

British Columbia Sheep & Wool Industry

Overview

April, 1990

Agri-Food Regional Development Subsidiary Agreement

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BC 

BRITISH COLUMBIA SHEEP & WOOL INDUSTRY

OVERVIEW

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The responsibility for the profile as written as all conclusions reached herein are those of the research contractor, Mr. Michael Downes. The report does not necessarily reflect the opinions of the federal and provincial governments which funded the study.

FORWARD

The agriculture community is in the midst of a struggle to reconcile conflicting goals for agricultural policies. These goals are summarized in Canada's paper, Growing Together, in November, 1989:

- More market responsiveness,
- Greater self-reliance,
- Recognition of regional diversity,
- Increased environmental sustainability.

It selects lamb as an "example of a potential opportunity...

Canadian farmers produce an excellent product, and there is a proven and growing demand". In spite of this, we are witnessing a reduction of the sheep industry in our province, with the increased demand being met by imported product and by live lambs shipped into B.C. from Alberta.

Sheep production in the province of British Columbia is an integral part of an agricultural industry, providing a high quality food source on a sustainable basis and is compatible with these federal and provincial goals for the following reasons:

- In the Peace River region, perennial forage production in cereal rotations results in less soil erosion, less dependence on non-renewable fossil fuels and less fertilizer and pesticide use.
- The interior, where the use of sheep to selectively graze unwanted vegetation in reforestation projects replaces the broad-scale use of herbicides.

- The lower mainland and islands, where sheep graze on otherwise unharvested parcels of grass.

In 1988, the B.C. Sheep and Wool Commission proposed a study to develop a plan which would assist the sheep industry to meet its perceived potential. In the autumn of 1989, this three phased study was proposed and was to be supervised by a project advisory committee with members from federal and provincial governments and sheep producers.

Phase 1 - Documentation of the current status of the industry.

Phase 2 - Consultation with the industry to identify industry constraints and potential opportunities.

Phase 3 - Development of a strategy which would indicate specific steps to enhance the progress of the B.C. sheep industry, contributing to the provincial economy.

The B.C. Sheep and Wool Commission would like to thank those who have devoted their time and thought to this project and the continuing effort that it initiates.

Arvo P. Koppel,

Chairman B.C. Sheep and Wool Commission.

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A. INTRODUCTION

For as long as we have recorded history, sheep have played an essential role in providing food and garments for mankind as well as being an investment and a measure of his wealth and status. The versatility of sheep and their ability to graze short grasses and various shrub species, have enabled them to fulfill a productive role in most parts of the world. Breeding and selection over the past century have created a wide genetic base for modern sheep producers who are faced with a continually competitive market and higher capital costs. To remain in business, the sheep producer needs to meet the market demands, to keep abreast of and apply, where practical, the technologies of the industry being developed elsewhere. Recognition must also be given to the economies of scale, which are as much of a reality in poultry, hog and, to some extent, beef production, as they are in the sheep industry today.

Mankind's enthusiasm for a challenge will spur his efforts to achieve the demands of a world of increasing populations and increasing competition. Ironically, the Canadian sheep industry has dwindled to the point where, despite the vast untapped forage reserves in the country, we only supply about 35% of our national lamb demand, and not even 10% of our wool requirement.

The situation is no different in British Columbia. Since 1930, when there was estimated to be 145,000 sheep in the province, the 1986 census shows a population of only 57,000. Human populations in these years were 694,000 and 2,883,000 respectively.

The Canadian Sheep Council has identified the shortfalls of the present sheep industry in Canada and has indicated its sincerity in the pursuit of:-

1. an effective marketing strategy,
2. continuing research in new technologies, diseases, clear-cut grazing, etc,
3. dissemination of information,
4. an increased role by federal and provincial government bodies in the industry.

These objectives must not be left with others to handle and to bring them to fruition. It is the obligation of every concerned producer to do all possible to further the goals of his or her industry.

REGIONS OF BRITISH COLUMBIA

Giving 1986 census figures for ewe and rams

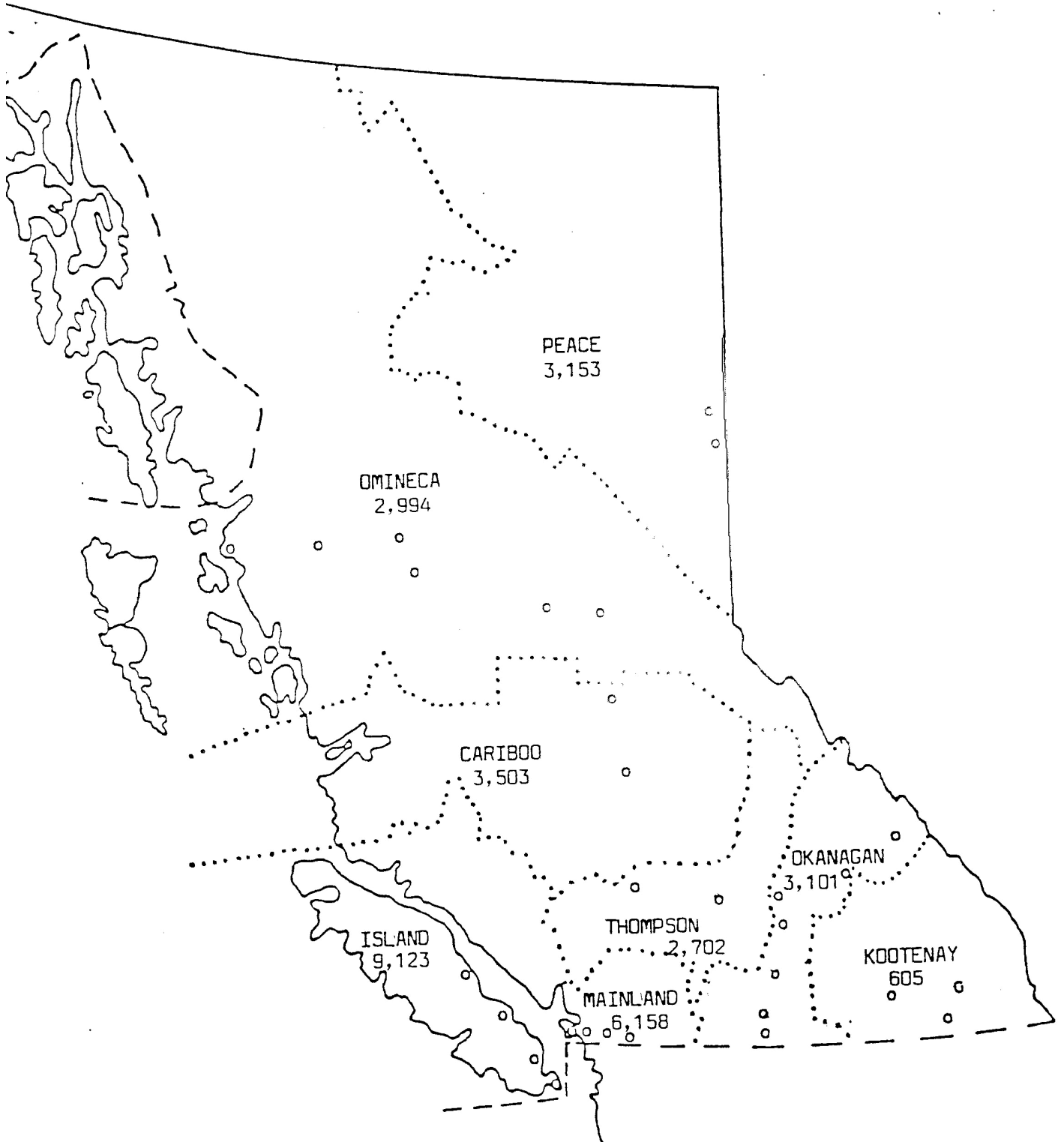


TABLE 1
SIZE OF SHEEP FARMS - 1986 CENSUS

| Region | <u>NUMBER OF ACRES</u> | | | | | Total |
|----------|------------------------|-------|--------|---------|------|-------|
| | 1-9 | 10-69 | 70-179 | 180-399 | 400+ | |
| Cariboo | 2 | 8 | 12 | 4 | 3 | 29 |
| Island | 55 | 99 | 20 | 8 | 4 | 186 |
| Kootenay | 1 | 10 | 1 | 2 | - | 14 |
| Mainland | 106 | 67 | 1 | 1 | 1 | 176 |
| Okanagan | 11 | 31 | 9 | 3 | 3 | 57 |
| Omineca | 1 | 9 | 16 | 7 | 8 | 41 |
| Thompson | 7 | 8 | 2 | 2 | 4 | 23 |
| Peace | 2 | 2 | 12 | 5 | 7 | 28 |
| Totals | 185 | 234 | 73 | 32 | 30 | 554 |

Source: Statistics Canada, 1986 Census of Agriculture.

TABLE 2
SIZE OF SHEEP FLOCKS IN B.C. IN 1986

| Size of Flocks | 1-32 | 33-122 | 123-272 | 273-527 | 528+ | Total |
|----------------|---|--------|---------|---------|------|-------|
| <u>Region</u> | - - - - - Number of producers - - - - - | | | | | - |
| Cariboo | 76 | 25 | 3 | 1 | 0 | 105 |
| Island | 307 | 105 | 19 | 4 | 0 | 435 |
| Kootenay | 44 | 12 | 1 | 0 | 0 | 57 |
| Mainland | 393 | 91 | 11 | 2 | 0 | 497 |
| Okanagan | 111 | 41 | 8 | 3 | 1 | 164 |
| Omineca | 80 | 28 | 7 | 1 | 2 | 118 |
| Thompson | 53 | 19 | 5 | 2 | 1 | 80 |
| Peace | 41 | 23 | 9 | 3 | 4 | 80 |
| Totals | 1105 | 344 | 63 | 16 | 8 | 1536 |

Source: Statistics Canada, 1986 Census of Agriculture.

B. CHARACTERISTICS OF THE B.C. SHEEP INDUSTRY

Since 1976, when the sheep flock numbers recorded a low of 37,938, we have seen some recuperation. Statistics Canada census revealed a population of 66,988 in 1981 and 57,243 in 1986. About 72% of the producers own flocks of 32 sheep or less (see Table 2). Estimates for the 1989 breeding flock reflect a total similar to that of 1986. Assuming a ewe flock of 29,463 head and a number of lambs-to-market per ewe of 1.2, we find 35,355 lambs sold in 1989. Of these, 3,457 were exported to the U.S. and Alberta leaving 31,900 for the provincial market. Comparing the census statistics between 1981 and 1986, we find significant reduction in populations in the Omineca, Okanagan, Kootenay and Peace regions with minimal decreases in the Mainland and Thompson regions. The Cariboo records a significant increase and the Island region a minimal increase. The south western corner of the province continues to have approximately 49% of the total breeding flock. This coincides with high human population density and therefore direct marketing opportunities.

Almost without exceptions, sheep farming provides only a portion of the gross family income. In fact, many are hobby farms and sheep farming offers a way of life to the

land owner rather than a profitable venture. Some raise sheep to qualify for farm classification. Land values, flock sizes, marketing opportunities and often, the higher cost of feed, tend to distinguish the semi and urban farm from the extensive rural operation. The common denominator is the same product being sold in the same province. Some of the extensive sheep farms are integrated with other agricultural operations.

Many producers have reported that the industry has become fragmented because of:

- distance
- conflicts between producer groups,
- the lack of government support in terms of a sheep specialist and/or technicians.

In recent years, some of the progressive sheep producers have been pursuing research work in the Pacific North West forest areas of the U.S. Clear-cutting practices by forestry companies have created a brush control problem for the new tree crop, and when herbicide utilization is considered environmentally undesirable, mechanical or manual methods of control become very expensive. The use of sheep

has become a popular concept to control weed species which compete for light and nutrients with newly planted trees. However, as with any new cultural practical, much needs to be done to manage the system to be of benefit to the forester and producer alike. Similar utilization of livestock for this purpose has been done in other parts of the world. Problems of predators, variability of weight gains, suitable sheep breeds, brush and grass management, shepherding, contagious diseases such as foot rot, are a few of the factors involved and will be addressed as the work continues. The industry is fortunate to have some very enthusiastic and capable extension workers assisting in developing the clear-cut grazing projects.

National Tri-partite Stabilization (NTS) Program.

The province of British Columbia opted into the NTS program for lamb, effective the year commencing March 1, 1989. Approximately 200 producers registered for the program under 2 schemes, the Ewe Flock option and the Home-raised Lamb option. This program is jointly funded by the federal and provincial governments and is a stabilization program providing payments, under the plan, in years when the calculated national price for lamb is less than the price

for lamb is less than the preceding ten-year rolling average. Over a ten year period the plan will be fully supported by the financial participation of the three parties, and producers will experience years when they will be making indemnity contributions and receiving no payouts.

TABLE 3

B.C. SHEEP NUMBERS - EWES & RAMS

1981-1986

| <u>REGION</u> | <u>1981</u> | <u>1986</u> | <u>VARIATION</u> |
|---------------|---------------|---------------|------------------|
| Cariboo | 2,385 | 3,503 | +1118 |
| Island | 9,065 | 9,123 | +58 |
| Kootenay | 915 | 605 | -310 |
| Mainland | 6,953 | 6,158 | -795 |
| Okanagan | 4,952 | 3,101 | -1851 |
| Omineca | 3,264 | 2,994 | -270 |
| Thompson | 2,772 | 2,702 | -70 |
| Peace | 4,064 | 3,153 | -911 |
| <u>Totals</u> | <u>34,370</u> | <u>31,339</u> | <u>-3031</u> |

Source: Statistics Canada, 1986 Census of Agriculture.

Participation in the program is open to all sheep producers and there are no minimum flock size requirements.

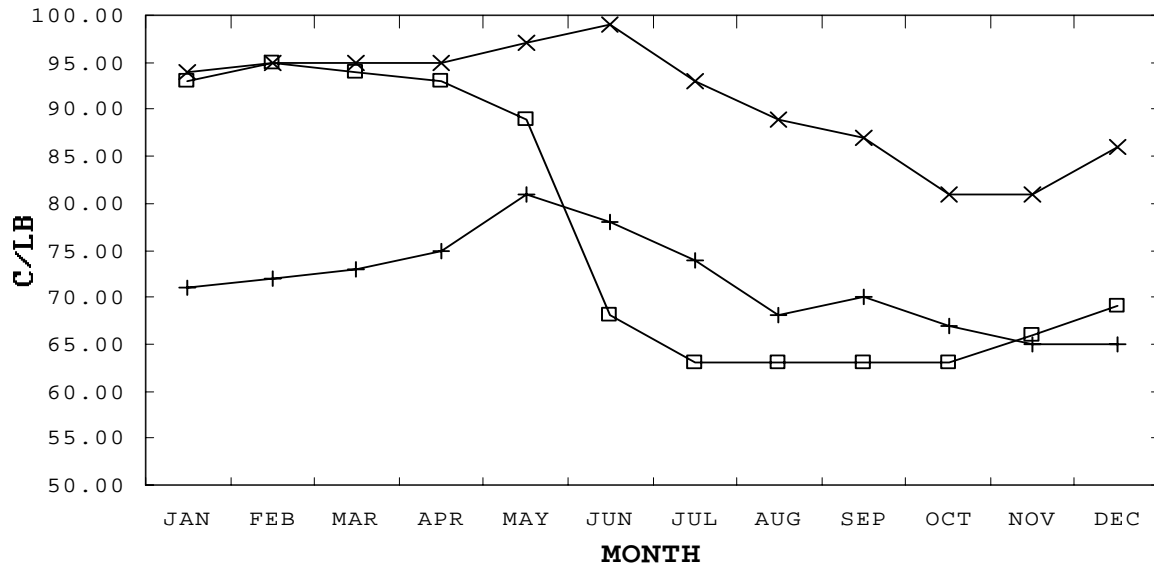
Farm Income Insurance.

The Farm Income Insurance Plan is a provincial plan first implemented in 1975 as Farm Income Assurance, and was later changed to be an insurance policy for sheep producers, with a minimum of 40 sheep, funded by the provincial government and the producer. The plan provides support to producers when the price of lamb is less than the production costs, as determined by a cost model annually updated by mutual negotiations of the B.C. Sheep and Wool Commission and the Farm Income and Crop Insurance Branch of the Ministry of Agriculture and Fisheries. The plan provides for payment of 50% of the deficit when the cost of production exceeds market return. The plan will be discontinued in its current format, effective March 1, 1990. In its place will be a top-up program, as yet to be finalized, which will provide for payments to producers in addition to NTS.

Lamb Marketing Overview.

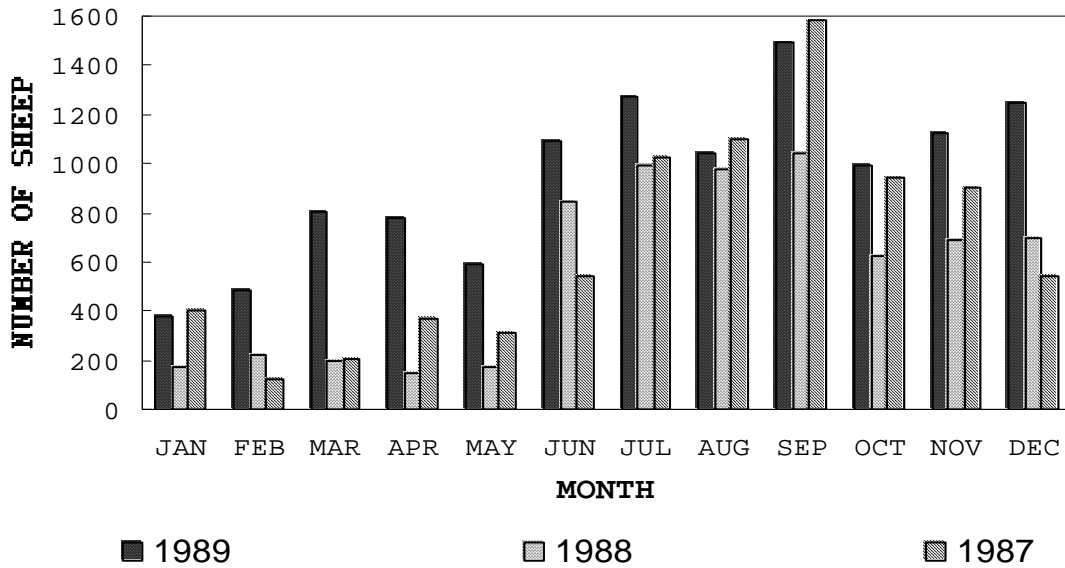
The total dressed lamb sales in B.C. have increased

TABLE 4
LAMBCO LIVE LAMB PRICES
 1987 - 1989



+ 1989 □ 1988 x 1987
 Source: Alberta Agriculture.

TABLE 5
B.C. SHEEP SLAUGHTERINGS 1987-1989
INSPECTED PLANTS



Source: Agriculture Canada.

substantially from an estimated 5,690,000 pounds in 1981 to approximately 8,677,700 in 1989 (see Table 9). B.C. lamb is estimated to be 14.4% of this market.

Approximately 70% of the B.C. lambs enter the freezer, ethnic trade as farm-gate sales. Most of this segment is in the south western corner of the province and most of the lambs are sourced in that area. Many of the smaller flock owners elsewhere in the province also sell lamb direct to the consumer. The larger extensive producers inevitably have to seek out other markets further afield. The areas situated close to the Alberta border such as the Peace region, assemble liner loads of lambs and ship them to Lambco at Innisfail in Alberta. Some large and smaller

loads are trucked to plants and auction markets in the Fraser Valley. Auction markets around the province sell approximately 5,000 head of stock per year. Auction commission in 1989 ranged from 5% to 10%. The price of B.C. lamb is influenced, to a great extent, by the Alberta lamb price. This varies according to supply and demand at the Lambco plant, which in turn is affected by the market in the U.S. At the time of writing this report, there was a surplus of lamb in Alberta, compounded by purchase commitments to take U.S. lamb into Lambco. There has been a softening of prices of lamb in the markets and we might well see a further softening before prices rise again.

TABLE 6

CHAIN STORE RETAIL PRICES OF LAMB CUTS DURING JANUARY, 1990
(\$ per lb)

Australian Fresh

| <u>Region</u> | <u>Leg (bone-in)</u> | <u>Shoulder chops</u> | <u>Loin chops</u> | <u>Shoulder</u> |
|-------------------|--------------------------|---------------------------|-----------------------|-----------------|
| Cariboo | 5.19 | 4.19 | 7.09 | 3.79 |
| Island | 4.84 | 3.41 | 7.31 | 3.89 |
| Mainland | 4.80 | 3.90 | 7.31 | 3.49 |
| Okanagan/Kootenay | 5.20 | 4.20 | 7.10 | 5.00 |
| Omineca | 5.25 | 4.20 | 7.39 | 3.80 |
| Thompson | 5.10 | 4.10 | 7.00 | 3.70 |

New Zealand Frozen

| | Leg | | Shoulder | Loin |
|-------------------|-----------|-------|----------|----------|
| Region | (bone-in) | chops | chops | Shoulder |
| Cariboo | 3.60 | 3.90 | 5.20 | - |
| Island | 3.13 | 3.00 | 6.04 | 3.70 |
| Mainland | 2.84 | 3.42 | 5.88 | - |
| Okanagan/Kootenay | 2.98 | 3.80 | 5.10 | - |
| Omineca | - | 3.90 | 5.20 | 3.00 |
| Thompson | 3.48 | - | 4.93 | - |
| Peace | 3.49 | - | 5.30 | - |

Alberta Fresh

| | Leg | |
|--------|-----------|-----------|
| Region | (bone-in) | Rib chops |
| Peace | 5.60 | 5.68 |

B.C. Fresh

| | Leg | Shoulder | Loin | |
|----------|-----------|----------|-------|----------|
| Region | (bone-in) | chops | chops | Shoulder |
| Island | 4.86 | 3.16 | 7.02 | 3.67 |
| Mainland | 4.99 | 4.35 | 8.03 | 3.63 |

Where prices are not given, it indicates that they were not available.

Source: Survey Taken of Prices in Regions.

TABLE 7

WHOLESALE PRICES OF LAMB CUTS IN B.C.

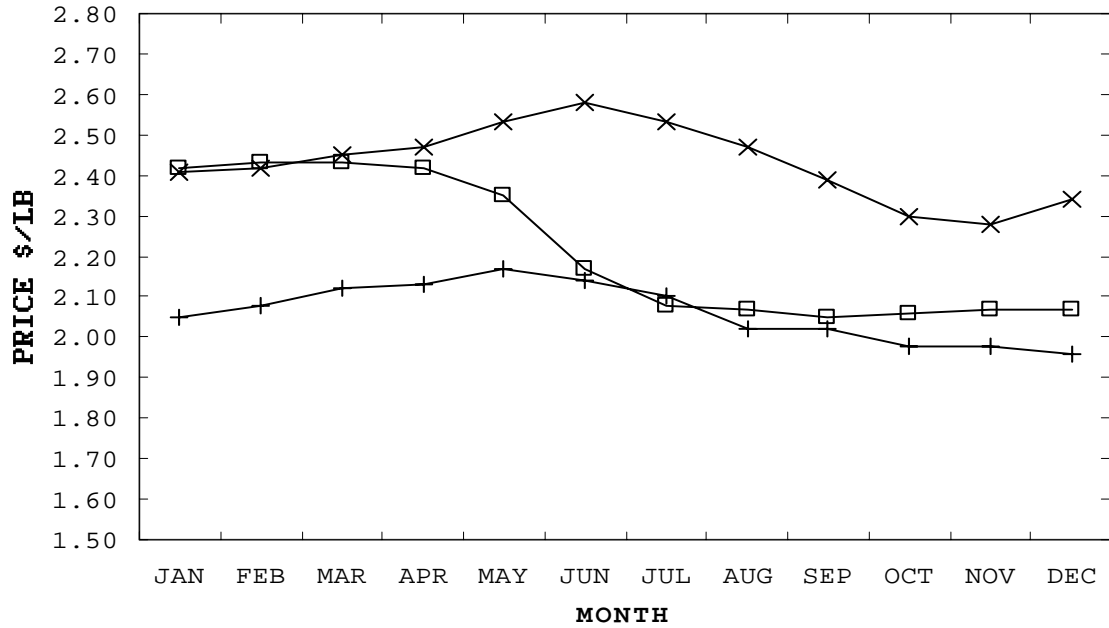
(\$ per lb)

| <u>Origin</u> | <u>Leg (bone-in)</u> | <u>Shoulder</u> | <u>Racks</u> |
|--|--------------------------|-----------------|--------------|
| Australian Fresh (Price in January, 1990) | 2.49 | 1.84 | 3.29 |
| New Zealand Frozen (Price in January, 1990) | 1.97 | 1.97 | 3.41 |
| U.S. Fresh (Average Price for 1989) | 2.65 | 1.84 | 3.75 |
| Alberta Fresh (Price in February, 1990) | 3.33 | 1.59 | 6.70 |
| B.C. Fresh (Price in January, 1990) | 2.65 | 1.25 | 4.00 |

Source: Wholesalers in the Trade.

TABLE 8

LAMB CARCASS WHOLESALE PRICES
(VANCOUVER)



+ 1989

□ 1988

x 1987

Source: Agriculture Canada.

C. LAMB RETAILING.

1. Chain Stores.

This is the largest market segment of the lamb industry in B.C. In 1989 it accounted for approximately 4,923,700 lbs of lamb sales, which is approximately 57% of the total (see Table 9). The size of the market coupled with the fact that some of the buying policies influenced by convenience, availability and uniformity of supply, make it one of the most difficult for B.C. lamb to establish a firm foothold. There is, however, some B.C. lamb offered in a few of the chain stores which enjoy a certain amount of autonomy with regard to purchasing of this type of merchandise. These are to be found in some parts of Vancouver Island, Saltspring Island and in a few places in the interior.

Meat managers in the stores that were visited, report a positive attitude from some of the buying public for this product, but there remains a very limited demand.

These outlets generally do not have the capabilities of handling whole carcasses, and therefore tend to purchase boxed lamb with vacuum packed cuts which have a

substantially longer shelf-life. It is estimated that the chain stores' requirements are made up of approximately 40% legs, 40% loins and 20% shoulders.

An exception to the norm of offering mostly off-shore lamb, is the Peace area. Much of the lamb sold by this market segment in this region, is from Alberta.

2. Hotels, Restaurants and Institutions.

Lamb is featured on the menu in many gourmet restaurants in B.C. Those that do offer it have reported that orders for lamb dishes are increasing all the time and indicate an increase in sales of between 30% and 200% over the last 5 years. Lamb tends to find favour in Greek restaurants whereas Italian restaurants also make use of a lot of veal.

The hotel restaurants also report an increasing usage of lamb. Racks continue to be the most popular at about 60% of the demand and then roast leg of lamb at around 30%. New Zealand lamb racks, due to the consistency of size and quality, are preferred by many restaurateurs. Shoulders do not sell particularly well to this market.

The increase in this segment is attributed to the promotional efforts of the restaurants by offering lamb and the reported interest by diners to "try something different" and quite obviously discover a good product. There is an interest to feature B.C. lamb, but hitherto, the New Zealand frozen product is:

- more convenient with regard to size and select cuts,
- more available due to it's consistent supply and quality,
- in some cases, frozen lamb is preferred because of the storage capability.

The airline caterers prepare lamb for the various airlines, mainly for Business and First Class passengers. The cuts used depend on the menus, which operate on six month rotations. One of the caterers uses lamb cops weighing 55gms (2 oz) from New Zealand and prefers U.S. lamb when racks are on the menu. Another prefers the fresh Australian product. Both caterers supply the major airlines and jointly use between 1,500 and 4,000 lbs of lamb per year. One of the buyers expressed an interest in supporting the B.C. lamb industry, but has concerns about consistency, availability and service.

Recent years have shown an increasing trend towards the consumption of fresh lamb sourced from Australia, New Zealand and the U.S. Again, apart from price, consistency of size, quality and availability of select cuts is the key to the market. Loins and legs, in that order, by far the most preferred primal cuts. Some shoulder is utilized by the ethnic restaurants.

It is estimated that this segment of the market utilized approximately 1,648,600 pounds of lamb in 1989, which was 19% of the total lamb consumed (see Table 9).

3. Meat Markets and Independents.

As in the chain stores and hotels and restaurants, this market reflects a very competitive demand and marketing activity. Approximately 584,700 lbs of New Zealand, 105,000 lbs of Australian lamb is channeled through this segment. B.C. lamb also enjoys a share of the market, approximately 15% or 187,100 lbs (see Table 9). Most of the fresh lamb is supplied from the U.S.- approximately 273,450 lbs in 1989. A mix of whole carcasses as well as cuts are purchased as many of these outlets have the

capabilities of breaking down carcasses. Of these markets surveyed, loin chops are the biggest seller at between \$5.29 and \$6.06 per lb. Legs sell for between \$4.49 and \$5.29 per lb. Shoulders are not generally popular. Of the meat markets and independents contacted, preference is shown for carcasses of 40 to 45 lbs. Certain ethnic markets are sourcing lamb from Australia and New Zealand which is killed in those countries according to the required religious ceremonial procedures.

B.C. lamb is reported to be popular and Saltspring Island lamb is well known in the south west corner of the province and is quite sought after.

This market segment appears to have the best short term growth potential for B.C. lamb. This can largely be attributed to the owner operated markets and butchers in small towns supporting rural producers.

4. Direct to Consumer (Freezer/Ethnic).

These represent live lambs sold on farms, lambs slaughtered on farms, and custom slaughterings in abattoirs. It is estimated that approximately 71% of the

B.C. lamb crop is marketed in this way. It is a very large market for B.C. lamb and enables the producers to receive a higher price per pound with relative stability. Many customers will return year after year to the same supplier.

The market includes a wide range of lamb weights, with the lighter lambs being supplied to the Eastern and Christmas markets. Lambing seasons are controlled to meet the demands at these times of the year. Heavy lambs are cropped in the fall for the freezer market. Most of the lambs are raised from flocks in the major urban areas. This accounts for the high sheep numbers on the Mainland and Island regions - approximately 13,000 ewes.

In certain killing plants the cost of killing, cutting and wrapping is as high as \$50 per lamb. This, coupled with the inconvenience experienced by some of the pants to switch from one species of livestock to another for one or two head, has made the option of custom killing less popular amongst producers and processors.

The bulk of this lamb sells between \$1.00 and \$2.00 per pound, on a live weight basis. Usually the Easter and

Christmas lambs, being a specialty market, range between \$2.00 and \$3.00 per pound. It is estimated that in 1989 approximately 17,192 lambs went to this market (Table 11).

TABLE 9

LAMB MARKET IN B.C. IN 1989.
(pounds)

| Market Segment | New Zealand | United States | Alberta | Australia | B.C. | Total |
|--------------------------------------|--------------------|------------------|-----------------|--------------------|-------------------|----------------------|
| Hotels, Restaurants and Institutions | 1,169,312 70.9% | 136,724 8.3% | 15,232 0.9% | 314,904 19.1% | 12,473 0.8% | 1,648,645 100.0% |
| Chain Stores | 2,143,739 43.6% | 832,773 16.9% | 118,048 2.4% | 1,679,488 34.1% | 149,675 3.0% | 4,923,723 100.0% |
| Meat Markets and Independents | 584,656 48.4% | 273,448 22.7% | 57,120 4.7% | 104,968 8.7% | 187,094 15.5% | 1,207,286 100.00% |
| Direct to Customer Freezer/Ethnic | - | - | - | - | 898,048 100.0% | 898,048 100.0% |
| Total | 3,897,707 | 1,242,945 | 190,400 | 2,099,360 | 1,247,290 | 8,677,702 |
| % of Total | 45.1% | 14.3% | 2.2% | 24.2% | 14.2% | 100.0% |

Source: Estimates Based on Survey of Industry.

D. LAMB SUPPLIERS.

The major suppliers to the B.C. market are New Zealand Australia and the United States. These countries have been able to penetrate the market and increase their sales due to aggressive marketing and supplying their customer's needs. They supply year round and offer consistent quality and size of product as well as the desired cuts. Buyers from these suppliers are contracted into programs where advertising and promotion costs are paid in full by the supplier of origin. Most of the lamb imported is fresh and Australia and New Zealand have developed the technology of their vacuum packed fresh lamb to the point where it can be shipped to Canada by sea, instead of by air, and also has a substantially longer shelf-live upon arrival.

1. New Zealand Lamb.

New Zealand sold 3,897,700 lbs of lamb to B.C. in 1989. This represents about 45% of the total market. Of this, approximately 80% is New Zealand Frozen Spring Lamb and the remainder if fresh cuts. Very few whole carcasses are

brought in. Cuts are processed from 24 to 34 lb carcasses.

All New Zealand lamb is imported duty free into Canada and the New Zealand Lamb Company is the sole distributor.

It is anticipated that lamb production will decline by 15% in New Zealand in 1990 as a result of lower stock numbers caused by draught conditions and flock rebuilding. However in the European Economic Community, New Zealand's major export market, the lamb prices are strong and has improved the outlook for the New Zealand producer. (Source of this information is Agriculture Canada).

2. Australia.

In 1989 Australia sold approximately 2,099,400 lbs of lamb to B.C. - about 24% of the total provincial market.

Approximately 66% of this total was fresh or chilled lamb cuts and about 33% were frozen cuts. Whole carcasses were about 1%. As in the case of New Zealand lamb, it is duty free.

Australian lamb has seen considerable growth in Canada in recent years due to a combination of offering a leaner, more

consistent product then they had offered before. This product is price competitive as well advertised.

Australian Range Lamb is imported by many of the meat importers and distributors. Cuts are processed from carcasses weighing approximately 40 lbs.

The Australian flock has increased from approximately 139 million head in 1984 to an estimated 173 million in 1989. The sheep industry, in this country, is largely one of wool production and the meat from this sector is mostly mutton. Lamb is produced by specialist producers. It is expected that lamb exports could reach 72,000 tonnes by 1991. In 1987 Australia exported 53,000 tonnes of lamb. (Source of this information is Agriculture Canada).

3. United States.

The market share of U.S. lamb is calculated to be approximately 14% of the B.C. market, or about 1,242,900 lbs. Almost 73% of this comes in as whole fresh carcasses and the balance consists of fresh primal cuts. The lamb is imported by Columbia Meats Ltd, in Langley, a subsidiary of Superior Packing Co, Ellensburg, Washington.

A duty of 3.4c per pound is levied on U.S. lamb entering Canada. The average U.S. lamb carcass is about 50 -55 lbs.

The breeding flock numbers have increased from about 9 million to approximately 11 million over the past three years. It is considered that 9 to 9.5 million breeding sheep is sufficient to supply the nations present lamb requirement. The surplus has resulted in a drop in the lamb price over the last 8 months. Lamb feedlots have suffered from the decline in price and it is anticipated that lamb prices will be low in the U.S. during 1990.

4. Alberta.

An estimated 190,400 lbs of dressed lamb was sold in B.C. markets in 1989. This figure was obtained from live lamb imports, carcass imports and retail cuts featured on chain store shelves in the Peace region. Approximately 3,000 live lambs were sold through B.C. markets in 1989. The average price per pound, live weight, was 75c. These were imported to make up a shortfall in the B.C. lamb supply in the Fraser Valley and on Vancouver Island. On occasions, some of this lamb has been reported to be overly fat and

carcass weights too high for local meat markets with a clientele demanding a leaner product. Because of the surplus of lamb in Alberta at the present time, we are likely to see an increase in Alberta lamb channeled into the B.C. system in the short term.

The Alberta breeding flock has increased from 75,000 to approximately 125,000 in 4 years. The increased lamb production and the influence of lower lamb prices in the U.S. have contributed to the price levels in B.C. in 1989. It is expected that lamb and feeder lamb prices in Alberta will be low in 1990. (Source of this information is the Alberta Sheep and Wool Commission).

5. British Columbia

A survey taken of prices of lamb sold into the B.C. meat market system as distinct from the "farm-gate" (direct to consumer) segment, showed an average selling price of 72c per pound live weight to the producer in 1989. This is in respect of an estimated 30% of the B.C. lamb produced and sold in 1989. Many of these lambs are sold at auction yards. The other 70%, or approximately 898,048 pounds of dressed lamb was sold directly to consumers.

Meat processors prefer a dressed carcass of between 40-50 pounds with 45 pounds being ideal for customers. Concern was expressed by some of the processors, that were interviewed, that they were still receiving a number of intact ram lambs and were experiencing difficulty in selling them.

The following table is the grading of 3,432 B.C. lambs, of the total slaughter in inspected plants in 1989.

TABLE 10
GRADES OF B.C. LAMB

| <u>Canada Grade</u> | <u>Number</u> | <u>Percentage</u> | <u>1988%</u> |
|----------------------------|----------------------|--------------------------|---------------------|
| A 1 | 1,878 | 54.5 | 52.2 |
| A 2 | 1,197 | 34.7 | 29.2 |
| A 3 | 133 | 3.8 | 6.6 |
| A 4 | 1 | - | - |
| B | 171 | 5.0 | 6.4 |
| C 1 | 6 | 0.2 | 1.3 |
| C 2 | 1 | - | 0.3 |
| D 1 | 45 | 1.3 | 1.7 |
| <hr/> | | | |
| Total | 3,432 | 100% | 100% |

Source: Agriculture Canada

TABLE 11

DISPOSTION OF SHEEP AND LABMS SLAUGHTERED IN B.C. IN 1989

In Inspected Plants

Lower Mainland and Victoria 11,302 (lambs- 9,834)

In B.C. Licensed Abattoirs - Non-inspected

Cariboo 335

Island 3,704

Kootenay 171

Mainland -

Okanagan 1,280

Omineca 69

Peace 33

Thompson 366

 Total 5,958 (lambs- 4,974)

Total kill in B.C. Abattoirs 17,260 (lambs-14,808)

Source: Agriculture Canada.

Estimated On-Farm Kill

All regions Lambs only 17,192

Total Estimated Lambs Slaughtered 31,900

E. MUTTON.

411,512 Pounds of frozen mutton was imported into B.C. during 1989. Of this, 77,154 pounds were from New Zealand and 334,351 pounds from Australia. The cost of these imports averaged 82c per pound. Approximately 1,500 mutton sheep were killed in B.C abattoirs during 1989.

Mutton is used by some of the meat processors as a filler for sausage manufacturing. The use of mutton for this purpose depends on whether it has a price advantage over residual cuts of beef and pork.

F. WOOL MARKETING.

To date, most B.C. wool has been marketed to the Canadian Co-operative Wool Growers (C.C.W.G.) through their B.C. agents, the B.C. Sheep Breeders Co-operative Association. Collection days are arranged. Producers deliver their wool in packed burlap bags to the collection depot for trucking to the C.C.W.G. warehouse in Lethbridge, Alberta. From there, the wool is usually shipped to Carleton Place, Ontario for grading, repacking and sale. Most of the

coarse wool is sold by C.C.W.G. to the U.K. and Europe and the fine wool is bought by Japan. Due to a lack of the presence of Chinese buyers in the world wool market, the price has decreased in recent months. Less than 50% of the wool on auction is selling in the major wool markets. In 1988, auctions were selling 90% of the wool offered. Unfortunately, the B.C. Co-op does not have representation in all areas of the province. In the Fraser Valley and on Vancouver Island, where a large number of sheep are raised, there is no representation. Private individuals make independent arrangements with the C.C.W.G. in Lethbridge to collect and ship wool. There are also a number of shearers and dealers who collect wool and ship it to various markets including the C.C.W.G. and the U.S.

B.C. Wool Sales in 1989.

In 1989, 152,404 pounds of wool were shipped to C.C.W.G. from 95 B.C. growers. Payments averaged 75c per pound less 6c for shipping. The bulk of the wool graded Western Domestic 3/8 Semi Bright. In 1988, C.C.W.G. received 61,000 pounds of wool from B.C. paying an average of 65c per pound.

It is estimated that the current flock has the potential of producing in excess of 200,000 pounds of wool per annum.

An Estimated Breakdown of B.C. Wool as to Type and Spinning Count (Provided by C.C.W.G.).

| <u>Range Wool</u> | | (24,500 lbs) |
|-------------------|-------|--------------|
| Spinning Count | 60+ | 12% |
| | 56-58 | 76% |
| | 50-54 | 8% |
| | Other | 4% |

| <u>Domestic Wool</u> | | (127,905 lbs) |
|----------------------|----------|---------------|
| Spinning Count | 56-58 | 70% |
| | 50-54 | 17% |
| | 48 | 5% |
| | Coloured | 4% |
| | Other | 4% |

More care is requested in preparing the fleece thoroughly by removing belly wool and tags. Much of B.C wool is reported

to have a yield of only 50 - 56%. This is reflected in the price.

A number of producers make their own arrangements for further processing of their wool and a carding facility was been established at 150 Mile House in the Cariboo to custom card and spin wool. There is also a small carding facility in the Dawson Creek area. A carding and spinning operation is located on the Cowichan Indian Reserve in Duncan for production of yarn for the Cowichan Indian sweaters. Fine New Zealand wool is imported for use in a blend with B.C. wool. A considerable amount of wool from small producers is destroyed or discarded because of the lack of opportunity for marketing, or because of the time and effort of getting small amounts of wool to a collection point.

Birkeland Bros Wool Batts Ltd, Vancouver, source washed wool from the U.S. for carding into batts. The Down breeds provide a suitable wool for this industry. Some custom carding is done for pre-washed B.C. fleeces. At the present time, there is no adequate scouring - washing facility in B.C. with desirable air-drying capabilities to supply this market.

West Coast Woollen Mills, in Vancouver, weave cloth with yarn spun from wools of 22- 24 microns sourced from the southern hemisphere. They require approximately 15 tons of yarn per month. The current price for "natural" spun yarn for their requirements is between \$16 and \$20 per kilogram.

G. PELTS.

Most of the sheep and lamb hides that are marketed in B.C. are shipped by processing plants to hide brokers. In Vancouver, Martin and Stewart are the principal brokers and pay approximately \$2.00 per hide. Recent prices on Vancouver Island have between \$2.00 - \$3.00 each. Hides are then exported to various countries which process them further.

A small amount of custom tanning is done by B.C. Fur Dresser and Dryers Ltd. Two different processes are used, chrome tanning and alum tanning. These currently cost \$47.00 and \$41.00, respectively.

Some entrepreneurial sheep producers are tanning pelts and selling them for approximately \$60.00 each.

TABLE 12

ANALYSIS OF 100 EWE FLOCK MODELS

| 1 Cost per Ewe | Cariboo below 2500 ft | Cariboo above 2500 ft | Mid Island | South Island | Koote- nay | Upper Mainland | Lower Mainland | Okanagan | Omineca | Thompson | Peace |
|---|--------------------------------------|--------------------------------------|-----------------------|-------------------------|-----------------------|---------------------------|---------------------------|-----------------|----------------|-----------------|--------------|
| Income/Ewe | (\$) 137 | 115 | 179 | 173 | 120 | 162 | 218 | 137 | 124 | 134 | 109 |
| Direct Expenses: | | | | | | | | | | | |
| Feed | (\$) 52 | 68 | 55 | 74 | 76 | 88 | 80 | 71 | 62 | 59 | 52 |
| Other | (\$) 26 | 20 | 27 | 23 | 21 | 25 | 23 | 21 | 22 | 21 | 21 |
| Gross Margin/Ewe | (\$) 59 | 27 | 97 | 78 | 23 | 49 | 115 | 45 | 40 | 54 | 36 |
| 2 Model Assumptions: | | | | | | | | | | | |
| Days on Pasture | 178 | 149 | 245 | 245 | 143 | 185 | 180 | 143 | 143 | 190 | 127 |
| Lamba Marketed/Ewe | 1.35 | 1.32 | 1.35 | 1.35 | 1.25 | 1.34 | 1.45 | 1.35 | 1.35 | 1.34 | 1.30 |
| Live Lamb Price/lb | (\$) 0.85 | 0.80 | 1.10 | 1.10 | 0.08 | 1.00 | 1.37 | 0.82 | 0.72 | 0.80 | 0.65 |
| 3 Live Lamb Breakeven Analysis Comparing Model Results with Results of Increments of 0.15 Lamba/Ewe: | | | | | | | | | | | |
| - Lambs Marketed/Ewe | 1.35 | 1.32 | 1.35 | 1.35 | 1.25 | 1.34 | 1.45 | 1.35 | 1.35 | 1.34 | 1.30 |
| Direct Exp./lb Lamb | (\$) 0.50 | 0.80 | 0.63 | 0.65 | 0.85 | 0.60 | 0.67 | 0.52 | 0.68 | 0.62 | 0.54 |
| Total Cost/lb Lamb | (\$) 1.49 | 1.79 | 1.78 | 2.52 | 1.63 | 2.02 | 2.33 | 1.45 | 1.39 | 1.63 | 1.44 |
| - Lambs Marketed/Ewe | 1.50 | 1.47 | 1.50 | 1.50 | 1.40 | 1.49 | 1.60 | 1.50 | 1.50 | 1.49 | 1.45 |
| Direct Exp./lb Lamb | (\$) 0.44 | 0.73 | 0.58 | 0.61 | 0.77 | 0.55 | 0.62 | 0.48 | 0.62 | 0.57 | 0.50 |
| Total Cost/lb Lamb | (\$) 1.36 | 1.62 | 1.61 | 2.29 | 1.47 | 1.83 | 2.12 | 1.32 | 1.26 | 1.47 | 1.30 |
| - Lambs Marketed/Ewe | 1.65 | 1.62 | 1.65 | 1.65 | 1.55 | 1.64 | 1.75 | 1.65 | 1.65 | 1.64 | 1.60 |
| Direct Exp./lb Lamb | (\$) 0.42 | 0.68 | 0.54 | 0.57 | 0.71 | 0.51 | 0.58 | 0.45 | 0.58 | 0.53 | 0.46 |
| | (\$) 1.24 | 1.48 | 1.48 | 2.1 | 1.34 | 1.67 | 1.95 | 1.21 | 1.16 | 1.35 | 1.19 |

Source: Assumptions and Calculations Based on Survey of the Industry.

Total Cost = Direct Expenses + Indirect Expenses + Interest on Investment + Operators Labour and Management.

H. REGIONAL PROFILES

Data presented in three profiles was taken from responses to a questionnaire mail-out to sheep producers in B.C.

1. Cariboo.

This region is comprised of the Fraser Plateau and mountains. Much of it falls within a rain shadow and the annual precipitation is from 15-20 inches. Deep valleys create micro-climatic anomalies. The northerly part is wooded and grazing is available where pasture has been established or clear-cutting has taken place.

The 1986 census shows 66% of the sheep farms are 70 acres or more. Though much of the lamb crop is marketed from the farm-gate, the annual William's Lake fall auction attracts a number of sheep from this and neighbouring regions. Several of the sheep and beef farms are integrated.

Questionnaire Data

Questionnaire responses were received from 52% of the producers, representing 19% of the number of ewes shown in the 1986 census. The following data was extracted:

- Lambing 131%,
- Lamb loss between lambing and weaning, 20%,
- Average selling price per lamb, \$82
- Losses caused by predators. Bear (4), coyote (32), dogs (2). Value \$2,210.
- Total veterinary costs per ewe \$4.59.
- Average killing cost \$11 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Length of winter feeding.
- Lack of processing facilities.
- Cost of feed.
- Predators.
- Cost of housing and handling facilities.
- Import competition.
- Production management skills.
- Seasonal demand for lamb.
- Disease.
- Cost of processing.

The most common suggestions for improvement:

- More than 1 auction sale per year.
- Need for provincial sheep specialist.
- Licensed, inspected slaughter houses.

- Sheep husbandry courses at colleges.
- Better market for hides.
- More advertising needed.
- Develop wool processing in B.C.

2. Island.

This region encompasses Vancouver Island, the Gulf Island, Sunshine Coast and Powell River. The areas supporting sheep farming are at low elevations from sea level to 500 feet. Precipitation ranges from 35-85 inches. Sheep can graze on pasture for 9 or more months of the year. The 1986 census revealed 83% of the farms were 69 acres or less. Flocks are correspondingly small. Clear-cut logging could support a much larger sheep industry should sufficient interest be created in this direction. Nearly all lambs produced are sold direct to the consumer and distances to sale yards are short but are inconvenienced, in many cases, by ferry crossings. The southern part of this region experiences 231 frost-free days and the central part 188 frost-free days per year.

Questionnaire Data.

Responses were received from 17% of the producers, representing 18% of the ewes shown in the 1986 census.

The following data was extracted:

- Lambing 152%.
- Lamb loss between lambing and weaning, 11%.
- Average selling price per lamb, \$100.
- Losses caused by predators: Bear (5), cougar (1), wolves (26), dogs (2). Value \$2,645.
- Total veterinary costs per ewe, \$7.56.
- Average killing cost, \$14 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Cost of feed.
- Length of winter feeding.
- Cost of processing.
- Lack of processing facilities.
- Availability of skilled labour.
- Cost of housing and handling facilities.
- Availability of breeding stock.
- Seasonal demand for lamb.

- Inconvenience of federal inspection in island situations.
- Predators.

The most common suggestions for improvement:

- Better promotions and more advertising for B.C. lamb.
- Educate public on predator dogs.
- Encourage wool handling and processing in region.
- More slaughtering facilities needed.
- Access to more grazing land.
- Encourage year-round supply of lambs.

3. Kootenay.

The Kootenay region has a very wide variation in climatic and geographical conditions. The annual precipitation ranges between 13 and 40 inches. 80 frost-free days per annum is common at the higher elevations with the valleys experiencing 140 frost-free days. The agricultural area is principally within the 2,500-4,500 feet elevation range. Irrigation is practiced, where possible, in valleys. In the 1986 census, the Kootenay was recorded to have the fewest sheep of all the regions. The total of ewes and rams were 605.

There is a small and limited local market for lamb in this region and some sheep are auctioned at Fort Macleod in Alberta.

Questionnaire Data.

Questionnaire responses were received from 29% of the regions sheep producers, representing 38% of the number of ewes recorded in the 1986 census. The following data was extracted:

- Lambing 150%
- Lamb loss between lambing and weaning, 7.2%.
- Average selling price per lamb, \$72.
- Losses caused by predators. Coyotes (12). Value \$800.
- Total veterinary costs per ewe, \$5.75.
- Average killing cost, \$15 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Lack of processing facilities.
- Availability of breeding stock.
- Distance to market.
- Cost of processing.
- Length of winter feeding.

- Lack of market information.
- Cost of feed.
- Lack of producer marketing skills.
- Seasonal demand for lamb.
- Predators.

The most common suggestions for improvement:

- Need for sheep specialist.
- More processing facilities,
- Co-operation between producers to promote lamb consumption.
- Government assistance needed to fund capital works, e.g. barns, fences, hay sheds, etc.
- More advertising for B.C. lamb.

4. Mainland.

This region extends from Vancouver eastwards along the Fraser Valley as far as and including the Fraser-Cheam district. It is characterized by small farms scattered between urban developments. This provides a ready market for farm-gate sales and potentially high predator problems from dogs. Hay tends to be expensive and because of the size of farms, many sheep producers have little

opportunity of growing their own hay requirement. The grazing season is, in many cases, restricted by land availability. Frost-free days range from 244 in the lower region to 170 in the upper region. Precipitation ranges from 48-78 inches per annum.

Questionnaire Data.

Responses were received from 11% of the producers, representing 9% of the ewes shown in the 1986 census. The following data was extracted:

- Lambing 171%.
- Lamb loss between lambing and weaning, 10%.
- Average selling price per lamb, \$107.
- Losses caused by predators. Cougar (1), coyote (18), dogs (8). Value \$2,450.
- Total veterinary costs per ewe, \$10.59.
- Average killing cost, \$23 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Cost of feed.
- Cost of processing.
- Lack of market information.
- Lack of producer marketing skills.

- Length of winter feeding.
- Predators.
- Import competition.
- Cost of housing and handling facilities.
- Access to information on management.
- Financial management skills.

The most common suggestions for improvement:

- Communication between producers needs improving.
- Subsidized producers, in part, for feed costs.
- Processor makes as much as producer.
- Need for sheep specialist/technician.
- Need for a producer marketing board.
- Curb import of lamb.
- Need consistently available shearers.
- Produce lamb to meet specific requirements of restaurants marketing segment.

5. Okanagan.

Aspect and elevation have a strong influence on the vegetation of this region. There is some grassland on southern and south western facing slopes. The forest vegetation varies from pine in the dryer parts to cedar

and hemlock in the moister sites. Precipitation varies from 15-22 inches per annum and the elevation ranges from 1200-1700 feet in the agricultural areas.

Sales of lamb are predominantly direct to the consumer. Much of the remaining lamb is auctioned at sale yards in the region or in the lower Fraser Valley.

According to the 1986 census, 72% of the sheep farms in this region are 69 acres or less.

Questionnaire Data.

Responses to the questionnaire were received from 16% of the producers. This represents 21% of the number of ewes recorded in the 1986 census. The following data was extracted:

- Lambing 143%.
- Lamb loss between lambing and weaning, 5%.
- Average selling price per lamb, \$111.
- Losses caused by predators. Coyote (20), dogs (6).

Value \$2,600.

- Total veterinary costs per ewe, \$4.22.
- Average killing cost, \$14 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Cost of processing.
- Cost of feed.
- Lack of processing facilities.
- Length of winter feed.
- Distance to market.
- Production management skills.
- Financial management skills.
- Cost of housing and handling facilities.
- Market information.
- Availability of breeding stock.

The most common suggestion for improvement:

- Need for sheep specialist.
- More processing facilities required.
- Government should promote marketing.
- A home study, or otherwise, course should be offered to train producers.
- Set up a lamb marketing board.

6. Omineca

This region has the Nechako Plateau with lake-bottom and till soil at an elevation range of 1,800-2,500 feet. At the edge of the plateau it becomes mountainous with livestock production occurring primarily in valley bottoms. Annual precipitation varies from 18 inches on the plateau to 26 inches in the mountainous regions.

Crops are mostly forage crops with a small amount of grain for livestock consumption. Hay is fed for approximately 200 days per year. Some of the sheep farming is integrated with cow-calf operation.

The Omineca covers a vast area of land and markets, other than farm-gate sales, involve considerable distance. 75% of the sheep farms are 70 acres or more, according to the 1986 census.

Questionnaire Data.

Questionnaire responses were received from 27 of the sheep producers. This represents approximately 16% of the total number of ewes reflected in the 1986 census. The following data was extracted:

- Lambing 157%.
- Lamb losses between lambing and weaning, 11%.
- Average selling price per lamb, \$85.
- Losses caused by predators. Bear (4), coyotes (19), dogs (6). Value \$2,750.
- Total veterinary costs per ewe, \$7.28.
- Average killing cost, \$10 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Lack of processing facilities.
- Cost of feed.
- Distance to market.
- Length of winter feeding.
- Cost of housing and handling facilities.
- Availability of breeding stock.
- Production management skills.
- Access to information on management.
- Market information.
- Import competition.

Most common suggestions for improvement:

- Inspected abattoir needed.
- More information from B.C. Ministry of Agriculture and Fisheries on sheep production.

- Promotion of B.C. lamb to consumers.
- Need for sheep specialist in B.C.

7. Thompson.

Thomson Valley is characterized by low rainfall in much of the region. Elevations from about 1,000-1,500 feet are primarily grasslands. Coniferous forests occur between 1,500 and 5,000 feet. Sagebrush predominates on the steeper slopes. The region experiences between 107 and 187 frost-free days per annum.

Irrigation is practiced, where possible, in the river valleys, where farms are considerably smaller and intensive.

The Thompson region was once considered the sheep capital of B.C. but today, the flocks are smaller and more scattered. The 1986 census shows only 35% of the farms are in excess of 70 acres.

Questionnaire Data.

Responses from the questionnaire were received from 26% of the sheep producers, representing approximately 51% of the total number of ewes in the region. The following data was extracted.

- Lambing 141%.
- Lamb loss between lambing and weaning, 10%.
- Average selling price per lamb \$73.
- Losses caused by predators. Bear (2), coyotes (43), dogs (5). Value \$3,739.
- Total veterinary cost per ewe, \$8.22.
- Average killing cost, \$12 per head.

The 10 most emphasized constraints on production and marketing, in order of concern:

- Lack of processing facilities.
- Lack of market information.
- Import competition.
- Lack of producer marketing skills.
- Availability of good breeding stock.
- Production management skills.
- Predators.
- Length of winter feeding.
- Cost of feed.
- Disease.

The most common suggestions for improvement:

- Promotion of B.C. lamb to consumer.

- Subsidize breeding stock of the right kind for flock increase.
- Subsidize wool prices.
- Disease control - notably footrot and abortion.
- Use of top-notch shepherds in grazing projects.

8. Peace.

The Peace region is characterized by being more prairie in nature than the rest of B.C. It experiences short hot summers and extremely cold winters where frost penetrates several meters. It is a relatively flat to rolling grain producing region totaling approximately 19 million hectares. The normal precipitation is from 16-20 inches per annum and the elevation ranges between 2,200 and 2,400 feet.

Because of its geographic location, many of the lambs produced are shipped to Lambco in Innisfail, Alberta. Distance to market is a major concern to the sheep producer.

The region, from the meat production point of view, enjoys lower costs of grain and hay than in the other areas of the province.

Questionnaire Data.

Questionnaire responses were received from 32% of the sheep producers, representing approximately 33% of the total number of ewes. The following data was extracted:

- Lambing, 173%
- Lamb losses between lambing and weaning, 15%.
- Average selling price per lamb, \$68.
- Losses caused by predators. Coyotes (7). Value \$600.
- Total veterinary costs per ewe, \$6.97.
- Average killing cost, \$15 per head. (only one report).

The 10 most emphasized restraints on production and marketing, in order of concern:

- Distance to markets.
- Lack of processing facilities.
- Length of winter feeding.
- Import competition.
- Seasonal demand for lamb.
- Lack of market information.
- Lack of producer marketing skills.
- Cost of housing and handling facilities.
- Lack of production management skills.

- Cost of feed.

The most common suggestions for improvement:

- Promotion of B.C. lamb to consumer.
- Efforts to produce a high quality, consistent product.
- Government appointed sheep specialist.
- Need for more processing plants.
- Encourage feedlotting of sheep in the region.

B.C. SHEEP ASSOCIATIONS

Barkley Valley Sheep Producers Association.

B.C. Sheep Breeders Association.

B.C. Purebred Sheep Breeders Association

Cariboo Sheep Breeders Association.

Dawson Creek Sheep Breeders Association.

Inter Island Sheep Breeders Association.

McBride Sheep Breeders Association.

Nechako Valley Sheep Breeders Association.

Prince George Sheep Breeders Association.

Romney Club of Canada.

North Peace Sheep Breeders Association.

Shuswap Sheep Breeders Association.

Quesnel Sheep Association.

British Columbia Sheep Grazing Association.

LIST OF COMPANIES CONTACTED.

Importers and Brokers.

H. Cleveland & Co Ltd
New Zealand Lamb Co Ltd
Columbia Meats Ltd
Lambco
Unifoods Ltd
Everfresh Meats Ltd
Pan Pacific Commodities
Westwing Meat Distributors Ltd
Penguin Meats Ltd

Meat Distributors and Purveyors.

Canada Packers Inc
Gainers Inc
Centennial Packers
Intercity Packers
Burns Meats Ltd

Chain Stores (Grocery)

Overwaitea
Stongs
Kelly Douglas (wholesaler to stores)
Safeway
Mr Grocer

Meat Markets.

Fraser Meats
Quality Meat Market
Friendly Meats
Dennett's Meat Market
Family Meat Market
Tenderland Meats
Bruce's Grocery
Windsor Quality Meat

Meat Purveyors.

Fletcher's Fine Foods
Freybe Sausage Manufacturing
Fleetwood Sausage
Alaska Highway Packers
B.C. Fancy Sausage

Hotels and Restaurants.

Holiday Inn
Hyatt Hotels
Sheraton Hotels
Keg Restaurant
Il Corsaro
William Tell Restaurant
Fado Restaurant
Inglenook
Chesa Restaurant
Royal Oak Restaurant
Holyrood House
Water's Edge Restaurant
Eugene's
Oak Bay Marina Restaurant

Federally Inspected Abattoirs.

Pitt Meadow Meat Ltd
Midway Packers
Kohler's European Sausage
Glenbrook Foods
Lawrence Meat Packing Co
Coaspac Meat Ltd
Johnston Packers Ltd
Grandmaison Beef Farm Ltd
Scott's Meats Ltd
Island Meat Packers Ltd

Provincially Licenced Abattoirs.

Chilako Meats
Cowichan Bay Meats Ltd
Findlay Meats Ltd
Johnston's Meats
Saatchi Meats
Empire Meats
Ranchland Packers

Westholme Meat Packers Ltd
Kam Lake View Meats
Steiner Meat Cutting

Wool Industries.

Canadian Co-operative Wool Growers
Birkeland Bros Wool Batts Ltd
Philosopher's Wool
Miocene Custom Carding
West Coast Woollen Mills
Wool Bureau, Toronto

BIBLIOGRAPHY

1. B.C. Annual Livestock Report. Agriculture Canada. N.Peterson. 1988 and 1989.
2. B.C. Sheep and Lamb Marketing Opportunities Study. Don Ference and Associates Ltd. 1983.
3. Clearwater Agroforestry Trials. B.C. Ministry of Forests. G. Ellen. 1985-1988.
4. Commodity Plan Summary for Sheep. B.C. Ministry of Agriculture and Food. Dr. S. Mason. 1983.
5. Economic Survival for the B.C. Sheep Producer. John Knapp (Alberta Sheep Specialists). 1987.
6. Forage Preferences for Herded Sheep as Related to Brush Control and Seasonal Browsing Damage to Douglas Fir Regeneration. S. Sharrow and W. Leininger. Oregon. 1980-1983.
7. Import Displacement for Red Meats, Within the Hotel, Restaurant and Institutional Industry in B.C. B.C. Ministry of Agriculture and Food. Lynn Oldeheuvel. 1983.
8. Market Commentary. Agriculture Canada. 1988 and 1989.
9. Problem Wildlife Report. Ministry of Environment, Wildlife Branch, predation reports. 1988.
10. Red Meat Plan. Sheep Development. Ministry of Agriculture and Food. Ontario. 1986.
11. Red Meat Plan II. Sheep Development Program II. Ministry of Agriculture and Food. Ontario. 1990.
12. Report on Clear-cut Grazing. B.C. Sheep Grazing Association. A. V. Smith. 1989.
13. Sheep 2001. A Strategy for the Canadian Sheep Industry. Canada Sheep Council. 1989/90.
14. The Use of Forage Crops for Stall Lamb Fattening. Nottingham University. S. Fitzgerald. 1983.

15. Trends in the U.S. Lamb Slaughter Industry. Oregon State University. 1987.

APPENDIX 2

FLOCK HEALTH MANAGEMENT



Ministry of
Agriculture
and Fisheries
ANIMAL HEALTH BRANCH

Animal Health Centre
1874 Gladwin Road (Box 100)
Abbotsford
British Columbia
V2S 4N8
Telephone: (604) 852-5370
Fax: (604) 853-4357

Flock Health Management

Sheep Footrot

Footrot is a serious contagious disease which claims approximately \$12.50 per ewe out of the sheep producer's pocket annually. This disease can be eradicated from the flock, but the producers must admit to the presence of the disease and place an honest effort in cleaning up the problem.

The BCMAF Animal Health Branch, has started a pilot project in the interior of B.C. to demonstrate the control and eradication of sheep footrot. Although the industry is facing declining numbers of sheep in the province excellent opportunities exist for the industry to use sheep to manage unwanted forage in the clearcut areas. In addition to utilizing clearcut areas and in order for the sheep industry to regain confidence of Alberta lamb feedlot operators and ensure U.S. markets of breeding stock and fat lambs, the sheep producers need to start cleaning up footrot in their flocks. Good management practices such as isolation, trimming and treating suspect animals can help keep the problem out of the flock.

All the flocks have been inspected at least twice on the premises of origin. The footrot problem was worse than it was initially suspected. Most flocks had evidence of active footrot and a few had old, possibly dormant infections. The flock on the clearcut has also been inspected twice to monitor and evaluate the foot condition on the clearcut.

Hoof trimming, isolation of suspect animals, and treatment with 20% zinc sulphate solution, foot soaking for 30 minutes twice weekly has been effective. Well designed facilities are important for effective treatment.



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COLUMBIA

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Telephone: (604) 852-5370
Fax: (604) 853-4357

O.P.P (Ovine Progressive Pneumonia)

O.P.P. is a chronic disease of sheep. The causative agent is a slow growing virus that also causes arthritis and mastitis. Agriculture Canada has completed a National survey that showed nation wide incidence of the disease. In B.C. 586 samples were taken from 32 farms; 10 flocks were positive, with a total of 21 animals positive to the test. Since 1987 Alberta Health Management Branch in Fairview, Alberta, has been doing a management trial to eradicate O.P.P. from the flock. After this trial is completed recommendations for the industry will follow. The Animal Health Centre in Abbotsford has the reagent to test a flock for O.P.P. at this time.

Johne's Disease

Johne's disease is caused by a very slow growing bacteria which causes thickening of the wall of the intestine resulting in a chronic wasting. A new ELISA test may soon be available to assist in detecting positive flocks, and implement management strategies to eliminate the organism from sheep flocks.

If you need information on sheep production contact the District Agriculturalists or the Animal Health Branch.

Animal Health Branch
Ministry of Agriculture and Fisheries
Abbotsford, B.C.
Phone: 854-4400

SHEEP FOOTROT

Dr. Henry Lange
Health Management Veterinarian
B.C. Ministry of Agriculture & Fisheries

1) **What is sheep footrot (SFR)?**

SFR is a serious contagious disease that affects all ages of sheep, goats, and deer. It is characterized by severe lameness resulting from invasion and the digestion of the horn of the hoof. An estimated \$12.54 per ewe is lost living with SFR (based on 1989 prices).

2) **What causes SFR?**

The primary bacteria causing SFR is B. nodosus. A common contaminate, F. necrophorum is required to facilitate colonization and induce SFR.

3) **Where do B. nodosus and F. necrophorum come from?**

F. necrophorum exists in manure, in the gut, on skin and the feet of all animals, and consequently is part of the sheep environment. B. nodosus can survive in the soil or manure under moist conditions (also contaminated vehicles and equipment) for not more than two weeks, but can survive months in hoof cracks, crevices, and cavities of sheep and goats. Under moist, warm conditions the bacteria multiply and contaminate the manure and soil, where they contact the susceptible hoof.

4) **How do sheep become infected?**

Wet manure and mud soften the hoof wall and irritate the skin between the toes, which facilitates colonization of F. necrophorum, resulting in infection and inflammation. Damage to the hoof and skin allows entry of B. nodosus which secrete enzymes that digest the tissue that connects the horny part of the hoof to the underlying soft tissue.

5) **What is the incubation period?**

Under optimal conditions with a very virulent strain clinical SFR can be seen in approximately one week, and in 4 weeks 50% of the flock can be affected. In unfavourable conditions (cold or dry) the organism becomes dormant.

6) **What are the symptoms?**

In the initial stages of SFR the skin between the toes will become red and swollen. As SFR progresses the sole and hoof wall become undermined and filled with a foul dirty grey material. The degree of lameness will depend upon the severity of lesion.

7) **How is SFR diagnosed?**

Sheep with undermining of the sole and separation of the hoof, and with pockets of grayish foul smelling material are very indicative of SFR. Some sheep will require extensive paring to reveal the lesion. In cases which are questionable a standard Gram's stain and a specific fluorescent antibody stain may be used to identify the organism. Carrier animals are difficult to diagnose, and for this reason if one sheep is suspect, the whole flock must be treated.

Footrot Prevention

Preventing SFR from becoming established in the flock should be the producers primary goal. Eradication is much more difficult, labor intensive and expensive. Every effort should be put towards maintaining a footrot-free status. By understanding the disease process, one can apply several management practices that will minimize chances of introducing SFR into a flock.

- 1) Never buy lame sheep unless you know it is not SFR.
- 2) Always assume new additions to your flock are infected with SFR. Isolate these animals for one month at least. Trim every foot immediately on arrival and footbath with 20% zinc sulphate. Infected sheep should be foot bathed for a one hour stand twice a week for four weeks. Footbathing will not cure carriers unless their feet have been CAREFULLY TRIMMED.
- 3) Avoid using SFR contaminated facilities. Either a thorough cleaning and disinfecting with an iodine base disinfectant or leaving the facilities vacant for at least two weeks will help reduce spread to non-infected sheep.
- 4) In areas of high incidence, routinely footbath sheep one weekly during the warm season.

Footrot Control and Eradication

Effort should be directed towards treatment and eradication.

1) Footbathing

Zinc sulphate is the chemical of choice to treat SFR. It is less toxic to the shepherd and sheep, does not stain wool and is less corrosive to metal, compared to copper sulphate or formaldehyde. Overgrown hooves treated with walk-through footbaths defies all principles of topical treatment. The chemical must come into contact with the organism and infected tissue long enough to exert a

therapeutic effect. Foot paring, drying and repeated bathing are essential for maximum efficacy.

The penetration of zinc sulphate may be enhanced by increasing the footbath time and the addition of a liquid detergent. Care should be taken when paring feet as zinc sulphate and detergent will exacerbate bleeding.

2) Oral Treatments

The efficacy of oral zinc sulphate in the treatment and prevention of footrot is controversial. Use of 0.5 grams zinc sulphate for seven weeks, has been advocated.

3) Antibiotics

Penicillin-streptomycin at high doses appear to be the best intramuscular treatment. Erythromycin or Oxytetracycline have shown moderate effectiveness.

Keep in mind that antibiotics are usually more expensive, less effective and should only be used in severe cases in cooperation with footbaths.

4) Vaccination

Use of SFR vaccine decreases the spread of SFR in flocks where the infecting bacteria is one of the serotypes in the vaccine. It also may have some therapeutic affect. Two doses of vaccine administered subcutaneously 4-6 weeks apart is more effective than a single does. The first dose should be given a week or so before a seasonal outbreak is anticipated.

5) Use of Clean Pastures

B. nodosus survives for a maximum of two weeks outside the host and a pasture free of cattle, sheep, goats, or deer for two weeks may be considered clean. Where possible sheep should be moved to clean, dry grazing following paring and bathing.

The following points aid in eradicating SFR:

- Build a sturdy footbath, durable and leak proof. Caulk all joints and use corner strapping.
- Make all sides high enough to prevent splash out. Approximately 18 inches high plywood or rubber. Wool tags have been suggested to reduce splashing but it leashes out the zinc sulphate, and is not recommended.
- A non-slip board ramp at the exit saves chemical and acts as drying areas which allows air to the lesion.
- Hooves should be given the chance to dry after footbathing before sheep go to pasture.
- Use a 20% zinc sulphate
 - = 2 pounds powder in one gallon water

- = 2 kg powder in 10 litres water
- Ensure thorough mixing when adding the zinc sulphate to prevent caking on the bottom. When re-using the footbath agitate the solution first.

 - To calculate water capacity: measurements in inches
$$\frac{\text{length} \times \text{width} \times \text{water depth}}{280 \text{ cu. in./imperial gallon}} = \text{gallons of water required}$$
For example, a footbath 96 inches long by 48 inches wide holding water 4 inches deep, had a capacity of:
$$\frac{96 \times 48 \times 4}{280} = 66 \text{ gallons of water}$$

 - Add liquid laundry detergent to the footbath, at one (1) cup to 30 gallons solution. This acts as a wetting agent, promoting the solution to adhere and penetrate into the hooves.

 - Start out with the solution at a minimum depth of 4 inches. Top up when it reaches 2 inches, using a 25% solution. Be sure the final solution is at least 10%, if in doubt add more chemical.

 - Clean the trough, when mud and manure are layered on the bottom. The sheep's feet must contact the solution to have the desired effect.

 - Locate footbaths away from muddy areas if possible. Excess mud and manure on hooves necessitate more frequent changes of solution.

Footbath Design

There are several good reasons for making a footbath portable rather than permanent. Some are:

- 1) changing patterns of flow at your handling facility;
- 2) treating in different pens;
- 3) treating out on pasture;
- 4) moving footbath to clean area, thereby avoiding the necessity of sheep traveling over contaminated ground;
- 5) ease of cleaning the footbath.

Having the versatility of moving footbaths to where they are most useful, encourages their use and reduces labour. Therefore, construct footbaths keeping in mind portability and strength to withstand skidding them around.

A typical footbath used for foot soaking one hour should hold several sheep. Using 4'x 8' sheet of plywood for a floor, will hold about 8-13 mature sheep. If footbaths are multiples of this size dividers should be placed every 8 feet, to prevent trampling or drowning.

APPENDIX 3

- a. A PRODUCTION AND ECONOMIC ASSESSMENT OF PRESCRIBED
GRAZING OF SHEEP ON FOREST CLEAR-CUTS. March, 1990.

- b. SUMMARY OF FOREST SERVICE MANUAL BRUSHING PROGRAMME
CAMPBELL RIVER DISTRICT. 1985-1989.

- c. ESTIMATES OF VEGETATION MANAGEMENT ACCOMPLISHMENTS
KAMLOOPS REGION. 1988-1989.

A Production of Economic Assessment of Prescribed Grazing of Sheep on Forest Clearcuts

Project Number: 262

Supervisor: Ted Moore, P.Ag., District Agrologist, Kamloops

Branch: Development & Extension, Southern Interior Region

Co-operators: Thompson-Nicola Sheep Grazers Association
B.C. Forest Service – Clearwater

Funding: D.A.T.E. 1988/89 \$2,000.00
B.C.F.S. 1988/89 \$15,000.00

Objective: To make an economic assessment of prescribed grazing of sheep on clear-cuts and compare this to sheep production on irrigated pasture. This is part of a larger project involving B.C. Forest Service and Thompson-Nicola Sheep Grazers Association to assess both the silvicultural impact of sheep grazing and the practicability of clearcut grazing for sheep producers.

Summary

The D.A.T.E. funds were used to purchase a portable sheep handling facility (A.J. Ewe-Handle-Her Equipment) and ear tags for animal identification. The handling equipment worked very well for sorting sheep for weighing, treatment and shipping.

A total of 1,526 sheep (ewes and lambs) were grazed on forest clearcuts in the Otter Creek watershed, northeast of Vavenby. A representative sample of these sheep were ear tagged and weighed at monthly intervals from May to September (lambs were shipped out in August).

Results from this project have shown it is possible to obtain liveweight gains on lambs of 40 pounds (18kg) during a 90 day grazing season, an average gain of .4 pounds (.2 kg) per day.

Over a 130 day grazing period, ewes also gained weight, an average increase of 19.25 pounds (8.7 kg), indicating an adequate level of nutrition. These weight gains are comparable to results obtained in previous years and from other grazing sites in 1988.

OTTER CREEK SHEEP CLEARCUT GRAZING PROJECT

(1) Costs For 1500 Sheep (700 Ewes 800 Lambs)

| Cash Costs of Clearcut Grazing | Cost / head | Total Cost |
|--|-------------|------------|
| Labor-hired | \$13.30 | \$20,000 |
| Trucking (325 km round trip) | 4.00 | 6,000 |
| Producer trips (500 km at .25) | .83 | 1,250 |
| Losses (5%) | 3.76 | 5,250 |
| Dogs; feed, etc. | .40 | 600 |
| Salt/ min/ vet | .35 | 550 |
| Grazing fees | 1.00 | 1,500 |
| Misc. (bookkeeping, hay & grain) | .33 | 500 |
| Sub Total | 23.76 | 35,650 |
| Reduced weight gains on lambs (30 lbs x .70 x 800 = \$16,800) | 11.20 | 16,800 |
| Total | 34.96 | 52,450 |

At \$35 per head x 5 head per hectare = \$175 per hectare for vegetation management.

The major benefit to the producer is the flexibility gained in management of the home base.

- increase flock size and pasture some sheep at home
- produce hay
- rent pasture out, take off farm job

What is the \$ value of having home acreage available for other uses for 4 months?

If home acreage is irrigated and can produce top quality hay, the potential net value is \$180/ acre (based on 4 tons/ acre at \$110/ ton)

This same land is irrigated pasture should support 12 sheep/ acre

$$\frac{\$180}{12} = \$15 / \text{head}$$

A more realistic estimate would be a net return of \$120/ acre of hay. (4 tons at \$95/ ton)

At 12 head/ acre $\frac{\$120}{12} = \$10 / \text{head}$

Net costs of clearcut grazing to producer:

| | \$ / head |
|-------------------------------------|-------------|
| Herding, Trucking, etc. | 24 |
| Reduced weight gains | <u>11</u> |
| Sub Total | \$35 |
| Less additional return home base | \$10 |
| Net cost to producer | \$25 / head |

At \$25/ head, no change has been made to the bottom line for sheep producers – i.e. the loss per lamb of \$25 (at current market prices) still would exist.

If the sheep industry is to expand, silviculture contracts will probably have to pay more than \$25/ head.

SUMMARY OF FOREST SERVICE MANUAL BRUSHING PROGRAM
CAMPBELL RIVER DISTRICT

As of this date, 264 hectares have been manually brushed in the Campbell River District. Manual brushing activities started in 1985. Since that time different approaches have been analyzed to attempt to reduce costs including:

1. Three (3) year multiphase "stewardship" contracts;
2. Site preparation with the objective of enabling establishment of linear easily accessed planting rows;
3. Trials of alternative treatments including black plastic covering over maple stumps, weed control mats, and grass seedlings; and
4. Planting of cottonwood as an alternative to managing for conifers.

Photographic documentation is available of brush development overtime and the response of brush to treatment. To contrast treatments, herbicides demonstration plots have been established at Headquarters II and III and Piercy Creek.

Source: B.C. Ministry of Forests.

TABLE 1

SUMMARY OF MANUAL BRUSHING - CAMBELL RIVER DISTRICT

| Location | Hectares | Dominant Brush Species | Commencement Date | Number of Treatments to Date | Completion Date | Expenditure to Date (\$/ha) | Anticipated total cost (\$/ha) |
|--------------------|----------|---|-------------------|------------------------------|-----------------|-----------------------------|--------------------------------|
| Headquarters I+ II | 26 | salmonberry, bracken, broad- leaf maple | 1986 | 6 | 1990 | \$2,476 | \$2,700 |
| Headquarters III | 24 | salmonberry, elderberry, cottonwood, alder | 1988 | 3 | 1992 | \$750* | \$2,000 |
| Piercy Creek | 37 | salmonberry, lady fern | 1988 | 4 | 1992 | \$891 | \$2,000 |
| Browns River | 67 | salmonberry, bracken, alder cottonwood | 1989 | 2 | 1993 | \$265* | \$1,600 |
| Williams Beach | 17 | bracken | 1989 | 1 | 1992 | \$221* | \$1,200 |
| McKay Cove | 6 | alder | 1985 | 1 (girdling) | 1985 | \$350 | \$350 |
| McKay Cove | 82 | alder | 1986 | 1 (girdling) | 1986 | \$467 | \$467 |
| Surprise Island | 5 | alder | 1987 | 1 (girdling) | 1987 | \$397 | \$397 |
| Total | 264 | | | | | | |

* Costs of site preparation to prepare the site for manual brushing are not included. These costs were as follows: (i) Headquarters III - \$225; (ii) Browns River - \$200; and (iii) Williams Beach - \$225.

SUMMARY OF MANUAL BRUSHING EXPERIENCE

1. Performance of planting stock can have a major impact on manual brushing costs as it determines the number of years of treatment required. Curtailment of height growth due to planting shock or low survival to the point that fill planting is required can substantially increase costs. The expense of growing and planting high quality PSB 615 stock types may be justifiable for sites that require manual brushing.
2. Staking individual trees is a necessary and expensive requirement of manual brushing. Staking is essential for locating and preventing accidental cutting of plant seedlings. Metal pins with square flagging attached are a less costly alternative to cedar stakes, but there are concerns as to their durability and retention of visibility over the long term.
3. Mechanical site preparation can improve worker mobility. However, due to the intensity of labour involved in physically brushing each seedling it probably does not significantly reduce the cost of manual brushing. Mechanical site preparation can provide one-half to a full growing season of reduced vegetative competition. A major drawback is exposure of mineral soil resulting in establishment of high density of deciduous hardwoods which leads to an additional expensive future brushing treatment.
4. Production rates of 0.4 to 0.7 hectares per manday have been recorded. The slowest rates are in dense salmonberry, the fastest rates in braken. Production rates for cutting and covering maple coppices are very low -14 to 20 stumps/manday.
5. The three (3) year multiphase contract clearly has administrative efficiencies, and has resulted in reasonable rates for the work involved. These lower rates may be due to lack of contractor experience in manual brushing. The successful bidder on the 1988 contract bid 54% higher than the lowest bidder on the 1989 contract.
6. In general, it appears that manual brushing will lead to total costs approaching or exceeding \$2,000.00/ha

Summary of Results of Alternative Treatment Trials

1. Covering maple stumps with 6 mm black plastic appears to provide control. The plastic must be secured into the ground around, but away from the stump. Any tears or puncture holes will result in coppice production therefore, checking and maintenance is important. It has not been determined how many years the plastic cover must be maintained intact in order to kill the stump, but it appears to be at least two (2) growing seasons.
2. Polypropylene weed control mats costing \$1.44/mat covered an area of 0.8 m² around each seedling. These were totally ineffective in controlling woody brush species. Brush grew up around the edges of the mat and then grew laterally towards and over the seedling.
3. The grass trial involved application at 25kg/ha of the following seed mix;

| | |
|----------------------------------|------------------------|
| 20% Fortress Creeping Red Fescue | 5% Meadow Foxtail |
| 5% Red Top | 10% Perennial Ryegrass |
| 20% Alsike Clover | 10% Annual Ryegrass |
| 10% White Clover | 20% Orchard Grass |

Establishment of the grass cover has clearly resulted in a significant reduction in the level of establishment of salmonberry, elderberry, and red alder. Disadvantages of the grass cover include its impact on seedling height and diameter growth, the matting effect in winter, the potential of creating vole habitat and attracting ungulates, and the need to expose mineral soil to establish it. The height growth of the grass (150 cm) on the richest trophotopes and moister hygrotopes was a major problem. The potential for establishing grass species that are not prone to excessive height growth would be worth investigating.

4. Success has been achieved with establishment of black cottonwood. Early attempts at planting small whips and cutting were a disaster due to the combined effects of brush, browse, and slug damage. Planting of 2.0 m whips on vigorous salmonberry sites with no brush treatment has been successful. The cottonwood foliage is above the brush and out of reach of browsing.

ESTIMATES OF VEGETATION MANAGEMENT

ACCOMPLISHMENTS (1988/89)

KAMLOOPS REGION

| Method of Application | Ministry | | Industry | |
|--------------------------|------------------|-----------------------|------------------|-----------------------|
| | Hectares (ha) | Avg. Cost Range \$ | Hectares (ha) | Avg. Cost Range \$ |
| Non- chemical: | | | | |
| Manual Cutting | 968 | 574 (481-1090) | 204 | 524 (305-624) |
| Girdling | 7 | 111 (100-115) | - | |
| Ground Herbicide: | | | | |
| Backpack | 875 | 434 (200-824) | 13 | 383 |
| Stump | 537 | 618 (400-965) | - | |
| Hack & Squirt | 291 | 228 (108-700) | 149 | 274 (100-850) |
| Vehicle-mounted | 142 | 446 (200-497) | - | |
| Aerial: | | | | |
| Helicopter | 136 | 224 (213-245) | 176 | 198 |

Source: Ministry of Forest, Kamloops.

Costs given are per application. In some sites more than one application was necessary.

APPENDIX 4

ANNUAL COST ESTIMATE FOR TECHNOLOGY TRANSFER

B.C. SHEEP AND WOOL INDUSTRY

ANNUAL COST ESTIMATE FOR TECHNOLOGY TRANSFER

B.C. SHEEP AND WOOL INDUSTRY

| <u>Sheep Specialist</u> | <u>Annual Cost (\$)</u> |
|-------------------------|-------------------------|
| Salary | 46,000 |
| Programme Expenses | 5,000 |
| Travel Expenses | 4,000 |
| TOTAL | 55,000 |

Master Sheep Producer Programme

| | |
|-------------------------------------|---------|
| Salary - \$10 per Hour (1500 Hours) | 15,000 |
| Travel Expenses | 3,000 |
| Equipment and Supplies | 4,000 |
| Upgrading and Development | 3,000 |
| TOTAL | 23,000 |
| 5 Technicians at \$23,000 per annum | 115,000 |
| TOTAL Estimated Cost per annum | 170,000 |

It is proposed that funding for Technology Transfer, initially, be undertaken by the provincial and/or federal governments for a 5 year period. After which time the Master Sheep Producers Programme would be funded, entirely, by the B.C. Sheep and Wool Commission.

APPENDIX 5

B.C. SHEEP AND WOOL

SURVEY QUESTIONNAIRE

B.C. SHEEP AND WOOL SURVEY QUESTIONNAIRE

FLOCK OWNER

ADDRESS

REGIONAL DISTRICT

PART I - 1989 STATISTICS

FLOCK DESCRIPTION

EWES NUMBER BREED/TYPE

RAMS NUMBER BREED/TYPE

LAMBS NUMBER NUMBER WEANED

LAMBS MARKETED

NUMBERTS SOLD:-

TO PROCESSORS OR WHOLESALERS AVG. LIVE WEIGHT AVG. PRICE/LAMB

DIRECT TO CONSUMERS AVG. LIVE WEIGHT AVG. PRICE/LAMB

AT SALEYARDS AVG. LIVE WEIGHT AVG. PRICE/LAMB

FOR BREEDING AVG. PRICE/LAMB

WOOL CROP

AVERAGE YIELD PER HEAD (LBS) AVERAGE PRICE PER POUND

PELTS SALES

NUMBER SOLD AVERAGE PRICE PER PELT

MARKETING COSTS

AVERAGE AUCTION COMMISSION AVERAGE SLAUGHTER COST

TRUCKING

MILES TO MARKET

FEEDING

GRAZING ACREAGE

LENGTH OF GRAZING SEASON WEEKS

HAY FED IN 1989 TONS

SILAGE FED IN 1989 TONS

CONCENTRATES FED IN 1989 TONS

FLOCK HEALTH COSTS

TOTAL VETERINARIAN

PARASITE CONTROL

VACCINES/MEDICATIONS

PREDATORS IDENTIFY

LOSSES NUMBER OF SHEEP TOTAL VALUE

COST OF PREDATOR CONTROL PROGRAMME

PART II - SHEEP INDUSTRY DEVELOPMENT1. WHAT CONSTRAINTS ADVERSELY EFFECT YOUR:MARKETING?

PLEASE RATE THE FOLLOWING AS TO THEIR IMPORTANCE

| (CIRCLE APPROPRIATE NUMBER) | LOW | MEDIUM | HIGH | |
|-----------------------------------|-----|--------|------|---|
| DISTANCE TO MARKET | 1 | 2 | 3 | 4 |
| LACK OF PROCESSING FACILITIES | 1 | 2 | 3 | 4 |
| COST OF PROCESSING | 1 | 2 | 3 | 4 |
| MARKET INFORMATION | 1 | 2 | 3 | 4 |
| IMPORT COMPETITION | 1 | 2 | 3 | 4 |
| SEASONAL DEMAND FOR LAMB | 1 | 2 | 3 | 4 |
| LACK OF PRODUCER MARKETING SKILLS | 1 | 2 | 3 | 4 |
| OTHER - SPECIFY | 1 | 2 | 3 | 4 |

PRODUCTION?

| | | | | |
|---|---|---|---|---|
| AVAILABILITY OF BREEDING STOCK | 1 | 2 | 3 | 4 |
| DISEASE | 1 | 2 | 3 | 4 |
| PRODUCTION MANAGEMENT SKILLS | 1 | 2 | 3 | 4 |
| FINANCIAL MANAGEMENT SKILLS | 1 | 2 | 3 | 4 |
| ACCESS TO INFORMATION ON MANAGEMENT | 1 | 2 | 3 | 4 |
| AVAILABILTY OF SKILLED LABOUR | 1 | 2 | 3 | 4 |
| COST OF FEED | 1 | 2 | 3 | 4 |
| COST OF HOUSING AND HANDLING FACILITIES | 1 | 2 | 3 | 4 |
| PREDATORS | 1 | 2 | 3 | 4 |
| LENGTH OF WINTER FEEDING | 1 | 2 | 3 | 4 |
| OTHER - SPECIFY | 1 | 2 | 3 | 4 |

2. WHAT CAN YOU SUGGEST TO IMPROVE CONSTRAINTS IN QUESTION 1?

3. GIVE YOUR PERCEPTION OF THE OPPORTUNITES YOU SEE IN THE B.C. SHEEP INDUSTRY AS IT RELATES TO:

THE INDUSTYR AS A WHOLE

YOUR OWN OPERATION

4. WHAT ADVANTAGE IN YOUR OPERATION GIVES YOU THE COMPEITIVE EDGE?

(PLEASE USE ADDITIONAL PAGES I MORE SPACE IS REQUIRED)

APPENDIX 6

PRESS RELEASE

ON

THE RESTRUCTURING OF THE CANADIAN SHEEP INDUSTRY

NATIONAL ORGANIZATION

***** PRESS RELEASE *****

May 14, 1990 - Canadian sheep industry representatives reached consensus on the restructuring of its national organization at a meeting in Winnipeg on May 12 and 13, 1990. Nine provinces and four national industry groups were present. The meeting was called by Agriculture Canada at the request of several provincial sheep agencies.

The present Canada Sheep Council had been having some difficulty in its operations which were precipitated by the withdrawal of the Alberta Sheep and Wool Commission in April, 1988. In seeking to restructure the national organization, delegates attempted to address the major issue of effective industry representation.

Mr. Mazankowski indicated "I am pleased that my Department could assist in the resolution of previous organizational difficulties of the sheep industry. I am sure the discussions will result in a much more stronger industry organization."

Discussions centered around the need for a national organization which would link provincial and industry organizations, the objectives, membership and representation and funding mechanisms. Consensus was reached on all issues.

The representatives recommended that the new name of the organization should be the Canadian Sheep Federation.

Amongst several objectives of the Federation will be the appropriate reaction to legislation which impacts on the industry, the improvement of marketing system, the monitoring of trade issues, the formulation of long-term goals and strategies which seek to strengthen the industry and the promotion of consumption of Canadian lamb and wool. The representatives agreed that the new body must strive for self-reliance as soon as possible.

Membership provisions will allow for provincial sheep agencies and national sheep industry groups to participate on the Board of Directors. National sheep industry groups include the Canadian Sheep Breeders Association, the Canadian Co-operative Woolgrowers and the Lamb Feeders of Canada.

The number of directors and votes per province as well as funding will be determined by the sheep population in each province with a minimum of one director and vote per province. It is expected that there will be thirteen directors on the Board sharing nineteen votes based on sheep distribution in Canada.

The Federation office will be located in Ottawa to improve communications with the links to the federal government.

Chairman Bruce Howard of Agriculture Canada expressed his satisfaction at the end of the meeting. "All representatives are to be congratulated for their willingness to reach mutual agreement on some serious issues augers very well for this industry."

The Directors of the present Canada Sheep Council together with a liaison committee, comprising of a representative from Council, provincial and national organization will supervise the transition and will meet to discuss the transition to the Canadian Sheep Federation and a revised constitution which reflects the discussions in Winnipeg. It is anticipated that the Federation will be operational by August.

-30-

For more information, media may contact:

Andre Degenais
Livestock Development Division
Agriculture Canada
Ottawa, Ont.
tel: 613-995-9554

APPENDIX 7

NET PRESENT VALUE ANALYSIS
OF SHEEP INDUSTRY DEVELOPMENT PLAN

NET PRESENT VALUE ANALYSIS OF COST/BENEFITS OF SHEEP

INDUSTRY PLAN

| Year | Cost (\$000) | Benefits (\$000) | |
|------|--------------|------------------|-------|
| | | (A) | (B) |
| 1 | 170 | 0 | 0 |
| 2 | 170 | 20 | 147 |
| 3 | 170 | 50 | 323 |
| 4 | 170 | 100 | 780 |
| 5 | 170 | 180 | 1,589 |
| 6 | 170 | 270 | 1,955 |
| 7 | 170 | 350 | 2,270 |
| 8 | 170 | 370 | 2,586 |
| 9 | 170 | 380 | 2,700 |
| 10 | 170 | 390 | 2,800 |

| | <u>(A)</u> | <u>(B)</u> |
|--------------------------------|------------|------------|
| Present Value Costs (\$000) | 1,045 | 1,045 |
| Present Value Benefits (\$000) | 1,050 | 7,583 |
| Net Present Value (\$000) | 5 | 6,538 |

(A) Improving gross margin per ewe on existing flock only, by \$13 over 10 year period.

(B) Expansion of the flock to 58,000 ewes in 10 years plus improved gross margin per ewe of \$34 over 10 years.

Source: Agriculture Canada.

APPENDIX 8

B.C. SHEEP AND WOOL INDUSTRY

DEVELOPMENT STRATEGY

DRAFT TERMS OF REFERENCE

B.C. SHEEP & WOOL INDUSTRY DEVELOPMENT STRATEGY

DRAFT TERMS OF REFERENCE

NOVEMBER 30, 1989

Introduction:

The relative size of Sheep & Wool Industry in British Columbia is limited. The Industry is widely distributed throughout the Province with the majority of production located in the Lower Mainland and Vancouver Island. In terms of farm cash receipts, the Industry generated close to \$2.5 million in 1987.

The present market demand for lamb and wool exceeds the British Columbia supply capacity and opportunities may exist for British Columbia sheep producers to meet this market demand with local product. In order to determine the capability to meet this market demand for lamb and wool, a comprehensive Industry Development Strategy is required.

Objective:

To develop a comprehensive Sheep & Wool Industry Development Strategy for British Columbia.

Study Outline:

The development of the Strategy will involve three phases which consist of, but not limited to:

Phase I ---- Current Status of the Sheep and Wool Industry

1. Baseline production and Marketing Statistics by region outlining size, structure, production methods and patterns.
2. Demand for lamb and wool and the level of importation from outside of British Columbia
3. Marketing and processing infrastructure, which includes promotion of B.C. product.
4. Opportunities and Constraints.

Phase II --- **Industry Consultation**

1. Identify opportunities and constraints to the Industry.
2. Determine the effect of imports and trade.
3. Assess the current marketing and promotion practices.
4. Identify opportunities to reduce production costs and increase net farm income.
5. Recommend specific strategies and action plans to achieve the objectives of the industry.

Phase III --- **Strategy Development**

1. Based on regional input, prepare a draft report with recommended strategy(ies).
2. Review and develop final recommendations in consultation with the Industry.

Process

The following process in the development of the British Columbia Sheep and Wool Strategy:

1. The Project Advisory Committee to review the Term of Reference, clarify Research Assistant role and duties and establish timelines for defining actual work and steps to obtaining baseline information in Phase I.
2. Research Assistant to undertake Phase I, (update and expand B.C. Sheep and Lamb Marketing Opportunities Study, June 1983).
3. Research Assistant to identify all relevant organizations pertaining to sheep and wool production, processing, distributing and marketing. Characterize Industry for commercial production and other goals. This profile to be discussed with Advisory Committee for further strategic planning decisions needed to complete the balance of the planning process.
4. Advisory Committee to draft a letter of invitation to the various producers and organizations for input through regional workshops or individual submissions. Research Assistant to prepare Questionnaire.

5. Subject to paragraph 4, the process may involve BCMAF to organize regional workshops for the Peace River, Southern Interior and South Coastal Regions as necessary.
 - a) To direct and facilitate meetings to stimulate discussion regarding the direction the industry wishes to pursue, the opportunities and constraints facing industry and actions required to achieve industry objectives.
 - b) To prepare transcripts of regional meetings.
 - c) To meet with the Project Advisory Committee after the first regional meeting to review procedures, workshop format and strategy as indicated by the first workshop. Modification of the remaining meetings as required.
 - d) Conduct remaining workshops.
 - e) Identify regional delegates to review of draft report.

6. BCMAF/Research Assistant to prepare a draft report recommending a commodity strategy from regional industry input.
 - a) Distribution to Project Advisory Committee and regional delegates for review and comment.
 - b) Meet with Project Advisory Committee and regional delegates to present and review strategy and study.

7. Prepare a final report, British Columbia Sheep and Wool Industry Strategy, which identifies regional issues of importance and divergent opinions.

8. Distribute report to key Industry players identified in paragraph 3.

Documentation

Two reports will be prepared:

1. An updated industry overview, background and analysis report.
2. An industry development strategy with an action plan.