Nepal is a very small country, nestled right in between China and India, in southern Asia, it is roughly 147 000 km squared, if one would compare this to the size of Canada it would only

http://www.infoplease.com/atlas/country/nepal.html (Figure 1)

make up about a sixty seventh of Canada's total surface area (The Multimedia History Company, 2009). Nepal has a population of roughly 26.6 million people, making its population density a whopping 180 people per square kilometer which makes Nepal's population density by far greater then Canada's which is around 3.5 people per square kilometer. Therefore each Nepalese farmer does not have the access to the land we Canadians do, comparing the two a small Canadian farm will have approximately 100 acres of land and a small Nepalese farmer will only have 1 acre of land (The Multimedia History Company, 2009). Thus, farmers in Nepal need to utilize every inch of land that they can to receive as high of a yield as possible or else they will be harvesting hardly anything, which would be devastating for them because they rely on said crop to feed their family and in some cases, if in excess, produce a small income (The Multimedia History Company, 2009).

Poverty is a serious problem in Nepal, with 26% of the population classified as poor, which is a little over a quarter of the population, making Nepal one of the least developed countries in the world (The Multimedia History Company, 2009). The main bulk of these people are the farmers of Nepal because around 70% of the population works in the agriculture industry, the industry makes up about 39% of Nepal's GDP being one of the driving forces of Nepal's annual income (The Multimedia History Company, 2009).

The country of Nepal can be divvied into three different geographical sub headings, the Terai region, the Himalayan region and the mid hill region (Gewalf, 2014). Nepal has a large spectrum in terms of its highest point compared to its lowest point, with its highest point being Mount Everest with an altitude of 8848 meters and its lowest point being in the Terai region being 60 meters above sea level (Gewalf, 2014). Around 83% of the land in Nepal is covered in hills and high mountains, leaving only 14% of land area left for the Terai region or the plains (Gewalf, 2014). Because Nepal has such a diverse range in altitude it has multiple climates depending on the region, the first is 3000 plus meters is classified as extremely cold or Artic/Nival temperatures, between 2000 and 3000 meters is classified as cold temperatures, warm temperature is between 1500 and 2000 meters, the subtropical region is between 1000 and 2000 meters, and lastly the tropical region which is any area that is under 1000 meters (Gewalf, 2014).

With 83% percent of the land area being covered in hills and high mountains, it is hard for the farmers of Nepal to use all of their land when they use crops such as rice, corn, wheat, and barley (Gewalf, 2014) (Home Harware, 2014). Hence if the Nepalese farmers were introduced to a new crop that is able to climb up the terrace walls on the hills and utilise all the land they possess, the farmers would be able to produce a larger quantity of crop to use for feeding their family and/or

sell for a profit. The product being proposed is a type of climbing bean, more specifically a pole bean.

Part 1

The Blue Lake Heirloom Pole Bean Seed, a product of a company named the Incredible Seed located in Nova Scotia, Canada, and this particular brand of seed was established in 1923 and is commonly known within its' area as one of the top heirloom beans for a high yield and for the great taste (Chris, 2014). The Blue Lake Heirloom Pole Bean Seed have a quick growing cycle making them ideal for short seasons and planting them more than once in a longer season (Chris, 2014). This breed of bean particularly has a growing cycle of about 65 days until they reach maturity and are able to harvest (Chris, 2014). When fully matured the plant itself grows to a height of about 6 to 7 feet in long vines, therefore because they grow vertically there is an increase in potential crop planting due to the fact that each plant does not require a large surface area of land; on each vine numerous individual bean pods are developed with a large size, roughly 6 inches long (Chris, ep al. 2014). (Gewalf, 2014)

The seed is developed in a Canadian farm seed based company, in the Annapolis Valley of Nova Scotia (Chris, 2014). This company, Incredible Seed, specializes in the development of open-pollinated heirloom and heritage seed (Chris, 2014). The company is all organic, therefore no genetically modified organisms, they believe in "the preservation of genetic diversity in order to provide the best yield and the best tasting crop" (Chris, 2014). Since the company is all organic, they choose crop that will suite them the best, meaning a crop that will be produce a high yield with no addition of any pesticides, therefore the Blue Lake Canadian Heirloom pole bean follows this trend (Chris, 2014). The Incredible Seed states that the Blue Lake Canadian Heirloom Pole

Bean is most “ideal for an organic setting” producing large plants with high yields (Chris, ep al. 2014). The pole bean thrives in a certain climate; generally within in the range of 15-20 degrees Celsius the pole bean will produce its highest yields (Reddick, p. 2014). Thus, if grown in the hill regions of Nepal the temperature on most days will be at the ideal temperature making this the perfect crop for the region (Reddick, p. 2014).

The pole bean itself in compared to the common bush bean is much more involved and takes a little more work to grow (Rhoades, 2014). In order for the bean to grow it requires a support, and there are 3 common methods that most Canadian farmers use that Nepal’s farmers will also find useful (Rhoades, 2014). There is the standard pole method, where the farmer will take an 8 foot pole and will then stick about a foot of the pole in the ground at about ten to 12 inches apart from one another; the pole itself should be rough rather than smooth to help the vine latch on to the rough exterior and grow up the pole (Rhoades, 2014). The second method is for the farmers with flat land rather than the hilly land in Nepal, it is called the bean plant tepee (Rhoades, 2014). With this method three rough poles are placed together with a triangular base and the tops must be tied firmly (Rhoades, 2014). The last method would be a lattice structure, which not only could be built on flat land it could also utilize the extra space in the hill regions and could be built along the terrace walls, thus taking advantage of all the land they have (Rhoades, 2014). These sorts of set ups take more work than the average bush bean, due to the fact that constructing the supports takes time and as the plant grows it is required for the farmer to tie the vine to the support structure, this gives the plant direction, allowing to grow vertically up the structure, so the bean plant can grow as easily as possible without extra stress (Rhoades, 2014).

The cost of these structures varies, depending on the type of wood used and how much is actually used, a standard piece of wood can vary from two to fifteen dollars therefore there is lots

of variation (Home Harware, 2014). However the least expensive structure out of the three would be the single pole method because it only requires one pole per plant and does not need other supplies such as rope and in some cases with the tepee and lattice structure netting or wire which increases the total cost significantly (Home Harware, 2014).

Nutrition Facts

Serving Size 1 cup (8 fl oz) 240 mL
Servings Per Container 4

Amount Per Serving	
Calories 80	Calories from Fat 10
	% Daily Value*
Total Fat 1g	**2%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 600mg	**25%**
Total Carbohydrate 15g	**5%**
Dietary Fiber 5g	**20%**
Sugars 4g	
Protein 4g	

Vitamin A 6% • Vitamin C 20%
Calcium 6% • Iron 10%

*Percent Daily Values are based on a 2,000 calorie diet.

In terms of nutrition the pole bean is relatively very healthy for consumption; the bean is composed of 83% carbohydrates, 14% protein and 3% fat per serving (Nutrition.ca, 2014). Without exceeding the necessary daily servings, carbohydrates are very good for a person; it is a rich source of short term energy so if eaten at lunch in the middle of the day the farmer will receive an extra boost of energy from the carbohydrates in the beans (Nutrition.ca, 2014).

(Figure 2)

However, an over consumption of the beans is not so good because if the energy from the sugars is not used in the day the carbohydrates will be converted into fat, this is the body way of storing energy to be used later but too much fat can be dangerous to the body (Nutrition.ca, 2014). Excess body fat can cause many different severe health issues such as arthritis, type 2 diabetes, high blood pressure, heart disease, liver disease, etc. therefore although there is a need for some carbohydrates every day, the Nepalese people cannot solely rely on the beans for food because too many carbohydrates will be more bad for a Nepal farmer rather than good (Nutrition.ca, 2014).

The price of this seed is not inexpensive, the Incredible Seed sells the seed in packs of 50 at $2.75, however in Nepal the fields per farmer are relatively small being around 2 acres of land,

and each farmer does not use their entire field for one crop therefore they will only need to buy enough seed for the section of land being used (5). In terms of the shipping, the company states that they will handle the process and paper work for a standard fee (Chris, 2014).

Canada as a whole will probably not benefit greatly from this exportation, regarding the economy, due to the fact that it is only one company who is benefiting from this transaction and this exportation would just be on a small scale. However, helping the development of the Nepal agriculture system will aid with improving the Canadian name around the world because we are attempting to help advance other countries knowledge and understanding of agriculture in order to get their lively hoods enhanced. The main benefactor from this transaction would be the company the Incredible Seed because not only are they going to be responsible for a large order, they are also branching their company out to new places around the world making their presence and widening their client list, therefore making their business more successful than before.

Part 2

Nepal would benefit greatly from this project in many different ways. Firstly, although the price of the setup is not inexpensive, if the support structures are set up properly they have the potential of lasting many years (Rhoades, 2014). In addition, this specie of pole bean is an open pollinated plant, therefore if done correctly each of the Nepal farmers will potentially only have to buy seeds once because they will be able to produce their own seed with some of the crop they produced from the previous season and will therefore be able to supply themselves with seed for future years (Rhoades, 2014). Secondly, according to the company the Incredible Seed this crop flourishes in an organic setting with very high yields and maintaining a great taste. The Nepalese farmers will then not be forced to spend extra money on pesticides and sprays to upkeep this

crop; with this extra money the farmers will be able to spend said money on other necessities for their family (Chris, 2014). This could potentially allow the children of these families the ability to go to school and have proper nutrition. With an education the children will have much more knowledge and will be able to use this knowledge in enhancing their farm or could give them the ability to leave the farm and find a job that provides a steady income. Lastly, although the crop is much more involved requiring daily checks and upkeep during its growing cycle, it does produce high yields and is able to be harvested more than once during maturation. This is possible because if pods are plucked during maturation the plant will replace the pods as it grows, thus instead of waiting until the plant is completely developed, the family is able to eat some of the crop during the development of the plant (Rhoades, 2014).

When harvest time arrives, there are multiple different techniques that can be applied to storing the beans such as freezing, canning, pickling, or drying. Freezing requires two steps, blanching and then the freezing part; before the beans can get frozen they must be blanched (Nummer, 2010). The purpose of blanching is to prevent enzyme production in order to save the flavour, colour and the texture (Nummer, 2010). Blanching is carried out by boiling water, once at a boil the beans are placed in the pot if the water does not boil again within 30 seconds to a minute there are too many beans in the pot and should be removed (Nummer, 2010). Once the water has gone back to a boil for 3 minutes, the beans should then be removed and placed immediately into cold or ice water (Nummer, 2010). To freeze the beans, they should be put in an air tight bag with a little space to the top, once the air is removed and the bag is closed the beans can then be put in a freezer (Nummer, 2010). Canning beans can be very risky due to the fact that they are a low acid food and canning requires more acid to be safely canned in a boiler-water canner, thus it is not suggested that this process is performed due to the risks (Nummer, 2010). It is not too

common to pickle beans and is not suggest because it is a required taste, however it is possible with a the use of a pressure canner, to undergo this process the beans do not have to be blanched previous to pickling (Nummer, 2010). Lastly drying the beans is a common method used around the world, this can be carried out with the use of a dryer (Nummer, 2010). However, dryers are fairly expensive and average Nepal farmer will not be able to afford said machinery, but the beans can be dried in an alternative method (Nummer, 2010). After the beans reach maturity they can be left on the vines, this allows the beans to be dried naturally by the sun (Nummer, 2010). Although this process does take longer and it depends on the days to be dry, it is a free way for the farmers to naturally dry their beans and this will then allow the farmers to store for later use (Nummer, 2010).

No major effects on the climate will come from the increased production of the pole bean; however it is very useful when used in a crop rotation (Naseri, 2014). Crops such as corn require large quantities of nitrogen from the soil and if planted twice on the same field can permanently damage the field because it uses up all the nitrogen in the soil (Naseri, 2014). Hence, if a crop such as the pole bean is used the following season they will replace the nitrogen by releasing it back into the soil because beans can fix the nitrogen from the air and trapped inside the stock, therefore when the field is combined the stocks will decompose and release the nitrogen back into the soil (Naseri, 2014).

In conclusion, the Blue Lake Canadian Heirloom Pole Bean would be a fantastic benefactor for the people of Nepal. This seed is meant to be grown in the region, it thrives in an organic setting which Nepal is naturally, it produces its highest yields within the temperature range of 15-18 degrees Celsius which the hill regions of Nepal are usually around these temperatures and it can climb the terrace walls allowing the Nepalese farmers utilise all their land. Not only will this

product help the lives of farmers across Nepal, it will also aid in enhancing the whole country by giving more of the Nepal people an opportunity to go to school and receive a proper diet in their everyday lives. (Bhandari, 2013)

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