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Economic Profile of the Mushroom Industry in Canada

by Simon Beaulieu-Fortin

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Introduction

Dominating the immobile portion of opisthokonts, Eumycetes grow inconspicuously on the ground in cities and forests. The common name “mushroom” is an umbrella term for thousands of varieties, each with its own unique properties (Campbell, 2007). Agri-food analysts have a strong tendency to cite edibility and marketing potential as the main qualities of this food product, giving only a few dozen species of mushrooms a place on grocery store and market shelves. But what does the mushroom industry in Canada look like and how is it evaluated? To answer this, this paper used data from the last few decades of Statistics Canada’s annual Mushroom Growers’ Survey and customs data from the Global Trade Atlas. This analysis assesses the mushroom production and marketing sector using qualitative values, production volumes, farm gate sales values, prices and export data. Using unpublished statistics,¹ the results will focus on the economic profile of two types of mushrooms that stand out because of their prevalence in the market basket and the techniques used to produce them, namely Agaricus mushrooms and other mushrooms, which will be referred to as specialty mushrooms² (shiitake, oyster, etc.).

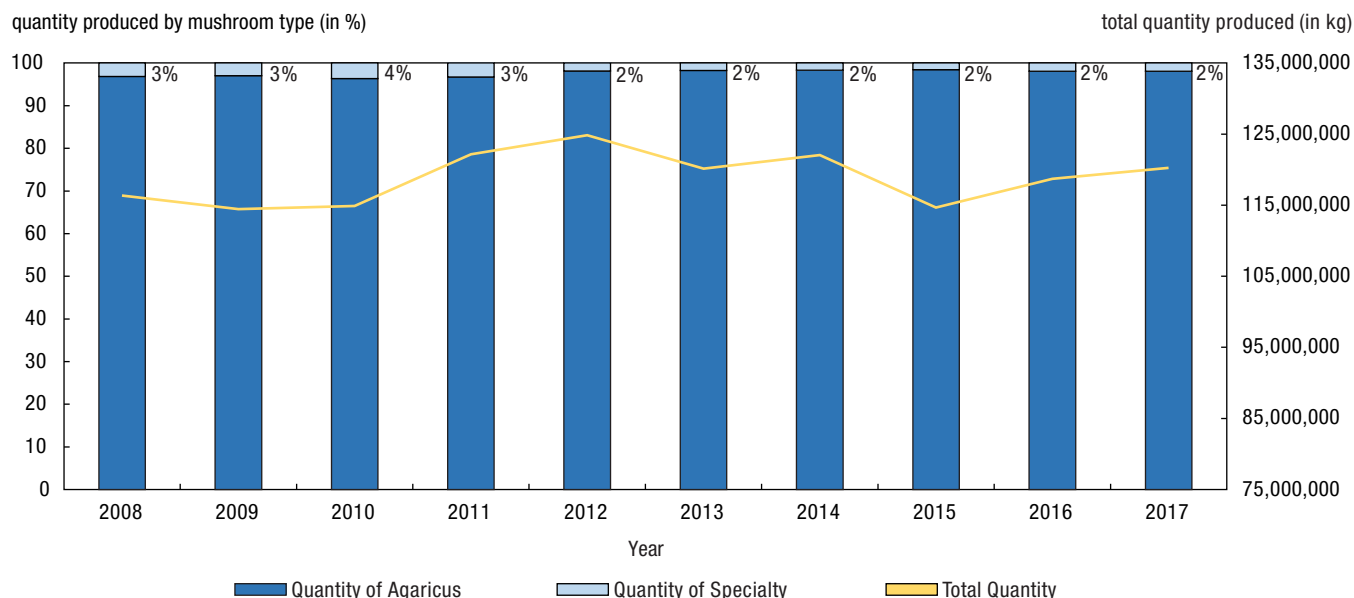
Comparing mushrooms and oranges

Total mushroom production has not deviated significantly from the average of 118.9 million kilograms over the last 10 years (Chart 1). In 2017, Canadian businesses produced 120.3 million kilograms of mushrooms. The specialty mushroom craze has certainly evolved since the new millennium, but in terms of proportion, production peaked in 2010 when specialty mushrooms accounted for 4% of total mushroom production. By comparison, this figure was 2% over the last six years.

At the same time, Agaricus growers produce the majority of mushrooms (98% in 2017). Therefore, it cannot be said that specialty mushrooms have an established place in the market basket. It is one thing to be adopted by the haute cuisine restaurant industry, but quite another to become part of the dietary habits of everyday people. Specialty mushrooms have been sold in grocery stores for several years, this has contributed to their growing popularity.

1. The analysis will refer to these as unpublished data. These data are nonetheless valid representations of the Canadian market.
2. Mushrooms gathered in the forest will not be taken into consideration.

Chart 1
Change over time in total mushroom production by Canadian growers and in percentage, by type



Sources: Statistics Canada, Mushroom Growers' Survey, unpublished data, 2017 and Mushroom Growers' Survey, Table 32-10-0356-01, 2017.

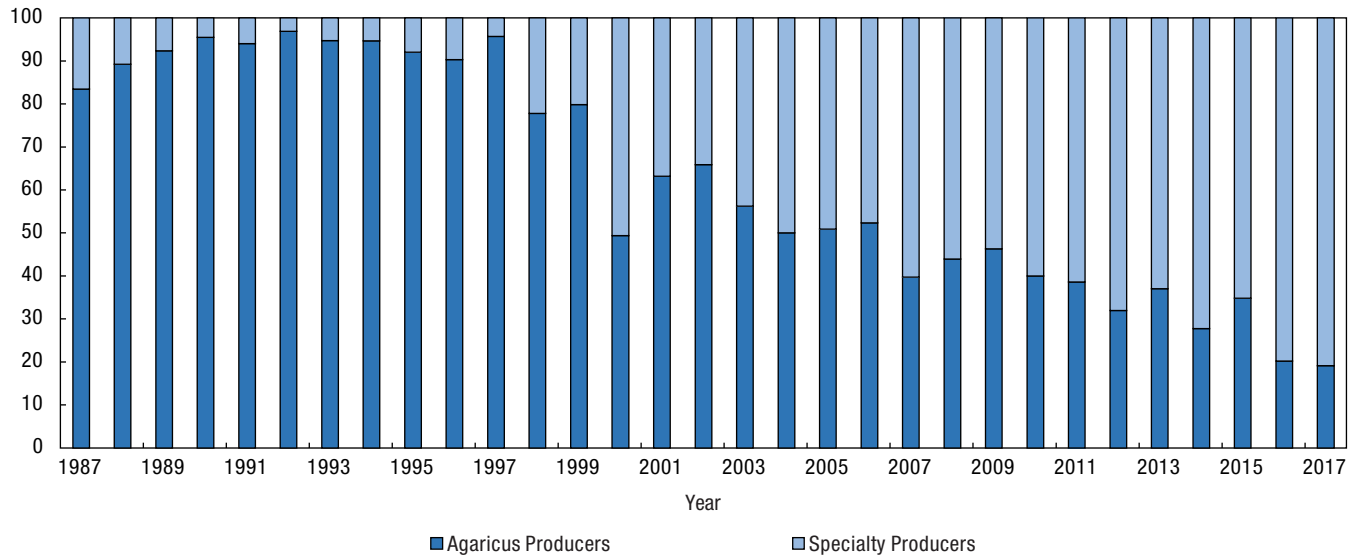
The percentage of Agaricus growers has declined over the last 10 years (Chart 2). The 2016 Census of Agriculture estimates that there are a total of 305 mushroom growers. Beginning in the early 2000s, there has been an observable upward trend in the proportion of specialty mushroom growers compared with the total number of growers. In 2017, the survey results showed that 19% of Canadian growers were Agaricus growers, while 81% were specialty mushroom growers. Twenty years earlier, 96% of mushroom growers were producing Agaricus.

This change is primarily the result of significant economies of scale in the Agaricus production industry, this has led to just a few large companies in Canada growing them. Furthermore, the evolution of consumer trends, partly as a result of immigration, foreign demand and growing interest in fine dining, has also led to the emergence of specialty mushroom businesses that are still small-scale for the time being.

In 2017, the average Agaricus business sold 2.1 million kilograms of mushrooms and recorded \$9.6 million in sales, while the average specialty mushroom business sold 26 thousand kilograms of mushrooms and recorded \$297,077 in sales. This example illustrates the disparity between the profiles of specialty mushroom businesses—which are small businesses with a smaller production volume selling what is considered to be a niche product—and Agaricus growers. Unlike specialty mushroom growers, Agaricus growers often have large production volumes and significant investments in infrastructure and machinery. They target mass markets.

Chart 2
Change over time in the percentage of Canadian mushroom growers in percentage, by type

number of producers by mushroom type, in %



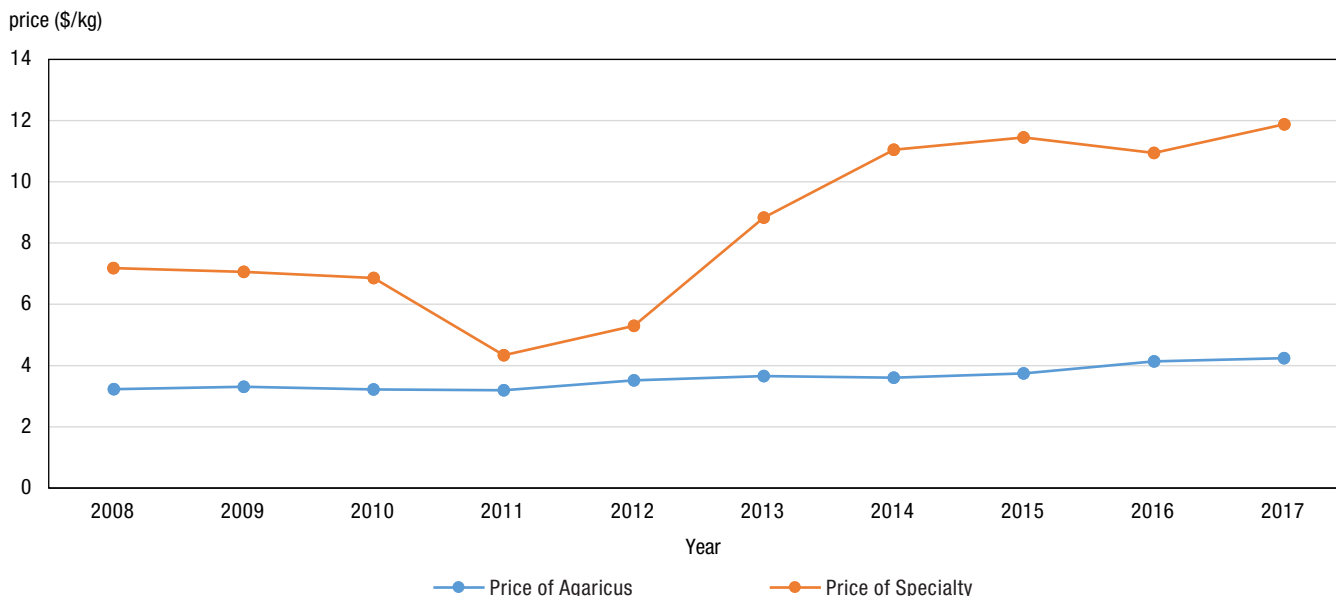
Source: Statistics Canada, Mushroom Growers' Survey, unpublished data, 2017.

Mushrooms, a profitable crop

Price trends differ between Agaricus and specialty mushrooms. Chart 3 shows a fairly constant price for Agaricus mushrooms, with a slight increase from \$3.23/kg in 2008 to \$4.24/kg in 2017. The price of specialty mushrooms saw greater fluctuation. There is an observable price decrease over the four years ending in 2011, when it reached its lowest point of \$4.34/kg. In subsequent years, a surge in prices led to a high of \$11.88/kg in 2017, but with a decrease to \$10.94/kg in 2016.

This variation in prices resulted in record high mushroom sales in Canada in 2017 (\$527.6 million). Fluctuations in global supply and demand, which will be addressed later, seem to be one of the determining factors of this instability.

Chart 3
Change over time in mushroom prices, by type

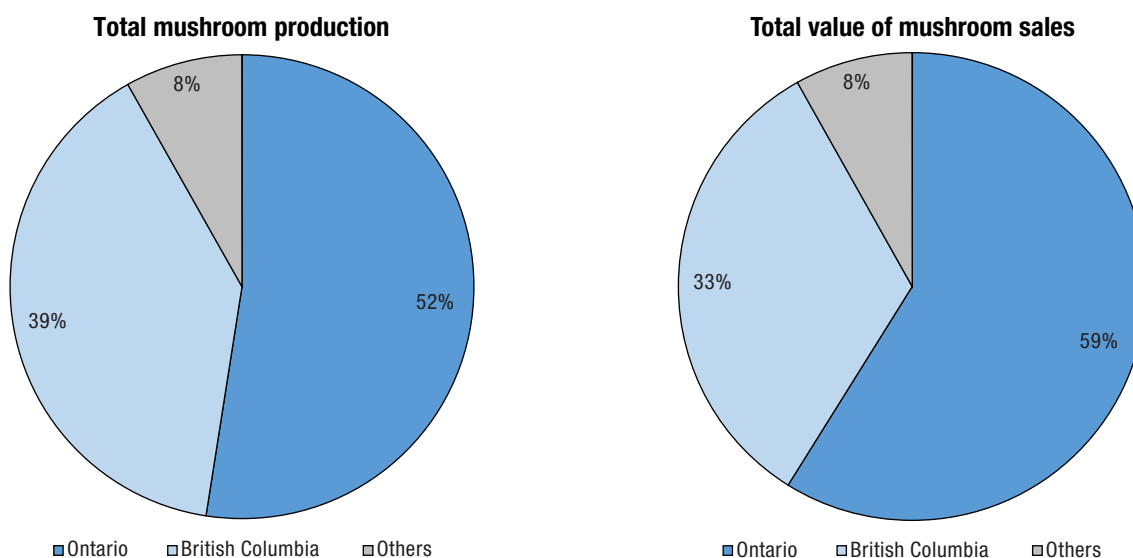


Source: Statistics Canada, Mushroom Growers' Survey, 2017.

Two provinces leading the pack

There is a dichotomy between growing regions in Canada. When production and sales data are broken down by province (Chart 4), only two provinces stand out in the 2017 Canadian profile: Ontario and British Columbia. These provinces alone account for 92% of production in Canada (63.1 and 47.3 million kilograms, respectively) and 92% of the total value received (\$311.3 million and \$173.8 million, respectively).

Chart 4
Breakdown of total mushroom production and total value of mushroom sales, by province, 2017



Source: Statistics Canada, Mushroom Growers' Survey, Table 32-10-0356-01, 2017.

International production

Canada is the eighth-largest mushroom producer in the international market, far behind China, which produces 7.1 billion kilograms (72.2% of global production), and the United States, which produces 380.7 million kilograms (3.9% of global production). It goes without saying that Canada is a price taker, with 1.2% of global production (FAOSTAT, 2016).

Most mushroom exports consist of Agaricus, which make up 98.4% of exported mushrooms and 96.0% of the value received (Table 1). In 2017, 38.2 million kg of mushrooms³ were exported (31.7% of Canadian mushroom production). Of the 37.6 million kilograms of Agaricus mushrooms exported, 99.5% went to the United States.

Table 1
Mushroom exports, 2012 to 2017

Type of Mushroom	Country	2012		2013		2014	
		Quantity	Value Received	Quantity	Value Received	Quantity	Value Received
		'000 kg	'000 \$ CAN	'000 kg	'000 \$ CAN	'000 kg	'000 \$ CAN
Agaricus	United States	30,110	106,509	30,677	113,982	30,591	128,007
Agaricus	Japan	14	568	62	3,314	14	685
Agaricus	Other	22	498	49	971	14	372
Specialty	United States	1,244	4,464	979	3,625	412	4,484
Specialty	Japan	52	2,626	115	5,620	48	1,973
Specialty	Other	10	215	42	647	3	68

Type of Mushroom	Country	2015		2016		2017	
		Quantity	Value Received	Quantity	Value Received	Quantity	Value Received
		'000 kg	'000 \$ CAN	'000 kg	'000 \$ CAN	'000 kg	'000 \$ CAN
Agaricus	United States	31,401	154,584	36,375	186,947	37,400	195,844
Agaricus	Japan	106	5,023	107	4,836	27	1,715
Agaricus	Other	49	1,479	63	2,191	143	4,077
Specialty	United States	684	7,606	795	7,327	566	6,331
Specialty	Japan	157	9,059	192	11,543	25	1,664
Specialty	Other	106	2,597	28	917	10	372

Source: Statistics Canada, Canadian International Merchandise Trade Database, 2017.

Although the total volume of Agaricus exports has been increasing slightly since 2012, this was not the case between 2015 and 2016, when the quantity exported rose by 15.8%. A sharp rise in the value received for exports was also observed (this time between 2014 and 2015), from \$129.1 million in 2014 to \$161.1 million in 2015, an increase of 24.8%. This increase is attributable to rising global prices, since Canada is a price taker, as previously mentioned.

The average price for Agaricus in Canada rose from \$4.22/kg in 2014 to \$5.10/kg in 2015. For the first time, Canada exported mushrooms to China, suggesting that the global price increase is due in part to a mushroom supply shortage in the Asian market, which benefits the Canadian market.

In 2016, despite a price increase of only 4%, the value of Agaricus exports rose to \$194.0 million because of a strong increase in the quantity produced. The 2015 price hike seems to have boosted the quantities exported in 2016. In 2017, a modest rise in export volumes (2.8%), combined with stable global prices, shows that the boom of recent years is slowing down. However, there was a noticeable shift in the destinations of Canadian mushroom exports, with volumes that normally went to Japan now going to Europe.

In 2017, specialty mushroom exports totaled 601.0 thousands of kg sold for \$8.4 million. This means that a kilogram of specialty mushrooms is exported at about 2.6 times the price of a kilogram of Agaricus mushrooms.

However, the international market for specialty mushrooms seems to be much less stable. At \$19.8 million in 2016, total revenues from specialty mushroom exports had almost tripled compared with exports in 2014⁴, a slight increase of 1% over exports in 2015. Between 2016 and 2017, there was a decline of 58%, which brought

3. Excluding truffles.

4. Comparison in 2002 constant dollars.

sales down to pre-2015 trends. The price received in 2015 was a record high, after three annual increases of 56%, 62% and 45%, bringing it to \$20.35/kg. Prices for specialty mushroom exports fell in 2016 and 2017, primarily because of a drop in prices from the United States (\$11.19/kg in 2017), while prices to Japan continued to rise (\$66.56/kg in 2017).

The evolution of the global price in the international market is similar to that of domestic prices (Chart 3), proof that the specialty mushroom industry is closely tied to foreign demand. Historically, specialty mushroom exports have been less monopolized by the American market than Agaricus mushroom exports. In fact, the American market purchased on average 83.5% of Canada's annual specialty mushroom exports over the last 10 years, while the Japanese market purchased an average of 10.9%.

Ontario and British Columbia are still the most active provinces for mushroom exports. However, although Ontario is the largest mushroom-producing province (52% of production), British Columbia is the largest exporting province (72% of exports). Although the geographic locations of both provinces facilitate exporting to the United States, British Columbia has an advantage when exporting to Asia, which is a very lucrative market based on the prices set out above.

The value received by exports from British Columbia is far greater than the value received by Ontario, and its evolution is consistent with the variation in exports to Japan (Table 2). Most of Ontario's production is either sold on the domestic market—because of its proximity to large population bases in Ontario and Quebec—or exported to the eastern United States and Europe.

The prices the two provinces receive also differ. Historically, the price British Columbia receives exceeds the average global price, while the price Ontario receives is lower, with all prices varying depending on the export destination (Table 2). For example, there was a difference of \$7.60/kg between the export price of specialty mushrooms from the two provinces in 2016 when Japan was a major consumer of Canadian mushrooms, but the price difference was only \$2.59/kg in 2017 when exports to Japan fell sharply.

Table 2
Mushroom exports, 2012 to 2017, Ontario and British Columbia

Type of Mushroom	Province	2012			2013			2014		
		Quantity kg	Value Received \$ CAN	Price \$/kg	Quantity kg	Value Received \$ CAN	Price \$/kg	Quantity kg	Value Received \$ CAN	Price \$/kg
Agaricus	British Columbia	17,427,267	63,455,767	3.64	17,296,779	69,588,547	4.02	18,366,473	78,481,138	4.27
Agaricus	Ontario	12,617,454	43,701,798	3.46	13,366,202	48,082,182	3.60	12,252,498	50,582,036	4.13
Agaricus	Other Provinces	101,538	418,142	4.12	124,974	595,828	4.77	129	894	6.93
Specialty	British Columbia	211,360	4,654,241	22.02	263,307	7,585,861	28.81	230,720	4,160,560	18.03
Specialty	Ontario	1,086,595	2,527,291	2.33	872,236	2,286,424	2.62	224,942	2,234,411	9.93
Specialty	Other Provinces	7,744	124,114	16.03	1,208	20,455	16.93	7,247	130,248	17.97

Type of Mushroom	Province	2015			2016			2017		
		Quantity kg	Value Received \$ CAN	Price \$/kg	Quantity kg	Value Received \$ CAN	Price \$/kg	Quantity kg	Value Received \$ CAN	Price \$/kg
Agaricus	British Columbia	20,586,232	107,587,785	5.23	24,548,040	133,665,467	5.45	27,212,940	146,680,851	5.39
Agaricus	Ontario	10,968,982	53,496,056	4.88	11,981,141	60,210,201	5.03	10,347,793	54,901,674	5.31
Agaricus	Other Provinces	387	4,108	10.61	15,207	99,047	6.51	10,340	53,079	5.13
Specialty	British Columbia	488,382	15,053,583	30.82	681,313	16,362,477	24.02	311,102	4,814,226	15.47
Specialty	Ontario	455,282	4,166,475	9.15	182,752	2,999,583	16.41	257,942	3,323,574	12.88
Specialty	Other Provinces	2,782	42,209	15.17	150,265	425,271	2.83	31,441	229,161	7.29

Source: Statistics Canada, Canadian International Merchandise Trade Database, 2017.

Conclusion

The composition of the mushroom industry has changed over the last 20 years. While the total quantity produced has remained relatively stable, the number of Agaricus producers has been largely outnumbered by the number of specialty growers.

Between 2012 and 2017, there was also an increase in the domestic price of specialty mushrooms, while that of Agaricus mushrooms remained stable. The sharp increase in global mushroom prices in 2015 boosted mushroom production, which reached, in 2016 and 2017 consecutively, record highs in terms of sales value.

Given its limited role in global production, Canada is a price taker. Most Agaricus exports, go to the United States, both in terms of quantity and sales value. Specialty mushrooms are not exclusively exported to the United States, also benefiting from the higher prices obtained on the Japanese market.

British Columbia and Ontario produce the majority of the mushrooms in Canada. Due to their geographical locations, the international markets for their products are different. British Columbia exports mostly to Asia, which gives its growers a better price than growers in Ontario who export primarily to the United States. This could have an impact on the future of the industry.

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