

Exporting Cranberry Seeds to Nepal

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Product Information:

The product of interest are the seeds of the *Vaccinium macrocarpon*, or more commonly known as cranberry seeds. Cranberries are a native fruit to North America (Yan et al., 2002). For example, it has been found that a specific breed of cranberries called *Viburnum trilobum* Marsh is native to Saskatchewan, Canada (St. Pierre, 1992). The fruit that is derived from the seeds grows on vines (Debnath & McRae, 2001). These vines grow to approximately thirty-centimeters in height (Debnath & McRae, 2001). Cranberries are a cool season crop which means that they will thrive in cooler climates (Debnath & McRae, 2001). The seeds germinate the most efficiently in moister soils, like wet lands (Debnath & McRae, 2001). The growing season of these plants takes approximately two years to grow to maximum height and have full, fresh fruit that is ready to be harvested (Yan et al., 2002). It is important to note that they are harvested in the fall, not the summer (Yan et al., 2002). Cranberries have many health benefits to them which will be discussed later in this report in the ‘Benefits to Nepal’ section. These plants need a significant amount of water in order to grow (Hammer & Bastian, 1989). So they will be need to be grown in an area of Nepal with higher levels of precipitation. Table 1 shows the annual precipitation in the mountain ranges of Nepal in the years 1987 to 1996 (Ichiyanagi et al., 2007).

Year(s):	Approximated precipitation
1987-1996	Western Nepal: 3000 mm/year Central Nepal: 1000 mm/year (Ichiyanagi et al., 2007)

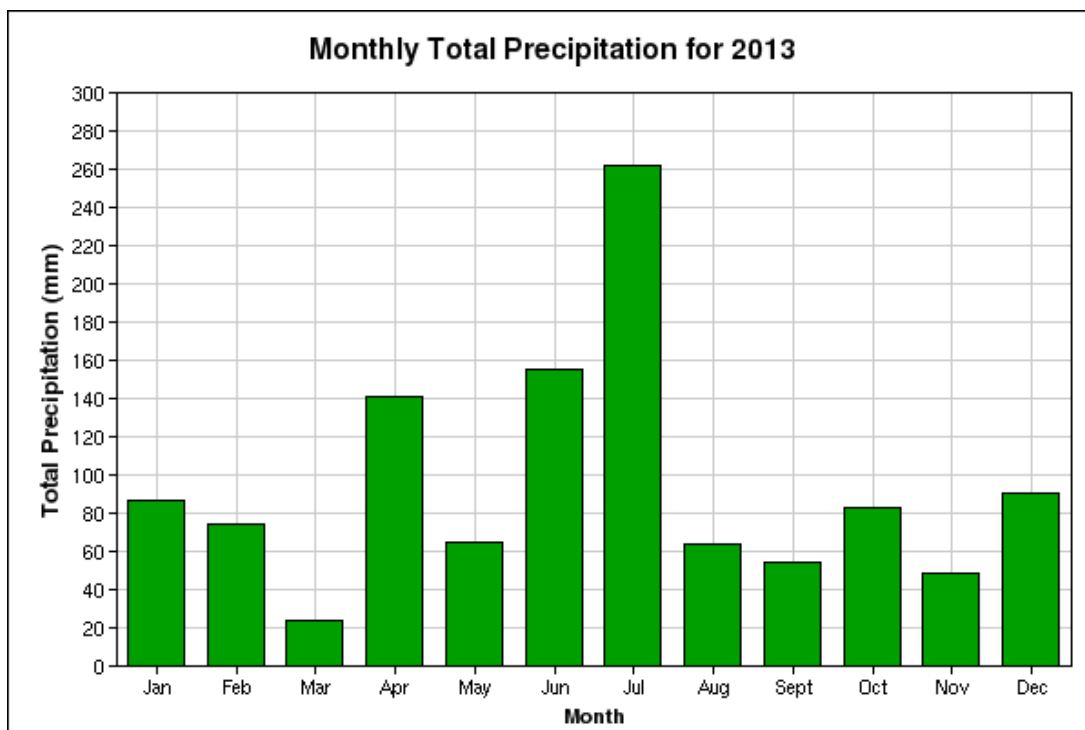
Table 1. This table indicates the annual precipitation in some areas of Nepal, although this data is exactly the most recent, one could assume that precipitation has only been increasing due to world climate change (Ichiyanagi et al., 2007). This indicates that cranberries could potentially be grown in Nepal. If the precipitation in these two specific areas has been increasing, precipitation should hypothetically be increasing in the mountain ranges as well.

A potential company that could be involved in the exportation of cranberry seeds to Nepal is Atoka Cranberries. This cranberry company is located in Manseau, Quebec (Atoka Cranberries, 2015). The company was originally founded in 1984 (Atoka Cranberries, 2015). It originally started off as a family run farm until 1988 when it started to become more than just that (Atoka Cranberries, 2015). As of now, Atoka Cranberries is one of the largest cranberry companies in Canada (Atoka Cranberries, 2015). This company already ships to the United States, Europe, and Oceania (Atoka Cranberries, 2015). Nepal is located relatively close to the Oceania area so it wouldn't be so difficult for them to export to Nepal as well if they're already in Oceania exporting to other countries as well (Vanhanen, 1997). The products that this company distributes are seeds, dehydrated cranberries, juice concentrate, single-strength juice, powder, and frozen cranberries (Atoka Cranberries, 2015). But the main focus here is the seeds of cranberries.

Benefits to Canada:

On a world scale, Canada accounts for a slightly smaller percentage of the world's exportation of cranberry seeds compared to the United States of America (Agriculture Canada, 2015). If this idea were to be accepted, this could potentially create more cranberry farms Canada wide. The more farms that are created in Canada with the intention of exporting seeds to

Nepal, more jobs will be created in development of seed extraction technology, potentially engineering for new devices to harvest the fruit and extract the seeds, as well as management, and of course physical labour of farming and harvesting cranberries. This could boost Canada's economy, and lower the unemployment rate, especially in Ontario if farms are created in the province. Also, Ontario is surrounded by more fresh water lakes than any other province (Smith et al., 2011). Specifically, South Western Ontario. For example, Windsor, Ontario. This city has one of the highest unemployment rates in all of Ontario (Government of Canada, 2008). The city is surrounded by Lake Erie and runs right along the Detroit River which is a very good source for fresh water for flooding fields (City of Windsor, 2015). Also, over the past five years or so, Windsor, Ontario has seen a drastic increase in annual precipitation (Government of Canada, 2015). Figure below shows the annual precipitation in Windsor, Ontario in the year of 2013, provided by the government of Canada.



http://climate.weather.gc.ca/climateData/generate_chart_e.html?StationID=4716&timeframe=3

[&cmdB1=Go&type=bar&MeasTypeID=totprecip&cmdB2=Go&Year=2013&cmdB2=Go#](#)

Figure 1. As one can see, the precipitation in 2013 was highest in July. This is when cranberries are still growing, so cranberry farms could potentially be developed in Windsor-Essex County if expansion of Atoka Cranberries were to occur. Since the table shows that Windsor-Essex County has a relatively high precipitation during the peak of cranberries growth season, this area would be acceptable for growing cranberries (Hammer & Bastian, 1989). This is due to the fact that, as mentioned earlier, they require a significant amount of water in order to grow (Hammer & Bastian, 1989). This is just one specific example of what the expansion of the cranberry industry can do for Canada.

Also, the more cranberry seeds we export, more jobs could be created in the transportation industry. The seeds need to be shipped via transport truck from a location where they can be loaded onto a freight vessel, then shipped across the ocean to India, and finally be transported by truck again to Nepal. This process will be discussed in further detail in the transportation section of the report. Once again, the more jobs that are created, the more people that are working and making decent wages the more Canada's economy will boost.

Intro to Nepal:

Nepal is landlocked country which means it is located in between the borders of two or more countries, and in this case those countries are China and India. It is home to approximately twenty-eight million people, and approximately eighty percent of the population are farmers that live in rural areas of Nepal (Government of Nepal, 2015). Nepal's land is divided into three different regions, the terai region, the hill region, and the mountain region (Government of Nepal, 2015). Typically, there is more crop production in the mountain ranges when it comes to

fruits because of altitude, increased precipitation, and temperature (Rasul & Thapa, 2003). The capital city of Nepal is Kathmandu (Alam et al., 2008). It is home to approximately one million of the twenty-eight million people of Nepal and is the most urbanized city in all of Nepal (Haack & Rafter, 2006). But, considering most of the population lives in the rural areas of Nepal, the target audience of this product would be the farmers in the hill regions of Nepal.

Benefits to Nepal:

Cranberries have many healthy elements to them such as anti-oxidants which reduce urinary tract infections, weak immune systems, heart disease, and some types of cancers (Yu et al., 2005). There is a large portion of the population of Nepal who do not consume meat or some other types of foods with important nutrients in them due to religious reasons (Suwal, 2001). So, people need to find a supplement for the nutrients they are lacking. The main religion in Nepal is Tijani, and as far as research goes, fruit can be consumed, so cranberries could be added to the Nepalese diets without causing controversy (Government of Nepal, 2015). As mentioned earlier in this report, cranberries have antioxidants in them. But antioxidants have more functions to them than just health benefits. Other than preventing UTI's, antioxidants slow the aging rate of the fruit produced (Yu et al., 2005). As a result, these fruits can stay on the market longer and will remain fresh longer than some other varieties of fruit would.

Below is figure 2. This photo shows a short summary of what was explained in the previous paragraph. It is important to note that it is not just people who are malnourished who benefit from the consumption of cranberries. Everyone does. Antioxidants are a very rewarding substance, in fact they are just as valuable as Vitamin C or Vitamin E. In fact, Cranberries actually contain Vitamin C in them (Debnath & McRae, 2001).

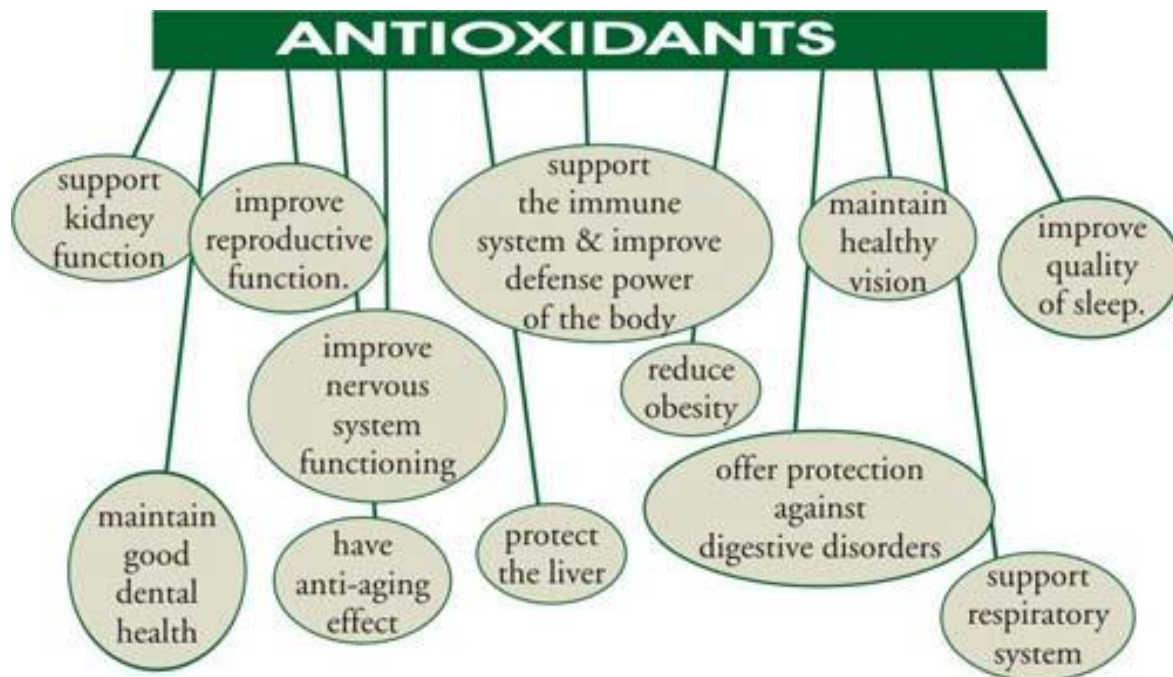


Figure 2. (<http://www.antioxidants-make-you-healthy.com/benefits-of-antioxidants.html>)

Transportation:

As stated earlier, the product being exported is seeds, there is very little concern of the product going sour during the duration of transportation. The seeds are dormant and very durable which makes them ideal for surviving long trips on commercial freights and transport trucks, etc. The seeds will need to be packaged at the Atoka Cranberries facility in Quebec. After this, they will need to be loaded onto transport trucks from CN international, a Canadian transport company and sent to British Colombia. The reason for doing this is because it is much easier to ship things overseas from British Colombia than it is Newfoundland. This is simply because it takes a lot longer for the freight vessel to go from Newfoundland to Nepal than it does to go

from British Columbia to Nepal. Once the seeds are in Vancouver, British Columbia, they will then be loaded onto a commercial freight vessel from A1 Freight Forwarding and shipped over seas. The seeds will be shipped to Digha, India where they will then be loaded again onto another transport truck to be driven from Digha to Kathmandu. Below is a table of approximate estimations of shipping prices.

Type of Shipping:	Shipping from:	Shipping to:	Cost
Commercial trucking	Manseau, Quebec	Vancouver	\$2557 USD
Commercial freight vessel	Vancouver	Digha, India	1809.09 USD
Commercial trucking	Digha, India	Kathmandu, Nepal	2224.23 USD
(approximations from World Freights: http://worldfreightrates.com/freight)			Total Cost: 4590.32 USD

Table 2. This table shows the approximate shipping costs from each location. From Quebec to Vancouver, the length of transit time is approximately five with the CN international shipping company (CN, 2015). Since it will be shipped via CN international freight, it will cost significantly more because it is a private company. From Vancouver to India it will take approximately twenty-five days (SeaRates, 2015). Since the seeds will be sent over on a commercial freight vessel along with many other items, it costs considerably less than it will shipping them over with a private company.

Considering table 2, it is evident it will cost the most to ship from Quebec to Vancouver. This could be due to the fact that they will be shipped via transport truck and truck drivers are only allowed a specific number of hours they are allowed to be on the road before they must stop to rest and sleep a full eight hours. So this extends the estimated time of arrival. This same process occurs when the seeds arrive in Digha, India. Drivers need time to rest after driving on the road for so many hours so it takes them longer to arrive to their destination. The cheapest form of shipment is via commercial freight vessel across the ocean valued at approximately \$1809.09 in USD. Overall, it will cost close to \$5000 to ship a sufficient amount of seeds over to Nepal.

Labour and Costs:

Labour wise, the seeds may need to be planted by hand if the technology is not available in Nepal. In order to harvest the cranberries, the fields need to be flooded via fresh water reserves (Hammer & Bastian, 1989). So, the Nepalese could potentially use the water from melting snow from the mountains as their fresh water reserves to flood the fields with. How this would be done still needs some further research. Once the fields have been flooded, it is likely that they will have to collect the cranberries by hand, if they do not have the technology to collect the cranberries via machinery. Further research will need to be done on the cost of machinery to see if this technology could potentially be sent over to Nepal as well so they do not have to pick the fruit themselves. Also, the Nepalese will not have the technology in order to properly extract the seeds from the fruit without decreasing their profit, they will need to sell the fruit whole. This means that they will need to continue purchasing seeds from Canada until the technology is either sold or developed in Nepal.

As for costs, the main concern for farmers will be purchasing the seeds on the market. Since cranberry seeds have a very protective outer coat, they should be able to handle the acidity of the soils in Nepal (Hancock et al., 2008). Although, just to be on the safe side, farmers may want to apply some nitrogen fertilizers as a precaution. Or if fertilizers are not available, planting intercrops would be just as sufficient. If additional labour is required to harvest the fruit, that may be classified as an additional cost to the farmer depending on the size of their cranberry field and how much fruit is actually produced. So there are quite a few inputs that need to be taken into consideration when exporting this product, but, once the product gets on the market, and the general public of Nepal start to purchase the fruit, the end result will eventually outweigh the costs. Overall, this product will be helping people, so even though it may cost more to start up cranberry farms in Nepal, it is only going to benefit the people of Nepal health wise.

Competitors:

Canada's biggest competitor is Ocean Spray Cranberries mainly located in the United States of America. They are one of the largest cranberry companies on a world scale. In fact, they have a few distribution centers in Canada Ocean Spray is an American based company. They're products are available all over the world, for example they are distributed on planes as a snack for flyers (Ocean Spray, 2015). Some of the products they export are the same as the products Atoka Cranberries exports. For example, Ocean Spray exports dehydrated cranberries, juice concentrates, juices, sauces, and much more (Ocean Spray, 2015). This poses a problem for Canadian export. Ocean Spray is a very successful, very commonly known company. Chances are they already ship to similar or even the same areas as Atoka Cranberries. So, if Atoka Cranberries were to export to Nepal, there is a likely chance Ocean Spray could do they same

and possibly at a cheaper price considering the fact they are a much larger company than Atoka Cranberries.

If Ocean Spray can export their products for a cheaper price than Atoka Cranberries can, the Nepalese are more likely to purchase their seeds and other products from them instead of the Canadian company. Competitive pricing is key in this industry. So, in order to deal with this, cost cutting solution would need to be taken in order to make the overall retail price of the seeds cheaper. For example, cutting down the price of shipping the seeds from each destination.

But it is not just Ocean Spray that is Atoka Cranberries largest competitor on exporting cranberry products. There are a variety of cranberry farms out is Saskatchewan (St. Pierre, 1992). There is a very likely possibility that those farms could expand and become a potential threat to Atoka Cranberries profits. They may be able to export for cheaper prices given they are a lot closer to Vancouver where the majority of goods shipped to Nepal departs from. Overall, selling their goods for cheaper prices. Money would still be entering the province, and the economy would boost, which are all good things, but if Atoka Cranberries is the company that is chosen export products to Nepal, this could mean increased competition which Atoka Cranberries may or may not be able to handle.

Marketing Strategy:

Investing in a new product is always a risk. But sometimes the benefits outweigh the risks. The reason as to why this would be a risk for the Nepalese is because they have never grown cranberries before. Although the seeds have a very tough shell, it is unknown if the acidity of the soil can penetrate that barrier and potentially harm or infect the seed. Also, they are unaware of just how well this product will grow in the hillside environment. So, a sales

representative would have to be able to speak Nepali, eliminating a language barrier, and have a full understanding as to how this product is planted, grown and harvested and how it will benefit the farmer. If a sufficient number of farmers decide to purchase this product, it could theoretically could open up doors for other products to be exported into

Future Studies Required and Unknowns:

As stated earlier, a few things that will need further research are if they Nepalese can purchase or create the technology requires to properly harvest the cranberries and/or extract the seeds from the cranberries without lowering profits. Performing all labour by hand will drastically increase labour costs. So if the Nepalese could actually own the technology to plant cranberry seeds using machinery instead of planting them by hand labour costs will be lowered. Considering Table 1, the data of shown for precipitation in Nepal is outdated, knowing that cranberry seeds need a massive amount of water in order to grow, more research should be done into an updated precipitation rate in Nepal. An assumption is alright for the time being, but if this product were to be shipped over, there would need so me more reliable data to go off. This is so people can know exactly where they should or should not plant the cranberry seeds in the mountain ranges.

Another unknown that will need further looking into is if there are any competitors closer to Nepal. As far as the research has gone in this report, there has been no sign of cranberry exportation or distribution in countries closer to Nepal. So far, it is just the United States of America and Canada that export cranberry products to Oceania.

Recommendations:

There are many benefits to having cranberries available to the general public. The most significant being the potential health benefits cranberries provide. The people of Nepal who are malnourished, especially women and young children could a greatly advantage from this fruit, potentially improving their immune systems and reducing disease and UTI levels. The only issue with sending this product over is the cost. These are only rough estimations, but as they were very difficult to find, unless more research is done it does not look like it will be much cheaper than what is shown in Table 2. So, if it costs almost five-thousand USD to send the seeds over, this means that the product that is sent over would cost more for the Nepalese, and there are a lot of farmers that cannot afford much to begin with.

As of now, cranberry seeds would be more of a luxury product unless a solution is found to lower the cost of shipment of the seeds. So, for now, I would not recommend sending this product over solely because of the cost of shipping and potentially the labour costs if the seeds were sent over. The Nepalese would more than likely need to plant the seeds by hand, and harvest by hand. That is a great deal of intense labour that would be required.

Also, if further research is done into cutting cost, there is a potential for sending over the technology required to properly plant the seeds and harvest the fruit. This potential arises from the amount of time it may take in order to figure out how to cut shipping costs. If the Nepalese have the proper harvesting and planting technology labour costs would be cut down significantly. But all of these technologies and pricing solutions will take more extensive research. So in conclusion, the product would be put to good use in Nepal in the future, and at some point in

time it should be shipped over, but for now, a more detailed analysis of cost-cutting solutions is required.

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