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Case Study: AGT Food and Ingredients Ltd: Industrial Development and Collective Action in the Canadian Pulse Industry

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2022

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Published 2022

Centre for the Study of Science and Innovation Policy (CSIP)
101 Diefenbaker Place
Saskatoon, Canada, S7N 5B8

Abstract

The United Nations declared 2016 the year of the pulse, which offers an excellent opportunity to look back at western Canada's progress in developing its pulse industry. Starting with negligible production as recently as 1980, the industry now produces 65% of world lentil exports and 55% of world pea exports. Along the way, the University of Saskatchewan Crop Development Center (CDC) in partnership with the Saskatchewan Pulse Crop Development Board (operating as Saskatchewan Pulse Growers or SPG), the preeminent industrial lobby group for research and market development in Canada, have created a unique public-private-producer partnership (aka P4) that has become a powerhouse of global pulse innovation. Along the way, AGT Food and Ingredients Ltd. from Regina emerged from a small, family-owned trading venture and developed into a publicly traded, vertically integrated company that grossed over $1.7 billion trading pulses globally in 2015. Impressive as this story is, it was all done under the intellectual property regime provided by International Union for the Protection of New Varieties of Plants (UPOV 78), which provided only relatively modest protection for plant breeders' rights (PBRs) for new varieties. Since Canada ratified the 1991 UPOV Convention in July 2015, plant breeders now have the capacity to use either PBRs or whole plant patents and to apply end-point royalties, which some believe may incentivize new and different private breeding efforts. Some suggest this may significantly change the trajectory of the industry, accelerating movement toward niche breeding and away from commodity breeding. AGT, possibly in collaboration with the SPG-CDC breeding partnership, is likely but not guaranteed to be at the centre to this new future. This case reviews the history of pulse development and explores the potential influence of the new IP regime on the trajectory of AGT and the industry.

AGT Food and Ingredients Ltd: Industrial Development and Collective Action in the Canadian Pulse Industry

Peter WB Phillips and Stephen Fransoo
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Introduction

Pulse crops are seeds of legumes that are used as food, and include peas, beans, lentils, chickpeas and faba beans. Pulses provide about 10% of the total dietary protein consumed in the developing world and have about twice the protein content of most cereal grains.[1] Pea crops were a leading production crop in eastern Canada at the turn of the century, with an average of 720,000 acres grown each year from 1883 to 1902 but production in eastern Canada declined and has since been supplanted by activity in the Prairies. Saskatchewan is at the heart of the Canadian pulse industry. With approximately 15,000 pulse growers and 95 special crop processors, Saskatchewan farmers grew 96 per cent of Canada's lentils, 99 per cent of its chickpeas, and 64 per cent of its dry peas crop. This case study examines the emergence and evolution of this industry.

Case studies of industrial development normally focus on the heroic entrepreneur or the fast-growth firm at the core of an emerging industry. While there is some dispute about how appropriate that approach is for understanding general industrial development, the emergence of AGT Food and Ingredients Ltd. (AGT) can only be understood by examining the collective actions of a variety of public, private and collective actors. From farm to fork, government, private and participatory institutions have played pivotal roles in the growth and expansion of the pulse sector, creating the market space for AGT to emerge and grow into a multi-billion dollar vertically integrated food and ingredients company.

As recently as the late 1970s, pulse production in western Canada was very limited. The convergence of interests and coordination of actions has in less than a generation made Canada, especially Saskatchewan, a global leader in pulse innovation, production, and trade. Collective action between the governments of Saskatchewan and Canada, researchers at the University of Saskatchewan Crop Development Center (CDC), farmers through their commodity check-off programs, specifically the Saskatchewan Pulse Crop Development Board in 1983, and a handful of private sector agri-food processors and exporters, especially AGT Food and Ingredients Inc (AGT), has transformed the industry. These core institutions have collaborated to foster innovation in pulses by providing the funds, knowledge, and export market opportunities to overcome the common market failures that hold back new products and markets, thereby paving the way for rapid and sustained growth in this sector.
On 21 April 2016 Statistics Canada reported that Western Canadian farmers will plant a record pulse crop, an estimated 5.14 M acres to lentils and 4.28 M acres to peas, up 30% and 16% year-over-year respectively. Saskatchewan producers will plant approximately one in four cultivated acres to pulses; in total, Saskatchewan makes up about 76% of the total Canadian area. These rising volumes are increasingly processed and exported by AGT, which has moved from a niche pulse export company to an integrated agri-food export company that exports, creates value-added products and recently has moved

[1] (http://www.cicilsiptic.org/pulses.php?id=21)

into custom pulse research and development. This institutional collaborative effort has allowed Saskatchewan to become the global leader in pulse innovation, production and trade. The Government of Saskatchewan estimates that the province has a 65% share of world lentil exports and 55% of world pea exports (Government of Saskatchewan, 2015: 13).

While in many ways a local story, it has a global reach. The case study examines how institutional collaboration between multiple governments, farmers and the SPG, the University and the CDC, and AGT have created the conditions for the province to evolve into a global pulse leader.

The market-making challenge

Creating an industry from scratch is a challenge. When starting, a new agri-food sector requires: research and development to define or refine the product; extension work with producers to enable them to adapt and adopt the new crop; marketing infrastructure to distribute product-specific inputs (e.g. seeds) and to assemble and move the resulting product into the marketplace; information on markets, including supply, demand and price discovery mechanisms; market development; and standardizing and grading of the product. Many of these are often missing in new industries (Phillips and Khachatourians 2001).

A number of economists have argued that many of these features are not forthcoming because of a variety of market failures. Incomplete markets, public good attributes, common pool resources and technical externalities all inhibit development. In essence, Williamson (1979) argues that if investors believe they have a weak post-investment bargaining position with respect to users of their transaction-specific investments, and as a result will not be compensated adequately for their investment, then they are likely to withhold investment. The classic hold-up problem according to Milgrom and Roberts (1992) is "the general business problem in which each party to a contract worries about being forced to accept disadvantageous terms later, after it has sunk an investment, or worries that its investment may be devalued by the actions of others." With asset specific (specialized) investments, the value of the asset in its specific use is far greater than its value in the next best use.

The development of an industry inevitably involves the provision and delivery of a large number of asset-specific factors that present hold-up problems and potential for market failures. Taken together, the up-front costs of introducing a new crop are large and it is highly uncertain that any individual investor acting independently could expect to recoup early investments in industry development. The problems which cause investors to hold-up investments are more often than not the result of incomplete institutions. The pulse industry case illustrates the interconnectivity of science, policy, institutions and markets.

Conceptual Framework

Case studies are effective tools for analyzing the decisions, actions and impacts of persons, events, decisions, periods, projects, policies, institutions, or other systems. There is no single way to frame case analysis. This case applies a systems approach to examine the emergence and evolution of the Western Canadian pulse industry and in particular AGT, the flagship trader in the sector.

A number of others have studied aspects of this case. Gray et al. (2008) undertook an ex-post, cost-benefit analysis of the pulse breeding effort for SaskPulse. They estimated that the provincial government, producers through the SPG and the Western Grains Research Foundation, a not-for-profit research foundation, jointly invested between 1984 and 2008 approximately C$47 million dollars in pulse

crop research (shared 41%, 55% and 3% respectively). They calculated that these investments generated an internal rate of return (IRR) of 39% for the both the short term and for somewhat-less-conservative long-term scenarios. Boland, Phillips and Ryan (2010) then used social network analysis tools to examine the global pulse research system, locating the CDC-SPG public-private-producer partnership in the context of its global research networks and relationships.

Both previous studies conducted ex-post impact assessments of parts of the story. The purpose of this case is to examine the pathways of development and what they might say about the future trajectory. Market making is not as simple as economic theory might imply. Markets are fundamentally about voluntary, self-interested exchange. Nobel Prize winning economist James Buchanan (1989:21) argues that 'the modern failure is that twentieth-century economists had been converted to the maximization-scarcity-allocation-efficiency paradigm… which draws attention away from individual behavior in exchange contract.' He argues instead for economics to focus on the 'origins, properties, and institutions of exchange.' Douglass North, another prize winning economist, asserts that 'neo-classical theory is simply an inappropriate tool to analyze and prescribe policies that induce development. It is concerned with the operation of markets, not with how markets develop' (North, 1993). North suggests our focus should instead be on institutions:

> the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct) and formal rules (constitutions, laws, property rights). Throughout history, institutions have been devised by human beings to create order and reduce uncertainty in exchange. Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economy activity. They evolve incrementally, connecting the past with the present and the future; history in consequence is largely a story of institutional evolution in which the historical performance of economies can only be understood as a part of a sequential story. Institutions provide the incentive structure of an economy; as that structure evolves, it shapes the direction of economic change towards growth, stagnation, or decline (North 1991: 97).

Robert Picciotto (1995) offers a nice way to undertake an examination of market-making institutions. In Picciotto's model, institutions exist to address market gaps. He categorizes institutions into public, private, and participatory entities based on the differing degrees of excludability, rivalry and voice inherent in the market functions they provide. Gray et al (2001) translated this model explicitly into the agricultural market-making context, positing that:

> the government sector produces public goods (e.g., justice, defense, public health) usually characterized by low excludability, low rivalry, and low voice that are involuntarily consumed by all citizens equally. On the other hand, the private sector provides market goods (e.g., farming) which exhibit high excludability, high rivalry and low voice, and are consumed voluntarily by individuals. In contrast, the participatory sector specialized in common pool goods (e.g., market development services) with low excludability, from low to high rivalry and high voice (e.g., coordination)" (Gray et al, 2001: 87).

Gray, Malla and Phillips (2001) applied Picciotto's model to the canola sector, focusing on the role of the Canola Council of Canada (CCC) and the various provincial development commissions as participatory actors in providing up-front funding to undertake research, to produce commercial cultivars, to provide extension services to assist farmers to effectively adopt the new crop and to develop the market

through regulatory compliance and standards setting. They concluded that the farmer check-off system and related collective action through the CCC and the development commissions, the engagement of federal research agencies, incentives provided by the provinces to attract multinational seed and chemical companies and the federal decision to implement UPOV 1978 that strengthened plant breeder's rights (PBR) all worked to attract global interest in the crop. The crop was first converted from a niche industrial oil to an edible oil recognized as 'generally regarded as safe' (GRAS) for human use and then targeted as an early and important species for transgenic modification. As the candidate technologies were proved up, the private industry, in partnership with the farmer participatory agencies, emerged and took the lead. While the transformation of rapeseed into canola in the 1970s was largely a public-collective effort, the transgenic revolution was differentially a private one. Between 1985 and 2000, the public system retreated from varietal development and the associations were minor albeit important partners in the adoption phase of the new transgenic varieties. GM herbicide tolerant canola came to dominate the market. In addition to pushing out other traits, the new cultivars incentivized farmers to expand their area devoted to canola. In 2011-15, Canadian farmers planted and harvested on average more than 20 million acres of canola annually, up from an average of only about 7 million acres in 1986-90.

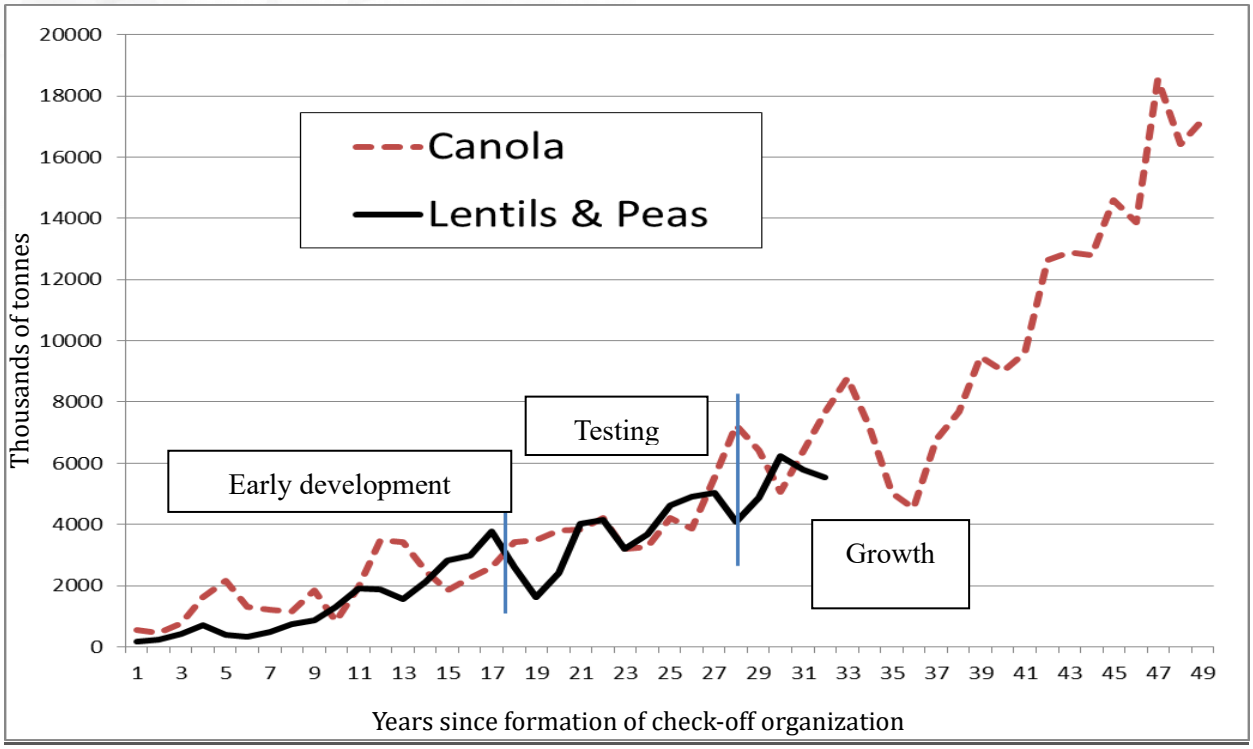
The earlier studies of aspects of the pulse story and the parallel analysis of the development of canola offer a template for reviewing the pulse story. We will review the story longitudinally, highlighting the interplay of science, industry, government and collective actors as they add to and change the dynamics of the industry. As with most cases, the story is far from done. We will conclude with a discussion of if or how the recent accession to UPOV 1991 and the rebranding of Alliance Grain Traders as a food rather than trading company will set the stage for future growth.

The Saskatchewan Pulse Industry

Making a new agricultural and food product and successfully securing a market is a major challenge. Success requires investment in research, regulatory compliance, education and transfer to producers, market development and marketing. In absence of well-established supply chain relationships and/or strong intellectual property protection, most of these investments run the real risk of being sunk costs that cannot be recouped in the market. This is a classic case of the hold-up problem.

The rest of this paper examines the interplay between the public, private and participatory sectors, focusing on the factors leading to the creation and growth of AGT. To assist with the analysis, we have divided the history into four parts: the pre-history, where farmers experimented with the crops but there was little or no organized research, production or marketing; the early development period, when public investments and check-off funds dominated, coordinated through the newly forming participatory councils, in each case for about 16-18 years; a testing phase where new commercial market actors entered and challenged the market, which lasted about a decade for both sectors; and then a fast growth phase, where private capital unambiguously moves in and takes over, driving expansion of innovation, production and trade (figure 1).

Figure 1: Industrial development pathways in canola and pulses



Period 0: The pre-history of pulses (before 1984)

Both pulses and canola were not traditionally grown in Western Canada. While both had a long history of being tested and produced by individual producers, neither made much headway until the 1970s. According to Agri-Canada (2016), in the 1970s "the wheat glut encouraged farmers to diversify into cash crops such as rapeseed (canola), lentils, peas and other specialty crops." All of those crops were only moderately suited to cultivation and use in Western Canada. Rapeseed was first out of the gate and offered some lessons for farmers looking to develop other new crops. In 1967 producers succeeded in forming a check-off funded organization, the Rapeseed Association of Canada, which was almost immediately faced with the market-stopping news that there were anti-nutritional properties in the oil and meal (erucic acid and glucosinolates, respectively) that affected both human health and animal nutrition and precipitated trade and market disruptions. A concerted research effort in Agriculture Canada led to the development of the first double-zero variety by 1974, which was rolled out successfully to Western Canadian farmers and ultimately rebranded as canola in 1978.

Pulses faced similar challenges in getting started. As recently as 1980, there were no recorded acres of lentil and only 75 thousand acres of peas in Western Canada. A number of factors needed to fall into place for pulses to be considered a commercial crop warranting concerted action. In the first instance, plants needed to be adapted to commercial farming. Public breeders did the early work. As early as 1960 Agriculture Canada released its first pea cultivar (Century); over the next 15 years another half dozen pea cultivars were released. Meanwhile, in response to dry conditions in the early 1970s, Pioneer Grain Company brought in some lentils and offered them to a few producers to try. They discovered the plants grew well but were outcompeted by weeds and tended lodge when mature, making them hard to harvest. Farmers continued to experiment with them but the consensus was that the crop needed more development. The University of Saskatchewan (U of S) created the Crop Development Centre (CDC) in 1971 to focus research on new crop development. The CDC, largely funded by the Saskatchewan Ministry of Agriculture, is mandated to "improve economic returns for farmers and the agriculture industry of western Canada by improving existing crop, creating new uses for traditional crops, and developing new crops" (CDC, 2016), in collaboration with market and participatory institutions.

In 1973 the University hired Dr. Al Slinkard from the University of Idaho to work in the CDC on pulses. He released his first lentil variety, Laird, in 1978; over his career the CDC developed 19 more lentil cultivars for commercial release. Some have heralded Laird as the Marquis wheat and Yukon Gold of its class. Coincident with the improved genetics, new herbicides were registered to control weeds and processors worked to develop scale-appropriate methods for processing product for the food and feed markets. During the 1970s, producers had formed the Saskatchewan Pulse Crop Growers Association as a forum for producers to share experiences for the then new crops of lentils and peas. By 1983 the crop and the industry was primed for more development.

Period 1: Early development of the pulse industry (1984-1999)

During 1983 the producers followed the lead of other crops and voted to create a producer check-off to help to develop the industry. Given that the federal and provincial governments share constitutional authority for agriculture, forming such an association is authorized both by federal statute (Agricultural Products Marketing Act) and provincial law (Natural Products Marketing Act of the Province of Saskatchewan). In July 1984 the Saskatchewan Pulse Crop Development Board, with a Board of seven pulse farmers, elected by registered pulse growers began operations. At the start, the marketing orders established a mandatory, non-refundable producer check-off of 0.05% of the value of all pulses grown and trade in Saskatchewan. For sake of simplicity the organization will be called the Saskatchewan Pulse Growers (SPG), the name it currently operates under. Similar organizations emerged in the neighbouring provinces—the Manitoba Pulse and Soybean Growers Association in 1983 and the Alberta Pulse Growers in 1989—but their check-off levies raised just C$2.4 million jointly between 2003 and 2013, in comparison with more than C$23 million raised by the SPG (Gray et al 2008).

This participatory, farmer-funded industry association addresses two important aspects of industry development. First, by operating a mandatory, non-refundable levy, it removed the possibility of free riding, which removes one of the causes of the hold-ups in industrial development. The levy was set in 1983 at 0.5% of the gross value at the first point of sale or distribution by a producer and was then raised in two stages in 2001-3 to 1% of receipts. Second, by mandating membership, it created the precondition for farmers to organize around and contribute to the identification of research targets, extension of knowledge and development of new markets. By creating a mechanism to project producers' voice and by giving them the tools to address the key non-rival elements of market development (which as discussed are often non-excludable), the organization offered a fix that in this industry has worked amazingly well.

Operationally, the SPG collaborated with the CDC to develop new cultivars. After the first two releases by Slinkard before the establishment of the levy, the SPG increasingly engaged with the U of S CDC or genetics and breeding. Table 1 shows the long-term and rising relationship between CDC and SPG. Initially funds flowed as part of specific projects but over time the two organizations developed long-term partnerships. In 1997 the two organizations formed their first multi-year agreement. The latest extension in 2005 was for 15 years (SPG, 2016). In the early years (1984-99, the growers' association contributed only modest amounts and shares of the pulse research budget, but after 2000 the SPG moved to the fore, partly in response to increased levies from doubling the non-refundable, mandatory levy to 1% of gross receipts and partly due to larger harvests but also because of a significant pull-back by the province from breeding investments in general. Between 1997 and 2015, the CDC produced and released royalty-free to Canadian producers 52 verities of lentils, and 30 varieties of peas. Gray et al. (2008: 2) calculated for every SPG R&D dollar invested from 1984-2012, producers gained $15 of benefits.

Table 1: Average Annual Expenditures on Pulse Crop Research by Period

	ADF/AFIF[1]	SPG[2]	WGRF[3]	Total
Average annual investments ($000)				
1984-89	$529	$73	$148	$750
1990-94	$648	$144	$95	$887
1995-99	$1,556	$450	$124	$2,130
2000-02	$1,455	$1,148	$124	$2,727
2003-08	$386	$2,924	$74	$3,384
Total 1984-2008	$20,346	$24,323	$2,651	$47,320
% Distribution				
1984-89	71%	10%	20%	100%
1990-94	73%	16%	11%	100%
1995-99	73%	21%	6%	100%
2000-02	53%	42%	5%	100%
2003-08	11%	86%	2%	100%
Total 1984-2008	43%	51%	6%	100%

Source: Gray et al 2008.[1.] Agricultural Development Fund/ Agri-Food Innovation Fund; [2.] Saskatchewan Pulse Growers Research and Development expenditure; [3.] Western Grain Research Foundation

Period 2: Commercial testing the market (1999-2007)

In many ways, 1999 marked a watershed in industrial development for pulses. A number of events in the preceding years precipitated change. Acreage and production were rising, partly due to the availability of new and more competitive cultivars and partly due to a rising interest in cash crops to supplement the traditional crop rotation. By the mid-1990s evidence was mounting those pulses provided significant agronomic value by fixing nitrogen in the soil that would be accessible for crops in future seasons. In 1999 total production reached almost 3 million metric tonnes, about 2.2 million of peas and 0.75 million tonnes of lentils. Given that almost 80% of that production was in Saskatchewan, it was only natural that the processing and marketing industry would target the province.

About the same time, the international trade system began to change. Internationally, the World Trade Organization Agreement was concluded in 1994 and ratified and implemented beginning in 1995, opening up new agricultural and food markets. In Saskatchewan the government restructured its trade portfolio in response, spinning out its trade and market development unit into a newly created Saskatchewan Trade and Export Partnership (STEP) that began operations in 1996.

The public-private-producer partnership space expanded significantly in that period. The SPG found a lot more partners to work with over that period. In addition to their sustaining work with the CDC, the Growers engaged with a wider range of research partners (Gray et al 2008), seed growers and processors as work moved beyond breeding and into agronomy and processing.

In 1997 the national industry created Pulse Canada, a national industry association that represents growers and a range of processors and traders of pulse crops in Canada. Direction and core funding for Pulse Canada is provided by the Alberta Pulse Growers Commission, Saskatchewan Pulse Growers, the Manitoba Pulse Growers Association, the Ontario Bean Growers, and the processors and exporters of Canadian peas, lentils, beans and chickpeas that are members of the Canadian Special Crops Association (in 2006 the two organizations merged). Project funding comes from both federal and provincial governments. Canada targets five operational areas: market access; market growth and innovation; transportation; environment; and industry initiatives (http://www.pulsecanada.com/about-us).

Early in this period it was not clear how the industry would develop. The CDC, in partnership with Pulse Canada, was actively engaged in international development, but exactly how that market would be served was uncertain. While some of the larger grain companies were showing interest in pulse trading, their main focus was on the grains managed through the Canadian Wheat Board and the exciting prospects for canola. The large multinationals, which traditionally remained aloof from Canadian agriculture, had a strong interest in soybeans, a not-so-distant cousin to pulses, and were increasingly attracted by prospects for canola, but showed no real interest in peas, lentils and chickpeas, the most common pulse crops in western Canada. By 2001, Saskatchewan Agriculture estimated that there were more than 135 special crops processors in the province, many of which processed pulses. Most of the plants were small mom-and-pop type shops or facilities owned by groups of local farmers. The big players in the grain industry, apart from the Wheat Pool which operated four plants, did not have a presence comparable to their conventional grain processing capacity (Pratt, 2001).

Into that mix stepped Murad Al-Katib, a Saskatchewan native and U of S graduate who had just completed his business studies and was doing an internship at the Canadian Embassy Liaison Office for the World Bank in Washington, D.C. (see Fast 2013 for full story). He wrote the Premier both suggesting the province should develop a strategy for emerging markets and suggesting he would like to join the effort. He was hired and joined STEP when it began operations in 1997. Through his work with STEP Al-Katib met the Arslan brothers, who owned the Arbel Group, one of the largest grain trading companies in

Turkey. The Arslans were looking to partner with a Canadian pulse company. Al-Katib took up that challenge.

Arbel provided Al-Katib the capital to create Saskcan Pulse Trading Inc., which began trading in 2001 (figure 2). The company used much of the capital to build a state-of-the-art lentil and pea splitting facility in Regina using Arbel's proprietary technology and a team of seven Turkish 'split-masters' who immigrated to operate the equipment. The plant opened in October 2002. As the market expanded, Saskcan grew apace. By the 2003-7 period, there was 3.2-4.2 million tonnes of peas and lentils produced annually in western Canada, and Saskcan was processing and marketing an increasingly large share.

Figure 2: Key milestones in development of Saskcan Pulse and AGT 2001-2007

Source: AGT 2016.

By 2007 Saskcan had three processing plants in Saskatchewan, with another plant in North Dakota in the process of being acquired and was expanding both into Australia and the US (figure 2). Al-Katib claimed Saskcan by then was the largest processor and exporter of red lentils in the Western Hemisphere (The Leader Post 2007). The company clearly needed outside capital to grow to meet the market opportunity.

Period 3: Growth with AGT as a publicly traded company (2007-15)

Up until 2007, the industry was largely dominated by public and producer funds partnered through the CDC, with the resulting product processed and marketed by a small and diverse group of entrepreneurial firms. Saskcan was emerging as one the largest but was constrained by access to capital for growth. Coincident with its expansion internationally, Al-Katib merged Saskcan, which was a privately held company, with Saskatchewan-based Agtech Income Fund, which traded as an income trust

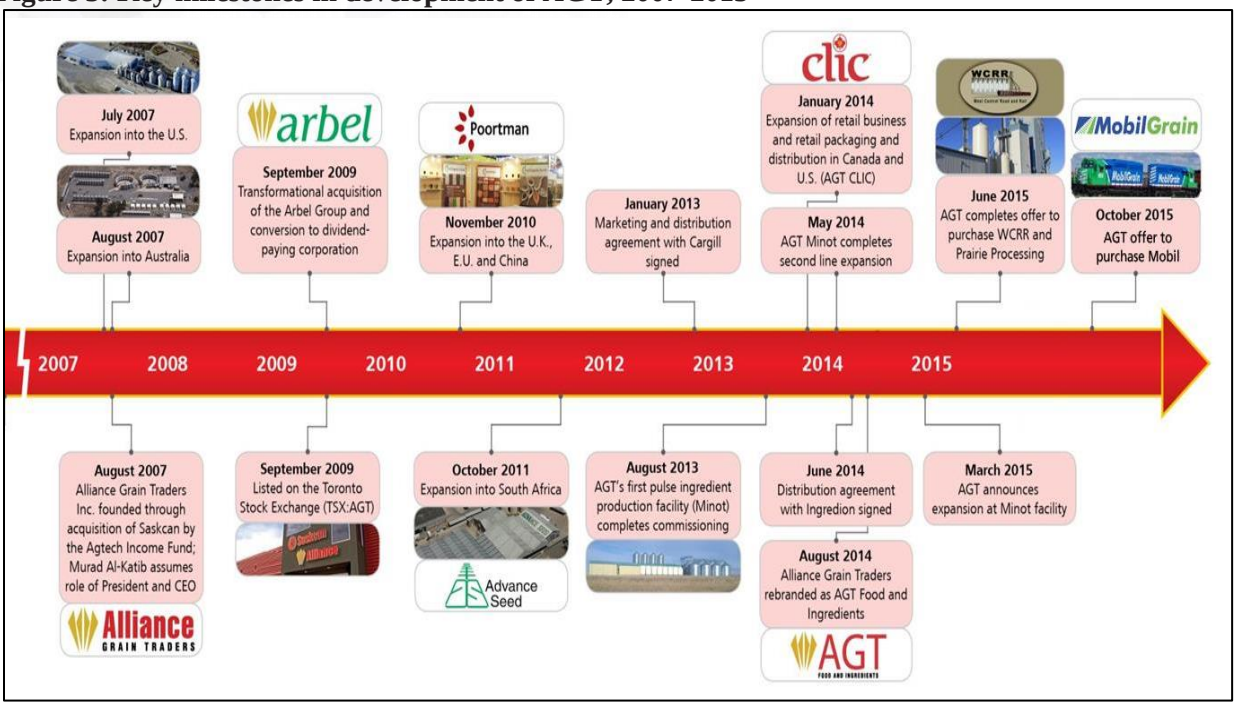
in the TSX Venture Exchange.[2] Agtech Income Fund had been created to purchase Agtech Processors of Regina in March 2005. Agtech Processors had been operating for about 20 years sourcing, processing and selling green lentils as specialty crops for the export market.

The terms of the deal between Saskcan and Agtech had the Income Fund acquiring all of the shares of Saskcan Pulse Trading Inc. in exchange for two million units of the income fund, valued at C$8 million. As part of the transaction, Agtech raised an additional $14 million through a private placement, which was used to pay down Saskcan's debt and complete the acquisition of a North Dakota pulse processing plant. The resulting holding company was rebranding as Alliance Grain Traders Ltd. and reported it had a market share of 300,000 tonnes, equal to about a 10% share of the Saskatchewan market. Al-Katib became the President and CEO of the new company.

By 2009, the company had outgrown its corporate structure. AGT transformed from an income trust to a publicly traded corporation listed on the Toronto Stock Exchange. As part of the restructuring, AGT acquired all of the outstanding shares of the Arbel Group for an aggregate purchase price of C$104 million, of which C$60 million was paid in cash and C$44 million was paid by the issuance of 2,850,448 Common Shares at a deemed price of C$15 Common Share. The Common Shares were approved for listing on the TSX and commenced trading under the symbol "AGT" as of the opening of business on September 18, 2009 (Market News 2009).

[2] TMX Money (2016) defines income trusts as “an exchange traded equity-type investment that is similar to common stock. By owning securities or assets of an underlying business, an income trust is structured to distribute cash flows from those businesses to unitholders in a tax efficient manner. An income trust does not pay corporate tax and is able to pass on the cash flows they receive (net of administrative costs) directly to unitholders. In addition to avoiding double taxation, many income trusts use a tax deferral mechanism to enhance tax efficiency, whereby a portion of the distribution is considered to be a return of capital. Investors do not pay tax on the amount deemed to be "return of capital", and the amounts received as return of capital serve to reduce the "cost base" of the original investment. This means that when the investors sell their units, they pay capital gains tax on the difference between the sale proceeds and the adjusted cost base at the time of sale.”

Figure 3: Key milestones in development of AGT, 2007-2015

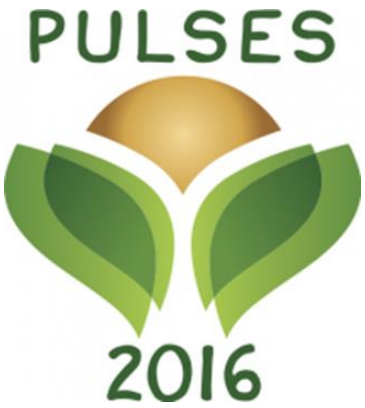


Source: AGT 2016

The transformation to a publicly traded company allowed them to raise capital for the purchase of future investments, including a C$80 million bought deal in 2014 that involved the issue of 2,858,000 Common Shares at a price of $28.00 per share. The acquisition of the Arbel Group transformed AGT from an exporter of pulses to an agri-food company. This acquisition also allowed them to enter the Turkish market which is a large producer and consumer of pulse products (AGT, 2016). Since then the company has made a flurry of deals (figure 3), including acquiring Poortman in 2010 and expansion into the UK, EU and China, acquiring Advance Seed in 2011 and expansion into South Africa, purchase of CLIC and expansion into retail packaging and distribution in Canada and US and purchase of WCRR and Prairie Processing (2015). AGT also signed marketing and distribution agreements with Cargill (2013) and Ingredion (2014). In 2016 the company reported it operated more than 41 processing operations on five continents. As of early 2016, AGT has a market capitalization of $850 million (AGT, 2016) and reported an increase in revenue to $1.7 billion in 2015, up from C$642 million in 2010, its first year of operation as a joint-stock company (AGT Annual Information and Strategic Overview Documents, 2010-2016).

Period 4: The Future (2016-)

The industry faces an interesting future. The conditions for growth are now largely in place, but it is far from clear whether the crop will realize a future of the same scale as canola. In 2015 Genome Canada through its large scale applied research program competition on 'Genomics and Feeding the Future' launched at $8.1 million, four-year project on the Application of Genomics to Innovation in the Lentil Economy (AGILE). Coincident with the launch of the UN Year of the Pulse in January 2016, the project leads of AGILE announced the successful sequencing of the lentil genome, using as the reference CDC Redberry, a small red lentil variety developed by CDC. This international sequencing led by the CDC, was cofounded by the SPG and government of Saskatchewan and involved researchers at University of California-Davis, National Research Council Canada, United States Department of Agriculture, Washington State University, International Center for Agricultural Research in Dry Areas (ICARDA), Victoria State Government, African Orphan Crop Consortium, University of Western Australia and the Institute of Experimental Botany in the Czech Republic (University of Saskatchewan News 2016.).



Beginning in 2014, AGT began to reposition the company from a commodity trader to an agri-food company which might yet come to both dominate and personify the Saskatchewan and Western Canadian pulse industry. Both the external environment and internal competencies and dynamics of AGT are driving towards change.

Perhaps most importantly, the underlying policy and mechanisms that have supported the public-private-producer partnership model exemplified by the SPG-CDC relationship are shifting. Gray et al (2008) concluded that the policies used for releasing varieties until now maximized returns for producers. The General Variety Release Program was effective in getting new seed to producers in a competitive and timely fashion. It both satisfied the commercial seed growers and generated sustained and growing levies from uptake and use. CDC, with SPG agreement, tenders international distribution rights for each crop to private companies to act as International Agents. While the CDC is the dominant player in the lentil breeding space (Table 2), there is more competition in the field pea market. Nevertheless, the bulk of the varieties in both species come from public programs. While a Tender Release Program, where small niche varieties and classes of pulses are licensed exclusively to a private company for development and marketing in return for royalties, has been available for a while, it currently makes up less than two percent of the cultivated area (Vandenberg 2016). The ability of farmers to save seeds and replant them has undercut the commercial basis for private companies to invest in this activity.

This comfortable and successful model is now facing a change in the policy context. In 2015 the Conservative government introduced and passed the Agriculture Growth Act, which implemented the provisions of UPOV 91 in Canada. This extended PBR protections from 15 to 20 years, allows both patents and PBRs on plants and expanded PBRs to include exclusive control over cleaning, conditioning and storing PBR protected seed. Perhaps most importantly for plant breeding, UPOV 91 allows for breeders to collect royalties either at the front or back end of farm production. This goes a long way to fixing one of the market failures in the pulse market—the inability to control secondary use of breeding materials and to collect royalties. This failure has inhibited private sector investment in most self-pollinated crops. In Australia, which adopted UPOV 91 in 1994, end-point royalties are common and a wider array and greater number of breeding programs for self-pollinated crops have emerged (Giovanoli 2014).

Table 2: Pulse Varietal Releases, 1960-2016					
Peas	# releases	Avg/year	CDC releases	CDC % total	AAFC releases
1960-1983	4	0.2	0	0	1
1984-1998	79	5.3	5	6%	0
1999-2016	95	5.3	31	33%	16
Lentils					
1960-1983	2	0.1	2	100%	0
1984-1998	10	0.7	8	80%*	0
1999-2016	52	2.9	50	96%*	0

* while there were non-CDC varieties released, they captured only modest areas.
Sources: Authors' calculations of CFIA Registered Varieties database (http://www.inspection.gc.ca/active/netapp/regvar/regvar_lookupe.aspx) and CDC Field Crop Varieties database (https://agbio.usask.ca/research/centres-facilities/cdc/varieties.php).

We are already seeing industry in Canada respond to the new incentives. In the first instance, public-private-producer partnerships are under review. Early in 2016 the Alberta Pulse Growers Commission announced they were pulling their, albeit minor, funding from CDC and with it their ability to obtain pulse varieties for farmers royalty free (Pratt, 2016). At the SPG annual meeting in January 2016 a group of growers proposed a motion to direct the SPG board to ask the province to amend the SPG regulations to convert the mandatory, non-refundable levy into a refundable one. This would enable farmers to apply for refunds of their pulse checkoffs that SPG collects (MacArthur, 2016). Both developments work to reduce the certainty and resources available for public breeding.

Meanwhile, the private sector is responding. While Viterra, a division of the Swiss trading giant Glencore, has a significant bulk shipping program and is funding some pulse research, AGT moved to the fore, restructuring the firm into a fast-growth, vertically integrated food company. In the past five years the company has grown sales by an average of $300 million per year, starting from a base of about $300 million in 2010.

The company has worked to build a fully vertically integrated operation. AGT in 2013 recruited from North Dakota Dr. Mehmet Tulbek, a leading food scientist, to set up a small R&D office in Saskatoon to work on food ingredients in partnership with the University and POS Bio-Sciences Ltd, a contract research organization which offers a pilot plant for R&D, custom processing and analytical services. In 2014 the company, formally known as Alliance Grain Traders Inc., renamed itself AGT Food and Ingredients Inc., signaling its new orientation. The company moved over the past few years to acquire other assets to complete the supply chain. By 2016 the company had 41 plants on five continents. As a part of an $85 million acquisition, AGT acquired in late 2015 West Central Road and Rail and Mobile Grain, which both secured logistical access to the large supply of pulses in the west central part of Saskatchewan and to Mobile's innovative modular-designed, moveable grain processing plant. By 2015 AGT had a proprietary variety commercialization program running successfully on 100,000s acres, with the B-90 variety of chickpea from a private breeder (exclusive until 2030), three CDC varieties (marketed as King Red™ and Queen Green™ lentils) and Malik faba bean. The Malik program (Malik translates to 'king' in Arabic) is directed to Egypt, where all the product arrives in branded bags and marketed as a branded food product, the first of its kind in this product

category. In contrast to most of the crop, AGT managed these varieties themselves as branded products, multiplying the seed, contracting the production directly with producers and managing the logistics of delivery, transportation, processing and delivery.

A March 2016 strategic overview document for the R&D center asserted it would invest in research "… to captur(e) customer sales opportunities … to develop new applications/ uses for pulse ingredients through collaborative research, commercialization & innovation initiatives and technology development … [and] to assist customers [to] convert test quantities to sales quantities" (AGT, 2016). The company has targeted three product areas: food uses for the human, animal and aquaculture markets, especially for high protein, low glycemic ingredients; fibre for nutritional and industrial use; and safe feedstock for the livestock industry. One example of this is a new high-amylose pea developed at Montana State University and acquired by AGT in 2015. This new variety (MSUPBL37A) has a low glycemic value which would fit well with the dietary needs of diabetics; AGT has contracted small amounts to a few producers and is to continue to research its food properties.

Where the industry will go remains unclear. Until now almost all the varieties in use have come from public research programs. As AGT, and others, contract for or possibly directly undertake research, the industry could see major changes. If it follows the canola route, public investment and research could shift away from development of commercial cultivars and refocus on upstream basic research or development of specific breeding technologies. The face of the industry would shift away from the SPG-CDC-AAFC-AGT and public-private-producer partnerships towards a more market directed and commercial visage. AGT is the one sustaining entity with the scale and reach to assume that role at the moment, but as we have seen in most other crop sectors that go through this kind of transformation, the commercial lead often changes hands and the names of the corporate actors are often ephemeral.

Discussion Questions

1. While the evidence suggests AGT and the industry emerged due to public-private-producers partnerships exemplified by the SPG-CDC relationship, are there other ways similar development might have progressed?
2. The AGT-SPG-CDC story is disproportionately a Saskatchewan story. Is that inevitable? Could this type of development become more distributed beyond a province?
3. Is there a place for another AGT in Canada, either in pulses or in other underdeveloped crop areas?
4. AGT has a commanding share of the pulse trade. How important is that to the development of the industry and commercial sector? How or will the Canada-European Trade Agreement (CETA) or Trans Pacific Partnership (TPP) affect the company plans to exploit opportunities for high protein, low glycemic ingredients, biodiesel and ethanol alternative fuels, fibre for nutritional and industrial use and livestock feedstock?
5. Accession to UPOV 91 and pending changes in the public-private-producer partnerships driving research could either open space for private research or lead to a slowdown in innovation. What strategy and tactics should AGT and the industry pursue?
6. To what extent is this case of broader value? What general lessons does it yield?

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