

Ultrasonic Rodent Repellent

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The objective of this project is to offer a product to Nepal to help with their agricultural industry. While providing help to Nepal the product is also supposed to provide Canada with benefits to their agricultural industry. Agricultural is very important to Nepal making up 33% of national production, 70% of all employment and a third of all exports (Devkota & Upadhyaya,2013). This is why this project allows for the development of export ideas to help improve agriculture for Nepal.

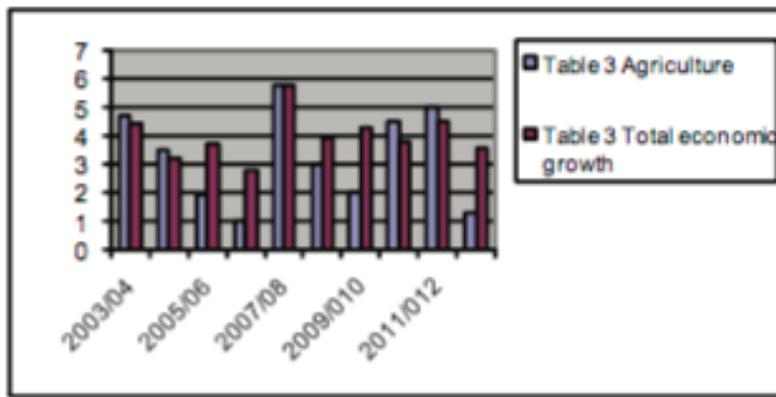
Introduction to Nepal:

Nepal is a developing country located in South Asia, sandwiched between India in the south, east and west and the People's Republic of China in the north, Nepal is a small landlocked developing country (Sharma, 2014). With Nepal being landlocked country means that it has no access to the ocean or sea ports, anything exported to Nepal from another country must be brought in through the borders of China or India. The majority of imports travel through India as Nepal shares a border of more than 1800 kilometers (Jayaraman & Pohit,2002). Nepal has had trade problems due to being landlocked by the countries of China and India. Nepal has been isolated from the global economy and, until just a few decades ago, its external trade was limited to its two neighbours (Dugar, 2014).

Nepal is a country made up of many different land types these include Himalayas, Mountains, Mid Hills, Foot Hills, Terai (T. Chapagain, personal communication, September 16 2016). Having many different types of land allows for a variety of different plants to be grown, it also provides difficulty as certain land forms can only grow certain types of crops. Due to the different land types there is issues with irrigation in certain areas of the country. There is also a major change in altitude from one land type to another this causing difficulty for farmers. The Terai land type produces small grain, the hills and mountain produce fruits vegetables and livestock (T. Chapagain, personal communication, September 16 2016).

Nepal currency is called a rupee; one rupee is equivalent to approximately 1.2 cents Canadian. How much a rupee is worth shows that Nepal is a developing country; it is a developing country the relies heavily on its agricultural industry to survive. More than 90% of the population depends on the agriculture which contributes about three-fifths of the total GDP and more than 70% of total export earnings (Sharma, 1986). Agriculture is important not only for the individual but for a country as a whole. Improvements to the agriculture industry will not only help the local farmer but will also allow improvements for the entire country including increase in GDP. Figure 1 below illustrates how as the agricultural growth goes up so does the economic growth there is a clear correlation that is presented in this graph between Agriculture and economics in Nepal.

Figure 1: Contribution of Agriculture to the Total Economic Growth of Nepal



Source: Economic Growth of Nepal and its Neighboring Countries(Bajracharya,2014)

Part 1- Product Info

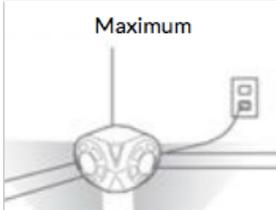
Product Description:

The product that has been chosen as an export from Canada to Nepal is ultrasonic rodent repellent. The specific product is made by Woodstream brand which is located in Brampton Ontario. Woodstream

PestChaser® PRO



Maximum



Coverage	Maximum
Recommended Use	Large-size rooms
Number of Speakers	2
Design	Heavy Duty and Industrial
Light	LED Light
Output	Varying Volumes (100dB) and Frequencies (32 to 62 kHz)
6-Foot Cord Included	✓

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brand has been a part of Canada since the mid 1800 where they began their company by selling game traps to the Hudson Bay Company (Woodstream Brand,2016). Their company designs and distributes pest control products. The product that has been chosen for export to Nepal is called the Pest Chaser Pro Ultrasonic Rodent Repellent. This product uses a high frequency sound that cannot be heard by the human ear or by pets and livestock animals but can be heard by rodents which keeps rodents away from where the frequency is produced. It allows for removal of pest to be done in a safe humane way without actual contact with the pest itself.

There is a red light located on the machine to know if it is working correctly since the frequency is inaudible. The Pest Chaser Pro does not only keep rodents away but also helps with repelling other pests (Woodstream Brand, 2016). This product runs off of electricity but contains a long 6-foot-long cord making it perfect for placement in any area (Woodstream Brand, 2016). It is perfect for larger areas such as barns or crop storage rooms. The sound produced from The Pest Chaser Pro changes in intensity and frequency to prevent rodents and other pest from getting used to the sound (Woodstream Brand, 2016). The typical unit last approximately 3-5 years' dependent on where it is used and how often it is plugged in for. The price for one unit is \$37.99 Canadian dollars or for 3 units it is \$75.98 and for 5 units \$113.97. From research that was conducted Woodstream brand is the only Canadian producer of any type of Ultrasonic rodent repellent, this means it has no local competition on the market within Canada.



Source: <http://www.woodstreambrands.ca>

Production of the product:

The production of this product will take place at Woodstream Brands in Brampton Ontario. The unit will be 100% pre-assembled before distribution, mean that no assembly will be required by the Nepalese people. The machinery required for this product has already been created, it is a assembly line production system with the end result being the Pest Chaser Pro. The employees of Woodstream Brand will be controlling and working along the assembly line in order for completion of the product. Products involved for the production of the Pest Chaser Pro may be out sourced to country such as China in order for the cheapest production possible for this product. All that will be required in order for the Pest Chaser Pro to run will be a source of electricity.

Market Opportunity:

The market opportunity for this product would most likely to be sold on the shelf of an agriculture store or a store that sells outdoors tools. Stores that this product could be sold at in Nepal are Met Group (p) Ltd, Navneet traders, which are stores that sell farm supplies. This

product would most likely have a small market due to how expensive the product is. The ideal customer for this product would be a farmer using it to protect stored crops or to keep rodents out of the barn. This product would most likely however be sold to larger corporation's that store large amounts of crops, this is due to the high price of the Pest Chaser Pro. This product could also be bought by small communities that want to live in a rodent free environment to reduce health risk that rodent provide. Since rodents are the most abundant and diversified order of living mammals in the world, they are host to many pathogens that impose public health risks (Meerburg, et al., 2009). Through looking at potential market it can be observed that this product would be best sold to business or cooperation's that are able to afford this product over the individual farmer who could not afford this product.

Benefits to Canada:

Exporting of the product the Pest Chaser Pro will provide many benefits to Canada as a whole but also to the individual Canadian farmers. Exporting to Nepal will provide a rise in GDP for the company which has a positive effect on Canada. The affect it will have is that it will help improve the Canadian economy. Increase in gross domestic product (GDP) to boost the economy ("Economy: GDP", 2011). The production of this product will also provide jobs to Canadians as there will be an increase in production of this product, which will require more workers in order to fill the order of Pest Chaser Pros to Nepal. This will also provide an increase interest in ultrasonic technology used for pest control. More research in this area may be done to improve the product to help the agricultural industry more than it already does.

With exporting this product, we are building new trade networks which help us on a global standpoint. International trade correlates with the gross domestic product (GDP), indicating that trade plays a central role in economic growth in all countries (Kastelle & Liesch,2013). International trade is very important not only for the economy but also for creating connections that could be useful in the future. The better supported you are by an alliance of diverse business and personal contacts, the better you can perform in today's fast-- paced environment, and the better prepared you will be for future change (Cambron, 2001). It's called networking (Cambron, 2001). Establishing connections and being on good terms with other countries has great value. Exporting this product to Nepal can also introduce the idea of

exporting this product to other developing countries other than Nepal allowing for more global connections to be made. Since exporting this product to Nepal would provide both direct benefits such as increase employment and indirect benefit such as global networking it would be a very beneficially exporting product for Canada.

Part Two

Transportation of the product:

The Pest Chaser Pro will start its travel to Nepal in a Woodstream brand warehouse in Brampton Ontario. From the warehouse it will be transported out east where it will be put onto a barge. Since Nepal is a landlocked country surrounded by India and China (Sharma, 2014) this means that the product must either cross the border of China or India to enter Nepal or must be directly flown into Nepal. For cost to be kept at a minimum the choice to have the Pest Chaser Pro be transported by a cargo ship versus a cargo plane was made. India has a long coastline of about 7517 km, spread on the western and eastern shelves of the mainland and also along the Islands with 12 Major ports and 200 non-major ports, as per the latest information received from maritime studies (Banerjee & Gupta,2013). Since India has access to the sea and also has many ports available, the Pest Chaser Pro will be first transported from Canada to India. India is a transit country for Nepal as it gives it access to the sea (Jayaraman & Shrestha, 1976).

The cost is dependent; the cost of moving a container through a port is different depending on where the container is going after it leaves (Fabey, 1998). The exact price for shipping could not be calculate but it is clear that it would be dependent on the quantity being shipped and what time of year the shipment was taking place and what port the shipment was entering. Once the pro duct has made it to India it will be transported from the port to Nepal. It will travel by transport or an equivalent to a transport, this transport will cross the India Nepal border. The Transport will have to go through customs and tariffs will need to be paid, after passing customs the product will be transported to a large city. This city could be Kathmandu which is the capital city on Nepal, from here the Pest Chaser Pro will be distributed to the appropriate stores. Below is a diagram of how the transportation process may look.



Profitability:

The Pest Chaser Pro cost \$37.99 Canadian dollars this is equivalent to approximately 3075.69 Nepalese Rupees. This is the price before any shipping has been added to it, shipping would add additional charges to the product making the price of the product go up. This is an expensive product for a Nepalese farmer, the average ‘poor’ household obtains Nepalese rupees (Nrs) 7,756 gross income from community forest annually, while the more ‘rich’ households obtain on average Nrs 24,466 per year (Adhikari,2005).The table below shows the average annual income for Nepalese workers based on what type of job they are in and the area that they

are

from.

Table 4. Annual average cash income by activity (Nepalese rupees)

FUGs	Forest ^a	Agriculture	Livestock	Wage	Business	Others ^b	Total
Saradadevi	1,485	15,609	40,027	8,597	9,440	23,910	99,068
Jayalachiti	270	11,428	14,598	4,298	14,623	43,539	88,756
Mahadevsthan	510	13,342	36,633	6,039	4,839	22,284	83,647
Thuli Ban	90	35,523	34,239	13,676	8,493	37,800	128,821
Gaurati	86	466	7,169	13,717	4,759	19,222	45,419
Shree Chhap	0	1,262	9,514	1,744	4,429	20,314	37,263
Janghare	102	276	3,611	10,263	17,361	20,660	52,273
Karki Tar	697	16,439	30,915	3,021	8,938	31,441	91,451

Notes: ^a Income deriving from selling forest products from private land;

^b Government/private services, remittance, and pension.

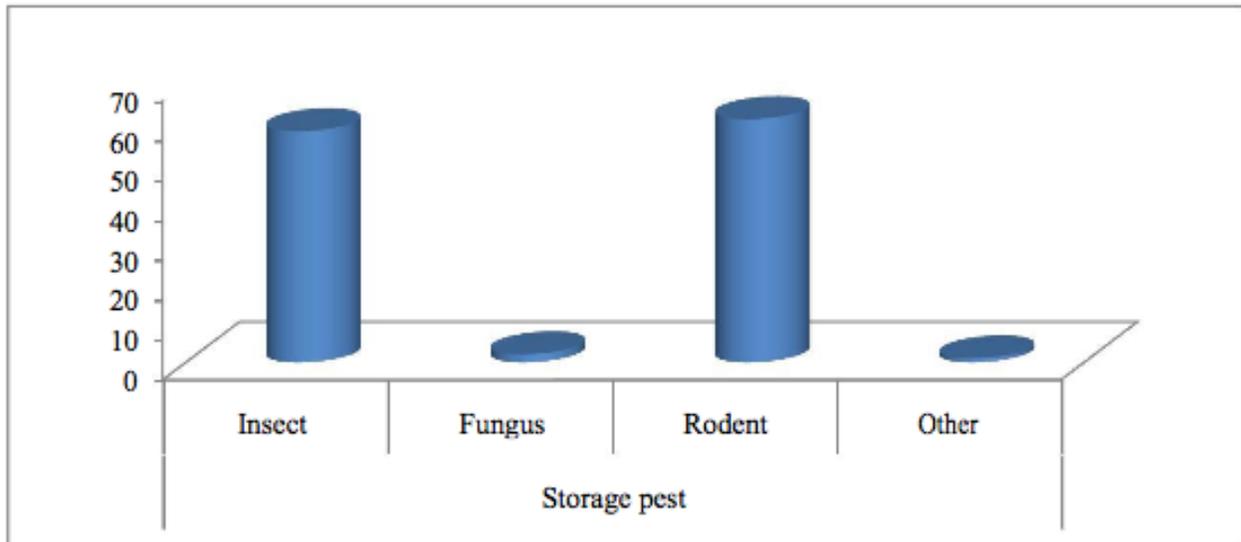
Source: Poverty, property rights and collective action: understanding the distributive aspects of common property resource management (Adhikari,2005).

The price of this product Is not financially realistic for an individual farmer to buy. With the price being so high it is more reasonable for a larger company that stores grains in a warehouse rather than being used on a farm. Therefore, this product could be profitable if bought by the right customers, but the market is small for the product which is expected to lead to not selling enough product in order to make the shipment to Nepal economically feasible. Thus the price point for the Pest Chaser Pro is unrealistic for exporting to Nepal.

Benefits to Nepal:

Exporting the Pest Chaser Pro from Canada to Nepal offers many benefits to Nepal. The Pest Chaser Pro repels rodents and other pest. Rodents are a pest that lead to post harvest crop lost. The losses caused by disease during storage was reported in 1987 that maize grain loss due to rodent, insects, mold making up 20%-25% of crop loss (Bhandari et al, 2015). The figure

below illustrates rodents as being one of the major pest that destroy crops in Nepal.



Source: Survey on maize post-harvest losses and its management practices in the western hills of Nepal (Bhandari et al, 2015).

This can be prevented with the Pest Chaser Pro as it reduces and can eventually eliminate the presence of rodents within a particular area with a reduction in rodents present within just 6-10 days(Woodstream,2016). This allowing for the stored crops to remain unspoiled and eligible to be used as food or to sell. Rats and mice spread over 35 diseases to humans, both directly and indirectly(Morton,2013). This causing a major issue in developing countries such as Nepal; a need to keep pest away from stored crops which are used as food is a must and the Pest Chaser Pro can do this. This product if bought by small communities can also reduce the rat population within that community allowing for healthier safer area to live.

This product will also create a trade partner for Nepal. International trade is leading the growth and development in the developing countries(Alqudah,2016). Creating new trade partners



Source: www.domyownpestcontrol.com
[wwwhttp://www.domyownpestc](http://www.domyownpestc)

for Nepal, like Canada allows for growth and development for Nepal. This is very important as it allows for new connections to be formed for Nepal. Allowing Canada to become a trade partner for Nepal, gives opportunity to Nepal to then export a product from Nepal to Canada.

The Pest Chaser Pro use ultrasonic frequencies to remove pest which is a new technology with pest control. Introducing a new type of technology provides benefits to Nepal by allowing for new opportunities to be made. This new technology allows for pest control to be done quickly and easily, all that is needed is the plug in the Pest Chaser Pro. No time is needed to be spent setting traps or trying to figure out how the pest are getting in. This technology allows for efficiency as a farmer's time is very important especially in developing countries such as Nepal.

Competition:

Canada is not the only producer of this product there are other countries that create products similar to the Pest Chaser Pro. Other companies and other countries have created rodent control products that also use ultrasonic frequencies as a method to keep pest away. A United States company that is called OxGord that runs out of Las Angeles has a product that is very similar product to the Pest Chaser Pro, this product that OxGord sells is cheaper at \$11.95 Canadian dollars which is less expensive product compared to the Pest Chaser Pro making it a more affordable product choice over the Pest Chaser Pro. There is also a Chinese company named AOSION that also sell a product similar to the Pest Chaser Pro. The Chinese product is also allot cheaper ranging from \$5-\$10 US dollars, this product is also produced a lot closer to Nepal making the shipping cost to be minimum. This makes the AOSION product to be financially affordable for a Nepalese farmer or a Nepalese community.

Next Steps:

After analyzing the research that was conducted on this product, it is clear that there are steps that need to be done in order to make the exporting of this product realistic. One step that needs to be done is the product the Pest Chaser Pro needs to be modified as the product uses electricity it is equipped with the outlet plug in of North America, this is a problem as the product will not be able to be plugged into the outlets in Nepal. The plug in needs to be changed and designed in order to fit into the outlets in Nepal. Another option to fix this problem is to sell the original product with an adaptor that allows for the product to be plugged in, in Nepal for areas of Nepal that do have electricity.

Another issue that the exporting of this product runs into is that the product runs on electricity. Nepal is faced with the problem of making electricity available to a large majority of its population; only about 9% of its people have access to electricity supply at present (Shrestha & Bhattarai, 1994). This causes an issue as the current product runs off of electricity. The current must be changed to either run off a battery or to make it solar powered. If the Pest Chaser Pro is made to run off a battery, it needs to be a cheap battery that last for a long period of time as the Nepalese people cannot afford to be constantly buying a new replacement battery for this product. If the product is changed to become solar powered, it also must be done in a cost effective way to make the product affordable to the people of Nepal. With making the product solar powered, put a limit on where the product can be placed to be able to run, as it needs access to the sun in order to be powered.

Another step that will need to be made for exporting the Pest Chaser Pro to Nepal is that the people of Nepal will need to be educated on the new technology. This needs to be done because many people are skeptical of new or different ways of doing something. Since a new technology is being introduced they will need to be educated on it in order for it to be accepted as a new form of pest control. "We are creatures of habit." Once we learn something and it becomes familiar and part of our daily routine, we are able to perform those tasks and activities without giving them much thought (Smith, 2010). This is why it is key to teach and educate the Nepalese people on this new ultrasonic pest control.

Conclusion: Critical Analysis of the Exporting Product:

Overall the exporting of the Pest Chaser Pro from Nepal to Canada is not the ideal exporting product. This is because the current product is too expensive to be sold to the Nepalese market, there is also other companies that sell a similar product for cheaper. The current product would have a very small market due to the amount of Nepalese people that actually have access to electricity which is needed to run the current product. There are also other companies not in Canada that create solar powered systems that are cheaper and therefore making it a more realistic for an export product. In conclusion the current product the Pest Chaser Pro would not be a good export product at this time to Nepal.

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