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The National Sheep and Goat Improvement Program for Portugal

Report of Consultancy Work during the period of
October 1 - November 3, 1984

Prepared For

PROCALFER and The Ministry of Agriculture,
Forestry and Food (MAFA), Portugal

By

Sheep-International Animal Agriculture Development

(Sheep-INTERAAD) - formerly

The Sheep and Goat Consultancy

Dr. Warren C. Foote and Dr. Carl L. Hausler

Logan, Utah, USA

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- Attachment 3. Outline of Seminar/Workshop Presented At The Meeting of The National Sheep and Goat Improvement Program Entitled "Combining Reproduction and Genetic Management Practices to Increase Production".
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Executive Summary

This report is for the consulting period of October 1 to November 3, 1984 for Dr. Warren C. Foote, Team Leader and Expert in Reproduction, Production and Management, and for Dr. Carl L. Hausler, Expert in Reproduction and Production, for the period of October 1 to November 1, 1984.

The Sheep and Goat Consultancy has continued to assist PROCALFER and MAFA since 1981 in the development, initiation, and conduct of a National Sheep and Goat Improvement Program. This consultancy is conducted as a part of the PROCALFER project under the specific direction of Dr. Carlos Fontes, Director General, General Direction for Livestock (DGP), MAFA as a part of the PROCALFER program; Eng. Jose de Almeida Alves, Chairman of the Coordinating Group; Dr. Phillip Warnken, Team Leader, USDA/OICD and Mr. James Black, Coordinator, USDA/OICD.

The Consultancy worked directly with Dr. Luis Telo da Gama (DGP) and others in the DGP and Regional Directions in conduct of the work.

Scope of Work of This Visit.

1. To review, monitor and evaluate the Basic Management and Breed Evaluation Programs at the stations where programs are underway.
2. To review and monitor research programs with small ruminants at the EZN (Fonte Boa), and the Universities of Vila Real (IUTAD) and Evora and assist in developing collaborative research with the National Sheep and Goat Improvement Program.
3. To participate in a seminar-workshop on Small Ruminant Genetics and Reproduction.
4. To assist the DGP in developing additional programs to strengthen the National Sheep and Goat Improvement Program, specifically:
 - a. Development of new extension materials in nutrition and other areas.
 - b. Further development of and establishment of purebreed sheep and goat organizations.
 - c. Further development of performance testing programs for male sheep and goats.
 - d. Prepare data for computer analysis for new computer facilities to be installed later in calendar year 1984.

5. To consult with other researchers and individuals, as appropriate, to strengthen the National Sheep and Goat Improvement Program in Portugal.

Summary of Work.

Since the last consultancy visit in November-December 1983 significant progress has continued on the Basic Management and Breed Evaluation Program, technology transfer information has been developed for producer support programs, and special production related projects have been identified and some initiated to extend information on production and management. The DGP and Regional Direction personnel continue to have strong, effective cooperation.

During this consultancy visit each location participating in the Basic Management and Breed Evaluation Program was visited and evaluated and were determined in general to be very satisfactory although there is some variation in quantity and quality of work due primarily to lack of resources.

During a two day program review and evaluation and planning meeting, program success as well as problems were identified. The ability of personnel from the DGP and Regional Livestock Stations to cooperate effectively was again displayed.

Visits were made to IUTAD, University of Evora and EZN. Each are interested in contributing more directly to the National Sheep and Goat Improvement program but resources are not available. Lack of effective communication and cooperation among PROCALFER, these institutions and some government organizations is seriously limiting optimal use of resources.

The DGP and Sheep and Goat Consultants together with OICD computer consultant selected computer equipment to be used in data analysis and arrangements were made for its purchase. Also a DGP person was identified to be trained as a computer operator and training is being arranged by the OICD training officer. The failure of access to a computer has resulted in a serious backlog of data to be analyzed.

Training needs were discussed and degree and non-degree programs identified and persons recommended for training. The consultancy fully supports the increased emphasis placed on training by PROCALFER.

The Consultancy worked with the PROCALFER Evaluation Team as requested to provide information on the livestock program.

This report provides a summary evaluation of the National Sheep and Goat Improvement Program to date, identifying both strengths and weaknesses and also limiting factors.

PROCALFER requested the Consultancy to develop a three year plan for the program, to expected end of project in 1987. This has been completed and is attached to this report.

Specific Recommendations.

1. Copies of consulting reports be translated to Portuguese and distributed to persons interested/involved and a written response be provided to the consultancy.
2. Additional DGP personnel be provided to assist Dr. Gama in supervision and administration of program and also some additional persons at some regional stations.
3. The initiation of new programs at the participating locations as resources permit to include nutrition and forage and pasture, economic analysis, and special production related projects.
4. Additional emphasis be given to producer support programs.
5. Animal health programs be continued as previously recommended.
6. Cooperation among institutions/organizations be encouraged.
7. Training programs be strengthened and expanded.
8. Equipment and supplies be provided as needs are established.
9. Establish a small, central reference library.
10. The Sheep and Goat Consultancy assume a more advisory role than previously because of experience and demonstrated capability of Portuguese persons. Efforts of consultants would be directed more to assisting in expanding/developing other aspects of the national program.
11. Develop and conduct a National Conference on Sheep and Goats in late 1986.
12. Develop a framework for interdisciplinary collaboration to provide all necessary inputs to the National Program.

This report is for the consulting period of October 1 to November 3, 1984 for Dr. Warren C. Foote, Team Leader and Expert in Reproduction, Production and Management and for Dr. Carl L. Hausler, an Expert in Reproduction and Production, for the period of October 1 to November 1, 1984.

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 - a. Development of new extension materials in nutrition and other areas.
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 - c. Further development of performance testing programs for male sheep and goats.
 - d. Prepare data for computer analysis for new computer facilities to be installed later in calendar year 1984.
5. To consult with other researchers and individuals, as appropriate, to strengthen the National Sheep and Goat Improvement Program in Portugal.

Work Accomplished Since The Last Consultancy Visit

(November - December, 1983)

1. Basic Management and Breed Evaluation Program. This program which involves adherence to prescribed management practices and to data collection schedules has continued at six stations and has been initiated or expanded at four stations. In addition, data collection to monitor producer flocks has also been initiated.

Results of information generated by the Basic Management and Breed Evaluation Program has also been used by university students for preparation of papers required for Eng. Zootechnia degrees.

2. Extension Programs. (Producer Support Programs)

a. A videotape has been developed cooperatively by the General Direction for Livestock and the General Direction for Agriculture for use with sheep producers entitled "Foot Rot".

b. A Sheep Day was developed cooperatively among the DGP and the Regional Direction for Alentejo at a commercial sheep farm participating in the Basic Management and Breed Evaluation Program. More than 250 persons attended where new management practices, including facilities developed under the PROCALFER Program, were demonstrated.

3. Special Production Related Programs. As many as four stations involved in the Basic Management and Breed Evaluation Program have also initiated additional program components or special production related programs. These include finishing lambs on pasture, carcass evaluation, and measuring the occurrence of estrus and ovulation throughout the year.

4. Strong effective cooperation among DGP and Regional Direction personnel has continued.

Also during this period.

1. Additional equipment and supplies required by the locations involved in the Basic Management and Breed Evaluation Program were approved, ordered, and partially delivered.

2. Approval of Eng. Carlos Carmona Belo (EZN, Fonte Boa) for M.S. degree training in forage and pasture production.

Work Completed During This Consultancy Visit

(October 1 to November 3, 1984)

1. Visited, reviewed, and evaluated each location participating in the Basic Management and Breed Evaluation Program and discussed continuing and expanding programs.

Dr. Luis Gama and Drs. Warren Foote and Carl Hausler visited each location (with the exception of Alter by Dr. Hausler) and met with the location leader in charge of the Basic Management and Breed Evaluation Program and also other persons involved in the program. Each aspect of the work was discussed and evaluated concerning the Basic Management and Breed Evaluation Program and the conduct of special production related programs which would continue and expand the activities of the location in data collection and also contribute to the development of the location capabilities in the support and conduct of producer support programs including serving as demonstration centers.

Each location is functioning in data collection although some are not following all Basic Management Practices outlined and some are not collecting all data. Data collected is considered to be valid and useful in the overall program.

Progress in location development as producer support centers varies considerably and depends almost entirely on resources provided to the station for facilities development and for human resource development. Both are essential and one or both need to be strengthened at nearly every location. More specific information is provided for each station in Attachment 1, an "In Progress" evaluation of each location as a center for Producer Support Programs.

It is the judgement of the consultants that the work at the locations, under the supervision of Dr. Luis Gama, can continue effectively with reduced input from the Consultancy and that the Consultancy should function in a more advisory role of the National Sheep and Goat Improvement Program to allow Portuguese persons to more independently carry out their work.

2. Visited the University at Vila Real (IUTAD), the University of Evora, the National Zootechnia Station at Fonte Boa, and Regional Directions (specifically PROCALFER Coordinators) where possible, and reviewed and encouraged previously suggested areas of cooperative work, suggested and encouraged areas for training and outlined procedures for presenting proposals to PROCALFER for support. Also explained and discussed need and possible procedures for conduct of a National Sheep and Goat Conference in late

1986, and the need for a collaborative program, including all required disciplines, to effect improved sheep and goat production (example: improved production and management practices, producer support, economic analysis, marketing systems, and lines of credit).

Although direct PROCALFER support is provided to the Regional Directions, support, particularly in terms of monetary resources, is not being made available to the universities and to EZN to fund sheep and goat related work. In earlier meetings with PROCALFER during this visit the Consultancy was informed that such resources were available from PROCALFER and that it was committed to providing them but that it must be done according to very specifically defined channels and procedures. These channels and procedures were discussed specifically with each institution/organization visited. This was done with the approval of PROCALFER.

In summary, the channels and procedures are as follows. The person or group desiring to receive support, prepares a proposal of work to be done, including resource support, with justification needed from PROCALFER. This proposal must be signed by each administrative officer involved. For example in a university by the department head, the rector, and then the PROCALFER Coordinator in the Regional Direction (which indicates Regional approval and support) before being submitted to PROCALFER.

For EZN the proposal must be signed by the department head and Director of EZN and then by the Director of INIAER before being submitted to PROCALFER. Dr. Luis Gama has been officially appointed as member of the PROCALFER Coordinating Group and all proposals will be reviewed by him with recommendations to the Coordinating Group. Therefore, it would be useful to confer with him on proposal preparation and submit the proposals directly to him after they have been properly signed.

According to the information received by the consultants from PROCALFER, if proposals of merit are prepared and processed through these channels, support will be provided.

3. Presented a two-hour seminar at the University of Evora for approximately 75 students and faculty of the Zootechnia Department and for Regional Direction personnel entitled "Sheep and Goat Production in the Alentejo; Potentials, Problems, and Approaches to Solutions".

This seminar was one part of a series of interactions with interested persons concerning the Sheep and Goat Improvement Program. The response, including that from the students, was very encouraging. There is a very significant potential resource

in the development of sheep and goats available in the universities and superior schools because students properly trained will strengthen improvement programs wherever they work in Portugal following completion of their training.

A brief summary of the seminar is provided in Attachment No. 2. Outline of the seminar presented at the University of Evora entitled "Sheep and Goat Production In The Alentejo: Potentials, Problems and Approaches to Solutions."

4. Presented a three-hour seminar/workshop for technology transfer to Basic Management and Breed Evaluation Program participants entitled "Combining Reproduction and Genetic Management Practices to Increase Production".

This seminar was presented as an integral part of the meeting of personnel from the participating locations in the Basic Management and Breed Evaluation Program and related programs of the National Sheep and Goat Improvement Program. There was very good participation. A summary of the seminar is provided in Attachment 3; Outline of Seminar/Workshop presented at the meeting of the National Sheep and Goat Improvement Program entitled "Combining Reproduction and Genetic Management Practices to Increase Production."

5. Conducted a meeting of the participants of the Basic Management and Breed Evaluation Program where the individual and overall aspects of the program were reported and evaluated and continuing and expanding aspects of the program were discussed and agreed upon.

The two day meeting was conducted by Dr. Gama and Dr. Foote and was attended by representatives of all the participating locations. The team leader from each location made a short report of activities including accomplishments and problems. Dr. Foote then presented a consultancy evaluation followed by a general discussion and review. Under the direction of Dr. Luis Gama future plans were made for the Basic Management and Breed Evaluation Program and Special Production related programs.

Special invited participants were Dr. Carlos Fontes, Director General, DGP; Dr. Phillip Warnken, Leader, OICD/USDA, and Dr. Jerome Maner, member of PROCALFER Evaluation Team. A summary of this meeting is presented in Attachment 4; A summary of business conducted at the National Sheep and Goat Improvement Program meeting for location participants, October 29-30, 1984.

6. Finalized arrangements for obtaining a microcomputer (Wang PC) with accompanying hardware and required software. Identified a DGP person to learn to operate a computer and arranged training. The computer will be used to process and analyze data collected on the Basic Management and Breed Evaluation Program.

This work was conducted over a period of several days. The participants were Dr. Tommye Cooper, OICD, computer consultant, Dr. Luis Gama, Dr. Warren Foote and Dr. Carl Hausler. Several aspects of this problem of special significance were accomplished:

(1) A decision was made to purchase a microcomputer (Wang) and tentative needs for software were established; (2) The data collected or being collected was divided into subsets and some priorities established; (3) Some preliminary approaches to data processing and analysis were established. This includes additional input from the consultancy and computer specialist, Dr. Rex Hurst, in data collection and program development; (4) DGP identified a person (with plans to identify others) to be trained as a microcomputer operator and OICD/USDA and PROCALFER is developing a training program; (5) Because of the extended delay in the procurement of the computer (projected date of receipt January-February 1985) a very serious problem has developed due to accumulated "backlog" of data waiting for processing. Under optimum conditions at least one year will be required before significant reduction of this backlog can occur. As a result of this, discussions were initiated with persons involved in the Basic Management and Breed Evaluation Program to consider reductions in amount of data being collected.

Early in the program the consultants and DGP recognized the need to process data as they were collected and recommended purchase of computer equipment and provided written justifications. But somewhere the system didn't work and now much significant work may be lost or at best minimized. A summary of recommendations on initial data processing and analysis is provided in Attachment 5.

7. Reported progress to date of the National Sheep and Goat Improvement Program and general plans for the next three years to Dr. Carlos Fontes, General Direction, DGP; Eng. Jose de Almeida Alves, Chairman, PROCALFER Coordinating Group; Dr. Phillip Warnken, Team Leader, and Mr. James Black, Coordinator, USDA/OICD. Training programs, criteria for training, and procedures to apply for training were discussed with Ms. Linda Lynch and Ms. Isabel Bravo, Training Officers USDA/OICD and PROCALFER, respectively.

The consultancy was very appreciative of these very open and frank discussions by everyone involved. It has a much better understanding of the role each perceives for itself and others in the overall PROCALFER project. Of greatest benefit was more specific definition of the role of the National Sheep and Goat Improvement Program as an integral part of PROCALFER, procedures for Institutions/Organizations to achieve PROCALFER support, increased emphasis on training, and the demonstrated interest, intent, and willingness of PROCALFER to support the program.

8. Provided information as requested to PROCALFER Evaluation Team and traveled with team member Dr. Jerome Maner to three locations where the Basic Management and Breed Evaluation Program is being conducted.

By invitation Dr. Maner attended and participated in the National Sheep and Goat Improvement Program meeting for location participants. Dr. Foote attended and participated in the meeting where Dr. Gama presented information on the National Sheep and Goat Improvement Program. Dr. Gama and Dr. Foote also met with Dr. Carlos Fontes, Director General DGP and Dr. Maner at Alcacer do Sai and reviewed the National program. Dr. Gama and Dr. Foote also traveled with Dr. Maner to visit two additional locations (Aboboda and Vale Formosa) in the Alentejo.

Evaluation of The National Sheep and Goat Improvement Program

The final objective of the Sheep and Goat Improvement Program is to increase the level and efficiency of sheep and goat production in Portugal. This can only be achieved by effectively assisting the producer in his efforts. The types and sizes of production systems vary greatly throughout Portugal (approximately 90% of the farms with sheep or goats have less than 10 animals). It is therefore necessary for the Sheep and Goat Improvement Program to provide alternative management practices to all types and sizes of production units including those with least resources.

Overall, the Basic Management and Breed Evaluation Program, which is the basic program of the Sheep and Goat Improvement Program, is progressing satisfactorily and it will yield the results required to adequately achieve its objectives. The Program is significantly more successful in some ways than initially anticipated. This is true both in overall quality of work and in the sampling of genotypes and geographic areas (local environments) in Portugal. Two aspects of the Program, intended to be conducted concurrently with other parts of the Program, however are quite seriously lagging. One of these is the fully implemented protocol for milk production measurements, the other is the initiation of the study to determine the occurrence of estrus and ovulation throughout the year. Also all locations are not performing at the same level. This is due to limitations imposed by inadequate levels of support provided by some agencies, such as the Regional Direction, the overall adequacy of facilities, and the efforts of the location Team Leaders. In the Consultancy's opinion, these limitations are resulting in failure of these stations to reach their potential and in a decrease of interest to continue programs at other stations.

Cooperative arrangements between the DGP and Regional Directions and also Regional Directions is somewhat tenuous and is based more on the willingness of individuals to work together to make the program successful more than on substantial cooperative arrangements among Directions. This has resulted, in some cases, in severe limitations of required resources and extended delays in receipt of promised resources. Availability of technically trained personnel is a very serious problem in some stations. All of these types of limitations are discouraging to the Team Leaders and others. The system which should be providing support and encouragement is not properly working.

The Program is now into the second year of data collection at most of the locations. A computer to process and analyze the data will be available by about February 1985. This phase of the program is at least one year behind schedule. But, with full

support as arranged by PROCALFER, DGP, OICD Computer Consultant, and the Sheep and Goat Consultancy, it is expected to be back on schedule in one to one and a half years. This is a serious delay to the program and was caused by factors beyond the control of the National Sheep and Goat Improvement Program and the Consultancy.

Special production related programs have been identified for selected locations which will provide continued development of required production and management information necessary for further development of the Sheep and Goat Improvement Program. Some of these programs are being initiated now and others will be initiated as the Basic Management and Breed Evaluation Program is phased out. These programs include finishing of lambs on pasture to heavier weights, carcass evaluation, performance testing of males, establishing purebred registers or flock books, economic analyses, producer support programs, measuring the occurrence of estrus and ovulation throughout the year, and estimating nutritive values of feeds.

Development of management practices, from the results of the Basic Management and Breed Evaluation Program and other available relevant information, as alternatives to the producer is an integral and very essential part of the Sheep and Goat Improvement Program. Technology, and resources to use the technology in developing videotapes and related programs for small ruminants, are generally available through the Ministry, in the General Direction for Livestock, and General Direction for Agriculture. Functional extension units for cooperation have not been identified in INIAER. Because of the unavailability of an extension program the National Sheep and Goat Improvement Program is developing a producer support program under the direction of DGP to provide this critical function. The Consultancy has assisted in preparing materials for some specific extension bulletins, have obtained and demonstrated videotapes developed by the International Sheep and Goat Institute, Utah State University, and have assisted in outlining programs for videotapes. During the last year, one videotape has been developed in Portugal by the DGP and DGA and additional ones are planned. One Sheep Day was held at one of the participating locations (Alcacer do Sal) during the past year and additional Sheep Days at other locations are being planned for this year. Additional programs are being identified for some other locations participating in the Basic Management and Breed Evaluation Program according to available resources and interest, that will continue to contribute relevant information to production and management, and strengthen it as a demonstration center after the initial programs have been phased out.

The Consultancy has enjoyed close and effective working relations with the Portuguese persons responsible for the Program including the participants. During the period of the Program to date, the Consultancy has provided detailed assistance in the

different aspects of planning, and establishing and conducting the various phases of work. Also during this period the Consultancy has arranged for and participated in short course training in the United States in general techniques of sheep and goat production (provided by California State Polytechnic University, Pomona) and more specific training in areas of Data Collection and Processing; Economics of Production, Reproduction and Genetics; Nutrition and Forages; Extension Methods and Administration, and Animal Health (provided by the International Sheep and Goat Institute, Utah State University, Logan). In addition, during consultancy visits, technology transfer has been conducted on selected subjects relevant to the objectives of the program on both a group and selected individual basis. Close working relations in conduct of the Basic Management and Breed Evaluation Program have also extended the transfer of relevant knowledge and the gaining of useful experience. The personnel involved in the program are now capable of conducting major aspects of the program which signals the need and the desirability of the Consultancy to reduce its involvement in the details of these areas and assist in planning and initiation of other aspects of the Sheep and Goat Improvement Program.

Projections of the National Sheep and Goat Improvement Program

The fourth of the initial five years of the Program life for PROCALFER was completed September 30, 1984. Assuming approval of a proposed two year extension, an additional three years is provided for program development and achievement (October 1984 to September 1987). During this consultancy visit PROCALFER requested a work plan for this three year period; this will be completed in January, 1985.

A copy of the three-year work plan is attached to this report and provides more detail of work anticipated. An excerpt from it is provided here to indicate the recommended philosophy and objectives under which the work would be conducted.

A National Program for Sheep and Goat Improvement implies the identification, development, integration, and application of the essential factors required for measurable increases in sheep and goat production under the varying conditions existing in Portugal. The full achievement of such a program is not possible during the period of the program in Portugal (1981-1987). But must be an ongoing program with the establishment and achievement of basic programs and plans for initiation of other required programs to be achieved in the future. Such a program includes the development of production and management practices as alternatives to traditional practices for increased production by the producer in the varied conditions in Portugal. These must be

based on data generated primarily under standardized local conditions for the different native genotypes of sheep and goats and ultimately include selected importation of germ plasm to strengthen their production capability. These production and management practices must be properly presented to producers, through producer support programs, as viable alternatives for improved production, with all levels of resources required for their use. This is necessary so that producers can evaluate their usefulness under their specific conditions and choose those they consider of greatest value. Also relevant economic analysis must be available, such as farm budgets, to provide the producer with estimates of profitability where different management alternatives are applied. At the same time marketing systems must be functioning to assure an appropriate outlet and price for an increased quantity and quality product as an incentive for increased investment of time and money. Also lines of credit at reasonable cost to the producer must be available so that the producer can initiate the management practices required to increase quantity and quality of production.

The National Sheep and Goat Improvement Program is of little functional value until its cost effective recommended programs are being used by producers and resulting in better utilization of resources with improved production of animal products which in turn increases the standard of living of the producers and the self sufficiency of their region and the country.

The purpose of this three year work plan is to provide an outline of work to be accomplished from the present through the expected end of the project in 1987 and its relationship to work underway or completed since the initiation of the program from 1981 to date. It is also the intent of this work plan to provide, near the end of the project, a plan of activities for the subsequent five years (1987-1992) and perhaps beyond to further assist in the successful continuation of the program.

The Consultancy has developed this work plan to include the required inputs to provide the best opportunity for measurable increases in level and efficiency of sheep and goat production. By design it has included development of programs and their availability to the producer of all resources necessary for increased production. It places the major responsibility for success on Portugal both from providing the required resources (monetary, physical and personnel) and their use in providing the initiative and follow-through to make them work. The required resources will be several times greater than provided to date, but represent a reasonable investment for the expected results. The total program is very ambitious. The consultancy believes that it can best serve the program by providing this total, overall plan. We recommend that the DGP and PROCALFER carefully evaluate the program plan in terms of the total program and its separate parts and determine what will be of greatest value to Portugal based on resources available.

The Consultancy believes the total program is necessary for the most complete achievement of the objective of increasing production and will be an excellent investment for all future development. It believes that if resources are available the program can succeed under the leadership of the DGP. The Consultancy believes that programs to date have been successful due in part to its own experience and expertise, but more significantly because of the interest and ability of the DGP, with support from Regional Direction Stations, to take initiative and follow-through on the selected programs. The Consultancy is dedicated to, and has been interested in, assisting in the development of all or parts of the program according to the decisions of DGP and PROCALFER. We hope that the total program can be carried out. We look forward to continued work with the DGP, the livestock stations, and PROCALFER in this program.

The overall objectives are to develop viable alternative management practices, based on data generated in Portugal, to improve sheep and goat production under the existing conditions, to extend these practices to producers resulting in their adoption and to outline a collaborative framework to provide input for other factors limiting production including agricultural policy, marketing systems, and lines of credit. These overall general objectives can be divided into the following sub-objectives.

A. To complete the current phases of the Basic Management and Breed Evaluation Program now in progress in terms of data collection, analysis, interpretation, and publication as technical and extension information and apply the results in development of alternative management practices for producers and procedures for genetic improvement of sheep and goats.

B. To expand and extend production related programs at the existing cooperating locations and with cooperating producers to obtain relevant information on (1) nutrition and forage and pasture production and utilization by livestock, primarily sheep and goats; (2) procedures and implementation of economic analysis of production systems, including alternative management practices; (3) conduct of special production related projects to provide additional relevant information of production to directly assist producers.

C. To assist in the development and to encourage implementation of producer support programs for assisting producers in improving sheep and goat production and in the development and use of the livestock stations as centers for demonstration.

D. To recommend and assist where possible in the development, and encourage implementation of, relevant national and regional animal health programs to control disease as a measure to improve production.

E. To encourage and facilitate where possible cooperation among institution/organizations in Portugal with resources that can contribute to the improvement of sheep and goat production.

F. To assist in institutional building through (1) personnel training through formal degree and non-degree programs, by technology transfer, and by program assistance to persons carrying out basic management and breed evaluation programs, and (2) to continue to assist in development of physical facilities.

G. To plan and conduct, in cooperation with appropriate national organizations, a National Conference on Sheep and Goats in Portugal.

H. To establish the National Sheep and Goat Improvement Program as an integral part of the existing ongoing programs in the General Direction for Livestock, Regional Directions and other cooperating organizations and/or agencies involved in the Improvement Program.

I. To suggest a framework for interdisciplinary collaboration production and management, producer support, economic analysis, marketing, credit) in a National Sheep and Goat Improvement Program to more fully achieve improved production by the producer.

J. To develop a five year or longer plan for continued activities (beyond 1987) of the National Sheep and Goat Improvement Program.

Major Meetings Conducted.

Approximately 27 meetings were conducted during the consultancy visit to provide additional information, explain, evaluate, and promote the National Sheep and Goat Improvement Program. These are largely independent of the work carried on with the Basic Management and Breed Evaluation Program. These are summarized in Attachment 7.

Specific Recommendations of Programs and Procedures

The following recommendations are those required for the continuance and expansion of the National Sheep and Goat Improvement Program to achieve its stated objectives (for the period of October 1984 to approximately September 1985).

1. **Translation and Distribution of Consultancy Reports.** It is recommended that copies of the consultancy reports be translated into Portuguese and be provided to all Portuguese persons working in, or interested in, the program including the following:

Dr. Carlos Fontes, Director General, DGP

Eng. Jose Almeida Alves, Chairman, Coordinating Group,
PROCALFER

All members of Coordinating Group

Each Regional PROCALFER Coordinator

Dr. Marcelino Sobral, Livestock Improvement, DGP

Dr. Luis Ferreira, Livestock Improvement, DGP

Each team leader of participating locations.

Dr. Texiera de Sa, DGP

Dr. Henriques Sales Henriques, DRARO

Dr. Apolinario Vaz Portugal, Director EZN

Dr. Cabral Calheiros, Head, Sheep Department, EZN

Dr. Eduardo Real, Rector, IUTAD

Dr. Nunes Potes, Head Zootecnia Dept. University of Evora

Dr. Azevedo, Rector, University of Evora.

It is recommended that these translations begin with this consultancy report and then working back through earlier reports (some reports were translated previously).

2. **Written Response to Consultancy Reports.** The Consultancy recommends that a written response to this report be provided to direct it in further work in the program.

3. Additional Portuguese Personnel to Assist DGP With The Program. It is recommended that additional persons be provided to work with Dr. Luis Telo da Gama to supervise and assist in the conduct of the program. Minimally this should involve two persons to work full time with locations participating in the Basic Management and Breed Evaluation Program and related programs including those with private producers, producer support programs, and with the study to measure the occurrence of estrus and ovulation throughout the year. One person has just recently been assigned to work as a microcomputer operator. Additional persons should also be trained, as available, to assist with data entry and processing.

The work in some regional stations has been seriously limited because of lack of technically trained personnel. These stations include the Aboboda Station. Dr. Jose Bettencourt needs one person to work in agriculture and two to work directly in the Sheep and Goat Improvement Program (one at Abododa and one at Vale Formoso) to assist in supervision of management and conduct of data collection and recording. At the Tondela Station, Dr. Cabral de Almeida needs one person to assist in supervision of programs including data collection.

4. Continuance and Expansion of The Basic Management and Breed Evaluation Program and Related Programs. This program provides the basis for the Sheep and Goat Improvement Program. The current programs at the existing locations should receive increased support to levels requested. Special production related programs should be started at these locations as resources become available. Special production related programs should be undertaken only if the required resources are provided, in areas such as finishing lambs on pasture for market, carcass evaluations, performance testing of males, establishing purebreed registries, estimating nutritive value of feed, and economic analysis. Special production related programs should also be initiated at other locations (government stations and private producers) as resources and opportunities provide. However, these programs should be conducted cooperatively but arranged separately from those locations involved in the Basic Management and Breed Evaluation Program.

5. Extension Programs. It is recommended that efforts be continued and expanded to develop materials for the producers on alternative management practices to increase production. This should be in the form of videotapes, radio programs and printed materials. Also arrangements should be made to present these materials to the producer (showing of the videotape which has already been prepared, on TV and in local meetings with producers). The use of the locations where Basic Management and Breed Evaluation Programs are being conducted should be maximized for: use as centers to hold sheep and goat (field) days and demonstrate alternative management practices.

6. **Animal Health Programs.** Animal health related programs recommended in earlier reports (such as the Consultancy Report dated December 16, 1983) should be reviewed and implemented as feasible.

7. **Cooperation.** Cooperation among organizations/agencies/institutions in Portugal should continue to be encouraged and strengthened. The broader concept of cooperation which includes any work which contributes to the general knowledge of Sheep and Goat Production and Management in Portugal should be stressed. Exchange of information among groups should be arranged. It is hoped that the National Conference on Sheep and Goat Production will promote the concept of cooperation. A summary of cooperation related activities that are being carried out in relation to the Sheep and Goat Improvement Program is provided in Attachment 6.

8. **Training Programs.** The Consultancy fully agrees with PROCALFER's increased emphasis on training. It is recommended that information about training programs be made available to agencies/institutions who might have or know of specific persons to be trained. This might include (in addition to Regional and General Directions) the University of Evora, IUTAD, the Superior Schools at Coimbra, Santarem, and Castelo Branco, and the National Zootechnia Station. It is further recommended that training be provided for both degree (primarily MS programs with a few selected Ph.D programs) and non-degree (up to one year in selected specialties according to personnel interest, capability and program needs).

Three points appear relevant in training programs related to livestock production.

- a. The type of training program needed.
- b. The person to be trained.
- c. Provision for use of the trained individual, after the training is completed.

The Consultancy has not made an extended effort to identify persons to be trained, but recommend the following persons for consideration which includes specific input from some individuals and agencies.

Persons recommended for graduate degree programs.

Date of Initiation	Name	Organization/Institution	Suggested Subject Matter Area	Type of Training
Sept. 1985	Dr. Luis Gama	General Direction Livestock	Genetics and Animal Breeding	M.S. degree (Portugal/USA)
Sept. 1985	Dr. Henrique Sales Henrique	Regional Direction Ribotejo	Animal Health	M.S. degree (Portugal/USA)
Sept. 1985	Dr. Luis Potes	General Direction Livestock National Reproduction & A.I. Station	Reproduction	M.S. degree (Portugal/USA)
Sept. 1985	Dr. Pedro Simoes	General Direction, Livestock National Reproduction & A.I. Station	Reproduction	M.S. degree (Portugal/USA)
Sept. 1985	Eng. Mafalda Montiero	General Direction, Livestock	Pastures	M.S. degree (Portugal/USA)
Sept. 1985/86	Prof. Jose Avo	University of Evora	Production	Ph.D. degree (Portugal/USA)
Sept. 1985/86	Dr. Jose Luis Tirapicos Nunes	University of Evora	Reproduction	M.S. degree (Portugal/USA)
Sept. 1985/86	Eng. Ana Teresa Castro Pereira	EZN (Fonte Boa)	Nutrition and Management (young goats)	M.S. degree (Portugal/USA)
Sept. 1985/86	Prof. Luis Antonio Domingues dos Santos Fernandes	University of Evora	Economic Analysis	M.S. degree (Portugal/USA)
Sept. 1985/86	Dr. Fernando Jose dos Santos Delgado	Superior Agricultural School, Coimbra	Animal Breeding/ Production	M.S. degree (Portugal/USA)
Sept. 1986	Eng. Claudino Mato	Regional Direction Alentejo, Aboboda Station	Genetics and Animal Breeding	M.S. degree (Portugal/USA)
Sept. 1986	Dr. Carlos Bettencourt	Regional Direction Alentejo, Aboboda Station	Reproduction	M.S. degree (Portugal/USA)

Recommended short course and/or on-the-job training programs and participants.

NAME	Areas of Training									
	Production & Management	Reproduction	Genetics	Nutrition	Pastures	Animal Health	Extension Techniques	Economics	Computer Science	Goat Production
Mario Costa	X							X		
Eugenia Costa							X		X	
Maria Antonio Martins da Cruz	X						X			
Manuela Oliviera								X		
Antonio Manuel do Sacramento Lopes	X	X								
Cabrel de Almeida		X		X						
Maria Isabel Xavier		X								
Ovidio Rodrigues										X
Graca Dias		X	X							
Selene Veige						X			X	
Lurdes Bettencourt							X		X	
Texiera de Sa		X					X			X
Marcelino Tavares			X							
Lopes Castro			X	X						
Renauto Carolino		X		X						
Jose Resende								X	X	
Rui Conduto			X	X						
Reonel Careigos			X				X			
Isaias Picarra					X					
Edgar Correia			X	X						X

The areas of short course and/or on the job training programs and the participants have been recommended by General Direction for Livestock and Regional Directions.

The requested total training programs for most participants varies from one to six months and involves more formal short course training and on the job training or both. The Consultancy recommends that each program be one to two months duration and organized so that all participants taking one subject would be taught at the same time. Special provisions could be provided to accommodate special training needs. It is recommended that consideration be given to including other interested and qualified persons. Late spring and summer is usually the best time to conduct these types of training programs because instructors and university facilities are usually more available and also the weather in many parts of the U.S. is better during this period. It is further recommended that the Consultancy assist in organizing, and if appropriate, in teaching parts of training programs which would likely be held at different locations in the U.S. Spring and summer of 1986 would appear to be the best time, to allow for proper planning and arrangements and to include the optimum number of participants.

Training can also be accomplished through technology transfer. It is recommended that a longer term technology transfer program be conducted dealing with experimental design, and planning, initiating and conducting research projects with livestock and livestock related programs.

This would consist of a six to twelve week program to be conducted by the Sheep and Goat Consultants during approximately a twelve month period. It is recommended the first approximately two week phase be taught at EZN, Fonte Boa, and that subsequent phases be taught to individual or smaller groups as indicated at their separate locations (institutions) where their related work would be carried out. This technology transfer program would be initiated in 1985. The following persons are recommended for this technology transfer training program. PROCALFER support would be required for necessary travel and per diem costs.

<u>Person</u>	<u>Location</u>
Eng. Ana Teresa Castro Pereira	EZN (Fonte Boa)
Eng. Mario Jose Teodora	EZN (Fonte Boa)
Eng. Ana Leite Salvador	EZN (Fonte Boa)
Dr. Jose Ribeiro	EZN (Fonte Boa)
Eng. Jose Santos Silva	EZN (Fonte Boa)

Eng. Manuel Roberto	EZN (Fonte Boa)
Eng. Pablo Duque Fonseca	Superior School, Santarem
Dr. Antonio Luis Gomes	Superior School, Santerem
Eng. Carlos Andrade	Superior School, Costelo Branco
Eng. Mafalda Monteiro	DGP

In addition to above short term projects, i.e., seminars will continue according to the pattern established in the past.

9. Equipment and Supplies. It is recommended that the required equipment and supplies be provided each participating location. The materials recommended in December 1983 were just received by DGP and distributed during this consultancy visit. It is recommended that lists of materials required to carry out the program, together with justification, be submitted by Dr. Gama to PROCALFER as they are identified. This will greatly facilitate their acquisition and thus strengthen programs.

10. Establish A Small Reference Library. A small central library should be established for personnel working in the Sheep and Goat Improvement Program. It should contain selected publications on relevant subjects. It is recommended that the consultancy and Portuguese program personnel develop a list of such publications for approval for purchase by PROCALFER.

11. Changes in Sheep and Goat Consultancy Program. It is recommended that because of the increased capability and experience of the Portuguese personnel working on the Sheep and Goat Improvement Program in the established work that the consultancy reduce its role in details of program management to allow Portuguese personnel to more effectively assume directing roles.

It is further recommended that the Consultancy (a) increase the exchange of information on program planning between visits to add continuity to the program and (b) to increase its capability to support the expanding program by adding two consultants, one in the area of statistics and computer science and one in the area of agricultural economics and farm budget development. These new consultants, as well as consultants already involved, would interface, as approved by PROCALFER, with other consultancies in optimizing expertise and minimizing undesirable duplication.

12. Conduct of a National Conference on Sheep and Goats. This recommendation which was made in the consultancy's December 1983

report (Attachment 7) is reemphasized. It is further recommended that the Conference be scheduled for late 1986 to provide some additional time for generation of data for presentations and to strengthen Portuguese persons participating in the IV International Conference on Goats to be held in Brazil in March, 1987.

13. Develop a Framework For Collaboration for The National Sheep and Goat Improvement Program. A fully functional National Sheep and Goat Improvement Program is based on two considerations:

(a) That the program be extended to all areas of Portugal and support all levels of sheep and goat production.

(b) That all components of the required multidisciplinary aspects be identified and made functional, collaborative efforts be outlined to provide for improvement in production by the producer (Attachment 8 - December 1983 Consultancy Report and updated and described in more detail in the attached three-year work plan).

These disciplines include management practices for increased production and forage and pasture production, producer support programs, economic analysis, marketing and lines of credit. From all of these inputs usable programs must be developed and provided to producers with all levels of resources in such a way as to allow each producer to improve production from his sheep and goats.

Because of the complexity of this program it is not possible for this to be accomplished during the remaining three years of the National Sheep and Goat Improvement Program. However, some significant aspects of this should be attainable. It is recommended that the consultancy prepare a justification and suggested outline for such a collaborative interdisciplinary effort and present it to PROCALFER for its evaluation by December 1985. A diagrammatic presentation of this concept is indicated in Figure 1.

14. Dates and Objectives Of Next Consultancy Visit. It is recommended that when the three-year plan of work is approved, consulting arrangements be made to cover all work to be done by the consultancy from the present to December 31, 1985. This will provide for better use of time overall and for more effective communication and exchange of information between visits to Portugal. Details of work are provided in The Three-year Work Plan.

Acknowledgements

Again the members of the Sheep and Goat Consultancy are indebted to those who provided for this visit and for the hospitality and continuing spirit of cooperation extended. This includes Dr. Carlos Fontes, Director General and others in the DGP; Eng. Jose de Almeida Alves, Chairman, and members of the PROCALFER Coordinating Group; Personnel in the Regional Directions; Dr. Philip Warnken, Team Leader, Mr. James Black, Coordinator and Miss Linda Lynch, Training Officer, USDA/OICD.

Special appreciation is expressed to Dr. Luis Telo da Gama, DGP and the Team Leaders and their associates at the cooperating locations in the various Regional Directions.

ATTACHMENT 1

An "In Progress" Evaluation of Each Location As A Center For Producer Support Programs.

The stated objectives for the National Sheep and Goat Improvement Program include the following: "To assist in the development and to encourage the conduct of extension or producer support programs for assisting producers in improving sheep and goat production and in the development of livestock stations as centers for demonstrations." It is essential that each station objectively evaluate its existing and potential capability to provide producer support programs such as functioning as a demonstration center, and to prepare to make this one of its major permanent functions. From the outset the National Sheep and Goat Improvement Program has considered these locations to be the basic, permanent focal point for the achievement of its objectives. The Basic Management and Breed Evaluation is only the first step in accomplishing this. The locations must accept as permanent functions both the development of information and in demonstration of its application to producers.

Following is a preliminary evaluation of how each participating location is progressing towards achieving this function.

1. **Mirandela.** This station has some excellent facilities, some of which are still in the construction phase. As a demonstration center, it may be "too advanced" in some technology to have an immediate applicaiton to the Tras-os-montes region, but this is not to be interpreted as a criticism. Instead, the use of improved pastures and management systems unknown to the area may well provide a model of potential alternatives for sheep producers in this region. It is anticipated that this station will provide, in the future, an estimation of the sheep production potential of the region. This would be of particular interest to those producers who have the resources to break away from the tradition-bound production practices presently employed. Especially valuable for future demonstrations would be their facilities for hay and silage feeding of sheep. Economic information should be generated to relate forage production and feeding systems to expected economic returns. The evolution of this station as a demonstration center will be greatly enhanced by their participation in the Basic Management and Breed Evaluation Program.

2. **Macedo de Cavalheiros.** The station has evolved rapidly into one which could have an immediate impact on the area producers

through demonstration programs. The personnel involved are dedicated to the extension function, and the development of the facilities has been achieved in a manner that could be applied immediately in the field. It is expected that there will be a field day organized at this station in the Spring of 1985, covering various aspects of management, particularly facilities for the handling of sheep, milking parlors and advantages of shortened, established breeding seasons. A constraint which may interfere with the future of this station is the status of its lease. Without a long-term lease, the region does not appear willing to invest the required resources for adequate facilities development.

3. **Tondela.** The Tondela station, when considered for use as a demonstration center, is a station of contrasts. On the one hand, it is an excellent forage production facility, but adequate research facilities are lacking to indicate economic or animal efficiency gains to warrant investment in forage production. There are excellent sheep available, but there exist difficulties at the station in the application of the Basic Management and Breed Evaluation Program, principally due to the lack of sheep handling facilities to obtain the breed evaluation data. A milking parlor with milking machines is being installed but equipment to measure production is inadequate. These deficiencies limit the overall usefulness of the location as a demonstration center. This location is considered essential to the success of the National Sheep and Goat Improvement Program, and should receive increased attention as it attempts to overcome problems. Potentially, this station could be extremely valuable to an important sheep producing area. Practically, it will take longer for it to develop.

4. **Castelo Branco.** In terms of extension demonstrations and field days, there are presently few resources being developed. The animal management facilities are absent, in fact, a permanent location for the sheep and goat flocks has yet to be finalized. The people in charge of data collection are capable, but young and lack some in experience. It is essential that during the next year (1984-85) this region will need to (1) identify a permanent location for the sheep and goat flocks; and (2) invest in facility development to meet program specifications. The facility development would occupy most of the 1985-86 year. If the above is accomplished and training of staff can be achieved during 1984-85 and/or 1985-86, producer support functions (demonstrations, field days, etc.) could begin during this period. It will need continuous inputs to achieve the rapid development prospects.

5. **Alter do Chao.** This station was developed, and is devoted to, primarily work with horses, and is doing a very adequate job in that respect. Sheep are of secondary concern although good facilities are available and the handling facilities have now been completed. Pasture for the sheep is sometimes inadequate. The location has very good potential as a demonstration center. Two factors must be dealt with in optimizing use of this location as a demonstration center: (1) The physical facilities do not typify what would be most useful or practical to most producers and (2) The genotypes of sheep include considerable exotic genetic input and represent efforts to develop a new breed-type. The latter can be an advantage or disadvantage depending on their reproduction and production capability and their availability as breeding stock to producers. The personnel at Alter have experience and can function very effectively in developing and conducting producer support programs.

6. **Alcacer do Sal.** Without doubt, this has been the fastest developing location. This may be due in part to the fact that it is a privately-owned flock. A very successful field day was held at this location on May 26, 1984. The human and physical resources at this location have combined favorably to keep it on schedule for completion of all the objectives of the Basic Management and Breed Evaluation Program.

7. **Aboboda.** The facilities at this station are excellent for producer support programs of all types. The major constraint is lack of human resources. There is a critical need for additional staff for data collection and management of the sheep and goat flocks as well as a need for someone to plan and organize the producer support programs. To become effective in producer support activities, this location must have the resources to increase personnel. This location is already providing very significant producer support information.

8. **Vale Formosa.** Facilities are practically non-existent at this station and must be developed. They are very inadequate for its function in the conduct of the Basic Management and Breed Evaluation Program and in producer support programs such as a demonstration center. The work is supervised by the director of the Aboboda Station and his staff assists in management and data collection. Additional human resources are essential. The location has the potential of providing excellent producer support programs.

9. **Paul de Serra.** Some physical facility improvement is underway, and more is needed. A major constraint to effective extension programming at this station is the lack of adequate feed, as

evidenced during the consultants visit in October, 1984. Feed supply was at the crisis stage from a drought. This affects not only the Basic Management and Breed Evaluation Program data being collected, but seriously limits any effective extension activities from this location. The first priority at Paul must be to develop a year-round feeding program that is flexible enough to withstand periodic drought. This is being attempted, but additional resources will be required. This location is in a very strong position to provide effective extension programs when the above limitations have been removed.

10 **Venda Nova.** This location is at the National Reproduction and Artificial Insemination Station and is a part of the DGP. Its primary function is expected to be generation of information contributing to the Basic Management and Breed Evaluation Program and related programs such as the occurrence of estrus and ovulation throughout the year. It has the potential of serving also as a demonstration center for selected management practices.

In addition to the above locations, other locations are being identified (both government and private) which can help in the generation and also demonstration of programs for direct consumption by the producers.

It is anticipated that all locations participating in the National Sheep and Goat Improvement Program will function in supporting the various training programs required to establish effective producer support programs.

ATTACHMENT 2

Outline of Seminar Presented At The University of Evora Entitled "Sheep and Goat Production In The Alentejo: Potentials, Problems and Approaches To Solutions.

Presented by Dr. Warren Foote, at the University of Evora, on October 25, 1984. The primary objective of this seminar was to increase awareness of the role of sheep and goats in resource utilization and food production in the Alentejo specifically and in Portugal more generally. Together with this were the objectives to indicate the potential for production and to involve the audience in identifying the problems in production and the possible approaches to solutions from the point of view of the producer; and to discuss the facilitating role of the National Sheep and Goat Improvement Program.

The seminar continued for two hours with approximately one-half of the time devoted to discussion.

Material presented included the following:

Small ruminants are animals of choice for increasing production in Portugal because:

1. High demand for products.
2. Produce wide variety of products (meat, milk, wool, pelts).
3. Best adapted to full spectrum of climate and other environmental conditions.
4. Reproduction and production cycles best fit season/annual forage production patterns.
5. Best adapted to self-harvesting feed and use of food by-products.
6. Where feasible can efficiently utilize harvested feed.
7. Highly adaptable to a mixed farming system.
8. Do not compete directly with man for food.
9. Can make rapid genetic gain.

10. Possess high reproduction potential.

11. Best adapted to producers with most limited resources.

Quadro 5 - Frequência das explorações
segundo o nº de animais possuídos (1972)

NÚMERO DE ANIMAIS POR EXPLORAÇÃO	OVINOS		CAPRINOS	
	NÚMERO DE EXPLORAÇÕES	EM PERCENTAGEM DO TOTAL DE EXPLORAÇÕES	NÚMERO DE EXPLORAÇÕES	EM PERCENTAGEM DO TOTAL DE EXPLORAÇÕES
1-4	131 489	76,2	126 896	85,5
5-9	22 173	12,8	11 387	7,7
10-19	6 417	3,7	4 451	3,0
20-49	4 926	2,8	3 206	2,2
50-99	3 164	1,8	1 469	1,0
100-199	2 281	1,3	548	0,4
> 200	2 072	1,2	358	0,3

Fonte: 1

Summary of information available on reproduction and production capability of native breeds of small ruminants.

1. All breeds are very well adapted to local environments where they are being used.
2. All or most breeds breed throughout all or most of the year.
3. Prolificacy is low (1.0 - 1.4).
4. Fertility is quite high (80 - 95%).
5. Mortality of both young and mature animals is low.
6. Body size is low to moderate; growth rate is moderate but will respond to improved management.
7. Lambs/kids slaughtered at very light weight overall (15-20 kg) in Alentejo.
8. Little useable information on improved management practices to increase production.

Table 1. Numbers and Estimated Reproduction and Body Weight Parameters for the Native Breeds of Sheep

in Portugal^{1/}

Breed Group	Numbers			%	Fertility %	Profilicacy	Lamb Mortality (%)	Live Body Weight (Kg)	
	Male	Female	Total					Male	Female
Churras									
Galego Mirandes	2,640	14,746	17,386	0.7	85-90	1.2	5	40-45	30-35
Galego Bragançano	6,606	33,564	40,170	1.7	85-90	1.2	5	50-55	35-40
Badano	27,403	179,815	207,218	8.6	85-90	1.1	5	40-45	30-35
Mondegueiro	4,815	66,137	70,952	2.9	85-90	-	5	-	-
Churro do Campo	4,570	57,645	62,215	2.6	85-90	1.0	5	35-40	25-28
Churro Algarvio	6,557	30,440	36,997	1.5	85-90	1.2	5	-	40-50
Bordaleiro									
Serra da Estrela	31,769	243,885	275,654	11.4	90-95	1.2-1.4	3	65-75	40-45
Entre-Douro e Minho	23,898	146,488	170,386	7.0	85-90	-	5	-	-
Saloia	5,437	49,757	55,194	2.3	85-90	-	5	-	-
Campanico	32,694	156,557	189,251	7.8	80-85	1.0-1.05	5	45-55	30-35
Merinos									
Merinos Brancos e pretos ^{2/}	195,704	915,442	1,111,146	45.9	85-90	1.1-1.2	5	70-80	40-50
Merino da Beira Baixa	18,439	165,186	183,625	7.6	80-85	1.0-1.2	5	40-50	28-30
Total	360,532	2,059,662	2,420,194	100.0	-	-	-	-	-

^{1/} Estimates from published data by S. Domingos Borrego, P. Teixeira de Sá F. Cabral Calheiros, and from unpublished estimates of other MACP personnel. Estimates are assumed to be for breeding animals.

^{2/} This breed has been crossed extensively with imported Merino Precocoe and Fleischaf breeds.

1/2

Examples of information needed to improve small ruminant production:

1. Age at first parturition.
2. Fertility.
3. Prolificacy.
4. Alternative times for breeding/parturition.
5. Frequency of breeding/parturition.
6. Age and weight at weaning and slaughter.
 - meat production
 - milk production
7. Finishing lambs for market.
8. Influence of disease on reproduction and production - primary limitations.
9. Nutrient quality of feeds.
 - harvested
 - grazed
10. Forage and pasture production and management.
11. Genetic improvement - estimates of genetic traits/methodology.
12. Alternative management programs.
 - Culling/selection of breeding males and females.
 - Care at breeding.
 - Care at parturition.
 - Care of young animals.
 - Animal health programs
 - Animal nutrition programs.
 - Practical record keeping systems.

Factors influencing the occurrence of the first postpartum fertile estrus.

Hypothalamic-Pituitary-Ovarian Axis

Recovery from pregnancy state,
Removal of lactation-suckling inhibitions,
Ovulation/luteal functions,
Ovulation with estrus.

Reproductive Tract Function

Uterine involution,
Shedding of decidual tissue,
Reduced vascularity,
Regeneration of endometrium

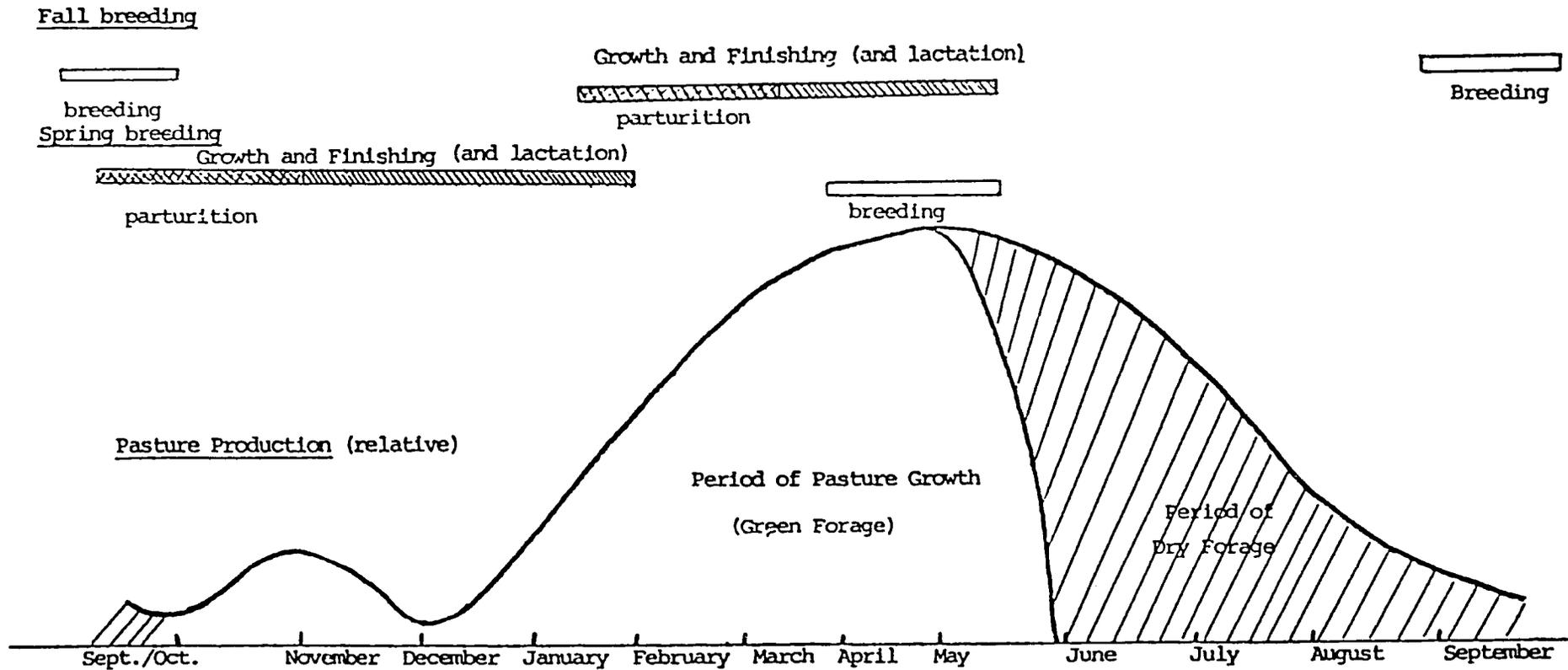
First Post Partum Fertile Estrus



Handwritten mark

FIGURE 1. - OUTLINE OF ANNUAL REPRODUCTION AND LAMB OR KID PRODUCTION SCHEDULES

Breeding period 
 Parturition period 
 Growth & Finishing period 



Objectives of the Sheep and Goat Improvement Program for Portugal.

1. To obtain information required to increase sheep and goat production in Portugal.
2. To develop and test alternative production and management practices to increase production.
3. To assist in the development of producer support programs for the producer to increase production.
4. To assist in training programs.

Program was initiated by PROCALFER through the Ministry of Agriculture, Forestry and Foods (MAFA) and is being conducted by the General Direction for Livestock and by the Regional Directions.

The National Sheep and Goat Improvement program has established a Basic Management and Breed Evaluation Program.

Basic Management Program:

- Facilities.
- Breeding related.
- Shearing related.
- Parturition related.
- Care of offspring related.
- Additional animal health related.
- Additional nutrition related.

Breed Evaluation:

- Obtain information from major genotypes in their locality under basic management conditions.
- Information on major reproductive and management characteristics.
- At present includes 12 genotypes at 9 locations.

Application by producer requires the following:

1. Practical production and management practices.
2. Assistance in understanding, selecting, and applying improved management practices.
3. Incentives to improve production, chance for increased profit.
 - economic analysis
 - marketing
4. Credit under conditions producer can afford.

Quadro 4. Estimativa do numero de femeas reprodutoras por Direccao - Regional.

	OVINOS (%)	CAPRINOS (%)
ENTRE DOURO E MINHO	98 000 (7)	50 000 (9)
TRAS-OS-MONTES	140 000 (10)	69 000 (13)
BEIRA LITORAL	156 000 (11)	96 000 (18)
BEIRA INTERIOR	216 000 (15)	110 000 (21)
RIBATEJO E OESTE	165 000 (11)	74 000 (14)
ALENTEJO	633 000 (44)	116 000 (22)
ALGARVE	24 000 (2)	16 000 (3)
	<hr/> 1432 000	<hr/> 531 000

ATTACHMENT 3

Outline of Seminar/Workshop Presented At The Meeting Of The National Sheep and Goat Improvement Program Entitled "Combining Reproduction and Genetic Management Practices to Increase Production"

Presented in the Portuguese language by Dr. Carl L. Hausler, consultant, on October 30, 1984.

I. Introduction.

A discussion of various factors that affect lifetime productivity of ewes (Figures 1 & 2). Discussed the importance of lifetime productivity of ewes to the profitability of the sheep operation.

II. Questions.

During the consultants visit to each station, questions regarding management of sheep were raised. These questions were annotated, combined and summarized into five questions (Figure 3) which were discussed in the seminar.

III. Integration of Management, Reproduction and Genetics.

A discussion of the interactions of reproduction and genetic decisions within a flock on other management decisions (Figures 4-6).

Figure 1.

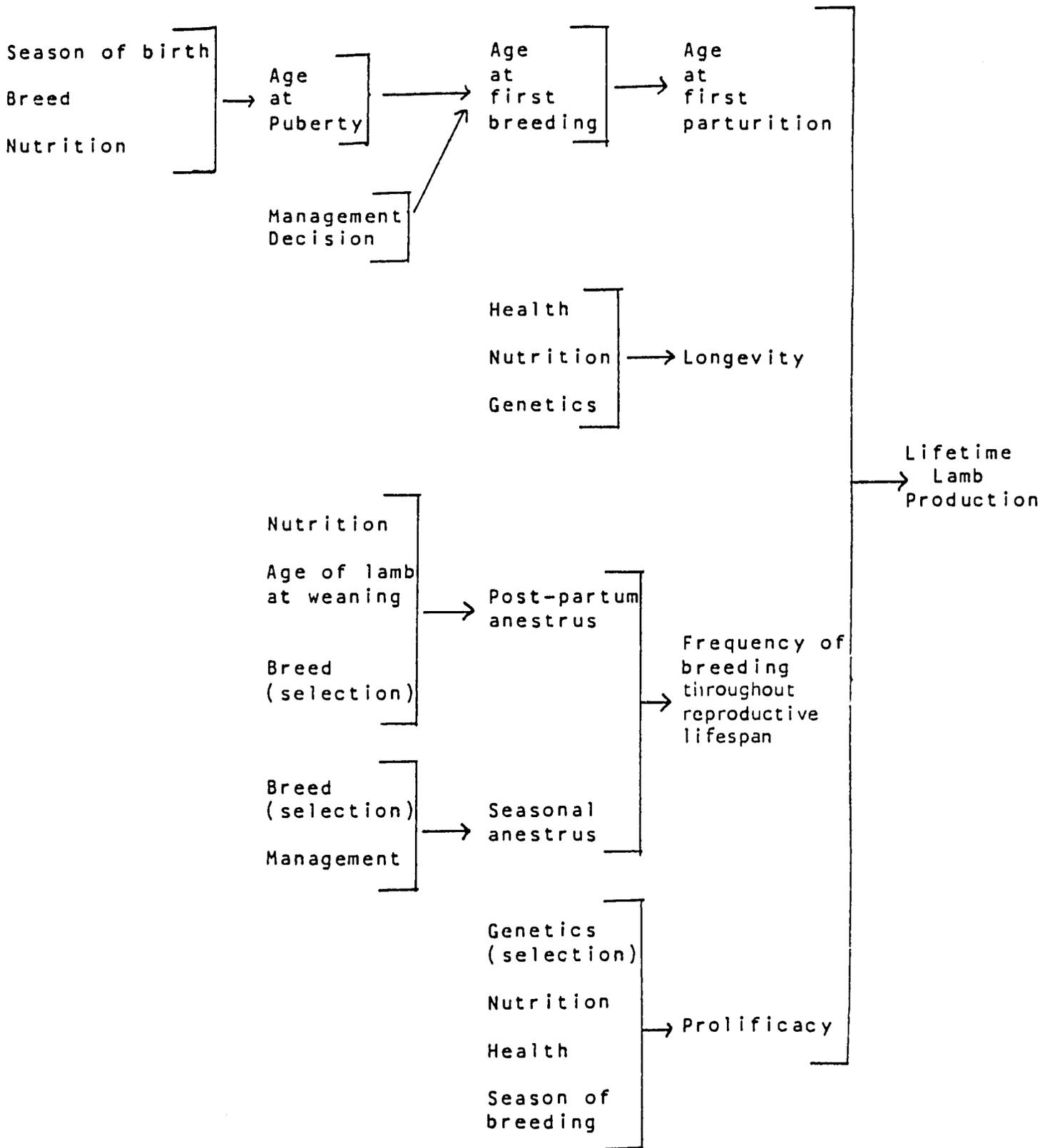
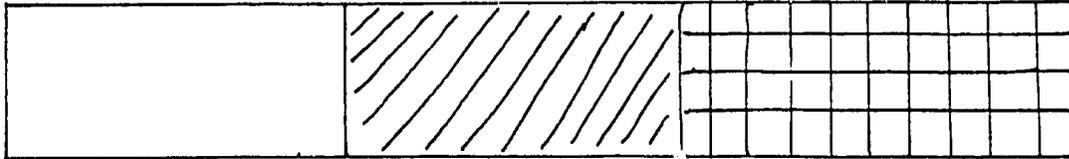


Figure 2.

Three periods in the productive life of a ewe.



—————> Number of lambs produced.

Ewe has not yet
paid for herself.

Break-even
point.

Ewe is earning
a profit.

Owes you money.

Making you money.

Figure 3.

Questions for Seminar
(summarized and combined)

1. Discuss the breeding season with respect to meat and milk production, accelerated lambing, effects of climate on reproduction (especially in April and May), and the effects of the duration of the breeding season.
2. Discuss when conclusion of basic management and ovulation study will become available. How will this information and the data from the estrus and ovulation study be integrated and how will these studies contribute to genetic improvement of the sheep in Portugal?
3. Discuss the marketing of lamb: spring born vs fall born, best weight to slaughter, etc.
4. Discuss management options for raising ewes with twins. Should twins be separated if ewe has not enough milk? How can lambs separated from dam be artificially raised?
5. Nutrition of breeding ewes: discuss protein and energy feeding, mineral nutrition (especially salt and calcium) and proper flushing periods.

Figure 4.

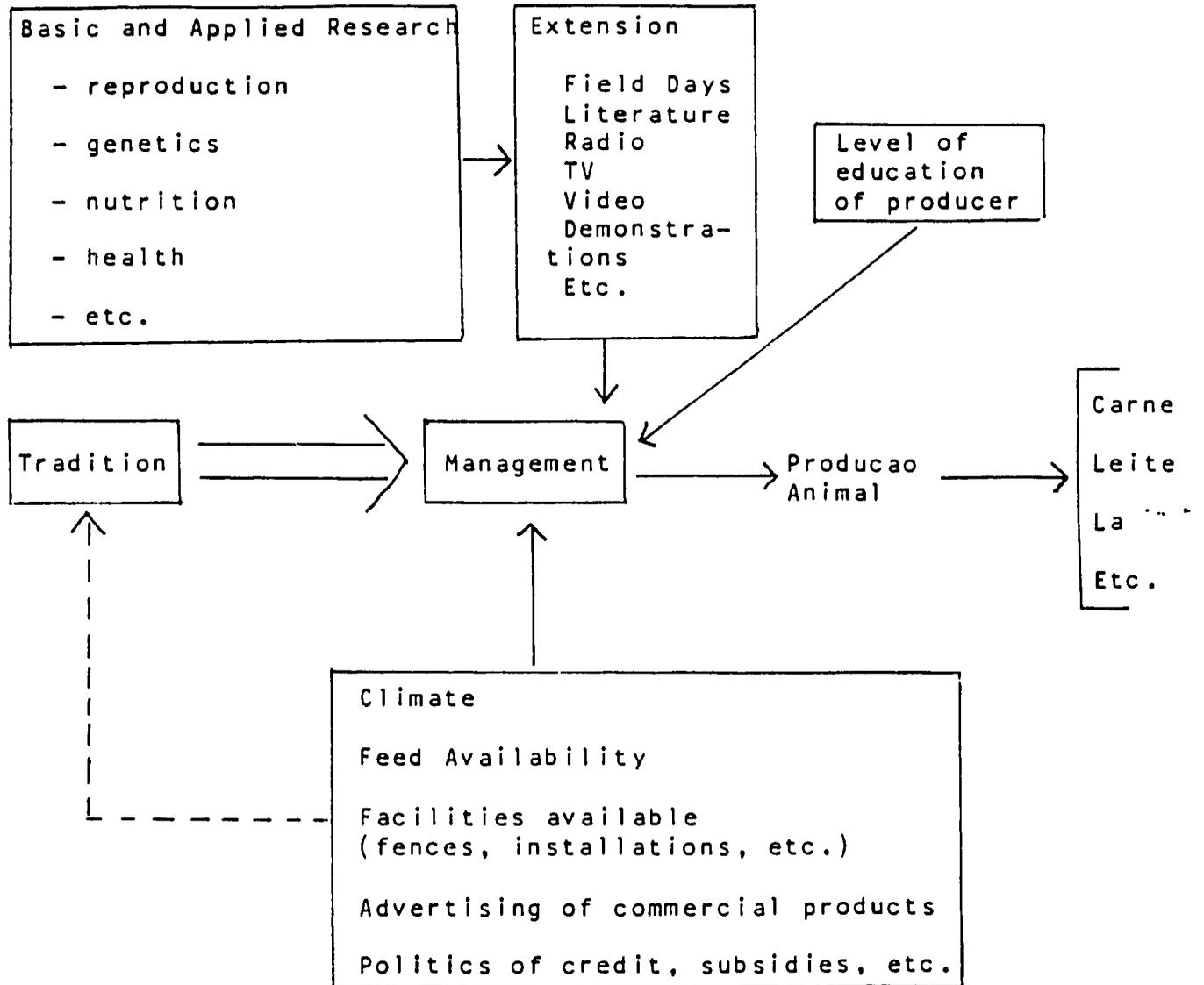
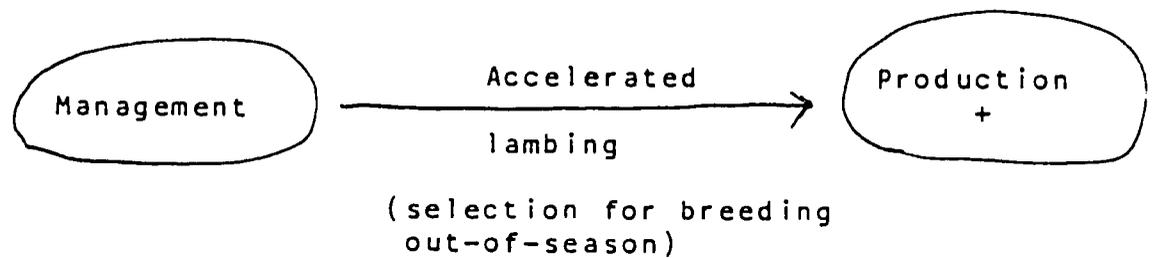


Figure 5.

Use of accelerated lambing as a method to increase production.

Necessary Inputs

1. Cull rigidly those ewes that don't perform.
2. Early weaning and artificial rearing of lambs.
3. Adequate technology for feeding, health, etc.



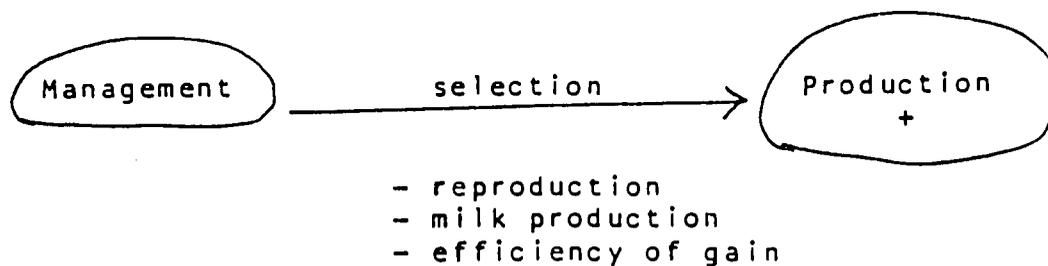
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Figure 6.

Utilization of selection as a method of increasing production.

Necessary Inputs

1. Will to follow rigid selection criteria.
2. Uniform environment for all animals.
3. Adequate nutrition and health for expression of characters.
4. Controlled breeding.
5. Resources.
 - scales
 - identification
 - etc.
6. Accurate measurement of characters being selected for.
7. Availability and utilization of correction factors.



ATTACHMENT 4.

A Summary Of Business Conducted At The National Sheep and Goat Improvement Program Meeting For Location Participants, October 29-30, 1984.

AGENDA

Sheep and Goat Improvement Program Meeting (October 29-30, 1984)

October 29

14.30	Welcome	Warren Foote
14.45	Review of objectives of program.	Luis Gama
15.00	Location reports.	Participants
16.30	Break	
16.45	Location reports.	Participants
17.45	Evaluation of locations.	Warren Foote
18.00	Adjournment	

October 30

9.30	Seminar	Carl Hausler
11.00	Break	
11.15	Seminar	Carl Hausler
12.30	Lunch	
14.30	Identification of sub-committee organization.	Luis Gama and Warren Foote
15.00	Data recording, processing and analysis.	Luis Gama
15.15	Extension programs.	Luis Gama and Warren Foote
16.00	Equipment and supplies.	Luis Gama, Warren Foote

16.15	Break	
16.30	Reevaluation, new programs, future.	Luis Gama and Warren Foote
17.00	National Sheep and Goat Conference.	Warren Foote
17.15	Adjournment	

Persons Attending the National Sheep and Goat Improvement Program Meeting.

Dr. Carlos Fontes	Director General, DGP (1st day)
Dr. Luis Gama	DGP
Dr. Texiera De Sa	DGP
Eng. Jose Lopes Castro	Alter do Chao
Dr. Jose Marcelino Tavares	Alter do Chao
Dr. Renata P. de Silva Carolino	Alcacer do Sal
Dr. Graca Ferreira Dias	Costelo Branco
Dr. Pedro Simoes	Venda Nova
Dr. Luis Filipe Potes	Venda Nova
Dr. Ovidio Nelson Rodriques	Macedo de Cavalheiros
Dr. Luis Aires Mateus	DRAA/Algarve
Dr. Mario Costa	DRAA/Algarve (Paul)
Dr. Edgar Correa	DRAA/Algarve
Dr. Henriques Sales Henriques	DRARO
Eng. Manuel Sacramento Lopes	DRTM/Mirandela
Dr. Jose Luis Cabral de Almeida	DRBL/Tondela
Dr. Antonio Jose Bettencourt	Aboboda
Dr. Carlos Manuel Bettercourt	Aboboda
Eng. Maria Antonio Martins de Cruz	DRTM/Mirandela
Eng. Claudino Matos	Aboboda
Dr. Marcelino Sabral	DGP
Dr. Carl L. Hausler	Consultant
Dr. Warren C. Foote	Consultant
Dr. Jerome Maner	PROCALFER Eval. Team (2nd day)
Dr. Phillip Warnken	PROCALFER OICD Team Leader (2nd day)

Welcome comments by Dr. Foote.

- Introductions.
- Consultancy enjoys and benefits from working with the group.
- Projected life of PROCALFER is to 1987. An extension of two years. Need to prepare three year work plan. Final objective is to increase sheep and goat production by producers.
- A team is in Portugal evaluating the PROCALER program. Dr. Jerome Maner is a member of this team with responsibility to evaluate animal related work. He is attending our meeting.
- Dr. Gama is being named a member of PROCALFER Coordinating Group. This is a very important position.
- We have a great deal of work to accomplish in our meeting.

Review of program objectives.

Dr. Luis Gama reviewed the objectives of the Basic Management and Breed Evaluation Program and related projects and emphasized the importance of the contributions from each location.

Location reports.

Leader or representative from each location reported on their activities, both progress and problems.

Dr. Foote summarized the reports and presented an evaluation for the consultancy.

- Overall program is very successful.
- More successful than initially expected.
- Some locations not conducting full program in terms of (1) Basic Management Programs and (2) collection of all data - to a great extent this is a result of lack of resources.
- A backlog of data has developed because a microcomputer has not been made available. A minimum of one year will be required to begin reducing backlog.
- Evaluation summaries provided in Table 1.
- A summary of present participating locations and programs are summarized in Table 2.
- The general location of the participating location are shown in Figure 1.

Seminar presentation.

Dr. Carl Hausler presented a seminar/workshop as a technology transfer activity entitled "Combining Reproduction and Genetic Management Practices to Increase Production." A summary of this activity is provided in Attachment No. 3.

Identification of subcommittee organizations.

Dr. Luis Gama discussed the need to form subcommittees from the location participants to provide expertise in developing new special production related projects and strengthening the overall efforts of the current ongoing work in the Basic Management and Breed Evaluation Program. He identified the following special projects that had already been initiated or that have been identified to be initiated as soon as procedures can be developed and resources are available: (1) Finishing lambs on pasture, (2) Carcass evaluation, (3) Performance testing of males, (4) Pure-breed Registers, (5) Annual occurrence of estrus and ovulation, (6) Postpartum events in females, (7) Estimates of genetic parameters, (8) Nutritive value of feeds and forage and pasture production, (9) Economic analysis, and (10) Development of locations as demonstration centers,

Dr. Gama then suggested subcommittees in general discipline areas. This was approved by the participants. He listed these disciplines and asked each participant to indicate the subcommittee(s) on which they would be willing to serve. The response is shown in Table 3.

Table 3. Working subcommittees and number of participants interested in working in each.

Subcommittee	No. of Persons
Genetics	
Reproduction	
Nutrition	
Animal Health	
Extension (producer support program)	
Credit & Economic Analysis	
Milk Production	
Computer & Statistical Analysis	

Dr. Gama noted that persons had not volunteered to work in all subcommittees (i.e. genetics, and computers and statistical analysis). By consensus it was agreed that Dr. Gama would evaluate individual person capabilities and interests and recommend adjustments in subcommittee assignments.

The spirit of cooperation in the group was apparent. Everyone was willing to participate and share their experience and expertise with others to strengthen the overall program.

Data recording processing and analysis.

Dr. Gama reviewed programs to obtain a microcomputer to process and analyze data being collected in the Basic Management and Breed Evaluation Program. He recognized the success of the locations in carrying out programs and collecting data and the problem that exists in data analysis due to the backlog accumulated caused by the unavailability of a computer. Dr. Gama recommended that highest priority data be analyzed first and estimated a minimum of one year before data backlog could be significantly reduced. He also discussed the need to modify data collection procedures to facilitate direct data entry into microcomputers by the operator. He also suggested that the total data being collected be reevaluated to determine if it could be reduced without weakening the program. There was unanimous agreement on all of the above points. Dr. Gama agreed to make recommendations on these points as soon as possible.

Extension Programs (Producer support programs).

Dr. Gama reviewed producer support programs that had been carried out during the past year. These were (1) Sheep (Field) Day held at Alcacer do Sal under the direction of Dr. Renato Carolino. Dr. Carolino reported on this activity (program attached). It was attended by over 250 producers and others working in sheep and goat related programs. Dr. Carlos Fontes, Director General, DGP and Eng. Jose de Almeida Alves, Chairman, Coordination Group, PROCALFER were in attendance. Management practices were discussed and the sheep handling facilities were demonstrated. Dr. Carolino, however, indicated concern about holding subsequent Sheep Days for two primary reasons: (1) Lack of support from the Regional Direction and (2) Need for more information, especially economic related, to provide to producer.

Dr. Carolino also outlined a program he expects to implement and test to shorten the lambing interval in the private flock he is managing. (2) Preparation of video tape on "Foot Rot in Sheep" under the Direction of Dr. Texiera de Sa. He indicated that this video tape had been developed jointly by DGP and DGA, using the facilities and expertise of DGA. The video tape was

viewed by the group. It was a very good presentation - both in terms of subject matter and in quality of production. This videotape will be used with producers. Additional video tapes are planned.

Dr. de Sa reported on additional activities and made suggestions as follows:

(a) Proceed with collection of technical data in sheep flocks of the breeds "Serra da Estrela", "Merino Alentejano" and "Saloia" with the objective of defining (obtaining) the production parameters of these populations.

(b) Studied the construction of milking parlors for small ruminants (sheep & goats) keeping in mind the management of the milking parlor; determine the techniques of milking, measurement of time required to milk; determine the routine of milking; and obtain (estimate) the profitability of mechanical milking of small ruminants.

(c) In addition to completion of the video tape production on Foot Rot, two pamphlets on the same topic have also been completed.

(d) Two courses in "technology training" directed at young sheep producers.

(e) Follow the results obtained in the PROCALFER program that is occurring in the livestock demonstration stations and transmission of this information through personal contacts, these same results are always highly adaptable and make possible adjustments in flock management.

(3) Additional producer support material. Dr. Gama reported on additional sheep management bulletins that are being produced. These are now in the process of being published.

Equipment and Supplies.

Dr. Gama reviewed the equipment and supplies requested last year and which had just recently arrived. This has been partially distributed. He discussed remaining distribution. Future needs were discussed. Dr. Gama will follow-through with individual contacts to determine needs for program and process request for financial support to PROCALFER to obtain the materials.

Table 1. Summary of location evaluations¹.

Name of Location	No. Yrs ²	No. Breeding Females	Genotype	Resources ³	
				Physical	Persons
Aboboda	2	189	M. Branco	+	-
	1	79	Sepentina	-	-
Alcacer	2	112	M. Branco	+	+
Alter	2	58	P. Alter	+	+
Costelo Branco	1	125	M.B.B.	-	-
		126	MBB X SE	-	-
Macedo	2	150	C. Badana	-	-
		119	CB X Mond.		
		115	Galego		
Mirandela	1	127	C. Badana	-	+
		63	Sardo X GB		
Paul	2	232	Campanico	-	+
Tondela	2	56	S. Estrela	-	-
		48	S. Estrela		
		105	Friserra		
Vale Formoso	2	122	Campanico	-	-
Venda Nova	0	50		+	+
Overall	7,3,1	1876	12 genotypes sheep 1 genotype goat 3 genotypes in two locations	4+,7-	5+,6-

¹There are 10 locations, the sheep and goat projects at Aboboda are considered two projects because they are located in separate facilities and were started at different times.

²Seven projects completing second year, three projects completing first year, and one project beginning first year.

³+ indicates adequate resources and - indicates inadequate resources.

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Table 2. A summary of locations (Government stations and a private flock), responsible person, and related information for the Basic Management and Breed Evaluation Program (1983-84).

Location	No. Females ¹	Program Leader	Genotype	Primary Product	Breeding Periods		Age at Weaning (weeks)	Age at Slaughter (weeks) ²
					Primary	Secondary		
Macedo	92	Rodrigues	Churro Badana	Milk	5/19-6/28	10/2-11/15	6-8 ⁴	14
	93		C. Badana X Mondegueira	Milk	5/19-6/28	10/12-1/15	6-8 ⁴	14
Tondela	56	De Almeida	Serra da Estrela	Milk	5/24-7/4	9/1-10/10	5	14 ⁶
	48		Serra da Estrela (Preto)	Milk	5/24-7/4	9/1-10/10	5	14 ⁶
	105		Friserra	Milk	5/24-7/4	9/1-10/10		
Alter	58	Tavares	Fleischschaff X M. Branco	Meat	5/2-6/10	8/8-9/8	15	15
Agobada	50	Bettencourt	Merino Branco	Meat	4/1-5/10	8/1-9/9	15	15
	50		M. Branco X M. Precoce	Meat	4/1-5/10	8/1-9/9	15	15
	50		Merino Branco	Meat	8/1-9/9	—	15	15
	50		M. Branco X M. Precoce	Meat	9/1-9/9	—	15	15
	100		Serpentina (goats)	Milk	6/1-7/15	10/1-11/15		
Vale Formoso	102	Bettencourt	Campanico	Meat	4/16-5/26	8/3-9/12	15	15
Alcacer	100	Carolino	M. Branco X M. Precoce	Meat	3/16-4/22	8/1-9/10	15	15
Paul de Serra	229	Costa	Campanico	Meat	5/4-6/12	10/4-11/8	15	15
Castelo Branco	100	Joao Pinto	Serrana (goat)	Milk	4/16-5/26	9/14-11/2	6	6 or 15
	125		Merino Beira Baixa	Milk	4/16-5/26	9/14-11/2		
	126		Serra Estrela X M.B. Baixa	Milk	4/16-5/26	9/14-11/2	6	6 or 14
Mirandela	100		Churro Badana	Milk	5/19-7/28	10/12-11/15	6	6 or 14
	100		Sarda X Churro Badana	Milk	5/19-6/28	10/12-11/15	6	6 or 14
Venda Nova	50	Pedro Simoes	Salola	Milk				

1) Number exposed at primary breeding; 2) Program not yet initiated; 3) Starting 1984-85 fall breeding periods at Abobada, Vale Formoso and Paul da Serra will be 9/1-10/13 and the spring breeding for Paul da Serra will be 4/16-5/26. All breeding periods will be for a six week duration; 4) Variation because milking machines not installed as planned; 5) Some lambs where meat is primary product may be fed longer; 6) Only a part of the animals from each genotype will be fed to this age.

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Figure 1. Sheep and Goat Development Consultancy Report,
August 31, 1982.

A map of National and Regional boundaries with approximate locations of the cooperating stations. Courtesy of The General Direction for Livestock (MACP).



AGRARIAN REGIONS

1. Entre Douro e Minho
2. Trás-os-Montes
3. Beira Litoral
4. Beira Interior
5. Ribatejo Oeste
6. Alentejo
7. Algarve

Recommended subsets and preliminary analysis of Basic Management and Breed Evaluation Program data.

Subset Divisions of Data

1. EWE PRODUCTIVITY RECORD

Station
 Year and month
 Species
 Dam ID number
 Genotype of dam
 Date of parturition (day, month, year)
 Ewe weight at parturition
 Number of offspring born
 Lamb data:
 viability
 weight at birth
 date of weaning
 weight at weaning
 Lamb data:
 viability
 weight at birth
 date of weaning
 weight at weaning
 Lamb data:
 viability
 weight at birth
 date of weaning
 weight at weaning
 Wool data:
 Grease fleece weight
 Staple length
 Classification score
 Ewe disposition date
 Reason code

2. EWE BREEDING RECORD

Station
 Species
 Genotype
 Ewe ID number
 Primary breeding season (day, month, year)
 six columns for data entry (0=not bred; 1=bred)
 Secondary breeding season (day, month, year)
 six columns for data entry (0=not bred; 1=bred)

3. EWE BODY WEIGHTS

Station
Genotype
Species
Ewe ID number
Year
Day, Month, Weight (repeat 13 times)

4. EWE MILK PRODUCTION

Station
Genotype
Species
Ewe ID number
Year
Day, Month of test, Quantity of milk (repeat 8 times)

5. LAMB WEIGHT GAIN RECORDS

Station
Genotype
Species
Lamb ID Number
Dam ID number
 (birth date and weight at birth - get from ewe record)
Year
Number of lambs born*
Sex
Weaning weight
Day, Month (pre-weaning weighing), weight (repeat 8 times)
Day, Month (post-weaning weighing), weight (repeat 8 times)
Disposition date
Reason code

*in ewe record, but easier to include here.

6. RAM RECORDS

Since there are few rams at each station, it is suggested that for the present these records be analyzed separately.

Preliminary Data Analysis

It is anticipated that a minimum of the following production indices will be generated from the data entries from each of the participating stations.

1. EWE PRODUCTIVITY RECORD

Analyze by station and breed:

a. age at weaning (date of weaning - date of birth)

b. age-corrected weaning weight

$$= \frac{\text{weaning weight} - \text{birth weight}}{\text{age at weaning}} \times 25$$

c. fertility rate = $\frac{\text{number of ewes lambing}}{\text{number of ewes exposed}} \times 100$

d. lambing percentage = $\frac{\text{lambs born}}{\text{ewes lambing}} \times 100$

or

$$= \frac{\text{lambs born}}{\text{ewes exposed}} \times 100$$

e. Average grease wool yield

f. Average staple length

g. Average classification score of wool

h. Ewe index (to be formulated after initial data collection is complete).

2. EWE BREEDING INDEX

a. % ewes marked 1st wk = $\frac{\text{ewes marked 1st wk}}{\text{ewes exposed}} \times 100$

b. % ewes marked 2nd wk = $\frac{\text{ewes marked 2nd wk}}{\text{ewes exposed}} \times 100$

c. % ewes marked 3rd wk = $\frac{\text{ewes marked 3rd wk}}{\text{ewes exposed}} \times 100$

d. - f. etc. for 4th - 6th week

g. also calculate $\frac{\text{ewes lambing}}{\text{ewes marked}}$

3. EWE BODY WEIGHTS

Average body weights at four week intervals throughout the year will be calculated.

4. EWE MILK PRODUCTION

Average milk production at four week intervals during the entire milk collection interval will be calculated.

5. LAMB WEIGHT GAIN RECORDS

Calculate average weight gain for two week intervals from birth through weaning.

Calculate averaged weight gain at two week intervals from weaning through one year of age.

ATTACHMENT 6

Cooperation and cooperation related activities being carried out that relate to the National Sheep and Goat Improvement Program.

The objectives of the National Sheep and Goat Improvement Program are wide in scope, and necessarily will involve active participation of many people and organizations both within the Portuguese government and with the private sector. This includes different agencies of the MAFA, as well as other ministries (such as Education). We recognize that formal understandings and commitments of agencies and people not directly responsible to the DGP are probably not possible. Yet we have seen evidence of cooperation among many agencies and people with the National Sheep and Goat Improvement Program. It will be an objective of the consultancy to continue to foster increased cooperation of this nature over the next three years (1984 - 1987). Some examples of cooperation which will need added emphasis in the future:

1. EZN. As the only research institute charged with small ruminant research, this institution will play an important role in providing research answers to the National Sheep and Goat Improvement Program (NSGIP). Their excellent facilities and staff are uniquely capable of providing quick and practical answers to many production problems as they arise. It is anticipated that through continued contact with the NSGIP, many producer problems can be brought to the attention of the researchers for solutions. Thus, we feel this cooperation can and will continue since it is mutually beneficial.
2. Both the UE and IUTAD are actively seeking means to cooperate with PROCALFER and the NSGIP. Besides their obvious role of providing trained people to work at the stations (i.e. the excellent assistance provided that Basic Management and Breed Evaluations Programs in Aboboda and Paul were "estagiarios" of these universities), the universities can provide research results and post-graduate training. The NSGIP should continue to foster this cooperation, and expand it, particularly in regards to getting the Veterinary School and Agricultural University, Faculdade de Agronomia, involved in health and disease related research problems.
3. JNPP. The marketing board that sets many of the policies and prices for agricultural products has cooperated with NSGIP on relevant aspects of production and marketing.



4. Private Sector. Seome excellent cooperation has come from the private sector in Portugal. This is particularly true in the case of the Basic Management and Breed Evlauation Program in Alcacer do Sal. A privately-owned flock has participated fully in this program, to the benefit of the NSGIP and the flock owner. It is felt that this is a particularly significant type of co-operation for the NSGIP. Ultimately, any increase in sheep and goat production wil have to come from cooperation with the private sector producers. To be involved with such a successful cooperative venture from the outset has been a strong-point of the NSGIP, and offers evidence that what is being done is of practical significance to the small ruminant producers of Portugal.

5. Cooperation with Regional Directions. The cooperation between the DGP and the livestock stations in the Regional Directions in the conduct of the NSGIP is excellent. Personnel, animals and facilities of the various regions are being used in the conduct of the Basic Management and Breed Evaluation Program. Financial assistance for the construction of sheep handling areas was provided/obtained primarily through the DGP. Training programs, periodic NSGIP meetings, field days and other activities have all been supported equally by the DGP and the respective Regional Direction.

Schedule of Major Meetings.

October 3, 1984 - Lisbon

Review scope of work for consultancy implementation, time schedule.

Dr. Carlos Fontes, General Director, DGP, MAFA

Dr. Luis Gama, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 3, 1984 - Lisbon

Review scope of work, implementation and time schedule.

Dr. Phillip Warnken, Team Leader, OICD/USDA, Portugal

Mr. James Black, Coordinator, OICD/USDA, Portugal

Mr. Corwin Edwards, Coordinator, OICD/USDA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 4, 1984 - Lisbon

Scope of work, review of consultancy program.

Eng. Jose Almeida Alves, Chairman, Coordinating Group,
PROCALFER

Dr. Phillip Warnken, Team Leader, OICD/USDA, PROCALFER

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 8, 1984 - Castelo Branco

Review and evaluate program at Castelo Branco.

Dr. Joao Pinto, Sub. Director, Regional Direction, Castelo Branco, MAFA

Dr. Graca Dias, Regional Direction, Castelo Branco, MAFA

Eng. Alfredo Mota, Regional PROCALFER Coordinator, Regional Direction, Castelo Branco, MAFA

Dr. Filomena Cortes, Regional Direction, Castelo Branco, MAFA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 9, 1984 - Castelo Branco

Planning of sheep and goat program at Castelo Branco.

Eng. Luis Pires, Regional Director, Regional Direction, MAFA

Dr. Joao Pinto, Sub. Director, Regional Direction, Castelo Branco, MAFA

Dr. Graca Dias, Regional Direction, Castelo Branco, MAFA

Eng. Alfredo Mota, Regional PROCALFER Coordinator, Regional Direction, Castelo Branco, MAFA

Dr. Filomena Corte, Regional Direction, Castelo Branco, MAFA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 9, 1984 - Castelo Branco

Review of facilities and programs at Costela Branco Superior School.

Dr. Pinto de Andrade, Director, Superior School at Castelo Branco

Prof. Jose Delgado Domingos, Sheep Producer

Eng. Carlos Andrade, Instructor in Sheep Production, Castelo Branco Superior School

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 10, 1974 - Mirandela

Review and evaluate program and identify areas of potential cooperation with IUTAD.

Eng. Augusto Lajes, Regional PROCALFER Coordinator, Regional Direction, Mirandela, MAFA

Eng. Maria Antonio da Cruz, Regional Direction, Mirandela, MAFA

Eng. Sacramento Lopes, Regional Direction, Mirandela, MAFA

Dr. Ovidio Rodrigues, Macedo Regional Station, Regional Direction, Macedo, MAFA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 11, 1984 - Vila Real

Review areas of cooperation for IUTAD, Regional Direction and PROCALFER.

Prof. Eduardo Real, Rector IUTAD

Dr. Ovidio Rodrigues, Macedo Station, Regional Direction, Macedo, MAFA

Dr. Lima Pereira, IUTAD

Eng. Arnaldo Dias da Silva, IUTAD

Dr. Jose Potes, IUTAD

Eng. Jorge Azevedo, IUTAD

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 15, 1984 - Lisbon

Review computer requirements for National Sheep and Goat Program.

Dr. Tommye Cooper, Computer Specialist, OICD/USDA, Consultant

Mr. James Black, Coordinator, OICD/USDA, PROCALFER

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 15, 1984 - Lisbon

Review of potential cooperation among PROCALFER, Regional Direction and the University of Evora.

Dr. Nuno Potes, Head, Zootechnia Department, Univ. of Evora

Dr. Jose Tirapicos Nunes, Assistant Head, Zootechnia Department, Univ. of Evora

Prof. Jose Avo, Member, Zootechnia Department, Univ. of Evora

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 16, 1984 - Fonte Boa (National Zootechnia Station, EZN)

Review research programs in the Sheep Department and discuss training needs of members of the department.

Dr. Cabral Calhieres, Head, Sheep Department, EZN

Eng. Carlos Carmona Belo, Member, Sheep Department, EZN

Eng. Ana Teresa Castro, Pereira, Member, Sheep Department, EZN

Eng. Ana Leite Salvador, Member, Sheep Department, EZN

Eng. Jose Manuel Bento Santos Silva, Member, Sheep Department, EZN

Dr. Jose Manuel Fernandes Ribeiro, Member, Sheep Department, EZN

Eng. Manuel Roberto, Member, Sheep Department, EZN

Eng. Maria Jose Teodoro, Member, Sheep Department, EZN

Dr. Warren C. Foote, Sheep and Goat Consultancy

October 16, 1984 - Oieras

Discuss possible training programs for "Tarefeiros".

Dr. Phillip Warnken, Team Leader, OICD/USDA, PROCALFER

Ms. Linda Lynch, Training Officer, OICD/USDA, PROCALFER

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 22, 1984 - Lisbon

Demonstration of Wang microcomputer and software.

Dr. Tommye Cooper, Computer Expert, OICD/USDA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Ms. Paula Pereira, OICD/USDA, PROCALFER

Ms. Christina Peioto, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

Dr. Carl L. Hausler, Sheep and Goat Consultancy

October 24, 1984 - Evora

Review National Sheep and Goat Improvement Program and areas for cooperation with University of Evora and Regional Direction.

Dr. Azevado, Rector, University of Evora

Dr. Jose Tirapicos Nunes, Assist. Department Head, Zootechnia Department, Univ. of Evora

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

October 24, 1984 - Evora

Review of National Sheep and Goat Improvement Program and areas for cooperation with the University of Evora, PROCALFER, and the Regional Direction.

Eng. Joaquim Pires Costa, PROCALFER Regional Coordinator, Regional Direction, MAFA

Dr. J.L. Verdoso Fernandes, Chief, Animal Production Division, Regional Direction, MAFA

Eng. Ana Camarate de Campos, Animal Production Division, Regional Direction, MAFA

Dr. Nuno Potes, Head, Zootechnia Dept., Univ. of Evora

Dr. Jose Tirapicos Nunes, Asst. Head, Zootechnia Dept., Univ. of Evora

Prof. Jose Avo, Zootechnia Dept., Univ. of Evora

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy.

October 25, 1984 - Evora

Review of research in Zootechnia Dept., University of Evora and areas of cooperation.

Dr. Nuno Potes, Head, Zootechnia Dept., Univ. of Evora

Dr. Jose Tirapicos Nunes, Reproduction, Zootechnia Dept., Univ. of Evora

Prof. Jose J. Avo, Ovinotecnia, Zootechnia Dept., Univ. of Evora

Prof. Manuel D'Orey Cancela Abreu, Nutrition, Zootechnia Dept., Univ. of Evora

Prof. Jose Antunes Afonso de Almeida, Nutrition, Zootecnia Dept., Univ. of Evora

Prof. Ofelia Pereira Bento, Nutrition, Zootecnia Dept., Univ. of Evora

Prof. Carlos Jose dos Reis Roquete, Bovinotecnia, Zootecnia Dept., Univ. of Evora

Prof. Luis Domingues dos Santos Fernandes, Zootecnia Dept. Univ. of Evora

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

October 29, 1984 - Lisbon

Review of programs at EZN, Fonte Boa and potential training programs and cooperation.

Dr. Apolinario Vaz Portugal, Director EZN, INAER, MAFA

Dr. Warren C. Foote, Sheep and Goat Consultancy

October 29-30, 1984 - Lisbon

Annual meeting of the National Sheep and Goat Improvement Program.

Dr. Texiera de Sa	DGP (Extension)
Eng. Jose Lopes Castro	Alter do Chao
Dr. Jose Marcelino Tavares	Alter do Chao
Dr. Renata P. de Silva Carolino	Alcacer do Sal
Dr. Graca Ferreira Dias	Costelo Branco
Dr. Pedro Simoes	Venda Nova
Dr. Luis Filipe Potes	Venda Nova
Dr. Ovidio Nelson Rodrigues	Macedo de Cavleiros
Luis Aires Mateus	DRAA/Algarue
Mario Costa	DRAA/Algarue

Dr. Edgar Correa	DRAA/Algarue
Dr. Henriques Sales Henriques	DRARO
Eng. Manuel Sacramento Lopes	DRTM/Mirandela
Dr. Jose Luis Cabral de Alveida	DRBL/Tondela
Dr. Antonio Jose Bettencourt	Aboboda
Dr. Carlos Manuel Bettencourt	Aboboda
Eng. Maria Antonio Martins de Cruz	DRTM/Mirandela
Eng. Claudino Matos	Aboboda
Dr. Marcelino Sabral	DGP
Dr. Luis Telo da Gama	DGP
Dr. Carl L Hausler	Consultant
Dr. Warren C. Foote	Consultant
Dr. Jerome Maner	PROCALFER Eval. Team (2nd day)
Dr. Phillip Warnken	PROCALFER OICD Team (about 1 hr 2nd day)

October 29, 1984 - Lisbon

Discuss estrus and ovulation study as component of the National Sheep and Goat Development Program.

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Antonio Jose Bettencourt, Director Aboboda Station, Alentejo Regional Direction, MAFA

Dr. Carlos Bettencourt, Aboboda Station, Alentejo Regional Direction, MAFA

Dr. Pedro Simoes, National Animal Reproduction and Artificial Insemination Station, DGP, MAFA

Dr. Luis Potes, National Animal Reproduction and Artificial Insemination Station, DGP, MAFA

Dr. Warren Foote, Sheep and Goat Consultancy

Dr. Carl Hausler, Sheep and Goat Consultancy

October 31, 1984 - Lisbon

Report on consultancy, general recommendations, exit meeting.

Dr. Carlos Fontes, Director General, DGP, MAFA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren Foote, Sheep and Goat Consultancy

Dr. Carl Hausler, Sheep and Goat Consultancy

October 31, 1984 - Oieras

Report on consultancy, general recommendations, exit meeting.

Eng. Jose Almeida Alves, Chairman, Coordinating Group, PROCALFER

Dr. Phillip Warnken, Leader, OICD/USDA, PROCALFER

Dr. Warren Foote, Sheep and Goat Consultancy

Dr. Carl Hausler, Sheep and Goat Consultancy

October 31, 1984 - Oieras

Review of training programs for the National Sheep and Goat Improvement Program.

Ms. Linda Lynch, Training Officer, OICD/USDA, PROCALFER

Ms. Isabel Bravo, Training Officer, PROCALFER

Dr. Warren Foote, Sheep and Goat Consultancy

Dr. Carl Hausler, Sheep and Goat Consultancy

November 1, 1984 - Oieras

Report of National Sheep and Goat Improvement Program to the PROCALFER Evaluation Team.

Dr. Phillip Warnken, Leader OICD/USDA, PROCALFER Members
PROCALFER Evaluation Team

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Warren Foote, Sheep and Goat Consultancy

November 1, 1984 - Alcacer do Sal

Review of National Sheep and Goat improvement Program.

Dr. Carlos Fontes, Director General, DGP, MAFA

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Dr. Renato Caralino, Alcacer do Sal

Dr. Jerome Maner, PROCALFER Evaluation Team Member, Live-stock

Dr. Warren Foote, Sheep and Goat Consultancy

November 6, 1984 - Lisbon

Discussion of training program for Sheep Department members, EZN (Fonte Boa), INAER.

Dr. Luis Gama, Sheep and Goat Program, DGP, MAFA

Eng. Carlos Carmona Belo, Sheep Department, EZN, INAER, MAFA

Dr. Warren Foote, Sheep and Goat Consultancy