts)	420
26.	1 metal storage cabinet (lockable)	580
27.	3 metal telephone No./Address organizers	50
28.	4 wooden side tables (2' x 2')	600
29.	3 staple removers	15
30.	2 floor lamps	300
31.	3 desk lamps	250
32.	2 3 1/2 x 8' wooden work tables with 2 drawers	750
33.	1 4 1/2 x 12' wooden conference table	850
34.	5 220 to 110 power converters (wall socket type)	600
35.	3 desk top calculator with printout capacity (Texas Inst. Co.)	450
36.	1 couch (8' cloth fabric) for secretaries office/reception room	1,200
37.	1 counter top work center with storage (lockable sliding doors) 4' x 8'	950
38.	1 small table top copy machine (X erox, Cannon 90, Verif. etc.)	1,500
39.	1 mimeograph machine (A. B. Dick, etc.)	1,680
40.	paper clips, staples, rubber bands, ballpoint refills, and miscellaneous other supplies	75
41.	4 Kodak projection lamps (to match projector-500 watts)	50

D. Office Equipment and Supplies
(continued)

Item		Approx. Cost $
42.	12 rolls of calculator paper	25
43.	30 reams of typing paper, 20 lb. bond	260
44.	3 stamp pads ink (black)	12
45.	30 IBM cloth typewriter ribbons (black)	110
46.	12 white (liquid paper) out typing error corrector	18
47.	12 packages of white out typing error corrector paper	12
48.	24 boxes of 8 1/2" x 11" letter copy paper (1 sheet paper with attached carbon sheet type)	80
49.	4 packages 8 1/2" x 11" carbon paper	5
50.	50 reams of 8 1/2" x 11" copy paper (mimeo type)	380
51.	10 1 gal. container of spirit fluid (mimeo fluid)	75
52.	25 reams of (xerox, verifox, or other appropriate brand) 8 1/2" x 11" copy paper	175
53.	50 pads of yellow or white (wide line) paper	37
54.	14 boxes of 12 felt tip pens (2 black + 2 red)	115
55.	10 cardboard file boxes	75
56.	1 set of maps of Morocco, including: tribal maps, temperature, climate, soil and rainfall maps, political divisions, topographic map and enlarged regional and perimeter maps.	2,500
57.	Complete multi-volume set of Etude pour l'Amenagement de Parcours du Maroc Oriental, by Etudes et Realisations Economiques et Sociales, 1970 (17, rue des Pyramides, Paris	1,500
58.	complete Agrostological and Range Inventory Study for SNE performed by Louis Berger, S.A.R.L.	650
	Total	34,854

GRAND TOTAL

A.	Seed Center Equipment	332,700
B.	Equipment for Seed Building	77,100
C.	Field Equipment	215,346
D.	Office Equipment and Supplies	34,854
		$660,000

TELEGRAM

PROJECT 608-0155

STATE: 205014

UNCLASSIFIED

ROD: 07/07AUG 79

R 070157Z AUG 79
FM SECSTATE WASHDC
TO AMEMBASSY RABAT 3283-3284
DT
UNCLAS STATE 205014

AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: RANGE MANAGEMENT IMPROVEMENT

REF: RABAT 4945

1. THE NEAC MET ON 7/19 AND APPROVED THE CONCEPT OF THE PID RANGE MANAGEMENT IMPROVEMENT PROJECT. PREPARATION OF THE PP WAS AUTHORIZED WITH THE FOLLOWING COMMENTS/RECOMMENDATIONS TO BE ASSESSED, APPRAISED AND INCLUDED WITHIN THE CONTEXT OF THE PP:

1. TARGET GROUP PARTICIPATION: THE NEAC EMPHASIZED THE NEED TO FOCUS ON THE TARGET GROUP CONSISTING OF SEDENTARY AND SEMI NOMAD HERDSMEN. THEIR PARTICIPATION IS NECESSARY IN THE DECISION MAKING PROCESS RELATIVE TO THE IMPROVEMENT OF LIVESTOCK HERDS THROUGH THE DEVELOPMENT OF RANGELAND, PASTURE ROTATION, FORAGE CROPS, OFF-TAKE RATIOS AND A PROPER BALANCE BETWEEN THE NUMBER OF LIVESTOCK AND CARRYING CAPACITY OF THE LAND. THE PID CALLS FOR FUTURE MEAT PRODUCTION INCREASES BY HAVING HEAVIER AND BETTER QUALITY CARCASSES. NEAC EMPHASIZED THE NEED FOR AN ANALYSIS OF THE LIVESTOCK SECTOR AND THE MEAT MARKETING SYSTEM RELATIVE TO THE ACHIEVEMENT OF THIS GOAL INCLUDING DETERMINATION OF LIVESTOCK CONSUMPTION PATTERNS AND RELIGIOUS/CEREMONIAL USE IN PP DESIGN. THE ATTITUDE OF THE TARGET GROUP TOWARDS THE PROJECT AND THEIR RECEPTIVITY AND DEGREE OF COOPERATION ARE OF FUNDAMENTAL IMPORTANCE. LAND TENURE ARRANGEMENTS FOR A RANGELAND PROGRAM AND EQUITY OF COOPERATORS IS ANOTHER KEY FACTOR. THE PP WILL NEED TO ADDRESS THE ADVANTAGES OF THE PRIVATE VERSUS COMMUNAL RANGE LAND AND ACQUISITION ARRANGEMENTS FOR THE PERIMETERS AND WHO WOULD DETERMINE THEIR USE. A DESCRIPTION OF THE CULTURAL AND SOCIAL ASPECTS OF THE TARGET GROUP WILL NEED TO BE PROVIDED WITH A STRATEGY DRAWN TO SECURE THEIR COLLABORATION.

2. STAFF AND BUDGET: THE PID DOES NOT PROVIDE INFORMATION

ON THE [illegible] OF [illegible] AND RANGES", A NEW STAFF COMPOSI-
TION, [illegible] QUALIFICATIONS, RESPONSIBILITY AND EFFECTIVENESS, NOR
OTHER ORGANIZATIONS CONCERNED WITH RESEARCH AND EXTENSION
IN RANGELAND DEVELOPMENT. [illegible] DISTURBED TO LEARN
THAT ONLY [illegible] PERCENT OF [illegible] ALLOCATED BY GOM
FOR RANGE MANAGEMENT [illegible] THAN 20 PERCENT [illegible]
[illegible] U.S. [illegible]
[illegible]
[illegible]
[illegible] GUIDANCE [illegible]
[illegible] REGIONAL [illegible]
AND [illegible] REGIONAL [illegible]
DETAILED DATA ON [illegible] AND [illegible]
[illegible]
[illegible] THE MINISTRY
OF AGRICULTURE, [illegible] AND [illegible]
ACTIVITIES ON THIS PROJECT? WHAT ARE THE RESPONSIBILITIES
AND DEMONSTRATED EXPERTISE OF THE NATIONAL RANGELAND COM-
MISSION AND HOW EFFECTIVE ARE THEY IN THE IMPLEMENTATION OF
RECOMMENDATIONS MADE FOR GRAZING COOPERATIVES AND PROVINCIAL
OFFICES?

[illegible] LINK WITH OTHER [illegible] PROJECTS: [illegible] UNIVERSITY OF CALI-
[illegible] NOTED THE EXPERTISE AVAILABLE [illegible]
[illegible] STAFF [illegible]
RANGE MANAGEMENT AND OTHER [illegible]
RANGE MANAGEMENT [illegible]
THE TRAINING [illegible]
IN WATERSHED MANAGEMENT, SOIL CONSERVATION [illegible]
[illegible] ALSO [illegible]
[illegible]
[illegible] GRAZING [illegible]
[illegible] SCIENTIFIC INFORMATION [illegible]
FOR [illegible] BY THIS ACTIVITY.

[illegible] THE EXTENSION SERVICE
THE PID LACKS INFORMATION ON THE CAPABILITY OF THE [illegible]
[illegible] OF QUALIFIED RANGE [illegible]
[illegible] SERVICE AND THE AVAILABILITY OF [illegible]
MANAGEMENT EXTENSION AGENTS TO TRANSFER RANGE MANAGEMENT
TECHNOLOGY TO THE TARGET GROUP. IT IS CRUCIAL TO APPRAISE
THE EXTENSION INFRASTRUCTURE AND THE FRAMEWORK OF RELATION-
SHIP/ASSIGNMENTS OF AGENTS TO THIS PROJECT IN THE RANGELAND
AREAS. THE PP DESIGN WILL NEED TO ASSESS THE COMPREHEN-
SIVE EXTENSION ROLE IN THE IMPLEMENTATION OF THE PROJECTS
AND WAYS AND MEANS TO DIFFUSE INFORMATION TO BENEFICIARIES
BY RESULT DEMONSTRATIONS, WORD OF MOUTH, MEETINGS, ETC.
[illegible] ELABORATE AND SOPHISTICATED AN EXTENSION CAPABILITY
[illegible] THE PROJECT REQUIRE?

[illegible] HERD SIZE:
[illegible] PID INDICATES THAT THE REDUCTION OF THE SIZE OF THE
[illegible] DISCUSSION [illegible]
[illegible] VITAL TO [illegible]
[illegible] MANAGEMENT [illegible] WHETHER OR NOT THE SIZE
[illegible] THE PID [illegible]

OF HERDS WERE ACTUALLY REDUCED. THE OBSTACLES TO SIZE REDUCTION APPEAR FORMIDABLE: 1) MOST OWNERS OWN FIVE OR FEWER HEAD OF CATTLE. 2) INCREASED NUMBER OF ANIMALS PROVIDE THE INDIVIDUAL WITH INSURANCE AS WELL AS STATUS 3) IT IS IN THE INTEREST OF ALL TO REDUCE SIZE OF TOTAL ANIMAL POPULATION. GIVEN THAT LAND IS HELD IN COMMON, IT IS IN INTEREST OF EACH INDIVIDUAL TO RESPOND TO DECREASE IN SIZE OF THE OTHER PERSON'S HERD BY INCREASING HIS OWN. PP SHOULD EXPLORE THESE PROBLEMS AND INDICATE STRATEGY FOR DEALING WITH THEM.

6. ECONOMIC ANALYSIS:
NEAC POINTED OUT THE NEED TO INCLUDE A COMPREHENSIVE ECONOMIC ANALYSIS OF THE LIVESTOCK SECTOR AND ITS COORDINATION/RELATIONSHIP WITH RANGELAND IMPROVEMENT AND LIVESTOCK DEVELOPMENT; AVAILABILITY OF VETERINARY SERVICES, FEED AND WATER SOURCES, ABILITY OF LIVESTOCK BREEDS TO UTILIZE THE IMPROVED RANGE AND AN ANALYSES OF THE PRICE STRUCTURE AND THE MARKETING SYSTEM. THE COMPLEMENTARY ROLE OF LIVESTOCK TO THE AGRICULTURAL SECTOR AS WELL AS THE BENEFICIARIES AND THEIR INTER-RELATIONSHIPS SHOULD BE DETERMINED IN THE PP DESIGN. ALSO MARKET ANALYSIS SHOULD INCLUDE THE EFFECT OF PRICE CONTROLS AND BARTER IN PROJECT DEVELOPMENT.

7. SEED MULTIPLICATION:
GIVEN THE IMPORTANCE OF SEED MULTIPLICATION OF VIABLE ADAPTED SEEDS TO PLANT THE RANGELAND AND THE ABSENCE OF GOM AND PRIVATE ENTERPRISE INVOLVEMENT IN THIS FIELD; SELECTED NATIVE AND ADAPTED FORAGE SEEDS WILL HAVE TO BE RESEARCHED AND REPRODUCED. A STRATEGY FOR DEVELOPMENT OF A CERTIFIED SEED MULTIPLICATION PROGRAM AND ITS MANAGEMENT TECHNIQUES MACHINERY AND EQUIPMENT, ORGANIZATION AND A SEED MARKETING APPARATUS AND DISTRIBUTION WILL NEED TO BE DEVELOPED IN THE PP DESIGN. NEAC HAD STRONG RESERVATIONS ON THE AVAILABILITY OF MANAGEMENT AND SCIENTIFIC EXPERTISE IN SEED MULTIPLICATION IN MOROCCO AND RECOMMENDED AN ASSESSMENT OF THESE RESOURCES AND A STRATEGY FOR THEIR DEVELOPMENT IN THE PP.

8. PROJECT PAPER SHOULD HAVE DETAILED BENEFICIARY ANALYSIS AND INDICATE HOW PROJECT FITS INTO OVERALL USAID STRATEGY OF PRODUCING SHIFT OF GOM RESOURCES TOWARDS THE POOR. 9. RECOMMEND COLLABORATIVE ASSISTANCE MODE BE ADOPTED FOR PROJECT IMPLEMENTATION AND THAT PIO/T BE PREPARED FOR SERVICES OF LAND GRANT INSTITUTION DESIGN TEAM TO ASSIST IN PP PREPARATION. PD AND S FUNDS WILL BE MADE AVAILABLE. VANCE

4 C. ICIAL FILE

ROYAUME DU MAROC

RABAT, LE 26 OCT. 1978

MINISTERE D'ETAT CHARGE
DES
AFFAIRES ETRANGERES
ET DE LA COOPERATION

N° D.C.T.21 T/6526

PROJECT 608-0145

III

ACTION TAKEN
No Action Necessary
Replied by :
Initials & Date

ACTION: FSA w/att.
due 11/7
INFO: DIR; A/DIR; PROG;
CONT; CHRON; RF

Le Ministère d'Etat Chargé des Affaires Etrangères et de la Coopération présente ses compliments à l'Ambassade des Etats-Unis d'Amérique à Rabat et a l'honneur de porter à sa connaissance que, suite aux recommandations du groupe d'experts de l'ATD qui a effectué en janvier entre avril et juin 1977, ainsi qu'à la réunion tenue au Département d'Etat du Ministère de l'Agriculture et de la Réforme Agraire en présence des responsables de l'ATD, les grandes lignes d'un projet de coopération dans le domaine de l'amélioration pastorale ont été arrêtées.

Le programme prévoit pour la partie marocaine quatre phases principales : une phase d'orientation technique et une phase de réalisation d'un centre spécialisé d'amélioration des parcours.

L'Ambassade trouvera, ci-joint une note élaborée par les services techniques du Ministère de l'Agriculture et de la Réforme Agraire, concernant la mise en place [illegible] la création et [illegible] coopération [illegible] nous prions [illegible].

Le Ministère d'Etat Chargé des Affaires Etrangères et de la Coopération saisit cette occasion pour renouveler à l'Ambassade des Etats-Unis d'Amérique à Rabat, l'assurance de sa haute [illegible]

[illegible]

[illegible]

OCT 27 19[illegible]

MOROCCO
Range Management Improvement
(608-0145)

Annex IV
Page 1

5C(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual fund sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PRODUCT?

A. GENERAL CRITERIA FOR PROJECT

1. FY 79 App. Act Unnumbered; FAA Sec. 653 (b); Sec. 634A. (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure)?

1. (a) The Appropriation Committees will be notified in accordance with normal agency procedures. (b) Yes.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

2. (a) Yes. (b) Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

3. No further legislative action is required.

4. FAA Sec. 611(b); FY 79 App. Act Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?

N/A

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?

N/A

6. FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

N/A

A.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

7. The project will encourage the development and use of cooperatives (credit unions).

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

8. A U.S. land Grant university will furnish out-of-country training, technical assistance and non-local commodities.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

9. The project agreement will so provide.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

10. Morocco is a [illegible] current [illegible] excess [illegible]

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

11. Yes.

12. FY 79 App. Act Sec. 608. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar, or competing commodity?

12. N/A

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b); 111; 113; 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained

1. (a) The project provides for assistance to the GOM Livestock service and to local grazing associations in the form of extension and demonstration of improved range management techniques. Primary beneficiaries will be poor sheep and goat raisers in arid regions.

2.1.b.(4).

(v) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

c. [107] Is appropriate effort placed on use of appropriate technology? — Yes.

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)? — Yes.

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to the Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? — N/A

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental and political processes essential to self-government. — f. The project will encourage improved management of tribally-owned grazing lands by promoting the formation of cooperative grazing associations among tribal members.

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase or productive capacities and self-sustaining economic growth? — g. Yes.

2. Development Assistance Project Criteria (Loans Only) — N/A

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

B.1.a.

basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning under sec. 104(b) or health under sec. 104(c); if so, extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

B.1. (b) Project will provide training and field demonstrations to members of cooperatives (grazing associations) in elementary range management techniques. Project will also encourage local participation in the municipal organizational structure, as the process of forming a grazing association is based upon a system of local representation at the tribal level. (c) The project will assist local provincial institutions to develop their own self-help capability in the livestock sector. (d) Women will be benefitted indirectly by the project. (e) The project will assist in the holding of an international range management seminar for North Africa.

b. 103. Technical assistance to the Livestock Service and grazing associations can be expected to increase productivity of the sheep and goat raisers in arid regions, and thereby generate increased incomes and improved levels of nutrition from the sale and home consumption of meat, milk and wool. Indirect effects will be expansion of employment in the rural livestock sector and thereby slow down rural-urban migration.

B.

N/A

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a). Will this assistance support promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?

b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?

ANNEX IV

MOROCCO
Range Management Improvement
(608-0145)
5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

A.

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?

1. Yes.

2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?

2. Yes.

3. FAA Sec. 60 (d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the United States on commodities financed?

3. Yes.

4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?

4. N/A

5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?

5. Yes.

6. FAA Sec. 603. (a) Compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.

6. Contract will so provide.

7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the

7. Yes.

A.7.

facilities of other Federal agencies will be utilized, are they paritcularly suitable, not competitive with private enterprise, and made available without undue interference with comestic programs?

7. N/A

8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

8. Contract will so provide.

9. FY 79 App. Act Sec. 105. Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States?

9. Contract will so provide.

B. Construction

B.

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

1. N/A

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

2. N/A

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the United States not exceed $100 million?

3. N/A

C. Other Restrictions

C.

1. FAA Sec. 122 (e). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

1. N/A

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

2. N/A

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foriegn aid projects or activities of Communist-bloc countries, contrary to the best interests of the United States?

3. Yes.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the United States, or guaranty of such transaction?

4. Yes

C.

5. Will arrangements preclude use of financing:

5.

a. FAA Sec. 104(f). To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to undergo sterilization?

a. Yes.

b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property?

b. Yes.

c. FAA Sec. 660. To finance police training or other law enforcement assistance, except for narcotics programs?

c. Yes.

d. FAA Sec. 662. For CIA activities?

d. Yes.

e. FY 79 App. Act Sec. 104. To pay pensions, etc., for military personnel?

e. Yes.

f. FY 79 App. Act Sec. 106. To pay U.N. assessments?

f. Yes.

g. FY 79 App. Act Sec. 107. To carry out provisions of FAA sections 209(d) and 251(h)? (Transfer of FAA funds to multilateral organizations for lending.)

g. Yes.

h. FY 79 App. Act Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nations in nuclear fields?

h. Yes.

i. FY 79 App. Act Sec. 601. To be used for publicity or propaganda purposes within United States not authorized by the Congress?

i. Yes.

Project Title & Number: RANGE MANAGEMENT IMPROVEMENT (0145)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
Program or Sector Goal: The broader objective to which this project contributes: -increase incomes of poor livestock raisers in arid range areas.	Measures of Goal Achievement: -increased meat production (average carcass weights and higher lambing rates) in the Eastern Region.
Project Purpose: -to strengthen GOM capability to perform range management research and carry out its range management program.	Conditions that will indicate purpose has been achieved: End of project status. -improvement of range conditions in Oriental region. -Seed center operating. -GOM Feeds/Ranges Service has competent extension program -communes assign grazing rights in equitable manner.
Outputs: -local production of forage seed. -trained Moroccan staff -management demonstrations -tribal rangeland deferred/seeded -data gathering and evaluative capability -anthropological study of livestock-raisers and grazing associations.	Magnitude of Outputs: -at least 125 tons forage seed. -at least 6 Ingenieurs d'Etat (MS) and 8 Adjoints Techniques on staff. -at least 50 demonstrations (2/year/perimeter) -at least 15,00 ha deferred/seeded -at least 5 range inventories
Inputs: -US:-21 person years counterparts and 20 person months TDY assistance -22 person years long term and 102 erson months short term participant raining -equipped seed center -GOM:-10 professionals (including participants) -20 extension agents (including participants) -construction of seed center.	Implementation Target (Type and Quantity) ($000) US:-$2,300 for technical and research personnel -$555 for participant education -$660 for commodities -$348 for local costs, French language training, evaluation and range seminar. (total w/o inflation = $3,863

N SUMMARY
AMEWORK

Life of Project:
From FY 1980 to FY 1984 Page 2
Total U.S. Funding $4,440,000
Date Prepared: January, 1980

MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
-reports of rural abattoirs -Livestock Service Census and other reports.	Assumptions for achieving goal targets: -favorable operational conditions prevail -GOM continues to give priority to increasing production in poor rangeland areas.
-agrostological studies -end-of-project evaluation -anthropologist report on livestock-raisers and grazing associations	Assumptions for achieving purpose: -Service of Feeds and Ranges continues to provide increasing admin. and operational support to implement program; and continues to be authorized by the Communes to initiate perimeter development before Ministerial Bills are signed.
-written reports to USAID/GOM -quarterly project meetings -on-site visits and periodic evaluations	Assumptions for achieving outputs: -GOM provides infrastructure and nominates qualified personnel. -personnel and funding requirements met by GOM and USAID -communes continue to participate in management demonstrations
GOM: ($000) -$1,635 technical and extension personnel -$5,135 for range program in Phase I perimeters, including $300 for seed center construction	Assumptions for providing inputs:

Sheep and Goat Marketing in Morocco

A. Location and Characteristics of Production

B. Meat Output

C. Imports and Exports

D. Prices

E. Consumption

F. Aid El Kebir

G. Markets

Summary and Conclusions

The livestock sector in Morocco contributed over a third of the total value of agricultural output in 1975. However, red meat production has been stagnating and has not kept up with population growth. The country was self-sufficient prior to 1975, but has had to import meat since then. Moroccan consumers are paying increasingly more for meat than other food items. Per capita consumption is stagnating and may actually be declining. Consumer preference generally favors young male lamb, particularly in urban areas.

Marketings and prices fluxuate considerably during the year due to: a) the seasonal availability of water and grazing, and b) increased demand during Aid El Kebir (pilgrimage feast). The livestock marketing system operates through daily souks and appears to be quite competitive. Eastern Morocco is a net exporter of lamb and mutton to urban coastal areas.

It is possible that livestock producers have economic incentives to retain excess adult males in their flocks, particularly when Aid El Kebir falls during the time of year when livestock prices are at their seasonal highest. But because of rapidly rising meat prices, urban consumer preferences and a relatively competitive marketing system, there is grounds for hope that producers who form grazing associations under the proposed project will not build up their flocks. The feasibility of fattening operations to stimulate sheep off-take should be examined during the Phase I period.

Sheep and Goat Marketing in Morocco

A. Location and Characteristics of Production [1/]

The livestock sector in Morocco accounted for 36 per cent of agriculture's contribution to Gross Domestic product in 1975 (Table 1). Over one third of this contribution came from the production of meat, wool and mohair from sheep and goats.

The results of the last official census by the Livestock Service indicate that there were 3.6 million cattle, 14.3 million sheep and 5.7 million goats in the country in 1975 (Table 2). There is little hard data on animal numbers after 1975. It is possible that the number of cattle has increased slightly, while the number of sheep and goats continue to decline to as a result of several years of overstocking, drouth and the slow progress of livestock improvement programs.

By far the majority of Morocco's cattle are located in the coastal plains of the Atlas Mountain complex and are raised primarily for dairy purposes. Eastern Morocco, where the proposed project is located, has only about 300,000 cattle, or less than ten per cent of the national herd. Most of these are concentrated around irrigated areas along the Moulouya River, especially northwest of Oujda.

The area west of the Atlas Mountains and north of Marrakech account for the majority of sheep in the country. Goats predominate in the southern provinces, particularly in the regions south of the Tensift River and in the Souss River valley. Eastern Morocco accounts for about 2.7 million sheep and about 1.3 million goats, or one fifth of the national sheep and goat herd (Table 2). The High Plateau is the most important sheep producing region within the Eastern Region and has a third of the areas' sheep. Goat production in Eastern Morocco is concentrated in the mountaneous Taza Province and in pre-saharan Errachidia (Ksar-es-Souk) and Figuig Provinces.

Most of Morocco's sheep and goats are raised in association with sedentary agriculture. Only about one quarter of the sheep and a third of the goats in the country are raised in a "transhumant" fashion (defined by the Livestock Service as being absent from cultivated areas for a period exceeding three days). These herds tend to be the largest (over 200 head).

[1/] For a dated but more comprehensive review of livestock production and meat marketing in Morocco, see: Livestock Marketing in Morocco, USAID/Rabat, 1971.

Most farmers and herders provide supplementary feed (barley, cereal bran, hay) for two to four months of the year. After grazing crop stubble and fallow, sheep and goats are dependent for the rest of the year upon the availability of native grass on the private and collective rangelands and the federal forest ranges. During years of good rainfall, livestock numbers increase with available grazing. During years with less than normal rainfall and resultant poor growth of grasses and other grazing plants, animals lose body weight and death losses occur during protracted drouth periods.

Some sheep and lamb feeding occur near urban areas of high demand and in irrigated zones. While some feeding and speculation occur before Aid El Kebir, most feeding amounts to holding operations. Of the agro-industrial by-products produced in the country, much of the fish meal, molasses and oil cake are exported. Dry beet pulp is widely appreciated by farmers as livestock feed but supplies do not reach many farmers outside of the irrigated areas which produce sugar beets.

B. Meat Output

Red meat production has increased at only 1.6% per year since 1971 and has not kept up with Morocco's three per cent population growth. The gap between supply and demand has been met by poultry production (Table 3).

Comparison of sheep and mutton production between Morocco and the USA shows that both countries had about the same number of sheep in 1975, but that the US marketed over twice as many animals and produced over three times as much meat (Table 4). Low production in Morocco is due primarily to the low rate of off-take (per cent of total population of animals slaughtered) and low average carcass weights. Off-take for sheep averages about 30% and for goats about 25%. Average carcass weights for both sheep and goats have stagnated for the last eight years (Table 3).

The primary cause of low meat production is malnutrition. Other important causes are: the retention of non-productive animals in the herds; indiscriminate breeding; disease; and poor management.

C. Imports and Exports

Historically, Morocco has been self-sufficient in meat production, albeit at low consumption levels. Prior to 1975, total exports of red meat exceeded imports (table 5). However, from 1975 to mid-1978, about 9,000 tons of meat and 25,000 slaughter animals were imported to meet

shortages in urban areas. Imports were sharply curtailed in mid-1976 as a result of the recent GOM import restriction program.

D. Prices

Moroccan consumers of meat are paying increasingly more for red meat than for other food items. Wholesale prices for beef and sheep are increasing at a faster rate than the Casablanca food index (Table 6). This is in some part due to the fact that several non-meat components of the food index are subsidized. Meat is not subsidized, though periodically the government has taken measures on the supply and distribution side to ameliorate local shortages. These include the importation of slaughter animals from Spain and the feeding of slaughter animals by parastatal agencies to sell at fixed prices during periods of high demand, such as Aid El Kebir.

Monthly retail prices fluxuate according to seasonal changes in the number of animals marketed. Low prices and heavy marketings of sheep occur during the spring and summer and the contrary during the fall and winter. During May to October as the seasonal rains end and range grasses dry up, increased numbers of animals (excess male lambs and cull ewes) are marketed as the dry season progresses and feed prices rise. During this period monthly marketings of sheep are double compared with the winter months. With decreased marketings prices rise around October and peak in December/January.

Beef prices tend to stay relatively in proportion to that of lamb and mutton, in spite of the fact that beef accounts for almost half of the annual tonnage of meat slaughtered. As beef production on the coastal plains is less dependent upon range resources, heavier marketings of cattle take place during the winter months when mutton prices are higher.

The low prices during the summer months no doubt increase the incentive for producers to hold some animals over the long dry season in order to obtain higher prices during the following winter. This may be occur when Aid El Kebir falls during the winter months (see below).

E. Consumption

According to estimates based upon the GOM's own figures, per capita red meat consumption in Morocco went from 10.1 kg in 1971 to 9.8 kg in 1978 (Table 3).

Moroccan consumer preference favors lamb over beef and is reflected in relative price levels. Consumers generally prefer young male lamb, particularly in urban areas. Next in order of preference is young female lamb, followed by (male) mutton. Consumers evidence a distinct distaste for cull ewe, which is sold at substantially lower prices and "mixed" with better mutton by butchers in poor areas. Butchers display lamb carcasses with the testicles attached to show the consumer the age and sex of the carcass. Goat is less preferred in urban areas in the North but is regularly sold in butcher shops in Agadir and other southern cities. Moroccan consumers prefer fresh over frozen meat, which is sold at a considerable discount.

F. Aid El Kebir

The religious feast of Aid El Kebir (12 Dou l'Hija on the Moslem lunar calendar) has an important impact upon livestock production and marketings. On this day, each head of family who can afford to do so sacrifices a ram. The sacrifice is in memory of the saving of Abraham's son Issac by the miracle of the ram caught in a thicket. The animal must be a male and must have reached a fertile age. This is generally 18 months to two years. It is estimated that one family in three sacrifices a goat buck.

Approximately one half of the annual sheep and goat slaughter is estimated to occur on this day. However, monthly controlled slaughter does not reflect this as most slaughter takes place in the family. The peak load on the livestock markets changes each year, as each date on the lunar calendar falls 10 to 11 days earlier on the Gregorian calendar.

It would appear that total numbers of animals sacrificed tends to grow annually at the same rate as the number of households, which may increase faster than the growth of the population as extended families break up into smaller units. However, it is now commonly held that because of extremely high prices for a ram during the last ten years, many Moroccan families are "doubling" up with their extended families.

It is also believed that the feast encourages the retention of males in the herds for one to one and a half years where lambing occurs between six to eleven months before the feast. It is possible that during the last thirteen years, farmers and herders in Morocco have been retaining a larger proportion of male animals over the dry season in their herds then they would otherwise. Since 1967, the feast has fallen during the winter months when prices are at their seasonal peak. Thus, a larger number of

older animals may be kept on vegetation at a time of the year when it is least able to sustain them.

Studies have also shown that entrepreneurs can make considerable profits by holding sheep in urban areas for several months and selling them immediately before the feast.

However, the available data on age/sex structure of the national sheep and goat herds supports only to a certain extent the hypothesis that an overly large number of older males are retained in the herds for the feast. The last two official livestock censuses were held in 1971 about one month after the feast and in 1975 about one month before the feast (Table 7). The latter year shows an increase in the relative proportion of adult sheep and goats of about 20 per cent. However, the latter year was a drought year, and also shows a relative decline in the proportion of all younger animals. What is more striking is the very low number of adult females (1.) per adult male, in comparison to the US norm 25 to 30. This may indicate a greater number of adult male sheep retained in the herds for other than reproductive purposes. But it also indicates the extensive nature of sheep production on Moroccan ranges, the slow rates of maturity of the animals (average age of adult males is 4 years) and the low marginal cost of retaining excess animals.

While data is lacking, GOM officials believe that the demand for male adult sheep is shifting qualitatively because of economic circumstances. More and more Moroccan families are substituting smaller and younger animals for rams.

G. Markets

The bulk of sheep and goats in Morocco are marketed in community souks scattered across the country. Generally, a souk is held in each village once a week. The days for the various souks are staggered such that it is possible for a buyer or seller to visit five or six souks each week within a 50 km radious.

Livestock are sold by the head through a process of individual bargaining between buyer and seller. If the seller is not satisfied with price offered, he will take his animals home and return again at a later date or visit a neighboring souk. While most souks do not have weighing facilities, sellers and buyers estimate animal weights fairly accurately be hefting the animals.

The system of livestock and meat marketing does not appear to pose serious problems of an organizational or logistic nature. About 50% of sheep and 25% of goat slaughter occurs in government-controlled abatoirs, subsequently passing through a competitive marketing chain to private retailers. Distribution costs of live animals are kept competitive by a well-developed road system and a large number of independent middlemen who transport livestock by truck between souks and from the major producing areas to the large urban coastal markets. Studies estimate that sheep-raisers obtain anywhere from 30 to 70 per cent of the retail dirham for their animals (in the US livestock industry the norm is 50 to 60 per cent).

The major souks in Eastern Morocco that handle sheep exported from the region are: Khenifra, Boumia, Missour and Berguent (Figure 1). Sheep are moved northward through Berguent to Oujda (and at least 20,000 per year are then taken in almost the opposite direction to Rabat and Casablanca). Sheep are moved northwestward through Azrou to Fez and Meknes and through Boumia and Khenifra to Casablanca and Marrakech. Income from head taxes on marketed livestock comprises the majority of municipal revenues in these souks.

The Eastern region is a net exporter of sheep. While solid marketing data is not available, most authorities estimate that the number of live animals leaving the souks in the Eastern Region for other markets far exceed the nurber of anirals slaughtered in the souks. Up to about 1960, the Eastern Region annually exported about 25,000 head of sheep to Algeria. Since then, the market has been re-oriented towards the west with rapid population growth and resultant demand on the Atlantic plains.

The number of sheep now exported from the Eastern Region may be estimated at about 300,000 head per year, or about six per cent of total consumption. This assumes an off-take of 30 per cent and annual consumption within the Eastern Region of 500,000 head (see Table 8). However, the great majority of the 330,000 goats extracted annually from the herds (assuming an off-take of 25 per cent) are consumed within the region.

FIGURE 1

FIGURE 1 Major Movements of Sheep through the Souks of Eastern Morocco Each arrow represents at least 20,000 head/sheep/year. Source: J. F. Troin, Les Souks Marocains, 1975.

Provincial Capital

TABLE 1.

Gross Value of Production in the Livestock Sector: 1969 and 1975

(millions of current Birhams)

		1969	1975
Meat Production			
	Beef	342	957
	Sheep	372	917
	Goats	102	133
	Camel	3	19
	Other	10	15
	Sub-Total	834	2,041
By Products			
	Cow's Milk	232	493
	Wool	45	99
	Mohair	2	1
	Sub-Total:	279	593
Other			
	Poulty	150	293
	Eggs	70	108
	Honey	7	26
	Sub-Total	227	427
Total, Livestock Sector:		1,340	3,061
Total, Agriculture:		4,631	9,494

Source: Division des Affaires Economiques, MARA

TABLE 2

Livestock Population in Morocco and Project Area

(000 head)

	1971		1975	
	Total	Eastern 1/ Region	Total	Eastern 1/ Region
Cattle	3,663	219	3,620	277
Sheep	16,700	2,814	14,300	2,695
Goats	7,052	1,428	5,706	1,347
Camels	139	N/A	103	N/A
Horses	311	22	359	25
Donkeys	1,019	112	1,123	123

Source: Direction de l'Elevage

1/Provinces of Errachidia, Figuig, Khenifra, Oujda, Taza and eastern half of Boulemane.

TABLE 3

MOROCCO: Estimated Slaughter, 1971-1978 1/

	1971	1975	1978
Cattle			
Head Slaughtered (000)	731	844	655
Meat Production (MT)	82,351	101,760	86,661
Average Carcass Weight (Kg)	112.6	120.6	132.3
Sheep			
Head Slaughtered (000)	3,858	4,424	5,338
Meat Production (MT)	41,926	50,170	66,016
Average Carcass Weight (Kg)	11.6	11.3	12.4
Goats			
Head Slaughtered (000)	1,623	1,469	2,100
Meat Production (MT)	16,963	14,000	22,257
Average Carcass Weight (Kg)	10.1	10.1	10.2
Other Red Meat (MT)	10,623	7,625	5,954
Total Red Meat (MT)	154,863	174,555	180,888
Poultry Meat (MT)	35,035	46,000	62,000
Total Meat Production (MT)	189,898	220,555	242,888

1/ Estimated slaughter based upon following percentages of controlled slaughter: 30% cattle, 50% sheep, 35% goats. The full time series of slaughter, production and carcass weights from 1970 to 1978 are available at USAID/Rabat. Average annual growth rates from 1970 to 1978 for all red meat production and poultry meat production are 1.56% and 6.4%, respectively. Average annual growth rates for sheep and goat carcass weights from 1970 to 1978 are .9% and .7%, respectively. "Other" category refers to pig, horse and camel. Official estimates of population in 1971 (15,379,259) and 1978 (18,906,000) put per capita red meat production at 10.1 Kg and 9.6 Kg for those years.

Source: Direction de l'Elevage and Direction de la Statistique.

TABLE 4

Comparative Sheep and Lamb Production in Morocco and the USA

	MOROCCO	USA
	1975	1975
Sheep and Lamb (000)	14,270	14,515
No. Slaughtered (000)	4,424	10,768 1/
Off-Take	31%	74%
Meat Production (MT)	50,170	186,140
Average Carcass Weight (Kg)	11.3	23.1

1/ Total marketings, including outshipments to other States for feeding or breeding purposes.

Source: Direction de l'Elevage; USDA, Agriculturlal Statistics, 1979; and USAID/Rabat, Livestock Marketing in Morocco, 1971

TABLE 5

Meat Exports and Imports, 1971-1978 (MT)

EXPORTS

	1971	1972	1973	1974	1975	1976	1977	1978
Beef	35	275	167	6	-	-	-	-
Mutton	40	-	-	-	-	-	-	-
Horse	3,012	3,000	3,569	2,476	1,827	1,175	1,500	1,300
Total	3,087	3,275	3,736	2,482	1,827	1,175	1,500	1,300

IMPORTS

Beef	-	-	-	126	2,167	1,469	1,200 1/	1,000 2/
Mutton	-	-	-	-	-	-	1,300	-
Poultry	-	-	-	-	-	1,515	-	-
Total	-	-	-	126	2,167	2,984	2,500	1,000
Exports minus Imports	3,087	3,275	3,736	2,356	-340	-1,809	-1,000	300

Source: Direction de l'Elevage, MARA

1/ Excludes the following live animals imported for slaughter in 1977: cattle (1,606); sheep (7,809) and goats (630). Source: USDA.

2/ Excludes the following live animals imported for slaughter in 1978: cattle (13,500); sheep (6,014). Source: USDA.

TABLE 4

Average Annual Wholesale Prices in Casablanca for Slaughter Cattle and Sheep and Cost of Living Index 1970-1977

(Dh/Quintal Liveweight)

	Beef	Index 1/	Sheep	Index 1/	Cost of Living 2/ Index-Retailed Food-Casablanca
1970	262,09	100	346,38	100	100
1971	275,08	105	387,05	112	106
1972	303,54	116	404,58	117	112
1973	319,79	122	419,79	121	118
1974	401,46	153	555,21	160	143
1975	431,67	165	601,46	173	154
1976	571,66	218	735,83	212	170
1977	627,38	239	824,17	238	196

1/ 1970 = 100 (Source: Direction de l'Elevage, MAR)

2/ Includes retail beef. Index figures for 1970-73 were estimated by regression from the 1974-77 series. For details see T. Eighmy, A Statistical Description of Morocco's Poor, USAID/Morocco, 1979.

All indices scaled to 100. Casablanca is the central market for livestock where 20-25% of total slaughter in the country takes place.

TABLE 7

Age/Sex Structure of Sheep and Goat Herds, 1971 and 1975
(1000 head)

	1971 Census 1/ (March-May)		Ratio of adult males to females	1975 Census 2/ (July-October)		Ratio of adult males to females
Sheep						
Ewes	8,851	(53%)	1:17	8,264	(58%)	1:14
Rams	501	(3%)		558	(4%)	
Lambs 3/						
ewes	4,225	(25%)		2,963	(20%)	
rams	3,123	(19%)		2,505	(18%)	
Total	16,700	(100%)		14,270	(100%)	
Goats						
Does	3,607	(54%)		3,220	(56%)	
Bucks	377	(5%)		346	(6%)	
Kids 3/						
does	1,640	(23%)		1,241	(22%)	
bucks	1,228	(17%)		939	(16%)	
Total	7,052	(100%)		5,746	(100%)	

1/ 1971 Census occurred during three months after Aid El Kebir (February 6, 1971) and immediately following the lambing (October-April) and kidding (November-April) seasons.

2/ 1975 Census occurred during four months before Aid El Kebir (December 14, 1975) during the dry season of a drought year.

3/ 0 to 18 months of age.

Source: Direction de l'Elevage, Enquete 1971 et 1975

TABLE 8

Eastern Region: Estimated Slaughter, 1977 1/

Cattle		
	Head Slaughtered	50,685
	Production (MT)	7,200
Sheep		
	Head Slaughtered	500,516
	Production (MT)	5,050
Goats		
	Head Slaughtered	338,309
	Production (MT)	3,574
Other	Head Slaughtered	1,173
	Production (MT)	163

1/ Provinces of Errachidia, Figuig, Khenifra, Oujda, Taza, and eastern half of Boulemane. Estimated slaughter based on following percentages of controlled slaughter: 30% cattle, 30% sheep and 35% goats.

Source: Direction de la Statistique

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UNITED STATES GOVERNMENT

Memorandum

TO : Alfred White, AA, NE Bureau

DATE: June 9, 1980

FROM : Harold Fleming, Director - USAID/Rabat

SUBJECT: USAID Response to NEAC Comments on Range Management Improvement - 0145

The following are USAID responses to the questions raised by the NEAC in the following cables: States 094516; State 103227; State 126797 and State 140809.

This paper is to be considered as an annex to the Project Paper reviewed by NEAC on March 27, 1980.

1. Contractor Selection Procedure.— USAID/Morocco has agreed with AID/W suggestion that the Collaborative Assistance Mode (CAM)be used for the selection of a contractor to implement this project. This procedure is outlined in section 7-4.5804 and 7-4.5805 of the Code of Federal Regulations. Normally, under this procedure, final selection is made by a panel in AID/W including representatives of contract management and the BIFAD. However, since this project is to be implemented under a host country contract, GOM representatives will participate in contractor selection by reviewing requests for expressions of interest and by attending the AID/W panel.

2. Revised Financial Plan.— The USAID agrees with AID/W that the life of project funding be increased by the following amounts:

Dols.	340,000	Revised DS/IT Training Costs
	50,000	Evaluation Project Year Five
	245,275	Contingency Fund
Dols.	635,275	Total

Overall life of project cost would then total Dols.5,075,275 instead of Dols. 4,440,000.

3. Clarification of Roles of MARA entities and steps to insure necessary cooperation.— The project will be implemented by the Feeds and Ranges Office of the Division of Livestock Husbandry with field offices in each Directorate of Provincial Agriculture (DPA). The DPAs contain the regional office of each Division of the Ministry of Agriculture: Livestock Husbandry, Forestry, Agronomic Research, Agricultural Development and Agricultural Education. Under the Chief of the Livestock Service Division in the DPA are veterinary and other animal production technicians as well as technicians of Feeds and Ranges. The latter coordinate all technical

assistance activities with the grazing associations, including veterinary services. In addition, agents of Feeds and Ranges coordinate any infrastructure development and custom services on communal lands with the DPA Agricultural Development Division. This is how the provincial system currently works and the USAID judges it basically adequate for successful implementation. Relationships between the Ministry of Agriculture, Interior and Finance as described in the Project Paper (pp.50-52) are defined by Royal Proclamation and therefore backed by law. We believe this sufficient to insure necessary cooperation.

Cooperation with Forestry, Agronomic Research and parastatal agencies consists essentially of exchange of technical information on success or failure of species evaluation trials. The record of technical coordination between these agencies has been poor, but to date activity in forage seed evaluation and production in general has been spotty anyway because of the newness of range science in the country. The USAID is confident that once the program gains momentum, common interests will prevail.

Finally, the USAID expects attempts to initiate the range extension course at the Meknes Extension Center will encounter little difficulty because of widespread interest in forage and rangeland improvement in the Ministry of Agriculture, as well as good relations with the Agricultural Education Division through Hassan II Agronomic Institute Project 0160. Hassan II Agronomic Institute has graduated all Feeds and Ranges technicians in the project so natural linkages already exist.

4. Possible Role of Peace Corps or Other Volunteers.— Once it is deemed appropriate by the GOM and US counterpart staff, individuals from a volunteer agency (supplied under a separate contractual arrangement) may be assigned to selected perimeters to work with BS and associate degree level technicians of the Service of Feeds and Ranges. However, the GOM has requested that the question of volunteers not be addressed until at least a year to a year and a half after project implementation has begun, by which time the extension program will be well-formulated and solidly on the ground. While in agreement that the program could benefit from local-level volunteer assistance, the GOM wishes to wait until perimeter demonstration and development activities are underway. The former range project had mass resignations of volunteers due primarily to poor programming and lack of structured jobs. Also, the success of the project is not dependent upon volunteer involvement. The USAID is keeping Peace Corps/Rabat up to date on all developments.

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5. Validity of Specific Commodities Listed in Annex I in Relation to Designs for the Seed Center.— The detailed commodity list is based upon general specifications for construction of the seed center which were not available at time of writing of the Project Paper but which are contained in the CID final report (pp.131-132). The proposed condition precedent withholds disbursement for commodities related to the seed center until final site specifications are drawn up by GOM.

6. USAID Intent regarding Request for Waiver.— A waiver for vehicles was not requested in the Project Paper because it is the intent of USAID to buy American.

7. GOM Ability to Provide Commodities Listed in Annex I, p.4, as part of their Contribution to the Project.— In view of unusually large GOM contribution to the Project including technicians, construction and operational costs, we do not feel GOM contribution to these commodities is necessary. GOM contribution of Dols. 6.8 million represents almost sixty per cent of total cost of Project.

8. USAID Views on the Production of Both Cool and Warm Season Species of Grasses in Phase I.— The GOM intent is to grow both cool and warm season species at the seed multiplication center, as the Feeds and Ranges office may decide to produce certain warm season species currently under evaluation by the Forestry and Agronomic Research Divisions. However, the general orientation of the project remains towards cool and intermediate species for the project area. The USAID and the Project Paper design team are in agreement with the GOM position.

9. Possibility that Availability or Coordination of Animal Health Services is a Major Constraint to Project Success.— Neither the USAID nor the GOM view the availability or coordination of veterinary services as a major constraint. To date the majority of technicians in the local DPAs are involved with veterinary activities. Since 1973 over one-third of the annual Livestock Division budget has been devoted to the same. Training facilities are adequate as Hassan II Agronomic Institute graduates ten vets a year. In fact it is the USAID intention to shift emphasis away from veterinary and genetic improvement activities towards greater emphasis on forage sources, rangeland improvement and extension in dryland areas.

10. Proposed Addition of Livestock Production Adviser to Resident Staff.— The USAID does not believe that the project alone justifies a resident livestock production specialist. As matter of course the scope of work is to require some animal production experience/coursework of all three

resident contract specialists in range management. If necessary, Hassan II Agronomic Institute animal science and veterinary departments offer additional technical sources to tap, including the proposed resident US professor of animal science under Project 0160.

11. Anthropological Description of Project Beneficiaries in Project Paper and Role of Project Anthropologist.— The primary beneficiaries of this project are the majority of dryland livestock-raisers in the Oriental Region with herds of 10-20 head. These correspond to the 89 per cent of livestock-raisers owning 55 per cent of sheep with herds under 50 head in Table 13 of the Project Paper. Classification problems with census and other data prevent the USAID from knowing the income mix from cereal cultivation, livestock-raising and employment. For example, we do not know what proportion are small farmer-herders or herders who receive payment for managing animals owned by others. But it is evident by criterion of extremely low cereal yields, ownership of sheep as index of available capital, and other data presented in the Project Paper, that many of these are among poorest in region. This group is most needful of assistance particularly in view of the higher local stocking rates on collective lands around villages and cultivated areas. Available data simply do not permit us to ascertain the proportion of such small-holders which benefit from grazing associations or how they fare in assignment of grazing rights. Furthermore, the question of how many animals a small-holder manages is a very controversial issue as many often illegally graze animals belonging to non-members of grazing associations.

Because these are extremely sensitive issues at the commune level, it is not appropriate that the USAID or short-term personnel explore them further outside the framework of an established project. This is why we believe a resident team social scientist is necessary to ensure that the small-holders are the primary project beneficiaries. The relevant data will emerge only during long-term observation and analysis during the implementation phase of the project. The rationale behind the contractor for mandatory team quarterly reviews and reports (p.25 of Project Paper) is to ensure that the data regarding beneficiaries which are collected by the anthropologist are reviewed and incorporated into project managerial decisions.

The more detailed scope of work for the resident anthropologist will be drawn up by USAID and the GOM once the expressions of interest have been received by the GOM and contractor selection is underway. This scope of work should include the analysis of local socio-cultural, micro-economic and local institutional conditions. The scope of work will

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also include an on-going evaluation process which will focus on measuring increased income among the participating herder groups as reflected in the production of meat, dairy products and fleece.

12. Program Plan.-- The contract will provide that the contract team complete an assessment of the adequacy of current GOM personnel and financial resources committed to the project purpose, as well as an estimate of end-of-project status in personnel, GOM budgetary support and level of training. The contract will also provide that the team take a close look at the relevant experience of the GOM with other perimeter programs and existing rangeland schemes.

13. Limited Immediate Disbursement to Facilitate Rapid Project Implementation.-- As stated in the Project Paper (p.21) the USAID wishes to issue certain Project Implementation Orders so as to set into the motion the processing of participant training and commodity orders such as project vehicles (not related to the seed multiplication center). The USAID therefore requests that the Project Authorization of Funds authorize immediate disbursement of not to exceed Dols.250,000 to initiate participant and commodity processing upon signature of the Project Agreement but prior to meeting the condition precedent requiring a signed host country contract. This amount is broken down as follows: NTE Dols. 100,000 for long-term participant training and NTE Dols. 150,000 for certain commodities from page 3, Annex I of the Project Paper.

14. Question 7, FAA Sec.621, Standard Item Checklist.-- The contract services will be furnished for the most part by a US University consistent with Part 1, Chapter 2, Title XII of the PAA.

JS/za