



Farmers and Food Prices

2023



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Executive Summary

APAS conducted a comprehensive study examining eight distinct retail products derived from Saskatchewan farm commodities. The objective was to determine the share of grocery store prices attributed to these farm commodities and explore their connection to food price inflation.

These eight products—beef, pork, beer, canola oil, margarine, lentils, flour, and bread—were selected for their significant reliance on Saskatchewan-grown components. The primary analysis of farm shares was conducted by Kevin Grier, a respected Canadian meat and grocery analyst, utilizing the United States Department of Agriculture (USDA), Economic Research Service's (ERS) methodology. To ensure the representation of Saskatchewan prices, we incorporated Statistics Canada data and consulted industry experts where supplementary information was necessary. All data was taken as averages across 2022.

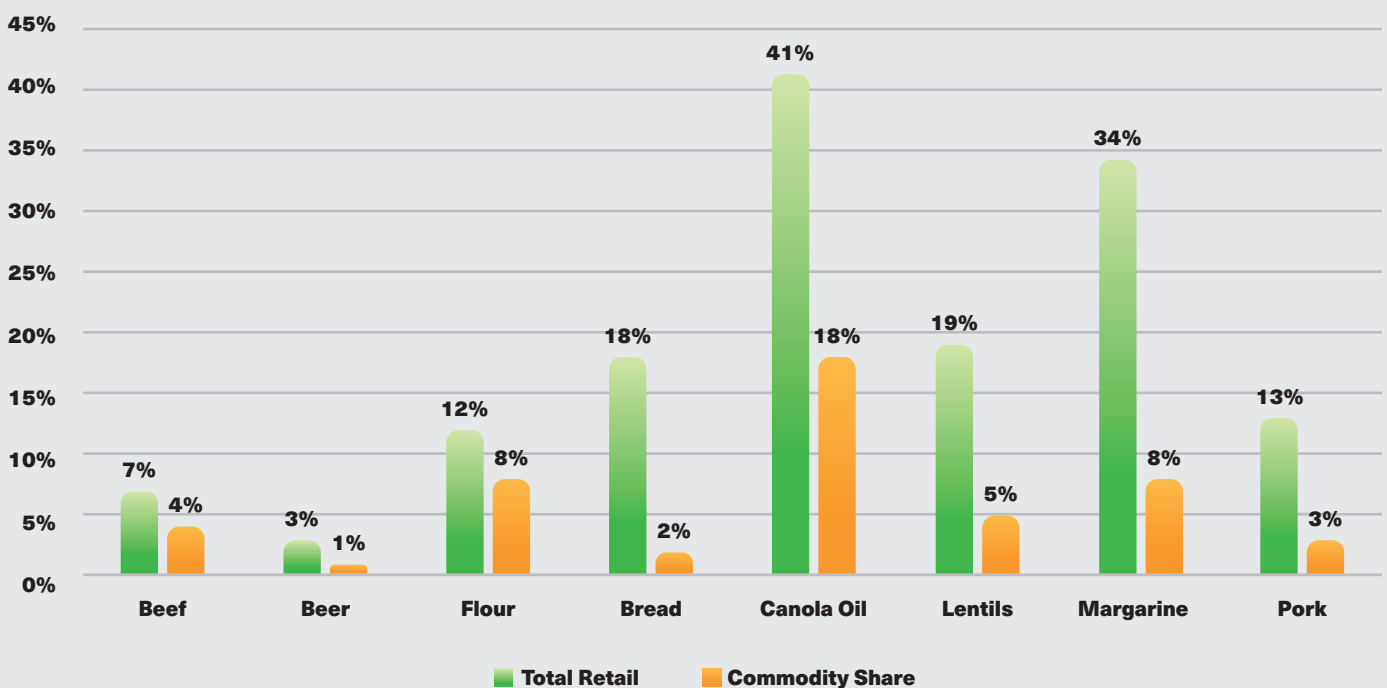
The research reveals that products requiring minimal processing, such as flour and beef, often have a higher farm share of food costs compared to those involving multiple processing stages, like beer and bread. When analyzing the impact of rising commodity prices on food costs, it is evident that the underlying commodity rarely accounts for the entire price increase in the final food product. Often, it plays a modest role in this equation.

Moreover, the analysis considers the broader context surrounding fluctuating commodity prices. Producers, both in Saskatchewan and across Canada, continue to be victims of price inflation, unable to set prices in alignment with their escalating input costs—leading to record-high expenses in 2021 and 2022. Commodity prices, influenced by the global market, are exhibiting signs of softening, whereas input costs have remained stubbornly resilient.

The share of food prices returned to the farmer exhibits significant volatility, varying not only from product to product but also from year to year. The narrow dataset studied underscores the complexities of forming assumptions. Upon deeper exploration of the impact of commodity prices on food costs, it becomes evident that the increasing grocery food prices are not predominantly driven by farm prices. Coupled with the context of soaring farm input costs and the consequences of adverse weather on harvest yields, this report provides a detailed perspective on the role of producers in the dynamic cost structure of food products on grocery shelves.

Ultimately, this report aims to enhance transparency along the supply chain by shedding light on the portion of food costs returned to the farm, providing clarity on an issue of incredible importance.

2022 Food Price Inflation Percentage: Total Retail vs Commodity Share





Introduction

Food prices have assumed a position of key interest and concern across Canadian households. Inflationary pressures have forced many to make challenging decisions in the aisles of our local grocery stores. As the cost of putting food on our tables continues to climb, it prompts a pressing question: Why?

Grocery store executives find themselves summoned before government authorities, tasked with establishing a grocery code of conduct. While this endeavor may not exert direct influence over the cost of food, it provides valuable insight into a critical facet of the food supply puzzle.

APAS aspires to provide a distinct perspective on yet another segment of this intricate supply chain—the dedicated farmers and ranchers of Saskatchewan. The products stemming from their efforts form the cornerstone of numerous staples on the shelves of grocery stores. Amidst the clamor of media attributing rising grain and

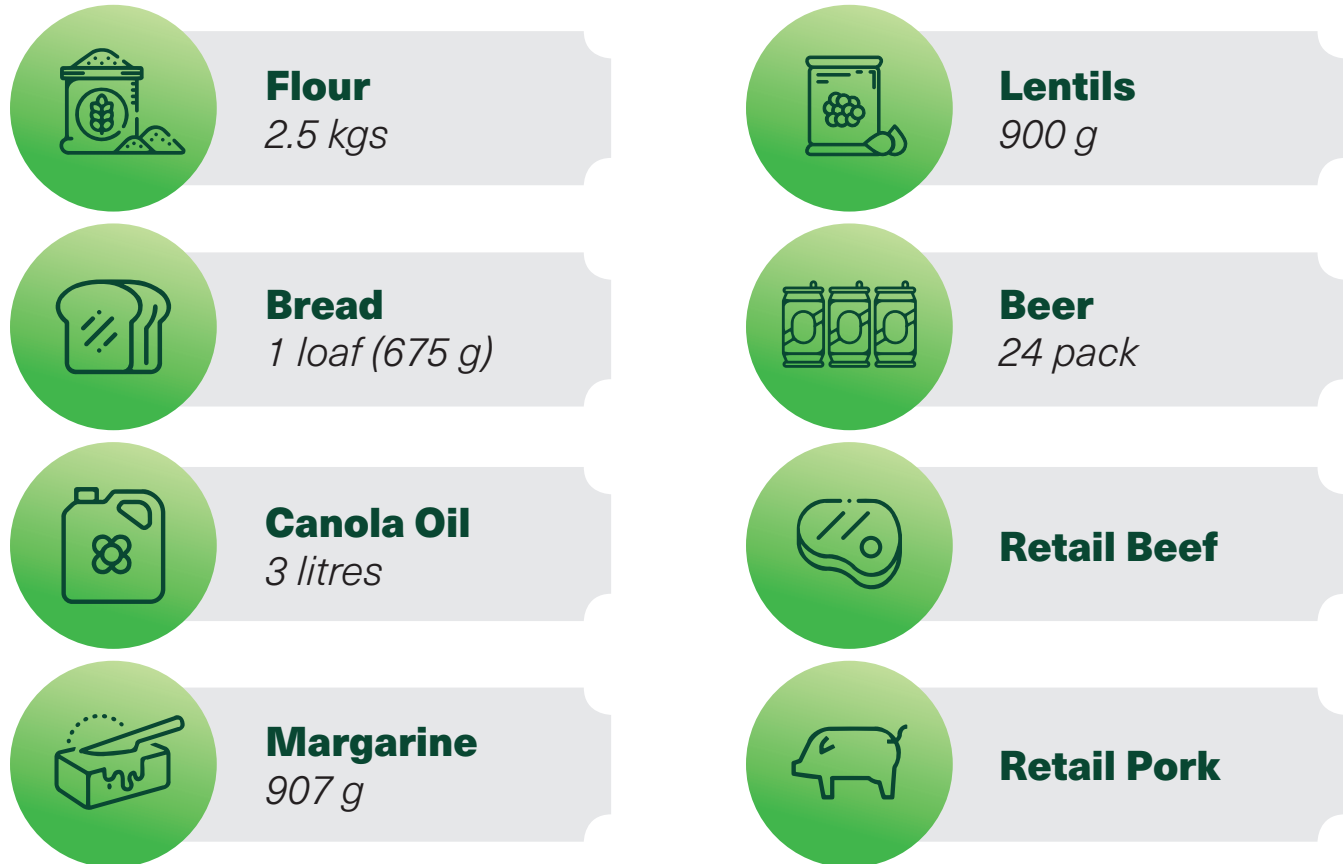
livestock prices as primary culprits for escalating consumer costs, APAS, along with other farm organizations on the prairies, undertook similar investigative pursuits in the past. For instance, in 2010, APAS, in collaboration with producer organizations from Alberta and Manitoba, authored a paper titled “The Farmers Share.”

In the current exploration, APAS delves into the study of eight distinct products crafted from Saskatchewan ingredients. The objective is twofold: to understand the portion of grocery store cost that returns to the farmer and to assess whether fluctuations in commodity prices exert any notable impact on the final grocery store price.

Through this endeavor, APAS aims to offer a detailed perspective on the intricate dynamics of the agricultural supply chain, shedding light on the relationship between producers and the cost dynamics experienced by consumers at grocery stores.

The Study

The eight products in the APAS basket are:



These products were chosen as they represent some of the core commodities grown in Saskatchewan – cattle, hogs, canola, wheat, barley, and lentils. They are also common household foods for Saskatchewan consumers and represent a variety of processing lengths. Both beef and pork are analyzed as ‘retail beef’ and ‘retail pork’, meaning that it is not a single cut of the animal, but an amalgamation of all cuts that come from a harvested animal, and the total cost of those products at a retail level.

APAS engaged Kevin Grier, a meat and grocery market analyst with extensive experience and contacts, to create a base analysis of the farm share of the retail cost for these

products in 2022. Through his research, Grier replicated the methods and processes used by the United States Department of Agriculture (USDA), Economic Research Service (ERS).

The USDA ERS has a great deal of analytical experience in farm share of the food dollar. They have published their methodologies and their research is widely used and cited. With that context noted, there are three main components that lead to the development of a farm share of specific food products: prices, conversion factors, and share tabulation.

Prices

There are two prices that are used in determining farm share:

1

The retail price of a food product.

For example, the two prices that would be used to examine the farm share for hogs as a component of the price of pork would be the retail price of pork and the farm price of hogs. Another example would be flour and wheat. That is the retail price of flour would be compared to the farm price of wheat.

Retail prices were collected from the Statistics Canada data table entitled, "Monthly average retail prices for selected products¹." This data forms the basis of the Statistics Canada Consumer Price Index (CPI), which is widely cited and readily accessible. The retail prices tracked by Statistics Canada are characteristically in the package size and composition of typical consumer food products. Each good or service in the CPI basket is representative of consumer spending patterns.

2

The farm commodity input price for that product.

This Statistics Canada retail price data is available for Saskatchewan and is used in this research. The exception is beer which is not listed in the above noted table. Beer prices were collected independently.

Farm product prices for the specific commodities are also from Statistics Canada again with a Saskatchewan focus. The Statistics Canada farm product prices are contained in the table entitled, "Farm product prices, crops and livestock²" weighted by monthly deliveries as sourced from the Canadian Grain Commission³. As with the consumer prices, this data is widely cited and readily accessible. There is consistency in data comparability between the Statistics Canada consumer and farm prices which is important for the purpose of this effort on farm share.

Conversion Factors

From that point, the USDA methodology uses a conversion factor to determine how much of a farm product it takes to create a unit of the food product. For example, according to the USDA, milling wheat yields approximately 73% flour and 27% co-products. That calculation means that producing 1 pound of flour requires 1.37 pounds of wheat. This calculation also accounts for the selling of the 27% of co-products, leaving an accurate representation of the cost of wheat in the bread.

The assertion here is that the USDA conversion factors should be utilized where available. The USDA conversion factors have been thoroughly researched and the food production methodologies would not differ materially between Canada and the United States.

With that noted, there is no USDA beer, lentil, or canola oil tabulation. Relevant conversion factors have been researched for these three products from publicly available sources or cooperating organizations.

¹ <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1810024501>

² <https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210007701>

³ <https://www.grainscanada.gc.ca/en/grain-research/statistics/grain-statistics-weekly/archived.html>

The Results

Beef

This section measures the share of Saskatchewan fed cattle relative to the value of beef cuts sold at retail in Saskatchewan.

As noted, this report utilizes USDA methodology where possible to generate the farm share. USDA retail value is a weighted average of an animal's retail meat cuts. That is, USDA has developed a model of the weighted average prices of all cuts typically sold at retail. The gross farm value is the value of the animal when it is sold, and the net farm value is the gross farm value minus the value of by-products. By-products are the hide, inedible offals, and tallow, among other products. USDA tracks these values on a daily basis based on packer sales. These USDA by-products in this model have been adjusted modestly lower (4%) than U.S. values. That is to reflect prairie packer by-product returns more accurately. Once the by-product value is removed, the remainder represents the value of the meat to the farmer.

Based on prior research this study assumes that the ERS retail value structure and format is similar in Canada/Saskatchewan as in the United States. This is a reasonable assumption. It is true that there will be differences between Canada and the United States retailer merchandising. That, however, is also the case between retailers within Canada and even within Saskatchewan. The main point is that Canadian and U.S. retailers each merchandise broadly similar beef products from very similar grain-fed cattle.

It is also of interest to note that based on comparisons between the Statistics Canada Saskatchewan retail beef products and the ERS retail beef product basket, the ERS basket was priced about 2% higher than Saskatchewan for 2022. When comparing specific cuts, the ERS was also higher priced than Saskatchewan. With that noted, and for the reasons noted above, the ERS is representative of what would occur in a Saskatchewan grocery meat case.

As a point of reference, the Saskatchewan share of 41% was like that generated for the U.S. farm share by ERS in 2022. In 2021 the Saskatchewan share was 40% which was higher than the USDA ERS U.S. share of 37%.

Beer

ERS does not provide guidance on the farm value of beer. As such, industry sources in the malting sector such as the Canadian Malt Barley Technical Centre, were queried

for the conversion factors from farm products to beer. It is noted that regarding beer, the main farm product is barley, but there are also hops, yeast, and, depending on the beer, a variety of other agricultural inputs. For these purposes, however, the only farm product examined is barley. That is because it is the overwhelmingly largest component. The other notable component, hops, are mainly grown in B.C. and Ontario.

There are several methods to move from farmed barley to beer. One widely cited industry guideline is that one bushel of barley makes 300 bottles of beer.

Another industry guideline is that it takes about 75 grams of farm barley for every bottle of beer. At \$400/tonne, 75 grams equals \$0.03 or three cents a bottle. One bottle of conventional or "macro" beer at retail was worth about \$1.85-1.90. That puts the farm barley share of the retail beer value at less than 2%. Craft or "micro" brewery beers might go as high as 4 or 5%.

Flour

In 2022, Statistics Canada reported that the price of flour at retail was \$5.22 for a 2.5-kilogram bag, or \$1.305 per kilogram. With a conversion factor of 1.37 and accounting for the cost of the co-products, the farm share of flour is 25%.

For context, it is noted that the historical ERS database shows the farm share varies widely year-over-year. For example, the lowest share was 13% in 2016. The high ERS farm share was 33% in 2022.

Bread

The farm share of bread utilizes the same methodology used above for flour. The farm-derived ingredients in 1 kilogram of white pan bread include 0.59 kilograms of flour, 0.01 kilograms of soybean oil, and 0.02 kilograms of corn syrup (dry weight). ERS assigns a zero-farm value to the bread's other ingredients, including water, yeast, salt, emulsifiers, and calcium propionate.

In 2022, Statistics Canada says the price of white bread in Saskatchewan averaged \$3.39 for a 675-gram loaf (\$5.02/kg).

The farm share of bread is 7%. For context, note that the ERS farm share of bread was 6% in 2022.

Canola Oil

ERS does not estimate shares for canola oil. Industry sources such as the Manitoba Canola Growers and the Canadian Oilseed Processors Association were utilized to determine farm-to-retail yields and product shares. According to Statistics Canada, the retail value of canola oil in Saskatchewan was \$10.79 per three litres (\$2.70/litre) in 2022. Conversions from seed to crude oil and then refined oil were taken into account, resulting in a farm share of 42%.

Lentils

Statistics Canada does not identify which type of lentils it tracks for price monitoring. It simply says, "Dried lentils, all varieties, sold by standard unit package size, 900 grams." With that noted, for these purposes, the focus is on red lentils given that that variety is common at retail. The ERS does not tabulate the farm value of lentils. Given that lentils are classified as a vegetable, this process will mimic the ERS methodology for fresh vegetables but adopted to lentils.

In the case of red lentils that are sold in retail packs as split or dehulled, (which would be nearly all the red lentils), dehulling yield is typically 83-85%, meaning 83-85% of the weight of the remaining dehulled/split lentils compared to the whole red lentils with the seed coat on. Red lentils sold in retail packs would also need to be cleaned between farmer delivery and splitting to remove dockage, foreign material, etc. So, after cleaning, going from clean, one unit of whole lentils should yield 0.83-0.85 units of retail lentils. This results in a farm share of 27%

Margarine

The USDA discontinued estimating the farm share of margarine in 2013. Their farm share was based on a

soybean oil margarine. APAS used the discontinued ERS methodology for margarine in conjunction with the developed canola oil methodology. This resulted in a farm share of 20%

Pork

As with beef, ERS calculates the farm share based on a weighted average of retail pork products. Those products include fresh items such as loins and ribs as well as processed products such as bacon and ham.

Based on an assessment of Saskatchewan retail prices from Statistics Canada compared to ERS prices, it appears that ERS prices are generally greater than Saskatchewan. The retail value of all pork products sold in Saskatchewan in 2022 is estimated at \$6.38 per pound or \$14/kilogram.

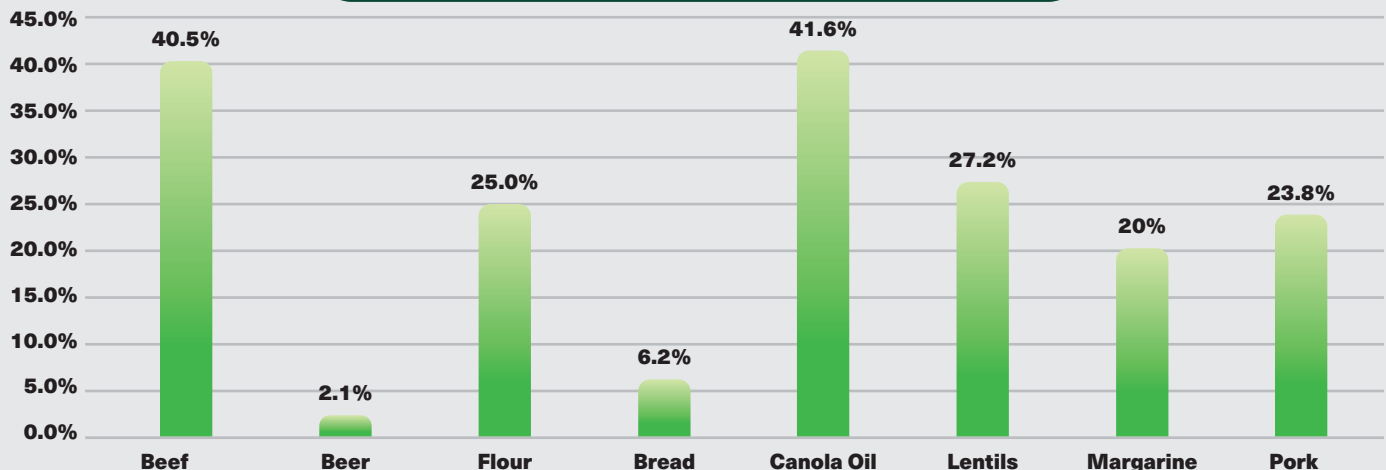
The Saskatchewan share of 24% in 2022 compares to USDA ERS farm share in 2022 of 25%. The Saskatchewan share in 2021 was 25% compared to the ERS share of 26%.

Overall

Farm share estimates are generally larger for less-processed products, such as canola oil, beef, and flour than for more-processed foods such as bread. Multiple ingredients are required to produce bread (including flour, high fructose corn syrup, and vegetable oil), and bread must be mixed, baked, and sliced.

Beer contains many non-farm related costs including marketing and distribution as well as many taxes. In contrast, for most of the beef cuts, there is comparatively little processing and thus less value-adding for the final consumer product. Canola oil is also a product with little value-added processing necessary. In addition, the farm product of canola seed is comparatively rich in the portion that becomes the final retail product.

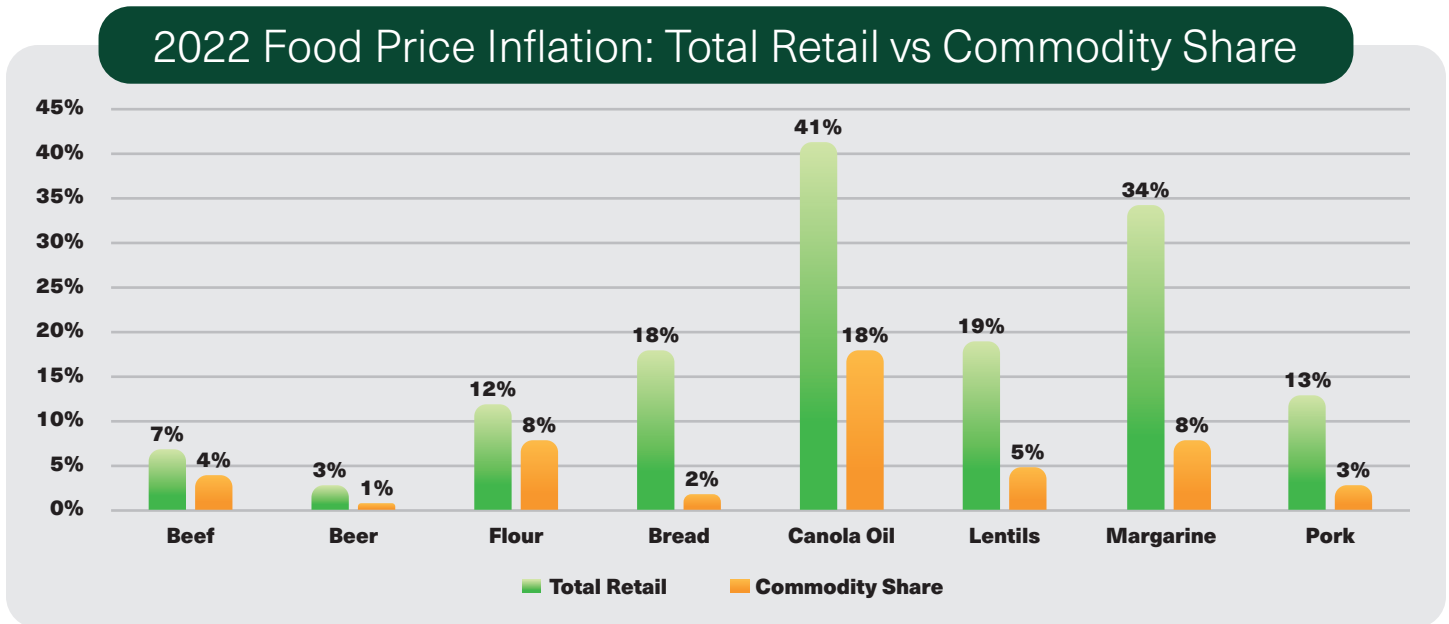
2022 Farm Share of Retail Price



Inflation Analysis

The following graph presents an overview of the inflation rates of various food products in the year 2022. Additionally, it highlights in orange, the inflation component directly attributable to fluctuations in commodity prices, as determined by the respective proportion of farm-level input within each product category. To illustrate, if the sole driving factor behind the escalating prices of bread were the increasing costs associated with wheat, the inflation rate for 2022 would have registered at 2%. However, the actual observed inflation for 2022 amounted to a considerably higher 18%.

This comparison was calculated using the farm share for 2021, and 2022 monthly commodity prices⁴ and delivery amounts⁵, creating a weighted yearly average price. By calculating the food price for each item using these numbers, it is possible to see what the 2022 food price would have been if all other players in the supply chain did not contribute to a change in cost. By then comparing this to the true price increase seen in 2022 the result is the below graph.



What Does This Mean?

This data underscores the complex nature of food inflation, revealing that farm gate prices do not exclusively dictate its trajectory. While commodities like beef and flour, characterized by a more streamlined supply chain with fewer intermediaries between the farm and the consumer, exhibit a more pronounced influence of commodity price fluctuations, the case of pork and lentils, which are similarly minimally processed, present a scenario where other variables within the supply chain exert notable impacts on inflation dynamics.

While the impact of escalated commodity prices on food costs is noted, it is imperative to bear in mind that farmers operate within the confines of a price-taking environment. They lack the ability to establish market prices for their products and are market participants who must accept

existing prices. Their influence is predominantly limited to the timing of their product sales, with negligible sway over the final selling price. Furthermore, the prolonged drought conditions experienced in the province have compounded the predicament, leading to subpar yields and diminished product quality for many agricultural producers.

Regardless of the current commodity prices, if producers encounter impediments in the form of crop failures, challenges in livestock rearing due to adverse conditions, or unexpected trade barriers, they are unable to capitalize on the advantages of any elevated market prices. Diving even deeper into this complex narrative, the underlying production costs associated with these commodities must also be considered.

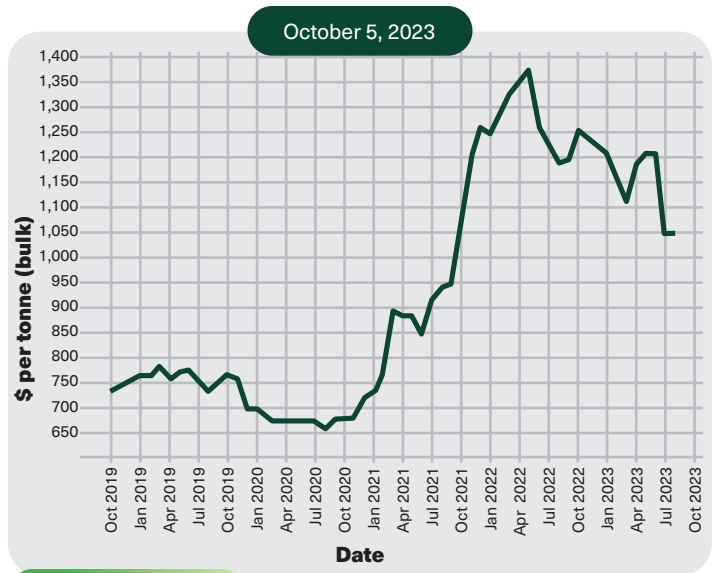
⁴ <https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=3210007701>

⁵ <https://www.grainscanada.gc.ca/en/grain-research/statistics/grain-statistics-weekly/archived.html>

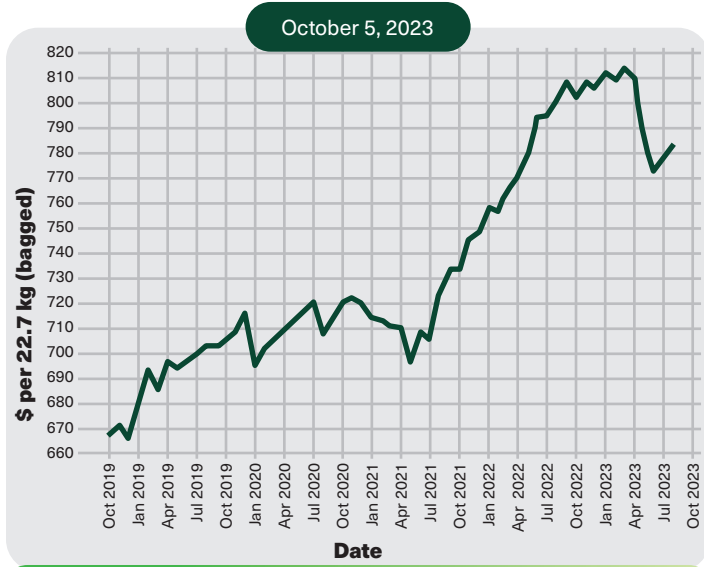
Farm Input Cost Inflation

Farm input costs have witnessed a significant upswing. It is worth noting that while commodity prices have exhibited a downward trend, the corresponding decline in farm input and food prices is not as distinct. A comprehensive study conducted by APAS revealed that the year 2021 marked the most expensive period for farming operations to date.⁶

The Statistics and Data Development Section, Intergovernmental and Trade Relations Branch, Alberta Agriculture and Irrigation have compiled data on the cost of farm inputs⁷, showing a steep rise over a short period of time. Even if some input prices have begun to fall, they are still in an extremely elevated price environment.



Fertilizer, 11-51-0, bulk



Seed, Liberty Link Herbicide Tolerant Canola, Certified No. 1, treated not including TUA, bagged



Refine, SG, granular



⁶ APAS Cost of Production Backgrounder, 2022

⁷ Graphs Source: <https://www.agric.gov.ab.ca/app21/rtw/surveyprices/graph.jsp?groupid=5&dataId=39>

Conclusion

It is essential to recognize that while the farm share allocated to producers changes with commodity price fluctuations, such movements do not serve as accurate indicators of the actual returns realized by farmers on these agricultural commodities. An insightful resource, the Crop Planning Guide published by the Government of Saskatchewan, underscores a compelling narrative. It reveals that for key crops such as canola and wheat, current market prices scarcely, and in certain geographic zones do not, suffice to cover the expenses incurred in the production of these crops themselves.

Arguably, this represents a pivotal insight concerning the intricate interplay between food prices and the underlying commodities from which they are derived. When food prices undergo an uptick, it is common for attention to be redirected toward farmers with a desire to attribute the situation to rising commodity prices and producers

getting more than their share to the detriment of the public. It is worth emphasizing that these commodity prices are inherently dynamic and subject to constant fluctuations, which do not naturally indicate a corresponding rise in farm profits. Even in the current context, where several commodity prices are experiencing a downturn, the same cannot be said for food prices.

While a portion of food production costs undoubtedly finds its way back to the primary producer, it appears improbable that the farmgate is the principal driving force behind the escalating costs of retail food products within major grocery chains.





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