

PN-000-696

**SMALL RUMINANT
COLLABORATIVE RESEARCH
SUPPORT PROGRAM**

SUMMARY OF ACCOMPLISHMENTS

year four

SR - CRSP
university of california - davis

**SMALL RUMINANT CRSP
PROGRESS REPORT
1978-1982**

**Summary of Accomplishments
Year Four**

Prepared by the Management Entity

The Small Ruminant CRSP (SR-CRSP) is now entering the beginning of its fourth fiscal year. This CRSP was the first, and therefore undertook much of the pioneering work associated with development and implementation of this new idea. At the time we took the CRSP over, there was an incredible amount of groundwork to be done in establishing foreign worksites and educating our many constituencies about the concept of Title XII in general, and CRSPs in particular.

THE CONCEPT OF THE CRSPs

The US, as the world's largest generator of surplus food, has provided aid to millions of hunger victims. Abundant harvests in the US have been widely distributed in acute disaster relief programs and on a regular basis to food deficient nations. It has become apparent, however, especially in the last forty years as the world's population burgeons, that supplying the hungry world with food through distribution of surpluses in no permanent way alters the cycle of poverty and deprivation in the less developed countries (LDCs). Improving the capability of these areas to supply their own food needs is the only real long-term solution to the problem. Recently, to promote this goal, the US Congress passed The International Development and Food Assistance Act of 1975.

Included in the act was Title XII - Famine Prevention and Freedom from Hunger, which states, "... in order to prevent famine and establish freedom from hunger, the US should strengthen the capacities of US land grant ... universities in program-related agricultural institution development and research... improve their participation in the US government's international efforts to apply more effective agricultural sciences to the goal of increasing world food production and in general should supply increased and longer term support to the application of science to solving food and nutrition problems of the developing countries."

The act also specified that USAID administer and fund Title XII with money from their existing budget and authorized the President to create the Board of International Food and Agricultural Development (BIFAD) to initiate implementation of the act. BIFAD appointed the Joint Research Committee (JRC) to oversee the research-related aspects of Title XII. It was their recommendation that Title XII-sponsored research be implemented through Collaborative Research Support Programs (CRSPs). Among their suggested topics was small ruminants.

WHY A SMALL RUMINANT CRSP?

Forty percent of the world's sheep and 77 percent of the world's goats are located in the LDC's. They are owned primarily by small pastoralists and farmers of very limited means. Despite their low production, these animals significantly contribute to the economy and food supply in these regions and demand for their products exceeds the supply.

Improving the performance of small ruminants would directly improve the diet and standard of living of a great many people because the animals are inherently well suited to the needs of smallholders and the conditions prevailing in the LDC's. For example, they:

- Have low initial and maintenance costs
- Are able to use marginal land and crop residues
- Produce milk and meat in small, readily usable quantities
- Produce fiber and skins which sustain cottage industries
- Are easily cared for by any member of the family

THE ORGANIZATION OF THE SR-CRSP

- THE MANAGEMENT ENTITY (ME).

Seventeen research proposals were selected to embark upon the first CRSP and UCD, one of the participating institutions, was designated the Management Entity (ME). A Program Director was appointed, and three committees, each of which play a distinct role in the function of the SR-CRSP, were established.

- THE TECHNICAL COMMITTEE (TC) is an executive committee of the CRSP which develops and implements research projects in the US and overseas. It consists of each Principal Investigator.

- THE BOARD OF INSTITUTIONAL REPRESENTATIVES (BIR) is an executive committee of budget and policy. It consists of representatives from the administrations of the participating institutions.

- THE EXTERNAL EVALUATION PANEL (EEP) is an advisory committee of the CRSP responsible for review and evaluation of CRSP research activities and progress. It consists of a multidisciplinary group of eminent scientists from institutions not participating in the CRSP.

- THE OVERSEAS COUNTERPARTS.

Overseas counterparts at the level of higher administration and at the scientific levels have made regular attendance and inputs to the Technical Committee and joint TC/Board meetings. In country, there are, in some cases, Program Administration Committees (PAC) in which Ministry, University and International Agency inputs are made to the SR-CRSP.

SR-CRSP BUDGET

Funds for the SR-CRSP have been committed by AID under the terms of Grant No. AID/DSAN/XII-G-0049 which requires a minimum cost sharing contribution of 25 percent from the participating US institutions. The terms of the grant are favorable for a research program, always a long term venture, providing a two year funding horizon and five year planning horizon for participants. The SR-CRSP budget for the initial five year funding period is 15 million US dollars. The overseas collaborators have contributed well over \$1 million per year towards the SR-CRSP activities. The SR-CRSP has also received an extension for three years with provision by USAID of \$12 million, subject to appropriate matching.

SR-CRSP OVERSEAS WORKSITES

The group of people towards whom the activities of SR-CRSP are directed are the limited resource producers in the LDC's such as smallholders and nomadic husbandmen. The problems unique to their situation make research overseas not only appropriate, but essential if meaningful progress is to be made in improving small ruminant productivity under these conditions. Because the overseas research component of the CRSP was considered the cornerstone of the project, great care was taken to select appropriate overseas worksites which meet the following criteria:

- The sites are representative of the various ecozones and production systems encountered in the tropics. The applicability of CRSP findings should extend beyond the borders of any nation in which the research was conducted and be useful in other areas of similar climate and topography.

- The countries in which the sites are located have established agricultural institutions, staffed by scientists, trained personnel, and students with whom the CRSP investigators have an opportunity to collaborate. These institutions also provide the extension links which are pivotal to the implementation of CRSP findings. The current overseas and collaborating institutions are:
 - Brazil: EMBRAPA
 - Peru: INIPA
 - Indonesia: AARD
 - Kenya: MINISTRY OF AGRICULTURE
 - Morocco: HASSAN II UNIVERSITY

SR-CRSP RESEARCH PROJECTS AND GOALS

The individual projects were designed to help alleviate some of the major problems which severely hinder small ruminant productivity in the LDC's.

<u>PROBLEM AREA</u>	<u>RESEARCH AREA</u>
Inadequate year-round feed supply	Nutrition and Feeding
Improper grazing practices	Range Management
Poor reproductive performance	Research on reproduction in the male and female
Non-selective breeding	Genetic improvement of local breeds and crossbreds
Disease-Parasitism	Animal Health
Sub-optimum utilization of available resources	Management
Cultural constraints and lack of capital	Socio-Economic Research
Lack of coordination and integration in improvement efforts	Systems Research

The long range goal of the SR-CRSP is to increase the production efficiency of meat, milk, and fiber by sheep and goats in order to increase the food supply and raise the income of the smallholder. The program will expand the body of knowledge and increase the level of competence of US and LDC scientists to conduct research on small

ruminants in smallholder production systems. This will facilitate the development and testing of appropriate technology and practices to improve small ruminant performance in developing countries.

SUMMARY OF ACCOMPLISHMENTS

Everyone associated with the CRSP both in the USA and overseas should take pride in the fact that in three years, the CRSP has accomplished so much. In summary:

- The five important units of the CRSP have all settled down to an excellent working relationship:
 - The Management Entity
 - The Technical Committee
 - The Board of Institutional Representatives
 - The External Evaluation Panel
 - The Overseas Counterparts

Their work has been thoroughly documented and distributed to all our constituencies.

- We have established Memoranda of Understanding or Initial Agreements with all five of our original target countries where work is now underway: Indonesia, Kenya, Morocco, Brazil and Peru. Excellent working relationships have been established with senior administrators and scientists in each country.
- More than two thirds of the approximately \$15,000,000 of USAID funds have been distributed to participating institutions via subgrants and contracts issued from the University of California at Davis acting as the Management Entity.
- US institutions have matched USAID funds at a rate over 60% according to an independent audit of all the participating institutions.
- Overseas governments have matched USAID funds at a rate of approximately 15% in total - a very significant contribution to the CRSP.

- US technicians have travelled overseas to provide specialized training in analytical procedures and facility development. Four overseas counterpart researchers have studied in the US in short term, intensive instruction in advanced techniques.
- We have been used, primarily, as a scientific resource for our overseas colleagues. In spite of the many comments made about numerous short term trips by US scientists (many of which were inevitable to set up programs), it is true to say that probably the greatest single need, identified by overseas colleagues, has been that of high level technical input from US Principal Investigators to help design long range plans for scientific research.
- We have sponsored over 50 trips to the USA of foreign counterparts for training. These have included travel to undertake degree work for short term training, and for technical and administrative purposes.
- We have completed the first comprehensive audit of the entire SR-CRSP by an independent auditor and the result was excellent. There were absolutely no problems resulting from the audit.
- The CRSP has been publicized through a fold-out flyer, a comprehensive paper, eight newsletters, a six volume Integrated Program Plan, two Annual Reports with complete budget reporting, and a descriptive brochure, all available from the Management Entity Office in Davis.
- One of the most rewarding accomplishments of the CRSP has been the linkages we have been able to provide among institutions, projects and departments overseas. These have included joint work with institutions that have had little contact with each other for decades, until the CRSP came along.
- Teaching and research at US institutions has materially changed as a result of the SR-CRSP. New courses, improved facilities, short courses and campus-wide interest have all been generated to a substantial degree. Moreover, the activities of the SR-CRSP have been made public at the national scientific meetings of scientists and producers alike so benefits accruing to the USA from this program can be quickly understood and implemented.

- The Management Entity Office has been an extremely busy place and functioned with a small staff and a relatively very small budget. It has been a clearing house for literally hundreds of inquiries, and the administrative costs of the ME Office itself have been less than 7% of the CRSP budget.
- The Management Entity has attempted to be not only fiscally accountable, but to be realistic in equating dollars awarded with performance. Five of the thirteen institutions have been targeted for budget cuts or termination by the ME based on either EEP recommendations or those of foreign counterparts. This has naturally led to conflict and stress at times--but also perhaps to a better SR-CRSP program in the long run because all have survived the resulting intense scrutiny of their modified program. Two subgrants have been terminated completely.
- Site development overseas has been very significant. CRSP resources have been used as seed money--the catalyst that has inspired substantial investment from local governments. Many lasting facilities are in place that would not have been had the SR-CRSP not collaborated with particular counterparts.
- Several seminars, workshops, and short courses have been undertaken overseas including three in Peru, one in Kenya, one in Indonesia and two in Brazil. CRSP scientists were also much in evidence at the III International Conference on Goat Production and Disease in Tucson, Arizona, January 1982, where more than 20% of the papers presented were by CRSP-sponsored scientists.
- Perhaps most significantly, it has been particularly exciting to see that the SR-CRSP has focused on the needs of the smallholder or limited resource farmer. In Indonesia and Kenya, almost all the effort has been conducted in baseline survey work at the village level in every discipline, backed up by relevant research programs at regional research centers. In Peru almost all the work has concentrated in the Central and Southern High Sierra working with cooperatives formed after land reform or with ethnic groups in isolated villages; and in Brazil the new CRSP has dove-tailed well into EMBRAPA's newly established Sheep and Goat Research Center.

- It is already evident that the benefits to the United States sheep and goat industry are potentially enormous. Just one example is that US scientists have achieved direct "hands on" experience with the world's most prolific breeds of sheep (which all exist outside the US) and with animals characterized by resistance to disease and parasitism which could provide a fundamental understanding of the mechanisms involved and application in the US. Thus a program directed at the small practical producer in the LDC's may yet prove to have far reaching repercussions in our own industry in the USA.

Attached to this paper is an update of the training and outputs of the CRSP. Briefly stated, our accomplishments fall into three categories, namely, research, training and public service - the things that Universities do best.

- With respect to research, the CRSP scientists, both US and foreign have generated some 223 research reports, papers, abstracts or journal articles - all of which are listed by title and author in attached documents. It has been particularly gratifying to see that although the United States is not a leading center for goat research, nor has the CRSP been functioning for very long, CRSP scientists contributed approximately 20% of the research papers to the Third International Goat Conference held in Tucson in January 1982.
- With respect to training, the Small Ruminant CRSP can point to over 312 scientists who have received training in the following categories:

Overseas students in degree training in the USA

Overseas students in degree training at home

US students in degree training overseas

US students in degree training in the USA

Overseas students on non-degree training in the USA

Overseas students trained in CRSP sponsored short courses

Overseas professional and administrative visits to the USA

- This CRSP can also point to the placement overseas of highly qualified scientists on a long term basis as follows:

Brazil	14
Peru	13
Indonesia	6
Kenya	15
Morocco	2

The names and locations of these individuals are appended to this report.

- With respect to public service, this CRSP has undertaken public service which is always harder to define and categorize. I would draw your attention to just four or five examples.

1. Solution of the CAE disease problem in Kenya.

Some time ago, perhaps as far back as 1976, CAE disease was introduced into Kenya via shipments from Europe and the USA by other bilateral programs and the disease went unnoticed. CRSP scientists, on arrival in Kenya, were quick to spot the disease, diagnose it as CAE, initiate widespread testing and propose complete control and eradication measures that have now been taken. It is no exaggeration to say that this alone, although it will never appear as a research paper, book or other visible contribution, may have justified the expenditure of the entire \$15,000,000 invested in the CRSP.

2. Institution building programs.

It has been the philosophy of this CRSP to undertake administrative institution building efforts to allow our overseas colleagues to truly manage their own CRSP component of the program. Thus, while we initially began with approximately 0.70% FTE of expatriate administrative input per site, we are now down to less than 0.20% FTE per site. In the interim, we have provided support by facilities development and training local staff with a high degree of competence to interact not only with the CRSP, but other international agencies.

3. The CRSP has undertaken a large number of workshops and an even larger effort in on-the-job training which does not show in public view. For example, simple advances have been made in such areas as construction of facilities, improved management techniques, identification of disease and support for highly practical applications of US technology. Also, the CRSP has been a major sponsor in financial terms and in contributions to International Symposia and has maximized the participation of overseas participants in these colloquia.
 4. The CRSP has taken some major initiatives as new opportunities for advancement have presented themselves. One example is a major workshop on "Prolific Sheep" which has drawn together the world's leading scientists and led to new collaborative research in Egypt and Morocco by scientists within the CRSP as well as scientists who have nothing to do with the CRSP. Next year, the CRSP hopes to sponsor a major workshop on Prolific Sheep and we already have a publisher willing to market the proceedings in hard back form free of charge.
 5. The Small Ruminant CRSP has also attracted very substantial resources, not only from matching money provided by participating institutions, but by other Bureaus in USAID and particularly overseas governments which easily match the CRSP dollar for dollar on funds placed overseas. Thus the main grant upon which the SR-CRSP is now based provides less than 50% of the total resources expended.
- Finally, although the SR-CRSP has accomplished much, it is not perfect. Few programs are. There have been complex and difficult problems to surmount and many still exist. The CRSP has struggled to restructure itself, to account for the sensitivity of overseas missions not to mention governments, and it has tried to be accountable in equating the output from institutions with the input of funds. It has tried to be responsive to the pressures from the highest levels of administration and implement many of the changes required by a new administration. Many of the specific problems faced are addressed in previously circulated documents, but here I wish to draw attention to some outstanding ways in which the CRSP has been served lately. These are:

1. By senior administrators in our collaborating countries who have exerted pressure to change the CRSP into a form best suited to meet their needs. These are: Dr. Chema (Kenya), Dr. Valverde (Peru), Dr. Carlos (Brazil), Dr. Nari (Indonesia), and Dr. Firdawcy (Morocco).
2. By our Project Officer and senior administrators in USAID, who, following the funding hiatus in USAID over the past three years, have really come to grips with the fiscal problems of this CRSP and problems associated with Mission relations overseas. Dr. Haines, Dr. Butchart and Dr. Robins deserve our special thanks. Also, the staff at BIFAD, and Dr. Elmer Kiehl in particular, who have worked hard to keep the dialogue between USAID and universities going.
3. By an outstanding External Evaluation Panel (EEP) that has done an exhaustive, thorough and professional job in evaluating the CRSP program and recommending changes which the Management Entity has vigorously enforced. The Small Ruminant CRSP has been fortunate indeed in acquiring the services of an EEP consisting of world class experts in their field, who, apart from their role as evaluators, have no other association with the CRSP. These people are:
 - Dr. Art Pope, University of Wisconsin, Department Chairman for 17 years and an internationally recognized expert in sheep husbandry and nutrition. He was recently honored by the American Sheep Producers Council as recipient of the Silver Ram Award for research and extension.
 - Dr. Jan Rendel, previously Chief of the FAO Livestock Division in Rome, and now Chairman of the Department of Animal Breeding and Genetics, Swedish University of Agricultural Sciences. Dr. Rendel is an internationally recognized geneticist, has written a text in Animal Breeding.
 - Dr. Robert McDowell, Cornell University, Professor of International Agriculture, has written the text on Tropical Animal Husbandry, is currently Chairman of the Board at ILCA and is internationally recognized for his work in tropical animal agriculture.

- Dr. William Moulton, recently retired after long service in the Veterinary Division of USDA and more recently, International Programs, has had extensive overseas service in several countries.
- Dr. Saul Fernandez-Baca, Facultad de Medicina, Veterinaria y Zootecnica, UNAM Ciudad Universitaria, Mexico, is an international expert in reproductive physiology. A native Peruvian, he was responsible for the early development of IVITA at San Marcos University in Lima and currently serves as leader of a FAO program in Mexico.

This Panel has been the single greatest influence in facilitating the changes, modifications, and budget allocations proposed to the CRSP Board by the Management Entity and their opinion has been invaluable. It is an important step that they have been invited to make a presentation to the JRC at its last meeting.

PROBLEMS ENCOUNTERED BY THE SR-CRSP

It is hardly surprising that a brand new venture like a CRSP would encounter new problems and difficulties. To pretend they do not exist is to jeopardise their possible solution. The greatest difficulties encountered in managing CRSPs stem from the following.

1. Background Preparation for Title XII

- At the time UCD accepted the role of Management Entity, there was absolutely no overseas planning in place. The CRSP team had to wait one year and undertake this task itself.
- The overseas planning was done in full collaboration with USAID who had a representative on each team that visited Asia, Africa, Latin America and the Near East.
- USAID missions overseas were almost completely unaware of what Title XII was supposed to be or do. Reaction varied from cautious optimism to outright hostility, generally reflecting the same attitudes in Washington DC.

2. Changing Personnel in USAID Posts

- The CRSP now has its fifth Project Officer in 3 years in Washington.
- The Mission Director in every country we work with has changed since the inception of the CRSP and so have many of the staff.
- Of the 21 people we interacted with in USAID to place the CRSP overseas and draft the contract, only one of these people is still at the same post.

3. Changing Moods of USAID Missions

Not only have staff changes taken place, but the whole attitude of USAID missions has gone through cycles that have made work difficult.

- Indonesia and Peru represent highly professional missions that have been greatly helpful. One of the programs has been successful (Peru) and the other has had difficulties (Indonesia) but the missions have remained faithfully helpful. Both represent missions in which few staff changes have taken place.
- In Kenya, the mood changed from welcome to unwelcome in the initial stages, later changed to warm welcome, then fell away to something less than warmth.
- In Morocco, the mood was obstructive at first and led to a 3 year delay in implementation. Staff changes took place and suddenly Morocco has become the most helpful of all missions and the program is running apace.

4. Changes in Overseas Governments and Organizations

Every single country in which we work has gone through a major governmental reorganization.

- Kenya - After a national election, a brand new Ministry, the Ministry of Livestock Development (MLD), was formed. The CRSP signed its MOU with the Ministry of Agriculture but had to change partners in mid-stream.

- Indonesia - The AARD completely reorganized its Animal Husbandry structure. LPP, our collaborating institute, was incorporated into the BPT with a 3 institute consortium and all our counterparts were lost to new administrative duties.
- Peru - INIA, with whom we signed the MOU, was changed to INIPA, assuming new and wider responsibilities. It changed offices and the CRSP lost its physical headquarters at INIA.
- Brazil - The Sheep and Goat Research Laboratory moved its location into a new site and a new Director of the laboratory has just been appointed.

5. The Financial Crisis within USAID

- USAID has been on a "continuing resolution" for so long that it has found it hard to meet its fiscal obligations and long term financial planning.
- The University is now more than \$4 million behind in money supposed to be obligated by USAID according to the originally envisaged 2 year funding horizon.

6. Lack of a Cost Benefit Analysis of the SR-CRSP

- The SR-CRSP has an External Evaluation Panel of world class experts who have thoroughly and continually reviewed the CRSP at considerable cost. They have rarely been consulted by AID, JRC or BIFAD.
- None of the above groups have ever considered a cost benefit analysis of the CRSP in comparison, say, with bilateral AID contracts, contributions to International Centers etc. Such an analysis may well reveal CRSPs to be the most effective and cost benefit worthy forms of research support ever devised.

7. The Multi-Management Problem

Perhaps the greatest single difficulty is the "fingers in the pie" syndrome whereby everyone perceives they have the right to manage CRSPs. The Missions feel they should dictate, USAID in Washington feels it should, overseas counterparts feel they should, some collaborating institutions feel they should,

and not surprisingly, the Management Entity with whom the contract is signed feels it should! To a degree, all have a valid claim. However, when everyone presses their claim simultaneously, the University experiences a departure from the smooth administration to which it has become accustomed.

At some point, if USAID wishes to maintain the attention and interest of US universities in CRSP management, it will have to "let go of the reins", and allow well established, trustworthy institutions which have sufficient checks and balances built into their own bureaucracies, the freedom to manage these programs properly. Otherwise, the universities will simply lose interest.

In the case of the University of California at Davis, the following facts prevail.

- In spite of our well recognized international reputation, we have never applied competitively for any grant from USAID or other international agencies. Our reputation rests exclusively on the quality of our campus and programs, which have been established for decades.
- Nevertheless, we have been offered and agreed to undertake well over \$50 million worth of current contracts with USAID. These include the management of the first CRSP and the first Host Country Contract under Title XII.

TRAINING - SR-CRSP SPONSORED STUDENTS IN DEGREE PROGRAMS IN US

<u>NAME</u>	<u>PROGRAM</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Aboud, Abdillahi ¹	MS Rural Sociology	Missouri	Fall/79 - 3/82	Kenya
El Aich, Ahmed ²	PhD Range Management	Utah/Range	6/81 - 9/86	Morocco
Artz, Neil	MS Range Management	Utah/Range	6/81 - 3/83	US
Baker, Jerry ³	PhD Animal Breeding	Texas A&M/Systems	9/79 - 12/81	US
Bari, Johnson	MS Veterinary Microbiology	Washington	2/81 - 1/83	Kenya
Berkat, Omar ⁴	PhD Range Science	Utah/Range	10/81 - 7/84	Morocco
Blackburn, Harvey	PhD Animal Breeding	Texas A&M/Systems	9/79 - 1/83	US
Bravo, Walter	MS Reproduction	Utah/Reproduction	1/81 - 6/85	Peru
Brenni, Geanlucca ³	PhD Animal Breeding	Texas A&M/Systems	1/79 - 6/83	Switzerland
Brown, Lynn E.	MS/PhD Animal Nutrition	North Carolina	9/78 - 12/83	US
Burstein, Helaine	PhD Animal Nutrition	North Carolina	Fall/81 - 12/85	US
Castilla, Domingo Martinez ⁵	MS Production Economics	Winrock/Economics	1/81 - 12/82	Peru
Coronado, Luis	MS Animal Breeding	Texas A&M/Systems	1/81 - 8/83	Peru
Drobnis, Erma ³	MS Animal Science	Cal Poly	4/79 - 8/81	US
East, Nancy	MPVM	UC Davis/Health	8/79 - 1/80	US
Ellis, John, DVM	PhD Pathology	Colorado	8/80 - 7/83	US
Farfan, Ramiro ⁶	MS Range Management	Texas Tech	9/80 - 12/82	Peru

¹ Attended Ohio State University; thesis research supported by Missouri

² Attending Colorado State; partial support

³ Partial support

⁴ At Texas A&M, but overseas research supported by Utah

⁵ Attending University of Missouri

⁶ Partially supported by LASPAU

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<u>NAME</u>	<u>PROGRAM</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Fierno, Carlos	PhD Range Science	Texas Tech	1/82 - 12/84	Mexico
Flores, Enrique ⁶	MS Range Management	Utah/Range	Fall/80 - Win/83	Peru
Garcia, Laura ³	MS Animal Science	Cal Poly	Spr/81 - Spr/83	US
Garcia, Omar ³	PhD Genetics	UC Davis/Breeding	9/78 - 8/81	Venezuela
Gathuka, Zachariah ⁷	MS Animal Breeding	Texas A&M/Systems	9/80 - 5/82	Kenya
Gonzalez, Gonzalo ³	PhD Genetics	UC Davis/Breeding	7/80 - 9/82	Uruguay
Gutierrez, Nestor ⁸	PhD Agricultural Economics	Winrock/Economics	10/79 - 1/83	Colombia
Hardesty, Linda Howell	PhD Range Science	Utah/Range	Win/81 - Spr/84	US
Haryanto, Budi	MS Animal Nutrition	North Carolina	1/81 - 1/83	Indonesia
Hawariatt, Girma ³	PhD Animal Breeding	Texas A&M/Systems	9/78 - 12/82	Ethiopia
Howard, Pamela Jo ⁹	MS Marketing	Winrock/Economics	1/81 - 12/81	US
Hussein, Mohamed	MS Range Management	Utah/Range	Win/80 - Win/83	Morocco
Jamtgaard, Keith	MS Rural Sociology	Missouri	1/79 - 12/82	US
Jimenez, Lidia	MS Rural Sociology	Missouri	Fall/81 - Spr/84	Peru
Job, Morgan ¹⁰	PhD Agricultural Economics	Winrock/Economics	6/80 - 12/82	Trinidad/Tobago
Kibuchi, James N. ¹¹	MS Animal Management	Winrock/Management	9/80 - 7/82	Kenya
Kimotho, Judith W. ¹²	MS Animal Science	Cal Poly	8/81 - 6/84	Kenya
Kiriro, Philip	BS Animal Breeding	TAMU/Systems	1/81 - 6/83	Kenya
Kirmse, Robert	PhD Range Management	Utah/Range	Spr/82 - Sum/84	US
Kooyman, David ³	MS Animal Science	Cal Poly	8/82 - 6/84	US

⁷ Partially supported by FAO

⁸ Attended Purdue University

⁹ Attended University of Florida

¹⁰ Attended Purdue University

¹¹ Attended Tuskegee Institute

¹² Partially supported by USDA

<u>NAME</u>	<u>PROGRAM</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Lasslo, Laurel ³	PhD Genetics	UC Davis/Breeding	7/80 - 6/82	US
Luginbuhl, Jean-Marie	MS/PhD Animal Nutrition	North Carolina	6/79 - 1/83	Switzerland
Mandari, Godfrey ¹²	MS Animal Science	Cal Poly	8/80 - 8/82	Tanzania
Mathenge, James	MS Animal Breeding	Texas A&M/Systems	6/80 - 12/81	Kenya
Mbwiria, Stanley	MS Veterinary Physiology	Washington	Spr/81 - 1/83	Kenya
McCorkle, Constance ¹³	PhD Anthropology	Missouri	2/80 - 12/82	US
Mesquita, Roberto	MS Range Management	Utah/Range	Fall/82 - Sum/84	Brazil
Mortimer, Danna Lee ¹⁴	MS Animal Health	Winrock/Economics	9/80 - 5/82	US
Muhuyi, William ¹²	MS Animal Science	Cal Poly	6/80 - 6/82	Kenya
Mukisira, Ephraim ¹⁵	MS Ruminant Nutrition	Winrock/Management	8/82 - 8/84	Kenya
Muljadi, Agus ¹⁶	MS Production Economics	Winrock/Economics	5/81 - 7/83	Indonesia
Mwandotto, Bonfance	PhD Animal Breeding	Texas A&M/Systems	9/81 - 6/84	Kenya
Narjisse, Hamid	PhD Range Management	Utah/Range	8/79 - 5/81	Morocco
Neira, Roberto	PhD Animal Genetics	UC Davis/Breeding	4/81 - 8/82	Chile
Neumaier, Marisa	MS Rural Sociology	Missouri	6/81 - 8/83	Brazil
Njanja, J.	MS Veterinary Parasitology	Washington	Spr/82 - present	Kenya
Noble, Amanda	MS Rural Sociology	Missouri	9/79 - 8/82	US
Nolte, M. Enrique ¹⁷	PhD Animal Science	Ohio/Texas Tech	8/81 - 8/84	Peru
Novoa, Cesar	PhD Reprc. Physiology	Utah/Reproduction	1/81 - 1/85	Peru
Odenya, William ⁷	MS Animal Science	UC Davis/Genetics	3/80 - 6/82	Kenya

¹³ Attended Stanford University; thesis research supported by University of Missouri

¹⁴ Attended Washington State University

¹⁵ Attending Louisiana State University

¹⁶ Attending Texas A&M University

¹⁷ Now being supported by Texas Tech

<u>NAME</u>	<u>PROGRAM</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Okeyo-Mwai, Alfeyo	MS Animal Science	UC Davis/Genetics	9/81 - 6/83	Kenya
Padilla C., Terezinha	PhD Comp. Pathology	UC Davis/Health	1/82 - 1/85	Brazil
Perevolotsky, Avi ¹⁸	PhD Anthropology	Missouri	8/81 - 9/83	Israel
Pfister, James A.	PhD Animal Nutrition	Utah/Range	Fall/79 - Sum/83	US
Queiroz, Joao S. de	PhD Range Management	Utah/Range	Spr/80 - Win/84	Brazil
Ramirez, Antonio	MS Microbiology	Colorado	7/82 - 7/84	Peru
Reiner, Richard	PhD Range Science	Texas Tech	6/82 - 5/85	US
Rotich, Daniel ³	MS Animal Science	Cal Poly	6/82 - 6/85	Kenya
Sands, Michael ¹⁹	PhD Animal Science	Winrock/Management	1/80 - 8/82	US
Silitonga, Sorta ²⁰	MS Animal Nutrition	North Carolina	4/81 - 12/82	Indonesia
Simplicio, Aurino	PhD Repro. Physiology	Utah/Reproduction	8/82 - 8/85	Brazil
Subandriyo ²¹	MS Animal Breeding	UC Davis/Genetics	3/82 - 3/84	Indonesia
Suradisastra, Kedi	MS Rural Sociology	Missouri	1/81 - 1/83	Indonesia
Ubirici, Jose	MS Reproduction	Utah/Reproduction	5/81 - 6/84	Brazil
Valdivia, Corinne ⁵	MS Agricultural Policy	Winrock/Economics	1/81 - 12/83	Peru
Vivanco, H. William	MS Reproduction	Cal Poly	9/81 - 6/83	Peru
Wilcox, Brad	MS Range Management	Texas Tech	1/80 - 12/82	US

¹⁸ Attending University of California, Davis; thesis research supported by University of Missouri
¹⁹ Attended Cornell University
²⁰ Attending University of Minnesota
²¹ Attending Montana State

TRAINING OF OVERSEAS DEGREE CANDIDATES OVERSEAS WITH CRSP SUPPORT

<u>STUDENT</u>	<u>PROGRAM/INSTITUTION</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Aguirre, Lucrecia ¹	Licenciatura University of Cuzco	Missouri	9/81 - 9/82	Peru
Ait Mhannd, Thami	3eme Cycle Range Management Hassan II	Utah/Range	9/82 - 7/83	Morocco
de Assis-Arruda, Francisco	MS Animal Husbandry Federal University of Ceara	North Carolina	1/80 - 12/82	Brazil
Bueno S., Juan	MS Animal Breeding National Agrarian University, Lima	Montana	7/81 - 12/83	Peru
Bueno, Luiz Juan	Ing. Agr. National Agrarian University, Lima	Texas Tech	1/80 - 12/82	Peru
Cabrera, Prospero	MS National Agrarian University, Lima	Montana State	3/80 - 3/83	Peru
Caldas, Willi ¹	BA National Agrarian University, Lima	Missouri	9/81 - 9/82	Peru
Chavez, Diana	Ing. Agr. National Agrarian University, Lima	Montana State	7/81 - 12/83	Peru
Chergaoui, Abdelaziz	3eme Cycle Range Management Hassan II	Utah/Range	9/80 - 3/82	Morocco
de Costa, Odorico	MS Marketing Federal University of Ceara	Winrock/Economics	11/80 - 2/82	Brazil

¹ Support for thesis research only

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<u>STUDENT</u>	<u>PROGRAM/INSTITUTION</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Cruces, Martha	Ing. Agr. Agricultural Economics National Agrarian University, Lima	Winrock/Economics	11/80 - 12/83	Peru
Darfaoui, El Mostafa	3eme Cycle Range Management HASSAN II	Utah/Range	9/81 - 7/82	Morocco
Diaz, Roxana	Ing. Agr. Agricultural Economics National Agrarian University, Lima	Winrock/Economics	11/80 - 9/82	Peru
Escalante, Victor ¹	Licenciatura University of Cuzco	Missouri	9/81 - 9/82	Peru
Gamarra, Jorge	Ing. Agr. National Agrarian University, Lima	Texas Tech	9/80 - 12/83	Peru
Garagay, Gladys	Ing. Agr. National Agrarian University, Lima	Montana	3/82 - 4/83	Peru
Gutierrez, Carlos	DVM San Marcos University, Lima	Texas Tech	1/80 - 5/83	Peru
Harkousse, Mohammed ²	3eme Cycle Range Management HASSAN II	Utah/Range	9/81 - 7/82	Morocco
El Honsali, Mohammed	3eme Cycle Range Management HASSAN II	Utah/Range	9/82 - 7/83	Morocco
Huapaya, Gladys	MS National Agrarian University, Lima	Montana	3/80 - 3/83	Peru
Igmoullan, Ahmed	3eme Cycle Animal Nutrition HASSAN II	North Carolina	10/81 - 7/82	Morocco
Khal, Mohamed	3eme Cycle Animal Nutrition HASSAN II	North Carolina	10/81 - 7/82	Morocco

² Partial support

<u>STUDENT</u>	<u>PROGRAM/INSTITUTION</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Kitivo, Daniel	MS Grassland Science Reading University	CRSP Exchange Funds	8/82 - 12/83	Kenya
Larez, Ivan	Ing. Agr. National Agrarian University, Lima	Texas Tech	6/80 - 12/82	Peru
Llerena, Gorki	Licenciatura Economics and Marketing National Agrarian University, Lima	Winrock/Economics	11/80 - 1/82	Peru
Lopez, Victor	Ing. Agr. National Agrarian University, Lima	Montana	Completed 1981	Peru
Machuca, Juan	Ing. Agr. Agricultural Economics National Agrarian University, Lima	Winrock/Economics	9/80 - 9/81	Peru
Mathuva, Moses	MS Grassland Science Reading University	Winrock/Management	8/82 - 12/83	Kenya
Mawi, Syahrir	MS Sociology Institut Pertanian, Bogor	Missouri	8/82 - 8/84	Indonesia
Moura Fe, Fatima	MS Animal Science Federal University of Ceara	Winrock/Economics	8/81 - 8/83	Brazil
Rios, Marina	DVM San Marcos University, Lima	Texas Tech/ Colorado	6/80 - 6/81 2/82 - 7/82	Peru
Rodriquez, Humberto	MS National Agrarian University, Lima	Montana	3/80 - 4/81	Peru
Roque, Juan	MS Animal Breeding National Agrarian University, Lima	Montana	7/81 - 12/83	Peru
Ruiton, Jesus	Ing. Agr. Agricultural Economics National Agrarian University, Lima	Winrock/Economics	1/80 - 9/82	Peru
Sabrani, M. ²	PhD Gadja Mada Univ., Jogkarta	Winrock/Economics	6/82 - 12/84	Indonesia

<u>STUDENT</u>	<u>PROGRAM/INSTITUTION</u>	<u>SUPPORT</u>	<u>DATES</u>	<u>COUNTRY</u>
Sahnoun, Abdelatif	3eme Cycle Animal Nutrition Hassan II	North Carolina	10/81 - 7/82	Morocco
Setiadi, M.	MS Animal Science IPB University, Bogor	UC Davis/Breeding	4/81 - 3/83	Indonesia
Valderi, Vierira da Silva	MS Production Systems Federal University of Ceara	Winrock/Economics	8/81 - 8/83	Brazil
Soto, Alberto	MS Animal Health San Marcos University, Lima	Colorado	4/82 - 8/82	Peru
Souza, Jose de	MS Marketing Federal University of Ceara	Winrock/Economics	9/80 - 2/82	Brazil
Sugiyanto	MS Production Economics Institut Pertanian Bogor	Winrock/Economics	8/80 - 12/82	Indonesia
Velarde, Ruben	Licenciatura Agricultural Economics National Agrarian University, Lima	Winrock/Economics	1/80 - 12/83	Peru
Vasquez, Nelly	Ing. Agr. National Agrarian University, Lima	Texas Tech	6/80 - 8/83	Peru

SR-CRSP SPONSORED SHORTCOURSES

<u>COURSE</u>	<u>SPONSORED BY</u>	<u>WHERE HELD</u>	<u>DATES</u>
Sheep Production 23 participants	All Projects	Indonesia	6-7/80 (2 wks)
Reproduction 18 participants	Utah/Cal Poly Reproduction	Sobral, Brazil	9/80 (2 wks)
Management of Reproduction 26 participants	Utah/Cal Poly Reproduction	Lima, Peru	3/81 (5 days)
Forage-Vegetation Sampling 16 participants	Utah/Range	Sobral, Brazil	5/81 (2 days)
Veterinary Lab Techniques	Washington	Kabete, Kenya	6-7/81 (6 wks)
Animal Breeding 65 participants	Montana	Lima, Peru	11/81 (5 days)
Training on Pathology & Immunology Lab 5 participants	Colorado	Lima, Peru	2/82 (2 wks)
Diet Analysis Techniques 9 participants	Utah/Range	Sobral, Brazil	3/82 (2 days)
Animal Breeding & Systems 21 participants	TAMU/Breeding & Systems	Sobral, Brazil	5/82 (2 days)
Nutrition	North Carolina		
Part I: Nutrition Update for Sheep and Goats 20 participants		Sobral, Brazil	7/82 (5 days)
Part II: Practical Training in Feed Analysis 10 participants		Procedures Sobral, Brazil	8/82 (5 days)
Management & Improvement of Natural Pastures 117 participants	Texas Tech	Lima, Peru	8/82 (4 days)

LONG TERM OVERSEAS PARTICIPANTS

NAME	DEGREE	PROJECT	DATES
<u>Brazil</u>			
C. Daley	DVM	UCD/Health	8/81 - 10/81
N. East	DVM	UCD/Health	8/79 - 2/80
N. Gutierrez	PhD Cand.	Winrock/Economics	3/80 - 9/81
D. Hansen	DVM	UCD/Health	5/81 - present
L. Hardesty	PhD Cand.	Utah/Range	2/82 - present
R. Kirmse	MS	Utah/Range	9/80 - present
M. Knight		All Brazil Projects	7/81 - 12/81
T. Miller	BS	ME	6/80 - 7/82
M. Neumaier	MS Cand.	Missouri	7/82 - present
J. Pfister	PhD Cand.	Utah/Range	10/80 - 7/82
G. Primov	PhD	Missouri	8/81-2/82; 6/82-present
Joao Queiroz	PhD Cand.	Utah/Range	11/80 - 2/82
T. Robb	PhD	North Carolina/ME	7/81 - present
C. Zometa	PhD	Texas A&M/Breeding	8/82 - present
<u>Indonesia</u>			
M. Bell	MS	UC Davis/Breeding	7/82 - present
H. Knipscheer	PhD	Winrock/Econ.-UMo-ME	10/81 - present
J. Levine	PhD	UC Davis/Breeding	1/80 - 1/81
S. Mink	MS	Winrock/Economics	6/80 - 9/80
N. Thomas	PhD	North Carolina/ME	6/80 - 6/82
J. Van Eys	PhD	North Carolina	6/82 - present
<u>Kenya</u>			
J. Bell	MD	Washington	10/81 - present
Y. Berger	MS	UCD/Breeding-ME	8/80 - 8/82
H. Blackburn	PhD Cand.	Texas A&M/Systems	6/81 - 12/81
K. Boor	MS	Winrock/Management	10/81 - present
D. Brown	PhD	Winrock/Management	7/81 - present
M. Job	PhD	Winrock/Economics	7/80 - 10/81
R. Matthewman	MS	Winrock/Economics	9/81 - 6/82

NAME	DEGREE	PROJECT	DATES
<u>Kenya, cont.</u>			
D. Mortimer	MS	Winrock/Economics	9/80 - 1/81
Amanda Noble	MS	Missouri	7/80 - 3/81
T. Quick	MS	Ohio	2/80 - 12/80
E. Reynolds	PhD	Missouri	8/82 - present
S. Russo	PhD	Winrock/Management	10/81 - present
F. Ruvuna	PhD	TAMU/Systems	11/81 - present
M. Sands	PhD	Winrock/Management	2/80 - 8/81
P. Sayer	DVM	Washington	1/80 - 10/81
<u>Morocco</u>			
N. Artz	MS Cand.	Utah/Range	6/81 - present
Y. Berger	MS	UCD/Breeding	9/82 - present
<u>Peru</u>			
T. Capps	MS	Winrock/Economics	1/81 - 5/82
R. Cochran	MS	Texas Tech	6/80 - present
K. Jamtgaard	PhD Cand.	Missouri	6/80-6/81; 1/82-present
E. Lotterman	PhD	Winrock/Economics	11/80 - 7/82
C. McCorkle	PhD	Missouri	2/80 - 6/80
T. Nelson	PhD	Colorado	7/82 - present
A. Perevolotsky	PhD Cand.	Missouri	9/81 - present
G. Primov	PhD	Missouri	3/82 - 6/82
B. Quijandria	PhD	Montana-ME	9/81 - present
A. Schlundt	PhD	Texas Tech	6/80 - present
G. Sides	PhD	Utah/Reproduction	1/81 - present
T. West	PhD	Missouri	2/80 - 6/80
B. Wilcox	MS	Texas Tech	7/80 - 8/81

PUBLICATIONS

Publications--formal and informal--and verbal presentations by SR-CRSP related or supported personnel.

Refereed Journal Articles

- Abegunde, T. O., H. E. Adler, T. B. Farver and A. J. Da Massa. 1981. A Serologic Survey of Mycoplasma putrefaciens Infections in Goats. *Am. J. Vet. Res.* 42: 1798-1801. **UCD-Health**
- Alderson, A., A. Naranjo, G. E. Bradford, D. D. Kress, P. J. Burfening and R. L. Blackwell. 1981. A Comparison of Four Imported Breeds of Sheep and the Native Criollo in Columbia. *Int'l. Goat and Sheep Res.* In Press. **Montana & UCD-Breeding**
- Brooks, D. L., A. J. Da Massa, and H. E. Adler. 1981. Caprine mycoplasmosis: Immune Response in Goats to Mycoplasma putrefaciens after Intramammary Inoculation. *Am. J. Vet. Res.* 42: 1898-1900. **UCD-Health**
- Campbell, R. R., M. F. Nolan and John F. Galliher. 1981. Reflections of Title XII Collaborative Research: The Case of Sociology in the Small Ruminant CRSP. (Presented at 5th World Congress for Rural Sociology. Mexico City) *The Rural Sociologist* 1(1):2-10. **U.Mo.-Sociology**
- DeBoer, A. J. 1981. Socioeconomic Aspects of Dairying in Developing Countries. *J. Dairy Sci.* 64(12):2453-2462. **Winrock-Economics**
- East, Nancy. 1982. Chronic Weight Loss in Adult Dairy Goats. *Compendium on Continuing Education.* In Press. **UCD-Health**
- Edwards, R. L., D. D. Crenwelge, J. W. Savell, M. Shelton and G. C. Smith. 1982. Cutability and Palatability of Rambouillet, Blackface-Crossbred and Karakul Lambs. *Int'l. Goat and Sheep Res.* In Press. **TAMU-Breeding**
- El Aich, A., J. O'Rourke and A. Bourbouze. 1980. Etude des Preferences Alimentaires et de la Valeur Nutritive de la Ration des Ovins sur la Station Pastorale de Timahdite. *Hommes Teare & Eaux* 10(36): 59-67. **Utah-Range**
- Ellis, J. A. 1982. Retroviral Diseases in Small Ruminants: Ovine Progressive Pneumonia and Caprine Arthritis-Encephalitis. *Comp. on Continuing Education.* In Press. **Colorado-Health**
- Ellis, J. A. and J. C. DeMartini. 1982. Causes of Morbidity and Mortality in Smallholder Sheep Flocks in Peru, with Special Emphasis on Respiratory Diseases. *Int'l. Sheep and Goat Res.* In Press. **Colorado-Health**
- Fiscus, S. A., J. C. DeMartini and L. D. Pearson. 1982. Mitogen-induced Blastogenesis of Peripheral Blood and Efferent Lymph Lymphocytes from Normal Sheep. *JAVMA.* In Press. **Colorado-Health**

- Gilles, Jere L. and Keith Jamtgaard. 1981. Overgrazing in Pastoral Areas - The Commons Reconsidered. *Sociologia Ruralis* XXI(2):129-141. To be reprinted in "Nomadic Peoples". **U.Mo.-Sociology**
- Gilles, J. L. and K. Jamtgaard. 1982. Common Pastures: An Advantage or Constraint? *Rangelands*. In Press. **U.Mo.-Sociology**
- Goode, Lemuel, A. C. Linnerud and D. F. Tugman. 1980. Sheep: Reproductive Performance of Straightbred and Crossbred Barbados Blackbelly Ewes. *Int'l. Goat and Sheep Research*. 1(3): 216-225. **NCSU-Forages**
- Gutierrez, N. F., A. J. DeBoer and E. Ospina. 1981. An Econometric Model of the Columbian Beef Sector: 1950-1970. *Canadian J. Agr. Econ.* 30(1):61-70. **Winrock-Economics**
- Kennedy, B. W., C. M. Finley, E. J. Pollak and G. E. Bradford. 1981. Joint Effects of Parity, Age and Season of Kidding on Milk and Fat Yields in Dairy Goats. *J. Dairy Sci.* 64:1707-1712. **UCD-Breeding**
- MacLachlan, J., D. Gribble and N. East. Polyradiculoneuritis in a Goat. *JAVMA* 180:2:166. **UCD-Health**
- Muljadi, A., M. Sabrani, A. Suparyanto and D. Pramano. 1980. The Effect of Land and Animal Ownership Systems on the Possibility of Sheep and Goat Development in Ciburuy, Bogor. *Lembaran LPP* (4): 5-15. **Winrock-Economics**
- Provenza, F. D. and J. C. Malechek. 1982. Tannin Allocation in Blackbrush: An Application of Theory on Plant Antiherbivore Chemistry. *Biochemical Systematics and Ecol.* 35. In Press. **Utah-Range**
- Riley, R. R., M. Shelton, J. W. Savell and G. C. Smith. 1982. Age, Sex, Breed and Species Differences in Carcass and Dress-Off Item Yields of Sheep and Goats. *J. Anim. Sci.* In Press. **TAMU-Breeding**
- Sabrani, M. and A. Muljadi. 1981. Prospects for Small Ruminant Development with Reference to Land Holdings in Ciburuy Village, Bogor. *Lembaran LPP* (1):1-4. **Winrock-Economics**
- Shelton, Maurice. 1980. Goats: Influence of Various Exteroceptive Factors on Initiation of Estrus and Ovulation. *Int'l. Goat and Sheep Res.* 1:156. **TAMU-Breeding**
- Shelton, M. and Elsie A. P. Figueiredo. 1981. Types of Sheep and Goats in Northeast Brazil. *Int'l. Goat & Sheep Res.* 1:258-268. **TAMU-Breeding & CNPC**
- Tengerdy, R. P., D. L. Meyer, L. H. Lauerman, D. C. Lueker, and C. P. Nockels. 1981. Vitamin E Enhances Immunity to *Clostridium perfringens*, Type D, in Sheep. *Vet. Immunol. Immunopath.* In Press. **Colorado-Health**
- Wescott, R. and B. LeaMaster. 1981. Efficacy of Ivermectin Against Naturally and Experimentally Induced Nematodiasis in Sheep. *Am. J. Vet. Res.* In Press. **Washington-Health**

Manuscripts Submitted

- Calhoun, M. C., B. C. Baldwin, Jr. and M. Shelton. Comparison of Dry Matter Intake and Digestibility and Some Blood Constituents of Sheep and Goats. **TAMU-Breeding**
- DeMartini, J. C., K. L. Banks, A. Greenlee and D. S. Adams. 1982. Lymphocytes Surface Markers and Blastogenic Responses in Blood of Goats Chronically Infected with Retrovirus Causing Caprine Arthritis-Encephalitis. **Colorado-Health**
- Florez, A., E. Malpartida and F. Bryant. 1982. Relationships Between Nutrient Content and Plant Phenology of Cool Season Grasses in the Andes of Peru. J. Range Mgmt. **Texas Tech-Range**
- Griffin, C. L., M. W. Orcutt, G. C. Smith, J. W. Savell and M. Shelton. 1982. Palatability of Lamb, Mutton and Goat Meat. **TAMU-Breeding**
- Gutierrez, A. N. F., A. J. DeBoer and J. Ubiraci. 1981. Iteragoes de Recursos e Caracteristicas Economicas dos Criadores de Ovinos e Caprinos no Sertao do Ceara, Nordeste do Brasil. Resultados Preliminares. EMBRAPA Bulletin. **Winrock-Economics**
- Hansen, D., J. A. Pfister and J. C. Malechek. 1982. Guidelines for Establishment and Maintenance of Esophageal Fistulae in Small Ruminants. EMBRAPA Bulletin. **Utah-Range**
- Kirmse, R. D., J. A. Pfister, L. V. Vale and J. S. de Queiroz. 1982. Woody Plants of the Northern Ceara Caatinga. EMBRAPA Bulletin. **Utah-Range**
- Lawson, Janet and Maurice Shelton. 1982. Observations on Breeding Season Variations and Early Weaning of Spanish Does. Int'l. Goat and Sheep Res. **TAMU-Breeding**
- Malechek, J. C. and F. D. Provenza. 1982. Nutrition of the Range Goat. World Animal Review. **Utah-Range**
- Pfister, J. A. and R. Kirmse (Eds.) 1982. Sampling Caatinga Vegetation: Proceedings of a Shortcourse. EMBRAPA Bulletin. **Utah-Range**
- Pfister, J. A., J. S. de Queiroz, R. D. Kirmse and J. C. Malechek. 1982. Rangelands and Small Ruminant Production in Ceara State, Northeastern Brazil. Rangelands 4. **Utah-Range**
- Provenza, F. D. and J. C. Malechek. 1982. The Effects of Tannins on Dietary Selection of Blackbrush by Range Goats. Oecologia 50. **Utah-Range**
- Provenza, F. D., J. C. Malechek, P. J. Urness and J. E. Bowns. 1982. Some Factors Affecting Twig Growth in Blackbrush. J. Range Mgmt. 35. **Utah-Range**
- Riera, G. S., A. A. Simplicio and W. C. Foote. 1982. Diagnostico de Prenhez em Cabras e Ovelhas. PAB. Brazil. **Utah-Reproduction**

Simplicio, A. A., G. S. Riera, E. A. Nelson and M. P. Pant. 1982. Seasonal Variation in the Semen and Testes Characteristics of Brazilian Somali Rams in the Hot Semi-Arid Climate of Tropical Northeast Brazil. *J. Repro. and Fert.* **Cal Poly-Reproduction**

Snyder, S. P., J. C. DeMartini, E. Caletti and E. Ameghino. 1982. Coexistence of Pulmonary Adenomatosis and Progressive Pneumonia in Sheep in Peru. **Colorado-Health**

Warren, L. E., J. M. Shelton, D. M. Ueckert and A. D. Chamrad. 1982. Diets of Spanish Goats, White-tail Deer and Cattle in the South Texas Plains. *J. Range Mgmt.* **TAMU-Breeding**

Warren, L. E., D. N. Ueckert and J. M. Shelton. 1982. Comparative Diets of Selected Breeds of Sheep and Goats on West Texas Rangeland. *J. Range Management.* **TAMU-Breeding**

Theses

PhD

DaSilva, Jose, H. 1981. The Effects of Age of Regrowth, Daylength and Ambient Air Temperature on the Growth and Quality of Three Forage Species. North Carolina State University. **NCSU-Forages**

Garcia-Betancourt, O.J. 1981. Genetic Analysis of a Crossbreeding Experiment Using Improved Dairy Goat Breeds and Native Goats in a Dry Tropical Environment. University of California, Davis. **UCD-Breeding**

McCorkle, Constance. 1981. Animal Management and the Agro-Pastoral Dialectic with Implications for Development. Stanford University. **U.Mo.-Sociology**

Narjisse, Hamid. 1981. Acceptability of Big Sagebrush to Sheep and Goats: Role of Monoterpenes. Utah State University. **Utah-Range**

Provenza, Frederick D. 1981. Some Morphological and Chemical Responses of Blackbrush (*Coleogyne ramosissima*) to Goat Browsing: Influences on Dietary Blackbrush Selection by Goats and Cattle. Utah State University. **Utah-Range**

MS

Ashley, A. 1980. Evaluation of Sweet Potato Vines and Leaves as an Energy Source for Small Ruminants. Tuskegee Institute. **Tuskegee-Management**

Ba Mamadou, Abdoul. 1980. Etude des Preferences Alimentaires et de la Valuer Nutritive des Ration ses Ovins sous l'Influence du Taux de Charge (Station Pastorale de Timahdite dans le Moyen Atlas). IAV, Hassan II, Rabat, Morocco. **Utah-Range**

Brasfield, John C. 1980. A Comparison of Voluntary Intake and Digestibility in Sheep Breeds and Crosses Fed Diets Varying in Composition and Quality. North Carolina State University. **NCSU-Forages**

- Brown, Lynn E. 1981. Goats and Sheep: A Comparison of Intake, Digestibility, and Other Metabolic/Digestive Parameters When Fed Wheat Straw Rations. North Carolina State University. **NCSU-Forages**
- Chami, Mohamed. 1982. Productions Animales et Systemes Alimentaires des Troupeaux du Haut Atlas Occidental (Vallee de Rheraya). (Feeding Systems and Animal Products in the High Atlas). IAV Hassan II, Rabat, Morocco. **Utah-Range**
- Chergaoui, A. 1982. Etude des Preferences Alimentaires des Ovins et de la Vegetation sous Differents Niveaux de Charge a la Station Pastorale de Timahdite. IAV Hassan II, Rabat, Morocco. **Utah-Range**
- Chergaoui, A. 1981. Etude Bibliographique de l'Effet de Charge sur Dynamique de la Vegetation: (1) Preferences Alimentaires des Animeaux sur Parcours; (2) Valeur Nutritive de la Ration Alimentaire sur Parcours; (3) Performanced des Animeaux sur Parcours. IAV Hassan II, Rabat, Morocco. **Utah-Range**
- Chriyaa, Abdelouahid. 1982. Etude des Effets de la Charge et de la Saison sur les Preferences Alimentaires des Ovins a la Station Pastorale de Timahdite. (Effects of Season and Stocking Rates on the Sheep at the Timahdite Feeding Behavior Experimental Station.) IAV Hassan II, Rabat, Morocco. **Utah-Range**
- Darfaoui, El Mostafa. 1982. Etude des Ressources de l'Activite Pastorales et du Comportement Alimentaire des Caprins dans la Vallee Rheraya (Haut Atlas Occidental). (Study of Range Resources and Goats Feeding Behavior in the Rheraya Valley, High Atlas.) IAV, Hassan II, Rabat, Morocco. **Utah-Range**
- De Moraes Eloy da Costa, Odorico. 1981. Oferta de Exportacao de Peles de Caprinos e Ovinos (Export Supply of Sheep and Goat Skins). Dept. of Agricultural Economics, Federal University of Ceara, Fortaleza, Brazil. **Winrock-Economics**
- DeSouza Neto, Jose. 1981. Analise Econometrico da Oferta de Caprinos e Ovinos no Ceara, Brazil (An Econometric Analysis of Sheep and Goat Supply in Ceara State, Brazil). Dept. of Agricultural Economics, Federal University of Ceara, Fortaleza, Brazil. **Winrock-Economics**
- Drobnis, E. Z. 1981. Processing Frozen Goat Semen. California State Polytechnic University, Pomona. **Cal Poly-Reproduction**
- El Aich, A. 1979. Etude des Preference Alimentaire et de la Valeur Nutritive de la Ration des Ovins sur la Station Pastorale de Timahdite. IAV, Hassan II, Rabat, Morocco. **Utah-Range**
- Elliot, A. W. 1980. The Effects of Supplementing Grass Hay with a Concentrate Containing Dried Cattle Manure. Tuskegee Institute. **Tuskegee-Management**
- El Maghraoui, Abdelaziz. 1979. Les Effects de la Mise en Defens sur les Preferences Alimentaires des Ovins dans le Moyen Atlas. IAV, Hassan II, Rabat, Morocco. **Utah-Range**

- Hansen, H. H. 1981. Goat Diets in an Upland Hardwood Ecosystem. University of Florida. **Winrock-Management**
- Harkousse, Mohamed. 1982. Effet de la Charge et le Temps sur la Valeur Nutritive de la Ration et les Quantities Ingerees par les Ovins, a la Station Pastorale de Timahdite. (Effect of the Stocking Rate and Time on the Nutritive Value and Intake of Rations on the Sheep at Timahdite.) IAV Hassan II, Rabat, Morocco. **Utah-Range**
- Howell, L. 1981. A Review of Tropical and Subtropical Brush Management Techniques with Special Reference to Northeastern Brazil. Utah State University. **Utah-Range**
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