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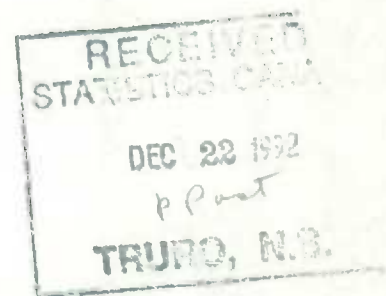
Agriculture Statistics Division

Canada

GRAIN AND OILSEED CONSUMPTION BY LIVESTOCK AND POULTRY
CANADA AND PROVINCES, 1990

Livestock Feed Usage Study

by
Ruth McMillan
Agriculture Division
Statistics Canada
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Without the efforts of many persons and organizations, this project could not have been completed successfully. Special thanks are extended to the ten provincial departments of agriculture for their major contributions to the Livestock Feed Usage Study.

Executive Summary

Statistics Canada conducted its second consecutive Livestock Feed Usage Study from May through September 1991. The primary goal of this project, undertaken for Agriculture Canada on a cost recovery basis, was to develop provincial grain and oilseed intake per animal coefficients for 1990. The results would be used by the Committee of Experts on red meat stabilization to distribute the benefits of certain non-commodity specific programs among the various classes of livestock and poultry. Net benefits to red meat producers could then be calculated, as mandated by the "National Tripartite Stabilization Red Meat Agreements".

This project profited from the progress made in the course of the Livestock Feed Usage Study carried out in 1990 covering calendar year 1989. During the current study, the provincial departments of agriculture developed feed intake coefficients for the calendar year 1990 for beef cattle, dairy cattle, sheep and lambs, hogs and horses in their respective provinces. Feed intake coefficients for layers, chickens and turkeys were developed centrally, with the assistance of the national marketing boards and the Canadian Feed Industry Association. Statistics Canada's role was to act as

national coordinator, to provide the overall conceptual and methodological framework, to develop livestock and poultry population estimates using the data available, and to review and evaluate the results.

Table 1, below, shows grain and oilseed consumption per animal in 1990, by class of livestock and poultry.

TABLE 1. Grain and Oilseed Consumption per Animal, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- metric tonnes -											
BEEF CATTLE	.569	.524	.479	.363	.286	.619	.550	.572	.744	.289	.611
DAIRY CATTLE	1.597	1.217	1.415	1.569	1.460	1.390	1.722	1.754	1.308	1.634	1.452
SHEEP AND LAMBS	.044	.104	.037	.042	.064	.081	.089	.120	.091	.043	.077
HOGS	.317	.327	.307	.311	.337	.369	.311	.362	.365	.295	.347
LAYERS	.0248	.0289	.0316	.0298	.0305	.0299	.0312	.0294	.0305	.0328	.0305
CHICKENS	.0029	.0038	.0034	.0038	.0036	.0036	.0033	.0039	.0034	.0032	.0036
TURKEYS	.0000	.0138	.0104	.0105	.0153	.0211	.0201	.0206	.0210	.0179	.0186

Source: Livestock Feed Usage Study, Statistics Canada

Based on these coefficients, and the corresponding inventory and output estimates, grain and oilseed consumption by livestock and poultry totalled 17 360.4 thousand metric tonnes at the Canada level in 1990, as shown in Table 2, below. This represents a 0.3% increase over the equivalent 1989 estimate, which stood at 17 310.5 thousand metric tonnes. Note that although the 1989

report referred to "grain consumption", these estimates also included oilseeds, and are comparable to estimates of "grain and oilseed consumption" in the current report.

TABLE 2. Total Grain and Oilseed Consumption by Class of Livestock and Poultry, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE(1)	3.2	25.2	31.0	19.1	200.4	924.1	451.7	921.8	2577.7	148.1	5302.3
DAIRY CATTLE	10.9	45.9	90.4	77.3	1525.4	1284.1	210.1	154.7	295.7	241.1	3935.6
SHEEP AND LAMBS	.3	.5	1.1	.4	9.3	24.6	3.0	5.5	20.8	2.8	68.2
HOGS	9.7	60.2	71.6	37.8	1670.4	1728.5	632.7	388.1	945.2	126.9	5671.3
LAYERS	9.5	3.7	27.4	13.8	111.9	238.2	73.5	27.8	56.9	86.6	649.3
CHICKENS	16.1	4.3	47.0	38.0	401.0	475.3	57.0	43.5	122.1	156.8	1361.0
TURKEYS	.0	.1	7.7	5.5	75.4	170.7	27.8	16.2	34.5	35.0	372.7
TOTAL GRAIN AND OILSEED CONSUMPTION	49.7	139.9	276.2	191.9	3993.8	4845.5	1455.8	1557.6	4052.9	797.3	17360.4

(1) Total grain and oilseed consumption by Steers, Slaughter and Feeder Heifers has been adjusted to compensate for grain and oilseed intake by feeder steers and heifers prior to interprovincial movement and/or international export.

Source: Livestock Feed Usage Study, Statistics Canada

Data validation encompassed the following steps:

1. The provincial grain and oilseed intake coefficients for 1990 were reviewed by Statistics Canada, Agriculture Canada and the provincial departments of agriculture. Interprovincial comparisons of the current coefficients, as well as comparisons to the corresponding 1989 data resulting from the

previous Livestock Feed Usage Study, were made. The provincial coordinators were asked to re-examine coefficients which appeared discrepant.

2. Validation at the total grain and oilseed consumption level included comparisons to two sources of analogous statistics. These were the preliminary 1990 estimates of grain consuming animal units by the Livestock Feed Board of Canada (based on its 1983 study) and by Statistics Canada (based on its 1970 study).
3. Finally, the estimate of total grain and oilseed consumption in 1990 at the Canada level, based on the Livestock Feed Usage Study, was compared to Statistics Canada's 1990 estimate of feed, waste and dockage.

Data quality appeared good, based on these comparisons.

The following recommendations emerged from this study:

- A third study of livestock feed usage should be carried out in 1992. Study terms and concepts are now well defined. A further study would allow for refinement in methodology and for consistency comparisons with the current study.

- The time period to be covered in the third study should be examined. Feed intake coefficients for a range of years, under "average" conditions, might prove more useful than coefficients for a specific calendar year, depending on the objective.
- Each provincial department of agriculture should be given the opportunity to review and comment on the methodologies used by other provinces to develop 1990 feed intake coefficients, prior to the development of coefficients in the third study. This would facilitate efforts to standardize methods.
- Data emerging from the Cost of Production Surveys, carried out by the poultry and dairy marketing boards in 1991, should be utilized in the development of feed intake coefficients.
- The estimation of the populations used in this study for "other beef calves", "other dairy calves" and "layers" should be reviewed.
- A further study should include validation of provincial data by type of grain and oilseed, where possible.

- Horses should again be included in the third study, for validation purposes. Obtaining usable provincial estimates of total horse populations was a problem during the 1990 study, but the 1991 Census of Agriculture should fill this gap.
- Consideration should be given as to whether total grain and oilseed consumption should be expressed in common units, such as grain corn and soybean meal equivalent.

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INTRODUCTION

Statistics Canada conducted its second consecutive Livestock Feed Usage Study from May through September 1991. The primary goal of this project, undertaken for Agriculture Canada on a cost recovery basis, was to develop provincial grain and oilseed intake per animal coefficients for 1990. The results would be used by the Committee of Experts on red meat stabilization to distribute the benefits of certain non-commodity specific programs among the various classes of livestock and poultry. Net benefits to red meat producers could then be calculated, as mandated by the "National Tripartite Stabilization Red Meat Agreements".

Numerous secondary uses for the data generated through the Livestock Feed Usage Study were foreseen, including:

1. calculation of the Producer Subsidy Equivalent;
2. use in the context of program development, such as the Net Income Stabilization Account (NISA);
3. determination of net benefits to producers from financial assistance programs;
4. check data for farm level financial data on feed usage in the Cost of Production estimates;

5. policy discussion relating to feed freight assistance;
6. outlook;
7. modelling; and
8. grain and oilseed supply-disposition balance sheets.

This project profited from the progress made in the course of the Livestock Feed Usage Study carried out in 1990 covering calendar year 1989. During the current study, the provincial departments of agriculture developed feed intake coefficients for the calendar year 1990 for beef cattle, dairy cattle, sheep and lambs, hogs and horses in their respective provinces. Feed intake coefficients for layers, chickens and turkeys were developed centrally, with the assistance of the national marketing boards and the Canadian Feed Industry Association. Statistics Canada's role was to act as national coordinator, to provide the overall conceptual and methodological framework, to develop 1990 livestock and poultry population estimates using the data available, and to review and evaluate the results.

The remainder of this report is divided into six sections:

1. Methodology;
2. Results;
3. Analysis of Results;

4. Comparison with 1989 Livestock Feed Usage Study Estimates;
5. Comparison with Livestock Feed Board of Canada's Preliminary 1990 Estimates; and
6. Recommendations.

METHODOLOGY

The Livestock Feed Usage Study conducted in 1991 continued the research started in March 1990. The study conducted in 1990 examined feed intake by class of livestock and poultry during calendar year 1989. The reference period for the current study was calendar year 1990.

Once again, the provincial departments of agriculture were asked to develop provincial feed intake coefficients for beef cattle, dairy cattle, sheep and lambs, and hogs. Coefficients for horses were also requested, and are discussed later in this report, in the chapter entitled "Analysis of Results". Feed intake coefficients for layers, chickens and turkeys were developed centrally, with the assistance of the national marketing boards and the Canadian Feed

Industry Association. Statistics Canada's role was to act as national coordinator, to provide the overall conceptual and methodological framework, to develop 1990 livestock and poultry population estimates using the data available, and to review and evaluate the results.

The concepts defined in Appendix 1 were developed. A grid on which each contributor could summarize consumption of grains, oilseeds, roughage, and supplements by subclass of livestock and class of poultry was designed (Appendix 2). These materials were provided to the provincial agricultural statisticians in May 1991. They were asked to develop feed intake coefficients such that for those types of livestock for which total grain and oilseed consumption could be calculated on an output basis, all feed consumption over the lifetime of animals output in 1990 should be included; for the remaining types of livestock, all feed consumption during calendar year 1990 should be included. Information was exchanged between the provinces and Statistics Canada from May through September 1991.

The detailed grain and oilseed intake coefficients generated for each province, including those developed centrally for poultry, are displayed in Appendix 3.

Note that although the 1989 report referred to "grain consumption", these estimates also included oilseeds, and are comparable to estimates of "grain and oilseed consumption" in the current report. The remainder of this section describes:

1. the development of 1990 grain and oilseed consumption coefficients by class of livestock;
2. the development of 1990 grain and oilseed consumption coefficients by class of poultry;
3. the development of 1990 populations by class of livestock and poultry; and
4. the calculation of total 1990 grain and oilseed consumption by livestock and poultry.

Development of 1990 Grain and Oilseed Consumption Coefficients by Class of Livestock

Seven provincial departments of agriculture generated their own intake coefficients by type of grain and oilseed, for calendar year

1990 by subclass of livestock within each class. The development of consumption coefficients for the remaining three provinces - New Brunswick, Prince Edward Island and Newfoundland, is described below. Note that this discussion applies only to the development of intake coefficients for livestock. The methodology used to generate provincial coefficients for layers, chickens and turkeys is described in the next section of this chapter.

The New Brunswick Department of Agriculture and Rural Development established total grain and oilseed consumption coefficients for calendar year 1990 by subclass of livestock. The totals were separated among the various grains and oilseeds by Statistics Canada, using Nova Scotia's proportional distribution.

All coefficients for Prince Edward Island represented consumption in calendar year 1989. These coefficients were developed by the Prince Edward Island Department of Agriculture during the previous Livestock Feed Usage Study. Time constraints prevented them from generating coefficients for calendar year 1990.

The weighted average value of the Maritime Provinces was used for each of Newfoundland's feed intake coefficients. The coefficients

were weighted using the corresponding populations for each of the three provinces, by subclass of livestock.

Each province's department of agriculture utilized all its data sources and local information in developing coefficients. The methodologies used, however, are not necessarily the same.

A brief description of the development of 1990 grain and oilseed consumption coefficients for the various classes of livestock follows. All references to inventory and output represent calendar year 1990 unless otherwise indicated. The terms inventory and output are defined later in this chapter, in the discussion of populations.

1. Beef Cattle

Consumption coefficients were developed for the following subclasses of beef cattle (on the basis indicated):

- a. beef cows (per animal in inventory);
- b. beef heifers one year old and over for herd replacement (per animal in inventory);

- c. steers, slaughter and feeder heifers (per animal output);
- d. veal calves (per animal output);
- e. beef bulls (per animal in inventory); and
- f. all other beef calves (per animal in inventory).

As indicated above, intake coefficients for steers and slaughter and feeder heifers as well as veal calves were developed on an output animal basis. Consumption coefficients for the remaining subclasses of beef cattle were calculated per inventory animal.

Steers and slaughter and feeder heifers were handled somewhat differently from other types of livestock. Firstly, they were divided into two groups based on feeding practices, those being "short keep" and "long keep" (as defined in Appendix 1). The provincial departments of agriculture developed feed intake coefficients for each group (which are reported in Appendix 3) and also provided estimates of what proportion of the steers and slaughter and feeder heifers output in 1990 were raised using each feeding practice. Using these proportions, average feed consumption per animal was calculated.

Secondly, like other subclasses of livestock for which feed consumption was calculated on a per animal output basis, these estimates of feed consumption per animal represented intake over the lifetime of animals output in 1990. In the case of steers and slaughter and feeder heifers, this meant that a significant quantity of grain and oilseeds fed in 1989 would be included. It was believed that this quantity would compensate for the amount fed in 1990 to steer and feeder heifer calves less than one year old which would be output in 1991, for which intake coefficients were not developed.

Grain and oilseed consumption per animal for beef cattle was a weighted average of the six subclasses of cattle listed above. It, therefore, represented neither consumption per animal output nor consumption per animal in inventory, but a calculable combination of the two.

2. Dairy Cattle

Grain and oilseed consumption per animal was estimated for the following subclasses of dairy cattle (on the basis indicated):

- a. dairy cows (per animal in inventory);
- b. dairy heifers one year old and over for herd replacement (per animal in inventory);
- c. dairy bulls (per animal in inventory); and
- d. all other dairy calves (per animal in inventory).

Grain and oilseed consumption per animal for dairy cattle was a weighted average of the four subclasses of dairy cattle listed above, and represented consumption per inventory animal.

3. Sheep and Lambs

Intake coefficients for the following subclasses of sheep and lambs were developed (on the basis indicated):

- a. ewes and wethers (per animal in inventory);
- b. rams (per animal in inventory);
- c. market lambs (per animal output); and
- d. breeding lambs (per animal in inventory).

As noted above, consumption coefficients for market lambs were developed on an output animal basis. They represented intake

over the lifetime of animals output in 1990. Intake coefficients for the remaining subclasses of sheep and lambs were calculated per inventory animal.

Grain and oilseed consumption per animal for sheep and lambs was a weighted average of the four subclasses of sheep and lambs listed above. It, therefore, represented neither consumption per animal output nor consumption per inventory animal, but a calculable combination of the two.

4. Hogs

Grain and oilseed consumption per animal was estimated for the following subclasses of hogs (on the basis indicated):

- a. sows and bred gilts (per animal in inventory);
- b. boars (per animal in inventory); and
- c. all other pigs (per animal output).

As indicated above, intake coefficients for all other pigs were developed on an output animal basis. They represented consumption over the lifetime of animals output in 1990.

Consumption coefficients for the remaining subclasses of hogs were calculated per inventory animal.

Grain and oilseed consumption for hogs was a weighted average of the three subclasses of hogs listed above. It, therefore, represented neither consumption per animal output nor consumption per inventory animal, but a calculable combination of the two.

Development of 1990 Grain and Oilseed Consumption Coefficients by Class of Poultry

Provincial grain and oilseed consumption coefficients for layers, chickens and turkeys were developed by Statistics Canada, with the assistance of the Canadian Egg Marketing Agency (CEMA), the Canadian Chicken Marketing Agency (CCMA), the Canadian Turkey Marketing Agency (CTMA), and the Canadian Feed Industry Association (CFIA).

A brief description of the methodology used to develop coefficients for each class of poultry follows:

1. Layers

Provincial feed conversion ratios (kilograms of feed consumed per dozen eggs produced) were provided by CEMA, based on its 1986 Cost of Production Study. These ratios were multiplied by Statistics Canada's provincial estimates of total egg production in 1990 to calculate total feed consumed by province. The grain and oilseed portion of total feed was estimated using "typical" layer ration formulas provided by CFIA.

These provincial estimates of total grain and oilseed consumption were divided by Statistics Canada's 1990 layer inventory estimates in order to calculate provincial grain and oilseed consumption per layer coefficients. These estimates, therefore, represented consumption per layer in inventory.

Note that consumption coefficients were not developed for pullets less than twenty weeks of age due to the lack of available data.

2. Chickens

CCMA provided provincial feed conversion ratios (kilograms of feed consumed per kilogram of meat produced on a live weight basis), derived from its 1986 Cost of Production Survey. These ratios were multiplied by Statistics Canada's provincial estimates of total kilograms of chicken produced in 1990 (converted from eviscerated to live weight with CCMA's factor) to calculate total feed consumed by province. The grain and oilseed portion of total feed was estimated using "typical" chicken ration formulas provided by CFIA.

Provincial grain and oilseed consumption per chicken coefficients were calculated by dividing these provincial estimates of total grain and oilseed consumption by Statistics Canada's estimates of the number of chickens produced in 1990.

These coefficients, therefore, represented consumption per chicken output. Note that these coefficients vary between provinces not only because of the types of grains and oilseeds fed but also because of differences among the weights at which chickens are slaughtered.

3. Turkeys

Provincial feed conversion ratios (kilograms of feed consumed per kilogram of meat produced on a live weight basis) were provided by CTMA, based on its 1988-89 Cost of Production Update. Feed conversion ratios (on the same basis) for breeding turkeys originating from industry sources were also provided by CTMA. Using Agriculture Canada's 1990 slaughter data, the various feed conversion ratios were applied to the appropriate slaughter weight classes in order to calculate each province's 1990 weighted average feed conversion ratio.

These ratios were multiplied by Statistics Canada's provincial estimates of total kilograms of turkey produced (converted from eviscerated to live weight with CTMA's factors) to calculate total feed consumed by province. The grain and oilseed portion of total feed was estimated using "typical" chicken ration formulas provided by CFIA.

Provincial grain and oilseed consumption per turkey coefficients were calculated by dividing these provincial

estimates of total grain and oilseed consumption by Statistics Canada's estimates of the number of turkeys produced in 1990. These coefficients, therefore, represented consumption per turkey output. Note that these coefficients vary between provinces not only because of the types of grains and oilseeds fed but also because of differences among the weights at which turkeys are slaughtered and because of the presence or absence of breeding birds.

Development of 1990 Populations by Class of Livestock and Poultry

Statistics Canada was responsible for developing 1990 livestock and poultry population estimates by province. These populations would be multiplied by the corresponding provincial grain and oilseed consumption per animal coefficients to calculate total grain and oilseed consumption.

Populations for the following subclasses of livestock and classes of poultry represented estimates of the total number of animals output rather than inventory:

- steers, slaughter and feeder heifers;

- veal calves;
- market lambs;
- all other pigs;
- chickens; and
- turkeys.

In general, the populations for the remaining subclasses of beef cattle, dairy cattle and sheep and lamb were calculated by taking the average of Statistics Canada's January 1, 1990 and January 1, 1991 inventory estimates, and averaging the resulting number with the July 1, 1990 inventory estimate.

The populations for the remaining subclasses of hogs were calculated by taking the average of the January 1, 1990 and January 1, 1991 inventory estimates, adding the resulting number to the April 1, 1990; July 1, 1990; and October 1, 1990 inventory estimates, and dividing by 4.

The layer population was the average of the 12 monthly inventory estimates for 1990.

A description of the methodology used to calculate 1990 populations, by class of livestock and poultry, follows.

1. Beef Cattle

The beef cow and beef heifer one year old and over for herd replacement 1990 average inventories were calculated by taking the average of the January 1, 1990 and January 1, 1991 inventory estimates, and averaging the resulting number with the July 1, 1990 inventory estimate. The source of these inventory numbers was "Livestock Report", Statistics Canada Catalogue 23-008.

Although total bulls one year old and over inventories were also published, a breakdown into beef versus dairy bulls was not available. Using data from the 1986 Census of Agriculture for operations which reported exclusively beef or dairy cows, provincial ratios of bulls to cows for beef and dairy operations were calculated. The 1990 populations of beef and dairy cows were multiplied by the corresponding 1986 bull to cow ratios to calculate "initial" provincial estimates of dairy and beef bull inventories.

These "initial" provincial beef and dairy bull inventory estimates were totalled and compared with the 1990 average

inventories of total bulls in the "Livestock Report". The residuals were prorated across beef and dairy bulls based on the ratio of each to total bulls on the 1986 Census of Agriculture, by province.

These residuals were then added to the "initial" provincial inventory estimates to create the final 1990 beef and dairy bull population estimates.

The population of steers and slaughter and feeder heifers was an estimate of total output during 1990. The following types of output for 1990 were totalled:

- federal and provincial inspected slaughter of steers and heifers by province of origin (source: "Canada Livestock and Meat Trade Report", Agriculture Canada);
- international exports of slaughter steers and heifers, as estimated by the provincial departments of agriculture; and

- cattle killed and eaten, killed and sold, and other commercial slaughter (source: Cattle Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada).

The veal calves population was also an estimate of output in 1990. It included:

- federal and provincial inspected slaughter of calves by province or origin (source: "Canada Livestock and Meat Trade Report", Agriculture Canada);
- international exports of calves (source: International Trade Division, Statistics Canada); and
- calves killed and eaten, killed and sold, and other commercial slaughter (source: Calves Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada).

The 1990 population of all other beef calves was estimated using the following methodology. The 1990 inventory of beef bull calves less than one year old intended for reproduction was assumed to be equal to 20% of the estimated 1991 inventory of beef bulls one year old and over, plus estimated death loss. (The 1991 inventory of beef bulls was calculated by substituting 1991 values into the same model described above

with reference to the 1990 beef bull population). The 1990 inventory of beef heifer calves less than one year old intended for reproduction was assumed to be equal to the 1991 average inventory of beef heifers one year old and over for beef cow replacement, plus estimated death loss. The 1991 average inventory represented the average of the January 1, 1991 and July 1, 1991 beef heifer for beef cow replacement inventories published in the "Livestock Report". The death loss estimates were derived from the Cattle Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada.

The estimated 1990 inventories of beef bull and heifer calves less than one year old intended for reproduction were summed to create the 1990 population of all other beef calves.

2. Dairy Cattle

The dairy cow and dairy heifer one year old and over for herd replacement populations were calculated by taking the average of the January 1, 1990 and January 1, 1991 inventory estimates, and averaging the resulting number with the

July 1, 1990 inventory estimate. The source of these inventory numbers was "Livestock Report", Statistics Canada Catalogue 23-008.

Although total bulls one year old and over inventories were also published, a break-down into beef versus dairy bulls was not available. Using data from the 1986 Census of Agriculture for operations which reported exclusively beef or dairy cows, provincial ratios of bulls to cows for dairy and beef operations were calculated. The 1990 populations of beef and dairy cows were multiplied by the corresponding 1986 bull to cow ratios to calculate "initial" provincial estimates of beef and dairy bull inventories.

These "initial" provincial beef and dairy bull inventory estimates were totalled and compared with the 1990 average inventories of total bulls in the "Livestock Report". The residuals were prorated across beef and dairy bulls based on the ratio of each to total bulls on the 1986 Census of Agriculture, by province.

These residuals were then added to the "initial" provincial inventory estimates to create the final 1990 beef and dairy bull population estimates.

The 1990 population of all other dairy calves was estimated using the following methodology. The 1990 inventory of dairy bull calves less than one year old intended for reproduction was assumed to be 20% of the estimated 1991 inventory of dairy bulls one year old and over, plus estimated death loss. (The 1991 inventory of dairy bulls was calculated by substituting 1991 values into the same model described above with reference to the 1990 dairy bull population). The 1990 inventory of dairy heifer calves less than one year old intended for reproduction was assumed to be equal to the 1991 average inventory of dairy heifers one year old and over for dairy cow replacement/milk production, plus estimated death loss. The 1991 average inventory represented the average of the January 1, 1991 and July 1, 1991 dairy heifer for dairy cow replacement inventories published in the "Livestock Report". The death loss estimates were derived from the Cattle Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada.

The estimated 1990 inventories of dairy bull and heifer calves less than one year old intended for reproduction were summed to create the 1990 population of all other dairy calves.

3. Sheep and Lambs

The ewe and wether, ram and breeding lamb populations were calculated by taking the average of the January 1, 1990 and January 1, 1991 inventory estimates and averaging the resulting number with the July 1, 1990 inventory estimate. The source of these inventory numbers was "Livestock Report", Statistics Canada Catalogue 23-008.

The population of market lambs was an estimate of total output during 1990. The following types of output for 1990 were totalled:

- federal and provincial inspected slaughter of lambs by province of origin (source: "Canada Livestock and Meat Trade Report", Agriculture Canada);
- international exports of sheep and lambs (source: International Trade Division, Statistics Canada); and
- sheep and lambs killed and eaten, killed and sold, and other commercial slaughter (source: Sheep and Lamb Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada).

4. Hogs

The sow and bred gilt and boar populations were calculated by taking the average of the January 1, 1990 and January 1, 1991 inventory estimates, adding the resulting number to the April 1, 1990; July 1, 1990; and October 1, 1990 inventory estimates and dividing by four. The source of these inventory numbers was "Livestock Report", Statistics Canada Catalogue 23-008.

The population of all other pigs was an estimate of total output during 1990. The following types of output for 1990 were totalled:

- federal and provincial inspected slaughter of hogs by province of origin, excluding emaciated, ridglings, sows, stags and boars (source: "Canada Livestock and Meat Trade Report", Agriculture Canada);
- international exports of hogs (source: International Trade Division, Statistics Canada); and
- hogs killed and eaten, killed and sold, and other commercial slaughter (source: Hog Supply-Disposition Balance Sheet, Agriculture Division, Statistics Canada).

5. Layers

The layer population represented the average of the twelve monthly inventory estimates for 1990, as published in "Production of Poultry and Eggs", Statistics Canada Catalogue 23-202.

Registered, non-registered and breeding birds twenty weeks of age and over were included.

6. Chickens

The chicken population was an estimate of the total number of birds output during 1990. The source of these data was "Production of Poultry and Eggs", Statistics Canada Catalogue 23-202.

Output for 1990 included commercial production, non-commercial production and birds consumed by producers.

7. Turkeys

The turkey population was an estimate of the total number of birds output during 1990. The source of these data was "Production of Poultry and Eggs", Statistics Canada Catalogue 23-202.

Output for 1990 included commercial production, non-commercial production and birds consumed by producers.

Calculation of Total 1990 Grain and Oilseed Consumption by Livestock and Poultry

In general, total grain and oilseed consumption by livestock and poultry in 1990 was calculated by multiplying each provincial grain and oilseed consumption per animal coefficient developed through the Livestock Feed Usage Study by the corresponding inventory or output estimate.

The exception was steers and slaughter and feeder heifers, for which an additional step was required.

Total grain and oilseed consumption by short keep and by long keep steers and slaughter and feeder heifers was calculated by province and then summed to create initial provincial estimates of total grain and oilseed consumption for this subclass. These estimates were then adjusted to compensate for grain and oilseed intake by feeder steers and heifers prior to interprovincial movement and/or international export.

The estimates for Newfoundland, Prince Edward Island and Nova Scotia were not adjusted since they recorded negligible net movement of feeder animals both interprovincially and internationally in 1990. Total grain and oilseed consumption by steers and slaughter and feeder heifers in the remaining provinces were adjusted as indicated below:

Province	Net Adjustment ('000 metric tonnes)
New Brunswick	- 0.2
Quebec	+ 3.8
Ontario	-51.0
Manitoba	+88.4
Saskatchewan	+85.8
Alberta	-58.2
British Columbia	+22.0

The level of these adjustments was calculated by Statistics Canada, using data provided by the provincial departments of agriculture during the study period. Each province completed a table showing the number of feeder steers and heifers exported interprovincially in 1990 by weight class, the estimated quantity of grain and oilseeds consumed per animal prior to export for each weight class, and the province of destination. Similar data were collected for international exports of feeder steers and heifers.

Therefore, in the case of interprovincial movement, a positive adjustment to total grain and oilseed consumption was made to the source province for each animal exported in 1990, while a compensatory negative adjustment was made to the province of destination. Each province was given the opportunity to review the interprovincial movement data provided by the remaining provinces. With regards to international movement, only positive adjustments were made.

The net adjustments listed above are equal to the sum of all of these positive and negative adjustments, and overcome some of the previous study's weaknesses. If an adjustment was not made to account for interprovincial movement of feeder steers and heifers, grain and oilseed consumption would be overestimated for provinces which were net importers of feeders and underestimated

for provinces which were net exporters. Handling international exports of feeder steers and heifers separately from exports of slaughter animals reduces the overestimation of pre-export grain and oilseed consumption by these animals.

It should be noted that the issue of interprovincial and international movement of veal calves, market lambs and all other pigs as feeder animals was also examined. Research and analysis by the provincial departments of agriculture and Statistics Canada indicated that interprovincial and international movement of feeder animals for these types of livestock had a minimal impact on the total provincial grain and oilseed consumption estimates for 1990.

RESULTS

The following three text tables summarize the Livestock Feed Usage Study's results for calendar year 1990. More detailed tables, showing data by subclass of livestock as well as by class of livestock and poultry, are shown in Appendices 4, 5 and 6. Data for Newfoundland turkeys are not included in any of these tables because market dominance prevents the publication of turkey production and these data are, therefore, confidential.

The methods used to produce the grain and oilseed consumption per animal coefficients, the livestock and poultry populations, and the total grain and oilseed consumption estimates for 1990 are discussed in the previous chapter, entitled "Methodology".

Text Table 1, below, shows the 1990 grain and oilseed consumption per animal coefficients developed during the current study, by class of livestock and poultry. The corresponding 1990 inventory and output estimates are displayed in Text Table 2, by province and at the Canada level. Finally, Text Table 3 shows total grain and oilseed consumption in 1990, by class of livestock and poultry, for each province and Canada.

TEXT TABLE 1. Grain and Oilseed Consumption per Animal, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- metric tonnes -											
BEEF CATTLE	.569	.524	.479	.363	.286	.619	.550	.572	.744	.289	.611
DAIRY CATTLE	1.597	1.217	1.415	1.569	1.460	1.390	1.722	1.754	1.308	1.634	1.452
SHEEP AND LAMBS	.044	.104	.037	.042	.064	.081	.089	.120	.091	.043	.077
HOGS	.317	.327	.307	.311	.337	.369	.311	.362	.365	.295	.347
LAYERS	.0248	.0289	.0316	.0298	.0305	.0299	.0312	.0294	.0305	.0328	.0305
CHICKENS	.0029	.0038	.0034	.0038	.0036	.0036	.0033	.0039	.0034	.0032	.0036
TURKEYS	.0000	.0138	.0104	.0105	.0153	.0211	.0201	.0206	.0210	.0179	.0186

Source: Livestock Feed Usage Study, Statistics Canada

TEXT TABLE 3. Total Grain and Oilseed Consumption by Class of Livestock and Poultry, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE(1)	3.2	25.2	31.0	19.1	200.4	924.1	451.7	921.8	2577.7	148.1	5302.3
DAIRY CATTLE	10.9	45.9	90.4	77.3	1525.4	1284.1	210.1	154.7	295.7	241.1	3935.6
SHEEP AND LAMBS	.3	.5	1.1	.4	9.3	24.6	3.0	5.5	20.8	2.8	68.2
HOGS	9.7	60.2	71.6	37.8	1670.4	1728.5	632.7	388.1	945.2	126.9	5671.3
LAYERS	9.5	3.7	27.4	13.8	111.9	238.2	73.5	27.8	56.9	86.6	649.3
CHICKENS	16.1	4.3	47.0	38.0	401.0	475.3	57.0	43.5	122.1	156.8	1361.0
TURKEYS	.0	.1	7.7	5.5	75.4	170.7	27.8	16.2	34.5	35.0	372.7
TOTAL GRAIN AND OILSEED CONSUMPTION	49.7	139.9	276.2	191.9	3993.8	4845.5	1455.8	1557.6	4052.9	797.3	17360.4

(1) Total grain and oilseed consumption by Steers, Slaughter and Feeder Heifers has been adjusted to compensate for grain and oilseed intake by feeder steers and heifers prior to interprovincial movement and/or international export.

Source: Livestock Feed Usage Study, Statistics Canada

TEXT TABLE 2. Livestock and Poultry Populations, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 -											
BEEF CATTLE	5.6	48.1	64.6	53.3	687.9	1575.6	661.0	1460.7	3540.4	437.7	8534.5
DAIRY CATTLE	6.8	37.7	63.9	49.3	1045.6	923.8	122.1	88.2	226.0	147.6	2710.7
SHEEP AND LAMBS	7.4	4.4	29.8	9.4	148.0	308.1	33.8	45.5	226.1	65.4	877.7
HOGS	30.6	184.0	234.1	121.3	4966.7	4688.6	2030.5	1072.4	2592.0	429.4	16354.6
LAYERS	384.0	129.0	866.0	462.0	3668.0	7967.0	2356.0	945.0	1866.0	2640.0	21283.0
CHICKENS	5543.0	1121.0	13838.0	10003.0	111507.0	132178.0	17278.0	11155.0	35946.0	49043.0	387612.0
TURKEYS	.0	4.0	736.0	525.0	4925.0	8089.0	1381.0	786.0	1644.0	1954.0	20044.0

Source: Livestock Feed Usage Study, Statistics Canada

ANALYSIS OF RESULTS

Data Validation

1. 1990 Grain and Oilseed Consumption per Animal Coefficients

Validation of the 1990 grain and oilseed consumption per animal coefficients encompassed three steps, which were repeated after each round of revisions. The provincial departments of agriculture, Agriculture Canada and Statistics Canada all participated in this stage of data validation. The steps were as follows:

- a) the 1990 coefficients for each class and type of livestock and poultry were compared between provinces;
- b) where applicable, the 1990 coefficients for each class and type of livestock and poultry were compared to the equivalent 1989 value, developed through the previous Livestock Feed Usage Study; and
- c) the 1990 coefficients developed by the provincial departments of agriculture were compared to data from other sources including feed companies, universities and other studies.

Discrepancies identified during data validation were brought to the attention of the project coordinator in the source province. If, after review, the province decided to make revisions, the new data were substituted for the old. In situations where a province decided not to revise, an explanation for the divergence was provided to Statistics Canada.

There were many reasons for the remaining apparent anomalies in grain and oilseed consumption per animal including:

- differences in management practices, in general;
- variation in feed quality;
- use of grains and oilseeds which provide more/less energy per metric tonne;
- substitution of roughage for grain and oilseeds;
- different breeds of livestock being raised;
- higher/lower average slaughter weights;
- differences in weather conditions; and, where applicable,
- statistical errors.

2. Total Grain and Oilseed Consumption by Livestock and Poultry in 1990

Validation of the total grain and oilseed consumption estimates for 1990 by Statistics Canada included the following steps:

- a) comparisons with 1990 estimates of grain consuming animal units from the Livestock Feed Board of Canada (based on its 1983 study) and Statistics Canada (based on its 1970 study) as well as the comparable 1989 estimate of grain and oilseed consumption emerging from the previous Livestock Feed Usage Study; and
- b) comparison to Statistics Canada's 1990 estimate of feed, waste and dockage (the residual in Agriculture Division's Grain Supply-Disposition Balance Sheets).

The estimates developed through this study and those of the Livestock Feed Board of Canada are compared later in the report, in the chapter entitled "Comparison with Livestock Feed Board of Canada's Preliminary 1990 Estimates". A comparison of the 1990 estimates developed through this study to the 1989 estimates produced during the previous Livestock Feed Usage Study is found in the section entitled "Comparison with 1989 Livestock Feed Usage Study Estimates".

Statistics Canada's preliminary estimates of total "grain" consumed by livestock and poultry, based on inventories at July 1, 1990 and the coefficients developed during its 1970 study, are considerably lower than this study's estimates of grain and oilseed consumption. At the Canada level, the total grain consumption estimate for 1990

based on the 1970 study (12 117.4 thousand metric tonnes) is 30% lower than the current study's estimate of grain and oilseed consumption during 1990 (17 360.4 thousand metric tonnes).

Little of the methodology from the 1970 study has been retained. Which grains were included and whether oilseeds were taken into account in the 1970 study is unknown. Additionally, there have been substantial changes in Canadian agriculture in the last twenty years. Probable conceptual differences between the two studies also make it difficult to evaluate the level of change. However, a comparison of the July 1, 1989 estimate (based on the 1970 study) to the 1989 Livestock Feed Usage Study estimate yielded a similar difference with the former being 26% lower than the latter.

The second step in validation at this stage involved a comparison to the 1990 feed grain estimates produced by the Crops Section (Agriculture Division, Statistics Canada) in the preparation of its crop production estimates. They produce feed grain estimates for wheat, oats, barley, rye, grain corn and mixed grains. Waste and in some cases dockage are also included in these feed grain estimates since feed, waste and dockage are treated as a residual in the grain supply-disposition balance sheets. (Waste includes losses during transportation and handling, damaged grain, grain consumed by wildlife, etc. Dockage is any foreign material which

has not been cleaned from the grain, such as weeds, straw, hulls, chaff and broken grains). Oilseeds are not included in these feed grain estimates. Feed grains obtained through commercial channels are excluded at the provincial level.

Comparisons were made for total grain consumption only. The most useful point of comparison was produced by adding the 1990 estimate of feed grain moving through commercial channels at the Canada level (source: Industry Division, Statistics Canada) to the Canada level feed, waste and dockage estimate. The result was 19 039.0 thousand metric tonnes. The 1990 Livestock Feed Usage Study estimate excluding oilseeds, of 15 364.4 thousand metric tonnes, is 19% lower.

It was anticipated that the study estimate of grain consumption would be lower than the estimate of feed, waste and dockage. One reason for this would be the inclusion of waste and some dockage in the feed grain estimate. Another could be that although the feed intake per animal coefficients developed during this study were intended to represent the "average" farm situation, they may, in some cases, reflect somewhat "ideal" conditions. Yet another reason that the study estimate of grain consumption was lower than the estimate of feed, waste and dockage would be that some animals which consume grains and oilseeds were excluded from the study's

definition of livestock and poultry. Horses were believed to be one of the major consumers not accounted for so these data were collected simultaneously with the livestock portion of the study, using the same methodology as that used for livestock.

The study yielded an estimate of 489.8 thousand metric tonnes of grain consumed by horses in 1990. This furnished a total 1990 grain consumption estimate (excluding oilseeds) for livestock, poultry and horses of 15 854.2 thousand metric tonnes, representing 83% of the feed, waste and dockage estimate (including commercially obtained grains). It should be noted that only partial estimates of horse populations were available for most provinces (essentially limited to horses on "census-farms") and consequently, these populations were probably underestimated.

Data Quality

Numerous strengths and weaknesses should be considered with regard to data quality in this study.

The Livestock Feed Usage Study's greatest strength was likely the participation of all ten provincial departments of agriculture throughout the development of coefficients and data validation. The study benefited from the expertise of numerous individuals considered specialists in their provinces.

One problem resulting from the involvement of so many organizations was that methodologies varied at times, making it difficult to make interprovincial comparisons in these cases.

Another strength came through experience from the first Livestock Feed Usage Study. Much of the ground work had been completed then and many of the contributors were veterans of the first study.

The detailed consumption coefficients provided by most provinces, by subclass of Livestock and type of grain/oilseed, also improved data quality in the second study.

The contributions by the egg, chicken and turkey marketing agencies, based on their Cost of Production Surveys, were beneficial, allowing this study to benefit from the knowledge gained through their surveys.

The collection of grain and oilseed consumption data on horses filled a gap which existed in the 1989 Livestock Feed Usage Study. The estimate of total 1990 grain consumption by livestock, poultry and horses at 15 854.2 thousand metric tonnes represented 83% of the independent estimate of feed, waste and dockage, including commercial movement. Note that both of the estimates mentioned above exclude oilseed consumption.

Finally, the estimates of total grain and oilseed consumption emerging from the two Livestock Feed Usage Studies were very comparable. The 1990 estimate of 17 360.4 thousand metric tonnes of grain and oilseeds consumed by livestock and poultry represented a 0.3% increase over the equivalent 1989 estimate (17 310.5 thousand metric tonnes).

COMPARISON WITH 1989 LIVESTOCK FEED USAGE STUDY ESTIMATES

In terms of grain and oilseed consumption per animal coefficients, the 1989 and 1990 Livestock Feed Usage Study estimates are comparable for only four classes, those being:

1. hogs;
2. layers;
3. chickens; and
4. turkeys.

The methodology changed for at least one subclass of beef cattle, dairy cattle and sheep and lambs making it inadvisable to make year to year comparisons of coefficients and populations at the class level.

Note that although the 1989 report referred to "grain consumption", these estimates also included oilseeds, and are comparable to estimates of "grain and oilseed consumption" in the current report.

The following subclasses of beef cattle underwent the changes in methodology described:

1. The feed intake coefficients for steers and slaughter and feeder heifers for 1989 represented consumption during 1989 by animals one year old and over. Intake by steer and feeder heifer calves less than one year old was included in the beef calves estimate. The 1990 coefficients for steers and slaughter and feeder heifers represented consumption over the lifetime of animals output in 1990.

The populations differed since all exports of steers and slaughter and feeder heifers were included in the 1989 population whereas only exports of slaughter steers and heifers were included in the 1990 population. An adjustment for grain and oilseeds consumed by feeder animals prior to export was made at the total grain and oilseed consumption level for 1990.

Also of note, the two subtypes of steers and slaughter and feeder heifers - "short keep" and "long keep" existed only in the 1990 study.

2. Veal calves were included with "beef calves" in 1989. Population was calculated on an inventory basis. Veal calves were a separate subclass of beef cattle in 1990, including all calves slaughtered for veal regardless of breed. Population represented total output during 1990.
3. The methodology used to calculate the beef bull population was refined for 1990, resulting in a substantial increase in beef bulls.
4. In 1989, "beef calves" included all beef heifer calves, beef bull calves and steer calves less than one year old. The 1990 "all other beef calves" estimate included only beef heifer and bull calves less than one year of age intended for reproduction.

With regard to dairy cattle, the methodology used to calculate the populations for two subclasses changed:

1. The methodology used to calculate the dairy bull population was refined for 1990, resulting in a substantial decrease in dairy bulls.
2. In 1989, "dairy calves" included calves of dairy breeds which were intended to be slaughtered for veal. In 1990, the "all other dairy calves" population included only dairy heifer and bull calves less than one year of age intended for milk production and/or reproduction.

Under sheep and lambs, an additional subclass, that being "breeding lambs", was included in 1990. Breeding lambs were not represented in the 1989 calculations.

The total grain and oilseed consumption estimates for the two years are more comparable, although the methodological changes listed above must still be taken into consideration. Text Table 4 shows total grain and oilseed consumption in 1989, by class of livestock and poultry, by province and at the Canada level. Text Table 3, in the section entitled "Results" displays the equivalent 1990 data.

TEXT TABLE 4. Total Grain and Oilseed Consumption by Class of Livestock and Poultry, Canada and Provinces, 1989

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE	1.6	26.3	18.9	15.8	203.4	1021.7	467.8	1040.9	2683.6	111.1	5591.0
DAIRY CATTLE	8.8	52.4	76.4	61.5	1287.4	1458.7	202.9	154.4	327.1	239.4	3869.0
SHEEP AND LAMBS	.3	.5	1.0	.3	8.9	20.2	3.2	4.1	14.5	3.5	56.5
HOGS	8.9	65.4	73.5	46.6	1487.8	1551.1	753.3	420.8	1018.5	125.6	5551.5
LAYERS	10.9	4.1	27.0	14.6	111.7	238.8	70.3	25.7	54.1	80.6	637.8
CHICKENS	15.6	3.4	44.6	36.5	382.8	448.1	53.1	41.4	108.0	135.2	1268.7
TURKEYS	.0	.1	7.0	4.8	73.0	159.6	23.3	13.0	26.3	29.0	336.0
TOTAL GRAIN AND OILSEED CONSUMPTION	46.1	152.2	248.4	180.1	3555.0	4898.2	1573.9	1700.3	4232.1	724.4	17310.5

Source: Livestock Feed Usage Study, Statistics Canada

Grain and oilseed consumption by livestock and poultry totalled 17 360.4 thousand metric tonnes at the Canada level in 1990, an increase of 0.3% over the equivalent 1989 estimate (17 310.5 thousand metric tonnes).

COMPARISON WITH LIVESTOCK FEED BOARD OF CANADA'S PRELIMINARY 1990 ESTIMATES

Prior to the two Livestock Feed Usage Studies conducted by Statistics Canada (STC), the most recent study covering all provinces was the one conducted in 1983 by the Livestock Feed Board of Canada (LFBC). Comparisons to LFBC's estimates were, therefore, made throughout the Livestock Feed Usage Studies.

Three key conceptual differences between LFBC and STC's studies have been identified:

1. LFBC's data were intended to be used in examining trends, not the actual level of grain consumption whereas it was the major goal of STC's studies to establish the quantity of grain and oilseeds consumed by the various classes of livestock and poultry;
2. LFBC's study looked at feed consumption in "efficient" operations whereas STC was interested in "average" operations; and
3. LFBC's coefficients did not include consumption of oilseeds whereas STC's did.

Also of was note the general method through which these sets of coefficients were developed. LFBC's coefficients were generated based on an evaluation of the forage potential of each province and an assessment of grain consumption per animal by LFBC. Key people were then contacted, across the country, to confirm the estimates.

The primary sources of STC's coefficients, on the other hand, were the provincial departments of agriculture with other sources and methods being used only as check data.

Both the coefficients and populations developed by STC differ from those used by LFBC in many classes of livestock and poultry.

The resulting estimates of total grain consumption also differ, as demonstrated in the two tables below. Text Table 5 shows the Livestock Feed Board of Canada's preliminary 1990 estimates of total grain consumption by class of livestock and poultry, based on its 1983 study. Text Table 6 shows Statistics Canada's 1990 estimates of total grain consumption, based on the current Livestock Feed Usage Study.

Note that oilseed consumption is not included in Table 5 or 6.

TEXT TABLE 5. Livestock Feed Board of Canada Estimate of Total Grain Consuming Animal Units, by Class of Livestock and Poultry, Canada and Provinces, 1990

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE	.9	20.0	23.2	19.5	91.4	497.0	182.6	305.9	1010.8	91.5	2242.6
DAIRY CATTLE	5.3	27.3	45.7	36.0	586.9	446.1	59.3	35.1	138.8	124.8	1505.3
SHEEP AND LAMBS	.4	.3	2.0	.6	7.7	14.0	1.6	3.4	14.0	3.5	47.4
HOGS	8.3	54.0	66.0	38.0	1471.5	1512.5	622.7	357.8	928.8	110.9	5170.4
LAYERS	15.4	5.0	29.4	14.7	88.5	289.2	99.3	24.8	42.7	83.6	692.7
CHICKENS	21.0	5.5	54.9	43.8	479.1	539.9	69.6	55.3	168.6	170.2	1608.0
TURKEYS	.0	.0	12.3	8.5	101.8	189.1	35.8	18.4	42.7	47.2	455.8
TOTAL GRAIN CONSUMPTION	51.3	112.0	233.6	161.1	2826.9	3487.7	1070.9	800.6	2346.4	631.6	11722.1

Source: Livestock Feed Board of Canada (based on coefficients from its 1983 study and July 1, 1990 populations)

TEXT TABLE 6. Total GRAIN Consumption by Class of Livestock and Poultry, Canada and Provinces, 1990(1)

CLASS OF LIVESTOCK AND POULTRY	NFLD.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE(2)	3.1	25.2	29.4	18.2	188.3	924.1	451.7	919.0	2339.4	145.0	5043.3
DAIRY CATTLE	9.8	42.4	80.6	69.0	1352.8	1115.6	194.0	124.7	267.4	196.6	3452.8
SHEEP AND LAMBS	.3	.5	1.0	.4	8.1	22.8	2.9	5.5	18.2	2.5	62.1
HOGS	8.5	55.9	60.9	32.1	1486.2	1414.2	534.5	331.4	818.1	111.8	4853.8
LAYERS	7.5	2.9	21.8	11.0	89.0	189.4	69.5	26.3	53.8	81.9	553.2
CHICKENS	13.0	3.5	38.0	30.7	324.3	384.4	47.4	36.1	101.4	130.3	1109.0
TURKEYS	.0	.1	6.1	4.3	59.5	134.7	21.0	12.3	26.1	26.5	290.3
TOTAL GRAIN CONSUMPTION	42.3	130.5	237.8	165.7	3508.1	4185.1	1321.1	1455.3	3624.4	694.5	15364.4

(1) Consumption of oilseeds is not included in this table.

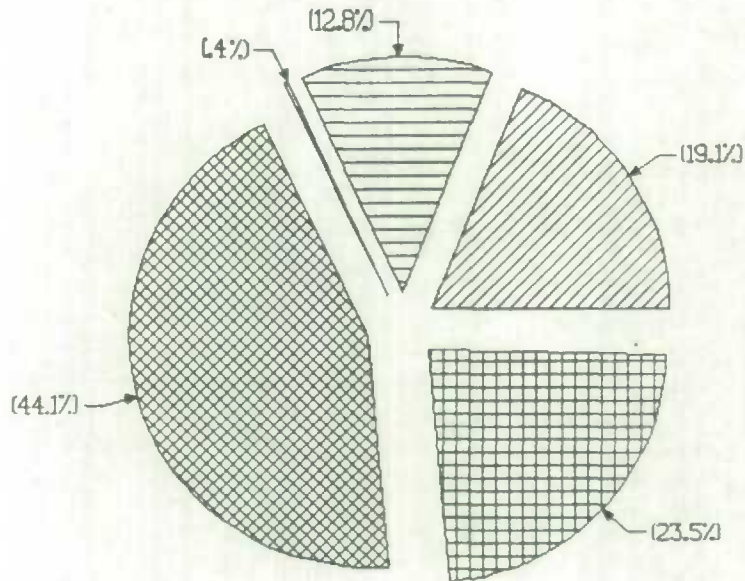
(2) Total grain consumption by Steers, Slaughter and Feeder Heifers has been adjusted to compensate for grain intake by feeder steers and heifers prior to interprovincial movement and/or international export.

Source: Livestock Feed Usage Study, Statistics Canada

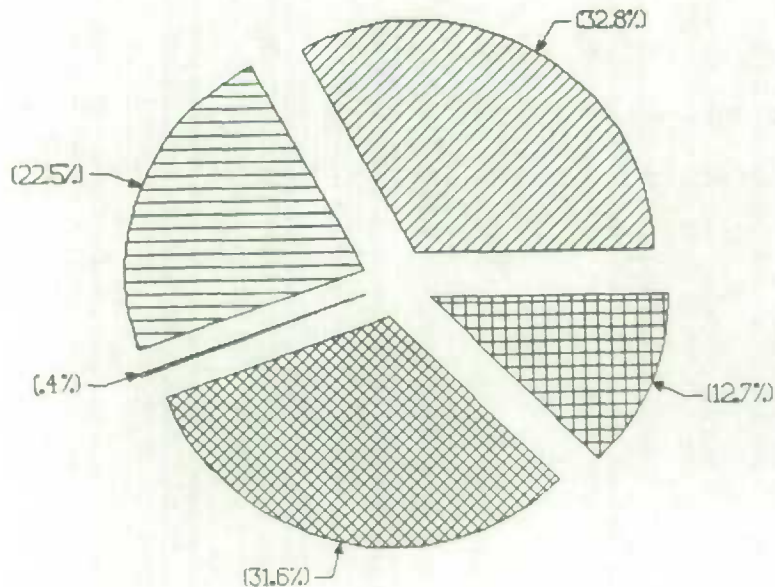
The final comparison made between these two series of data was of the proportion of grain consumed by each class of livestock and poultry. Figure 1, below, demonstrates that the distribution of total grain consumption among the various classes of livestock and poultry also differs significantly between the two studies being discussed.

FIGURE 1. Proportion of Total 1990 Grain Consumption Consumed by Each Class of Livestock and Poultry, Livestock Feed Board of Canada Versus Statistics Canada Livestock Feed Usage Study

Livestock Feed Board of Canada



Statistics Canada Livestock Feed Usage Study



RECOMMENDATIONS

The following recommendations emerged from this study:

- A third study of livestock feed usage should be carried out in 1992. Study terms and concepts are now well defined. A further study would allow for refinement in methodology and for consistency comparisons with the current study.
- The time period to be covered in the third study should be examined. Feed intake coefficients for a range of years, under "average" conditions, might prove more useful than coefficients for a specific calendar year, depending on the objective.
- Each provincial department of agriculture should be given the opportunity to review and comment on the methodologies used by other provinces to develop 1990 feed intake coefficients, prior to the development of coefficients in the third study. This would facilitate efforts to standardize methods.
- Data emerging from the Cost of Production Surveys, carried out by the poultry and dairy marketing boards in 1991, should be utilized in the development of feed intake coefficients.

- The estimation of the populations used in this study for "other beef calves", "other dairy calves" and "layers" should be reviewed.
- A further study should include validation of provincial data by type of grain and oilseed, where possible.
- Horses should again be included in the third study, for validation purposes. Obtaining usable provincial estimates of total horse populations was a problem during the 1990 study, but the 1991 Census of Agriculture should fill this gap.
- Consideration should be given as to whether total grain and oilseed consumption should be expressed in common units, such as grain corn and soybean meal equivalent.

APPENDIX 1. Livestock and Poultry Definitions

LIVESTOCK FEED USAGE STUDY

LIVESTOCK DEFINITIONS

1. **BEEF CATTLE** - all beef cows; beef heifers (≥ 1 YEAR) for herd replacement; beef heifer calves (< 1 YEAR) for herd replacement; steers, slaughter and feeder heifers; veal calves; beef bulls; and beef bull calves (< 1 YEAR) intended for reproduction.
- 1a. **BEEF COWS** - all females which have calved at least once and are being used to reproduce beef cattle or for slaughter.
- 1b. **BEEF HEIFERS (≥ 1 YEAR) FOR HERD REPLACEMENT** - all females one year and older which have never calved and which will be used to reproduce beef cattle.
- 1c. **STEERS, SLAUGHTER AND FEEDER HEIFERS** - regardless of age. Total feed consumption by steers, slaughter and feeder heifers will be calculated on an OUTPUT animal basis.
- 1c.i. **SHORT KEEPS** - Steers, which at approximately 800-900 lbs., and heifers, which at approximately 700-800 lbs., are placed on a high energy ration until slaughter (normally 60-120 days). (All feed consumption over the lifetime of short keep steers and heifers slaughtered in 1990 should be included.)
- 1c.ii. **LONG KEEPS** - Steers, which at approximately 500-600 lbs., and heifers, which at approximately 400-600 lbs., are placed on a medium to high energy ration in the feedlot until slaughter (normally 180-300 days). (All feed consumption over the lifetime of long keep steers and heifers slaughtered in 1990 should be included.)
- 1d. **VEAL CALVES** - All calves less than one year old which will be slaughtered for veal. Total feed consumption by veal calves will be calculated on an OUTPUT animal basis.
- 1e. **BEEF BULLS** - one year and older.
- 1f. **ALL OTHER BEEF CALVES (< 1 YEAR)** - all females less than one year old which will be used to reproduce beef cattle and all intact males less than one year old which will be used to reproduce beef cattle.

2. **DAIRY CATTLE** - all dairy cows; dairy heifers (≥ 1 YEAR) for herd replacement; dairy heifer calves (< 1 YEAR) for herd replacement; dairy bulls; and dairy bull calves (< 1 YEAR) intended for reproduction.
- 2a. **DAIRY COWS** - all females which have calved at least once and are being used to reproduce dairy cattle or mainly for milking purposes.
- 2b. **DAIRY HEIFERS (≥ 1 YEAR) FOR HERD REPLACEMENT** - all females one year or older which have never calved and which will be used to reproduce dairy cattle or mainly for milking purposes.
- 2c. **DAIRY BULLS** - one year or older.
- 2d. **ALL OTHER DAIRY CALVES (< 1 YEAR)** - all females less than one year old which will be used to reproduce dairy cattle and all intact males less than one year old which will be used to reproduce dairy cattle.
3. **SHEEP AND LAMBS** - all ewes and wethers; rams; market lambs; and breeding lambs.
- 3a. **EWES AND WETHERS** - all female sheep one year or older and all castrated male sheep one year or older.
- 3b. **RAMS** - all non-castrated male sheep one year or older.
- 3c. **MARKET LAMBS** - all lambs under one year regardless of sex which will be slaughtered as lambs. Total feed consumption by lambs will be calculated on an OUTPUT animal basis.
- 3d. **BREEDING LAMBS** - all lambs under one year regardless of sex which will be used for reproduction.
4. **HOGS** - all sows and bred gilts; boars; and all other pigs.
- 4a. **SOWS AND BRED GILTS** - all female pigs farrowed or bred to farrow.
- 4b. **BOARS** - all non-castrated male pigs six months or older.
- 4c. **ALL OTHER PIGS** - all pigs except for those defined above as sows, bred gilts and boars. Total feed consumption by all other pigs will be calculated on an OUTPUT animal basis.
5. **HORSES AND PONIES** - all horses and ponies, regardless of sex or age.

1990 FEED INTAKE COEFFICIENT GRID

PAGE 1

TYPE OF LIVESTOCK	GRAIN AND OILSEED CONSUMPTION PER ANIMAL IN 1990									ROUGHAGE CONSUMPTION PER ANIMAL IN 1990 (100% dry matter basis)			PROTEIN,VITAMIN OR MINERAL SUPPLEMENTS (NOT ELSEWHERE SPECIFIED) PER ANIMAL IN 1990 (Specify Units)
	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill Feeds and Screenings	TOTAL GRAIN AND OILSEED CONSUMPTION	Forage	Silage	Pasture	
	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	
BEEF CATTLE(1)													
Beef Cows(1a)													
Beef Heifers (≥1 year) for Herd Replacement(1b)													
Steers, Slaughter and Feeder Heifers(1c)*													
Short keeps(1c-i)*													
Long keeps(1c-ii)*													
Veal Calves(1d)*													
Beef Bulls(1e)													
All Other Beef Calves (<1 year)(1f)													
DAIRY CATTLE(2)													
Dairy Cows(2a)													
Dairy Heifers (≥1 year) for Herd Replacement(2b)													
Dairy Bulls(2c)													
All Other Dairy Calves (<1 year)(2d)													

* Grain consumed per animal OUTPUT. All other coefficients should be based on inventory animals.

LIVESTOCK FEED USAGE STUDY

1990 FEED INTAKE COEFFICIENT GRID

PAGE 2

TYPE OF LIVESTOCK	GRAIN AND OILSEED CONSUMPTION PER ANIMAL IN 1990									ROUGHAGE CONSUMPTION PER ANIMAL IN 1990 (100% dry matter basis)			PROTEIN,VITAMIN OR MINERAL SUPPLEMENTS (NOT ELSEWHERE SPECIFIED) PER ANIMAL IN 1990 (Specify Units)
	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill Feeds and Screenings	TOTAL GRAIN AND OILSEED CONSUMPTION	Forage	Silage	Pasture	
	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	(Metric Tonnes)	
SHEEP AND LAMBS(3)													
Ewes and Wethers(3a)													
Rams(3b)													
Market Lambs(3c)*													
Breeding Lambs(3d)													
HOGS(4)													
Sows and Bred Gilts(4a)													
Boars(4b)													
All Other Pigs(4c)*													
LAYERS(5)													
CHICKENS(6)													
TURKEYS(7)													
HORSES AND PONIES(8)													

* Grain consumed per animal OUTPUT. All other coefficients should be based on inventory animals.

APPENDIX 3. DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL BY SUBCLASS OF LIVESTOCK AND POULTRY,
CANADA AND PROVINCES, 1990

NEWFOUNDLAND DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill	TOTAL GRAIN AND OILSEED CONS.
								Feeds and Screenings	
BEEF CATTLE	.000	.399	.131	.000	.018	.021	.000	.000	.569
Beef Cows	.000	.061	.049	.000	.000	.000	.000	.000	.110
Beef Heifers for H.R. ≥1yr	.000	.215	.139	.000	.000	.008	.000	.000	.362
Steers, S. and F. Heifers*	.000	.609	.180	.000	.029	.033	.000	.000	.851
Short keeps*									
Long keeps*	.000	.609	.180	.000	.029	.033	.000	.000	.851
Veal Calves*	.000	.000	.000	.000	.000	.000	.000	.000	.000
Beef Bulls	.000	.261	.189	.000	.000	.013	.000	.000	.463
All Other Beef Calves <1yr	.000	.165	.131	.000	.009	.013	.000	.000	.318
DAIRY CATTLE	.142	.487	.206	.000	.368	.094	.068	.232	1.597
Dairy Cows	.190	.641	.282	.000	.492	.126	.092	.303	2.126
Dairy Heifers for H.R. ≥1yr	.056	.188	.068	.000	.136	.033	.027	.107	.615
Dairy Bulls	.000	.354	.223	.000	.000	.013	.000	.000	.590
All Other Dairy Calves <1yr	.055	.210	.055	.000	.158	.041	.024	.105	.648
SHEEP AND LAMBS	.004	.020	.012	.000	.006	.002	.000	.000	.044
Ewes and Wethers	.004	.021	.014	.000	.005	.001	.000	.000	.045
Rams	.005	.016	.009	.000	.005	.001	.000	.000	.035
Lambs*	.002	.014	.007	.000	.005	.004	.000	.000	.032
Breeding Lambs	.008	.039	.017	.000	.015	.003	.000	.000	.082
HOGS	.021	.139	.023	.000	.088	.031	.008	.007	.317
Sows and Bred Gilts	.083	.387	.117	.000	.289	.106	.020	.013	1.015
Boars	.063	.316	.092	.000	.234	.082	.016	.011	.814
All Other Pigs*	.017	.123	.017	.000	.075	.026	.007	.007	.272
LAYERS	.0034	.0000	.0000	.0000	.0153	.0051	.0000	.0011	.0248
CHICKENS*	.0004	.0000	.0000	.0000	.0019	.0006	.0000	.0001	.0029
TURKEYS*	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000

(1) Newfoundland's feed intake coefficients are the weighted average of the Maritime Provinces' coefficients.

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

PRINCE EDWARD ISLAND DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL

- metric tonnes -

TYPE OF LIVESTOCK	Other								Mill	TOTAL
	Wheat	Barley	Oats	Small	Grain	Soybean	Canola	Feeds	GRAIN AND	
				Grains	Corn	Meal	Meal	and Screenings	OILSEED CONS.	
BEEF CATTLE	.000	.340	.140	.000	.044	.000	.000	.000	.524	
Beef Cows	.000	.075	.075	.000	.000	.000	.000	.000	.150	
Beef Heifers for H.R. ≥1yr	.000	.517	.172	.000	.000	.000	.000	.000	.689	
Steers, S. and F. Heifers*	.000	.438	.169	.000	.068	.000	.000	.000	.675	
Short keeps*										
Long keeps*	.000	.438	.169	.000	.068	.000	.000	.000	.675	
Veal Calves*	.000	.000	.000	.000	.000	.000	.000	.000	.000	
Beef Bulls	.000	.397	.133	.000	.000	.000	.000	.000	.530	
All Other Beef Calves <1yr	.000	.260	.100	.000	.040	.000	.000	.000	.400	
DAIRY CATTLE	.118	.549	.322	.000	.134	.094	.000	.000	1.217	
Dairy Cows	.170	.756	.530	.000	.170	.134	.000	.000	1.760	
Dairy Heifers for H.R. ≥1yr	.047	.258	.094	.000	.047	.027	.000	.000	.473	
Dairy Bulls	.000	.596	.199	.000	.000	.000	.000	.000	.795	
All Other Dairy Calves <1yr	.071	.356	.071	.000	.142	.071	.000	.000	.711	
SHEEP AND LAMBS	.000	.050	.050	.000	.002	.002	.000	.000	.104	
Ewes and Wethers	.000	.070	.070	.000	.000	.003	.000	.000	.143	
Rams	.000	.015	.016	.000	.000	.000	.000	.000	.031	
Lambs*	.000	.022	.022	.000	.006	.000	.000	.000	.050	
Breeding Lambs(incl. in S&L)	.000	.022	.022	.000	.006	.000	.000	.000	.050	
HOGS	.038	.185	.043	.000	.038	.023	.000	.000	.327	
Sows and Bred Gilts	.150	.410	.240	.000	.150	.070	.000	.000	1.020	
Boars	.100	.300	.170	.000	.100	.040	.000	.000	.710	
All Other Pigs*	.0299	.1701	.0299	.0000	.0299	.0203	.0000	.0000	.280	
LAYERS	.0040	.0000	.0000	.0000	.0178	.0059	.0000	.0012	.0289	
CHICKENS*	.0005	.0000	.0000	.0000	.0025	.0007	.0000	.0001	.0038	
TURKEYS*	.0018	.0000	.0000	.0000	.0084	.0029	.0000	.0007	.0138	

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

NOVA SCOTIA DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill Feeds and Screenings	TOTAL GRAIN AND OILSEED CONS.
BEEF CATTLE	.000	.333	.121	.000	.000	.025	.000	.000	.479
Beef Cows	.000	.040	.030	.000	.000	.000	.000	.000	.070
Beef Heifers for H.R. ≥1yr	.000	.130	.130	.000	.000	.010	.000	.000	.270
Steers, S. and F. Heifers*	.000	.900	.230	.000	.000	.070	.000	.000	1.200
Short keeps*									.000
Long keeps*	.000	.900	.230	.000	.000	.070	.000	.000	1.200
Veal Calves*	.000	.000	.000	.000	.000	.000	.000	.000	.000
Beef Bulls	.000	.371	.351	.000	.000	.028	.000	.000	.750
All Other Beef Calves <1yr	.000	.170	.170	.000	.000	.020	.000	.000	.360
DAIRY CATTLE	.123	.376	.125	.000	.374	.077	.076	.264	1.415
Dairy Cows	.197	.602	.197	.000	.602	.123	.123	.406	2.250
Dairy Heifers for H.R. ≥1yr	.050	.140	.050	.000	.140	.030	.030	.120	.560
Beef Bulls	.000	.371	.351	.000	.000	.028	.000	.000	.750
All Other Beef Calves <1yr	.040	.130	.040	.000	.130	.025	.025	.110	.500
SHEEP AND LAMBS	.004	.017	.008	.000	.006	.002	.000	.000	.037
Ewes and Wethers	.005	.016	.008	.000	.006	.001	.000	.000	.036
Rams	.005	.016	.008	.000	.006	.001	.000	.000	.036
Lambs*	.002	.010	.004	.000	.004	.003	.000	.000	.023
Breeding Lambs	.010	.047	.019	.000	.018	.003	.000	.000	.097
HOGS	.012	.113	.012	.000	.113	.035	.011	.011	.307
Sows and Bred Gilts	.040	.350	.040	.000	.350	.120	.030	.020	.950
Boars	.040	.350	.040	.000	.350	.120	.030	.020	.950
All Other Pigs*	.010	.100	.010	.000	.100	.030	.010	.010	.270
LAYERS	.0043	.0000	.0000	.0000	.0194	.0065	.0000	.0014	.0316
CHICKENS*	.0004	.0000	.0000	.0000	.0023	.0006	.0000	.0001	.0034
TURKEYS*	.0014	.0000	.0000	.0000	.0063	.0022	.0000	.0005	.0104

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

NEW BRUNSWICK DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill Feeds and Screenings	TOTAL GRAIN AND OILSEED CONS.
BEEF CATTLE	.000	.251	.094	.000	.000	.018	.000	.000	.363
Beef Cows	.000	.077	.058	.000	.000	.000	.000	.000	.135
Beef Heifers for H.R. ≥1yr	.000	.130	.130	.000	.000	.010	.000	.000	.270
Steers, S. and F. Heifers*	.000	.563	.144	.000	.000	.044	.000	.000	.750
Short keeps*									
Long keeps*	.000	.563	.144	.000	.000	.044	.000	.000	.750
Veal Calves*	.000	.000	.000	.000	.000	.000	.000	.000	.000
Beef Bulls	.000	.067	.063	.000	.000	.005	.000	.000	.135
All Other Beef Calves <1yr	.000	.094	.094	.000	.000	.011	.000	.000	.200
DAIRY CATTLE	.136	.416	.137	.000	.414	.085	.085	.296	1.569
Dairy Cows	.197	.602	.197	.000	.602	.123	.123	.406	2.250
Dairy Heifers for H.R. ≥1yr	.071	.200	.071	.000	.200	.043	.043	.171	.800
Dairy Bulls	.000	.148	.140	.000	.000	.011	.000	.000	.300
All Other Dairy Calves <1yr	.064	.208	.064	.000	.208	.040	.040	.176	.800
SHEEP AND LAMBS	.005	.019	.008	.000	.007	.003	.000	.000	.042
Ewes and Wethers	.004	.014	.007	.000	.005	.001	.000	.000	.032
Rams	.004	.014	.007	.000	.005	.001	.000	.000	.032
Lambs*	.005	.025	.010	.000	.010	.007	.000	.000	.057
Breeding Lambs	.006	.028	.011	.000	.011	.002	.000	.000	.057
HOGS	.012	.115	.012	.000	.115	.036	.011	.010	.311
Sows and Bred Gilts	.047	.413	.047	.000	.413	.142	.035	.024	1.120
Boars	.034	.295	.034	.000	.295	.101	.025	.017	.800
All Other Pigs*	.010	.096	.010	.000	.096	.029	.010	.010	.260
LAYERS	.0041	.0000	.0000	.0000	.0183	.0061	.0000	.0013	.0298
CHICKENS*	.0005	.0000	.0000	.0000	.0025	.0007	.0000	.0001	.0038
TURKEYS*	.0014	.0000	.0000	.0000	.0064	.0022	.0000	.0005	.0105

(1) The TOTAL grain and oilseed consumption coefficients provided by the New Brunswick Department of Agriculture and Rural Development have been separated among the various grains and oilseeds using Nova Scotia's proportional distribution.

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

QUEBEC DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other				Mill Feeds and Screening	TOTAL GRAIN AND OILSEED CONS.
				Small Grains	Grain Corn	Soybean Meal	Canola Meal		
BEEF CATTLE	.009	.039	.026	.000	.164	.018	.000	.030	.286
Beef Cows	.000	.024	.024	.000	.053	.008	.000	.049	.158
Beef Heifers for H.R. ≥1yr	.000	.049	.049	.000	.105	.017	.000	.098	.317
Steers, S. and F. Heifers*	.056	.113	.036	.000	.603	.005	.000	.004	.817
Short keeps*	.000	.000	.000	.000	.000	.000	.000	.000	.000
Long keeps*	.056	.113	.036	.000	.603	.005	.000	.004	.817
Veal Calves*	.000	.018	.018	.000	.086	.023	.000	.018	.163
Beef Bulls	.000	.000	.000	.000	.000	.000	.000	.000	.000
All Other Beef Calves <1yr	.000	.045	.045	.000	.081	.056	.000	.045	.272
DAIRY CATTLE	.003	.276	.160	.000	.637	.165	.000	.219	1.460
Dairy Cows	.006	.417	.195	.000	1.020	.178	.000	.308	2.124
Dairy Heifers for H.R. ≥1yr	.000	.131	.131	.000	.236	.164	.000	.131	.793
Dairy Bulls	.000	.000	.000	.000	.000	.000	.000	.000	.000
All Other Dairy Calves <1yr	.000	.117	.117	.000	.211	.146	.000	.117	.708
SHEEP AND LAMBS	.000	.012	.012	.000	.017	.008	.000	.015	.064
Ewes and Wethers	.000	.015	.015	.000	.020	.010	.000	.020	.080
Rams	.000	.016	.016	.000	.022	.010	.000	.021	.085
Lambs*	.000	.006	.006	.000	.008	.004	.000	.008	.032
Breeding Lambs	.000	.021	.021	.000	.055	.018	.000	.021	.136
HOGS	.019	.042	.028	.000	.175	.035	.002	.036	.337
Sows and Bred Gilts	.000	.000	.149	.000	.381	.104	.030	.299	.963
Boars	.000	.000	.129	.000	.328	.089	.030	.257	.833
All Other Pigs*	.020	.045	.020	.000	.162	.031	.000	.019	.297
LAYERS	.0042	.0000	.0000	.0000	.0188	.0063	.0000	.0013	.0305
CHICKENS*	.0005	.0000	.0000	.0000	.0024	.0007	.0000	.0001	.0036
TURKEYS*	.0020	.0000	.0000	.0000	.0093	.0032	.0000	.0008	.0153

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

ONTARIO DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill	TOTAL
								Feeds and Screenings	GRAIN AND OILSEED CONS.
BEEF CATTLE	.004	.077	.077	.043	.418	.000	.000	.000	.619
Beef Cows	.006	.075	.075	.019	.038	.000	.000	.000	.213
Beef Heifers for M.R. ≥1yr	.009	.125	.125	.031	.063	.000	.000	.000	.353
Steers, S. and F. Heifers*	.004	.091	.091	.072	.731	.000	.000	.000	.989
Short keeps*	.004	.083	.083	.066	.671	.000	.000	.000	.907
Long keeps*	.004	.100	.100	.079	.805	.000	.000	.000	1.088
Veal Calves*	.000	.000	.000	.000	.400	.000	.000	.000	.400
Beef Bulls	.009	.124	.124	.031	.062	.000	.000	.000	.350
All Other Beef Calves <1yr	.006	.075	.075	.019	.038	.000	.000	.000	.212
DAIRY CATTLE	.011	.458	.179	.050	.461	.135	.047	.049	1.390
Dairy Cows	.018	.805	.282	.080	.829	.190	.070	.060	2.334
Dairy Heifers for M.R. ≥1yr	.000	.117	.088	.000	.091	.075	.033	.036	.440
Dairy Bulls	.000	.200	.150	.050	.220	.120	.020	.100	.860
All Other Dairy Calves <1yr	.007	.136	.073	.040	.130	.090	.018	.040	.535
SHEEP AND LAMBS	.001	.029	.029	.000	.016	.006	.000	.000	.081
Ewes and Wethers	.002	.045	.045	.000	.011	.001	.000	.000	.104
Rams	.000	.011	.011	.000	.000	.000	.000	.000	.022
Lambs*	.000	.016	.016	.000	.016	.009	.000	.000	.057
Breeding Lambs	.000	.041	.041	.000	.041	.007	.000	.000	.130
HOGS	.000	.032	.008	.000	.219	.050	.017	.043	.369
Sows and Bred Gilts	.000	.275	.110	.000	.484	.187	.061	.034	1.151
Boars	.000	.228	.091	.000	.401	.155	.050	.029	.954
All Other Pigs*	.000	.013	.000	.000	.198	.039	.014	.044	.308
LAYERS	.0041	.0000	.0000	.0000	.0184	.0061	.0000	.0013	.0299
CHICKENS*	.0005	.0000	.0000	.0000	.0024	.0007	.0000	.0001	.0036
TURKEYS*	.0028	.0000	.0000	.0000	.0128	.0045	.0000	.0011	.0211

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

MANITOBA DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other		Soybean Meal	Canola Meal	Mill	TOTAL GRAIN AND OILSEED CONS.
				Small Grains	Grain Corn			Feeds and Screenings	
BEEF CATTLE	.000	.440	.110	.000	.000	.000	.000	.000	.550
Beef Cows	.000	.416	.104	.000	.000	.000	.000	.000	.520
Beef Heifers for H.R. ≥1yr	.000	.208	.052	.000	.000	.000	.000	.000	.260
Steers, S. and F. Heifers*	.000	.688	.172	.000	.000	.000	.000	.000	.860
Short keeps*	.000	.555	.139	.000	.000	.000	.000	.000	.694
Long keeps*	.000	.998	.250	.000	.000	.000	.000	.000	1.248
Veal Calves*	.000	.400	.100	.000	.000	.000	.000	.000	.500
Beef Bulls	.000	.344	.086	.000	.000	.000	.000	.000	.430
All Other Beef Calves <1yr	.000	.400	.100	.000	.000	.000	.000	.000	.500
DAIRY CATTLE	.071	1.295	.137	.022	.065	.105	.027	.000	1.722
Dairy Cows	.130	2.000	.250	.040	.120	.160	.050	.000	2.750
Dairy Heifers for H.R. ≥1yr	.000	.460	.000	.000	.000	.030	.000	.000	.490
Dairy Bulls	.000	.344	.086	.000	.000	.000	.000	.000	.430
All Other Dairy Calves <1yr	.000	.460	.000	.000	.000	.050	.000	.000	.510
SHEEP AND LAMBS	.004	.053	.027	.002	.000	.002	.001	.000	.089
Ewes and Wethers	.002	.029	.014	.001	.000	.001	.001	.000	.048
Rams	.002	.023	.011	.001	.000	.001	.001	.000	.039
Lambs*	.005	.065	.033	.002	.000	.002	.001	.000	.108
Breeding Lambs	.008	.104	.053	.003	.000	.003	.002	.000	.173
HOGS	.109	.154	.000	.000	.000	.037	.011	.000	.311
Sows and Bred Gilts	.249	.566	.000	.000	.000	.101	.011	.000	.927
Boars	.167	.546	.000	.000	.000	.076	.008	.000	.797
All Other Pigs*	.100	.125	.000	.000	.000	.033	.011	.000	.269
LAYERS	.0194	.0099	.0000	.0000	.0000	.0005	.0012	.0003	.0312
CHICKENS*	.0004	.0023	.0000	.0000	.0000	.0006	.0000	.0000	.0033
TURKEYS*	.0146	.0000	.0000	.0000	.0000	.0037	.0012	.0006	.0201

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

SASKATCHEWAN DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL

- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other				Mill	TOTAL
				Small Grains	Grain Corn	Soybean Meal	Canola Meal	Feeds and Screenings	GRAIN AND OILSEED CONS.
BEEF CATTLE	.003	.565	.002	.000	.000	.001	.001	.000	.572
Beef Cows	.000	.450	.000	.000	.000	.000	.000	.000	.450
Beef Heifers for H.R. ≥1yr	.000	.360	.000	.000	.000	.000	.000	.000	.360
Steers, S. and F. Heifers*	.000	1.364	.000	.000	.000	.000	.000	.000	1.364
Short keeps*	.000	1.060	.000	.000	.000	.000	.000	.000	1.060
Long keeps*	.000	1.520	.000	.000	.000	.000	.000	.000	1.520
Veal Calves*	.210	.210	.110	.000	.000	.060	.060	.000	.650
Beef Bulls	.000	.450	.000	.000	.000	.000	.000	.000	.450
All Other Beef Calves <1yr	.000	.360	.000	.000	.000	.000	.000	.000	.360
DAIRY CATTLE	.041	1.351	.022	.000	.000	.170	.170	.000	1.754
Dairy Cows	.000	2.100	.000	.000	.000	.256	.256	.000	2.612
Dairy Heifers for H.R. ≥1yr	.000	.287	.000	.000	.000	.032	.032	.000	.351
Dairy Bulls	.000	.500	.000	.000	.000	.027	.027	.000	.554
All Other Dairy Calves <1yr	.210	.210	.110	.000	.000	.060	.060	.000	.650
SHEEP AND LAMBS	.000	.120	.000	.000	.000	.000	.000	.000	.120
Ewes and Wethers	.000	.110	.000	.000	.000	.000	.000	.000	.110
Rams	.000	.100	.000	.000	.000	.000	.000	.000	.100
Lambs*	.000	.140	.000	.000	.000	.000	.000	.000	.140
Breeding Lambs	.000	.120	.000	.000	.000	.000	.000	.000	.120
HOGS	.088	.221	.000	.000	.000	.048	.005	.000	.362
Sows and Bred Gilts	.180	.670	.000	.000	.000	.138	.013	.000	1.001
Boars	.200	.640	.000	.000	.000	.133	.013	.000	.986
All Other Pigs*	.080	.180	.000	.000	.000	.040	.004	.000	.304
LAYERS	.0183	.0093	.0000	.0000	.0000	.0005	.0011	.0002	.0294
CHICKENS*	.0005	.0027	.0000	.0000	.0000	.0007	.0000	.0000	.0039
TURKEYS*	.0150	.0000	.0000	.0000	.0000	.0038	.0012	.0006	.0206

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

ALBERTA DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats					Mill	TOTAL
				Other		Soybean	Canola	Feeds	GRAIN AND
				Small	Grain				
				Grains	Corn	Meal	Meal	and Screenings	CONS.
BEEF CATTLE	.037	.517	.069	.024	.000	.000	.067	.030	.744
Beef Cows	.013	.156	.026	.013	.000	.000	.026	.026	.260
Beef Heifers for H.R. ≥1yr	.020	.195	.098	.020	.000	.000	.039	.020	.392
Steers, S. and F. Heifers*	.072	1.053	.108	.040	.000	.000	.126	.040	1.439
Short keeps*	.060	.779	.180	.060	.000	.000	.060	.060	1.199
Long keeps*	.077	1.170	.077	.031	.000	.000	.154	.031	1.540
Veal Calves*	.000	.000	.000	.000	.000	.000	.000	.000	.000
Beef Bulls	.015	.185	.031	.015	.000	.000	.031	.031	.308
All Other Beef Calves <1yr	.016	.165	.082	.016	.000	.000	.033	.016	.328
DAIRY CATTLE	.087	.875	.100	.065	.021	.036	.089	.035	1.308
Dairy Cows	.159	1.369	.102	.119	.038	.059	.154	.064	2.064
Dairy Heifers for H.R. ≥1yr	.000	.190	.060	.000	.000	.000	.000	.000	.250
Dairy Bulls	.000	.218	.145	.000	.000	.000	.000	.000	.363
All Other Dairy Calves <1yr	.000	.358	.132	.000	.000	.016	.021	.000	.527
SHEEP AND LAMBS	.007	.051	.014	.004	.000	.006	.005	.004	.091
Ewes and Wethers	.008	.028	.017	.003	.000	.003	.007	.003	.069
Rams	.007	.034	.013	.003	.000	.003	.003	.003	.066
Lambs*	.005	.063	.010	.005	.000	.008	.004	.005	.100
Breeding Lambs	.008	.102	.016	.008	.000	.013	.006	.008	.161
HOGS	.076	.227	.004	.000	.000	.027	.022	.009	.365
Sows and Bred Gilts	.090	.750	.000	.000	.000	.050	.050	.000	.940
Boars	.000	.850	.000	.000	.000	.050	.050	.000	.950
All Other Pigs*	.075	.185	.004	.000	.000	.025	.020	.010	.319
LAYERS	.0190	.0096	.0000	.0000	.0000	.0005	.0012	.0002	.0305
CHICKENS*	.0004	.0024	.0000	.0000	.0000	.0006	.0000	.0000	.0034
TURKEYS*	.0152	.0000	.0000	.0000	.0000	.0039	.0013	.0006	.0210

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

BRITISH COLUMBIA DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL

- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill	TOTAL GRAIN AND OILSEED CONS.
								Feeds and Screenings	
BEEF CATTLE	.000	.239	.000	.000	.000	.004	.004	.042	.289
Beef Cows	.000	.014	.000	.000	.000	.000	.000	.000	.014
Beef Heifers for H.R. ≥1yr	.000	.055	.000	.000	.000	.000	.000	.000	.055
Steers, S. and F. Heifers*	.000	1.125	.000	.000	.000	.000	.000	.173	1.298
Short keeps*	.000	.748	.000	.000	.000	.000	.000	.090	.838
Long keeps*	.000	1.250	.000	.000	.000	.000	.000	.200	1.450
Veal Calves*	.000	.664	.000	.000	.000	.051	.051	.204	.970
Beef Bulls	.000	.008	.000	.000	.000	.000	.000	.000	.008
All Other Beef Calves <1yr	.000	.008	.000	.000	.000	.000	.000	.000	.008
DAIRY CATTLE	.000	1.032	.000	.000	.000	.000	.302	.300	1.634
Dairy Cows	.000	1.862	.000	.000	.000	.000	.543	.543	2.948
Dairy Heifers for H.R. ≥1yr	.000	.000	.000	.000	.000	.000	.000	.000	.000
Dairy Bulls	.000	.429	.000	.000	.000	.000	.066	.132	.627
All Other Dairy Calves <1yr	.000	.238	.000	.000	.000	.000	.074	.064	.376
SHEEP AND LAMBS	.000	.037	.001	.000	.000	.000	.005	.000	.043
Ewes and Wethers	.000	.041	.000	.000	.000	.000	.000	.000	.041
Rams	.000	.010	.000	.000	.000	.000	.000	.000	.010
Lambs*	.000	.040	.002	.000	.000	.000	.011	.000	.053
Breeding Lambs	.000	.010	.000	.000	.000	.000	.000	.000	.010
HOGS	.049	.180	.000	.000	.000	.029	.006	.031	.295
Sows and Bred Gilts	.174	.730	.000	.000	.000	.013	.008	.157	1.082
Boars	.148	.636	.000	.000	.000	.000	.000	.148	.932
All Other Pigs*	.042	.148	.000	.000	.000	.030	.006	.024	.250
LAYERS	.0204	.0104	.0000	.0000	.0000	.0005	.0012	.0003	.0328
CHICKENS*	.0004	.0022	.0000	.0000	.0000	.0005	.0000	.0000	.0032
TURKEYS*	.0130	.0000	.0000	.0000	.0000	.0033	.0011	.0005	.0179

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

CANADA DETAILED GRAIN AND OILSEED CONSUMPTION PER ANIMAL
- metric tonnes -

TYPE OF LIVESTOCK	Wheat	Barley	Oats	Other Small Grains	Grain Corn	Soybean Meal	Canola Meal	Mill	TOTAL
								Feeds and Screenings	GRAIN AND OILSEED CONS.
BEEF CATTLE	.018	.381	.056	.018	.091	.002	.028	.017	.611
Beef Cows	.006	.228	.032	.007	.007	.000	.011	.013	.304
Beef Heifers for H.R. ≥1yr	.009	.206	.067	.012	.016	.001	.015	.014	.340
Steers, S. and F. Heifers*	.040	.750	.093	.040	.226	.001	.064	.025	1.239
Short keeps*	.027	.496	.120	.052	.275	.000	.025	.027	1.022
Long keeps*	.048	.897	.078	.033	.198	.002	.087	.024	1.367
Veal Calves*	.008	.058	.015	.000	.182	.017	.005	.020	.305
Beef Bulls	.007	.232	.039	.010	.007	.000	.013	.013	.321
All Other Beef Calves <1yr	.007	.199	.058	.009	.011	.004	.013	.009	.310
DAIRY CATTLE	.024	.519	.148	.023	.427	.128	.050	.133	1.452
Dairy Cows	.040	.857	.205	.038	.703	.160	.083	.193	2.279
Dairy Heifers for H.R. ≥1yr	.003	.145	.090	.000	.130	.094	.014	.069	.545
Dairy Bulls	.000	.150	.068	.013	.056	.033	.008	.029	.357
All Other Dairy Calves <1yr	.011	.171	.087	.015	.136	.095	.015	.068	.598
SHEEP AND LAMBS	.002	.037	.017	.001	.009	.005	.002	.004	.077
Ewes and Wethers	.003	.037	.023	.001	.007	.003	.002	.004	.080
Rams	.002	.026	.010	.001	.003	.002	.001	.004	.049
Lambs*	.002	.034	.012	.001	.008	.006	.002	.003	.068
Breeding Lambs	.0030	.0604	.0236	.0024	.0220	.0088	.0018	.0053	.1273
HOGS	.039	.101	.012	.000	.119	.039	.011	.026	.347
Sows and Bred Gilts	.065	.360	.077	.000	.260	.120	.038	.095	1.015
Boars	.047	.384	.058	.000	.201	.102	.034	.066	.892
All Other Pigs*	.037	.082	.007	.000	.109	.033	.009	.021	.298
LAYERS	.0098	.0036	.0000	.0000	.0117	.0041	.0004	.0009	.0305
CHICKENS*	.0004	.0007	.0000	.0000	.0017	.0007	.0000	.0001	.0036
TURKEYS*	.0058	.0000	.0000	.0000	.0079	.0038	.0003	.0008	.0186

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

APPENDIX 4. Total Grain and Oilseed Consumption per Animal by Subclass of Livestock and Poultry, Canada and Provinces, 1990

SUBCLASS OF LIVESTOCK AND POULTRY	N.F.L.D.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- metric tonnes -											
BEEF CATTLE	.569	.524	.479	.363	.286	.619	.550	.572	.744	.289	.611
Beef Cows	.110	.150	.070	.135	.158	.213	.520	.450	.260	.014	.304
Beef Heifers for H.R. ≥1yr	.362	.689	.270	.270	.317	.353	.260	.360	.392	.055	.360
Steers, S. and F. Heifers*	.851	.675	1.200	.750	.817	.989	.860	1.364	1.439	1.298	1.239
Short keeps*	.000	.000	.000	.000	.000	.907	.694	1.060	1.199	.838	1.022
Long keeps*	.851	.675	1.200	.750	.817	1.088	1.248	1.520	1.540	1.450	1.367
Veal Calves*	.000	.000	.000	.000	.163	.400	.500	.650	.000	.970	.305
Beef Bulls	.463	.530	.750	.135	.000	.350	.430	.450	.308	.008	.321
All Other Beef Calves <1yr	.318	.400	.360	.200	.272	.212	.500	.360	.328	.008	.310
DAIRY CATTLE	1.597	1.217	1.415	1.569	1.460	1.390	1.722	1.754	1.308	1.634	1.452
Dairy Cows	2.126	1.760	2.250	2.250	2.124	2.334	2.750	2.612	2.064	2.948	2.279
Dairy Heifers for H.R. ≥1yr	.615	.473	.560	.800	.793	.440	.490	.351	.250	.000	.545
Dairy Bulls	.590	.795	.750	.135	.000	.860	.430	.554	.363	.627	.357
All Other Dairy Calves <1yr	.648	.711	.500	.800	.708	.535	.510	.650	.527	.376	.598
SHEEP AND LAMBS	.044	.104	.037	.042	.064	.081	.089	.120	.091	.043	.077
Ewes and Wethers	.045	.143	.036	.032	.080	.104	.048	.110	.069	.041	.080
Rams	.035	.031	.036	.032	.085	.022	.039	.100	.066	.010	.049
Lambs*	.032	.050	.023	.057	.032	.057	.108	.140	.100	.053	.068
Breeding Lambs	.082	.050	.097	.057	.136	.130	.173	.120	.161	.010	.127
HOGS	.317	.327	.307	.311	.337	.369	.311	.362	.365	.295	.347
Sows and Bred Gilts	1.015	1.020	.950	1.120	.963	1.151	.927	1.001	.940	1.082	1.015
Boars	.814	.710	.950	.800	.833	.954	.797	.986	.950	.932	.892
All Other Pigs*	.272	.280	.270	.260	.297	.308	.269	.304	.319	.250	.298
LAYERS	.0248	.0289	.0316	.0298	.0305	.0299	.0312	.0294	.0305	.0328	.0305
CHICKENS*	.0029	.0038	.0034	.0038	.0036	.0036	.0033	.0039	.0034	.0032	.0036
TURKEYS*	.0000	.0138	.0104	.0105	.0153	.0211	.0201	.0206	.0210	.0179	.0186

* These coefficients represent intake per animal output in 1990. The remainder represent intake per inventory animal in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

APPENDIX 5. Livestock and Poultry Populations by Subclass, Canada and Provinces, 1990

SUBCLASS OF LIVESTOCK AND POULTRY	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	CANADA
- '000 -											
BEEF CATTLE	5.6	48.1	64.6	53.3	687.9	1575.6	661.0	1460.7	3540.4	437.7	8534.5
Beef Cows	1.0	11.4	23.2	18.9	175.8	380.3	389.5	844.5	1475.0	235.3	3554.6
Beef Heifers for H.R. ≥1yr	.2	3.1	6.4	4.6	41.3	101.0	61.0	155.0	266.0	42.4	680.9
Steers, S. and F. Heifers*	3.4	29.1	20.1	19.2	115.8	753.8	113.8	222.7	1408.4	69.7	2756.0
Short keeps*	.0	.0	.0	.0	.0	414.6	79.7	75.7	422.5	17.4	1009.9
Long keeps*	3.4	29.1	20.1	19.2	115.8	339.2	34.1	147.0	985.9	52.3	1746.1
Veal Calves*	.7	.5	6.6	4.5	298.0	203.6	9.5	23.2	10.2	30.5	587.3
Beef Bulls	.1	.8	1.3	1.3	11.3	22.5	19.0	43.9	83.3	12.3	195.8
All Other Beef Calves <1yr	.2	3.2	7.0	4.8	45.7	114.4	68.2	171.4	297.5	47.5	759.9
DAIRY CATTLE	6.8	37.7	63.9	49.3	1045.6	923.8	122.1	88.2	226.0	147.6	2710.7
Dairy Cows	4.4	20.1	32.8	26.3	546.3	450.0	66.3	52.3	124.0	77.0	1399.3
Dairy Heifers for H.R. ≥1yr	1.1	8.6	15.3	11.1	240.5	230.5	26.9	17.0	49.0	33.6	633.5
Dairy Bulls	.1	.4	.4	.5	12.5	7.0	1.6	1.6	2.5	.7	27.3
All Other Dairy Calves <1yr	1.2	8.6	15.4	11.4	246.3	236.3	27.3	17.3	50.5	36.3	650.6
SHEEP AND LAMBS	7.4	4.4	29.8	9.4	148.0	308.1	33.8	45.5	226.1	65.4	877.7
Ewes and Wethers	3.7	2.6	16.9	5.1	68.4	114.0	12.7	24.8	97.6	26.1	371.8
Rams	.1	.2	.7	.2	2.5	5.3	.7	1.3	5.0	1.5	17.4
Lambs*	2.8	1.2	9.7	3.0	66.3	163.7	18.2	14.2	101.0	31.3	411.4
Breeding Lambs	.8	.4	2.5	1.1	10.8	25.1	2.2	5.2	22.5	6.5	77.1
HOGS	30.6	184.0	234.1	121.3	4966.7	4688.6	2030.5	1072.4	2592.0	429.4	16354.6
Sows and Bred Gilts	1.8	11.3	11.8	7.0	282.4	321.6	125.1	82.3	178.6	22.3	1048.1
Boars	.1	.7	.6	.4	13.5	20.6	8.0	7.0	11.8	1.5	65.3
All Other Pigs*	28.7	172.0	221.7	113.9	4670.8	4346.4	1897.4	983.1	2401.6	405.6	15241.2
LAYERS	384.0	129.0	866.0	462.0	3668.0	7967.0	2356.0	945.0	1866.0	2640.0	21283.0
CHICKENS*	5543.0	1121.0	13838.0	10003.0	111507.0	132178.0	17278.0	11155.0	35946.0	49043.0	387612.0
TURKEYS*	.0	4.0	736.0	525.0	4925.0	8089.0	1381.0	786.0	1644.0	1954.0	20044.0

* These populations represent number of animals output in 1990. The remainder represent average inventory in 1990.

Source: Livestock Feed Usage Study, Statistics Canada

APPENDIX 6. Total Grain and Oilseed Consumption by Subclass of Livestock and Poultry, Canada and Provinces, 1990

SUBCLASS OF LIVESTOCK AND POULTRY	N.F.L.D.	P.E.I.	N.S.	N.B.	QUE.	ONT.	MAN.	SASK.	ALTA.	B.C.	CANADA
- '000 metric tonnes -											
BEEF CATTLE(1)	3.2	25.2	31.0	19.1	200.4	924.1	451.7	921.8	2577.7	148.1	5302.3
Beef Cows	.1	1.7	1.6	2.6	27.8	80.9	202.5	380.0	383.5	3.3	1084.1
Beef Heifers for H.R. ≥1yr	.1	2.1	1.7	1.2	13.1	35.7	15.9	55.8	104.3	2.3	232.2
Steers, S. and F. Heifers*(1)	2.9	19.6	24.1	14.2	98.4	694.0	186.3	389.5	1966.7	112.4	3508.1
Short keeps*	.0	.0	.0	.0	.0	376.0	55.3	80.2	506.6	14.6	1032.7
Long keeps*	2.9	19.6	24.1	14.4	94.6	369.0	42.6	223.4	1518.3	75.8	2384.8
Veal Calves*	.0	.0	.0	.0	48.6	81.4	4.8	15.1	.0	29.6	179.4
Beef Bulls	.0	.4	1.0	.2	.0	7.9	8.2	19.8	25.7	.1	63.2
Other Beef Calves <1yr	.1	1.3	2.5	1.0	12.4	24.2	34.1	61.7	97.6	.4	235.3
DAIRY CATTLE	10.9	45.9	90.4	77.3	1525.4	1284.1	210.1	154.7	295.7	241.1	3935.6
Dairy Cows	9.4	35.4	73.8	59.2	1160.3	1050.4	182.3	136.6	255.9	227.0	3190.3
Dairy Heifers for H.R. ≥1yr	.7	4.1	8.6	8.9	190.7	101.3	13.2	6.0	12.3	.0	345.6
Dairy Bulls	.1	.3	.3	.2	.0	6.0	.7	.9	.9	.4	9.8
Other Dairy Calves <1yr	.8	6.1	7.7	9.1	174.4	126.3	13.9	11.2	26.6	13.6	389.9
SHEEP AND LAMBS	.3	.5	1.1	.4	9.3	24.6	3.0	5.5	20.8	2.8	68.2
Ewes and Wethers	.2	.4	.6	.2	5.5	11.9	.6	2.7	6.7	1.1	29.8
Rams	.0	.0	.0	.0	.2	.1	.0	.1	.3	.0	.9
Lambs*	.1	.1	.2	.2	2.1	9.3	2.0	2.0	10.1	1.7	27.7
Breeding Lambs	.1	.0	.2	.1	1.5	3.3	.4	.6	3.6	.1	9.8
HOGS	9.7	60.2	71.6	37.8	1670.4	1728.5	632.7	388.1	945.2	126.9	5671.3
Sows and Bred Gilts	1.8	11.5	11.2	7.8	272.0	370.2	116.0	82.4	167.9	24.1	1064.9
Boars	.1	.5	.6	.3	11.2	19.7	6.4	6.9	11.2	1.4	58.3
All Other Pigs*	7.8	48.2	59.9	29.6	1387.2	1338.7	510.4	298.9	766.1	101.4	4548.1
LAYERS	9.5	3.7	27.4	13.8	111.9	238.2	73.5	27.8	56.9	86.6	649.3
CHICKENS*	16.1	4.3	47.0	38.0	401.0	475.3	57.0	43.5	122.1	156.8	1361.0
TURKEYS*	.0	.1	7.7	5.5	75.4	170.7	27.8	16.2	34.5	35.0	372.7
TOTAL GRAIN AND OILSEED CONSUMPTION	49.7	139.9	276.2	191.9	3993.8	4845.5	1455.8	1557.6	4052.9	797.3	17360.4

(1) Total grain and oilseed consumption by Steers, Slaughter and Feeder Heifers has been adjusted to compensate for grain and oilseed intake by feeder steers and heifers prior to interprovincial movement and/or international export.

Source: Livestock Feed Usage Study, Statistics Canada



