

Nepalese Apples

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Promoting Nepalese Agrifood Exports to Canada Essay

**Product Information**

*Malus domestica*, otherwise known as the apple tree, is a crop that has been domesticated, planted, traded and sold around the world since the beginning of agriculture. Once described as the “most ubiquitous of temperate fruit” (Janick, 1996, pg. 1), the apple tree originates in Southern Asia near Nepal and is a viable part of Nepal’s agricultural practices and traditions.

A study published in the Nutrition Journal of Medicine by Cornell University concluded that apples are a “rich source of phytochemicals, and epidemiological studies have linked the consumption of apples with reduced risk of some cancers, cardiovascular disease, asthma, and diabetes” (Boyer, 2004, pg. 2). Although apple juice does contain less antioxidants and nutrients than whole apples, it is still majority consumed around the world and in Canada as a source of nutrition (Boyer, 2004). A research paper published in April of 2014 highlighted the immense untapped potential Nepal has for growing and exporting apples, as most of Nepal’s prospective farm land is unoccupied (Sujata, 2014). These untilled and crop-free areas allow the possibility of apple farming to become Nepal’s main agrifood export within the next 10-20 years. Additionally, there is a lot of potential for Nepalese farmers to incorporate apple trees into already established farm land (Sujata, 2014).

### **The Environmental, Social and Economic Benefits of Nepalese Organic Apple Farming**

When considering pesticide use and its degrading effects on soil and the environment, it would be beneficial for Nepalese farmers to consider farming and exporting organic apples for apple juice and dried apple slices. Additionally, organic apples are a great product for Nepal to outsource because low-input organic apple farming is shown to increase agro-ecological benefits in soil as well as reduce negative environmental impact by 6-99%. (Alaphilippe, 2013).

Pesticides and inorganic fertilizers can not only be costly, but have a negative effects on the environment and human health as well (Alaphilippe, 2013). By exporting organic apples, Nepalese farmers can not only sell their product to higher-end grocery stores in Canada like Sobeys, Metro and Loblaws, but also take pride in the fact that they are doing their part to negate the effects of climate change and soil erosion.

In a recent study, it was noted that fertilization of fruit trees have the “strongest impact on global warming potential, followed by plant protection activities” (Alaphilippe, 2013, pg. 586). Additionally, organic apple farming was shown to consume less energy and time than inorganic farming systems, as the practice of fertilizer application and production used less energy in total (Alaphilippe, 2013, pg. 586). Additionally, a good agriculture practice for Nepalese farmers looking for an economical and organic fertilizer would be the use of night fertilizer. Although organic apple farming has been shown to produce slightly lower yields than conventional farming methods, the “potential toxicity was decreased by 2–40 % for human, 71–82 % for aquatic life, and 97–99 % for terrestrial life using mechanical control versus toxic pesticides to control weeds and diseases” (Alaphilippe, 2013, pg. 586).

### **Addressing Climate Change in Nepal in Regards to Apple Production**

In order to meet the exceeding demands of climate change, it is essential for agriculture to undergo a major transformation (Sujata, 2014). Although Nepal is an ideal growing environment for the apple tree, the country is gradually experiencing climate change. According to Sujata this causes “ecological shifts which, in turn, can lead to the expansion of the lower limit

for the cultivation of apple trees in this area” (pg. 734). As damaging in some aspects that climate change may be, Nepal’s climate change can actually positively impact apple production, as rising temperatures may actually result in an increase of appropriate land for apples to grow (Sujata, 2014).

In a lecture by Ngamindra Dahal, the director of the Climate Change Program in Nepal, it was said that effects of climate change on apple agriculture in Nepal has actually been resulting in larger and better apple crops, especially at higher altitudes where climates used to be too cold to grow apple trees (2004). However, this should also be approached with caution because as with any crop, the rise in temperatures may bring fresh challenges to Nepalese farmers in the form of new pests and diseases (Sujata, 2014).

### **Export Potential**

In order to help Nepalese farmers benefit from apple farming and exporting, one must also think practically and economically. One of the largest costs of growing and exporting apples is transportation (Goletti, 2001). Nepal is ideal for growing apples, specifically in the hillsides and mountains, because of its generally cooler climate. However, the apple export sector could become much stronger and benefit Nepalese farmers if the cost of fuel and transportation were somehow reduced, an issue that should be addressed and solved.

A positive to farming apples in Nepal is that they have a relatively long shelf life, and the storage of apples does not affect its phytochemicals or nutrition, thus they are relatively low maintenance crops to export (Boyer, 2004). Apples themselves are not a niche product, but the recent trend of most agricultural consumers wanting to go organic is and is great for Nepalese organic apple farmers. Essentially, apple farming—and especially organic apple farming—is an ideal agrifood product for Nepal to trade with Canada. Ultimately however, in order to propagate

this agricultural sector, it is essential that a new study regarding low-cost fuel and transportation options be conducted in order to benefit farmers of Nepal economically and socially.

#### References

- Alaphilippe, A., Simon, S., Brun, L., Hayer, F., & Gaillard, G. (2013). Life cycle analysis reveals higher agroecological benefits of organic and low-input apple production. *Agronomy for Sustainable Development*, 33(3), 581-592.
- Boyer, J. (2004). Apple phytochemicals and their health benefits. *Nutrition Journal*, 1-15. Retrieved November 1, 2014.
- Dahal, N. (Director) (2006, November 1). Impacts of Climate Change on Biodiversity in Nepal:

Some Observations and Opportunities . Lecture conducted from National Trust for Nature Conservation, Pokhara, Nepal.

Goletti, F., Bhatta, A., & Gruhn, P. (2001, November 1). Crop Production and Productivity Growth in Nepal. *Agrifood Consulting Internationa*, pp. 1-20.

N. Moore, J. (1996). Apples. In J. Janick (Ed.), *Fruit Breed, Volume I: Tree and Tropical Fruits* (Vol. 1, pp. 1-77). John Wiley & Sons.

Sujata, M. (2014). Assessing suitability of apple cultivation under climate change in mountainous regions of western Nepal. *REGIONAL ENVIRONMENTAL CHANGE*, 14(2), 743- 756. Retrieved November 1, 2014.