A report for:

Capturing and Creating Value for Brazilian's Midwest Grain

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Executive Summary

Brazil has been an outstanding case-study of agriculture success. In the last 30 years, its increase of production and improved techniques have turned the country from an importer of food to one of the main granaries of the planet.

Brazilian agriculture is unique in its ability to produce two crops in the same agricultural year without irrigation, especially in the Midwest region. Year by year this capacity is increasing, especially in the second, or even a third crop.

The status of being one of the main players relied upon to feed the world, has been overshadowed by the Brazilian ability to capture and create value in the market chain.

This report aims to improve the understanding of the gaps in the value chain and indicates the possibilities to capture more value from the “safrinha”, the Brazilian second crop. Farmers must understand how they can plan their production system to fit demand and generate greater profits with the same resources, an outside the gate approach.

This report explores the diversification of crops, adding value to the products, selling by e-commerce and other Agro-industry opportunities. The report also shows the importance of improving the image of the farm group through strong representative institutions, standardized protocols that guarantee consistency and quality to buyers, and better communication with consumers.

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Foreword

I was enthusiastic when given the Nuffield opportunity to travel to many countries and see farmers, governments and agricultural institutions who are making great efforts positioning their products as good food, with a unique story and not just commodities.

Since 2013, I have been working at my family farms in the Brazilian Midwest. Back then we used to farm in one specific region, where it was perfectly possible, due to the larger window of rain and altitude, to grow two full crops in a crop year. In 2014 I moved to a more northerly area called Araguaia Valley to start a new agricultural operation and encountered various challenges which I needed to solve to make the farm viable.

This region has shortergrowing season, a greater distance to the seaports, lower altitude, higher taxation and no incentives for agri-industry, as well as a bigger bureaucracy and some other disadvantages. By understanding the marketing chain, I saw opportunities outside the farm gate to improve margins for farmers and for the sector. I do not intend to suggest recipes for improving the profitability of commodities solely by targeting value-adding strategies, since "*a good strategy for success for one farm could be a total bust for other farm businesses* (Roger G. Ginder)"[1]. On the other hand, I believe that general guidelines can be made to alert producers to opportunities in this area. These guidelines can be adopted by individual producers, as well as by groups of producers and whole sectors within the Brazilian grain-producing chain.

Brazil is a rich country, with land, an abundance of water, big consumer market and creative people; but in general, there is not much excitement about "Brazilian made" when speaking about food. For example, Brazil is one of the biggest exporters of coffee in the world, but European countries, which have no coffee-growing land, are recognised as the sources of quality coffee. This discrepancy applies to many crop types. It has long been common knowledge that Brazilian producers have been relying on producing volume, taking advantage of abundant resources, but missing big chances to create and capture value for the national products. There are chances to move from being a price taker to a price maker, if we change our mind-set and start thinking about strategies as a food industry entrepreneur and change from thinking about "field to the table" instead of being only focused on production. This report is written from the perspective of a larger than average size entrepreneurial farm manager, , is young and confident about development and growth and who looks forward to becoming part of a big improvement in the way products are marketed in Brazil.

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Abbreviations

ABRASEL – Association of Pubs and Restaurants of São Paulo

APROSOJA - MT– Associação dos produtores de Soja e Milho do Mato Grosso, in English: Soybeans and Corn producers Association from Mato Grosso State

DDG – Dried Distillers Grain

FACS – Fundo de Apoio à Cultura da Soja, in English: Soybean Support Fund

FIT – Fine Instrument Technology

GMO – Genetically modified organism

IBRAFE – Brazilian Institute for Beans and Pulses

UK – United Kingdom

US – United States of America

SENAI – National Service for Industrial Learning

Objectives

This report is based on personal experiences of the author through the Nuffield Scholarship, which allowed an expansion of knowledge and visualization of opportunities. This work has as its mission to present ways to capture and retain more value and income for the producer and region of Brazil's Midwest, directed specifically at crops with potential in the second harvest. The specific objectives were to:

- Showcase diversification options of crops that have potential to reach higher value in national and international markets and also go through processing to add margins.
- Analyse gaps in the market chain for grains where opportunity exists.
- Comprehend the customer needs, in order to exploit potential markets (Brazil and abroad).
- Give an overview of marketing strategies to be adopted in the Brazilian marketplace,in order to create more value for farmers.

Chapter 1: Introduction

Overview of grain production

Despite the low fertility and acidity of the soils, the use of technology over time made Brazilian's Midwest into the most important grain producer in Brazil and potentially one of the most important in the world. The region is responsible for the production of 42.5 % of cereals, leguminous and oilseeds in the country Mato Grosso state is important in the national scenario, leading with 24% of the national production (2016).

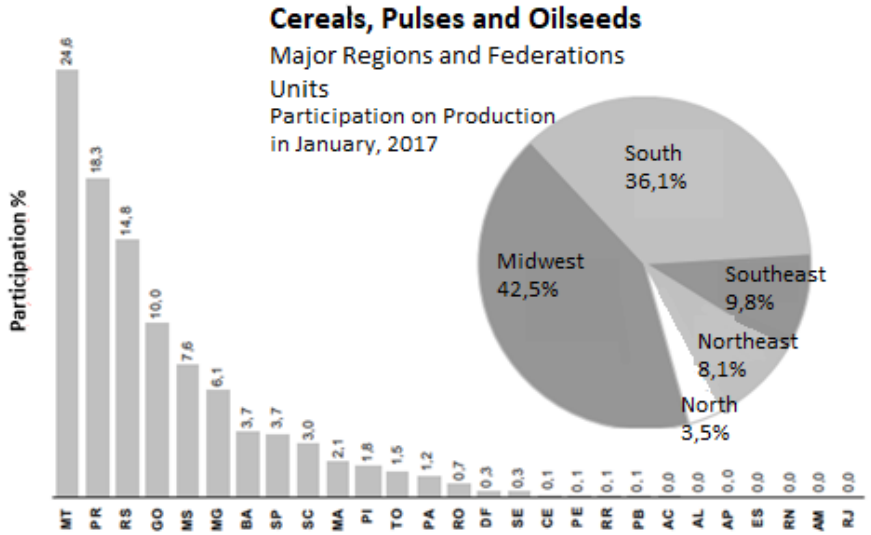

Figure 1 - Cereals, Legumes and Oilseeds among Brazilian *main r*egions. Products: Cotton seeds, peanuts, rice, beans, castor beans, corn, soybeans, oats, rve, barley, sunflower, sorghum, wheat and triticale (all in grains)

The biggest grain season in Brazil happens from September to December of each year and is harvested from 90 to 140 days afterwards. The main crop in this period is soybeans, which is not grown after May due to the necessary disease break. Because of this restriction, other crops like beans, cotton and especially corn, which would originally compete for the area, often make space for soybeans and are cultivated as a second crop.

The second crop is popularly called '*Safrinha*', or the small crop. This technique has emerged in the 70's in Paraná state through the adoption of no-tillage practices which have taken place throughout the country over the years. Safrinha seeding happens right after the harvest of soybeans and in most of the country the main crop is corn, but other options are cultivated too. The cultivated area and investments made on fertilizers and biotechnology vary from year to

year, depending on many factors, such as the scheduled period of the soybean harvest and on the rainfall forecast from April and May, months that usually have less rainfall (Duarte, 2015).

The chart below shows the second crop area for corn in millions of hectares in Brazil has doubled in the last ten years. This means the same area is used twice to produce grain, a great boost, without any kind of deforestation. We see this practice being most relevant in Mato Grosso.

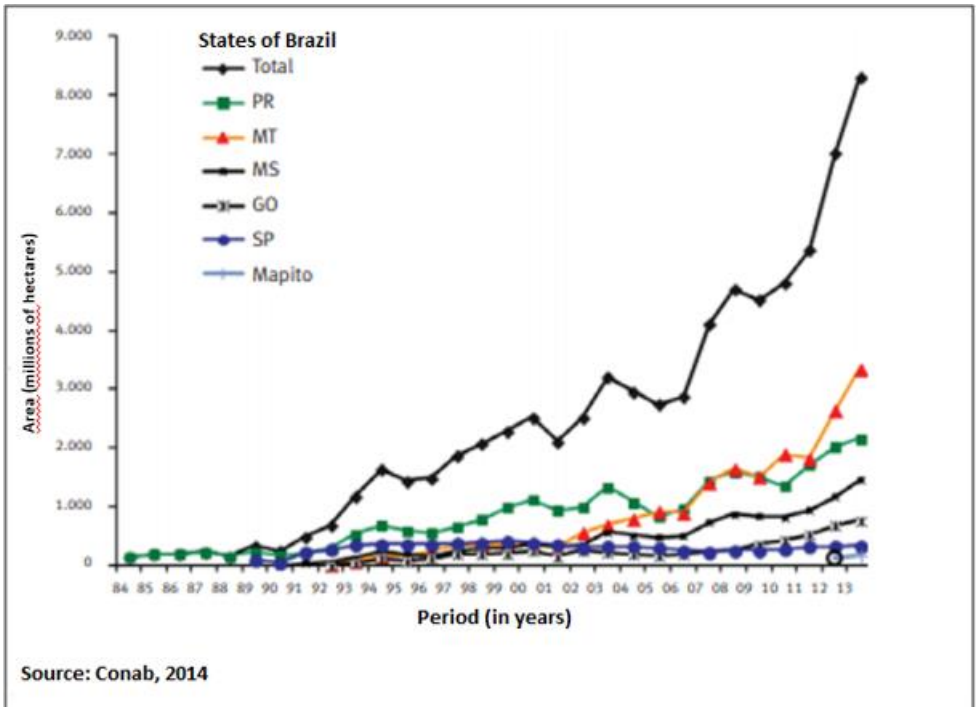

Figure 2 - Evolution of area of Corn of Second Crop in Brazil (Total) and states of Paraná (PR), Mato Grosso (MT), Mato Grosso do Sul (MS), Goiás (GO), São Paulo (SP) and Chapadoes do Maranhão, Piauí and Tocantins (MAPITO); 1984 to 2013

Areas not used before for "Safrinha" are rapidly becoming available, due to the growth in machinery size impacting on the speed of seeding and allowing harvesting in a smaller window, and due to early varieties, reducing the time each crop is on the field without reducing productivity (IPEA, 2016).

Safrinha has increased the availability of grain and it puts downward pressure on the prices of corn. It may also increase freight rates on grain, in a central area when freight can cost more than the value of the grain being carted. The aim of the second crop is "*to add value to commodities and to increase the value of the product being transported, so the freight price is less significance*" (Wallace, 2017).

Creating and capturing value in grain commodities

There are two ways of adding value to commodities: capturing it or creating it. Capturing value means covering the role of other supply chain players under the umbrella of the existing business and can be done through direct marketing, vertical integration, alliances and cooperatives. Two good examples are forming a cooperative to build a corn ethanol plant or direct exporting of processed clean beans, skipping all the intermediaries within the marketing chain (Hofstrand, 2004).

On the topic of the creation of value, we can include the creation of branded products, or combining unique services with the product to deliver a different experience for the customer, or the production of crops with enhanced characteristics or specialty crops.

All these add value where none existed before (Hofstrand, 2004). Examples are:

- Branding specialty coffees.
- Giving tours through the coffee fields for the consumers to relate this experience with value.
- Cultivating corn varieties with higher levels of starch.

Biggest opportunities are on the second crop

In contrast to soybeans, which have a well-defined marketing chain through well-known trading companies and a good weather window, safrinha crops have the following outstanding issues arising from a large number of intermediaries in the marketing chain. These intermediaries often:

- Do not meet tax obligations.
- Are unorganized with cash flow and accept too much risk, which results in delay or non-payment to the farmer.
- Have weak contracts.
- Circumvent weight and freight rules.
- Work illegally, with no registered company.
- Lack communication between the farmer and the consumer market.
- Lack information and research about alternative crops.
- Have infrastructure issues arising from unhygienic storage facilities.
- Lack scale to build demand.
- Experience less predictable income due to weather and price risks.

The internationally famous business coach, Tony Robbins, says: "*Every problem is a gift. Without them we would not grow*". Safrinha crops present an opportunity to use unused cropping areas to increase the whole-farm income.

Chapter 2: Diversification of Crops

The plant breeding industry is being developed to increase the productivity but not really improve farmer's income; the large-scale grain industry focuses on productivity, not on net value. This is especially in the case of genetically modified organisms (GMO) corn in the Midwest, which often achieves very low prices with high freight costs; having alternatives on the radar is important.

Additionally, the combination of soybeans and corn in Brazil, if done year-on-year, does not represent a viable crop rotation. A continuous succession of the same combination of crops does not add to soil health and fertility and increases the risk of pest resistance to agrichemicals.

Requirements for Safrinha crops

There are infinite combinations of farming products and all might have a chance of success, but the purpose of this chapter is to explore crops which meet the following requirements, showing:

- The ability to be transported long distances without special requirements and conditions (eg, refrigeration).
- Have the potential to be cultivated as a second crop (i.e. not a perennial).
- Require the use of similar machinery for seeding and harvesting as the first crop.
- Do not require much extra staff.

Pulses

Pulses are dried edible legume seeds. Worldwide, there are 11 types of pulses recognized by the United Nations Food and Agriculture Organization (FAO). This term is limited to crops harvested solely for dry grain, not including those harvested green for food, like green peas or green beans, which classify as vegetables. Their production processes are also well known, and they have the additional benefit of fixing nitrogen in soils. The biggest group of pulses includes:

- Dry beans and its variations, such as kidney, mungo, black bambara and carioca beans.
- Dry broad beans, including faba beans.
- Dry peas, including chickpeas, cow peas and pigeon peas.
- Lentils.
- Vetches.
- Lupins (FAO, 1994).

Pulses on the national scene

Pulses have been moving into areas of second cropping in Brazil. Governmental and private organizations have been working on developing and researching adapted varieties with potential in the internal and international markets.

Carioca beans are the most consumed pulse in Brazil. Black beans are more popular in the southern region and Rio de Janeiro state. Cow peas are popular in the northeast. All of them yield well in the Midwest, with differences in the cost of production and water requirements. Carioca and black beans are expensive crops to produce and need much more water than cow peas, which is much cheaper to produce but has lower prices. Carioca's market is currently restricted to this country, with no consumption internationally. Some years of low prices have opened farmer's eyes to other existing types with international markets, and the possibility of expansion.

Established and emerging alternatives for the Midwest

The crop of the moment in the Brazil is chickpeas, catching attention due to its price internationally and it is suitable as a second crop. The Empresa Brasileira de Pesquisa Agropecuária, (EMBRAPA), has launched two varieties into the market called Allepo and Cicero, which are adapted to the Midwest's weather and soils. The main challenge is to reach good productivity levels, but as with soybeans, it takes time to develop better varieties and the field management to realise higher yields. Chickpeas's advantage is the possibility of producing a high protein flour. In Brazil the author has seen just one small example of simple milling of imported chickpea flour. Canada has shown that much more can be done by splitting fibre from protein and starch.

Figure 3 on the left - Visiting a Chickpea field in Campo Novo do Parecis – Mato Grosso state
Figure 4 on the right - Chickpea trial during a Pulse Day in Cristalina – Goiás State

New varieties of cow peas to meet specific markets and areas of cultivation with different characteristics are being developed. The “black eye” is currently the most favoured for exports; BRS Tumucumaque is the most popular variety among farmers, since it is less susceptible to soiling and still has the easiest access to international market.

DRK or Dark Red Kidney, is a red bean consumed and canned in American and European markets. The national variety available is BRS Embaixador and Brazil is just beginning to access these markets with this product. Cranberry beans have similar markets and the most popular variety in Brazil is IAC Nuance. Red bamboo beans and Navi beans have been tried in the field.

Mung beans have an increasing number of fans, due to its ease of production; it is cheap to produce and does not require much water. It is in demand in Asian markets, which means its production could be expanded.

Besides those options, there are efforts being made by EMBRAPA to develop lentils and green pea varieties adaptable to the Midwest, but commercial quantities of seeds are in short supply as yet.

Campo Novo do Parecis, a town in the west side of Mato Grosso state, is a successful example of the diversification of crops. Many of these pulses are largely cultivated there and the town has already developed trading companies ready to absorb large-scale production. The author had the opportunity to visit Coperaguas, a company trading in Brazil and their key to success is for farmers work closely with a team of agronomists and marketing men to test new crops and introduce them to international markets. This strategy is a good example for the rest of the region.

Specialty crops

Canarana, a municipality in the Araguaia Valley region, is the largest national producer of sesame, however, with very weak market development. The biggest difficulty for producers is a lack of local buyers.

White corn is showing potential due to its internal market among the months of June and July, where people consume a lot of “canjica” a traditional dish for “festas juninas”, a Brazilian festival. Internationally, it is appreciated on the African continent, because they have a hard time getting good yields and are a potential growing market for Canarana (Tonon, 2018).

Following on corn options, popcorn has been achieving good results and it is a strong crop in the town of Campo Novo do Parecis, the main producer in the country. The “Mushroom” and “Butterfly” varieties are popular, with level 40 to 42 of expansion and are ideal for expanded popcorn snacks (Tonon, 2018).

Tom Mackenna from Schoular Company, in the United States (US), surprised the author about niche markets for different varieties of non-GMO corn types. There are 13 types of non-GMO corn starch and each of them has specific market. Schoular’s main business is to outsource these specific types of corn and use the containers that come from Asia with manufactured goods to send grain back in small lots. When questioned about growing them in Brazil, they say the country is still too bureaucratic for it and has bad logistics. Only 2% of corn produced worldwide is for human consumption.

Finally, peanuts are gaining traction as an alternative crop, but require specialist harvesting machinery. Amaranth and quinoa are experiencing emerging demand worldwide for human consumption and when contacted, EMBRAPA Cerrados in the Midwest, informed me that they are planning to expand production and need farms to grow these in partnership with them.

Chapter 3: Gaps in the Market Chain

Lack of commercial strategy

Carioca beans often come to farmer's mind for adding value, since they are directly sold to the consumer, with no industrial processes involved, besides cleaning and packaging. Its consumption happens mainly during lunch and dinner on Brazilian tables.

The ease of selling to the end-consumer led to a massive emergence of micro-enterprises specialized on buying beans, packaging, and delivering them to supermarkets. This would not be a problem, if it was not for the fact these companies appear and disappear quickly, are not committed to passing information about the quality of the grain in the packages and carry all the flaws of intermediates mentioned above. Carioca has faced a drop in consumption in the last few years and the change in the lifestyle of people is the main reason. Its cooking process is in a slow, and sometimes dangerous pressure cooker, and since people are transiting from eating regular meals to snacks, having to use a plate to eat it is not helping sales.

The lack of strategy on the production and commercialization of carioca beans is reflected by a big drop in prices, causing financial damage for farmers. Until recently, there was only one reference point for prices, in a place called "bolsinha do Brás", but often there is complaint about the reliability of this source.

IBRAFE, a non-profit Brazilian institute for pulses and specialty crops, has started initiatives to change this market scenario by helping farmers with access to good information, given by farmers and professionals in the sector. They now operate Whatsapp groups in the main regions where pulses are produced and these have their own price reference table with farm-gate prices. According to IBRAFE's president, Marcelo Lüders, there is still a long way to go if the sector is to become a strong competitor nationally and internationally.

Eduardo Lima Porto, market consultant and economist, believes that Brazilian farmers do not sell their products; they are just bought. There needs to be mechanisms to ensure consistent quality if the product is to be a real player in the market. Farmers still produce using herd behaviour: when prices are good, everyone produces the same type of beans. There is a huge lack of information about demand. Gabriela Meucci, a specialist on strategic marketing in the food sector, explains that the US, for example, has a strong budget and invests in market research for their agricultural products. They have a sector specialising in collating information

about consumer behaviour and production in many countries, including Brazil, and supply information that no Brazilian institutions have yet.

Other problems identified are:

- *Lack of specific products to monitor the pest and weeds control* in the field, that will be approved internationally. Apparently, IBRAFE has already opened conversations with agrochemical companies to develop specific products that will enable pulses to access international markets without problems.
- *Quality and consistency issues*. Information about the management of fields and international standards does not get to the farmers. Educating farmers touse the correct management practices to produce high quality products, with good size, good appearance and good nutritional components is crucial.
- *Low investments on market research.* IBRAFE has been promoting trips to Gulf Foods in Dubai, participating on the Global Pulse Confederation, which is hosting its next global meeting in Brazil in 2019; it will be the biggest pulse meeting in the world. This is a big step, but nationally not even bigger companies which sell packaged pulses carry out much market research.

No financial resources are committed to marketing of pulses for the benefit of consumers.

- *Lack of infrastructure* near to the field to process and separate the good products according to accepted standards.
- *There is no strong representative group supporting farmers*, leading to a feeling of disunity among farmers.
- *Only one way of selling the product – raw*. No processing or value-adding process is generally available. Gordon Bacon from Pulse Canada has described it brilliantly: "*in a changing world, we are still selling beans raw and expect people to boil them"*.

Mid-west's conjecture and tax environment

Why are farmers focusing on producing volume?

Besides the fast-developing technology designed to increase productivity in the last years, there is one very interesting piece of legislation: the "Lei Kandir", that could be translated to "Kadir's Law" (Senadonoticias, 2018). It says production destined for exports is free of state taxation. Commodities exported raw do not need to go through the complicated process of calculating taxes. In addition, farmers in Brazil are allowed to use a natural person to own and manage

businesses, regardless of the size of their operation. When opting for operating as a legal entity, which would be necessary for a processing plant for example, the taxation and bureaucracy increases exponentially. In order to gain worldwide markets, to capture value along the chain of markets and to negotiate with bureaucracy, a method of converting our farms to legal entities is needed. Those who change, in order to export grains, naturally achieve better standards (Porto, 2018).

An economist at Fundação Getulio Vargas (FGV), Felipe Serigatti, says Brazil is an average country. He emphasizes that Brazilian farmers have not moved towards strengthening agribusiness; it was Asian demand which did that. Brazil's response was to become more efficient producers. What is now needed is to force government to develop better policies aimed at assisting agroindustry to develop. The countries who have done that will get the bigger piece of the cake (Serigatti, 2017).

Market research

All leading marketing companies interviewed admitted they do not do research about trends and consumer habits. When asked about budgets for marketing, they have a small allocation to invest on their own brands, but absolutely nothing related to promote national grain or the consumption of various products, like beans, for example. National Specialty grain and grain for human consumption receives little if any kind of promotion.

Governmental and non-profit organizations also showed problems associated with a lack of funding. Agriculture in the center-west is focused on the big crops and the few existing institutions battle for funding, which results in poor marketing.

Chapter 4: How to Create and Capture Value

Using the creativity of Brazilians to develop a good market image for quality is something that might not appear so important at the field level, but it will capture their attention if the farmer sees some opportunity developing in the medium term. The production has to be good quality, but it also needs to be professionally promoted. In Brazil, farmers from the Midwest are no longer considered farmers, but agribusiness men and women, who should also become aware of the importance of good positioning for products in the market. This includes marketing, image building and marketing strategies, both as individuals but especially as a group. The mindset has to be: *As a farmer, I have to think like a food company*; that includes all farmers.

Understand the consumer needs

Creating value is a challenge. How do you know an idea will work? Something might make a lot of sense to a farmer but may not make sense to the consumer. What is crucial in any business is to understand customer needs.

Consumption trends usually start in Europe, followed by California, Australia, the rest of US and Canada: then it spreads to the rest of the world (Stangeland, 2018).

Millennials have entered the consumer market and they are the generation that, for the first time, spend more money on food than on clothes (Turow, 2014). There is "food porn" all over social media, with millennials daily sharing the diversity of what they have been eating and giving their opinions. Eating fads overlap human necessity and eating is now about the experience (Turow, 2014).

The fashion today is to avoid lactose, tomorrow to be a vegan and after that just no gluten. The trend is variety, being free to choose whatever the consumer feels on that day (Meucci, 2018). For food entrepreneurs, "away from", "free from" is an opportunity for diversification. However what cannot be forget is the two maxims when it comes to food: "taste is the king and price is the queen".

Traceability is becoming more important, in order to build trust. General Mills is showing stories about some of their tomato suppliers, so consumers can be aware of where their food is coming from, even if they do not know exactly which farm it was. Blairo Maggi, currently Brazil's Minister of Agriculture, also highlighted efforts by the Brazilian government to have QR Codes for the meat that comes from Brazil that would lead the buyer to videos about Brazilian livestock. During interviews at two big rice and beans processors in Brazil, it was

stated that quick response codes (QR codes) are not useful, since it is hard to do traceability on grain lots. However, giving consumers opportunity to get more information about good practices is generally possible and recommended.

Growing demand for plant-based protein – high protein is good for health

Reduction of meat consumption is also a trend in developed countries. 'Meat Free Monday' is easily seen in social media and big cities. This should not concern livestock producers. Population in the world is growing and people who have not eaten meat before will start doing so. However, cultures where consumption is high, like US and Canada, are looking for alternatives.

Proof of that is the great success of the "Impossible Burger", sold out in the burger stores in Canada, and "Beyond Meat", which are burgers with real meat taste, made out of vegetable proteins, including pea protein isolates.

The third daily meal, traditionally known as dinner, is now merging with snacking. Also, traditional snacking is not isolated anymore and now includes healthy options, such as fresh protein (Euromonitor, 2018). People are looking to reducing reduce fat, increase consumption of protein and eat more nutritious food, which also must be affordable (Bacon,2018).

Figure 5 - Picture of the "Impossible Burger" from A&W. Source: Vancouver Courier

Concern about milk production and animal welfare is also a big trend in developed markets, when we see people looking for alternative types of "milk"; these are beverages with a plant base, some developed using grain protein. Wilf Keller, President and CEO of Ag-west Bio and

board member of Protein Industries Canada, believes that flax seed, oats, quinoa and hemp seed, can access this high protein or plant-based trend.

Technologies for consistent classification; sell by component

Farmers are usually paid by weight, not for the components of grain.

Fine Instrument Technology (FIT) has created the Specfit, a machine that promises to measure in three seconds the components of grain and food. Silvia Azevedo (2017), partner of FIT and one of the machine's developers, explains this technology uses nuclear magnetic resonance to measure physical and chemical characteristics, such as the quantity of oil, acidity and levels of protein, among others. A big enterprise producing palm oil in Brazil adopted the technology and is remunerating the producer according to the amount and quality of oil the palm kernels provide.

The emergence of this technology can change the trading of commodities. Imagine a scenario where corn will no longer be the commodity itself, but the sum of the components of the corn delivered will set the final price. This kind of technology has the power to change the chosen varieties and the way the farmers deal with their field and their practices. Especially when looking to specialty crops, this is important. The farmer will easily get information about the components of his grain and will have more bargaining power, for negotiating the quality of his products with proved information, which is no longer based on characteristics visible by eye.

Building consumer's trust

As everybody needs the farmers in their daily lives, farmers pre-suppose that others know about them and should recognize their deeds simply because farmers are responsible for "feeding the world."

People have realized large-scale farming is a big business and the fear of the "big guys" is very common (Keller, 2018). People no longer know who to trust; they fear about profit having a higher priority than good practice in the fields.

Farmers now must open their gates and plan their communication strategy by themselves. Showing farming practices which are based on respect for the environment, social awareness and respect of the law, is a good way to make the consumer more confident about what they are consuming, and which aligns with their beliefs of a sustainable production system and a reliable origin.

Consistency in what is delivered to build image

When making investigations with serious marketers of pulses and special grains, the image of Brazil is still not the best, due to the difficulty of standardization that exists. There is not yet a place where farmers can check the international standards for each product or the location of the target market. In Canada the author was able to get a good idea of how they maintain a positive image of their quality and consistency The institutions that represent the main Canadian grain industries: Canola Council of Canada, Cereals Canada and Pulse Canada, created a program called "Keep it Clean!" It consists of a guide to keep producers well informed about what they need to do to get their products ready for their markets (Ramage, 2018).

Figure 6 - Pocket guide of Keep it Clean!

The program is based on the principle that everybody benefits when there is stable and open trade with markets that value their products the most. The five simple tips are:

1. Use acceptable pesticides only, with specific explanations for each crop.
2. Always read and follow the label (for spraying and harvesting practices).
3. Grow disease-resistant varieties and use practices that reduce infection (in order not to have cross-contamination of the lots).
4. Store the crop properly, keeping the storage facilities clean and free from foreign products.

5. Deliver what you declare. They created a document called Declaration of Eligibility that will ensure farmers do not to lie about their practices and the product delivered and can be punished if they are caught (Keepitclean, 2018).

Building the bridge between farmers and consumers

Case study: Grimmway Farms: Investments in knowing the consumer market

Situated in California State in the US, a company called Grimmway Farms used to cultivate different varieties of carrots to sell fresh. According to John Guerard (2017), the General Manager, said Grimmway Farms in the past faced a high level of disposable carrots with small defects that would not be suitable for the regular shelves. They identified that people like to eat carrots as a snack. With that information, they were able to develop the baby carrots; they go through a special process and look like baby carrots, easily carried in packages and eaten as a healthy snack. They were courageous to go outside the box and invest in market research, which increased their income and solved a huge waste problem. The author has visited a big farm operation in Center West of Brazil, specializing in vegetables and saw the same problem that Grimmway previously had. The manager was questioned about the baby carrots and any other solution for the problem and the answer was*: it is not worthwhile to invest in that, since carrots have such a low value*. This difference in the approach in both situations outlines the need of Brazilian agriculture to go further than producing efficiently; there is a lack of investment in research for understanding the consumer market, adapting to it and creating opportunities to add value.

Case Study. The Open Farm. Communicating with the community

The Open Farm is an initiative promoted by LEAF, an leading organization in the UK dedicated to promote sustainable food and farming, that incentivizes farmers one Sunday of the year to open their farms for the community to come and get to know their operations and what they produce. Any farmer can subscribe to participate, and any person can visit on that day. It is about building the bridge between the town and the fields (Openfarm, 2018). They use the internet to promote the event and discuss the results. Based on that benchmark and combined with an existing idea in my region, they entice teenagers to the farms to get to know the rural reality of their region. *# Seliganafazenda* was already an existing initiative, that went through a strategy of branding and marketing, with promotional videos on Youtube. Many people were interested in having the program in their municipalities (Seliganafazenda, 2018).

In Canada, there is information about an initiative in Saskatoon, Saskatchewan, where farmers were brought to the city mall to a fun event where, in partnership with the college students of the city, they had the opportunity to show the urban people what they do in a fun way. In brief, being creative and acting regionally is part of the initiative farmers need in order to build their image and the consumer's understanding.

Case Study. Action to Promote Pulses

It was interesting to get to know the initiative called "Impulseable" promoted by the association of Alberta pulse growers to develop recipes made out of pulses in universities to promote pulse consumption. Also, in Brazil, another program is aimed at people looking for healthy options for pubs, which is an initiative by ABRASEL to develop recipes at SENAI and have it ready for any pub who wants to have pulses on their menu.

Case study. Encouraging the consumption of local products

It is difficult to see quality local products promoted in Brazilian supermarkets. People simply do not care if the product is national or regional but tend to prefer imported products.

Walmart, in Canada, formed a partnership with Western Growers from Canada, an organization that represents farmers from five states for a vast variety goods, from vegetables to grain, to emphasise the products produced locally in these regions.

Tesco in England has also shown pro-activity with the label "Local Choice, Brilliant", not defining exactly what is local, but showing the customer that fresh necessarily needs to be from somewhere near. That helps the producers from the nation and gives it better value not having to create a completely new brand for each farm. It is a marketing for the local sector, not each farm separately and benefits all farmers as a group.

Figure 7: Advertisement about Canadian Farmers at Walmart in Saskatoon SK Canada

Need of the agricultural sector to be on the Media

When something is relevant to agriculture, we need to think about publicizing it. Websites are good research channels and there are Canadian examples, such as "farm food care" or "farm 360º" where farmers present themselves online, but they need support.

Whether it is through the use of posts with hashtags on Instagram, YouTube videos, or other influencers, agribusiness needs a presence on the internet and on web-based communications.

The agribusiness sector has no brand but has a cause, which does not have to show the production system and technical steps; it just needs to show the essence of production (Orlandio, 2018). Advertisements of big machinery harvesting huge areas in the Midwest is usual, but that does not show what is behind it, the story of a farmer and the family and the hard work involved in producing that item, and the love put into it. Meucci agrees, saying there is no emotion shown by farmers; farmers need to show our emotions and the way of the moment is through the internet (MEUCCI, 2018).

Teach people to eat differently

What does a farmer do when diversifying or have a product with limited culture around its consumption? In the case of Brazil, Carioca beans have a cultural restriction to their consumption nationally. To increase consumption, besides processing, there is the possibility of increasing its consumption worldwide. IBRAFE went on a mission to India in 2018, with culinary chefs teaching Indians how to use the beans to replace the pulses they are used to in

that country. The same can happen in Brazil, as the fashion now is chickpeas as a functional food. When well promoted, any food can be a superfood.

Agroindustry – a need to process grain

Plant-based protein flours

It has been only ten years since the food industries have been interested in pulses as food components (Pizzi, 2018), but an increase in the demand for more protein-based snacks shows that there are opportunities for such new ingredients in the national diet.

SENAI, in partnership with IBRAFE at the 2018 National Bean and Pulse Congress in Curitiba, showed a new recipe for pizzas made with white bean flour. It was a great success and people did not notice the difference from traditional wheat pizza. When speaking with Gabriela Meucci, we concluded Brazilians are not very into "packaged snacks", but enjoy fresh ones, sold on the street; what we call "salgados".

The number of cancelled reservations at happy hours in pubs, where there are no healthy options, is falling (Abrasel, 2018). By "healthy" options, one or more of the following requirements might be included: lactose free, gluten free, low calorie, high protein, no frying, etc.

Figure 8 - Typical Brazilian fresh snacks

Canada has given a great example of success on value-added protein. AGT Foods is a company founded in Regina; they became leaders worldwide as suppliers of pulse ingredients. Originally

driven by demand for pet food, they now are seeing great opportunities and increasing demand for human consumption (Bartsch, 2018).

Parheim foods does the same as AGT. When processing peas, they separate fibre from starch and protein. When producing pea flower, they remix what they have separated to create a 24% protein pea flour. Like wheat, it is first necessary to separate components to remix it into a viable ingredient, specific to each use, being different for bread and cakes, for example. Having this flexibility with the components is essential to produce good end-products (Cigi, 2018). Mung bean flour in Asia is used for Glass Noodles, a fine type of pasta for the Chinese market (O'Hara, 2018).

Figure 9 - Pulse Ingredients from Parrheim Industries in Saskatoon - SK, Canada

Gordon Bacon, CEO for Pulse Canada, explained that the success of the country of transforming green and yellow peas and faba beans into flour, is that those have prices much lower than lentils. Lentils are worth selling for direct consumption, with no processing.

In Brazil there are new ways of using carioca beans as raw material for flours. However, the industry should look at the beans produced with very low costs for the second crop, such as cow peas, which do not need irrigation, to produce flour. This specific type of peas has the advantage of being white, which means a better colour for flour and its production methods are familiar among farmers in the Midwest. There is research going on, developing cow pea flour in EMBRAPA Meio-Norte (at Piaui State) but this is not released to the market yet.

Initiative for industrialization coming from farmers

At Saskatchewan Food Industry Development Centre, Ricky Lam tells of many initiatives for development projects which come from farmers who want to be entrepreneurs. The basic question they ask is "*I have this crop, what can I do with it?"* This person can access a full consultancy on how to become an entrepreneur with the developed product, be given help to develop a concept and even see it started in co-manufacturing at the centre (Lam, 2018).

The practice of developing a product is available in Brazil at SENAI- SP. It is interesting to see the good equipment they have for cooking and testing there, using international standards. Anyone can go and ask to develop something, even though they still have difficulty in delivering the results to market. Normally the demand for research is from established companies, not from start-ups and even less from farmers who want to become entrepreneurs. This opportunity must be more widely disseminated.

Case study - Vapza

This Company has developed a method for vacuum-sealed packaging for pre-cooked food that does not use preservatives. They offer an option for non-condiment or condiment beans, since Brazilian culture sometimes demands their own seasoning. This is a great solution for those who do not want to cook at home, but still want to have the regular typical Brazilian meal: beans and rice, but the price of the product is a challenge.

Opportunities in cleaning plants and direct exports

The first step in removing unprofessional intermediaries is to increase investments on the basic infrastructure involved in cleaning and packing for direct exports. Much dust and second-grade grain is exported when could be used on-farms for animal feeding, or sold locally.

Figure 10 - ILTA Grain specialty processor in Saskatchewan State

Alternative for GMO Corn

Brazil is the biggest producer of ethanol from sugarcane. It is a type of ethanol with better conversion rates of planted areas into end product than corn, but problems with this model in Brazil have grown, for example:

- High labour costs to run the industry and field operations.
- The production cannot follow prices since it is a semi-perennial crop.

GMO Corn will still be the most popular second crop in the Midwest; however low prices of corn and large distances, combined with the possibility to use the same machinery as for the first crop of soybeans has encouraged governors and entrepreneurs to start following the US example. A new plant for corn ethanol was inaugurated in Sorriso – MT in 2017, being the first specialist corn ethanol plant in Brazil and already, in 2018, the investment of one billion reais in a second plant was announced (FS Biocombustiveis , 2018).

One Earth Energy, an ethanol plant in the US, turn four million bushels of corn into ethanol, Dried Distillers Grain (DDG) and biodiesel per month, producing 4.5 million litres of ethanol monthly. It closes twice a year for four days of maintenance and the most impressive thing is that it operates with only 20 employees, divided into four teams of five people. The corn is sourced less than 80 km from the plant. This type of production could also be a huge opportunity for the Midwest, using smaller plants.

DDG is a by-product that might attract local investments growing pigs and chicken, which would be great for the agroindustry in the state of Mato Grosso. (FS Biocombustiveis, 2018)

Conclusion

Facilitating access to the market

e-commerce and online platforms

CBO Agronegocios is an online platform similar to e-bay for agricultural products; a marketplace for buyers and sellers to encounter each other more easily. The platform still has some problems, since several companies can offer many lots of the same product; the farmer can be discouraged from using the platform if other commercial intermediaries enter the platform offering his same product, with a different brand. Making people negotiate through the platform also is hard since, once the identity of the lot's owner is revealed, it is easy to find his information directly on Google and skip commissions. The use of the platform is safe, since they guarantee to check information before approving the user.

Farm Leader, a platform with the same purpose and presence in Canada and the US, has solved these problems. According to Alain Goubau, owner of the company, even though they still have many intermediaries on the platform, they check the credit status of the buyers to make sure they have good buyers on the platform. This is a strong argument for people to negotiate using this platform. They offer an online distance calculator to assist buyer and sellers to calculate freight costs. In Brazil, this would be a great advantage if the platform did that automatically and as well, helped farmers with tax calculations, another big problem that affects producers when they need to make a quick decision to sell. In future this software will evolve to synchronize with other similar platforms. (Goubau, 2018).

Importance of non-profit and institutional organizations and associations

A big concern is how to organize group financing of big marketing publicity programs. The pulses and specialty grain sector in Canada shows a good model for financing publicity, charging farmers directly. This model is used in Mato Grosso state for soybeans and corn, through a direct tax implemented by the state, discounted from soybeans, cattle and cotton sales, called Fundo de Apoio à Cultura da Soja, FACS. FACS (Facs, 2018) finances institutions that implement publicity programs for the soybeans sector and plays a role in defending the interests of the state producers. A very well-known institution that uses this fund is APROSOJA-MT and it is the premier institution we have in Brazil that works for the soybeans and corn producers' causes. For pulses and specialty grains, even for corn, there is no compulsory levy. IBRAFE, the only institution that works in the marketing side of pulses in the country, has financial funds from associates, but is not enough for big programs (Lüders, 2018).

In Canada, one third of pulse sales goes to organizations that help to promote the pulses nationally and internationally and fund seed development (O'Hara, 2018). These funds go to state organizations; in Saskatchewan the funds are administered by Saskatchewan Pulse Growers, which is a member of a national organization called Pulse Canada (Bacon, 2018).

Ag-West Bio plays a role exclusively finding opportunities for the ag industry. Their day-to-day tasks are related to organizing conferences and events to get producers, dealers and industry together and discuss industry matters, and to help start-ups find markets. They are part-funded by the government and part-funded by the farmers.

This organization took the opportunity the government gave to general sectors of the economy to build an economic zone for a common agricultural approach, aimed at developing opportunities to grow big markets for plant protein made out of pulses from Canada**.** Based on a growing demand for protein in food, they are building the Protein Innovations Canada (PIC), a supercluster in the Ag. Sector focused on pulses. The main goal is to position Canada as the leading source of high-quality plant protein and related ingredients, developed in a sustainable and carbon-neutral production environment, while significantly increasing Canada's economic wealth and quality of life of its citizens. Canada is not very competitive at processing, but if they do not organize themselves to change this scenario for pulses, countries like Kazakhstan and Ukraine will compete with lower costs. Like Canada, we are good at producing but geographically poorly positioned logistically and have high costs of production. These countries and Africa, who have been receiving increasing investments and solutions based on the development of technology, might undermine our opportunities in a fast-changing world. We need to move more quickly in developing our marketing expertise. The idea is not only to look at marketing but to develop the industry as a whole. That can only be done if the sector works together.

This super cluster's board is staffed by important executives of various organizations related to grain and pulses, from the processing industry to the farmers who lead associations from the grain sector, which gathers a wide range of experienced people from different aspects of the whole market chain.

National and regional organizations

The US and Canada have strong associations and are able to develop a long-term independent plan for government policy. For government relations there are lobbyists, who make their

requests for funds to government, based on data sourced from the international market. That way, it is much simpler to draw up a strategy for the sector.

In Brazil, we cannot often count on governmental organizations; our alternative is to follow the Canadian model, organizing our industries in associations at the state and national levels, one reporting to another, as we already do for soybeans. Those organizations are the ones that can also drive political change. We also have to develop those associations, in order to have dedicated professionals capable of solving and promoting our grain nationally and internationally, in order to capture and create more value for our second crops. Organizing ourselves to develop market intelligence through government resources is crucial.

Gabriella Meucci points out that because of their experience with international associations, those who pay contributions are the ones who make the most of their markets, as they generate healthy internal competition generated from access to all, leveraging from the industry as a whole.

Recommendations

- Encourage farmer entrepreneurs who are willing to diversify, invest in quality, deliver what is promised and who spend time developing contacts with serious companies. It is our responsibility to choose the good buyers and discard the others. Farmers must think of themselves as food entrepreneurs, not as farmers.
- Farmers should learn not to look at their neighbor as a competitor as all need to work together to reach better results. Organizing Brazilian second crop producers into associations will help create homogeneous production and build relationship with good markets.
- Investing in market intelligence helps to build the strategy and consistency of the sector. It avoids the “herd effect”, where farmers all plant the same varieties in any year.
- It is very important for financial institutions and professionals to work together for farmers. Creating compulsory financial resources using levies is an unpopular measure in the short term, but countries who are using levies to invest in market intelligence are far ahead of Brazil in capturing the best markets.
- If Brazilian farmers are able to create a consistent production and tell a good story, specially exploring the sustainable advantages of using the same land for producing food twice a year, they can become strong players on the market. There is a huge opportunity in processing the second crop grain.

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Plain English Compendium Summary

Project Title:	**Building Strategies in order to capture and create value for Brazilian's Midwest Grain**
Nuffield International Project No.:	1703
Scholar:	Carla Mayara Borges
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Objectives	• Showcase diversification options of crops that have potential to reach higher value in national and international markets and also go through processing to add margins. • Analyse gaps in the market chain for grains where opportunity exists. • Comprehend the customer needs, in order to exploit potential markets (Brazil and abroad). • Give an overview of marketing strategies to be adopted in the Brazilian marketplace,in order to create more value for farmers.
Background	I am a business administrator who works in the family farming business in the Midwest. I have entrepreneurial blood in the veins and am always looking for ways to maximize returns on the properties. I am passionate about developing regions and creating opportunities. Inn 2014 I moved to a degraded farm to start a new grain farming operation and have been facing challenges on the second crop, which I see presents a huge opportunity to add value.
Research	My research is directed to looking for solutions to capture and create more value for the Araguaia Valley, a region in the Midwest which is starting its agricultural developing and has great potential. I have travelled around more developed regions in Brazil for comparison and a better understanding of the scenario. The countries visited which most influenced this work were Canada, UK, US and Japan.
Outcomes	Brazil has been positioning itself as a producer of great volumes. There is an opportunity to explore more markets that require more specific products, but for that it is necessary to invest in understanding consumer behavioural trends and creating national protocols to deliver consistent and quality products. All of that is possible if Brazilian farmers investi in building strong institutions which focus on bringing information to farmers and attracting industries to invest and absorb surplus production capacity with new products.
Implications	If we are able to build strong strategies to position ourselves in better markets, we will become very competitive. Brazilian farmers are great producers and if they realize they have to work together delivering consistent products and a good story, there will be no one to compete with them.