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Date: February 18, 2016

**SHEEP VALUE CHAIN ANALYSIS IN NORTHERN BELIZE**

**Project Code:**

GCP/BZE/001/EC

**Project Title:**

Economic Diversification of Micro, Small and Medium Enterprises in Northern Belize

*A project implemented by the Food and Agriculture Organization of the United Nations in collaboration with the Ministry of Natural Resources and Agriculture, Belize with funding by the European Union*

**PROMOTING AGRIBUSINESS DEVELOPMENT IN NORTHERN BELIZE**

# TABLE OF CONTENTS

[TABLE OF CONTENTS ii](#_Toc445209812)

[LIST OF ACRONYMS AND ABBREVIATIONS iv](#_Toc445209813)

[EXECUTIVE SUMMARY v](#_Toc445209814)

[1. INTRODUCTION 1](#_Toc445209815)

[2. METHODOLOGY 3](#_Toc445209816)

[3. HISTORY OF THE VALUE CHAIN 5](#_Toc445209817)

[4. OVERVIEW OF THE SHEEP VALUE CHAIN 6](#_Toc445209818)

[4.1 Value Chain Map 6](#_Toc445209819)

[4.2 Cost Structure of the Sheep Value Chain 8](#_Toc445209820)

[4.3 Description of Main Sheep Value Chain Actors 9](#_Toc445209821)

[4.4 Conclusion 10](#_Toc445209822)

[5. MARKET SITUATION 11](#_Toc445209823)

[5.1 Estimated Demand 11](#_Toc445209824)

[5.2 Seasonality and Sales Trends 12](#_Toc445209825)

[5.3 Main Retailers and Retail Prices 13](#_Toc445209826)

[5.4 Conclusion 13](#_Toc445209827)

[6. Supply Situation 14](#_Toc445209828)

[6.1 Sheep Production In Northern Belize 14](#_Toc445209829)

[6.2 Slaughter of Animals 14](#_Toc445209830)

[6.3 Constraints to Sheep Production 15](#_Toc445209831)

[6.4 Conclusion 16](#_Toc445209832)

[7. CHAIN SUPPORTERS AND SERVICES PROVIDERS 17](#_Toc445209833)

[8. ENABLING ENVIRONMENT 19](#_Toc445209834)

[9. SWOT ANALYSIS 21](#_Toc445209835)

[10. FINDINGS AND RECOMMENDATIONS 23](#_Toc445209836)

[11. SHEEP VALUE CHAIN UPGRADING STRATEGY AND ACTION PLAN 24](#_Toc445209837)

[11.1 Sheep Value Chain Upgrading Strategy 24](#_Toc445209838)

[ANNEX I- LIST OF FARMERS - ORANGE WALK AND COROZAL DISTRICTS 31](#_Toc445209839)

[ANNEX II- SOURCES OF MEDICATION AND SUPPLIES 33](#_Toc445209840)

**List of Tables**

[Table 1: Value Chain Actors along the sheep value chain 9](#_Toc445209841)

[Table 2: Chain Supporter/Service Provider to the Sheep Value Chain 17](#_Toc445209842)

[Table 3: SWOT Analysis of the Sheep Value Chain 21](#_Toc445209843)

**List of Figures**

[Figure 1: Value Chain Map 7](#_Toc445209844)

[Figure 2: Share of Margins in the Sheep Value Chain (BZ$) 8](#_Toc445209845)

[Figure 3: Sales Trends, Heinrich Peters, Shipyard, 2013 (lbs) 12](#_Toc445209846)

[Figure 4: Sales Trends, Heinrich Peters, Shipyard, 2014 (lbs) 12](#_Toc445209847)

[Figure 5: Sales Trends, Heinrich Peters, Shipyard, 2015 (lbs) 12](#_Toc445209848)

# LIST OF ACRONYMS AND ABBREVIATIONS

BAHA Belize Agricultural Health Authority

DFC Development Finance Corporation

FAO Food and Agriculture Organization of the United Nations

ICDF International Cooperation and Development Fund

MAF Ministry of Agriculture, Fisheries, Forestry, the Environment and

Sustainable Development

MOH Ministry of Health

NGOs Non-Government Organizations

SWOT Strengths, Weaknesses, Opportunities, Threats

# EXECUTIVE SUMMARY

**Introduction**

Belize has a suitable climate for agriculture along with abundant water resources. Approximately, 800,000 hectares or about 38 percent of Belize’s total land area is considered potentially suitable for farming and raising livestock. Sugar production has been the traditionally the largest industry in the agricultural sector and particularly in the Northern districts of Orange Walk and Corozal, providing direct employment for about 4,800 workers and 6,000 registered cane farmers. However, it is expected that as a result of the sugar reform regime, some small scale farmers will leave sugarcane production due to their inability to remain competitive.

FAO in partnership with the EU and in collaboration with the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development (MAF) of Belize, commissioned a project in ‘*Promoting Agribusiness in Northern Belize*’, towards the diversification of the economic base of the communities in Northern Belize. This project aims to facilitate commercial agriculture-based enterprises, so as to improve income and employment opportunities in the sugar belt of Belize. This will be achieved through a multi-faceted value chain based approach targeting three existing areas of production, namely, onion, honey and sheep production. These commodities have been chosen by MAF as target commodities for their agricultural diversification programme because they are deemed to have the most potential for expansion in growth and income opportunity, along with good local market potential.

This assignment elaborates a value chain and market analysis of the sheep industry in Northern Belize. At present, the sheep industry in Northern Belize is in its infancy and confined to a few sheep farmers who have only done small quantities for commercial purposes over the last 3 to 4 years, butchers/wholesalers and retailers scattered across Belize. The value chain analysis of the sheep industry therefore seeks to map all actors and stakeholders in the value chain, determine the total demand and supply of sheep meat to the local market, elaborate on support services and the enabling environment and conduct a SWOT analysis of the chain. Based on the findings, an action plan for intervention focused on production, marketing, governance and policy is elaborated for development of the industry.

**Main Findings**

There are no official statistics on the consumption of sheep meat in Belize. However, using an estimate of 200 animals per month and an average dressed weight of each carcass of 45 lbs per animal, total demand for sheep meat from Northern Belize can be estimated at 9,000 lbs per month or 2,400 animals (or 108,000 lbs) per annum. The main consumption centre for sheep meat from Northern Belize is Belize City or its outskirts. Belizeans traditionally consume sheep meat during special family functions or holiday celebrations. Market trends have shown an increase in demand for sheep meat with the influx of other nationalities and religious groups such as Americans, Hindus and Muslims.

With respect to supply, it is estimated that there are about 15,000 heads of sheep in Belize and 466 sheep producers. The areas of greatest production are the Orange Walk, Cayo and Belize districts. The Barbados Blackbelly and Dorper (White head) sheep are predominantly produced by farmers. However, the crossbreeds between these two comprise the vast majority of herds. Few farms have Katahdin and Pelibuey breeds. One farm in northern Belize produces purebred Dorper. Based on an informal survey conducted by the consultant in 2015, there were approximately 32 sheep farmers in the Orange Walk and Corozal Districts, who had a combined total of 1,657 animals. Disaggregated, there were 19 sheep farmers in the Corozal District with 597 animals and 13 farmers in Orange Walk District with 1,060 animals. The main constraints to production have been identified as poor quality of breeding stock, inappropriate production technologies, inadequate technical support and credit.

The sheep value chain benefits from basic support in the areas of animal health, production and food safety. The quality and frequency of technical assistance for sheep production is not clear. There is an absence of market development and support, as farmers are limited to one main buyer. The enabling environment for the sheep value chain is comprised of institutions, policies and regulations to support its activities. However, there is an absence of specific policies to support production, processing and marketing of sheep and its by-products.

**Recommendations**

The development of the Sheep Value Chain in Northern Belize will require the implementation of specific interventions targeted at improving production technologies and practices, market development and support for sheep farmers, governance mechanisms and policies to support the development of the value chain. As an outcome of the participatory value chain analysis exercise, a strategy in support of the development of the sheep value chain in Northern Belize has been developed. This strategy is a comprehensive way to address critical factors that impact on the development of this particular chain. It is based on the market situation for sheep and mutton products in Belize and identifies value chain issues that impede efficiency and growth.

The strategy is owned by the Value Chain Coordination Committee (VCCC) and has been designed for a 3-year period. The focus of the strategy is on process upgrading: improved value chain efficiency and increased output volumes, marketable yields and reduced costs per unit of output, which will be achieved through the introduction of improved genetic material and the adoption of modern animal husbandry practices, better veterinary attention, improved pasture management and the introduction of cut and carry systems.

Sheep farmer group training and support for the formation of sheep farmer groups will complement these activities. Agriculture extension services will have to play a key role in the field testing of improved forages and pastures and knowledge transfer. This work is complemented by elements linked to product upgrading (enforcement of handling, processing and storage regulations, etc.), as well as functional upgrading (i.e. slaughtering, packaging and marketing by registered butchers and meat handlers) and improvement in value chain coordination and governance and the enabling environment.

# INTRODUCTION

Belize is located on the Caribbean coast of northern Central America, with a population of 370,300 in 2015. The country shares a land and sea border on the north with the Mexican state of Quintana Roo, a land border on the west with the Guatemalan department of El Petén, and a sea border on the south with the Guatemalan department of Izabal. Belize is classified by the World Bank as an upper middle income country with a GDP per capita of US$8,486 in 2014. Main economic activities centre on agriculture, industry and services. The World Bank notes that the country has undergone a significant transformation over the last decade resulting from the first commercial oil discovery in 2005 and emergence of the tourism industry. The economy grew by 3.6 percent in 2014, supported strongly by the agricultural and tourism sectors.

**The Agricultural Sector in Belize**

Belize has a suitable climate for agriculture along with abundant water resources. Approximately, 800,000 hectares or about 38 percent of Belize’s total land area is considered potentially suitable for farming and raising livestock. However, only 9.7 percent of the land (about 78,000 hectares) is used for agricultural practices (Martin and Manzano 2010). The agricultural sector is important to the national economy, contributing to 15.3 percent of Gross Domestic Product and 17.9 percent of total employment. In 2015, the mid-year population of the Northern districts was estimated to be 94,996 or 25.8% of the Belizean population.

Agriculture in Belize is defined as having three main sub-sectors, namely, a well-organized traditional export sector for sugar, banana, citrus and marine products; a small scale farm sub-sector, producing food for local consumption; and a well-integrated large scale commercial sector. The principal cereal grains produced as annual crops are mainly rice, corn and sorghum, while vegetables, root crops and beans are important for the domestic market. The Mennonite community, which comprises 3.6 percent of the population, plays an important role in the agricultural sector, producing a variety of commodities and livestock. A recent census of farms in Belize shows that 24 percent of farms have less than 5 acres, 33 percent between 5 and 20 acres and 74 percent of farms in the country are below 50 acres (FAO, 2011).

Sugar production has been the traditionally the largest industry in the agricultural sector and particularly in the Northern districts of Orange Walk and Corozal, providing direct employment for about 4,800 workers and 6,000 registered cane farmers. However, it is expected that as a result of the sugar reform regime, some small scale farmers will leave sugarcane production due to their inability to remain competitive.

**Background and Purpose of the Value Chain Analysis**

Mixed farming systems that are market-driven provide opportunities for these farmers as an alternative to sugarcane production. Providing support to the diversification of the non-sugarcane agricultural activities is currently a focus of the Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development (MAF). FAO in partnership with the EU and in collaboration with the MAF, commissioned a project in ‘*Promoting Agribusiness in Northern Belize*’ towards the diversification of the economic base of the communities in Northern Belize.

This project aims to facilitate commercial agriculture-based enterprises, so as to improve income and employment opportunities in the sugar belt of Belize. This will be achieved through a multi-faceted value chain based approach targeting three existing areas of production, namely, onion, honey and sheep production. These commodities have been chosen by MAF as target commodities for their agricultural diversification programme because they are deemed to have the most potential for expansion in growth and income opportunity, along with good local market potential.

The interventions under the project will target key constraints that prevent small- scale farmers from maximizing production and earnings from onion, sheep and honey production, as well as increasing value chain efficiency in the rural communities of Orange Walk and Corozal. Strengthening the overall chains will in turn result in improved market accessibility and coverage for farmers’ products and improved earning potential. The use of a value chain approach included a market appraisal, participatory value chain analysis and design of upgrading strategies and activities and supporting value chain governance and management mechanisms.

This assignment elaborates a value chain and market analysis of the sheep industry in Northern Belize. The value chain analysis identifies and maps all actors and stakeholders, along with their roles and impact on the chain. It recognizes the status of the local market demand and potential for further development. It also identifies strengths, weaknesses, opportunities and threats to the chain and based on findings, proposes an action plan to upgrade the industry.

# METHODOLOGY

The value chain analysis of the sheep industry was developed using the following methods:

1. **Literature Review**

Baseline data on the sheep industry at the District Agricultural Stations in Corozal and Orange Walk were read and analyzed by the consultant.

1. **Telephone and Email Communication**

Telephone and email communication were used to follow-up and validate information and data ascertained through the literature review and in face-to-face interviews. These were primarily with MAF District Agricultural officers, as well as with FAO local and regional representatives.

1. **Face to Face Interviews and Questionnaire Survey**

Face-to-face interviews were conducted with key informants in relevant ministries and departments of Government and also non-government organizations (NGOs). These interviews allowed the consultant to have a better understanding of the situation relating to the sheep industry and the scope of work that was required for the process of formulating the value chain analysis. The interviews also informed the SWOT analysis and gave a better idea of the actions required for planning an upgrading strategy. Finally, the interviews provided an impetus to the stakeholders to move the industry forward.

A survey questionnaire was administered to all actors in the value chain. Although the survey was written in English, some of the interviews were conducted in Spanish.

A digital camera was used to document specific areas of the value chain, including pastures, flock, slaughtering and processing facilities.

1. **Field Visits to Sheep Value Chain Stakeholders**

Field visits were conducted with producers and provided the consultant with a firsthand opportunity to assess the dynamics of sheep production systems in northern Belize. Interviews were conducted with producers and a survey was administered to obtain baseline data for the sheep industry.

1. **Convening of stakeholders’ meetings and workshop**.

Stakeholders’ meetings and a value chain workshop served to validate data and information obtained from existing literature and interviews. Two separate sessions were held to elaborate on the SWOT analysis. The first was carried out at the Agriculture Station at Corozal with six sheep farmers. The second was done at the SIRDI conference room during the Sheep Value Chain Validation Workshop.

These fora also provided a platform to review a first draft of the sheep value chain upgrading strategy and action plan and to exchange ideas for stakeholders to find possible solutions to make the sheep industry more sustainable and profitable. Greater relationships among various actors along the value chain were also fostered at these events. It also set the stage for a better business, social and organizational relationships that is necessary for further development of the sheep industry.

1. **Finalization of the Report**

A final meeting was then held with the Project Team, FAO Technical Officers and the visiting FAO International Value Chain Consultant where further recommendations were made for improvement of the final document to bring it closer to stakeholder recommendations and FAO criteria. The draft was then presented and reviewed with the project team before forwarding to the FAO Representation. The draft was then technically edited, with input from the Lead Technical officers.

The application of this methodology has proven to be very effective in development of this value chain report, which will serve as a guideline and reference for the sustainable development of the Sheep Industry in Northern Belize.

# HISTORY OF THE VALUE CHAIN

The sheep industry in Northern Belize is very small and limited to a few sheep farmers, butchers/wholesalers in the Shipyard Mennonite community and retailers scattered across Belize. At present, sheep farmers in Northern Belize are first generation growers, who have only reared small flocks for commercial purposes over the last 3 to 4 years.

Traditionally, mutton is consumed as an exotic meat, mainly for special family occasions by Belizeans. Although Belize is a multi-cultural society, mutton is not a main ingredient in the diet of Belizeans, who prefer meats such as chicken, fish, pork and beef.

Key informant interviews reveal that the growth of the Muslims and Hindu communities are having a positive impact on the demand for mutton in Belize. It is important to note that with an influx of other ethnicities in Belize, consumption trends in mutton, especially lamb, is steadily growing throughout the country. Therefore, it is anticipated that the demand for mutton, even among traditional Belizeans will change over time, to being consumed more regularly as part of the national diet.

# OVERVIEW OF THE SHEEP VALUE CHAIN

The organization of the value chain is basic, as the actors at each stage are few, given the low levels of production of sheep. This section will therefore provide a map of the value chain, present the cost structure and describe the main value chain actors.

## Value Chain Map

The sheep value chain is comprised of input suppliers, sheep farmers, wholesalers/butchers, freighters, retailers and consumers. There are also entities that provide support services to the value chain, as well as enablers, who provide indirect support.

Figure 1 depicts the value chain map of the sheep value chain.

Figure 1: Value Chain Map

***Retailers***:

-Brodies Supermarket

- Smiling Meats - Michael Finnegan Market

-Meat shop

-Prosser Fertilize & Agrotec Company Limited

-Agro-Vet Jiron & Sons

-Bodega

-Farm Stores

-Veterinarians

-Pharmacies

-Farmers

32 sheep Farmers in villages in Corozol , Orange Walk & Little Belize

**CHAIN ENABLERS**

Technical: Veterinarians, Agro-Vet, MAF Extension Services, Cooperatives

Financial: Credit Unions- Saint Francis Xavier – Corozol Town, La Inmaculada – Orange Walk Town, DFC,  Commercial Banks

**CHAIN SUPPORTERS/SERVICE PROVIDERS**

**CHAIN ACTORS**

**CONSUMPTION**

**FUNCTION**

Mennonite Community in Shipyard

***Consumers***

MAF, BAHA, Public Health Department

## Cost Structure of the Sheep Value Chain

The Shipyard Mennonites purchases live animals from sheep farmers, mainly at the farmgate, at prices ranging from BZ$2.00 to BZ$2.75/lb and up to premium prices of BZ$3.00 to BZ$3.50/lb. After slaughtering, carcasses are transported in a freezer truck to the supermarkets in Belize City (mainly Brodies, Michael Finnegan Market and Smiling Meats). The selling price to the supermarkets ranged from BZ$5.75 to BZ$6.00/lb. The meat shops sell to the consumers at BZ$8.50 to BZ$9.00 per lb.

Figure 2 shows the portion of the retail price obtained by each action along value chain.

Figure 2: Share of Margins in the Sheep Value Chain (BZ$)

Based on the analysis, the wholesaler/butcher obtains the highest share of the retail price of 40 percent, while the farmer gains the least (27 percent).

## Description of Main Sheep Value Chain Actors

Table 1 details the main value chain actors along the sheep value chain.

Table 1: Value Chain Actors along the sheep value chain

| ACTOR | DESCRIPTION |
| --- | --- |
| Input Suppliers | Farmers mainly source their breeding stock from among themselves. One large farmer obtained his animals from Mexico. The government station at Yo Creek in the Orange Walk District is preparing to provide breeding stock to farmers.  There are four veterinarians that attend to animals and supply drugs and veterinary services to farmers for these animals. These veterinarians operate clinics across Northern Belize, with one located in Shipyard. However, it has been established that approximately 37 percent of farmers obtained their medication from the Shipyard Mennonite Community, compared to 9 percent from individual veterinarians.  Sale of medication such as worm medicines, antibiotics, vitamins; tools equipment and utensils, (scales, rope, hardware for fences and other infrastructures) are accessed from input suppliers. There are three main companies supplying Northern Belize with inputs to agricultural and livestock production. Two of these companies, Prosser Fertilize and Agrotec Company Limited and Agro-Vet Jiron & Sons have branches in the main towns of Northern Belize. Specifically, Agro-Vet Jiron & Sons has eight stores that caters to the needs of sheep farmers. Bodega, supplies mainly the Mennonite Community in Little Belize and Corozal District.  These larger stores are complemented by smaller farm/agricultural stores which are community based, from which farmers can also access inputs for their farm enterprise. |
| Farmers | There are 32 major sheep farmers in northern Belize – they work as independent units. They are first generation producers who have only been rearing sheep in commercial quantities over the last 3 to 4 years. There is no sheep farmers’ organization in Belize. |
| Wholesalers/Butchers | There are two main wholesalers in Shipyard which is a Mennonite community in Orange Walk which buys sheep from farmers in Northern Belize. They buy and slaughter an average of 100 animals per month.  During slaughter (Tuesdays and Thursdays) mornings, BAHA and Public Health Officers converge at the slaughterhouse to do ante mortem and post mortem inspection and certification of meats.  There are two certified butchers in Shipyard. Other Mennonites from the Shipyard community work in the slaughtering facilities. After the animals are slaughtered the carcasses are dressed and cleaned and put in freezers ready to be distributed and sold. Carcasses are then transported to their final destinations, namely meat shops and supermarkets.  The slaughterhouses keep records about their slaughtering activities. |
| Retailers | There are three main retail outlets for sheep meat in Belize City, who account for the largest portion of sales. These are Brodies Supermarket, Smiling Meats and the Michael Finnegan Market. In Northern Belize, there are two main retailers, Frank Rosado and Gillett’s meat shop in Orange Walk District, which sell small amounts of sheep meat. |
| Consumers | The main consumers of sheep meat are in Belize City, which accounts for 90 percent of total consumption. In Belize City, there are large growing Hindu and Muslim communities. Traditional Belizean families consume mutton on special occasions. Restaurants and casinos also purchase sheep meat for inclusion in their menus. |

## Conclusion

At present, there is a small, but integrated group of farmers, butchers, retailers and consumers who comprise the sheep value chain in both Northern Belize and Belize City. The Mennonites at Shipyard provide an important function in this chain, by being the main commercial butchers and wholesalers of sheep. However, the development of a viable sheep value chain in Northern Belize will be based on the growth of demand for sheep meat and other by-products in the main or potential centres of consumption or in export markets.

# MARKET SITUATION

Belizeans are not traditional consumers of sheep meat on a regular basis, which is mainly eaten during special family functions. Market trends have shown an increase in demand for sheep meat with the influx of other nationalities and religious groups such as Americans, Hindus and Muslims.

This section estimates the total demand for sheep meat from Northern Belizean, identifies seasonality and trends for consumption and the main retailers.

## Estimated Demand

There are no official statistics on the consumption of sheep meat in Belize. The consultant therefore undertook a small survey to ascertain a benchmark for its consumption in consultation with butchers, meat shops and supermarkets that buy the product. This figure excludes subsistence production and consumption systems within households and communities, where animals are grown, slaughtered and consumed, without passing through a formal supply chain.

The Shipyard Mennonites slaughter approximately 100 animals per month, but are unable to fulfil demand from their clients, which is estimated at 200 animals per month. The main seller of mutton in Belize City indicated that monthly demand was double their currently monthly supply. However, the other smaller meat shops did not think that the demand from their establishment was more than what was being supplied.

Using an estimate of 200 animals per month and an average dressed weight of each carcass of 45 lbs per animal, total demand for sheep meat from Northern Belize can be estimated at 9,000 lbs per month or 2,400 animals (or 108,000 lbs) per annum.

Import statistics of meat of sheep or goat (fresh, frozen or chilled)[[1]](#footnote-1) shows that 1 ton of mutton and chevon was imported to Belize in 2014, while 2 tons were imported in 2013. It may be inferred from the statistics that there are opportunities for import substitution.

## Seasonality and Sales Trends

Trends for sales in mutton for the period 2013 to August 2015 are depicted in Figures 3 to 5 below.

Figure 3: Sales Trends, Heinrich Peters, Shipyard, 2013 (lbs)

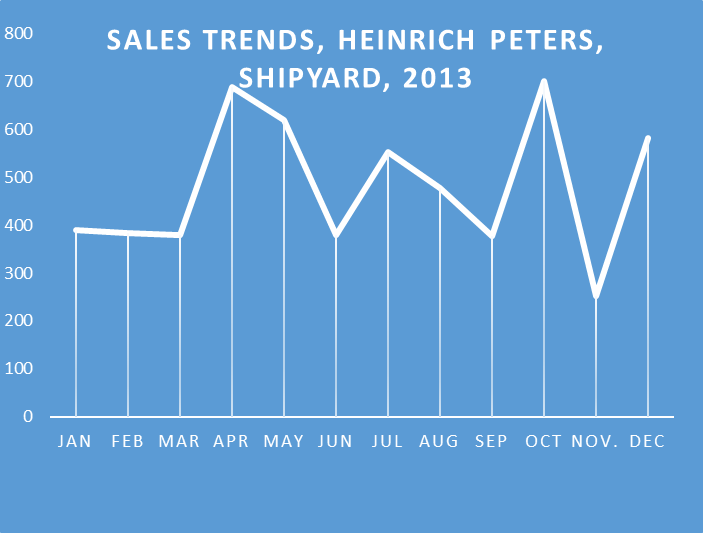
**Figure 3 shows the trends of sales for the Shipyard abattoir over the twelve month period of 2013. It can be observed that there were peak sales in April, October and December, coinciding with major holidays or religious celebrations.

Figure 4: Sales Trends, Heinrich Peters, Shipyard, 2014 (lbs)

In 2014 (see figure 4), the supply was fairly consistent with peaks in January, March, June, October and December.

It should be noted that the lowest sales in both years were in the month of November.

Figure 5 below shows the trend for the first eight months of 2015. April was the peak month, with January to March and May to June showing downward trends. Sales also peaked in July.

Figure 5: Sales Trends, Heinrich Peters, Shipyard, 2015 (lbs)

## Main Retailers and Retail Prices

The main consumption centre for sheep meat from Northern Belize is Belize City and its outskirts. Brodies Supermarket, which is located outside of Belize City, is the biggest buyer of sheep meat originating from the northern districts. They buy and retail 40 carcasses on a monthly basis from the Shipyard Mennonites at BZ$6.00 to BZ$6.50 per pound. The carcasses are then cut, packed, and sold to the consumer at BZ$8.00 to BZ$8.50/lb. Other buyers are Smiling Meats, who buys five carcasses per month and to a lesser extent, the Castillo’s Brothers at the Michael Finnegan Market in Belize City, who purchase three carcasses per month.

The meat shops sell to the consumers at BZ$8.50 to BZ$9.00 per lb. However, there have been instances where carcasses have been sold at as much as BZ$11.00 per lb to a Casino.

Based on the consultations with the meat shops in Northern Belize, it may appear that demand is low, given that only one meat shop sells three carcasses per month. Since commercial sheep farming is in its infancy, it could be assumed that some households grow, slaughter and consume their own sheep.

## Conclusion

Based on the above captioned analysis, the market for sheep meat from Northern Belize is small, but growing among specific consumer groups. Given cultural traditions, a significant growth in its consumption may not come from traditional Belizeans. There is great potential with religious groups such as Hindus and Muslims and other nationalities, such as Americans.

Belize is growing as a tourist destination, with nearly 300,000 stop-over visitors annually. In neighbouring Caribbean destinations, prime cuts of lamb are normally served to visitors as part of their meals. With sensitization of hotel chefs, this can also be done in Belize. However, such a programme would have to be properly managed to ensure that local sheep farmers benefit from any increase in demand for mutton or prime cuts of lamb.

# Supply Situation

It is estimated that there are about 15,000 heads of sheep in Belize and 466 sheep producers. The areas of greatest production are the Orange Walk, Cayo and Belize districts. The Barbados Blackbelly and Dorper (White head) sheep are predominantly produced by farmers. However, the crossbreeds between these two comprise the vast majority of herds. Few farms have Katahdin and Pelibuey breeds. One farm in northern Belize produces purebred Dorper.

Trade statistics show that meat of sheep and goat are imported in small quantities (1 ton in 2014 and 2 tons in 2013) into Belize. There is no information on the type of importers of meat from sheep and goat.

## Sheep Production In Northern Belize

Based on an informal survey conducted by the consultant in 2015, there were approximately 32 sheep farmers in the Orange Walk and Corozal Districts, who had a combined total of 1,657 animals (see Annex I). Disaggregated, there were 19 sheep farmers in the Corozal District with 597 animals and 13 farmers in Orange Walk District with 1,060 animals. Herd sizes are larger in Orange Walk than in Corozal. On an average, it is estimated that there is about 1.1 acres of land available per sheep, which suggests that there is scope for improving efficiency once production levels increase.

Sheep farmers works mainly as “independent units” and are not organized into groups or cooperatives. They are first generation growers who have been doing commercial quantities over the last 3 to 4 years.

There are other subsistence producers who have 1 to 2 sheep in their backyards.

Various feeding systems were observed on farms visited by the consultant. Most farmers practice an extensive grazing system with minimal emphasis on adequate nutrition. For example, one farmer was observed feeding his animals corn and fruits from the farm, while other farmers allowed their flocks to eat sugarcane, where available. A larger farmer reported that he fed the animals some concentrate purchased from a feed mill. Orange peelings purchased from a citrus factory were also fed to animals on another farm.

## Slaughter of Animals

Slaughter of animals is primarily done at the Mennonite community in Shipyard where there are two abattoirs which slaughter sheep. The abattoirs slaughter an average of 100 sheep per month. The animals are slaughtered on specified days to allow BAHA and Public Health officers to conduct ante mortem and post mortem inspection and certification of meats.

## Constraints to Sheep Production

The International Cooperation and Development Fund (ICDF) of Taiwan[[2]](#footnote-2) indicate that problems within the country’s existing sheep industry are caused by the poor quality of local sheep breeds, resulting in low productivity and the inability to meet market demand. ICDF reports that the main reason for Belize’s low productivity in sheep production is that the quality of breeding sheep is poor. There is limited capacity of Government to provide adequate and quality breeding stock to meet the needs of farmers. The management and technology of sheep feeding systems is poor and there has been a failure to maintain pure breeding lines. Farmers lack mechanisms for exchanging information and also knowledge about proper pasture and feed management and animal nutrition.

A survey conducted by the consultant revealed that access to finance was reported as the main constraint to production by 22 percent of respondents. This was followed by the capital costs for small farm infrastructure (includes sheds, water, and fencing for animals) by 19 percent of respondents. The survey also substantiated the findings of ICDF, as 15 percent of respondents stated that there were limited animals available for breeding and 8 percent stated that obtaining the right genetic stock was an issue. Other issues such as: little knowledge of animal health and husbandry practices; no experience in commercial sheep rearing; lack of efficiency, capacity and capital were also cited by farmers.

Other factors identified by farmers as constraints to production were:

* Lack of confidence in main buyer/marketer;
* Natural disasters and extreme weather conditions (for e.g. drought in the north);
* Absence of farmers’ organization, resulting in failure to capitalize on opportunities; and
* Absence of appropriate labour.

## Conclusion

There is an opportunity for improving sheep production in Northern Belize based on available land, existing and prospective sheep farmers, market potential and basic support services. However, there are binding constraints to production that can keep the industry from moving forward which will have to be jointly addressed by Government, producers and other key development partners. These include absence of adequate breeding stock, poor production and management practices, lack of technical support and difficulty in obtaining credit. Sheep farmers also need adequate markets to confidently make significant investments in sheep production. In addition, financial institutions will also need to be certain that sheep farming is viable before providing the necessary credit to sheep farmers.

# CHAIN SUPPORTERS AND SERVICES PROVIDERS

The sheep value chain is supported by mainly technical service providers. Traditionally, financial service providers have not supported the chain in any significant way. The following table shows the main chain supporters/service providers to the sheep value chain.

Table 2: Chain Supporter/Service Provider to the Sheep Value Chain

|  |  |
| --- | --- |
| **Provider** | **Function/Role** |
| Veterinarians (4) | * Provide animal health, professional advice and specialized health care services, such as emergency care and preventative medicine. |
| MAF- Extension Services | * 1 livestock officer each at the Corozal and Orange Walk research stations. * Provides basic husbandry education and animal health services, as well as making connections with farmers and other organizations that provide regulatory or supporting functions. * Supports capacity building and training and direct contact with farmers through the extension officers. |

**Financial Institutions**

There are three main types of financial institutions providing credit to farmers, namely, the government owned Development Finance Corporation (DFC), credit unions and commercial banks. These facilities are contingent on the individual’s track record, credit history, funding criteria and his/her relationship with the financial institution.

With respect to DFC, first time borrowers can qualify for amounts of up to BZ$7,500, with one guarantor needed to stand surety. Loans above BZ$7,500 require two guarantors. Loan officers will assist farmers with preparation of business plans, thereby making the process more farmer-friendly. Collateral in the form of land is preferred for larger loans, along with someone to co-sign.

**The Saint Francis Xavier Credit Union** is one example of a Credit Union that provides loans to farmers under the Belize Rural Finance Program. This is a program with finances coming from the Government of Belize, the EU and the International Fund for Agriculture Development (IFAD). Their loan portfolio consists of farmers from Corozal, Little Belize and San Carlos.

Members can borrow up to five times the amount of their savings up to BZ$10,000. Loans are evaluated based on the client’s capability of getting things done and ability to repay the loan. . Refinancing on repayment schedule is available in case of uncontrolled circumstances, and depends on the amount borrowed and on the loan deficit. At the time of the study, the interest rate on loans was 18 percent per annum.

**La Inmaculada Credit Union (LICU)** provides loans at a rate of interest at 1 percent per month on the reducing balance. In order to qualify for a loan, the farmer must be a member, have a good credit history and have at least 10 percent of loan in shares. If the latter condition is not met, then a guarantor, bill of sale or real estate is requested by the credit union to be used as security.

**Commercial banks** also provide loans, but the farmer must have a good credit history with them and most of the time, collateral is required. Interest rates are between 10 and 14½ percent per annum. The total amount loaned is usually 75 percent of the value of collateral.

Uptake of loans among farmers has been low because of their skepticism towards financial institutions. During the course of this study, financial institutions, namely, Development Finance Corporation, La Imaculada and St Francis Xavier Credit Unions were invited to make presentations to farmers. They shared their mandate, how they operate and borrowing conditions at the validation meeting on October 21, 2015. Farmers were invited to visit the institution for further information and to become active members of the Credit Unions.

**Conclusion**

The sheep value chain benefits from basic support in the areas of animal health, production and food safety. The quality and frequency of technical assistance for sheep production is not adequate, given farmers’ challenges documented in the survey. There is an absence of market development and support, as farmers are limited to one main buyer. Since access to credit is also an issue for farmers, it is clear that financial institutions need to have a better understanding of the sheep value chain, specifically, the operations of sheep farmers, to have confidence in lending to this group.

# ENABLING ENVIRONMENT

The enabling environment for the sheep value chain is comprised of institutions, policies and regulations to support its activities. This section details the main institutions supporting the sheep value chain and their functions.

The main Government bodies supporting the sheep value chain have a mandate relating to policy, regulation of imports, public health and food safety. These are described below.

|  |  |
| --- | --- |
| Provider | Function/Role |
| Ministry of Agriculture, Fisheries, Forestry, the Environment and Sustainable Development | * The development of the sheep industry as part of the Government’s diversification program. * Small ruminant research and development program in order to provide better support to sheep farmers. |
| Belize Agricultural Health Authority | * Ante mortem inspection of animals to ensure that they are fit for slaughter. * Regulatory inspection of facilities. * Regulates import/export of animals and animal products. |
| Ministry of Health - Public Health Department | * Ensures hygiene standards of areas and facilities where animals are slaughtered, processed and stored. * Conducts post mortem inspection at slaughtering facilities. * Inspects and approves meat for human consumption. |

**Bilateral Projects**

In addition to FAO’s intervention, there are bilateral projects with the Taiwanese and Mexican governments to improve sheep production.

***Genetic Improvement for Sheep and Goat Breeding Belize-Taiwan Project***

The Government of Belize received support from the Taiwanese Government valued at US $1.62 million for a *Genetic Improvement for Sheep and Goat Breeding Belize-Taiwan Project*. This is a two year project which commenced in December 2015. Its main objectives are:

1. Improvement and development of the National Small Ruminant Center at Central Farm.
2. Introduction of quality breeding stocks and renew breeding stock so as to improve the productivity of stock.
3. The capacity building and technical training of the Ministry’s livestock technicians and officers, and the small ruminant producers in the country including the establishment of a traceability registry for the herd.

***Mexican Technical Cooperation***

There is an ongoing technical cooperation agreement between the Government of Belize and Mexico, which mainly covers technical training for farmers and technicians. Mexico will provide specialist trainers to conduct training activities with this group in Belize. Additionally, 12 farmers (2 from each district) and Extension Officers will be taken to Mexico in an exchange visit to Yucatan to demonstrate sheep rearing in Mexico.

**Conclusion**

The sheep industry is still in its infancy, so there will need to be a determination by Government of the type of support that the industry must be given to move forward. Policies to support production, processing and marketing of sheep and its by-products must be put in place to ensure that this industry grows and is profitable to farmers.

# SWOT ANALYSIS

This section presents the SWOT analysis for the sheep value chain, which was developed in consultation with sheep farmers and other value chain actors.

Table 3 below outlines the SWOT analysis of this value chain.

Table 3: SWOT Analysis of the Sheep Value Chain

|  |  |
| --- | --- |
| **Strengths** | **Weaknesses** |
| * Growing market for lamb and mutton. * Availability of land for expansion of production. * Land tenure of farmers. * Basic knowledge and some experience of sheep husbandry. * Pastures available to some farmers. * Some farmers are undertaking pasture improvement using protein banks. * Animals are relatively disease free * Cadre of veterinarians which are accessible to farmers. * Availability of central abattoirs for the slaughter of meat. * Financing without onerous collateral requirements available to farmers. * Technical support available to farmers through the Extension Services and other Government agencies. * Ability to keep labour costs low by using family labour. | * One main buyer of live sheep, who does not always buy all the sheep produced by farmers. * Limited market intelligence on the level of domestic demand for mutton, lamb and other by-products. * Lack of knowledge of the market channels for live sheep, lamb and mutton. * Poor supply and quality of local sheep breeds. * Low productivity of existing breeds. * Inadequate knowledge of appropriate production technologies. * Farmers lack mechanisms for exchanging information. * Farmers lack knowledge about proper pasture and feed management and animal nutrition. * Inadequate pastures for some farmers. * Inadequate housing and farm infrastructure to accommodate herds. * Water availability is limited for some farmers. * Poor farmer organization. * Limited coverage of extension officers for farm visits and advice on technical production practices. * Limited relationship between financial institutions and sheep farmers. |
| **Opportunities** | **Threats** |
| * Potential to increase production to supply the domestic market. * Market expansion due to influx of immigrants who consume mutton and lamb regularly. * Potential for import substitution with local production. * Potential for development and sale of by-products (for e.g. organic fertiliser). * Introduction of new breeds or improvement of existing breeds can increase size and productivity of animals to meet demand. * Adoption of improved technology for sheep production can improve productivity of animals. * Potential for organizing farmers for a well-planned production and marketing program and for the implementation of quality standards. | * High capital start-up costs. * Low farmgate prices for live sheep. * Climate change, inclusive of heavy drought, excessive rains and natural disasters. * Disease outbreaks. * Praedial Larceny. |

**Conclusion**

The SWOT analysis shows that with adequate technical, financial and market support, there are opportunities for the growth and development of the sheep industry. However, strategies will have to be developed to address weaknesses and threats to the value chain, especially as it relates to the production and market functions.

# FINDINGS AND RECOMMENDATIONS

The sheep industry in Northern Belize has strong prospects for growth and development. Anecdotal evidence from farmers, wholesalers and retailers points to a gap in the supply of mutton and lamb to the market, especially in peak periods marked by religious festivals. There is also an untapped tourist market, which is currently growing in Belize.

Limited market intelligence on the level of domestic demand for mutton and lamb in various market channels has limited sheep farmers’ ability to adequately supply the market. An understanding of the market for live sheep, mutton, lamb and by-products is urgently needed to inform production decisions of farmers. Specifically, farmers need to be appraised of the quantity required, main consumption periods, market segments, cuts of meat and weight requirements of carcasses or live sheep, to adequately meet the demand of the market.

There are existing constraints to sheep production such as breeding stock, production technologies, technical and veterinary support and credit, which can hamper the development of the industry. It is important for these constraints to be addressed in a timely manner to enable producers to increase production, as opposed to distributors entering the market and importing the shortfall in production. The ongoing initiatives that are being implemented by various development partners need to be coordinated to have maximum impact on the industry.

The existence of one main buyer for live sheep for slaughtering will also pose challenges for expansion, as farmers already complain that the buyer does not always take their sheep. This situation can create wrong signals in the market, that is, depressing the price to the farmers or increasing the price to the retailer, if it is not properly managed. Therefore, the value chain needs to have proper information for all its actors to make informed production and pricing decisions. It also needs to be integrated, so that trust can be built with all players and producers to operate with full knowledge of the markets. The organization of farmers should be encouraged to develop a stronger position in the value chain, to address challenges and take advantage of opportunities to improve their livelihoods.

Government and other partners will have to play a formidable role in assisting farmers to improve, *inter alia*, their breeding stocks, technical capacity for animal husbandry, health and nutrition and knowledge of markets. Financial institutions will also have to support sheep farmers, given the high start-up costs for the operations. Farmers will have to develop relationships with their financial institutions to build trust and knowledge of their production systems, so that they can access credit that is affordable and suitable to their needs.

If given the necessary support the sheep industry can move from its existing position of producers supplying a small undefined market, to one which is organized and supplies defined market segments with differentiated products.

# SHEEP VALUE CHAIN UPGRADING STRATEGY AND ACTION PLAN

## Sheep Value Chain Upgrading Strategy

As an outcome of the participatory value chain analysis exercise, a strategy in support of the development of the sheep value chain in Northern Belize has been developed. This strategy is a comprehensive way to address critical factors that impact on the development of this particular chain. It is based on the market situation for sheep and mutton products in Belize and identifies value chain issues that impede efficiency and growth.

The strategy is owned by the Value Chain Coordination Committee (VCCC) and has been designed for a 3-year period. The focus of the strategy is on process upgrading: improved value chain efficiency and increased output volumes, marketable yields and reduced costs per unit of output, which will be achieved through the introduction of improved genetic material and the adoption of modern animal husbandry practices, better veterinary attention, improved pasture management and the introduction of cut and carry systems. Sheep farmer group training and support for the formation of sheep farmer groups will complement these activities. Agriculture extension services will have to play a key role in the field testing of improved forages and pastures and knowledge transfer. This work is complemented by elements linked to product upgrading (enforcement of handling, processing and storage regulations, etc.), as well as functional upgrading (i.e. slaughtering, packaging and marketing by registered butchers and meat handlers) and improvement in value chain coordination and governance and the enabling environment.

***Vision Statement:***

To enhance the competiveness of the sheep value chain and increase stakeholders income

***Component 1: Production and knowledge transfer***

Objective: To increase the production, productivity, quality and competitiveness of local sheep products.

***Component 2: Marketing***

Objective: To stabilize income and ensure fair profit margins for value chain actors higher and regular market supplies of sheep and sheep products.

***Component 3: Governance***

Objective: To promote effective sheep value chain development.

***Component 4: Policy***

Objective: To ensure consumer protection, food safety and an enabling environment in support of the sheep value chain development.

***Component 5: Knowledge***

Objective: To enhance the capacity of sheep farmers to form producer and marketing groups.

In order to guide the actors to improve their performance and get a larger profit share of the value added to the production and marketing of sheep and sheep products, support activities have been developed and grouped under each of the five components. A detailed action plan for the implementation of this upgrading strategy is provided in the following section. While the strategy implementation will be guided by the VCCC, there are specific roles and tasks for each of the actors and stakeholders in the value chain, including the Government. The responsible parties for particular actions are listed in the final column of the action plan table.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **GCP/BZE/001/EC – PROMOTING AGRIBUSINESS DEVELOPMENT IN NORTHERN BELIZE**  ***Sheep Value Chain Upgrading Action Plan***  ***2015-2017*** | | | | | | | |
| Production |  | | | | | | |
| **Strategy** | **Action** | **Means** | **Responsible party** | **Deadline** | **Location** | **Budget** |
| ***Objective 1: Improve production technologies utilized by sheep farmers*** | | | | | | |
| * 1. Enhance feeding systems | * + 1. Establish 20 acres of new pasture. | Selection criteria | Sergio  Canto  District focal point  EO | December 2016 | Corozal (CZL)  Orange Walk (OW) |  |
|  | * + 1. Renovate 20 acres of existing pasture with improved pasture | Selection Criteria | Sergio  Canto  District focal point  EO | December 2016 | CZL  OW |  |
|  | * + 1. Establish 16 parcels of forage. | Selection Criteria | Sergio  Canto  District focal point  EO | November 2016 | CZL  OW |  |
|  | * + 1. Train 20 farmers including extension officers on pasture and forage management. | Consultant | Sergio  Canto  Consultant  EO | June 2016 | Yo Creek, Orange Walk |  |
| * 1. Improve breeding stock/lines | * + 1. Purchase 15 heads of ram to support upgrading of genetic stock for Yo Creek breeding station | FAO purchase order | Sergio  Canto | June 2016 |  |  |
| * 1. Promote sheep farming | * + 1. Develop and implement a public awareness campaign to attract more persons into sheep farming. | Press Office | Sergio  Canto | August 2016 | National |  |
|  | * + 1. Train 20 farmers, including technicians in modern sheep rearing practices (TOT). Training will also highlight record keeping, budgeting and best practices. | Consultant | Sergio  Canto  Consultant | June 2016 | Yo Creek, Orange Walk |  |
|  |  | * + 1. Develop a database of sheep farmers. | MAF | MAF  EO  Sergio | May 2016 | CZL  OW |  |
| Capacity  Building | ***Objective 2: To enhance capacity of sheep farmers and technicians to improve production and productivity of sheep farming*** | | | | | | |
| 2.1 Improve capacity among stakeholders | * + 1. Train 20 farmers including extension officers in leadership and good governance. | Consultant through seminars | Sergio  Consultant | June 2016 | CZL  OW |  |
|  | * + 1. Train 20 farmers, including technicians in modern sheep rearing practices (TOT) and farm management. | Consultant | Sergio  Canto  Consultant | June 2016 | Yo Creek, Orange Walk |  |
|  | * + 1. Train 20 farmers including extension officers on the value chain concept. | Consultant | Consultant  Sergio  Canto |  |  |  |
|  | * + 1. Conduct 1 field visit to Yucatan Mexico to a modern sheep rearing farm for 15 farmers and extension officers. | Coordinate with SAGARPA Mexico | Sergio  Canto | May 2016 | Merida, Mexico |  |
| Governance | ***Objective 3: To establish effective mechanisms for management of the value chain*** | | | | | | |
| * 1. Establish a coordinating committee | * + 1. Establish a Value Chain coordinating committee with stakeholders from the entire chain. | Hold meeting with stakeholders | Sergio  Canto | Every two month starting February 2016 |  |  |
| * 1. Organize farmers into groups | * + 1. Advocate for farmer group formation through the Cooperative Department of Belize. | Cooperative Department | Hector (Coops) EO  MAF  Sergio | September 2016 | CZL  OW |  |
|  | ***Objective 4: Increase market channels for sheep meat*** | | | | | | |
| Marketing | * 1. Promote greater domestic consumption of sheep meat | * + 1. Develop promotion campaign with stakeholders |  |  |  |  |  |
|  | * + 1. Explore the potential of supplying hotels and restaurants with lamb that meets the required quality standard |  |  |  |  |  |
|  | ***Objective 5: To improve animal health and food safety for the sheep value chain*** | | | | | | |
| Policy | 5.1 Improve on-farm disease management | 5.1.1 Build capacity of extension officers, veterinarians and animal health assistants to provide on-farm support to sheep farmers in disease prevention and management. | MAF  Private Veterinarians |  |  |  |  |
| 5.2 Enhance food safety in the processing and handling of sheep meat. | Support the revision and implement of slaughter house food safety regulations and procedures and provide training for inspectors and animal health officers in the new procedures. | MAF  Ministry of Health | MAF  Ministry of Health |  |  |  |

# ANNEX I- LIST OF FARMERS - ORANGE WALK AND COROZAL DISTRICTS

|  |  |  |  |
| --- | --- | --- | --- |
| SHEEP FARMERS, COROZAL DISTRICT | | |  |
| NO | NAME | VILLAGE | FLOCK SIZE |
| 1 | Teresita Sanker | San Narciso | 15 |
| 2 | Andres Campos | San Narciso | 29 |
| 3 | Luis Garcia | San Victor | 15 |
| 4 | Alfonso Castaneda | San Roman | 11 |
| 5 | Fidel Pineda | San Antonio | 150 |
| 6 | Ruth Rivera/Kim Longsworth | Santa Elena | 65 |
| 7 | Zoila Sosa | Chan Chen | 6 |
| 8 | Patty Cassanova | Calcutta | 78 |
| 9 | Luis Chen | Consejo Rd | 61 |
| 10 | Adolfo Aviles | Consejo Rd | 31 |
| 11 | Ryan Cob | San Pedro | 6 |
| 12 | Francisco Campos | San Narciso | 15 |
| 13 | Dionicio Che | Cristo Rey | 4 |
| 14 | Etiquero Correa | San Roman | 10 |
| 15 | Herculano Patt | San Narciso | 20 |
| 16 | Johan Wall | San Andres | 9 |
| 17 | Jose Luis Dominguez | San Andres | 44 |
| 18 | John Ross | Xaibe | 14 |
| 19 | Herculano Cobb | Consejo Rd | 14 |
|  | **TOTAL FLOCK** |  | **597** |

|  |  |  |  |
| --- | --- | --- | --- |
| **SHEEP FARMERS- ORANGE WALK** | | | |
| No. | Name | Location | Total Flock |
| 1 | Mr. Chan | San Roman, Rio Hondo | 11 |
| 2 | Pamela Heron | Dubblum Area | 20 |
| 3 | Elvira Chi | San Luis | 9 |
| 4 | Antonio Chan | Santa Martha | 40 |
| 5 | Alan Carillo | San Lazarus | 260 |
| 6 | Armando Carillo | San Lazarus | 315 |
| 7 | Juan Carillo | San Lazarus | 60 |
| 8 | Martha Acevedo | San Felipe | 40 |
| 9 | Leovilijildo Wicab | San Felipe | 56 |
| 10 | Dony Urbina | Northern Hwy | 177 |
| 11 | Franz Weinz | Little Belize, Camp 28 | 21 |
| 12 | Peter Thiessen | Little Belize, Camp 33 | 41 |
| 13 | Nazario Chan | San Roman | 10 |
| **Total Flock** | |  | **1060** |

# ANNEX II- SOURCES OF MEDICATION AND SUPPLIES

Sources of Medication and Supplies, Corozal (9), Orange Walk, (10)

|  |  |
| --- | --- |
| **Name** | **Contact Person** |
| **Corozal** | |
| Prosser Fertilizer Co. | Vanessa Chuc |
| Dr. Sheila Schelling Veterinary Clinic | Dr. Sheila Schmelling |
| Pet Haven | Dra. Martha Hernandez |
| Your Pet Health Clinic | Dr. Alfric Charles |
| Corozal Farm Supply, | Alfonso Alcala, Xiomara Tzul |
| AgroVet Giron | John Tillett |
|  | Sylvestre Trejo |
| C’s Pharmacy | Ramon Centeno |
| Northern Veterinary Clinic | Dr. Honario Novelo |
| **Orange Walk** | |
| Prosser Fertilizer Co. |  |
| Northern Veterinary Clinic | Dr. H. Novelo |
| Shipyard | John Weiler |
| AgroVet Giron |  |
| Shipyard |  |
| Triple A |  |
| Landy’s and Sons |  |
| Granite Enterprises |  |
| German and Sons |  |

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1. International Trade Centre- <http://www.trademap.org/> [↑](#footnote-ref-1)
2. Genetic Improvement in Sheep and Goat Project Belize. <http://www.icdf.org.tw/ct.asp?xItem=33646&ctNode=29823&mp=2> [↑](#footnote-ref-2)