

Export Opportunity for Nepal

Homebrew Fermentation Unit

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Introduction to Nepal

Nepal is a landlocked country bordering China and India (Courselink, 2016). With a population of 28 million in 147,141km², Nepal is home to 8 of the 14 highest peaks of the world including Mount Everest. In comparison, Canada is 64 times greater than Nepal, but has a similar population with approximately 6 million more people. If a Canadian were to live in Nepal, they would be 6.5 times more likely to be unemployed, make 95% less money, be 6.5 times more likely to die in infancy, die 13 years sooner, use 99% less electricity, consume 99% less oil, and have 2 times more babies. As statistics help show, Nepal is an underdeveloped country when compared to Canada.

In Nepal, a total of 3.1 million cultivable hectares employ over 70% of the population. From the agriculture industry, Nepal generates 38% of its GDP. Nepal's land use is primarily taken by forest and shrubs, with agricultural land, and grassland and pasture taken up the second greatest area. Nepal is divided into three agro-ecological regions, mountain (35%), hill (42%), and terai (23%), where hills and mountains commonly grow fruits, vegetables and livestock, while the terai regions are responsible for larger quantities of small grains and cereal crop. Particularly to the hill regions, temperatures are sub-tropical to warm and the soil is a clay loam to sandy loam. Terrace farming is commonly used in maize and millet cropping systems.

Primarily of interest in the hills region, is the ability to grow fruits like apples, pears, and citrus fruits. The transportation in the hill regions depend on mules and sheep (Courselink, 2016). With agriculture employing the majority of the population, methods of production and efficiency of production are important to consider in these three agro-ecological regions.

Fruit Production in Nepal

Fruit is primarily grown in the hill and mountain regions in Nepal with a small amount grown in the terai regions (Publication, 1999). Commercial fruit production is not traditional in Nepal, instead production is limited to homestead gardens and fruit trees used for domestic consumption. That being said, there are still small orchards in the hill and mountain regions. Primarily grown in the hills and mountain regions are mangos, papayas, bananas, oranges, limes, lemons, peach plums, nectarine, persimmon, Asian pears, chestnuts, apples, peaches, plums, apricots, and cherries. Presently, deciduous fruits are of the most importance of the fruit crops in Nepal. In the past 10 years, fruit crop production has increased by almost 50 percent, but has had little effect on commercial scale production due to the scattered distribution. In the order of most commonly grown, apples are followed by pears and peaches. The Himalayan region in particular, around 1800-2800m above sea level, is considered suitable for high quality apple production. Being that fruit production is often on the mountain slope or hill, orchards are planted following a contour system. The fruit is managed and harvested all by hand, then stored in one place until they are sent to market. Nepal has no grading system in place for fruits but instead they visually inspect the bad ones due to harvest damage or pests and disease damage. Because the fruit production takes place in the mountain and hill regions, transporting the fruit to market is a lengthy difficult process that can take several days. This lengthy process can cause fruit to go bad taking away from a farmers yield. Fruit production has a lot of potential in Nepal as it continues to grow. The table below shows the growth in 5 years Nepal has experienced in its deciduous fruit production (Publication, 1999).

Table 9. Area Expansion (in Hectares) for Deciduous Fruits during the Ninth Five Year Plan (1997/98-2001/02)

Crop	1997/98	1998/99	1999/2000	2000/2001	2001/2002	Total
Apple	189	186	240	290	359	1264
Pear	76	46	32	32	32	218
Walnut	90	85	80	80	80	415
Peach	43	39	22	22	22	148
Plum	27	23	22	22	22	116
Apricot	4	10	5	5	5	29
Persimmon	6	9	10	10	10	45
Total	435	398	411	461	530	2235

Alcohol Use in Nepal

Alcohol consumption in Nepal is normal and widely accepted by the public (Jhingan *et al.*, 2003). Unfortunately for Nepal, it is also a major issue in Nepal in regards to alcohol and drug abuse. The alcohol industry in Nepal brings in one of the highest revenues in the national economy. Alcohol is favoured by the marketing industry, and is available to anyone 18 and older. Alcohol and tobacco products claim 30% of all the advertising in Nepal. Minimal restrictions on alcohol has created the opportunity for consumption abuse and social abuse. Alcohol consumption has also not held the same criticism it once did through religion.

The most common types of alcohol in Nepal are jand/chang homebrews made from fermented grains, and raksi, a liquor made from distilled grain and raw sugar. Other common drinks; beers, distilled liquors, and imported drinks all made from factory production systems. Surprisingly, ciders or fermented juices are not common in Nepal considering all the deciduous fruit production. Somersby Apple Cider has marketed itself along with other cider production companies, but the idea of homebrew fermentation is a relatively newer concept to the Nepalese (Jhingan *et al.*, 2003). This has opened the opportunity for Canada to export the required goods for one to start up their own homebrew operation.

Export Opportunity

My idea for a Canadian export opportunity, is to supply Nepalese people with the necessities to start their own homebrew fermentation using fruit they have produced domestically or on a larger scale for agricultural purposes.



Product Description

A one gallon glass jug (right) and 12 inches of ¼” ID clear hose tubing (left) are all the equipment required a simple home fermentation process. Using these pieces of equipment combined with juice from fruit harvest, Nepalese people can make their own alcoholic beverage for consumption.

The one gallon glass jug is sourced from ULINE Canada in Brampton, Ontario (ULINE, 2016). ULINE is a family owned business that is the leading distributor of shipping, industrial and packaging materials to businesses throughout North America. Glass itself and the phenolic black cap material can be sourced from the USA. ULINE Canada would not reveal the manufacturer of the glass or phenolic caps just the country of origin. The 1 gallon glass jug sells for \$5. The glass jugs are crystal clear for visibility, which is important for observing the fermentation process. They have a finger handle that allows for easy carrying and pouring. They are FDA compliant which confirms their safe use for storage of food and drink. The glass jugs come in cases of 4 but can be purchased individually as well. The glass jug will be used to hold the fruit juice and contain the fermentation vessel. The cap will have a hole (punctured by the owner of the unit) in it which the clear hose tubing will fit through it and reach into the glass jug. Compared to other suppliers ULINE sells glass jugs for the cheapest price at \$5 (ULINE, 2016). Ontario Beer Kegs sells a 1 gallon glass jug for \$6.49, Everwood Brew Shop in Nova Scotia for \$5.99 and \$4.98 for a ½ gallon glass jug from Toronto Brewing Supplies (ULINE, 2003: Ontario Beer Kegs, 2016: Everwood Ave Brew Shop, 2016: Toronto Brewing Supplies, 2016). ULINE has proved to be the most affordable and reliable considering their business and its success over many years.

The ¼” inner diameter clear hose tubing is sold by Ontario Beer Kegs from Mitchell, Ontario (Ontario Beer Kegs, 2016). Ontario Beer Kegs is a homebrew supplier with hundreds of items in inventory available to meet all the needs of homebrewers from beginners to experts. The ¼” clear hose tubing is sold for \$0.99 per foot. Ontario Beer Kegs source the tubing from the USA although they would not identify a particular manufacturer. The plastic is FDA approved which confirms this product safe to use for the food and beverage industry. Its flexibility will allow it to be bent into the shape required for the fermentation process (Ontario Beer Kegs, 2016). Those hose is required to allow CO₂ to be released from the glass jug but not taken in.

The hose is pushed through the hole in the lid allowing only air to come in from the end of the clear hose. The end of the hose outside of the glass jug is placed into any container with water and is submerged. The hose underwater will prevent air from getting into the glass jug but still allowing air to escape the glass jug. A ¼” inner diameter goes for \$0.79 at Everwood Brew Shop and \$0.99 from Toronto Brewing Supplies (Everwood Ave Brew Shop, 2016: Ontario Beer Kegs, 2016: Toronto Brewing Supplies, 2016). Ontario Beer Kegs was chosen to be the supplier as Nova Scotia would complicate shipping methods for the two items together.

Together, these two products cost a totally of \$6.76 with Canadian taxes included. Before shipping prices, this is a very affordable price.

After looking around for other possible suppliers across the world, Ontario’s suppliers ULINE and Ontario Beer Kegs provide the best deal on buying the two pieces of equipment. On Amazon, the cheapest glass jug sold for \$51.52 without shipping (Amazon, 2016). Also on Amazon, the cheapest hose closest to ¼” inner diameter, sold for \$5.07 with free shipping (Amazon, 2016). Alibaba was also searched for the two pieces of equipment but none were found (Alibaba, 2016).

In conclusion, the 1 gallon glass jug from ULINE and the ¼” inner diameter clear hose tubing from Ontario Beer Kegs is the best possible option for export to Nepal. Together, these two pieces of equipment can help the Nepalese make their own alcoholic beverage for the cheapest price available.

Listed below are the basic instructions that could be included with the purchase of a glass jug and clear hose. There would need to be translation for Nepalese people and a demonstration of how to use the product would be beneficial. Beyond the basic instructions, the process of fermentation is very simple and hard to mess up.

Step	Instructions
Step 1	Mash apples (approximately 40) and strain juice from skin and apple mush.

Step 2	Add strained apple juice to 1 gallon glass fermenter leaving 2 inches of space at the nozzle.
Step 3	Pierce hole in plastic PVC cap. Make hole slightly smaller than the ¼" ID food grade tube to provide air tight seal.
Step 4	Seal glass fermenter with cap and insert food grade tube 1 inch into hole.
Step 5	Place opposite end of food grade tube into container filled with water. This prevents any air getting into the fermentation glass jug but allows air to exit through the tube.
Step 6	Now the beginning preparation stage is complete.
Step 7	Keep the fermentation glass out of the sun and wait for three to four weeks. During this waiting process, you should observe small bubbles rising to the surface, that being CO ₂ as a by-product of ethanol fermentation.
Step 8	While waiting for the weeks to go by, wild yeast has taken the sugar in the apple juice and converted it to ethanol. Your fermentation is complete and you can no separate the alcohol from the sediment at the bottom.
Step 9	Pour off the liquid into any holding container of choice (sealable ones will allow you to retain carbonation). Leave the sediment in the bottom of the tube as it is proteins and yeast that have settled out of the juice. You will not be able to conserve all the juice from the fermenter. Some will be left behind in the

	sediment.
Step 10	Drink up.

Benefits to Canadian Companies

There are direct and indirect benefits that come from this Canadian export opportunity with Nepal. Direct benefits for the glass jug would be the actual manufacturer in the USA making the glass jugs and selling them to ULINE. Indirectly ULINE is benefiting as they receive business when products are ordered from ULINE. ULINE benefits as Nepal purchases glass jugs. Without business, a company will not survive. The business Nepal will provide to ULINE as well as other business is what keeps employees paid and helps them too.

Direct benefits again go to the manufacturer of the plastic for the ¼” inner diameter clear hose tubing. Indirectly, the sales staff and company Ontario Beer Kegs benefit from the business Nepal provides to them by purchasing the clear hose tubing.

Indirect benefits are also experienced with shipping companies used to get the product overseas like Purolator. As well, the benefit of an improved relationship between Nepalese people and Canadians is experienced if this export idea were to go through.

Marketing Opportunity

There is a huge opportunity for this product in Nepal considering the agricultural focus on the population. Because agriculture employs around 70% of the population, and a large portion of that is positioned in the mountain and hill regions, there are lots of fruit crops that are being grown.

This product will not only be marketed to those who operate orchards and fruit cropping farms, but to everyone. Because the hill and mountain regions are very suitable for fruit production, it is common for household or domestic fruit production from a few trees.

The whole idea behind the homebrew fermentation process, is cost effective production of your own alcohol. With no shortage of desire for alcohol in Nepal, this product would sell quite well.

Another selling point is the opportunity for a small business. Fruit farmers and orchard operators can try their hand at the simple fermentation process, and upon success, they could have the opportunity to start alcohol production on a larger scale. With a few more fermentation units, they can sell their own alcohol produced from the fruit of their orchards. This will not only benefit the producer of the alcohol, but the public around that can purchase it. Another benefit, is a reduction in wasted fruit that would otherwise go bad sitting and waiting until it can go to market.

Based on the information gathered regarding alcohol consumption and fruit production in Nepal, a homebrew fermentation unit would sell quite well to Nepalese provided it is cost effective after shipping costs (Jhingan *et al.*, 2003).

Export Potential to Nepal

Exporting goods to Nepal requires international shipping. There are many companies that can do this and they all vary in price. Depending on the amount you want to ship and the weight, the cost will vary. That being said, shipping 30 homebrew fermentation unit's verses shipping 5 will alter the sale price of a single unit once it is in Nepal.

The shipping and transportation of this product gets slightly complicated. Firstly, the clear tube hose from Ontario Beer Kegs needs to be shipped to Brampton where ULINE is. Someone will need to package the glass jug and clear tube hose in one shipping box to be sent from Brampton to Kathmandu, Nepal. That part gets complicated as you need to pay someone to organize and package the two items together after receiving them both from each distributor.

Starting with the cost of shipping the clear tube hose to Brampton, Purolator will ship a box of approximately 5lbs with 72" of clear tube hose for \$31.49 (Purolator, 2016). Once the clear hose tube has arrived at ULINE in Brampton, a designated worker will need to cut the hose into 6 even 12" pieces and package with 6 glass jugs in one box. It is unknown how to figure the cost of employing someone to organize and prepare the package, but a small charge of \$15 a package is an educated estimate. From here, the package will be shipped to the city of Kathmandu, Nepal. For a box containing 6 glass jugs and 6 pieces of clear hose tube, a box of

approximately 18lbs will cost \$550.94 (Purolator, 2016). This is a high price to pay for shipping that will have a major effect on the price of a single homebrew fermentation unit.

The biggest issue in exporting this product is getting it to the Nepalese that live in the mountain and hill regions. Getting it to Kathmandu is easy, but shipping it to those that are only accessible by mules or limited roads is extremely hard and cannot be accurately described or priced out. Based on the information gathered, a rough estimate \$100 Canadian is assessed to the transportation required for this product to reach those that live in the mountain and hill regions (Dhakal, 2003).

This product has no special requirements for storage or refrigeration making it easy to ship without concern. Packages require a FRAGILE label as glass is being shipped. This should not be an issue as the boxes that ULINE ships them in come with cardboard dividers to prevent the glass from breaking (ULINE, 2016).

Total costs for shipping 6 homebrew fermentation vessels are outlined below:

Item/Shipping	Price (Canadian dollar)
Cost of 72" clear tube hose	\$6.71
Cost to ship hose to Brampton	\$31.49
Cost of 6, 1 gallon glass jugs	\$33.90
Cost to package clear tube hose and glass jugs together	\$15 estimate per package of 6
Cost to ship 6 homebrew fermentation units together to Kathmandu, Nepal from Brampton, Ontario	\$550.94
Further distribution by road or mule	\$100 estimate
Total	\$738.04 or \$123/individual homebrew fermentation unit. OR in the Nepalese rupee 10,083.46 per unit



Benefits to Nepal

The benefits to those who purchase the product are as follows. The opportunity for personal alcohol production using fruits that are already grown either on the farm, at the orchard, or on a single household tree. This benefit is huge for the producer as purchasing alcohol isn't always easy when you live in the mountain or hill regions. Another benefit to those who operate an orchard or smaller scale fruit production, is the opportunity to start a small scale fermentation operation where they can sell their alcohol. This opportunity requires some basic experience of the fermentation process and also more homebrew fermentation units. A benefit of the process itself is that it does not require much work to complete the fermentation considering the wild yeast do all of the work.

Overall Product Evaluation

Selling a homebrew fermentation unit to Nepalese people would go over quite well considering the optimal parameters of those that live in the mountain and hill regions. The mass amount of fruit production and the simplicity of the fermentation process compliment each other and would work quite well for the Nepalese. Considering their alcohol situation, introducing a new beverage could help the overall industry and spark the juice fermentation sector. With an

affordable price point for the unit itself, the product is cost effective and could go over quite well with the Nepalese. However, the cost of shipping and handling negatively impacts the success of this export. The cost of shipping the product makes it unaffordable to the Nepalese. With a reduced shipping price, this product could do quite well, but with high shipping costs, this product will fail to sell in Nepal.

Future Studies

Further interest in this export opportunity would require more in depth research regarding cost effective shipping. Finding a company that can ship the product while keeping it at a reasonable selling point would make this product sell in Nepal. Further research could also look into manufacturers of glass jugs and clear hose tubing in China, India or nearby countries. This would reduce the large shipping price making the selling point reasonable.

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