

The Potential Export of Canadian Dark Red Kidney Bean for Human Consumption in Nepal
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Legumes have been cultivated by humanity for thousands of years due to their high protein content (Chapagain, 2016). Canada is the world's leading exporter and producer of legumes and pulses because of the favourable growing climate for these plants (Joyce Boye, 2010). These legumes and pulses play an important role in Canada's economy by providing employment for pulse farmers and processors in the food industry (Joyce Boye, 2010).

Amongst these legumes, dark red kidney beans, *Phaseolus vulgaris* (Zorica Nikolic, 2014), have been prominent in North American diets as a source of plant protein, animal feed and food processing (Joyce Boye, 2010). These beans have a dark earthy red colour as seen in Figure 1. Canadian dark red kidney beans are a potential export to Nepal for human consumption. The benefits to Canada and Nepal by the exportation of this product were researched. It was researched if it would be worth exporting dark red kidney beans from Canada to Nepal by comparing the benefits with the cost and labour.

Figure 1



Retrieved from:

http://www.mypatriotssupply.com/Dark_Red_Kidney_Bean_Heirloom_Garden_Seeds_p/red_kidney.htm

Part One: Dark Red Kidney Bean

Dark red kidney beans are primarily grown in Alberta, Canada (Gorge Grant, 2007). They are widely used as a rotation crops. The kidney bean is an annual crop, that matures around 90 to 150 days within well-drained soil at temperatures of 20 to 80 degrees Celsius (Yang Dongfang, 2007). This plant produces its beans in pods as seen in Figure 2. They have vigorous roots that have a symbiotic relationship with nitrogen fixing bacteria, *Rhizobium* (Chapagain, 2016), are able to yield their own consumable nitrogen (Joyce Boye, 2010). With an abundance of nitrogen, kidney beans are able to contain high levels of amino acids (Joana Costa, 2010).

Figure 2



Retrieved from: <https://www.pinterest.com/pin/325525879287056055/>

The average yield of this product in Canada is 1.4 t/ha (Yang Dongfang, 2007). Kidney beans are processed through different practices for their multiple purposes, some beans are prepared for future growing, while others are sent off to be used in the food industry and used for

animal feed. Beans can be placed through several methods such as an acid treatment to increase chances of germination. They are cultivated through the use of modern agricultural practices through the use of machinery such as seeders, and harvesters (Yang Dongfang, 2007).

Kidney beans, like many legumes, are rich in nutrients such as carbohydrates, proteins, and vitamins and minerals as seen in Figure 3 (Kazuko Hirai, 1994). They contain 60 to 70 grams of complex carbohydrates per 100 gram serving. The amount of protein in dark red kidney beans is similar to the amount of protein found in the same 100 gram serving of meat. These beans contain around 23-30 grams of protein per serving (Kazuko Hirai, 1994). In addition to these nutritional factors, they are also high in fibre, containing about 7 to 9 grams of fibre per serving.

Figure 3

Nutrient	Complex Carbohydrates	Protein	Fibre
Grams per 100 serving	60-70	23-30	7-9

(Kazuko Hirai, 1994)

Figure 4 is a table with multiple nutrients that also reside in kidney beans, such as magnesium.

Figure 4

Nutrient	Vitamin A	Vitamin C	Calcium	Iron	Vitamin B	Magnesium	Fat	Potassium	Sodium
% Daily intake	5	7	14	45	20	35	1	40	1
% in mass	45mcg	6.3mg	210mg	4.5mg	0.36mcg	140mg	0.8g	1406mg	24mg

(Kazuko Hirai, 1994)

This bean is consumed multiple ways in North American cuisine, with an increasing trend of animal free diets, legumes such as dark red kidney beans have become a popular source of amino acids (Gorge Grant, 2007). This product is also used in animal feed because it provides a protein source for animals cultivated for their products, such as meat and dairy (Chapagain, 2016). The beans are also used in food processing because they can be used as high starch bean flour rich in proteins, leading to products such as high protein bread (Joyce Boye, 2010). They are process by air classification in order to mill them into fine flours (Joyce Boye, 2010).

Part Two: Export

The company that could potentially export this product for consumption to Nepal is Agrocorp International Pte Ltd, Figure 5. They are an international trading company that specializes in the production and processing of many agricultural products such as canola, wheat and pulses such as kidney beans (Agrocorp International Pte Ltd, 2014). This company is a potential exporter of Kidney beans to Nepal because they already export a variety of their pulse products, such as peas and lentils to nearby countries, such as India, Bangladesh, and Pakistan. Other companies such as Pulse Canada and the Canadian Special Crop Associations, CSCA, The Manitoba Pulse Growers Association Alberta Pulse Growers Commission, and the Ontario bean growers also cooperation with Agrocorp in their production and processing of kidney beans. Agrocorp is able to produce kidney beans at a value of \$925 per metric ton, MT (Agrocorp International Pte Ltd, 2014). This potential export would be beneficial to Canada because it can generate industry for individuals working in pulse agriculture (Yang Dongfang, 2007), such as those working with Agrocorp. The increase of demand for this product caused by increased exports to Nepal can also encourage more farmers to grow more legumes (Chapagain, 2016). Since legumes are able to fix the nitrogen in the soil to provide an abundance of nitrogen

fertilizer for the following crop they would be beneficial to Canadian farmers who rotate their crops. The reduction of applied nitrogen fertilizer can reduce strain on nitrogen pollution to the surrounding environment (TiffL. van Huysen, 2016).

Figure 5



Retrieved from: <http://www.agrocorp.ca/agricultural-trading-company-news/>

Dark red kidney beans are produced near their main offices in Canada. In Alberta Canada, they are cultivated and stored at a maximum capacity of 6000MT (Agrocorp International Pte Ltd, 2014). They are then sent to different offices, such as the Cut Knife Office in Saskatchewan, where they will be packaged and shipped via the pacific railway. They are then sent to the Vancouver office to be shipped by boat and plane to destinations such as India at a price of US \$2000-\$2500 per MT depending on how much is imported (Agrocorp International Pte Ltd, 2014). I propose that from India, further transportation can be provided by an external company to deliver this product to the people of Nepal. These dried beans do not require refrigeration and are not perceptible to damage to their hard shells and long shelf life, this factor can ensure that the Nepalese people receive a non perishable item that they would be able to store for prolonged use (Gryson, 2010). The people of Nepalese communities need to work

together to purchase large proportions of this product in order to decrease the price per kg of these beans.

Upon further research it was found that Nepal could import dark red kidney beans from China at a lower cost of about US \$1000 per MT (Zhangjiakou Huawei Grain and Oil Products Corp., Ltd., 2001). Companies such as Zhangjiakou Huawei Grain and Oil Products Corp., Ltd. are able to provide this cheaper price. Although it is more expensive than the original price of \$925 per MT, this company does not have to spend as much transportation because they are a neighboring country to Nepal. Therefore, it would be much cheaper for the Nepalese people to purchase kidney beans from China than Canada.

Part Three: Benefits to Nepal

The consumption of Canadian dark red kidney beans can be beneficial to the Nepalese people. The majority of Nepalese people do not have a lot of income and rely on pulses as a major component of their diet (Chapagain, 2016). High nutrient food such as beans are important to their diet as they provide a well rounded meal with minimal preparation and costs (Kazuko Hirai, 1994). In comparison to purchasing multiple ingredients and meat products, the Nepalese can consume a mixture of dark red kidney beans and rice which would be able to sustain them as shown in Figures 3 and 4 (Kazuko Hirai, 1994). Dark red kidney beans are easily cooked by boiling them for 30 minutes, this would decrease the amount of labour into preparing their food (Gorge Grant, 2007). Since the Nepalese people could consume these simple and cheap diet choices, they would have more income to spend on other essential items that could further benefit them, such as school supplies (Gorge Grant, 2007). Dark red kidney beans are high in soluble fibers which can help with the increase of Cardiovascular disease, CVD in Nepal, this

fiber can help reduce the amount of cholesterol in the Nepalese people (Natalia Oli, 2014). The decrease of CVD in Nepal is beneficial to the people, especially those who do not have the adequate income to provide medical care for themselves (Chapagain, 2016).

Conclusion

In conclusion, although the export of dark red kidney beans from Canada to Nepal for human consumption through Agrocorp presents several economic and nutritional benefits to the people, it was seen that it would not be a good export to Nepal because of its greater cost than that of what China offers. The people of Nepal should import from China because they would still benefit from the incorporation of this legume into their diet. The Nepalese people can import the same amount of product more about US \$1000 less than what Agrocorp can offer.

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