

Exporting Canadian Harmony Peach variety to Nepal

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Part 1:

Product description

Peach, also known as *Prunus Persica*, is a native fruit crop to China. There are also more than 300 *Prunus*



Persica varieties in the world. Canadian Harmony is a <https://www.grandpasorchard.com/Tree/Prunus-Canadian-Harmony>

peach variety that was introduced in Ontario, Canada in 1968 (Slingerland, 2003). This peach variety is best known for its bright pink/red colour and characteristic hardness allowing it to thrive in colder temperatures, unlike most peaches (Slingerland, 2003). It is a late blooming, large, freestone peach making the Canadian harmony peach a good candidate for canning, freezing and having high dessert quality (Slingerland, 2003).

How product is grown and raised

Deciduous fruit trees, like peach trees, are grafted for propagation purposes. Grafting is a gardening technique wherein a sliced section of a tree's stem is placed upon the cross section of the tree (Southwick, 1981). The scion is the upper part of the graft and it grows into the top portion of the tree (Southwick, 1981). Scion is also the fruit-bearing part in the graft. The rootstock develops into the new trunk and the root system (Southwick, 1981).

This product grows into a 10-14-foot semi dwarf fruit tree, needing an overall area of 8-12 feet for the growth span of the branches and peaches (Slingerland, 2003). For peach trees to excel and produce every year, they must be pruned annually to stimulate growth as well as requiring well-drained soils and direct sunlight. The Canadian Harmony peach variety thrives in colder temperatures. The chart below shows the physiographic regions in Nepal showing the areas most suited to peach production.

Table 1. Characteristics of Physiographic Regions of Nepal

Features	Terai	Siwaliks	Middle Mountains	High Mountains	High Himal
Land Area (Million ha)	3.1 (44%)	2 (12.7%)	4.4 (29.5%)	2 (19.7%)	2.4 (23.7%)
Geology	Quaternary alluvium	Tertiary sandstone, siltstone, shale & conglomerates	Phyllite, quartzite limestone and islands of granites	Gneiss, quartzite & mica shists	Gneiss, schist, limestone and Tethys sediments
Elevation	100-300 m	200 - 1500 m	800 - 2400 m. Relief 1500 m with isolated peaks to 2700 m	1000 - 4000 m High relief 3000 m from valley floor to ridges	2000 to 5000 m +
Climate	Tropical	Tropical, subtropical	Subtropical, warm temperate (but tropical in lower river valleys; cool temperate on high ridges)	Warm to cool temperate, alpine	Alpine to arctic (snow 6 - 12 months)
Moisture Regime	Subhumid in FW+MWDR; humid in W+C and FDR	Subhumid in most of the area; humid in N-aspect of W+C=EDR and Dun Valleys	Humid; perhumid above 2000 m	Subhumid to perhumid	Semi arid behind Himal
Rainfall Intensity	High	High	Medium	Low	Low
Horticultural crops	Mango, lychee pineapple, jack-fruit, potato, tomato	Mango, papaya, banana, potato	Mango, papaya, banana, orange, lime, lemon, peach plum, nectarine, persimmon, Asian pear, potato, cauliflower	Chestnut, walnut, apple, peach, plum, apricot, cherry, almonds, potato	

Figure 1: (Devkota, 1999)

If Canadian Harmony peach variety is grown in Nepal, per Figure 1, the best suited areas in Nepal to grow the peaches is Middle Mountain and High Mountains (Devkota, 1999). Being as this peach variety thrives in colder temperatures, it would be a great variety suited for the climate in Nepal.

Labour required, costs, issues

Peach harvesting is very labour extensive, as peaches can only be hand-picked and must be harvested at a certain time. The Canadian Harmony peach variety is a late blooming peach, that ripens in late July and August, compared to most peaches that are ripe in the summer months, June through August. Peaches must also be harvested before extensive rain or extreme heat. During the growing seasons, the orchards must be extensively cared for, as pests and diseases such as the leaf curl, defoliating beetle and the peach aphid are common pests in Nepal in the peach growing industry (Devkota, 1999).

Farmers in Nepal can start growing Canadian Harmony peaches in an existing orchard by using the grafting method, or farmers in Nepal can start growing this variety of peach in a new orchard. To start an orchard, farmers should test the soil to make sure the soil has plenty of nutrients (nitrogen, phosphorous, potassium etc.) in the soil that the peach tree can absorb/uptake nutrients to produce high quality peaches. There should be little to no weeds present in the area where the peach rootstocks are going to be grown, as well as a cultivated soil will help in even water distribution for the fruit trees (D. K. Salunkhe, 1995). The trees should be planted 8-12 feet apart, for the growth span of the branches and peaches (Slingerland, 2003). Fertilization in peach trees is essential for the fruit tree to have exceptional growth, as peaches have high nutritional values, but to produce a nutritious crop, calcium, copper, nitrogen, phosphorous, potassium and zinc are required nutrients (Slingerland, 2003). As the peach trees start to grow and produce fruit, they must be thinned, which is a process where the smaller, less developed peaches are hand picked and removed, allowing the larger fruits to reach their full development (LaRue, 1989). Pruning is important to successful peach production, as pruning helps increase fruit development by cutting overgrown branches and/or dead branches (Somerville, 1996).

The size of the orchard determines the number of hired labour that is needed for harvesting the peaches. Peach harvesting is very labour extensive because harvesting peaches can only be done in a certain time frame so the peaches are not too ripe or too early to be picked.

To make sure all the peaches are harvested in their certain time frame, a lot of labour is needed to be hired to get harvesting done in a short time and efficient manner. Some peach trees may be more developed than others due to greater uptake in sunlight, nutrients or water, therefore certain trees or individual peaches will need to be hand picked at different times as well (Slingerland, 2003). After peach harvesting is complete, peaches must be handled with care, as bruised and damaged peaches will not go for a high value or may not even sell at all. Family labour could take care of peach orchards their selves, however if orchards are larger sized, it is recommended to have hired labour since the peach production industry is time sensitive.

Health Benefits

Canadian Harmony peach variety have high nutritional values as they are a large fruit containing many essential nutrients and minerals such as potassium, fluoride and iron that help improve digestion creating a better product for consumers in Nepal to buy (Hunter, 2014). Peaches are also low in calories and contain no saturated fats (Hunter, 2014). Fresh peaches contain high levels of antioxidants, such as Vitamin C. Consumption of foods with high levels of Vitamin C helps the body fight against and resist infectious diseases as well as help prevent free radicals known for causing cancer from forming (Hunter, 2014). Fresh fruits, like peaches, contain sources of Vitamin A and β carotene. These vitamins are essential to maintain good vision, as well as maintaining healthy mucus membranes and skin (Hunter, 2014).

As per the nutritional facts chart, Peaches also contain low cholesterol, which can help fight diseases such as diabetes and cardiovascular disease (Hunter, 2014).

Constraints

Small farm holders are limited in their ability to expand due to the lack of infrastructure, such as roads and markets, in the high mountains region (Devkota, 1999). Current peach production is also hampered by disease and pest pressure, in addition to a lack of quality planting materials, fertilizers, pesticides, and other crop

Nutrition Facts	
Serving Size 1 medium peach (147g)	
Amount Per Serving	
Calories 60	Calories from Fat 5
% Daily Value*	
Total Fat 0.5g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 15g	5%
Dietary Fiber 2g	8%
Sugars 13g	
Protein 1g	
Vitamin A 6%	• Vitamin C 15%
Calcium 0%	• Iron 2%
*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Saturated Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300 mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9 • Carbohydrate 4 • Protein 4	

Figure 2
<http://farmtotable.colostate.edu/eat-resources/peach.php#.WDc0QvkrLIU>

inputs (Devkota, 1999). Fruit cultivation requires large initial investment which most of Nepalese farmers cannot afford to make (Devkota, 1999). There is also little transportation, storage and processing facilities available in Nepal, as the area has not yet been developed for the fruit growing industry (Devkota, 1999).

More than 90% of rainfall occurs in Nepal from June to September, creating a heavy monsoon period, which is a critical time frame for the fruit trees, as they are developing in those months and require more care and nutrients at this stage (Devkota, 1999). There are socio-economical constraints in the peach growing industry in Nepal because most Nepalese farmers are experienced in only growing cereal crops, therefore there is lack of knowledge in growing the deciduous fruit trees since commercial fruit growing is not traditional in Nepal (Devkota, 1999).

Market Opportunity

This product can be used in many numerous ways creating a versatile market opportunity for the Canadian Harmony peach. Even though there are already a lot of nutritional benefits to just eating plain peaches, peaches can be used for all types of cooking, baking as well as preserving the product. In the season when trees are not producing peaches, the product can be canned to use later in the future or to make into jams. With the potential of this product being used for multiple purposes, there is several marketing opportunities. This variety of peach can be sold to local markets or the farmer can even sell their own product at the location of the orchard if they are in a high populated area so buyers can purchase the product straight from the source and allow tourists to pick their very own peaches. Since Canadian Harmony peaches are a variety that are known for being a key ingredient in producing high quality desserts, Nepalese farmers can also sell this product to restaurants and bakeries for a large income since peaches are a higher value crop.

Benefits to Canada

Exporting Canadian Harmony peach seed stocks to Nepal, is not only beneficial to Nepal, but will be beneficial for Canada as well. More jobs will be produced to meet customer demand, since the fruit tree industry is labour intensive, not only for the stage of harvesting the fruit, but the beginning of life stage for peaches, making sure the rootstocks are cared for and do not get diseases such a root rot, as the beginning life stage of deciduous fruit trees determines their

future fruit development (Southwick, 1981). The sale of the peach seed stocks to Nepal, will also create income and jobs from the marketing and transportation aspect. The Canadian nurseries have potential to expand their business and become a greater well known company if the product has continuous demand.

Nurseries

This peach variety seed stock will be shipped from Vancouver, British Columbia to Nepal from Bylands Nurseries Limited. Bylands Nurseries Limited is a producer of one of the most diverse, and complete mixes of hardy plant and plant materials (Bylands Nurseries Limited, 2016). Bylands Nurseries are a Summerland Varieties cooperation licenced nursery. Byland Nursery is in Kelowna, British Columbia and exports their disease-free quality products currently throughout Canada, the United States and Alaska (Bylands Nurseries Limited, 2016). This company sells seed stock containing at least 10 buds and are packed in groups of 100 sticks (1000 buds), costing thirty-five cents Canadian dollar per bud, which converts to \$28.04 Nepalese Rupee per bud (Bylands Nurseries Limited, 2016). Bylands Nursery has several accolades such as International Association of Horticulture Producers Grower of the Year, proving they are a reliable company capable of producing exceptional quality products (Bylands Nurseries Limited, 2016). Therefore, it would be beneficial for Nepal to grow Bylands Nurseries Limited products, as they are coming from a credible source and can guarantee a thriving crop.

Part II-Export Potential to Nepal

Proposal for Nepal

Since the Canadian export company sells bundles of 100 sticks containing 1000 buds, 100 seed stocks would be exported to Nepal for the customer to graft the variety onto their existing rootstocks or customers can purchase rootstocks from Bylands Nurseries Limited as well if they are just starting an orchard. The areas more focused on for the Canadian Harmony peach variety production, is areas in the hill regions as there is little fruit production occurring in this area and there can be great potential to produce this variety since the hill area is known to have a cooler climate as per Figure 3. The Canadian Harmony peaches are a cold hardy fruit and can withstand cooler temperatures, making the product a great variety to be grown in the hill region.

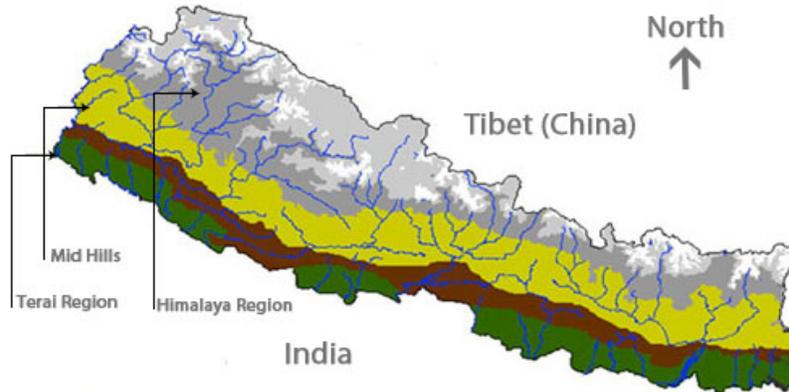


Figure 3. <http://creativenepal.co.uk/map 1>

There are many ideal locations for this peach variety to be targeted to in the hill region as per Table 4, but certain districts in Nepal that would be easiest to produce this variety would be districts Nuwakot, Kathmandu, Bhaktapur, Lalitpur, Sindupalchowkas and Dhadin; these districts are closest to Kathmandu airport, where the seed stock would be imported to (Devkota, 1999).

Table 2. Potential Districts for Commercial Production

Fruits	Major Districts
Apple and Apricot	Mustang, Jumla, Humla, Kalikot, Dolpa, Rukum, Rolpa, Bajhang, Bajura, Baitadi, and Darchula
Pear, Peach, Plum, Persimmon	Sankhuwasabha, Dhankuta, Sindhupalchowk, Rasuwa, Kavre, Nuwakot, Dhadin, Palpa, Baglung, Baitadi, Doti, Dharchula, Bajhang, Rolpa, Parbat, Gorkha, Makawanpur, Bhaktapur, Lalitpur, Kathmandu, Sindhuli, Ramechhap, Bhojpur, Terathum and Illam

(Devkota, 1999)

Shipping

The peach seed stocks should be ordered as soon as the customer is certain they want to grow this variety of peach, as peaches take two to four years to be fully developed and produce their product (Slingerland, 2003). The seed stock will travel in bundles, wrapped in wet newsprint and wax paper and labeled with its contents and the recipient's name (Summerland Varieties Cooperation, 2016). Summer bud wood is generally cut and shipped within 48 hours while winter scion wood is cut, graded, stored and shipped at the client's request (Summerland Varieties Cooperation, 2016). Orders are stored in cold-rooms until delivery to Vancouver

International Airport via UPS or FedEx. From Vancouver, International Airport the product would be shipped to Kathmandu, Nepal at Tribhuvan International Airport. Once the product has landed, the product must be transported to the customer's location as quickly as possible, so the seed stocks do not dry out. Below is a comparison chart of the cost of transporting a package of peach scions from Canada to Nepal.

Table 3: Comparison of Shipping Companies

Shipping Company	Rates	Time of travel (Vancouver to Kathmandu)	Reference
FedEx	\$560.07-\$622.29 CAD	4-7 days	(FedEx, 2016)
UPS	\$1007.27-\$1144.14 CAD	7 days	(UPS, 2016)

As per table 3, FedEx would be the more suitable choice of company to use when shipping the peach scions because FedEx is less expensive, helping lower overall costs and FedEx takes less time to get the product to Nepal. However, shipping internationally, from Canada to Nepal is quite expensive and leads to a very high cost for a developing country.

Cost Analysis

As stated above, Bylands Nurseries is a Summerland Varieties Corporation licenced nursery, therefore the pricing of the bundles of scions, is Summerland Varieties pricing which is quite affordable. The Canadian Harmony variety of peach, comes in 100 bundles of scion wood, containing at least 1000 buds costing thirty-five cents Canadian dollars per bud (Summerland Varieties Cooperation, 2016). The Nepalese customers purchase 100 peach scion woods, which is a total of \$35.00 Canadian dollars for the scion wood, converting to \$2863.64 Nepalese Rupee (Converter, 2016). As per table 3, using the lowest costing shipping company, FedEx, to ship the product from Vancouver to Nepal, it would cost from a range of \$560.07-\$622.29 total Canadian dollars if FedEx is used to ship the product (FedEx, 2016). When adding the cost of the product and the shipment costs using the company FedEx, as it is the less expensive company, the total

cost could range from \$595.07-\$657.29 Canadian dollars, converting to \$48,687.67-\$53,778.41 Nepalese Rupee (Converter, 2016). Since the shipping is very expensive, and the cost range of this project may make the idea seem unrealistic, as Nepal is a developing country and the overall total costs of the project is quite substantial. However, if Nepal farmers were to order a shipment of this peach variety together, splitting the shipment, it would help lower the cost of the shipment. The Nepalese farmers can also test out the product and see if they are satisfied with the result of this peach variety, as well as figuring out if this project is financially affordable to them and if it will become a profitable product towards their farm.

Needs and Benefits

Nepal is a developing country and currently 24% of their population is living under the poverty line, majorly impacting the Nepalese health, by not getting the intake of vitamins and minerals their bodies need, especially in the rural regions (Nepal Public Health Association, 2011). This is a reason why this variety of peach should be a stable crop in Nepal, as Canadian Harmony peaches are a hardy fruit and obtain high levels of antioxidants, vitamins and nutrients, resulting in being a valuable crop to Nepalese farmers since they need more vitamins and nutrients in their diet to sustain a healthy lifestyle.

There is also opportunity for Nepalese farmers to have a greater income since the peach trees must be spread apart from each other and grow in rows, there can be potential for the growth of a cover crop while the peach trees are growing. This will create better soil management, increasing the organic ingredients in the soil and improve the water holding capacity of the soil (Fortier, 1940). Cover cropping will also benefit the farmer because they can use the cover crop for livestock feed as well as other usages.

Documentation

Tribhuvan International Airport is the only gateway area for imported goods to enter Nepal via air freight (Nepal Freight Forwarders Association, 2016). Importing plants and plant material in Nepal requires a phytosanitary certificate as well as a phytosanitary import permit (Group, 2011). To export plant materials from Canada, the required documents from the Canadian company is a phytosanitary certificate and the product must meet the requirements of

the Convention on International Trade in Endangered Species (CITES) (Government of Canada, 2016).

Conclusion

In summary, the proposal of exporting the Canadian Harmony peach variety from Canada to Nepal would be beneficial for not only Nepal, but Canada as well. Despite the large shipping fees, Nepal would benefit from the import of the peach scions as growing and caring for the peach trees will create job opportunities due to the demand of the intensive labour in the peach industry. The quality and quantity of peaches will be increased, creating a larger income for Nepalese farmers from increasing yields and creating a higher value crop which can be good for market sales. Grafting the peach scions in Nepal creates a more hardy, durable fruit, containing higher nutritional values than most peaches, such as high levels of Vitamin A and C, leading to greater health benefits for Nepalese people as they would be absorbing more nutrients and vitamins from consumption of the peaches (Hunter, 2014).

As for Canada, job opportunities will also be increased for the Canadian company to meet customer demand. The sale of the peach seed stock will create income and jobs from the marketing and transportation aspect as well.

To make this project more realistic, it is highly recommended to consider lower shipping costs, however after researching the most reliable shipping companies, the lowest shipping price is still an expensive value for Nepalese farmers. A recommendation to benefit Nepalese farmers by growing the Canadian Harmony peach variety, could be to export the product from Canada to China, since China is a wealthier country and is a neighbouring country to Nepal, than China could export the peach seed stock to Nepal at a lower shipping cost to create an affordable product for Nepalese farmers.

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