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Belize Livestock Development Project II

Contract No. USAID 505-0006-C-00-9011-00

Final Report
a
Summary of Activities
from
August, 1989 to July 1991

Prepared by:

Rafael Ledesma, Ph.D.
Chief of party and Livestock Management Specialist.

and

Luis E. Tergas, Ph.D.
Posture Management Specialist.

Belize, 1991

PROJECT ACTIVITIES

I. IMPROVED LIVESTOCK MANAGEMENT.

A. GENETIC IMPROVEMENT.

DAIRY HERD IMPROVEMENT

1. Accomplishments:

- i. Establishment of an A. I. National Program.
- ii. Activities performed:
 - a) Review to determine the status of the A.I in the Country.
 - b) Visit of A.I. short-term consultant to help delineate the program and training farmers and technicians.
 - c) A.I. survey was carried out to determine farmers interest in participating in the program -300 farmers solicited.
 - d) Selection of the A. I. equipment.
 - e) Selection of the semen according to the farmers breeding plans and recommendations.
 - f) Procurement of the equipment.
 - g) Training of technicians.
 - h) Implementation of the program.
 - i) Establishment of an A.I. Advisory Committee made up of G.O.B. and BLPA officers.
 - j) Establishment of a breeding improvement plan for Central Farm and Macal Dairy Farmers.
 - k) Artificial insemination of the herd of 60 cows at Central Farm and Dairy Farmers in Cayo.
 - l) Computerization and improvement of the dairy records at Central Farm.
 - m) Proposal for a Dairy Management and Milking Sanitation and Hygiene Plan for Central Farm and Macal.
 - n) Training of 70 Dairy Farmers and Extensionist in Dairy Production.

- o) Close to four hundred inseminations have been performed.
- p) Bull testing service established with close to one hundred bulls tested in Cayo and Orange Walk.
- q) Establishment of a Dairy Management Plan for Central Farm and Dairy Farmers.
- r) Preparation of progress reports in Dairy and A.I. from August 89 to January 1991.

iii. Training Summary:

- a) Seven one day workshop in different parts of the Country -123 farmers attended.
- b) Two three day workshop for technicians -12 technicians attended.
- c) Three GOB technicians attended a 10 day intensive A.I. Course at Graham School, Kansas.

iv. Publications:

- a) Short-term Consultant Report on A.I.
- b) Artificial Insemination Programme.
- c) Managing the A.I. Programme.
- d) Breeding Improvement Plan for Beef and Dairy.
- e) A.I. Technician Manual.
- f) Heat Detection and Management Practices for Farmers.
- g) A.I. Chapter -December, May, April and September, December and March, BLDPII Quarterly Reports.
- h) Dairy Management Programme.
- i) Milk and Milk Products Quality Control.
- j) Bull Testing and Sickness Evaluation.

2. Recommendations for follow up:

- a) Prepare a training activity for farmers in Orange Walk.
- b) Train the A.I. Technicians in Pregnancy Testing Procedures.
- c) Monitor closely the operation of the programme, the reporting and the record keeping system of the farmers.
- d) Accelerate the promotion and visits to farmers (including Menonite in Spanish look-out and Yo Creek.
- e) To perform an evaluation of the programme in December, 1991.

B. CATTLE HERD IMPROVEMENT.

1. Accomplishment:

- i. Activities performed:
 - a) An evaluation was performed on the situation of the Cattle Herd at Central Farm and Yo Creek and some private farms.
 - b) Establishment of a Breeding Improvement Plan for Central Farm, Yo Creek and private herds.
 - c) Establishment of a Management Plan with Specific Recommendations to increase calf crop and growth rate for Central Farm and Yo Creek.
 - d) Establishment and Computerization of a new record keeping System.
 - e) Testing of all bulls used in Central Farm Yo Creek and some private farmers.
 - f) Artificial Insemination of approximately 300 head of bull cattle in Central Farm and Yo Creek.
 - g) Nine private beef farmers were trained in A.I. and are presently in the process of doing their own A.I.
 - h) Importation of 20 Heifers and 5 young bulls, American Brahman, were selected in different ranches in Texas. They are presently being used in the breeding plan.

- i) All records, more than 600 animal have been up dated and computerized in Central Farm and Yo Creek and the system established
- j) Improvement of the Productive and Reproductive Performances of the herds in Central Farm and Yo Creek (see progress report on Beef Cattle Programme).

ii. Training:

- a) More than 183 farmers and Extensionist trained on Livestock Management Workshop in different locations in the Country.

iii. Publications:

- a) Breeding Improvement Plan for Central Farm, Yo Creek and Private Farmers.
- b) Evaluation and Records of Performance of Central Farm Beef herds from 1984 to 1989.
- c) Management practices recommended to increase calf crop and growth rate.
- d) Artificial Insemination Management in Beef Cattle.
- e) National Beef Cattle Programme.
- f) Livestock Management Practices for improved cattle production.

2. Recommendations for follow up:

- a) Close monitoring of the Beef Management Programme at Central Farm and Yo Creek with special work in the raising of young bulls and replacement heifers.
- b) Follow the implementation plan for the breeding programme with the record keeping up dated and the Management of the bulls given priority.
- c) Initiate training activities in several locations in the Country on how to implement easy to follow breeding programs by the farmers to reduce inbreeding and improve genetic quality.
- d) Prepare the breeding plans for the 1992 breeding season.
- e) Evaluate the programme in December, 1991.

C. SWINE HERD IMPROVEMENT.

1. Accomplishments.

i. Activities performed:

- a) Analyses and evaluation of performance over the last five years of the swine herds at Central Farm and Yo Creek GOB Station, and small farmer units.
- b) Establishment of a breeding plan for Central Farm, Yo Creek and small farmers.
- c) Establishment of a nutrition and feeding practices program.
- d) Establishment of a complete swine management program, from birth to market.
- e) Establishment of a new type of record keeping system and its computerization.
- f) Implementation of a national swine production program.
- g) Importation of additional breeding animals to reduce inbreeding and satisfy the high demand from small farmers -36 quilts and 18 young boars were selected in U.S. and are presently on quarantine. The breeds are Landrace, Yorkshires and Duroc.
- h) Establishment of specific breeding plans for Central Farm and Yo Creek Station.
- i) Computerization of all records in Central Farm and Yo Greek.
- j) Establishment of feeding systems using by products in this case sugar cane juice.
- k) Two - in country training workshop were provided for 50 producers and 10 extensionist.

l) Publications.

- Swine Management Programme.
- Swine Breeding Plans for Central Farm Yo Greek and Small Producers.
- Practical Swine Management.
- Guia Práctica para el Pequeño Porcicultor.
- Breed Recommended for Seed Stock Production.
- Swine Management Practices.
- Nutrition and Feeding Practices Recommended for maximum income.

2. RECOMMENDATIONS FOR FOLLOW UP.

- a) Continue the by products feeding trials in Central Farm, Yo Greek and Punta Gorda.
- b) Evaluate the results of the Breeding and Management Programme.
- c) Continue training of Farmers.

II. SPECIAL POLICY AND ANALYTICAL STUDIES AND TRADE

1. Accomplishments.

- i. Activities performed under the direction of MAF, Policy Unit.
 - a) Record and accounts essential for Livestock Producers. Dr. Harston a short-term consultant visited Belize and with Dr. Ledesma, Tergas, Mr. Valencia and BLPA Executive Manager performed this study.
 - b) Market assessment for Belizean beef and pork in Belize and Belizean cattle and beef in selected CARICOM Countries, Mexico and USA.
Participants:
Dr. Kary Mathis, Market Consultant/IRI.
Mr. Orlando Orio, BLPA.
Dr. Rafael Ledesma, Livestock Management Specialist/COP/IRI.
Mr. Wendell Parham, Police Analyst/MAF.
 - c) Feasibility of establishing a Central Market facility to serve the livestock industry in Belize.
Participants:
Mr. John Carr, Chairman BLPA.
Mr. Moises Cal, BLDP II/PA.
Mr. Efrain Novelo, Economist/MAF.
Dr. Rafael Ledesma, Livestock Management Specialist/COP/IRI.
Mr. Wendell Parham, Chief Policy Unit/MAF.
 - d) An analysis of the Livestock Central Market Survey.
Participants:
Mr. Efrain Novelo, Economist/MAF.
Mr. Moises Cal, BLDP II/PA.
Dr. Rafael Ledesma/IRI.
Mr. Wendell Parham/MAF.
Mr. Alfonso Tzul/MAF/ Cayo District.

- e) Beef Cost of Production.
Participants:
Dr. Billy Freeman, Economist/IRI.
Mr. Efrain Novelo, Economist/MAF.
Dr. Rafael Ledesma, Livestock Management
Specialist/COP/IRI.
Mr. Moises Cal, BLDP II/PA.
Mr. Wendell Parham, MAF.
- f) Procurement of Computer, Software and programs to strengthen the MAF/Policy Unit/IRI.
- g) The Economist Mr. Efrain Novelo attended a 6 week training course at USDA, Washington in Basic Agricultural Survey Statistics and Methods from September 10 to October 19, 1990.
- h) Procurement of one vehicle for the Policy Unit.

2. Constraints.

The Major constraints have been the lack of personnel, in the Policy Unit. This has not allowed the BLDP II to implement a series of studies that have been already prioritized.

3. Recommendations.

- a. Establishment of a record keeping system for farmers to determine production costs and returns.
- b. Assessment of the Meat Processing Industry.
- c. Feasibility of constructing a slaughter and processing plants.
- d. Analysis of the Swine Industry, with special emphasis on cost of production.
- e. Study in the use of by-products for animal feeds.
- f. An Analysis of the Poultry Industry.
- g. Training
 - a) Servicing and maintenance of computers
 - b) Agricultural policy seminar U.S.

III. MARKETING/PROCESSING

A. LIVESTOCK CENTRAL MARKET

1. Accomplishments

i. Activities Performed

- a. Central Market concept paper developed
- b. Learning tour to several auction facilities in Texas was accomplished.
- c. Technical feasibility study and cost benefit analysis was prepared and is actually being reviewed and finalized.
- d. Site for the facility has been identified.
- e. Establishment of a working committee made up of BLDP II, BLPA, IRI, and USAID.
- f. Specifications of the Central Market prepared.
- g. Publications of bids for design of facilities.
- h. Assessment of bids.
- i. Recommendations to MAF and concurrence from USAID to assign contract for the design of the facilities.
- j. Working drawings and cost estimates prepared by a Belizean Engineering Company.

2. Constraints

- a. Long delays on the approval of the concept paper, feasibility study and request of funds to prepare the final drawings and cost estimate of the facility.

3. Recommendations

- a. Assess working drawings and cost estimates.
- b. Review feasibility study.
- c. Request USAID concurrence to initiate the construction.
- d. Prepare M.O.U. - BLPA/USAID/GOB
- e. Publish bids for construction.
- f. Publish bids for construction.
- g. Assess bids.
- h. Assign and prepare construction contract.
- i. Initiate construction.
- j. Initiate construction.
- k. Promote meetings in the districts to explain the operational plan for the management of the facility.
- l. Prepare all necessary documentation to operate the facility.
- m. Monitor the operation of the facility.
- n. Evaluation of operation.
- o. Establishment of grades and standards.
- p. Train farmers and technicians in grades and standards.
- q. Prepare promotional material for farmers.

4. Persons responsible for these activities.

Mr. Moises Cal, BLDP II, Project Administrator BLPA, Chairman and Executive Secretary.

Dr. Rafael Ledesma, Livestock Management Specialist IRI IRI/Short-term Marketing Consultant.

B. MEAT PROCESSING

1. Recommendations

This activity will begin with an assessment of the actual situation of the processing Industry.

Promotional meeting to determine the needs of the Industry have been accomplished.

A Scope of Work for the assessment is being developed and short-term consultants are already being identified.

The activities to be undertaken for processors and butchers will be delineated in the assessment and GOB and USAI concurrence will be requested.

IV. CREDIT

A. SHORT-TERM CREDIT for Small and Medium size Producers

1. Accomplishments

a. A familiarization tour of the "Fondo Ganadero" Program in Honduras was conducted by USAID, MAG and BLPA officials.

b. A proposal for the establishment of a Fondo Ganadero partnership program was presented by the BLPA to the GOB and approved. This proposal explains the functioning of the Fondo and all the contractual and cash flow projections for the program.

c. A general agreement to initiate the program is presently being discussed between BLPA and MAF.

2. CONSTRAINTS

a. The "Fondo Partnership Programme" is new to Belize and difficult for the different institutions involved to completely understand the nature and objective of the program.

3. Recommendations

- a. Training of BLPA field officer to determine farmer participation in the partnership program.
- b. Promotion of the program.
- c. Establishment of accounting procedures.
- d. Acquisition of the animals and veterinary products.
- e. Implementation of the program.
- f. Monitoring and assistance in its operation.
- g. Train the participant farmers in Livestock and pasture management record keeping system and partnership operation.
- h. Prepare publications.
- i. Maintain a continuing evaluation of the program.

4. Persons responsible for these activities

Mr. John Carr, Chairman BLPA
Mr. Moises Cal, BLDP II/Project Administrator
Dr. Rafael Ledesma, Livestock Management Specialist/IRI
Mr. Orlando Orio, Executive Secretary/BLPA
"Fondo Partnership Program" Committee

V. LABORATORY SERVICES

A. MEAT RESIDUE ANALYSIS LABORATORY

1. Accomplishment

- a. Mr. Mario Fernández is attending Northeast Louisiana University since January, 1990 to obtain his M.Sc. degree in Analytical Chemistry.
- b. Miss Delilah Cab. received 4 months of training in Miami Medical School and USDA Eastern Laboratory at Athens, Georgia on Meat Residue Analysis.
- c. Mr. Roy Myers/IRI Consultant visited Belize during 5 working days in November and performed a comprehensive analysis of the Meat Residue Lab. In this report he listed the equipment needed and cost of each item; the procedures for waste solvent disposal; an itemized list of chemicals and equipment in storage and an itemized list of excess chemicals and equipment; recommendations in relation to space allocation, personnel needs, methodology for testing different residues, storage room requirements, and hazardous chemicals, justification for equipment, apparatus and solvent.

2. Constraints

- a. IRI is waiting MAG approval and USAID concurrence to procure the necessary equipment to commission the Lab.

3. Recommendations

- a. Procure the equipment.
- b. Put in place the necessary personnel to operate the lab.
- c. Short-term consultant in the country to set up the equipment, train the personnel and commission the lab based on an operational plan that will be prepared to accomplish this task.

B. CENTRAL FARM LABORATORIES

Soil and Tissue Analysis Laboratory

1. Accomplishment

- a. A situation analysis document was prepared by the MAF, Agriculture Chemist. The equipment was procured and is in the country.

2. Constraints

- a. The equipment has not been installed due to the inadequate condition of the existing lab.
- b. The position of Agriculture Chemist is vacant.

Veterinary Clinic and Diagnosis Laboratory
At Central Farm

1. Accomplishment

- a. A situation request was presented on November 02 and is presently being analyzed.

2. Constraints

- a. The MAF request for assistance was received during November, 1990.

3. Recommendations

- a. Installation of equipment and training of personnel in the soil and tissue analysis laboratory.
- b. Procure equipment and provide the requested support for training for the veterinary laboratory.
- c. After these two laboratories are commissioned proceed testing and analysis of animal feeds to initiate a feed control program.

VI. TRAINING

A. LONG-TERM OVERSEAS TRAINING

1. Accomplishment

- a. Mr. Derick Clare is attending California Polytechnic State University studying toward a Bs. degree in Animal Science, concentration in animal Nutrition.
- b. Mr. Mario Fernández is attending Northeast Louisiana University pursuing a Ms. degree in Analytical Chemistry.
- c. Mr. Feliz Tzul is attending University of Arkansas pursuing an Animal Science degree with concentration in Poultry Science.

All three students are performing well in their studies.

B. SHORT-TERM OVERSEAS TRAINING

1. Accomplishment

Name	Place	Duration	Objective
Elide Valencia	Costa Rica	3 days	Tropical Pasture Seminar.
Manuel Cowo	Costa Rica	7 days	Seed Multiplication Seminar.
Dr. Victor Gongora	U.S.	21 days	Foreign Animal Health Disease Course.
Dalilah Cabb	U.S.	120 days	Meat Residue Analysis Training.
Orlando Habet	U.S.	7 days	Artificial Insemination Training.
Sebastian Shol	U.S.	7 days	"
Narco Tzul	U.S.	7 days	"
Timothy Lewis	U.S.	24 days	Meat Inspection Course.
Gaspar Martinez	Trinidad	18 days	Intensive Management of Livestock.
Elide Velencia	Puerto Rico	6 days	Caribbean Food Crops Society 26 Annual Meeting.
Efrain Novelo	U.S.	40 days	Basic Agriculture Survey Statistics and Methods.
Moises Gal	U.S.	7 days	Study Tour of Auction Market.
Melanio Pech	U.S.	7 days	Study Tour of Auction Market.
10 Farmers & Extensionists.	Honduras	4 days	Pasture Utilization Short Course.
2 MAF, 1 BLFA officers	Honduras	7 days	Study Tour "Honduras Fondo Ganadero".

C. SHORT-TERM IN-COUNTRY TRAINING

Improved Livestock Management

1. Accomplishments

Subject	Location	Date	# of Participants
1. Artificial Insemination	Blue Creek	09-25-89	16
2. Artificial Insemination	Yo Creek	09-25-89	17
3. Artificial Insemination	Corozal	09-26-89	19
4. Artificial Insemination	Cayo	09-28-89	22
5. Artificial Insemination	B.C.A.	09-29-89	17
6. Artificial Insemination	Cayo	06-09-90	17
7. Artificial Insemination	B.C.A.	06-15-90	15
8. Artificial Insemination	Yo Creek	06-18-90	26
9. Animal Breeding	Yo Creek	10-10-89	63
10. Animal Breeding	Corozal	10-11-89	33
11. Animal Breeding	B.C.A.	10-12-89	17
12. Swine Management	Cayo	03-22-90	15
13. Livestock Management	Orange Walk	03-30-90	31
14. Audio Visual Preparation	B.C.A.	07-16-90	13
15. Transfer of Technology	B.C.A.	07-23-90	26
Total Participants			347

VII PASTURE/FEED MANAGEMENT IMPROVEMENT

a. Cost/Benefit Demonstrations

(i) Central Farm

A. Accomplishments

1. Establishment of grazing trials with native and improved legume/grass and grass pastures.
2. Establishment of 5 grazing trials at Central for 1991.
3. Improved pasture management for dairy cattle.
 - a. Rehabilitation of 6.8 acres of African Stargrass and construction of an alley to initiate a rotation grazing system with highly productive dairy cows.
 - b. Establishment of a "protein bank" with Leucaena to be utilized in the rotational grazing with Stargrass with highly productive dairy cows.
 - c. Establishment of 5 acres of Dwarf Elephantgrass for feed supplementation of highly productive dairy cows.
 - d. Establishment of Stargrass and Bermuda Coast-cross 1 pasture to be utilized by replacing dairy heifers.
 - e. Establishment of 9.7 acres of grass/legume association to be utilized by productive dairy cows as an alternative to fertilized Stargrass pastures under intensive grazing system.
4. Utilization of improved pastures to increase the efficiency of Cow-Calf production systems. The establishment of the different treatments that have been initiated in the field during the planting season 1980.

A. Recommendations for Follow-up

1. To continue grazing trails with another group of steers that will replace the existing, ones after they reach 900 lbs.
2. To continue collecting data for another year to start analysis of results to formulate recommendations to farmers.
3. To organize and to initiate grazing and data collection in the new pasture treatments which were planted this year.
4. To initiate grazing and data collection in the other demonstrations with dairy cattle and cow-calf production systems.
5. To continue training of technical personnel to organize and conduct this type of trials and to begin training in the analysis and interpretation of results to be able to make recommendations to farmers.

(ii) On Farm Sites

A. Accomplishments

1. The following pastures have been established during 1990 to initiate grazing in 1991.
 - a. Cayo District - 59 acres
 - b. Orange Walk District - 27 acres
 - c. Corozal District - 10 acres
 - d. Toledo District - 25 acres
2. Cost of pasture establishment for the different system is presently being analyzed.

B. Recommendations for Follow-up

1. Cost of pasture establishment will be determined.
2. Continue demonstration trials at Central Farm and on-farm sites.

b. Establishment of Nurseries

A. Accomplishments

(i) Government Farms

1. Establishment of 5 acres of humidicola and Dwarf Elephant grass in Yo Creek Station.
2. Establishment of 1 acre of humidicola and Dwarf Elephant grass in Stann Creek.

(ii) On-Farm Sites

Cayo District

1. Establishment of 2 acres of Dwarf Elephant and Andropogon in 3 farms.

(iii) Regional Trials on "Pine Ridge"

1. Introduction of Brachiara, Centrosema, Stylo, etc. for Chan Pine Ridge, Bermuda Landing and mile 33 Western Highway.

B. Recommendations for Follow-up

1. To continue the establishment of nurseries on government farms and on-farms sites with new forage species recommended by the Pasture Program to cover the different ecosystems in Belize.
2. To initiate evaluation of the regional trials and to train technical personnel in the interpretation of results for recommendations to farmers.

c. Farm Evaluation

A. Accomplishment

1. A total of 37 farms have been evaluated country-wide representing approximately 7,000 acres.

B. Recommendations for Follow-up

1. Continue the training of new counterpart, extension agents and BLPA field officer in using evaluation methodology.

d. In-Country Training.

A. Accomplishment

Date	Subject	Location	Participants	Enroll
10-19-89	Production Economics	B.C.A.	Technicians	25
11-17-89	Workshop Legumes	Belmopan	Technicians	83
11-27-89	Pasture Utilization	B.C.A. & Honduras	Technicians & Farmers	21
03-22-90	Feed Supplementation	B.C.A.	Dairy Farmers & Technicians	23
03-27-90	Pasture Management	O. Walk	Farmers & Technicians	33
04-6-90	Pasture Management	Toledo	Technicians Farmers, Stud.	79
05-10-90	Feed Supplementation	O. Walk	Technicians & Farmers	32
05-31-90	Weed Control	B.C.A.	Technicians & Farmers	20
06-06-90	Weed Control	Toledo	Technicians & Farmers	26
06-14-90	Weed Control	O. Walk	Technicians	27
			Total	369

B. Plan of Work on "Utilization of Legume for Livestock Production in Belize".

1. Continue training extension agents and farmers in pasture management.
2. Preparation and Distribution of Publications.

A. Accomplishment

1. Proceeding Workshop on "Utilization of Legumes for Livestock
2. Tropical Pasture Legumes for Livestock Production. in Belize.
3. Dry Season Feed Supplementation for Milk Production.
4. Suplementacion Nutricional para el Ganado Durante la Estacion Seca. (Spanish)
5. Aleman, a Productive Grass for Fattening in Flooded Lands in Belize.
6. Andropogon, a Productive Grass recommended for planting with "Milpa" System and in association with legumes in Belize.
7. Humidicola, an Aggressive Grass recommended for the Wetter Areas in Belize.
8. Dwarf Elephantgrass, a High Quality Forage Grass for Belize.
9. Kleingrass, Blue Panic and Green Panic; Promising Forage Grasses for Belize.
10. Weed Management in pastures in Belize: Native Pastures

B. Recommendation for Follow-up

1. Continue the publication of technical information for Extension Officers and farmers.

Activities not included in the proposal but identified as necessary and its implementation approved by the BLDP II Coordinating Committee.

- a. Weed Control on Native and Cultivated Pastures

A. Accomplishment

1. A consultant on Weed Management conducted a 3-Week program and performed the following.
 - i. Identification of most important weeds in natural and cultivated pastures.
 - ii. Preparation of a draft for a manual for farmers.
 - iii. Conducted 3 short-course on weed management.
 - iv. Final report of his recommendation was prepared.

B. Recommendations for Follow-up

1. A weed management and control program on improved pastures, especially with grass-legumes, will be more complicated to establish at the farm level and farmers will require technical assistance in implementating new technology.

b. Pasture Seed Production

A. Accomplishment

1. A pilot seed production program has been prepared. The proposal, including training of technician in pasture seed production at CIAT, has been finally approved for its implementation in 1991.
2. A training program has been initiate by identification and approval of a technician to participate in a training program at CIAT beginning in February 1991.

B. Recommendations for Follow-up

A pilot seed production program will be initiated in early 1991 to begin harvesting and processing early in 1992.