Canadian Livestock Feed Consumption

2021 Estimates







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- Finfish
- Rabbits, Elk and Deer

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The objectives of this project are:

- To estimate livestock feed consumption volumes in Canada, on an annual basis, according to species and geography. For each species, consumption estimates are broken down by stage of production when the relevant statistics are available.
- To provide publicly available statistics on Canadian livestock feed consumption to industry stakeholders.
- To compare year over year livestock feed consumption estimates to proactively identify changes that could impact the industry.



Methodology

To estimate livestock feed consumption, the average feed intake of specific livestock populations was determined and multiplied by the Canadian population.

Calculation of feed consumption for species at specific stage of life/production:

average feed intake x population = estimated feed consumption

Average feed intake for each species, adjusting for various life and production stages, was determined by the Feed Statistics Special Purpose Committee of the ANAC Nutrition Committee. Feed intake averages are included in <u>Appendix A</u>.

Population data were taken from official sources including:

- Agriculture and Agri-Food Canada
- Equestrian Canada
- Statistics Canada
- Turkey Farmers of Canada



Reporting and assumptions

Estimated feed consumption volumes are provided as **complete feed equivalents** on an **as fed (AF)** basis.

All consumption volumes are reported in metric tonnes.

Monogastric feed consumption volumes represent total diet.

Ruminant feed consumption volumes do not include forages. Forage consumption estimates are provided separately in <u>Appendix B</u>.



Livestock feed consumption: 2021 overview



2021 Highlights



Approximately 28.9 million tonnes of feed was consumed by livestock (not including forages), 0.6% more than in 2020.



It is estimated 68% of livestock feed was consumed in Alberta, Ontario and Quebec, the same provinces where 73% of feed mills were located.



Feed consumption by swine destined for export saw a considerable increase (+53.81%) from 2020 to 2021 as many Canadian hogs were sent to the United States due to logistical challenges with domestic processing. Despite this, total swine feed consumption remained stable (+0.70% from 2020).



Other highlights

Changes from 2020 to 2021:

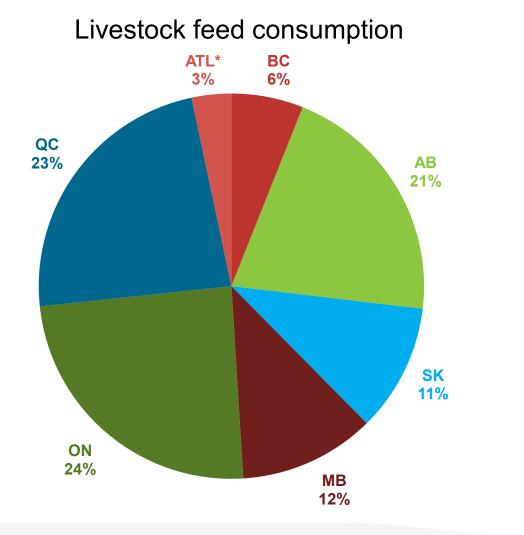
- Turkey feed consumption is down 5.67%*.
- Ducks/geese feed consumption is up 7.14%.

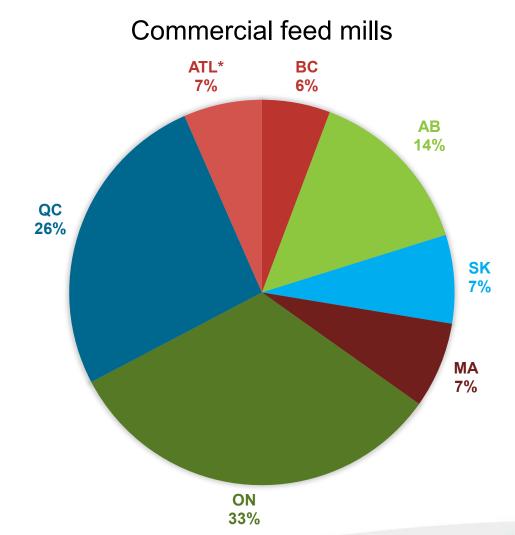
Changes from 2016 to 2021:

- **Bison** feed consumption increased considerably (+42.13%).
- Feed consumption dropped in **rabbits** (-11.70%), **elk** (-8.53%) and **deer** (-37.50%).



Distribution of livestock feed consumption and commercial feed mills across Canada in 2021



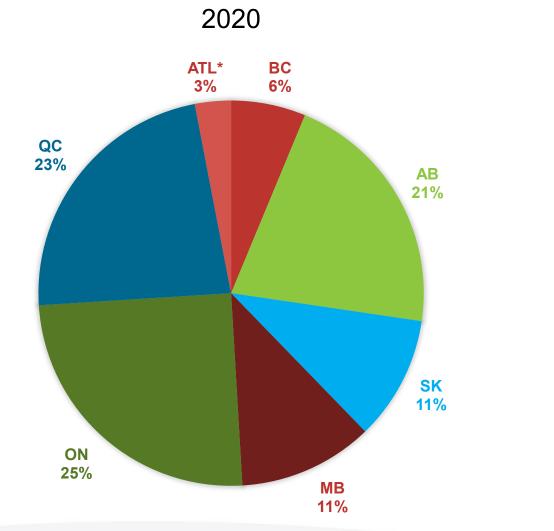


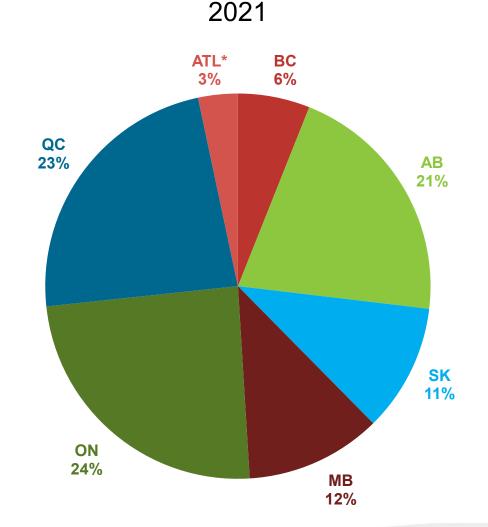
Provincial livestock feed consumption and commercial feed mills data is presented in Table A1.

Territories (Terr), including Northwest Territories, Nunavut and Yukon, represent 0.001% of Canadian feed consumption and will be included in graphs where relevant. *ATL includes the provinces of Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland and Labrador.



Comparison of feed consumption distribution across Canada by year



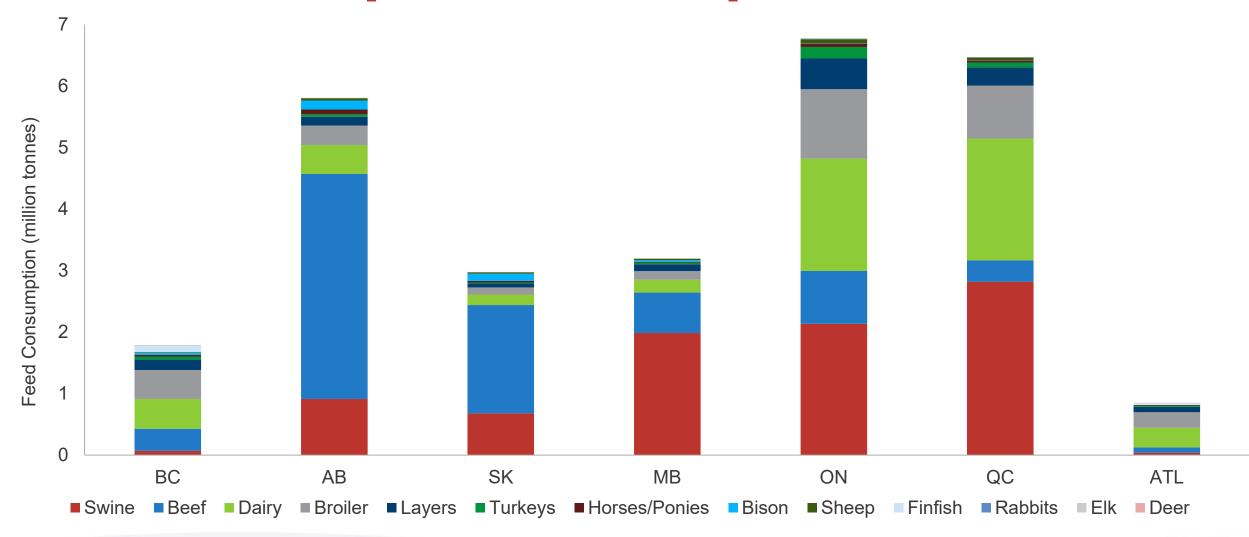


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2021 Livestock feed consumption by province and species



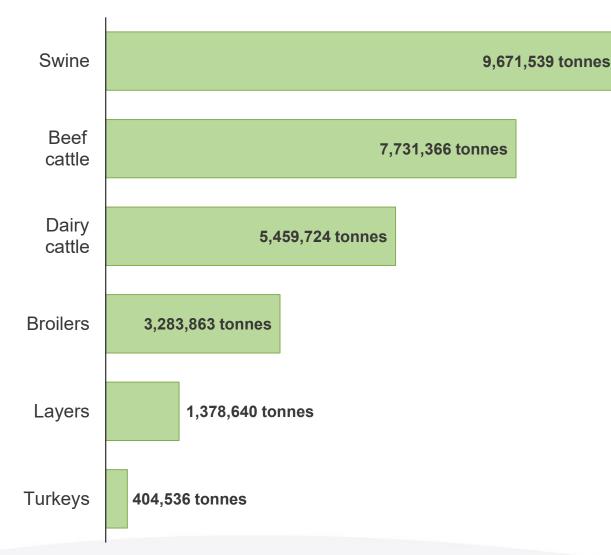
Territories, not included in this graph, represent 351 tonnes of feed consumption by horses/ponies, rabbits and elk. Data presented in this graph does not include feed consumption of ducks/geese nor swine for export due to unavailable provincial data.



Major species



Overview of major species



Major species consume approximately 27.9 million tonnes of livestock feed, representing 96.5% of total feed consumption in Canada.

- Swine 33.4%
- Beef cattle 26.7%
- Dairy cattle 18.9%
- Poultry 17.5%
 - Broiler chickens 11.3%
 - Laying hens 4.8%
 - Turkeys 1.4%

In addition to concentrate, beef and dairy cattle consumed a considerable amount of forage. Data on forage consumption estimates can be found in <u>Appendix B</u>.



Swine feed consumption by province

3.0 2.5 Feed Consumption (million tonnes) 2.0 1.5 1.0 0.5 0.0 BC AB SK MB ON QC ATL **Exports**

Swine consumed a total of 9.7 million tonnes of feed.

based on total number of hogs slaughtered by province in 2021.
Exports represent all live hogs exported to the United States including feeder pigs, breeding hogs and market hogs.

Population numbers were

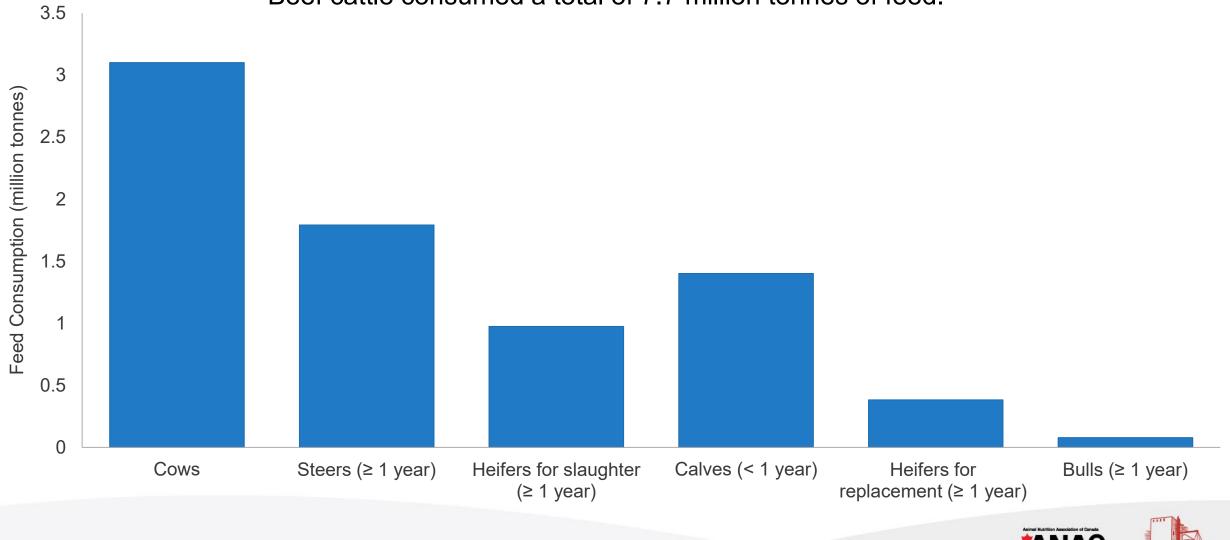
Parental feed intake was considered in pig feed consumption calculations.



Swine feed consumption data and intake estimates used for feed consumption calculations can be found in Tables A2 and A3.

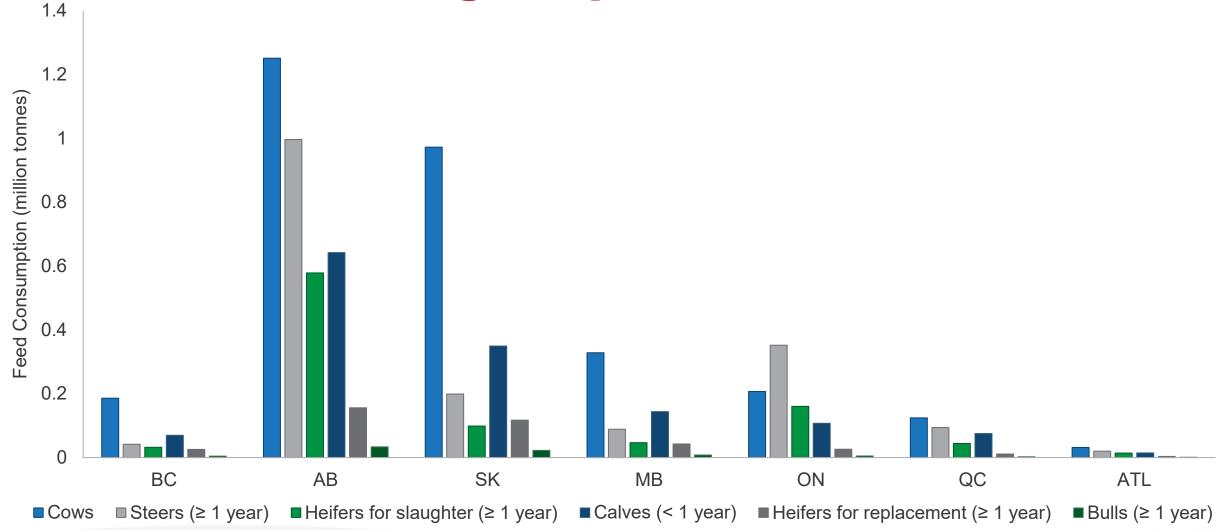
Beef cattle feed consumption by stage of production

Beef cattle consumed a total of 7.7 million tonnes of feed.



Beef cattle feed consumption data as well as intake estimates used for consumption calculations can be found in Tables A4 and A5.

Beef cattle feed consumption by province and stage of production

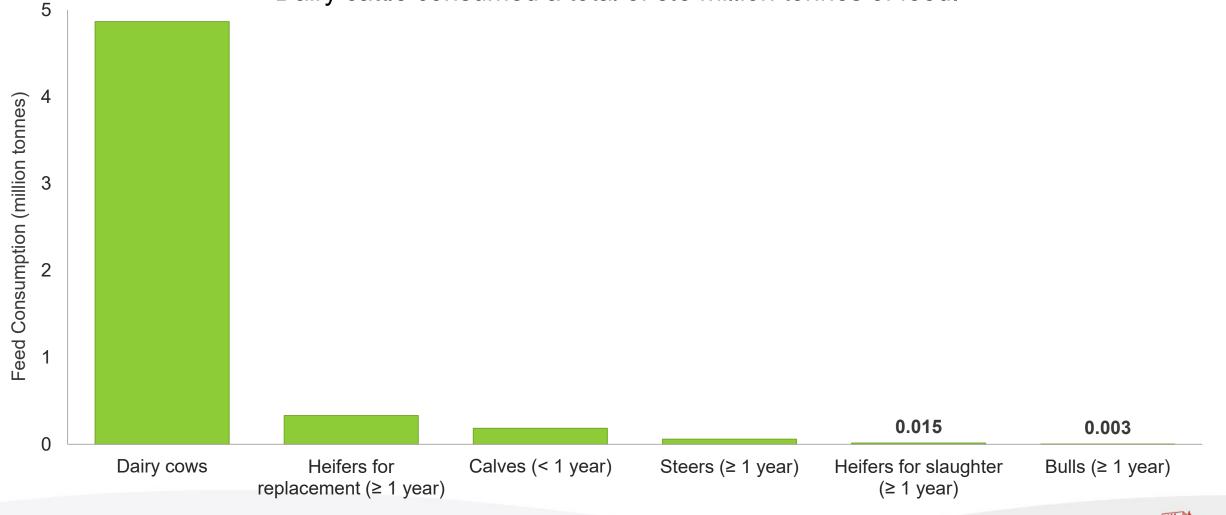




Beef cattle feed consumption data as well as intake estimates used for consumption calculations can be found in <u>Tables A4 and A5</u>.

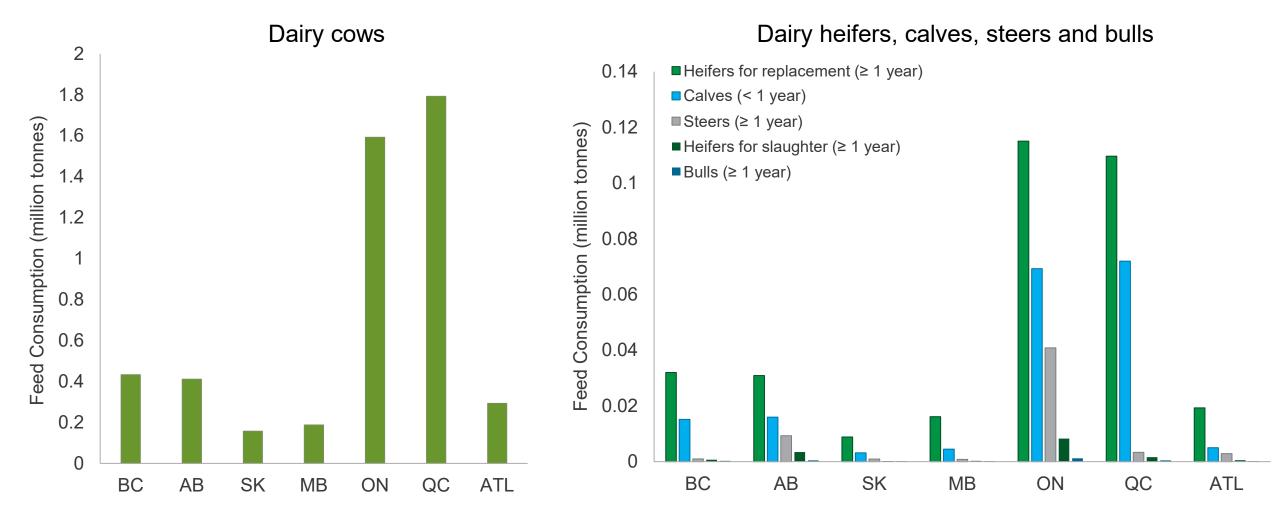
Dairy cattle feed consumption by stage of production

Dairy cattle consumed a total of 5.5 million tonnes of feed.



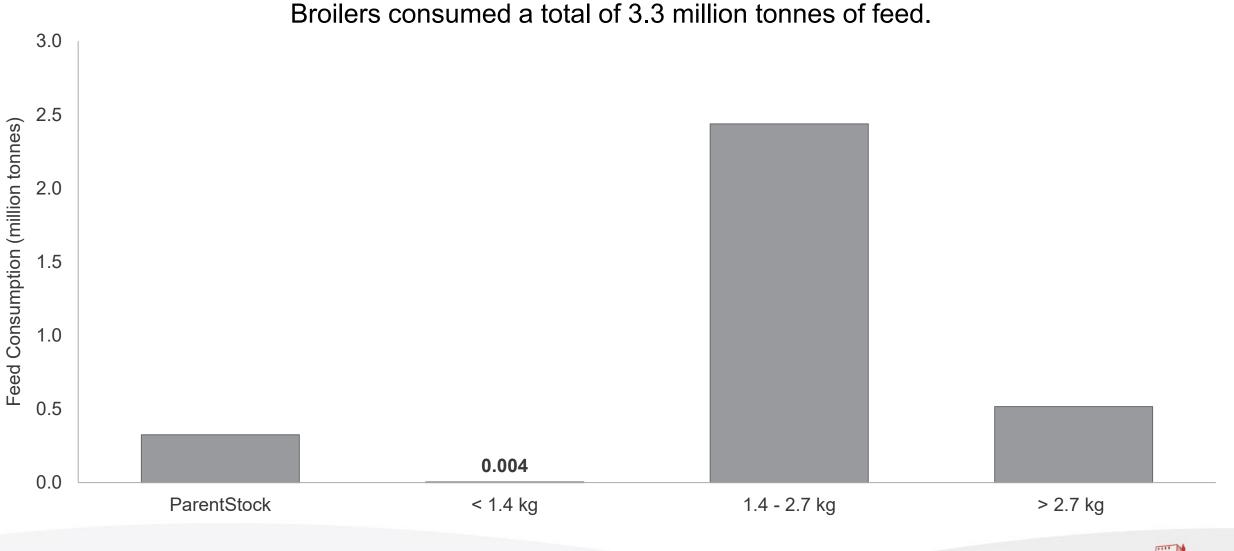
Dairy cattle feed consumption data as well as intake estimates used for consumption calculations can be found in <u>Tables A6 and A7</u>.

Dairy cattle feed consumption by province and stage of production



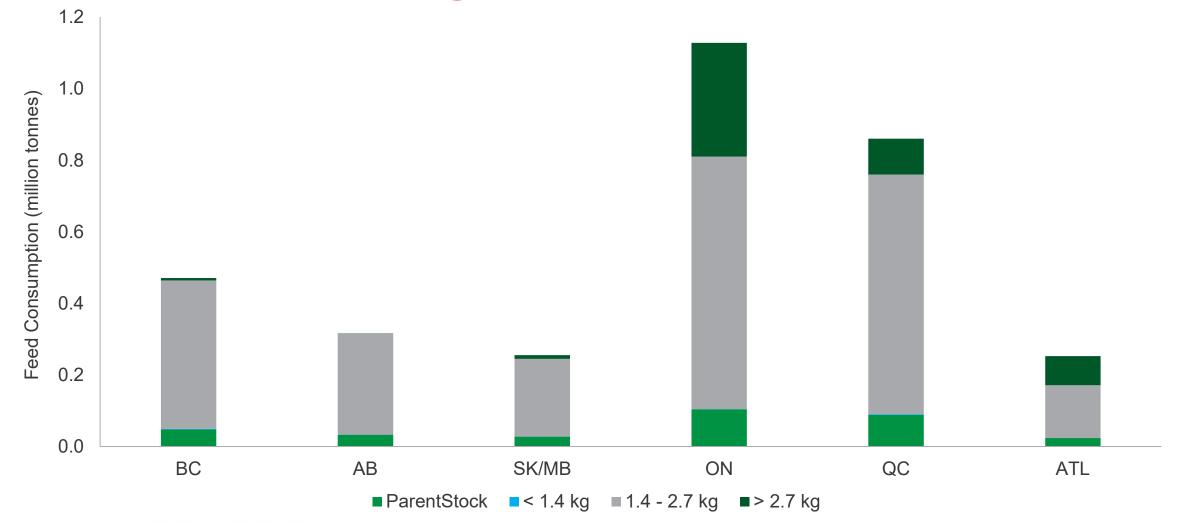
Dairy cattle feed consumption data as well as intake estimates used for consumption calculations can be found in Tables A6 and A7.

Broiler feed consumption by stage of production



Broiler feed consumption data and intake estimates used for feed consumption calculations can be found in Tables A8 and A9.

Broiler feed consumption by province and stage of production





Broiler feed consumption data and intake estimates used for feed consumption calculations can be found in Tables A8 and A9.

Layer feed consumption by province

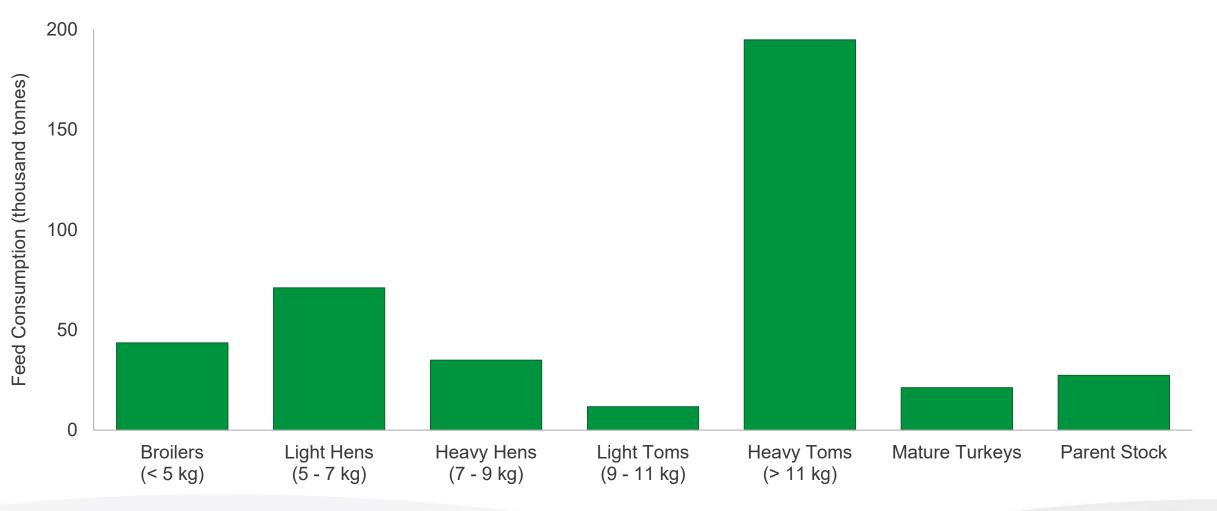
Layers consumed a total of 1.4 million tonnes of feed. 0.6 0.5 Feed Consumption (million tonnes) 0.4 0.3 0.2 0.1 0 BC SK QC AB MB ON ATL

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Layer feed consumption data and intake estimates used for feed consumption calculations can be found in Table A10.

Turkey feed consumption by stage of production

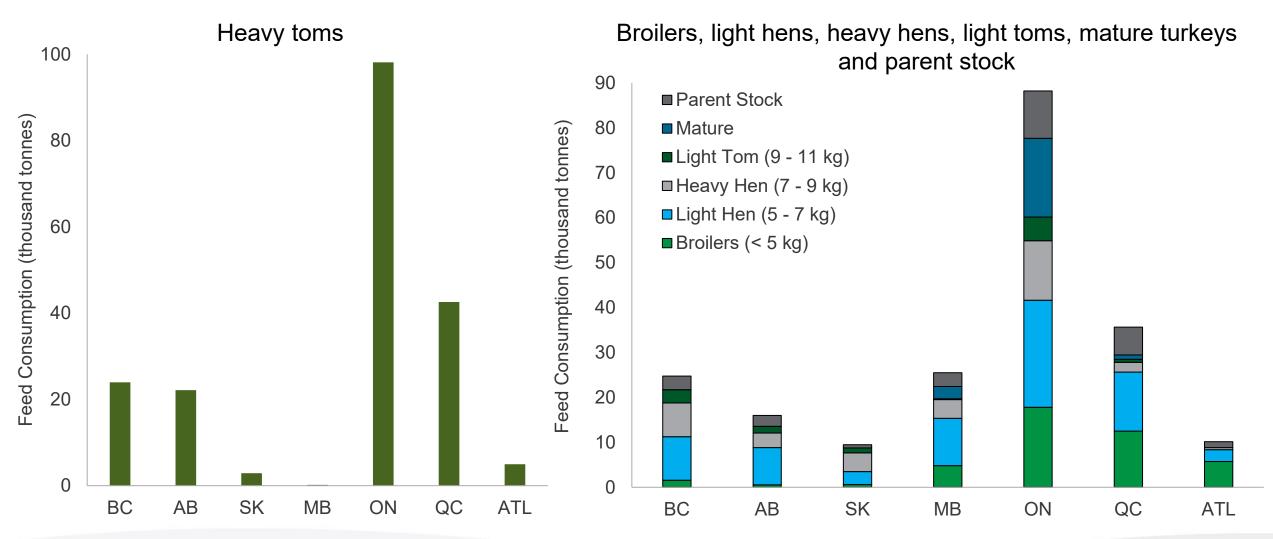
Turkeys consumed a total of 405 thousand tonnes of feed.

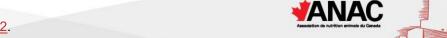




Turkey feed consumption data and intake estimates used for feed consumption calculations can be found in Tables A11 and A12.

Turkey feed consumption by province and stage of production



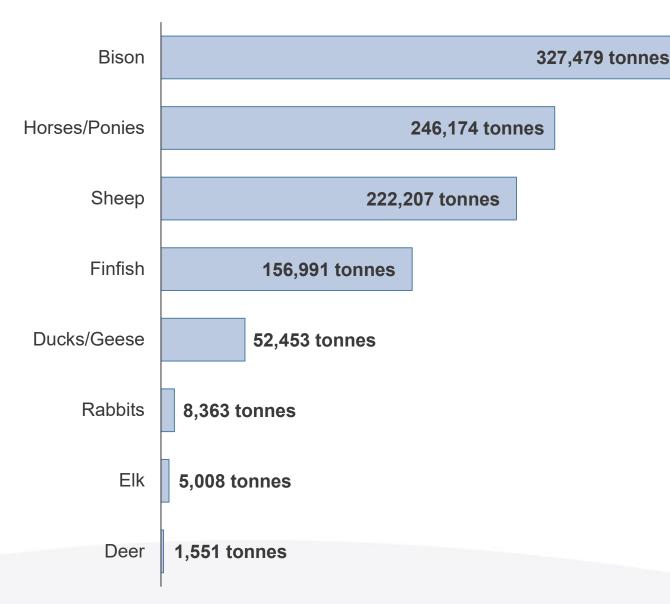


Turkey feed consumption data and intake estimates used for feed consumption calculations can be found in Tables A11 and A12.

Minor species



Overview of minor species



Minor species consume approximately 1 million tonnes of livestock feed, representing 3.5% of total feed consumption in Canada.

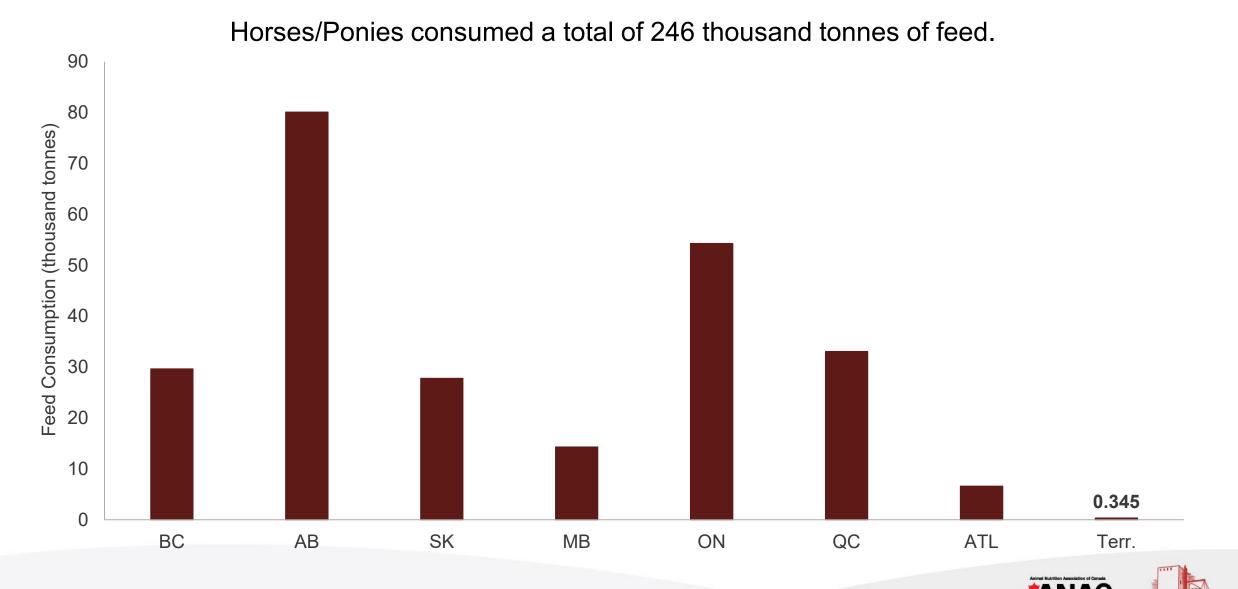
- Bison 1.13%
- Horses/Ponies 0.85%
- Sheep 0.77%
- Finfish 0.54%
- Ducks/Geese* 0.18%
- Rabbits, Elk, Deer 0.05%

Goats are a minor species but have not been included in this report due to insufficient data to estimate their feed consumption.



*Data for ducks/geese were only available at the national level; no further graphs will be provided.

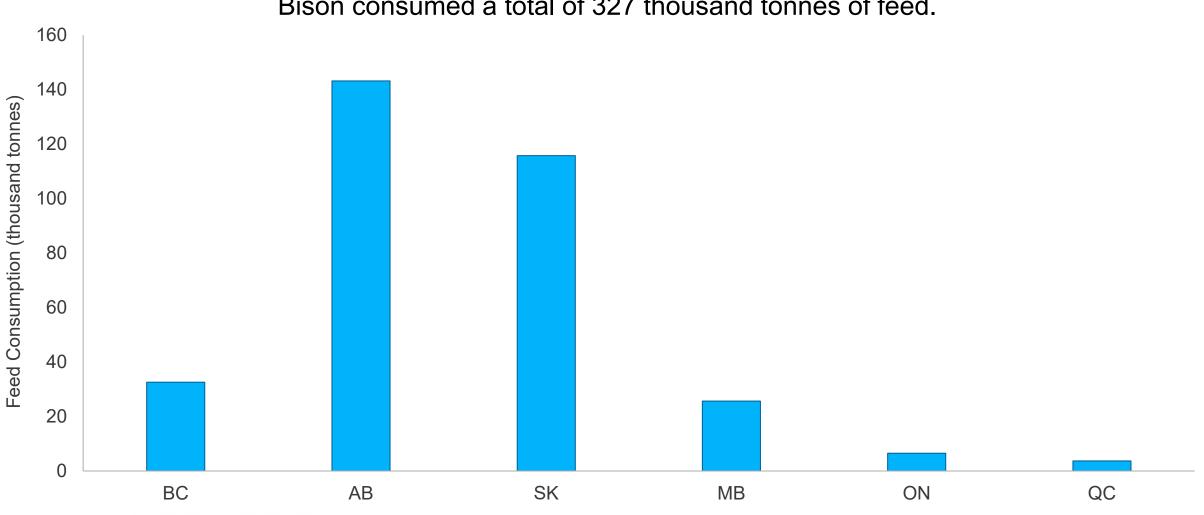
Horse/Pony feed consumption by province



Presented data reflects population data from 2010.

Horses/ponies feed consumption data as well as intake estimates used for consumption calculations can be found in Table A13.

Bison feed consumption by province

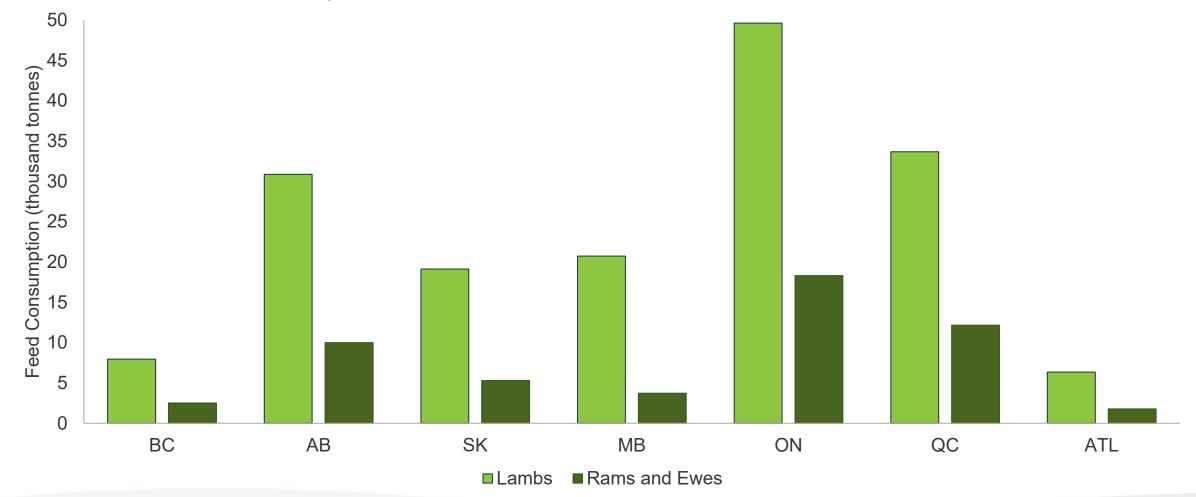


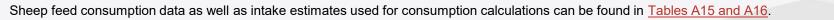
Bison consumed a total of 327 thousand tonnes of feed.

Bison feed consumption data as well as intake estimates used for consumption calculations can be found in Table A14.

Sheep feed consumption by province and stage of production

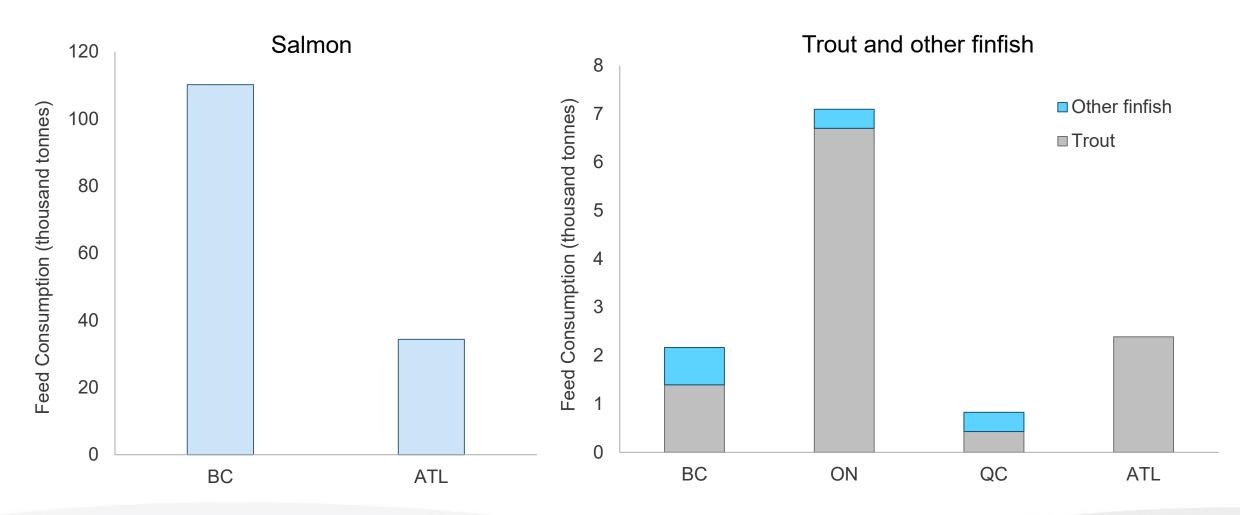
Sheep consumed a total of 222 thousand tonnes of feed.





Finfish feed consumption by province

Finfish consumed 157 thousand tonnes of feed.



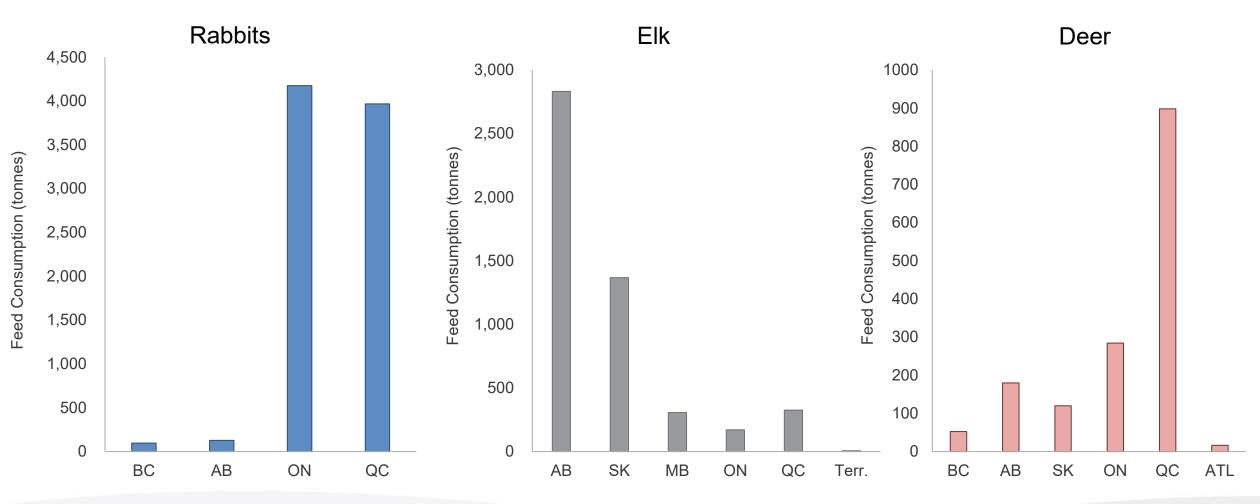


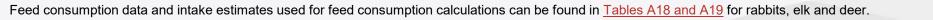
Presented data reflects population numbers from 2020.

Finfish feed consumption data and intake estimates used for feed consumption calculations can be found in Table A17.

Rabbits, elk and deer feed consumption

Rabbits consumed 8,363 tonnes of feed while elk consumed 5,008 tonnes and deer 1,551 tonnes.





Appendix A: Feed consumption data tables



Table A1. Total feed consumption (tonnes) and number of commercial feed mills across Canada

Province	Total Feed Consumption 2020	Total Feed Consumption 2021	Number of Commercial Feed Mills ¹
BC	1,754,315	1,787,516	27
AB	5,951,823	5,807,759	68
SK	2,932,542	2,975,511	35
MB	3,168,660	3,194,067	34
ON	6,961,596	6,776,408	153
QC	6,445,774	6,471,840	123
ATL	842,764	850,980	31
Terr	382	351	0
Canadian Total	28,778,408 ²	28,949,896 ³	471

¹Commercial feed mills are defined by the CFIA as businesses that manufacture mixed feeds for sale and distribution in the Canadian marketplace or for export (CFIA, 2020). ²Canadian total feed consumption includes listed provincial values plus national feed consumption values for swine exports (671,595 tonnes) and ducks/geese (48,958 tonnes). ³Canadian total feed consumption includes listed provincial values plus national feed consumption values for swine exports (1,033,011 tonnes) and ducks/geese (52,453 tonnes).



Table A2. Swine feed consumption (tonnes)

70,273
040.047
913,847
679,888
1,983,635
2,135,603
2,816,307
38,975
1,033,011

Canadian total9,671,539

Table A3. Estimated intake of swine by stage of production

Stage of production	Estimated intake (kg/hog)
Domestic hogs	396
Breeding and market hogs exports	396
Feeder exports	75

Population source: Agriculture and Agri-Food Canada Weekly Report of Origin of Hogs Slaughtered in Canadian Plants by Province and Annual Livestock Exported to the United States - through ports of entry



Table A4. Beef cattle feed consumption (tonnes)

Province	Cows	Steers (≥ 1 year)	Heifers for slaughter (≥ 1 year)	Calves (< 1 year)	Heifers for replacement (≥ 1 year)	Bulls (≥ 1 year)	Provincial Total
BC	186,239	41,476	32,049	69,557	25,822	4,741	359,884
AB	1,251,431	996,374	578,647	642,144	155,993	33,597	3,658,186
SK	972,335	199,157	98,986	349,642	117,357	22,547	1,760,024
MB	328,400	88,751	46,559	143,688	42,661	8,138	658,196
ON	206,918	351,774	160,245	107,500	26,047	5,263	857,748
QC	124,555	94,403	44,288	75,071	11,204	2,762	352,284
ATL	31,830	20,114	13,816	14,622	3,767	896	85,045
Canadian Total	3,101,708	1,792,050	974,590	1,402,223	382,851	77,944	7,731,366

Table A5. Estimated daily intake of beef cattle by stage of production

Stage of production	Estimated average BW (kg)	Estimated DMI ¹ (kg/hd/d)	Forage intake (% of diet)	Estimated feed intake on AF basis (kg/hd/d) ²
Cows	650	14.50	85.4	2.41
Steers (≥ 1 year)	414	10.35	65.8	4.02
Heifers for slaughter (≥ 1 year)	396	9.11	66.6	3.46
Calves (< 1 year)	128	3.33	70.0	1.13
Heifers for replacement (≥ 1 year)	450	10.35	85.0	1.76
Bulls (≥ 1 year)	900	18.00	95.0	1.02

¹DMI = dry matter intake

²AF intake estimates were calculated based on the assumption that dry matter (DM) content of feed was 88%. Population source: Statistics Canada Biannual Livestock Survey 2021



Table A6. Dairy cattle feed consumption (tonnes)

Province	Cows	Heifers for replacement (≥1 year)	Calves (< 1 year)	Steers (≥ 1 year)	Heifers for slaughter (≥ 1 year)	Bulls (≥ 1 year)	Provincial Total
BC	433,116	31,977	15,133	954	694	280	482,154
AB	410,658	30,909	15,970	9,323	3,407	467	470,733
SK	157,452	8,853	3,165	881	189	131	170,671
MB	187,807	16,141	4,472	807	252	149	209,630
ON	1,592,288	115,088	69,271	40,815	8,265	1,176	1,826,902
QC	1,791,694	109,707	71,987	3,303	1,577	429	1,978,698
ATL	293,186	19,270	4,963	2,863	505	149	320,936
Canadian Total	4,866,201	331,946	184,960	58,947	14,889	2,781	5,459,724

Table A7. Estimated daily intake of dairy cattle by stage of production

Stage of production	Estimated Average BW (kg)	Estimated DMI ¹ (kg/hd/d)	Forage Intake (% of diet)	Estimated feed intake on AF basis (kg/hd/d) ²
Cows	700	23.80	50.0	13.52
Heifers for replacement (≥ 1 year)	400	9.20	80.0	2.09
Calves (<1 year)	128	3.33	70.0	1.13
Steers (≥ 1 year)	414	10.35	65.8	4.02
Heifers for slaughter (≥ 1 year)	396	9.11	66.6	3.46
Bulls (≥1 year)	900	18.00	95.0	1.02

¹DMI = dry matter intake

²AF intake estimates were calculated based on the assumption that dry matter (DM) content of feed was 88%. Population source: Statistics Canada Biannual Livestock Survey 2021



Table A8. Br	oiler feed	consumption ((tonnes))
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Province	Parent Stock	Broilers < 1.4 kg	Broilers 1.4 – 2.7 kg	Broilers > 2.7 kg	Provincial Total
BC	47,668	1,686	414,691	6,768	470,813
AB	33,208	102	282,727	37	316,074
SK/MB	27,743	42	217,579	10,293	255,657
ON	104,326	436	705,348	317,992	1,128,102
QC	88,265	2,120	669,695	100,219	860,299
ATL	23,722	0	147,452	81,745	252,919
Canadian Total	324,933	4,386	2,437,493	517,053	3,283,863

Table A9. Estimated intake of commercial and parent stock of broilers

	Stage of production	Estimated Intake	Intake Units
Parent Stock	Broiler stock cockerels	0.032	kg/ chick
	Broiler stock pullets	0.370	kg/ chick
	Broiler chicks placed	0.402	kg/ chick
Commercial Stock	< 1.4 kg	1.389	kg/kg live weight (assume 70% dress)
	1.4 – 2.7 kg	1.647	kg/kg live weight (assume 70% dress)
	> 2.7 kg	1.847	kg/kg live weight (assume 70% dress)



Population Source: Agriculture and Agri-Food Canada Poultry Production Report 2021

Table A10. Layer feed consumption (tonnes)

Province	Feed consumption
BC	170,440
AB	143,440
SK	67,920
МВ	111,680
ON	501,240
QC	297,400
ATL	86,520
Canadian Total	1,378,640

Estimated intake used for feed consumption calculation was 40 kg/hen/year.



Population Source: Agriculture and Agri-Food Canada Poultry Production Report 2021

Table A11. Turkey feed consumption (tonnes)

Province	Broilers (< 5 kg)	Light Hens (5–7 kg)	Heavy Hens (7–9 kg)	Light Toms (9 – 11 kg)	Heavy Toms (> 11 kg)	Mature Turkeys	Parent Stock	Provincial Total
BC	1,567	9,681	7,499	2,985	23,966	4	3,022	48,723
AB	539	8,301	3,231	1,501	22,139	0	2,408	38,119
SK	587	2,916	4,143	1,109	2,886	0	727	12,368
MB	4,791	10,549	4,177	172	161	2,732	3,077	25,659
ON	17,803	23,840	13,224	5,278	98,136	17,506	10,569	186,357
QC	12,513	13,131	2,172	655	42,585	961	6,214	78,230
ATL	5,735	2,622	473	0	4,936	0	1,314	15,079
Canadian Total	43,534	71,040	34,919	11,701	194,808	21,203	27,331	404,536

Table A12. Estimated intake of commercial and parent stock of turkeys

	Stage of production	Estimated Intake	Intake Units
Commercial Stock	Broilers < 5 kg	1.52	kg/ kg live weight
	Light Hens (5 – 7 kg)	1.93	kg/ kg live weight
	Heavy Hens (7 – 9 kg)	2.13	kg/ kg live weight
	Light Toms (9 – 11 kg)	1.83	kg/ kg live weight
	Heavy Toms (> 11 kg)	2.23	kg/ kg live weight
	Mature Turkeys	2.99	kg/ kg live weight
Parent Stock	Poults	1.30	kg/poult





Table A13. Horse/Pony feed consumption (tonnes)

Province	Feed consumption
BC	29,638
AB	80,099
SK	27,798
МВ	14,308
ON	54,294
QC	33,087
ATL	6,605
Terr.	345
Canadian Total	246,174

Estimated intake used for feed consumption calculation was 0.7 kg/hd/day.



Population source: Equestrian Canada 2010 Canadian Equine Industry Profile Study

Table A14. Bison feed consumption (tonnes)

Province	Feed consumption
BC	32,605
AB	143,237
SK	115,763
MB	25,678
ON	6,513
QC	3,684
ATL	0
Canadian Total	327,479

Estimated intake used for feed consumption calculation was 6 kg/hd/day.



Population source: Statistics Canada 2021 Census of Agriculture

Table A15. Sheep feed	d consumption (tonnes)
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Province	Lambs (< 1 year)	Rams and Ewes (≥ 1 year)	Provincial Total
BC	7,970	2,530	10,500
AB	30,878	10,006	40,885
SK	19,132	5,304	24,436
MB	20,738	3,733	24,471
ON	49,614	18,312	67,926
QC	33,674	12,163	45,837
ATL	6,363	1,789	8,152
Canadian Total	168,370	53,837	222,207

Table A16. Estimated daily intake of sheep by stage of production

Stage of production	Estimated DMI ¹ (kg/hd/d)	Forage Intake (% of diet)	Estimated feed intake on AF basis (kg/hd/d)²
Lambs (< 1 year)	1.36	10	1.39
Rams and Ewes (≥ 1 year)	2.50	90	0.28

¹DMI = dry matter intake

²AF intake estimates were calculated based on the assumption that dry matter (DM) content of feed was 88%. Population source: Statistics Canada Biannual Livestock Survey 2021



Table A17. Finfish feed consumption (tonnes)

Province	Salmon	Trout	Other Finfish	Provincial Total
BC	110,170	1,397	770	112,337
ON	0	6,700	396	7,096
QC	0	431	396	827
ATL	34,343	2,389	0	36,732
Canadian Total	144,512	10,916	1,562	156,991

For all finfish, feed conversion rate was 1.2 kg/kg live wt.



Presented data reflects population numbers from 2020. Population source: Statistics Canada Annual Aquaculture Production and Value Survey 2021

Table A18. Feed consumption (tonnes) of rabbits, elk and deer

Province	Rabbit	Elk	Deer
BC	97	0	52
AB	128	2,831	180
SK	0	1,367	120
MB	0	307	0
ON	4,173	171	284
QC	3,965	325	898
ATL	0	0	16
Terr.	0	6	0
Canadian Total	8,363	5,008	1,551

Table A19. Estimated daily feed intake of rabbits, elk and deer

Species	Estimated Intake (kg/hd/d)
Rabbits	0.15
Elk	0.68
Deer	0.45



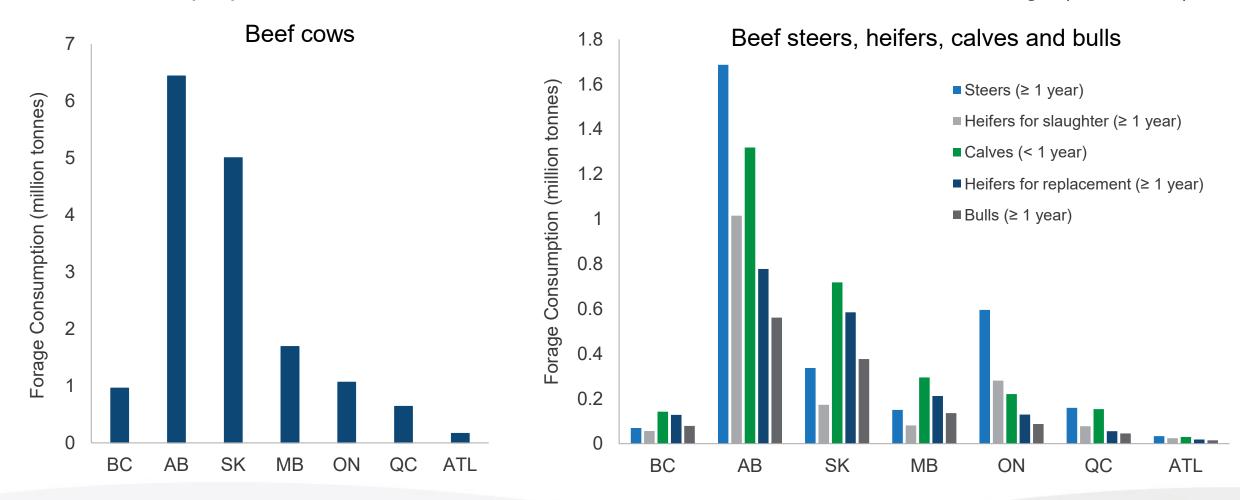
Population source: Statistics Canada 2021 Census of Agriculture

Appendix B: Ruminant forage consumption data



Beef cattle forage consumption by province and stage of production

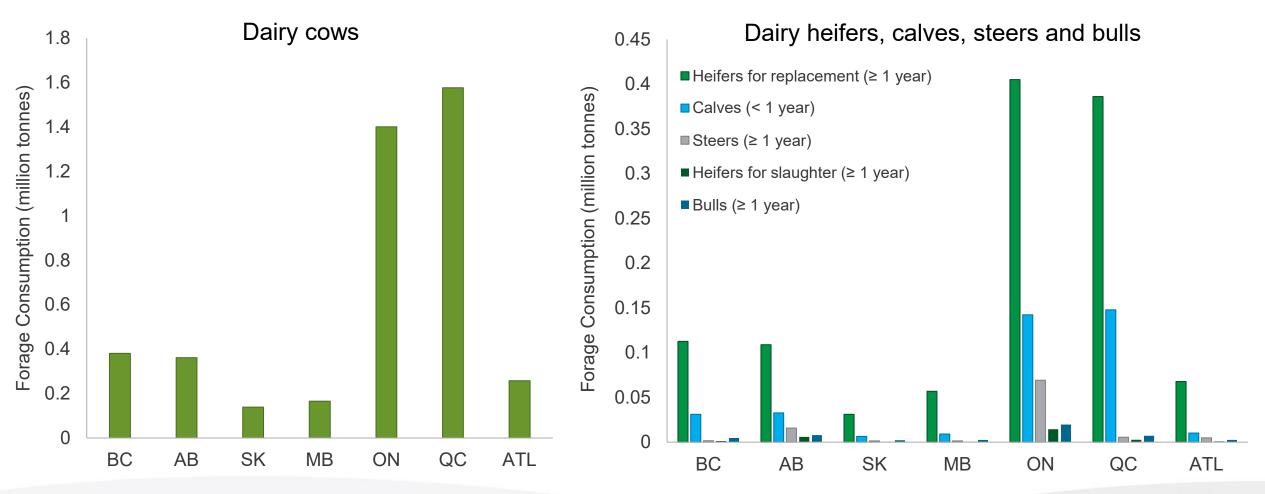
In addition to prepared feed, beef cattle consumed a total of 27 million tonnes of forage (DM basis).





Dairy cattle forage consumption by province and stage of production

In addition to prepared feed, dairy cattle consumed a total of 6 million tonnes of forage (DM basis).





Sheep forage consumption by province and stage of production

In addition to prepared feed, sheep consumed a total of 443 thousand tonnes of forage (DM basis).

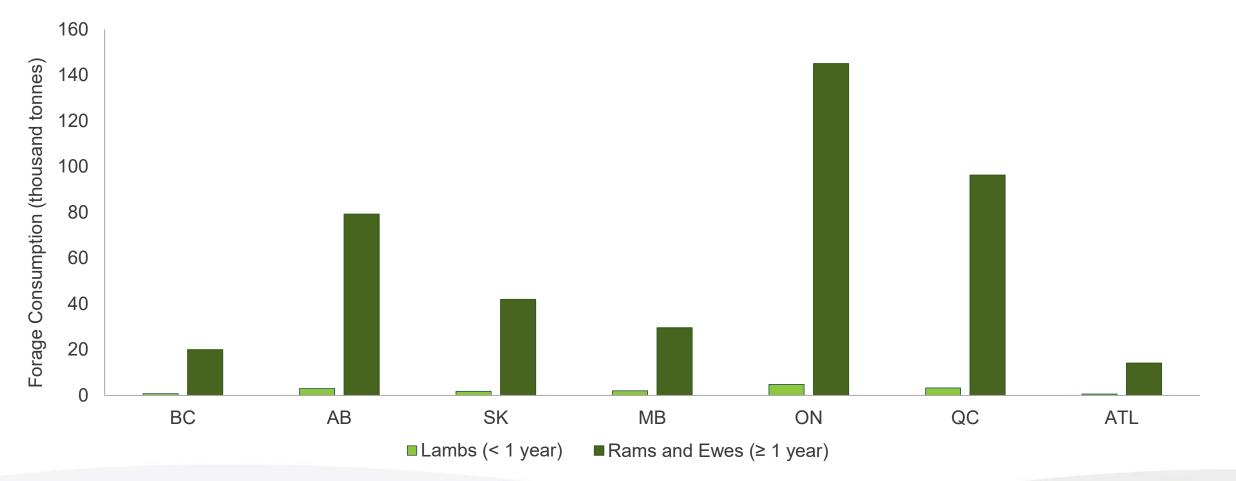




Table B1. Beef cattle forage consumption (tonnes of DM)

Province	Cows	Steers (≥ 1 year)	Heifers for slaughter (≥ 1 year)	Calves (< 1 year)	Heifers for replacement (≥ 1 year)	Bulls (≥ 1 year)	Provincial Total
BC	958,649	70,223	56,237	142,823	128,765	79,267	1,435,963
AB	6,441,612	1,686,961	1,015,370	1,318,535	777,886	561,735	11,802,098
SK	5,004,995	337,193	173,693	717,931	585,221	376,987	7,196,020
MB	1,690,403	150,264	81,699	295,039	212,735	136,065	2,566,205
ON	1,065,090	595,588	281,186	220,734	129,888	88,005	2,380,492
QC	641,133	159,834	77,714	154,145	55,873	46,187	1,134,886
ATL	163,843	34,055	24,244	30,024	18,785	14,980	285,930
Canadian Total	15,965,724	3,034,118	1,710,143	2,879,232	1,909,152	1,303,225	26,801,594



Population source: Statistics Canada Biannual Livestock Survey 2021

Table B2. Dairy cattle forage consumption (tonnes of DM)

Province	Cows	Heifers for replacement (≥ 1 year)	Calves (< 1 year)	Steers (≥ 1 year)	Heifers for slaughter (≥ 1 year)	Bulls (≥ 1 year)	Provincial Total
BC	381,142	112,560	31,072	1,616	1,218	4,681	532,289
AB	361,379	108,799	32,791	15,785	5,978	7,802	532,534
SK	138,558	31,162	6,500	1,491	332	2,185	180,228
МВ	165,270	56,817	9,183	1,367	443	2,497	235,577
ON	1,401,213	405,109	142,236	69,104	14,502	19,661	2,051,825
QC	1,576,691	386,170	147,813	5,593	2,768	7,178	2,126,212
ATL	258,004	67,832	10,190	4,847	886	2,497	344,255
Canadian Total	4,282,257	1,168,450	379,785	99,803	26,126	46,499	6,002,920



Population source: Statistics Canada Biannual Livestock Survey 2021

Table B3. Sheep forage consumption (tonnes of DM)

Province	Lambs (< 1 year)	Rams and Ewes (≥ 1 year)	Provincial Total
BC	779	20,039	20,818
AB	3,019	79,251	82,270
SK	1,871	42,007	43,878
МВ	2,028	29,565	31,593
ON	4,851	145,033	149,884
QC	3,293	96,333	99,625
ATL	622.2	14,167	14,789
Canadian Total	16,463	426,393	442,856



Population source: Statistics Canada Biannual Livestock Survey 2021