

PLANT-BASED PROTEIN MARKET GLOBAL AND CANADIAN MARKET ANALYSIS

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1. EXECUTIVE SUMMARY

As the global population continues to grow rapidly and more consumers think about their health and the environment, the demand for animal-protein alternatives, meat replacements and other non-animal industrial ingredients has rapidly increased. Cultural, health and environmental changes have all combined to create favourable market conditions for the rise of plant-based protein.

While the total protein demand will double to 943.5 million metric tons in 2054, the market for alternative proteins, including plant-based proteins, is expected to grow at 14% annually by 2024 — up to a third of the protein market. The global plant-based protein market alone is expected to reach USD 10.8 billion by 2022 supported by a CAGR of 6.7%.

With consumers pushing for diversification of protein sources, the booming plant-protein industry is now developing novel functional foods and value-added products that replace animal proteins. Nevertheless, plant-based protein applications reach well beyond dietary supplements, ranging from cosmetics and pharmaceuticals, to animal feed and pet food.

Growing interest demand for plant-based protein alternatives has been largely driven by (1) an increasing awareness about the benefits of protein-rich diet and plant-based alternatives, (2) rising world demand for protein due to rapid population growth, (3) growing consumer interest in foods that promote health and well-being, and (4) adoption of environmental stewardship and protection of animal welfare.

In Canada, more than 40% of the population is actively trying to incorporate more plant-based foods into their diets. Their compatibility with vegetarian, vegan and “flexitarian” lifestyles is now putting the spotlight on plant-based protein sources.

The economic value of plant-based diets, in terms of improvements in health, is estimated to be equal to or greater than their environmental benefits. These economic benefits are valued 1-31 trillion US dollars or 0.4 to 13% of global gross domestic product in 2050.

Annual global sales of plant-based meat alternatives have grown on average 8% a year since 2010, with projections forecasting that, in 25 years, 20% of meat will consist of plant-based and clean meat. Global revenue for plant-based dairy is expected to reach USD 34 billion in 2024. The plant-based beverage market has grown approximately 33% annually over the past five years. In Canada, sales of plant-based protein products rose 7% to more than \$1.5 billion in the 2016/17 fiscal year.

While North America takes the major share in the global plant-based protein market, Europe has a significant deficit in plant-based proteins, importing most of what its agricultural sector needs.

Plant proteins make high-quality animal feeds that can translate into more animal-based proteins needed to meet the increasing demand for animal protein in many developing countries. In countries where pulses are a traditional staple, the need for plant proteins for direct human consumption is also expected to grow at a rapid pace.

Most plant-based protein sources are at an early stage of development and require continued innovation to succeed. Key areas of plant-based research that provide considerable opportunities for meaningful industry innovation across the value chain include sourcing, isolation and functionalization, formulation, processing, and distribution.

The Canadian Prairies are currently on their way to become a hub for pulse fractionation, a relatively new processing technology used to select and extract proteins for use as food ingredients.

R&D investments in the sector seeking to maximize sustainable, reliable production of high-quality protein, include big data technologies, robotics and, more recently, blockchain technology for more secure and immediate transactions in the supply chain.

In Canada, outdated regulation, labour training and infrastructure continue to remain a challenge for the plant ingredient industry. Another current barrier for manufacturers seeking to position plant-protein foods domestically and abroad is that regulatory methods for measuring protein quality differ across regions. As the Canadian value-added industry expands, the finite resources used in food processing such as water and energy would also pose a significant threat to long-term environmental sustainability.

Producers and manufacturers in the sector have identified at least four venues to take advantage of the growing market of plant-based food: (1) starting new plant-based companies, (2) launching a plant-based product line or altering ingredients, (3) pursuing acquisitions to enhance their brand and product offering; and, (4) expanding, diversifying or adjusting product offerings to ensure alignment with the current market through R&D. Some of the major global players in the sector are undertaking major expansions of their existing facilities and operations in Canada.

Although the plant-based protein market is currently dominated by soy protein products, demand for pulse ingredients is growing as manufacturers are adding them to various products from breakfast cereals to snacks. Only from 2010 to 2014, the number of new

PLANT-BASED PROTEIN at-a-glance

Plant-based protein in Canada is expected to contribute more than **\$4.5B** TO GDP GROWTH

Sales of plant-based protein products grew 7% to more than **\$1.5B** in 2016/17

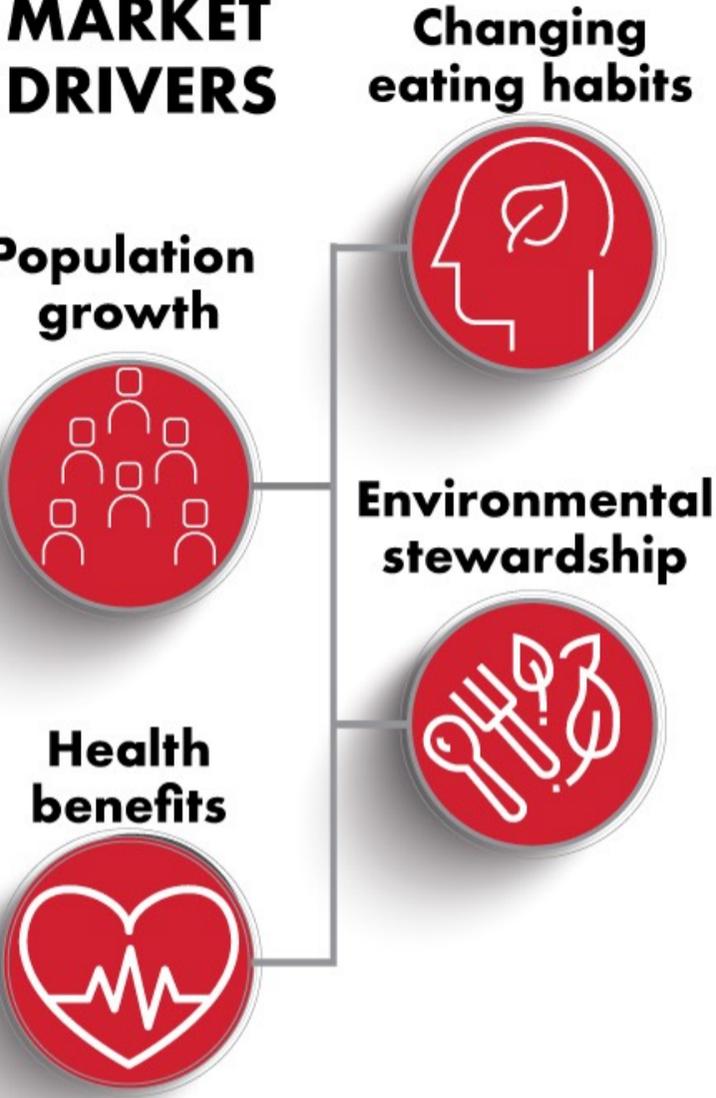


- Beans
- Chickpeas
- Lentils
- Peas

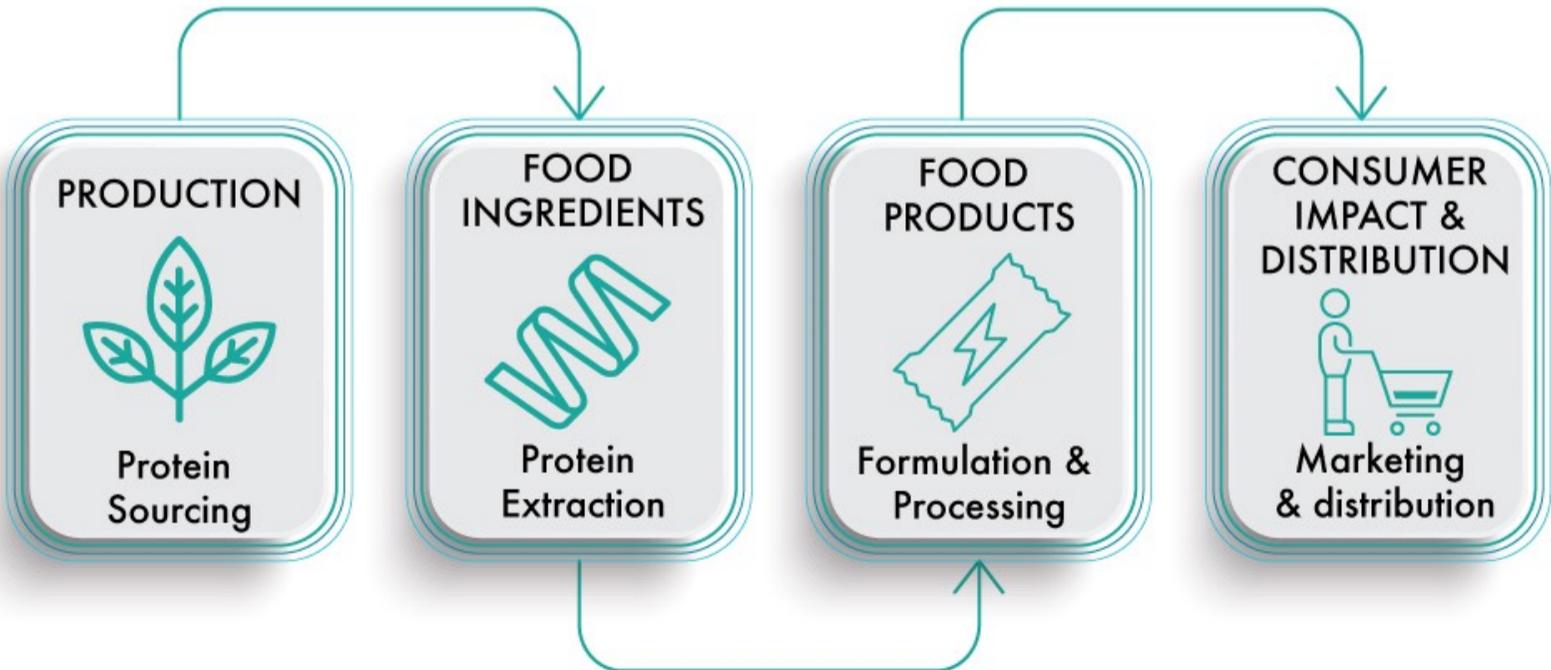
40% of Canadians are incorporating more plant-based foods into their diets

Canada is the world's largest producer & exporter of dry peas & lentils

MARKET DRIVERS



KEY AREAS OF INNOVATION



product launches containing pulse ingredients increased by 74%.

With 4.6 million tons produced in 2017, Canada has become a leading producer and exporter of pulses worldwide. The country is the world's largest producer of dry peas and lentils, producing slightly over half of the world's lentils in the same year.

Nevertheless, Canada exports most of its production to be processed, representing a potential opportunity for emerging Canadian processors to expand their operations domestically, a global opportunity for export growth and diversification for the Canadian economy.

With an enormous capacity for growing and processing plant-based proteins, the Prairies have the potential to become the world's "protein basket". International firms have already shown interest in the Prairies' potential by investing in facilities and equipment in western Canada.

While building on Canada's worldwide reputation as a leader in agricultural production and research, the Prairies-based supercluster Protein Industries Canada (PIC) is seeking to advance economic growth through innovation in plant-based proteins and co-products for export to the world. Supported by the largest funding boost in recent Canadian agriculture history, this industry-led consortium is expected to help generate an estimated \$853 million in new commercial activity, add \$15 billion to Canada's GDP and create up to 50,000 new jobs.

A copy of the market assessment is available upon request: kristen.trautman@nrc-cnrc.gc.ca