

AGR1110 – Canada Exports Assignment

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Section 104

This product is something that almost everybody grew up with, learned to love, and now enjoy in many different dishes, sauces, or just on it's own. We call this "something" milk. Unfortunately, milk isn't always a good choice in products, whether you're lactose intolerant, you simply just can't afford it, or it is not available to you. This dilemma is what the people of Nepal are dealing with. Since there is a shortage in the milk that is produced in Nepal, the quantities do not meet the demands of the Nepalese people (Anderson, 2014, p. 23). Displayed in Table 1 is the amount of milk that cows and buffalo in Nepal produce. From the these statistics, cows in Nepal only produce around 1 kg of milk a day and buffalo produce around 2-3 kg of milk a day; whereas cows in Canada produce on average 27 kg a day. This is a huge difference in the quantity of milk that is produced in each country. These statistics show how limited Nepal is in their production of milk.

Area	Number of milking cows	Number of milking buffalo	Total annual cow milk production (kg)	Total annual buffalo milk production (kg)	Annual milk production/milk animal (kg)	
					Cow	Buffalo
Hill	428,274	527,808	152,455	403,075	366	764
Mountain	98,087	70,433	32,027	48,908	327	694
Terai	258,579	222,679	112,138	212,957	434	956
Total	784,940	820,920	296,620	664,940	378	810

Table 1. Milking cow and buffalo populations, total milk production/year and annual milk production/animal. (http://ilri.org/infoserv/Webpub/fulldocs/South_South/ch08.htm)

Recently Nepal had to turn to their neighbouring country, India for assistance in the dairy industry. In December 2013, the Nepalese government proposed that India import 10 000 cows to their nation to overcome the shortage of 500 000 liters of milk a

day (Preeti Panwar, 2013). This is why a dairy alternative like soy, is a good solution for Nepal. Soymilk and soy products are a great substitute for milk and any other dairy products. Soymilk is a liquid beverage that is high in protein and rich in iron, that is produced by the processing of soybeans. This process includes grinding, cooking, and straining of the soybeans (Bryk, 2014). Soymilk is also cholesterol-free and low in sodium and fat (Bryk, 2014). Milk contains large amounts of calcium, but in this non-dairy substitute this major nutrient is lacking. To be able to intake the proper amounts of calcium, additives can be mixed into the beverage to get the correct amount to sustain a healthy diet (Columbian University, 2012). If these additives are not mixed, a food alternative is required to meet nutritional demands (Columbian University, 2012). In Table 2 the nutritional differences between cow's milk and soymilk are shown. These values state that soymilk is relatively close in nutrients for being a substitute, especially when nutrient alternatives are added (fortified).

Product	Calories	Fat(g)	%Fat	Calcium(mg)	Vit. B₁₂(mcg)
<i>Cow's Milk:</i>					
Whole milk	150	8	48	290	.87
Reduced fat (2%)	120	5	38	297	.89
Low fat (1%)	100	3	27	300	.90
Skim	85	.4	4	302	.93
<i>Soy:</i>					
Unfortified	79	4.5	51	10	0
Fortified	130	3.5	30	585	1.2

Table 2: Nutritional facts between cow's milk and soymilk per 8 oz. serving (<http://goaskalice.columbia.edu/nutritional-differences-between-soy-and-cows-milk>)

The technology to make soymilk is what will be an excellent product that Canada should export to Nepal. You may wonder how soymilk is made, but it is actually quite simple. Soymilk processing equipment is a great way to produce a larger amount of soymilk more efficiently than other processors. Using this soymilk processing equipment

will allow you to produce a large amount of soymilk, but there are ways to make smaller batches with other techniques. These techniques aren't necessarily the most efficient or easiest way to produce soymilk, but they allow you to be able to make something that is not in large quantities. Prices for these products range from \$95-180 (Amazon, 2014). These machines range from small to medium sized appliances that can fit on your counter. These appliances that you can buy don't actually make the soymilk for you. All that these machines do is soak and steam your beans. One who is making soymilk with these machines still needs to blend the beans and strain the pulp from the liquid. Soymilk can also be produce with everyday appliances you have at home (strainer, stove, blender). These different ways take more time and more labour than the large quantity size machines. That is why exporting larger quantity soymilk processing equipment to Nepal would be a great product that is highly efficient that could have a lot of potential for both Canada and Nepal, maybe even other developing countries in the future.

This soymilk processing equipment is manufactured in Ottawa, Ontario at ProSoya Inc. This company produces soy products including soymilk, soy cheese, and soy yogurt, as well as soymilk processing equipment and packaging. They provide advance technologies for small operating farmers or for large commercial processing plants (ProSoya, 2014). ProSoya supplies to more than 45 different countries and produces technologies for major corporations like DuPont, Kraft, Soya World, SunOpta, and Unilever (ProSoya, 2014). ProSoya already ships these products to over 1000 small to medium sized plants located all around the world. These machines have been sent to hospitals, schools, nonprofit organizations, and small to large sized commercial companies. Some large-scale plants that ProSoya supplies to can be found in Canada,

Germany, India, Iran, Russia, and the USA (ProSoya, 2014). Because these machines are already being sold around the world, selling to Nepal will just increase this nation's profit and also increase Canada's economy as well as assisting in the growth of another undeveloped country's economy. This soymilk processing technology is called the VS 200 Soymilk Continuous System (Figure 1).



Figure 1: VS 200 Continuous System
(http://i00.i.aliimg.com/photo/v1/152272558/VS_200.jpg)

The VS 200C is a machine that is fairly simple to install, operate, clean, and maintain (ProSoya, 2014). This machine produces approximately 200-250 L of soymilk base an hour (ProSoya, 2014). Any quality of soybeans can be used in this machine to make a nutritious and delicious soymilk base that can be then transformed into great beverages, yogurt, tofu, and many more (ProSoya, 2014). The only requirement to make this machine work is an electrical source (to power the machine), water (to mix with the soybeans to make the base), and soybeans (the

most important ingredient). The VS 200C works by adding the soybeans to the top of the machine, where water is added to it. The beans are then steamed and ground in the pipes throughout the equipment. The water that was mixed in with the soybeans allows the product to become a very rich liquid. After the product is mixed, the by-product okara is then strained out of this mixture. The final product (soymilk base) is finally produced.

The VS 200 Continuous System can be compared to the TEKMASH. This

product is manufactured in the Ukraine at TEKMAШ Institute, but this company's public relations office is located in Charlottetown, PEI (TEKMASH Group, 2014). It is similar to the VS 200C by making a highly nutritious product with a great taste and supplements can also be added to the mixture during production to make an even better product (TEKMASH Group, 2014). The TEKMAШ produces 1000 liters of soymilk using only 50kWh of energy. The only disadvantage to this product over the VS 200C is that the TEKMAШ needs 40m² to operate (TEKMASH Group, 2014). Figure 2 shows how large this product is and the difference in manufacturing equipment.



Figure 2: The TEKMAШ
(<http://www.tekmash.ca/catalog/goods/104>)

The VS 200 Continuous System is an environmentally friendly machine because of its limited production of waste. This machine creates a nutritious by-product that can be used for human and animal feed.

Since an electrical source is required for the use of this product, it will be wise if this product is transported to urban communities and consumers to be used in schools,

hotels, restaurants, and large-scale grocery stores. Popular towns that the VS 200C will be sent to are Kathmandu, Pokhara, Biratnagar, Lalitpur, and Bhim Datta. These towns were selected to import the VS 200C because of their increase in wealth, their stability, and their economy. These five towns will also be a good place to send the VS 200 Continuous System because of the towns' technological advancements, population, and resources for transportation and marketing of the machine. As the market increases, several more may be sent to many more cities in many different districts. It is uncertain how much each machine will cost because of unanswered questions from ProSoya, but other expenses can be calculated for the product. Some expenses may include transportation.

The company that will be exporting this product to Nepal is Federal Express Canada Ltd (FedEx). This company would be an excellent company to deal with because FedEx has a wide variety of shipment and service options (FedEx, 2014). FedEx is a reliable company that will ship products to more than 220 different countries around the world (FedEx, 2014). Shipping prices with FedEx depend on factors including the number of packages and the type of shipping requested (Melissa, personal communication, November 20, 2014). Since Nepal is a landlocked country, this product will have to be shipped from Canada to India over seas and then transported to Nepal from India by freight services (Figure 2). It will cost approximately \$1920.00 to \$2880.00 to ship one of these products over to India (FedEx, 2014). Once in India, it will cost another \$1585.50 to ship this to Nepal (FedEx, 2014). If one product were sent to each of the five largely populated cities, it would cost approximately \$3505.50 to \$4465.50 to send five VS 200 Continuous Systems to Nepal. Even though this is a little

pricey, these machines will be beneficially to Canada and Nepal.



*Figure 3: Map of the World
(<http://www.alliancezone.ca/dir/wp-content/uploads/2013/04/map-canada-india.png>)*

There are many different loans and grants that the Canadian Government will give to starting businesses, already existing businesses, someone who wants to export something, farmers, etc. To aid in the financial aspect of this export product, the government program “Export Guarantee Program” will be applied. This program allows exporters/businesses to get the financial help they need to create this new market (EDC, [date unknown]). This program will also purchase new equipment needed to fulfill new orders (EDC, [date unknown]). With this help, it will allow the people of Nepal to be able to afford this product and the transportation behind it. It won’t be free to the Nepalese people but it will decrease the price so that smaller franchises may be able to buy the product later, as the market grows.

As technology increases, this could open up new possibilities for this product. Producers may be able to manufacture a smaller version of the product; one that may be battery operated that doesn’t need electricity, or maybe even just a simpler design. By

changing some of these things will create new markets in a lot of other countries. Being battery operated will increase the profitability of this product because it will be able to go almost everywhere because it does not need a source of electricity.

Nepal is a country located in Southern Asia landlocked between the Republic of India and the Republic of China (Nations Online, 2014). Nepal is home to approximately 27 million people and 1.7 million of those people live in the country's capital, Kathmandu (Nepali Times, 2011). The whole country has three different landscapes: the mountain region, the hilly region, and the terai region. Nepal is sectioned off into 14 different zones containing 75 different districts among the three different regions (Maps of World, [date unknown]). Nepal has many different religions. Some religions include Hinduism, Buddhism, Islam, Christianity, Jainism, Sikhism, Bon, worshiping of ancestors, and animism (Nepal Tourism Board, 2012).

Soymilk is a very nutritious beverage because of the main ingredient (soybeans) that is put into it. Soybeans are packed with a large number of vitamins, carbohydrates, unsaturated fats and protein (Government of Canada, 2011). Soybeans are one of the only plants that contain all eight amino acids that are important for good human health (Soyatech, 2014). On top of all the nutritious qualities soybeans have, they also contain no cholesterol (Government of Canada, 2011). Since Nepal's neighbouring country, India, is such a substantial grower of soybeans, Nepal will have an easy time getting soybeans to process. Nepal may also use their own soybeans that are grown in their country. With approximately 1.7 million children in Nepal suffering from malnutrition, this product will be very beneficial to this nation (R. Joshi, 2010). This milk will allow the children of Nepal, as well as the adults to get a lot of the nutrients they wouldn't

usually digest. Not only is the beverage that is produced with the VS 200C nutritious, but the byproduct is as well. Okara is the by-product that is produced during this process. Okara can also be called the soy pulp of soymilk. It is a good source of fiber and protein for not only humans, but for animals too (ProSoya, 2014). This residue contains a lot of the carbohydrates and a small amount of oil from the soybeans (Soy 20/20, 2005). Okara can be used as animal feed for dairy and swine. This provides an abundant source of nutrients for these livestock. If the okara isn't being used as livestock feed, it can be used as a fertilizer in the fields because of its nutrient quality. Two other ways that the okara can be used is in pet food and food production (Soy 20/20, 2005). Using the by-product of the soymilk base allows for no waste production and an efficient way of farming. Not only is it possible to produce a very nutritious beverage, but you can also produce a very nutritious, fiber enriched food product (Table 3).

PER 100 grams of wet okara	
K calories	77.0
Water	81.6 g
Protein	3.2 g
Carbohydrates	12.5 g
Fiber	4.1 g
Calcium	80.0 mg
Iron	1.3 mg
Thiamin	0.02 mg
Riboflavin	0.02 mg
Niacin	0.1 mg

Table 3: Nutritional composition of okara
(<http://www.soy2020.ca/pdfs/overviewofokarautilization.pdf>)

This product will be sold to urban communities throughout Nepal. It will start in five largely populated cities and once the market grows and demands increase, it may be sent to other communities in Nepal. These machines will be sent to hotels, schools, and large grocery stores. By putting the VS 200 Continuous System on the market, it might

hurt already existing companies in Nepal, specifically the machinery produced by Suzhou Brightech Co., Ltd. This company is located in Suzhou, China, but the sales and service branch is located in Nepal (Dahal, 2014). Suzhou Brightech creates soymilk machinery with their 101-200 employees (Dahal, 2014). Since this company creates other types of processing machinery, hopefully by selling the VS 200C to Nepal, it doesn't drastically fluctuate Suzhou Brightech's revenue.

Not only will the product that the VS 200C makes be beneficial to Nepal, Nepal could also open up their markets to other countries by exporting the soymilk base. This may be beneficial to the undeveloped country and may increase their profit. Soy loving countries like India and China could be possible countries that Nepal could export the product they make from the machines. These other countries in Asia could use Nepal's soymilk base to make many different things like ice cream, yogurt, cheese, tofu, and any many other types of soy products. This deal may increase Nepal's economy as well as create new jobs for the people of Nepal. This may also open up new doors later down the road with these importing countries.

Overall, the VS 200 Soymilk Continuous System would promote Canada's agri-food exports and be highly beneficial for Nepal. This may decrease the amount of children that are suffering from malnutrition and also improve the diets of the Nepalese people. This will create new jobs for people in Nepal as well as supply them with a dairy substitute to overcome the unfortunate shortage. This product may not be the thing that Nepal needs, but it will improve the health of Nepal. Since these machines are being sold to companies in larger cities, these companies may send some of their excess products to the rural communities for an inexpensive price. This machine can be beneficial to both

the rural and urban communities of Nepal. This may not be a good product to export to Nepal because of its price, but hopefully Canadian grants will be accessible so that the developing country will be able to afford the product. As this product grows in this market, Canada may be able to export their soybeans as well to increase profit, market, and to expand their export potential. This would be beneficial to Canadian farmers as well as Nepal because they are receiving and processing a high quality product.

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