

Quinoa: A Versatile and Nutritious Export from Canada to Nepal

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Part 1

Product Description

Native to the Andean region of South America, quinoa has been around for thousands of years (Bhargava, A & Srivastava, S, 2013, p.3) providing nutritious food for humans and animals, medicine, and even a repellent from insects (Vega-Galvez, A., et al, p. 2542). After the Spanish conquest the plant was taken over by other crops such as potatoes and barley only to resurface recently (Bhargava, A & Srivastava, S, 2013, p.4). Today quinoa is growing in popularity due to its strong resistance to abiotic factors, the nutritional quality of the grain, and the versatility it can provide to society.

Quinoa being native to a region with unpredictable temperatures, varying altitudes and precipitation makes the plant naturally very resistant to these adverse abiotic factors (Bhagava, A & Srivastava, S, 2013, p.104). In order to thrive over many of thousands of years the plant has adapted methods to tolerate intermittent drought as well as terminal drought that are present in the Andean region (Bhagava, A. & Srivastava, S, 2013, p.114). The importance of drought resistance in a plant is the ability to finish the life cycle and provide a harvest even in unfavourable conditions. This is very important to areas that depend on the crop for survival.

The nutritional quality of quinoa has been recently discovered and spurred a demand for the seeds following the niche market of health foods that has risen in richer countries. Having a higher nutritive value than many commonly consumed cereal grains quinoa is an important emerging crop that needs to be investigated further. The most important aspect of quinoa is the ability for it to provide a complete protein and all essential amino acids needed in the human diet (Vega-Galvez, A. et al. 2010 p. 2543).

Table 1: Essential Amino Acids and Percent of Recommended Daily Intake Provided by Quinoa

Histidine	180%
Isoleucine	274%
Lysine	338%
Methionine	212%
Cysteom	212%
Phenylalanine	320%
Tyrosine	320%
Threonine	331%
Tryptophan	228%
Valine	323%

Source: Bhargava, A & Srivastava, S (2013). Quinoa: Botany, Production, and Uses. India: Pondicherry.

The lack of one of these amino acids in the diet plays a large part in the amount of nitrogen absorbed into the diet as well as resulting in poor growth seen in humans (Vega-Galvez, A. et al. 2010 p.2543) (Bhagava, A. &Srivastava, S, 2013 p.5). Along with the protein quality seen in quinoa, high amounts of important vitamins and minerals, carbohydrates, and fat are seen at higher concentrations than other commonly consumed substitutes (Vega-Galvez A. et al .2010 p.2543-2544). With this information being spread it will allow the replacement of a nutritionally inferior grain crop with quinoa resulting in better nutrition for those in developed nations and reduce the malnutrition seen in developing countries.

Finally, quinoa is a very versatile crop with the ability to utilize nearly all components of the plant. Quinoa can be eaten by humans or livestock and provide benefits to both. The most common way quinoa is seen eaten by humans is the seed boiled and served as a side dish replacing rice or cous cous, or made into a salad. The seed can also be ground into flour, used for a hot breakfast cereal, and used as an input product into other processed foods (Bhagava, A. & Srivastava S. 2013 p. 8). For livestock the leaves are high in protein and can be eaten by many breeds as fodder or put into processed feed for poultry (Bhagava, A. & Srivastava, S. 2013 p. 8). With more research and investigation quinoa may emerge as useful in industrial applications, pharmaceuticals, cosmetics, cloth dying, the textile industry and many more diverse applications (Bhagava, A. & Srivastava, S. 2013 p.8).

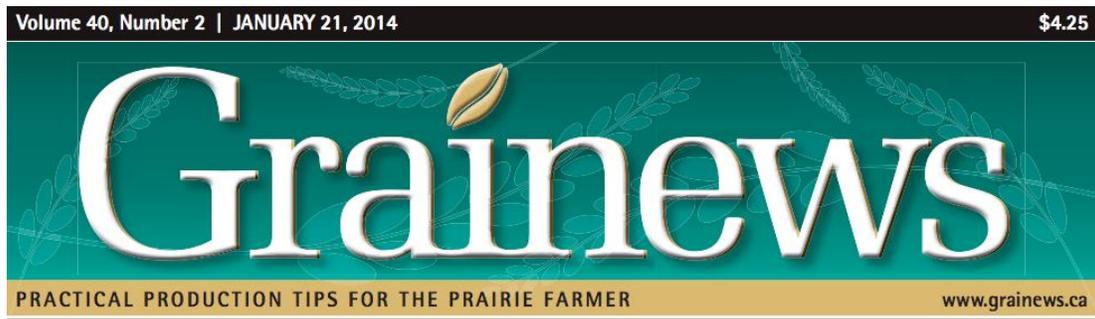
From an underutilized and overlooked crop quinoa is emerging as a useful and potentially staple crop across many countries providing a hearty nutritional crop with many uses. With further research the benefits are endless to both the developed as well as developing nations around the world.

Benefits to Canada

Due to the organic and health food trend in developed countries, more research is beginning to be done in regards to the crop and the unique beneficial values it holds (Bhargava, A. & Srivastava, S. 2013 p.3). In Canada quinoa was successfully grown in Alberta in the late 1980s/ early 1990s. This resulted in research being done at the Crop Diversification Centre South to investigate optimal places in Canada for the growth of quinoa. (Bhargava, A. & Srivastava, S. 2013 p. 42). It was seen that due to similarities in climate quinoa is best suited to grow in northeastern Saskatchewan but can also be grown

in Alberta. Today this is where quinoa is currently grown in Canada (Bhargava, A. & Srivastava, S. 2013 p.42).

With this introduction of a new crop into Canada farmers can enter a niche market and provide food not only domestically but have the opportunity to export their products. In an issue of grain news the NorQuin Company, that has the potential to ship quinoa to Nepal, is seeking more growers to meet the ongoing demand of quinoa. Currently the NorQuin Company has production on 5200 acres across the Prairie Provinces and is continuing expansion in the coming years (NorQuin, 2013). This is an ideal opportunity for farmer's who are seeking to expand their crops and be part of a growing market year after year. NorQuin showcasing the benefits and opportunities for Canadian farmers presently and into the future posted the article below in 2014.



Growing quinoa on the Prairies

Quinoa's gluten-free seeds have filled a niche for years, but as the crop grows in popularity, a Saskatchewan company is seeking more growers

Source: Guenther, L (2014, November 21). Growing quinoa on the prairies. Grainnews. Retrieved from

<http://www.agcanada.com/grainews/wpcontent/uploads/2014/01/GNN140121.pdf>

Exporting quinoa as a finished product would expand the growing market for quinoa and enable farmers with land unfavourable for other crops or, interested in adding a new crop to their crop rotation to grow quinoa.

In the short term selling finished products to Nepal will benefit the Canadian farmers who are producing the crop. When looking into the future the most useful way to help the Nepalese people is to see the production of quinoa domestically in the country, thus reducing transportation costs and allowing economic opportunities to the local people. When this time comes the innovation and advancement of the quinoa seed is where Canada will play the biggest role. With the ability to provide new and improved seeds targeted for the growing conditions in Nepal, the farmers would benefit from higher yields and healthier plants.

Canadian Company Information

Located in Saskatoon, Saskatchewan, NorQuin utilizes an integrated supply chain from field to finished product. After contacting NorQuin it was learned that the company currently ships 80% of their products to the United States, 10 % to East Asia, and 10% sells domestically (NorQuin representative, personal communication, November 9, 2015). The products available for wholesale include Golden Quinoa, Quinoa Flakes & Flour, Crispy Quinoa, and Quick Quinoa Powder. Each of the products come in various size bags and is either packaged for direct resale or in bulk (NorQuin, 2013). The product that will initially be shipped to Nepal is the Golden Quinoa as it is the most common and potentially the most useful.

Part 2

Brief Introduction to Nepal

Nepal is a landlocked country located in Southern Asia between China and India with a population of 31.5 million people. The country is divided into three main regions the Tarai in the south, Hill Region in the middle, and the Mountainous Himalayas in the

north (CIA World Factbook, 2015). Each of the three regions has distinct characteristics that relate to climate, demographics, soil type, and elevation. The climate is spread from cool summers and harsh winters in the Mountainous Himalayas to subtropical summers and relatively mild winters in the Tarai region. The terrain is indicated in the names of the regions with the Tarai region being flat. Finally, the elevation spans from the highest point at 8850 m to the lowest point of 70m (CIA World Factbook, 2015).

When looking into demographics and the Nepalese people it is seen that the society is predominately agrarian with 90 % of the people involved in the agrarian profession. The staple foods consist of rice, maize, wheat, and millet (Dahal, N. et al 2005). With a median age of 22.9 years, high infant mortality rates, and cases of serious malnutrition the country is classified as a developing nation (CIA World Factbook, 2015). This section of the paper will discuss the possibility and benefits that quinoa would provide to the Nepalese population.

Nepal Contact

In Nepal the easiest place to import the products from Norquin Company is to Bhat-Bhateni. Bhat-Bhateni is a leading supermarket and department store in Nepal serving over 40 000 people in six stores daily (Bhat-Bhateni, 2014). The company already ships products from 750 suppliers both locally and internationally and provides a wide range of goods (Bhat-Bhateni, 2014). This supermarket and department store would be a good place to introduce quinoa into the market because it would reach the greatest number of people in the shortest period of time.

Transportation and Costs

Michael, a representative from NorQuin, provided the information in Table 2. The table provides an estimate of the cost to transport one ton of the Golden Quinoa product to the Pacific Rim from Saskatoon. The importing nation will be responsible for the transportation costs associated with the product (FOB shipping point). The B13 Export Documentation is the declaration required by the Government of Canada and includes information such as exporter name, importing country, mode of transportation and other information to distinguish the product (Canada Border Service Agency, 2013). After arriving at the Pacific Rim the product will be trucked to Nepal through India to the distribution center of Bhat-Bhateni. From here the product will enter the supermarket chain Bhat-Bhateni in various cities including Katmandu, Lalitpur, and Pokhara where it will be distributed to consumers.

Table 2: Cost of Quinoa to Nepal from Canada

Costs	Transportation	Export Documentation	Product Cost	Total Cost for 1 ton tote of Golden Quinoa
Prices	Inland Freight Saskatoon to Vancouver: \$350 USD Ocean Freight Port of Vancouver to Pacific Rim: \$380 USD	B13: \$30	\$2.95 USD/kg 319.79 NPR/kg	\$3710.00 USD 395 882.27 NPR

Source: Michael, personal communication, November 23, 2015)

The GNI per capita PPP for Nepal in 2014 was 2420.00 USD (The World Bank, 2015). Since the product is selling for 2.95 USD/kg, even after calculating the mark up from buying at a supermarket quinoa is not too expensive given the array of benefits it provides. Even small amounts of the product added to the meals of the Nepalese people

will have nutritional benefits; therefore the benefits will outweigh the initial cost of introducing the new product.

Benefits to Nepal

The main benefit of quinoa relates to the Nepalese people whom many suffer from malnutrition. Quinoa provides an array of important nutrients that are shown to have a higher nutritive value than many cereal grains (Bhargava, A & Srivastava, S, 2013, p. 4). As cereal grains are highly consumed throughout Nepal, quinoa would offer an almost perfect substitution to readily consumed products with the added benefits of higher protein, lipids, carbohydrates, vitamin and mineral contents (Vega-Galez, A., et al, p. 2543-2544). With over 80% of Nepalese practicing Hinduism (CIA World Factbook, 2015) the demand for meat free diets is high, as they do not consume pork, beef, and sometimes chicken. Quinoa offers a high protein substitution and combined with other cereals has the potential to replace meat in the diet (Vega-Galvez, A., et al., p. 2546).

The second benefit is the versatility of the quinoa seed. The seed can be consumed as is, ground into flour, or used as an ingredient in various types of food products (NorQuin, 2013). Replacing other grains with quinoa in an everyday diet would improve health and malnutrition. Hot breakfast cereal, infant cereal food, flour, popped quinoa and malt beverages are just a few examples of how quinoa can be used in the everyday life of the Nepalese people (Bhargava, A., & Srivastava, S., 2013 p. 7-8).

On the contrary, introducing a finished more costly product into the market creates some limitations to those people who cannot access the major centers where the supermarkets are located. The people living in the larger urban centers where these stores are located may not be the ones suffering the most from malnutrition and therefore not

providing for those in the most need. As the product becomes more familiar and even grown domestically the benefits to the poorer more isolated people will be seen.

Marketing Strategy

The long-term goal in introducing quinoa to the Nepalese people is to show the benefits to adding quinoa into the crop rotation cycle. The first step is to introduce the finished product into the market and see how the response from the people is. After doing this introducing experiments for growing and harvesting the quinoa seed will be necessary. Not only will this provide food for the local communities but also farmers could bring it to market and be included in a domestic value chain.

Possible Competition

Canada and Nepal face a distance constraint that requires costly transportation. For this reason other countries that produce quinoa may be more attractive than the Canadian quinoa. Quinoa is not only being tested and researched in North America; but also in Africa, Europe, and Asia and therefore Nepal would be able to import from any of these countries instead of Canada. In Asia experimental introduction of quinoa is going well with high yields and promising market results in Pakistan and India (Bhargava, A. & Srivastava, S. 2013 p. 44). This is relevant as India makes up 58% of Nepal's imports and exports while Canada makes up only 1.3% of exports and 0.37% of imports (OEC,2015). Clearly there is already a strong relationship between India and Nepal and therefore Canada must stand out in some way.

In order to distinguish Canadian quinoa from competitive countries quinoa, Canada must add a unique aspect. One way to separate the Canadian product from others is to add knowledge with it. Add a small picture book with recipes on how to utilize the

product, how to plant and create a harvest out of the product, and finally provide findings from ongoing research happening in Canada. Canada must make a positive bond with Nepal in order for the more costly products to be imported from Canada.

Conclusions and Further Research

Further research must be done in order to ensure the want and need for quinoa in Nepal. Many benefits as well as some restrictions have been analyzed in this paper and as research continues many more will arise. Specific interest needs to be paid to markets in Nepal to ensure buyers can be connected with sellers at the lowest cost to both.

Quinoa has served and benefited people in the past and is now spreading around the world as a new crop that was previously underutilized. Through a thorough analysis of the costs, benefits, and needs for quinoa in Nepal as well as other developing countries, it is shown that this hearty and nutritious crop is very beneficial to the futures of many countries.

References

- Bhargava, A & Srivastava, S (2013). *Quinoa: Botany, Production, and Uses*. India: Pondicherry.
- Bhat-Bhateni (2014). Bhat-Bhateni Supermarket and Departmental Store. *Welcome to Bhat-Bhateni*. Retrived November 22, 2015, from <http://www.bbsm.com.np/index1.php?option=information&id=4>.
- Canadian Border Service Agency (2013). Government of Canada. *B13A-Export Declaration*. Retrieved December 1, 2015 from <http://www.cbsa-asfc.gc.ca/publications/forms-formulaires/b13a-eng.html>.
- CIA (2015). The World Factbook. *Nepal*. Retrived October 17, 2015 from <https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>.
- Dahal, R., Karki, T., Swamylingappa, B., Li, Q., Gu, G., (2005). Traditional Foods and Beverages of Nepal- A Review. *Food Reviews International*. 21, 1-25. DOI: 10.1081/FRI-200040579.
- Guenther, L (2014, November 21). Growing quinoa on the prairies. *Grainnews*. Retrieved from <http://www.agcanada.com/grainnews/wp-content/uploads/2014/01/GNN140121.pdf>.
- NorQuin (2013). NorQuin. *Products*. Retrieved October 18, 2015 from <http://www.quinoa.com/>
- OEC (2015). OEC. *Nepal*. Retrieved December 1, 2015 from <http://atlas.media.mit.edu/en/profile/country/npl/>.
- SakNepal (2015). SakNepal. *Project*. Retrieved October 17, 2015 from <http://saknepal.org/>.

The World Bank (2015).The World Bank. *Data*. Retrieved November 30, 2015 from
<http://data.worldbank.org/>.

Vega-Galvez, A., Miranda, M., Vergara, J., Uribe, E., Puente, L., Martinez., E. (2010).
Nutrition facts and functional potential of quinoa (*Chenopodium quinoa wild.*),
and ancient Andean grain: a review. *Journal of Science Food Agriculture*. 90
(2541-2547).