

Egg Turners for Poultry

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PART I: PRODUCT INFORMATION

Introduction

This report is to analyze how an agricultural product can benefit the agricultural industry in Nepal. The product is to come from Canada, as it is a Canadian promotional/exporting opportunity. The purpose is to network with the Nepalese government., this way they will be able to improve the sustainability of agriculture and in the future be able to contribute to the improvement of agriculture all around the world. The product that will be explored is egg turners for poultry. The paper will be more focused on the production of chickens as it is more reasonable, reliable and affordable for the Nepalese.

Product

The product that has been researched is egg turners for poultry. This product is used by chicken farmers all across the globe. The purpose behind an egg turner is so the farmer can use the turner when they are trying to hatch a large number of chicks without the use of hens. They use an incubator instead, and save money on feed and housing cost for the using of hens, as well as using electricity instead to heat the incubator and turn the eggs. The gestation period of a chicken is approximately 21 days (Landuer, 1961); this begins when the egg has been fertilized. Referring to Figure 1, the different gestational phases in a chicken's life are shown.

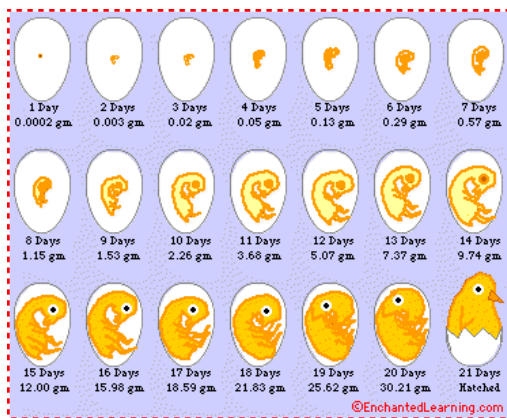


Figure 1: the gestation of a Chicken accessed from <http://www.enchantedlearning.com/subjects/birds/info/chicken/egg.shtml>

The purpose of an egg turner is to help stimulate the egg, while mimicking the actions completed by a hen. A hen turns her egg about 50 times a day (Landuer, 1961). When an egg turner is used, the eggs are placed in an incubator for about 21 days, to last the same time as a chicken's gestation period (Oosterbaan, 2009). This is to assure the three germ layers do not form on the side of the shell (Fonseca, 2013). Turning an egg helps stimulate it; this is because the egg is not naturally being stimulate by the mother hen.

The product has the ability to hold multiple egg species at once. However, different birds have different incubator temperatures and also have different gestation periods (Poultry CRC Ltd, 2016). These different species include chicken, quail, turkey and geese eggs. The product already comes with the chicken and quail egg holders, the geese and turkey eggs would have to be purchased separately.



Figure 2: pictured above is the egg turner with chicken eggs in the stacks, the stacks can come out to accommodate for turkey, geese and quail eggs. Accessed from <http://www.gqfmfg.com/hova-bator-accessories/1610-automatic-egg-turner-w/6-universal-6-quail>

The eggs should be left in the incubator for their entire gestation period, but should not be turned for the last three days until they hatch (Incubator Warehouse, 2016). One should not have to worry about this when using the turner since it has a cycle set up in the machine. Looking at Table 1, the gestation length of fowl (chickens) is 21 days which is different from turkeys, 28 days (Poultry CRC Ltd, 2016).

Table 1: the incubation length, temperature, wet bulb and relative humidity for different bird species that could benefit for the egg turner product that could be sent to Nepal accessed from <http://www.poultryhub.org/physiology/incubation/>

Breed of Bird	Chickens	Turkey	Duck	Goose	Pheasant	Quail
Incubation Period (days)	21	28	28	28	23-28	23-24
Temperature (°C)	37.6	37.4	37.5	37.4	37.6	37.6
Wet Bulb Temperature (°C)	29.4- 30.5	28.3- 29.4	28.8- 30.0	30.0- 31.1	30.0- 31.1	28.8- 30.0
Relative Humidity (%)	56-62	51-56	53-60	60-65	60-65	53-60
No turning after day	18	25	25	35	21	21
Incubation last 3 days	37.4	37.2	37.3	37.2	37.4	37.4
Wet Bulb Temperature last 3 days (°C)	32.2-34.4	32.2-34.4	32.2- 34.4	32.2-34.4	33.3-35.0	32.2-34.4
Relative Humidity last 3 days (%)	70-83	70-83	70-83	70-83	70-83	70-83

Company Analysis

The Canadian company that will be used is Berry Hill Ltd. They are a family owned business located in St. Thomas, Ontario founded in 1948 (Government of Canada, 2016). They employ about 8 people and have a licence to export products to various countries (Government of Canada, 2016). Their primary market is Farm, Lawn and Garden Machinery. As for the egg turners they are considered small poultry equipment (Government of Canada, 2016). They would require an incubator to be in place, as this is the entire reason for having the egg turner. There was an effort made to contact the company, but no information was given about the product. It

was mentioned that if additional information was needed, they could be contacted at their website <http://www.berryhill.ca> in the customer contact page, or call them at 800-668-3072.



Figure 3: Berry Hill Ltd is located in St. Thomas, Ontario. St. Thomas is just south of London, and is about 2.5 hours from Toronto. Accessed from <http://www.weather-forecast.com/locations/St-Thomas>

Cost and Labour

The cost of this product is about 80 Canadian dollars, this is to only purchase the egg turner machine. With the incubator it would cost another 80 Canadian dollars. The only extra costs required is the electricity bill. This product requires minimal labour to make, the product can be picked up from St. Thomas and will be transported to where it will be sent to Nepal. The cost in making the product is approximately \$40-50, the other \$30-40 is from the mark up and the cost of the materials used.

Input cost

The input cost to get this product running is the production of eggs from any bird species. It is much more preferred if the bird is a chicken, quail, turkey or goose. It is also preferred if the egg is of the same breed, i.e. chicken with chickens, turkeys with turkeys, etc. because some bird species eggs are larger than the others, and require different incubation lengths and temperatures, referring to Table 1. It is possible to have different egg species together, but because of the different requirements for the egg to hatch, there may be a lower success rate if this is performed (Williams, 1999). To get these eggs, one will need either pre-fertilized eggs, or a flock of chickens and a rooster to fertilize the eggs so they are viable to produce chicks.

No matter the field, there will always be expenses, sometimes money must be spent, before a profit is made. This is what occurs with most farming especially when one starts for the season. Table 2 shows the cost of owning chickens, in Canadian currency. The price would vary with the Nepalese Rupee.

Table 2: This table shows the input cost of owning chickens in Canadian currency accessed from <http://www.backyardchickens.com/a/how-much-does-it-cost-to-raise-backyard-chickens>

What is needed	Cost
Chicken	\$3.00-30.00
Coop	\$500.00-2000.00 Note: they will be able to use pre-existing coops
Feed	\$15.00/month for about 10 chickens
Miscellaneous	\$10.00 (water, maintenance etc.)
Total	\$28.00-2055.00

The birds that are being used for egg laying should have high mineral diet, it is important in developing good, strong quality eggs (FAO, 2016). Once the chick hatches, it should be fed high protein rations until it is about 3 months old as the chick is growing and needs strong bones (FAO, 2016). These rations range from whole & ground grains, cake plants/animals, protein and minerals, the amount of what each bird should receive can be observed in Table 3.

Table 3: the average rations that chickens should get at the given age restrictions, accessed from <http://www.fao.org/>

Age of Bird	Whole & Ground Grain	Cake plant/animal	Protein	Minerals
Up to 8 weeks	7 part	2 part	1 part	0.25 part
8-12 weeks	8 part	1.5 part	1 part	0.25 part
laying	8 part	1.5 part	0.25 part	0.50 part

Health

The health benefits of the physical product do not exist as it is plastic and electricity. To really look at the benefits of egg turners, what the product is helping produce must be taken into consideration.

The health and nutritional benefits that come along with this product is the consumption of meat after the eggs hatch. It will take about 8-12 weeks until the chick is fully grown or has the preferred carcass weight (WH Foods, 2016). This is all dependent on the genetics of the bird. If the bird is a slower grower, it will take longer to achieve ideal carcass weight of a breed specifically for raising broiler chickens.

Table 4: the nutritional values of the different parts of a chicken accessed from <http://www.whfoods.com/genpage.php?tname=foodspice&dbid=116>

	Amount (grams)	Calories	Total Fat (grams)	Saturated Fat (grams)	Cholesterol (milligrams)
Breast with Skin	100	185-200	6-8	2.0-2.25	70-90
Breast without skin	100	165-185	3-5	0.75-1.25	70-90
Leg with skin	100	185-225	8-9	2.0-3.0	125-130
Leg without skin	100	175-185	6-8	1.5-2.25	125-130
Thigh with skin	100	225-235	13-16	4.0-4.25	125-135
Thigh without skin	100	180-210	8-11	2.25-3.0	125-135

Chicken meat can reduce the risk of cardiovascular problems, because it is so low in its fat content compared to animals such as beef or pork (WH Foods, 2016). This would be a good way to wean in higher nutritional foods to the Nepalese culture without causing too much harm to their current practices.

Knowledge needed to use this product

There is not any pre knowledge that should be taken into consideration before purchasing the egg turner. Electricity is needed as this is what the egg turner runs off of. Also it must be assured that the eggs in use are fertilized. This way you are not waiting the time and energy into making a chicken that does not even exist in the egg.

Marketing Opportunity

It is recommended that this product should be bought by a community. The product is relatively expensive, and many Nepalese farmers do not make enough money to afford the product by themselves. This way it will be beneficial for the farmers as well as being more affordable. Since the egg turner can be filled with 46 chicken eggs at once, this means one egg turner can hatch 782 chicks a year.

Chicken and meat production in Nepal is not high. They are ranked 112th overall in the world (FAO, 2014). They can still sell the chicken in a market.

Benefits to Canada

The benefits to Canada of exporting egg turners to Nepal is that it will help improve the Canadian economy in the agricultural industrial sector as well as creating jobs for Canadians. Although this product is not expensive to Canadians, it is expensive to the Nepalese. This product does not directly benefit Canadian farmers, it only benefits 1 company located in St. Thomas, Ontario. Canadian benefits are very minimal. The product may be a hit in Nepal, but not for many years come or until they can sustain their own agriculture without the help from any developed countries such as Canada or the USA.

Environmental Sustainability

This product is made of plastic, this way it will last a longer period of time. The only way that it will not last as long is if the motor of the turners wears out. This is a possibility, but the farmers will not be using the egg turner as often as we use it in Canada, as many more chickens are produced in Canada than in Nepal. The Canadian average flock size is 20,811, and

in Nepal about 20 (Canadian Government, 2016). This is also because Canadian chicken farming is regulated by quota.

PART II: EXPORT POTENTIAL TO NEPAL

Introduction to Nepal's Agriculture

Nepal is a land-locked country that is located in central Asia. It is in between China and India. Nepal's population is about 29 million people and the average age of the current population is 25 years old (Nepal Demographics Profile 2016, 2016). Nepal is home to the world largest mountain; Mount Everest. The Himalaya's make up more than 75% of Nepal, and is in the northern part of Nepal (Nature, 2016).



Figure 4: Map of Nepal, China located to the north and India to the south accessed from <http://www.infoplease.com/atlas/country/nepal.html>

Nepal is split into three different topographical land regions, Terai, Hill Region and Mountain Region, which covers about 147,181 km² (Geography, n.d.). The Terai region covers about 17% of the total land, and provides highly fertile soil for farming and large spaces for industrial areas (Geography, n.d.). This is the most southern part of the three topographical regions, it is Nepal's' richest economic region. With its flat land; it makes it ideal to for farm land, it is well nourished and has many rivers for livestock (Geography 1, n.d.). The middle land region is the Hill Region and it includes the capital, Katmandu (Geography 1, n.d.). This land is ideal for the grazing of livestock, foraging and seasonal migrating of labours (Geography 1, n.d.). The growing season in this area is quite short compared to the Terai region (Geography 1, n.d.). The final land region is the mountain region, and this is where the Himalayans are located. This land is not stainable for agriculture, but for the attraction of tourist because of the many

mountains. The mountain region is known for its inclement climatic and rugged topographic conditions (Geography 1, n.d.).

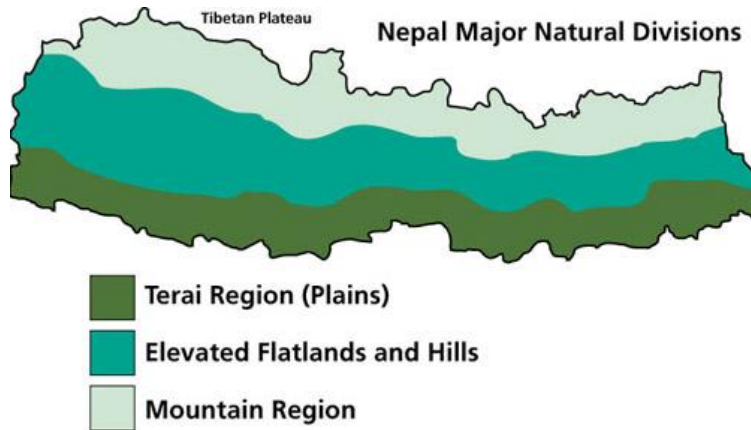


Figure 5: the 3 different topographically

Transportation Logistics

The egg turner will have to be transported to Nepal from Canada. This can be done by plane or boat. The one that is more efficient is hard to determine as you are sending this product half way across the world, and neither are cheap. The company that I have found to ship the egg turner is FedEx/UPS/ PTC. It will cost \$257.49, it is will be shipped right from St. Thomas to Katmandu, Nepal (Secureship, 2016). This was the best option, and the cheapest option that is out there. Many of the other option you must ship transport the item from the distributor to the airport, and then from the airport in India to Nepal, there would be a lot more labour and gas charges with these options. Therefore, this will be the best possibility for a transporting an Egg Turner to Nepal.



Figure 6: the companies that will be ship

Storage

There will be no storage necessary for the product after use. This is because it is a plastic machine, and there is no harvest after. The harvest is when the eggs hatch, and you have chicks.

Profitability

The profit behind this product is very minimal. These product is very expensive and not reasonable for the Nepalese to buy, because of how much it will cost. With the shipping fees, buying of the eggs/chickens, the cost of the turner, and the cost of the incubator, it would be anywhere from \$410-2437 Canadian dollars. This is even expensive for a Canadian Farmer to purchase, not to mention the maintenance that will comes along with raising livestock. This would mean that the product will cost about \$33,222.80-197, 473.07 Nepalese Rupee. This is just not reasonable for anyway to but in Nepal, not even a community. The GDP of Nepal is \$938.25 (Google, 2016). When you compare the GDP of Nepal to Canada or the USA, it is hardly even in the domain, as seen in Figure 7. This would mean that the family would have to spend half of their paycheck for the year on the egg turner. This maybe more realistic in year to come after Nepal's agriculture begins to develop, but at this time in the Nepalese economy cannot sustain this product yet.

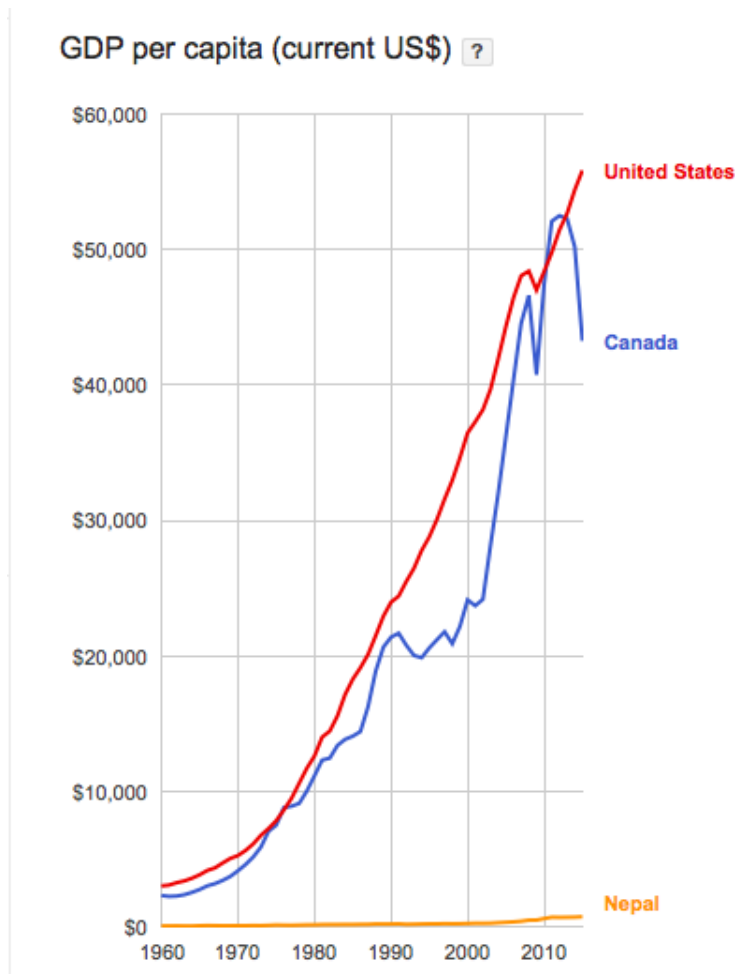


Figure 7: the GDP of Nepal, compared to the USA and Canada's GDP accessed from https://www.google.ca/publicdata/explore?ds=d5bncppjof8f9_&met_y=ny_gdp_pcap_cd&idim=country:NPL:PAK:BGD&hl=en&dl=en#!ctype=l&strail=false&bcs=d&nselm=h&met_y=ny_gdp_pcap_cd&sc

Competing Companies

There are other companies that sell this product, they are located in the US. There are some turners that are more expensive, and then others that are cheaper. Most of these egg turners come in an incubator. This way may be more realistic because the turner comes already equipped with the incubator and you do not have to buy the incubator separately. If these products were Canadian based, then they should be used over the egg turner that was manufactured here. This is because of the reliability of having the incubator and the turner all in one. But there were also products that were found that are very similar to the product researched. They are much cheaper,

but they are also in American currency. I also believe that the egg turner researched is much more reliable.

Paperwork

There will be paperwork that is required to get the egg turner into Nepal. This includes Commercial Invoice, Export Declaration, Certificate of Origin, Toxic Substance Control Act Form and Canadian Federal Communication Commission (FedEx, 2016). With each of the documents one should be able to export any product to a country. But like any products that are exported it will cost time and money.

Unknowns

When it comes to trying to promote any type of product, there will always be marketing unknowns, as well as overall unknowns. For the egg turner product, the unknowns that are possible is that it is unsure how many Nepalese people will be interested in the egg turner product. The unfortunate part about this product that it is easy to turn this product yourself by hand. One can also create their own egg turner out of cheap wood. You will manually have to turn the eggs at least twice a day, but it would be a much cheaper option than purchasing this item. The Nepalese may already have this product, but they produced it themselves. Another unknown is how many will be needed in Nepal. With how much this product costs to ship and the ability for the Nepalese to make their own egg turner, it is hard to say how many will want it right now, as their chicken operation is not large yet.

Conclusion

In conclusion this product is not reasonable to send to Nepal. This is because of the expense of the product, the ability for cheaper products to be sent there instead, and the ability for Nepalese to create their own homemade egg turner. If I was a Nepalese farmer I would not spend half of my year's salary on this product, because I have the ability to turn the eggs by hand or create my own with wood.

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