

# Banana Blossom

## A Potential Food Export for Nepal

### **Description**

The banana blossom *Musa paradisiaca L.*, also known as the banana flower or kera ko bungo in Nepali is consumed as a vegetable in other Asian countries including India, Sri Lanka, Malaysia, Indonesia and the Philippines (Shrestha & Rai, 2012; Sharmila & Puraikalan, 2015). Each banana stem produces one purple red banana blossom from the bottom of the bunch (Sumathy, Lachumy, Zakaria, & Sasidharan, 2011; Sharmila & Puraikalan, 2015). Blossoms from plantains should only be eaten since blossoms from sweet banana varieties have a bitter taste (Food and Agriculture Organization, 1983).

### **Health Benefits**

In some cultures, the banana blossom has been used to treat ailments including heart pain, asthma, diarrhea and reduce pain and excessive bleeding during menstruation (Sumathy, Lachumy, Zakaria, & Sasidharan, 2011) It is also a good source of Vitamin C, Vitamin A and studies are investigating the use of the banana blossom's to treat cancer and diabetes (FAO, 1983; Wickramarachchi & Ranamukhaarachchi, 2005).

Per 100 grams, the blossom has 1.62-2.07g of protein with high amounts of amino acids tryptophan and cystine + methionine (Sheng, et al., 2010). Dietary fiber is high at 4.96-5.74g/100g and Vitamin E levels were recorded at 0.87-1.07mg, flavonoids at 5.27-5.90mg and relatively low fat levels at 0.4g-0.6g (Sheng, et al., 2010). Mineral content in mg/100g included potassium, calcium, phosphorus, iron and magnesium at 553mg, 56mg, 73mg, 56mg and 49mg respectively (Sheng, et al., 2010).

### **Where And How It Is Grown In Nepal**

Geographically bananas are grown in the Terai region as well as the Siwliks and Middle Mountains regions of Nepal where rainfall intensity is high and medium respectively (Devkota, 1999). In the Middle-Hills the banana *Musa paradisiaca* was commonly found, especially on marginal farms (Baul, Atique Ullah, Tiwari, & McDonald, 2013).

The banana is grown for household consumption in some styles of home gardens like the multi-layered *bari / ghar-bari* (Tiwari, Thapa, Guatam, & Shrestha, 2006) Additionally some rural household home gardens with market access have already been shown to have a tendency to grow crops semi-commercially and commercially (Bioversity International, 2001). To harvest, when the bunch of banana fruits is half grown they can be cut off the banana blossom without detriment to the fruit (FAO, 1983). Therefore, in rural communities the banana blossom can provide income opportunities without giving up banana yields.

### **Socio-Cultural Aspects**

Home gardens are a symbol of social status, with richer families having larger, more diverse and unique plots (Bioversity International, 2001). Since diversity is a sign of prestige, it may be difficult to incorporate more banana plants into these kinds of systems as commercialization can lead to less diversity (Bioversity International, 2001).

Banana blossoms high moisture content suggests a short shelf life, which presents an issue considering the weak transportation networks in the Middle- Hills (Sheng, et al., 2010; Sharma, 2001). Dehydration of the banana blossom increases shelf life and thus marketability (Wickramarachchi & Ranamukhaarachchi, 2005). A dehydration system set up close to fields can present a way to make selling the blossom a more logistical option for remote farm communities who struggle to get perishable goods to market (Wickramarachchi & Ranamukhaarachchi, 2005). This system could be a supplement to the use of banana plants for

subsistence or the commercial production of banana, with women being main benefactors as they typically play the predominant role in home garden care (Bioversity International, 2001). Also, the increased production of banana blossoms may be able to encourage local consumption of the blossom subsequently improving the health of the rural poor due to its health benefits as well as its availability in home yards (Puraikalan, 2015; Tiwari, Thapa, Guatam, & Shrestha, 2006).

### **Economics**

On the market in Nepal the banana is sold year round while the blossom can only be found during three months at 35 Rupees or 0.43 cents Canadian per kg (Shrestha & Rai, 2012).

Acquiring a location, dehydrator and other supplies for the processing of the product are initial input costs that may provide an obstacle for poor rural farmers. Communities investing together could help reduce the financial cost on individuals. Micro finance loans from NGOs may be needed to achieve initial start up. Once the production facilities are set up, regular costs will include citric acid and packaging materials. The simultaneous banana production could provide food and income security that reduces the risk of starting a new business.

The full dehydration process can be found under the title Preservation of Fiber-Rich Banana Blossom as a Dehydrated Vegetable in the journal *ScienceAsia* (Wickramarachchi & Ranamukhaarachchi, 2005)

### **Environment**

In Nepal the banana plant has been recognized as important in "in situ" (on site) conservation of biodiversity as range cultivars (Baul, Atique Ullah, Tiwari, & McDonald, 2013). A way genetic diversity has been maintained is through the introduction of new species into home gardens by those who have traveled (Bioversity International, 2001). Commercialization

provides an incentive for farmers to increase production of one crop, which can mean biodiversity loss (Bioversity International, 2001).

When promoting the commercial production of banana plants and the processing of the banana blossom, it will be vital to work with locals in maintaining diversity, preserving indigenous culture and knowledge (Bioversity International, 2001; Sheng, et al., 2010).

### **Agronomic Problems**

A common pest for the banana tree, especially in the summer months in Nepal, is the *Odoiporus longicollis* or commonly the banana stem weevil (Tiwari, Thapa, Guatam, & Shrestha, 2006). Factors that increase chance of weevil infestation include the use of poor suckers, use of chemical pesticides and poor crop management practices (Tiwari, Thapa, Guatam, & Shrestha, 2006). Poor crop management affects yield of the blossom as well. The Food and Agriculture Organization provides ample information on properly growing banana plants (FAO, 1977).

### **Export Potential to Canada**

There is already a large market demand for dried vegetables in Canada suggesting dehydrated the banana blossom could do well. In 2013, imports of dried vegetables had increased to a value of \$293 million (TFO Canada, 2014).

It is predicted that specialty food markets, catering to ethnic groups in Canada, will steadily continue to grow (TFO Canada, 2014). The largest populated ethnic groups are reported being from South Asia and China (TFO Canada, 2014). These countries, being traditional consumers of the banana blossom, provide a marketing opportunity. However, as an exotic vegetable with many confirmed and potential health benefits and low fat content, the Nepalese could find their niche market growing to include the average consumer.

## **Import-Export Requirements**

Export shipments will only be released after advance payment or documentary credit is certified by a commercial bank (Trade and Export Promotion Centre, 2015). Also needed is a certificate of Proof of Origin and a phytosanitary Certificate assuring the product meets requirements of the importing country's food and drug regulations, including proper nutrition labeling (Trade and Export Promotion Centre, 2015; Government of Canada, 2015).

Trade barriers for Nepal would include the tariffs that fall under the Most Favoured Nation Tariff, General Preferential Tariff, Least Developed Country Tariff (Canadian Border Services Agency, 2014).

## **Future Studies Required**

Since dried banana blossoms can already be found on markets in Canada, further research should be done on how the Nepalese product would fair in competition with them. Further studies should also look into the history of the banana blossom in Nepal to incorporate more of local culture into potential marketing techniques.

## **Potential Importers**

### **1. Oceans Fresh Market**

150 West Drive, Unit 104  
Brampton, ON. L6T 4P9  
Phone: (905)-455-6166

### **2. Loblaw's**

Corporate office: 1 President's Choice Circle, Brampton,  
ON L6Y 5S5  
Phone: (905) 459-2500  
1-800-296-2332 for information on becoming a supplier.

### **3. Metro**

**Metro Inc. Head office:**

11 011, boul. Maurice-Duplessis  
Montreal (Quebec)  
H1C 1V6  
Phone: (519) 643-1000  
1 (800) 361-4681

Metro in specific would require an additional certification process that would be needed due to their high environment and social standards; if able to supply to them, Nepalese would potentially market to the growing body of socially conscious consumers (Metro Inc., 2015).

### **Conclusion**

In conclusion, exporting the banana blossom has potential to benefit Nepal. With proper labeling and documentation there are large market opportunities in Canada as a healthy and exotic food. When exploring opportunities tradition culture and practices should be consulted to conserve indigenous knowledge and biodiversity.

### **References**

Adhikari, R., & Adhikari, K. (2005). *Market Access Barriers to Select Nepalese Agricultural Exports*. Winnipeg: International Institute for Sustainable Development.

Baul, T., Atique Ullah, K., Tiwari, K., & McDonald, M. (2013). Exploring Agrobiodiversity on Farm: A Case from Middle-Hills of Nepal. *Small-scale Forestry*, 611-629.

Bioversity International. (2001). Home Gardens and in Situ Conservation of Plant Genetic Resources in Farming Systems. *Second International Home Gardens Workshop* (pp. 1-184). Witzenhausen: Biodiversity International.

Canadian Border Services Agency. (2014). *Customs Tariff Departmental Consolidation 2014*. Government of Canada.

China, R., Dutta, S., Sen, S., Chakrabarti, R., Bhowmik, D., Ghosh, S., et al. (2011). *In vitro* antioxidant activity of different cultivars of banana flower (*Musa paradisiaca L.*) extracts available in India. *Journal of Food Science* , C1292-9.

Devkota, L. N. (1999, 10). *Deciduous fruit production on Asian and the Pacific*. Retrieved 11 16, 2015, from FAO Corporate Document Repository:  
<http://www.fao.org/docrep/004/ab985e/ab985e09.htm#bm9>

Food and Agriculture Organization. (1983). *Banana: a tropical treat -(South Pacific foods leaflet; 7)*. Auckland: South Pacific Commission.

Government of Canada. (2015, 11 05). *Government of Canada*. Retrieved 11 21, 2015, from Justice Laws Website: Food and Drug Regulations: [http://laws-lois.justice.gc.ca/eng/regulations/c.r.c.,\\_c.\\_870/FullText.html](http://laws-lois.justice.gc.ca/eng/regulations/c.r.c.,_c._870/FullText.html)

Metro Inc. (2015, 11 21). *Supply Chain and Products*. Retrieved 11 21, 2015, from Metro Group: <http://www.metrogroup.de/en/metro-cash-and-carry/responsibility/supply-chain-products>

- Ministry of Agricultural Development. (2008). *Agriculture Development Strategy (ADS) 2015-2035*. Singhdurbar, Kathmandu: Government of Nepal.
- Nadumane, V., & Timsina, B. (2014). Anti-cancer potential of banana flower extract: An in vitro study. *Bangladesh Journal of Pharmacology* , 628-635.
- Padam, B., Tin, H., Chye, F., & Abdullah, M. (2012). Antibacterial and antioxidative Activities of the Various Solven Extracts of Banana (*Musa paradisiaca* cv. Mysore) inflorescences. *Jornal of Biological Science* , 12, 62-73.
- Pinoy Outlet. (2015, 11 21). *Lucia Dried Banana Blossom 30g*. Retrieved 11 21, 2015, from Pinoy Outlet Filipino Store & Asian Grocery: <https://www.pinoyoutlet.com/lucia-dried-banana-blossom-30g.html>
- Sharma, K. (2001, 03). *Crop Diversification in Nepal*. Retrieved 11 21, 2015, from FAO Corporate Document Repository: <http://www.fao.org/docrep/003/x6906e/x6906e09.htm>
- Sharmila, & Puraikalan, Y. (2015). Development and Evaluation of Banana Blossom Incorporated Dark Chocolate. *International Journal of Science and Research* , 4, 1409-1411.
- Sheng, Zhan-Wu; Ma, Wei-Hong; Jin, Zhi-Qiang; Bi, Yang; Sun, Zhi-Gao; Dou, Hua-Ting; Gao, Jin-He; Li, Jing-Yang; Han, Li-Na (2010). Investigation Of Dietary Fiber, Protein, Vitamin E And Other Nutritional Compounds Of Banana Flower Of Two Cultivars Grown In China. *African Journal of Biotechnology* , 3888-3895.

- Shrestha, S., & Rai, S. (2012). Survey of marketable vegetables and edible fruits in Dharan , eastern Nepal. *Nepalese Journal of Biosciences* , II, 134-147.
- Sumathy, V., Lachumy, S., Zakaria, Z., & Sasidharan, S. (2011). In vitro bioactivity and phytochemical screening of *Musa acuminata* flower. *Pharmacologyonline* , 118-217.
- TFO Canada. (2014, 03). *Export To Canada News*. Retrieved 11 21, 2015, from TFO Canada: [http://www.tfocanada.ca/global/File/JANUARY\\_-\\_MARCH\\_\\_2014\\_-ENGLISH.pdf](http://www.tfocanada.ca/global/File/JANUARY_-_MARCH__2014_-ENGLISH.pdf)
- Tiwari, S., Thapa, R., Guatam, D. M., & Shrestha, S. K. (2006). Survey of Banana Stem Weevil, *Odoiporus longicollis* (OLIV.) (COLEOPTERA : CURCULIONIDAE) in Nepal. *Journal of the Institute of Agriculture and Animal Science* , 127-131.
- Trade and Export Promotion Centre. (2015). *Government of Nepal Ministry of Commerce and Supplies*. Retrieved 11 19, 2015, from Exports Transit Procedure: <http://www.tepc.gov.np/pages/exports-transit-procedure>
- Wickramarachchi, K., & Ranamukhaarachchi, S. (2005). Preservation of Fiber-Rich Banana Blossom as a Dehydrated Vegetable. *ScienceAsia* , 265-271.
- XE: (NPR/CAD) *Nepalese Rupee to Canadian Dollar Rate*. (2015, 11 19). Retrieved 11 19, 2015, from XE Currency Converter: <http://www.xe.com/currencyconverter/convert/?Amount=1&From=CAD&To=NPR>