
Alberta 2022 beekeepers' survey results



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Purpose of survey

To address some of the data gaps and information needs of the beekeeping industry in Alberta, each year the Statistics and Data Development (SADD) Section of Alberta Agriculture and Irrigation (AGI) conducts a survey of beekeepers in the province. The survey results, along with information from other sources are used in the development of provincial and regional estimates for selected honey variables such as colony numbers, yield, production and prices. These estimates, along with the survey results are shared with survey participants, industry, Statistics Canada and other stakeholders.

This report focuses on the results of the Alberta 2022 Beekeepers' Survey and the related estimates developed.

Methodology

The Alberta Beekeepers' Survey, which is provincial in scope, collects data from producers through a non-probability survey. In December 2022, survey questionnaires were mailed out to 1,415 beekeepers across the province. The questionnaire specifically asked survey participants to provide information on colony numbers, production, yield, bee purchases, prices (expected/actual), carry-over stocks and selected management practices, for their related beekeeping operation in 2022.

Participants were made aware that participation in the survey was voluntary. They were also assured that all individual responses would be kept confidential under both the *Statistics Act of Canada*, and the *Alberta Freedom of Information and Protection of Privacy (FOIP) Act*, by which the SADD Section is governed and operates. In return for their participation, respondents who were interested in the survey results would receive the resulting publication highlighting the results of the 2022 Beekeepers' survey. As of August 31, 2023, a total of 507 questionnaires were received, of which 493 were usable and formed the basis in developing the Alberta 2022 honey production estimates.

Survey responses received were reviewed for data completeness, validated and entered into an electronic database. The data was then subjected to computerized analyses, the results of which were rolled up into group summaries to preserve the confidentiality of data provided by individual respondents. In turn, the group summaries, in conjunction with input from industry, the provincial apiculturist and other AGI staff, were used to develop provincial and regional estimates on the number of producers, colonies, yield and production.

It should be noted that the derived estimates could be subject to error. Some of the possible causes of error include data coding, data entry, editing and tabulation. Nonetheless, we believe that the statistics published in this report are reliable estimates for Alberta.

Highlights of the Alberta 2021/2022 Paired Beekeeping Surveys

The following survey highlights are based on the responses of 233 producers who participated in both the 2021 and 2022 Alberta Beekeepers' Surveys (See Table 1).

Paired sample highlights:

- ▶ In 2022, beekeepers purchased more packages/nucs than in 2021. Purchases increased 60.8 per cent, with the average beekeeper buying 56 packages/nucs, compared to 35 in 2021. In 2021, Alberta beekeepers encountered difficulties in obtaining imported bees, resulting in a significant shift from the usual practice. The majority of beekeepers had to rely on purchasing packages/nucs from local sources, with only a small portion being imported. However, by 2022, the situation had notably reversed, with the majority of beekeepers opting for imported packages/nucs, accounting for 78.9 percent of their acquisitions, with the remainder purchased locally (21.1 per cent), making it more in line with previous norms.
- ▶ The distribution of imported packages was as follows: New Zealand with 90.7 per cent, Australia with 9 per cent, and other sources with 0.3 per cent. In 2022, the average price of packages from New Zealand was \$222.06, \$320.00 for Australia and \$260.00 from other sources.
- ▶ In 2022, beekeepers sourced 40.4 per cent of their nuc purchases from Alberta, 59 per cent from British Columbia, and the remaining 0.6 per cent from other Canadian provinces. Compared to 2021, the number of nucs purchased from British Columbia increased while purchases in Alberta decreased. The average nuc price in Alberta was \$255.10, while in British Columbia it was \$301.66 and from Saskatchewan it was \$291.43.
- ▶ Individual queen purchases decreased 7 per cent in 2022, with producers purchasing 217.61 queens on average, compared to 234.1 in 2021. Most of the queen purchases were from outside of the province (97.6 per cent). Hawaii continues to be the primary source of queen imports, accounting for 52.2 per cent of the total, while other US States (mostly California) were second with 34.6 per cent and Australia was third with 11.2 per cent. The remainder came from other sources such as British Columbia, Saskatchewan, Quebec and New Zealand.
- ▶ Average queen prices in 2022 ranged from \$40 to \$49.27, depending upon the source of purchase. The price per queen was lowest for Saskatchewan at \$40, followed by other United States at \$40.65, and then Hawaii at \$42.42. The average prices per queen were highest for British Columbia at \$49.27.
- ▶ In 2022, the percentage deathloss for queens purchased in packages and nucs increased to 9.1 per cent, up from 8.7 per cent in 2021. For individual queens, the comparable percentage fell to 4.2 per cent, down from 6.8 per cent in 2021.
- ▶ On June 30, 2022, there was more honey in inventory than the previous year. Producers on average had 3,052 pounds of honey in stock, up almost fivefold from 2021.
- ▶ Alberta continues to be the preferred location for the over-wintering of bees. Previously some over-wintering of bees was carried out in British Columbia. However, in 2022 virtually all of over-wintering activity (indoor/outdoor) occurred in Alberta (99.1 per cent).
- ▶ "Outdoor" over-wintering remains the favored practice, accounting for 70.6 per cent of the total colonies over-wintered in 2022.
- ▶ In 2022, the average beekeeper reported 11.5 years of beekeeping experience. Years of experience in over-wintering "outdoors" was lower at 10.3 years, while for "indoors" it was 16.4 years.
- ▶ Producer prices received in 2021 were higher for both retail and wholesale sales. The average price realized for wholesale honey was \$268.64 per cwt, \$3.35 lower than the expected price of \$271.99 per cwt. Similarly, the average realized price for retail honey was \$468.80 per cwt, \$2.55 lower than the expected price of \$471.35 per cwt. The 2022 expected prices for honey are \$311.76 per cwt wholesale, and \$495.02 per cwt retail.

Table 1 - 2021 AND 2022 BEEKEEPING SURVEY RESULTS - ALBERTA*
(GROUP AVERAGES)**

DESCRIPTION	2021	2022	22/'21 (%)
PACKAGES/NUCS:			
Average number of packages/nucs purchased in spring per beekeeper:	34.74	55.87	60.8
Package queen/nuc deathloss (%):	8.66	9.07	4.7
Percent of packages/nucs purchased:			
- Locally (Alberta) (%)	95.33	21.06	-77.9
- Imported (%)	4.67	78.94	1,589.8
Distribution of imported packages purchased:			
- New Zealand (%)	46.34	90.66	95.6
- Australia (%)	-	9.03	n/a
- Other (%)	53.66	0.31	-99.4
Distribution of nucs purchased:			
- Alberta (%)	96.51	40.35	-58.2
- British Columbia (%)	2.79	59.10	2,021.8
- Saskatchewan (%)	0.64	0.21	-67.3
- Other (%)	0.06	0.34	455.4
Average price per package (2 lb equivalent) purchased from:			
- New Zealand (\$)	250.00	222.06	-11.2
- Australia (\$)	-	320.00	n/a
- Other (\$)	238.53	260.00	9.0
Average price per nuc purchased from:			
- Alberta (\$)	274.51	255.10	-7.1
- British Columbia (\$)	295.16	301.66	2.2
- Saskatchewan (\$)	264.29	291.43	10.3
- Other (\$)	275.00	205.56	-25.3
INDIVIDUAL QUEENS:			
Average number of queens purchased in spring per beekeeper:	234.08	217.61	-7.0
Purchased individual queen deathloss (%):	6.80	4.20	-38.2
Percent of individual queens purchased:			
- Locally (Alberta) (%)	1.35	2.41	78.5
- Imported (%)	98.65	97.59	-1.1
Distribution of imported queens:			
- British Columbia (%)	0.13	0.06	-53.8
- Saskatchewan (%)	1.03	1.47	42.7
- Ontario (%)	0.05	-	n/a
- Quebec (%)	-	0.14	n/a
- New Zealand (%)	0.12	0.20	66.7
- Australia (%)	-	11.21	n/a
- Hawaii (%)	63.42	52.23	-17.6
- Other United States (%)	32.98	34.63	5.0
- Chile (%)	0.17	-	n/a
- Other (%)	2.09	0.05	-97.6
Average price per individual queen purchased from:			
- British Columbia (\$)	35.27	49.27	39.7
- Saskatchewan (\$)	45.32	40.00	-11.7
- Ontario (\$)	45.00	-	n/a
- Quebec (\$)	-	45.50	n/a
- New Zealand (\$)	43.88	44.79	2.1
- Australia (\$)	-	45.00	n/a
- Hawaii (\$)	40.35	42.42	5.1
- Other United States (\$)	39.49	40.65	2.9
- Chile (\$)	45.00	44.79	-0.5
- Other (\$)	45.07	45.00	-0.2

* Based on paired sample ** Weighted n/a Not applicable

Note: Some totals may not add up due to rounding.

Source: Alberta Agriculture and Irrigation, Intergovernmental and Trade Relations Branch, Statistics and Data Development Section

**Table 1 (Cont'd) - 2021 AND 2022 BEEKEEPING SURVEY RESULTS - ALBERTA*
(GROUP AVERAGES)****

DESCRIPTION	2021	2022	22/21 (%)
OTHER SELECTED STATISTICS:			
Honey in inventory as of June 30th, per beekeeper (lbs.):	546	3,052	459.2
Experience in beekeeping (years):	10.61	11.52	8.6
Estimated number of colonies per active beekeeper:	139.15	205.13	47.4
Over-wintering intentions for active colonies:			
- indoors in Alberta (%)	29.52	28.50	-3.5
- outdoors in Alberta (%)	70.48	70.62	0.2
- in British Columbia (%)	-	0.88	n/a
Experience in over-wintering (years):			
- indoors	13.42	16.44	22.5
- outdoors	9.52	10.32	8.4
Price received for 2021 honey crop:			
- Retail (\$/cwt)	471.35***	468.80****	-----
- Wholesale (\$/cwt)	271.99***	268.64****	-----
Price expected for 2022 honey crop:			
- Retail (\$/cwt)	n/a	495.02	-----
- Wholesale (\$/cwt)	n/a	311.76	-----

* Based on paired sample ** Weighted *** Expected price in 2021 **** Actual price received in 2021 n/a Not applicable

Note: Some totals may not add up due to rounding.

Source: Alberta Agriculture and Irrigation, Intergovernmental and Trade Relations Branch, Statistics and Data Development Section

Honey production in Alberta

In 2022, Alberta beekeepers experienced higher winter losses of hives and some barely produced any honey in 2022, despite beekeepers' efforts to build colonies. Factors that contributed to bee a population decrease were a mite infestation and poor queens and weak colonies in the fall of 2021, which may have been caused by factors ranging from exposure to pesticides, weather or poor nutrition. As such, colony counts, honey yields, and production were lower in 2022.

In 2022, there were 1,817 beekeepers in Alberta, up 3.6 per cent from 2021 (see Tables 2, 3 and 4), the highest number since 1976. The growth in the number of beekeepers is largely due to an increase in the number of hobby beekeepers in urban areas. It is worth noting that the majority of beekeepers in the province are hobbyists, thus the number of beekeepers may fluctuate based on the type of honey season or cost of equipment. In fact, about 11 per cent of provincial beekeepers (producers with 100 or more live honey bee colonies) account for 96 per cent of the total Alberta honey producing colonies.

Colony numbers fell 7.4 per cent to 300,450 colonies, as producers experienced higher winter losses of hives due to mite infestation. Preliminary statistics indicate that while Alberta accounts for a relatively small percentage (12.3 per cent) of the nation's total beekeepers (13,850 producers), it accounted for 39.3 per cent of the honey producing colonies in Canada.

Alberta produced slightly less honey in 2022 than was previously forecasted. Final estimates show total production at 29.8 million pounds, compared to the preliminary fall 2022 forecast of 30.4 million pounds. Even so, the final 2022 production was 12.7 per cent lower than the 2021 production of 34.1 million pounds.

Preliminary estimates by Statistics Canada peg total Canadian honey production in 2022 at 74.4 million pounds, 15.6 per cent lower than the 88.1 million pounds produced in 2021. Alberta led all provinces and accounted for over 40.9 per cent of the nation's honey production in 2022.

In 2022, Alberta's honey production was down, largely due to a decline in colonies as well as yield. Half of all colonies died during the winter due to a mite infestation caused by warm weather in the fall of 2021 leading to mass colony loss. High input costs associated with replacement of bees also presented different challenges. The number of colonies was down across all regions in the province with the exception of the South, where they grew. The average honey yield per colony fell across all regions in Alberta except the North West.

Similar to colony counts and average honey yields, in 2022 honey production declined across all of the regions in Alberta except the North West region where it increased. At 9.9 million pounds, the North West region produced the highest amount of honey and accounted for 33.2 per cent of the total provincial production of 29.8 million pounds. The South region was second with 7.5 million pounds, (or 25.3 per cent), followed by the Peace region with 4.7 million pounds (or 16 per cent). The Central region had the lowest production with 2.9 million pounds (or 9.6 per cent), while the North East region was 4.3 million pounds (or 14.5 per cent). It cannot be over emphasized that honey production on a regional basis is directly tied to colony numbers and yield per colony, hence, explaining the variation among regions.

The Alberta Beekeepers' Survey also included questions about crop pollination. Based on the survey results (which did not include all beekeepers involved in pollination activities), 13,782 colonies were rented for pollination in 2022, with an average rental charge of \$238.75 per colony (Note: this rental charge is a blend of rental fees for blueberry and canola fields. Rental fees for blueberry fields are lower compared to those for canola fields). In fact, in 2022 average rental fees for blueberry fields were \$160, while canola fields fees ranged from \$245 to \$275.

Table 2 - 2022 HONEY PRODUCTION ESTIMATE - ALBERTA						
Region	Number of Registered Beekeepers	Number of Producing Colonies	Honey Yield Per Colony		Total Honey Produced	
			lbs	kg	lbs	tonnes
South	250	105,489	71	32	7,530,507	3,416
Central	696	34,114	84	38	2,850,040	1,293
North East	163	32,856	131	59	4,305,580	1,953
North West	597	79,811	124	56	9,870,353	4,477
Peace	111	48,179	99	64	4,749,366	2,154
Province	1,817	300,450	99	45	29,750,000	13,495

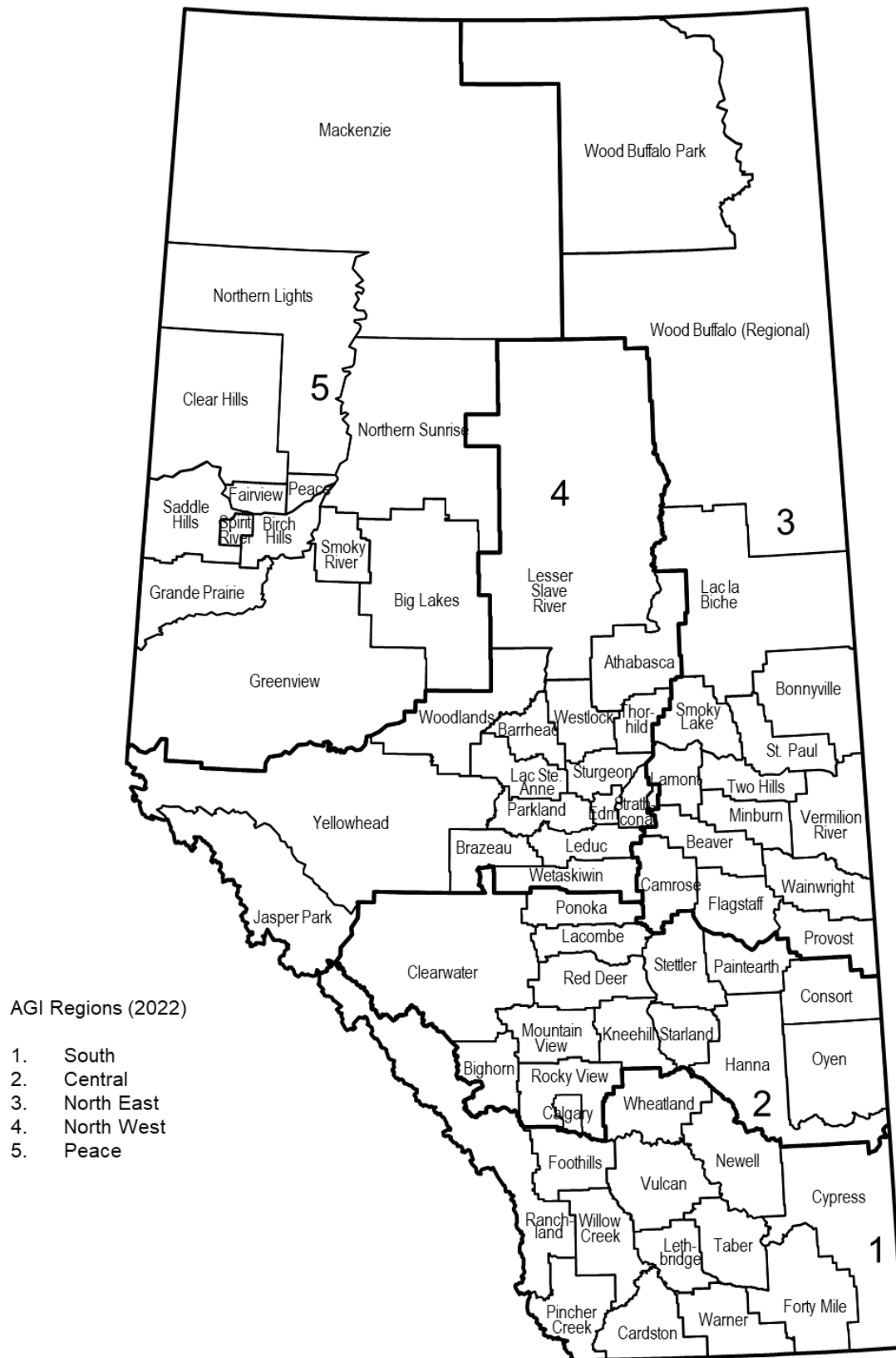
Note: Yield and honey production rounded to the nearest pound, kilogram or tonne.
Totals may not add due to rounding.

**2022 REGIONAL DISTRIBUTION OF ALBERTA'S ESTIMATED HONEY PRODUCTION
(SELECTED HONEY STATISTICS)**



Source: Alberta Agriculture and Irrigation, Intergovernmental and Trade Relations Branch,
Statistics and Data Development Section

Map of AGI regions in Alberta



AGI Regions (2022)

1. South
2. Central
3. North East
4. North West
5. Peace

Alberta municipalities classified by region

South Region

Cardston County
Cypress County
Foothills No. 31
County of Forty Mile No. 8
Lethbridge County
Newell County
Pincher Creek No. 9
Ranchland No. 66
Taber
Vulcan County
Warner County No. 5
Wheatland County
Willow Creek No. 26

Central Region

Bighorn No. 8
Calgary
Clearwater County
Kneehill County
Lacombe County
Mountain View County
Paintearth County No. 18
Ponoka County
Red Deer County
Rocky View County
Special Area No. 2
Special Area No. 3
Special Area No. 4
Starland County

North East Region

Beaver County
Bonnyville No. 87
Camrose County
Flagstaff County
Improvement District No.24
Lac La Biche County
Lamont County
Minburn County No. 27
Provost No. 52
Smoky Lake County
St. Paul County No. 19
Two Hills County No. 21
Vermilion River County
Wainwright No. 61
Wood Buffalo

North West Region

Athabasca County
Barrhead County No. 11
Brazeau County
Edmonton
Improvement District No.12
Lac Ste. Anne County
Leduc County
Lesser Slave River No. 124
Parkland County
Strathcona County
Sturgeon County
Thorhild County
Westlock County
Wetaskiwin County No. 10
Woodlands County
Yellowhead County

Peace Region

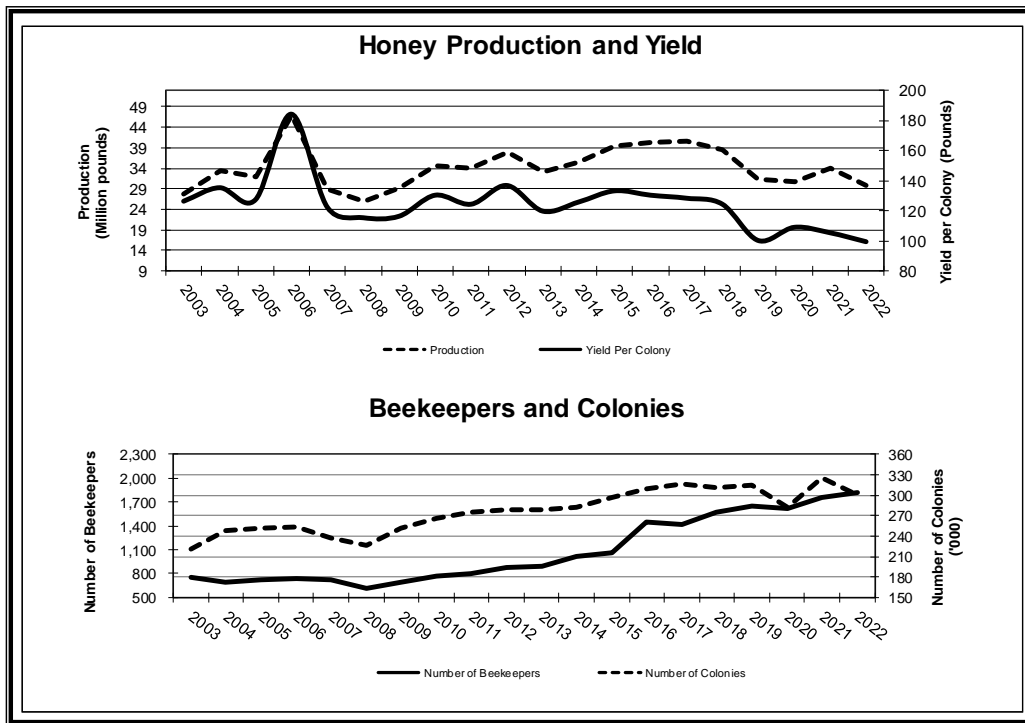
Big Lakes County
Birch Hills County
Clear Hills County
Fairview No. 136
Grande Prairie County No. 1
Greenview No. 16
Mackenzie County
Northern Lights County
Northern Sunrise County
Peace No. 135
Saddle Hills County
Smoky River No. 130
Spirit River No. 133

Note: Alberta Agriculture and Irrigation regional boundaries no longer exist; however, these have been maintained to facilitate historical comparisons.

Table 3 - ALBERTA HONEY STATISTICS, 2003-2022

Year	No. of Beekeepers	No. of Colonies	Production ('000 pounds)	Yield per Colony (pounds)	No. of Colonies Per Beekeeper
2003	754	221,000	27,846	126	293
2004	693	248,000	33,480	135	358
2005	728	251,000	31,877	127	345
2006	733	254,000	46,736	184	347
2007	726	237,000	28,914	122	326
2008	620	226,000	25,990	115	365
2009	683	251,000	29,116	116	367
2010	769	266,000	34,580	130	346
2011	798	274,600	34,050	124	344
2012	883	278,400	38,000	136	315
2013	890	278,100	33,200	119	312
2014	1,015	282,900	35,500	125	279
2015	1,064	296,880	39,461	133	279
2016	1,453	309,000	40,170	130	213
2017	1,420	317,000	40,576	128	223
2018	1,572	311,000	38,567	124	198
2019	1,653	314,800	31,418	100	190
2020	1,621	283,000	30,735	109	175
2021	1,754	324,500	34,061	105	185
2022	1,817	300,450	29,750	99	165
22'/21 % chg.	3.6	-7.4	-12.7	-5.7	-10.6

Alberta Honey Production, Yield, Beekeepers and Colonies, 2003-2022



Source: Alberta Agriculture and Irrigation, Intergovernmental and Trade Relations Branch, Statistics and Data Development Section

Table 4 - HONEY PRODUCTION BY REGION IN ALBERTA (2015-2022)

Region	2015	2016	2017	2018	2019	2020	2021	2022	22'/21 %chg.
Number of Active Beekeepers									
South	140	190	192	202	193	203	234	250	6.8
Central	363	516	519	589	639	642	714	696	-2.5
North East	119	148	136	151	146	129	137	163	19.0
North West	338	482	471	524	563	550	562	597	6.2
Peace	104	117	102	106	112	97	107	111	3.7
Province	1,064	1,453	1,420	1,572	1,653	1,621	1,754	1,817	3.6
Number of Producing Colonies									
South	84,664	85,684	84,155	75,152	86,553	89,002	100,193	105,489	5.3
Central	28,537	32,683	31,567	33,799	35,089	29,768	38,615	34,114	-11.7
North East	32,694	37,727	40,427	48,212	38,050	34,557	39,493	32,856	-16.8
North West	83,076	81,032	87,739	84,424	91,631	80,245	89,182	79,811	-10.5
Peace	67,910	71,875	73,112	69,414	63,477	49,428	57,018	48,179	-15.5
Province	296,880	309,000	317,000	311,000	314,800	283,000	324,500	300,450	-7.4
Average Yield (pounds per colony)									
South	73	40	64	64	46	54	83	71	-13.6
Central	128	146	116	116	107	111	94	84	-11.1
North East	138	157	116	116	112	91	136	131	-3.5
North West	167	208	156	156	132	153	108	124	14.1
Peace	137	140	180	180	115	147	125	99	-21.1
Province	119	125	133	128	124	100	109	99	-8.8
Honey Production ('000 pounds)									
South	3,372	4,898	5,379	3,973	4,016	4,787	8,279	7,531	-9.0
Central	4,163	3,988	3,666	3,259	3,746	3,312	3,628	2,850	-21.4
North East	5,148	6,187	4,676	5,345	4,250	3,137	5,361	4,306	-19.7
North West	17,265	13,914	13,672	13,011	12,098	12,248	9,669	9,870	2.1
Peace	9,513	11,183	13,184	12,979	7,308	7,252	7,125	4,749	-33.3
Province	39,461	40,170	40,576	38,567	31,418	30,735	34,061	29,750	-12.7

Note: Some totals may not add up due to rounding.

Source: Alberta Agriculture and Irrigation, Intergovernmental and Trade Relations Branch, Statistics and Data Development Section