

Beak Trimmers: Improvement of Nepal's Poultry sector

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Section I

Nepal's Poultry Industry

Nepal's poultry sector is a 22 billion Nepal Rupee industry (\$270 million CAD) and ranks the country 112th in chicken production, accounting for 3.5% of its \$25.4 billion CAD GDP. The daily demand of poultry meat is 150,000 kg/day to feed its 27.8 million and growing population (Shrestha, 2014). While annually the average Nepali will consume 4.1 kilograms per chicken and 44 eggs, (Kathmandu Post, 2016) the majority of distribution of chickens and ducks takes place in the Hill (50.25%) and Terai (44.61%) regions of the country, giving home to 1,000 broiler farms and 500 layer farms.

As per statistics gathered by the United Nations in 2014, the Nepal poultry industry directly employs over 70,000 people, features well over 39.5 million chickens, and supports many more workers indirectly. Since these statistics were collected, there has been a trend showing the industry is on rise at a 17-18% growth rate. Due to the rising success of the Nepalese poultry industry, the country has begun to export its products to Bhutan, (Shrestha, 2014) and has the potential to begin exporting to even more countries.

In order to demonstrate the potential of the poultry industry, consider that in 2015 Canada exported over \$4.04 billion dollars (CAD) in poultry products (Agriculture and Agri-food Canada, 2016) to more than 71 countries. In addition to this, Canada has over 4,500 chicken, turkey and egg producers, with many more businesses contributing to the production activities. These statistics demonstrate the magnitude of the poultry industry, and the demand for product in the western world. In a modern global market, if Nepal had the capacity to begin exporting to Canada, their poultry sector has potential to greatly enrich their economy.

Challenges Facing the Industry

When assessing the sustainability of Nepal's poultry sector, the 1.5 million households rearing birds face many risks and challenges. The demand for poultry meat and eggs is increasing; however, disease, high feed costs, security investment and the low market prices create suffering in the industry (Acharya & Kaphle, 2016). Small poultry farms also lack bio-security when it comes to raising the birds, and most farmers do not have formal training on farm management. The three main diseases impacting the industry (Infectious Bursal Disease, Avian Influenza and New Castle Disease) have caused more than 80% mortality rates in poultry (Acharya & Kaphle, 2016). Avian Influenza became a nationwide pandemic in 2013 causing a loss of approximately two million birds, and over 250 million rupees in government compensation (Acharya & Kaphle, 2016). In late June 2015 the agriculture industry was further devastated when a 7.8 magnitude earthquake shook Nepal, resulting in structural damage, as well as livestock and food loss.

In addition to environmental and economical risks, fighting and cannibalism among poultry flocks also can further hinder production. Feather pecking, cannibalism and an aggressive desire for dominance are naturally occurring behaviours among poultry, occurring from the stress of captivity. Since chickens utilize their beaks for foraging and discovery, it is not uncommon their curiosity may become misdirected, at which point they'll begin to peck at each other. An example of this is when a new hen has been introduced into a large flock. The other birds may peck at their new member as a sign of dominance, which may result in open wounds, feather loss, infection or even death. Laying hens are commonly targeted if they have a prolapsed uterus which has been exposed for a long amount of time. Other hens may begin pecking her to investigate, piercing the thin skin, causing bleeding and potentially progressing to cannibalism (Clauer, 2016). Factors that may further increase cannibalistic behaviour among chickens are: low lighting quality, overcrowding, lack of food and water, unbalanced diets, new birds in a flock, and extreme heat (Clauer, 2016).



Figure 1: A chicken with open wounds from cannibalism (PoultryHub, 2016)

A study was conducted on the mortality rates of laying hens from 2001 to 2004 based on their housing system. It was shown that cannibalism was the main cause of death in five out of 129 flocks housed in indoor litter, and four out of 23 outdoor free-range systems (Fossum *et al*, 2009).

Better management of living environments can assist with preventing cannibalism and feather pecking in hens. Such preventative measures include: improved lighting and heating conditions, better feed, and beak trimming.

Beak Trimming

Beak trimming or “debeaking” is the process of removing the tip of a chicken’s beak in order to reduce injury related pecking. This procedure is often performed on chicks that are between the ages of one and ten days old, and is maintained through repeated treatments for 6-12 weeks (Halls, 2011). A touch up trim may also be done on an adult bird in an alternative system. As chickens grow they develop sharp, downward hooked beaks capable of breaking skin and leading to infection or injury.

Bird Age	Length of Trim
1 Day	1/3 to 1/2 of the top beak
7-10 days	1/3 of top and bottom beak
6 weeks	1/2 of top and bottom beak
10-12 weeks	Heavily trimmed to a nickel’s width

	away from the nasal opening
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Table 1: Trim chart for chickens by age (Hasemann & Beyer, 1998)

At the time of writing, there are three different procedures for beak trimming. The most expensive and reliable for larger poultry producers is infrared beak trimming. Day old chicks are placed in a machine with mechanical fingers for no longer than 15 seconds. The beak is secured through small guard plates, where it is fed into the machine. Infrared light heat then treats the tip of the beak tissue and over the course of 2-3 weeks, the tip will slough off (Hy-line, n.d). This equipment is efficient, humane, and leaves little room for human error; however, it is very expensive and not ideal for the average Nepalese farmer. Another method is hand trimming with nail clippers, but for large flocks this is inefficient and requires a careful hand. The third method, which serves as the main focus of this report, is the hot-blade beak trimmer.

The Product

A hot-blade beak trimmer is a small, rectangular piece of equipment that uses a heated metal blade to trim the beak of a day old chick. A trained farmer holds the chick into the size guard, and uses a foot pedal or automatic motor to bring the blade down to cut off the tip. The freshly sheared beak tip is cauterized by the hot blade in order to reduce bleeding and infection. Once the process is complete, the chick is ready to be released into the flock to be raised to market weight for slaughter or for laying. Using a hot-blade beak trimmer is efficient and can be used on multiple farms in a region, allowing an investment opportunity for farmers looking to reduce mortality and increase production from their flock.



Figure 2: Chick that has been beak trimmed (Free From Harm, 2013)

Currently, there are no manufacturers in Canada that provide this equipment, but there are distributors that sell the product online. Alibaba is a global trade website for health and beauty products, gifts, machinery, parts and agriculture necessities which includes hot-blade beak trimmers. Berry Hill Limited, a local business that provides farm equipment, gifts and gardening supplies out of St. Thomas, Ontario are also a Canadian distributor of Lyons Electric beak trimmers. Lyons Technology, Inc. is an American company that provides veterinary equipment, poultry incubators, feeders, accessories and beak trimmers. They have multiple models that would suit lower or higher farm budgets, and have distributors globally. Many smaller foot-pedal operated models exist for under \$1000 CAD, which may serve as a potential export.

The Lyons “Super Beak Trimmer, 230VAC*” is a foot-pedal operated hot-blade beak trimmer which sells for \$461.25 CAD, and features an optional matching tripod stand for \$175.23. Replacement blades are also available for these trimmers at a cost of \$4.49.



Figure 3: Lyon USA “Super Beak Trimmer, 230VAC* (Lyon USA, 2016)

Company	Location	Contact	Website
Berry Hill Ltd.	75 Burwell Road St. Thomas, ON Canada M5P 3R5	Tel: (800)668-3072 Fax: (519)631-0480	http://www.berryhill.ca Available in-store & online
Alibaba	969 West Wen Yi Road Yu Hang District, Hangzhou China 311121	Tel: (+86)571-8502- 2008 Fax: (+86)571-8526- 9066	https://www.alibaba.com Available online
Lyon USA	1690 Brandywine Avenue Chula Vista, CA 91911 U.S.A	Tel:(619) 216-3400	https://lyonusa.com Available online

Jonkman Equipment Ltd.	28355 Fraser Highway Abbotsford, BC Canada V4X 1S9	Tel:(604) 857-2000	http://www.jonkmanequipment.com Available in-store
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Table 2: List of Global Distributers of Beak Trimmers & Accessories

In order for this method to be safe and effective for the birds and the farmers, the beak trimming process should be performed by a professional who has training on how to handle chicks, and be formally trained on proper use of the machine. Training can be provided through the Department of Livestock Services of Nepal, or through an experienced user travelling to Nepal to host a free training seminar for farmers and large scale producers. This information will help ensure bio-security, and humane treatment of the birds in order to create optimal safe healing conditions. There are many benefits to beak trimming; however, the beak of a bird holds many sensory receptors (Jacob, 2015) and assists in eating, foraging, and self-defence behaviour. Malpractice and an improper trim can cause infection, chronic pain and death.

One of the drawbacks to the hot-beak trimmer, is that it requires electricity, which can be an issue for rural farmers looking to purchase this product. As of a 2011 Nepal Standard Living survey, conducted by the government of Nepal, only 70% of households have access to electricity (CBS, 2011). Further exacerbating this, theft, power shortages and earthquakes, the people of Nepal often cause the remaining percentage to go without power. Approximately 30 million people endure long, frequent outages making hydro inefficient and unreliable (NASA, 2015). Though, most large poultry farms are located around major cities and large villages that do provide electricity making it easier for larger poultry businesses to gain access to necessary power for the machine.

The average Nepalese poultry farmer would not be able to purchase this machine alone; however, multiple farmers could purchase the equipment together and share among the farms. A poultry farmer named Dhanamaya Shrestha was interviewed by a Global Press Journal reporter in Kathmandu, Nepal. She currently raises 1,500 chickens and earns 30,000- 40,000 NPR (\$370-\$493 CAD) per month. Another farmer named Urmila Parajuli of Lalitpur, Nepal cares for 2,000 chickens and has had profits of

200,000-300,00 NPR (\$2,500-\$3,700 CAD) over three years (Bhusal, 2012). These two women are great examples of farmers that could be part of a group to invest in this opportunity together. If ten or more farm owners purchase a beak trimmer at \$100 CAD (8,100 NPR) each, this could cover costs for shipping, the machine itself and accessories making it affordable for investment. The farmers could also lease the beak trimmer out to smaller farms for a fee that will help gain extra profit and help pay for replacement accessories such as new blades. Not only will this assist to increase production in poultry flocks but leasing the machine out will provide extra money to buy feed, feeders and other farm equipment.

Since there is no company that currently manufactures the beak trimmers in Canada, this could open an opportunity for farm equipment companies to not only assist in export potential, but assist local farmers by making and providing this product. Canadian poultry farmers have to purchase from the United States or find a distributor of Lyons beak trimming machines locally. For Canada, this would provide more jobs in the manufacturing industry and in poultry production. Large companies such as Maple Leaf Foods use beak trimming in their hatcheries as well as other factory farms. This shows investment and export opportunity for Canadian agri-food companies and farm supply manufacturers.

Section II

The Export

There are two methods of shipping goods, products and machinery to Nepal. One option is ocean freight and the second method is air freight that will arrive in India, then ground freighted to its final destination in Nepal. Using an example of a farm in Nepal to calculate shipping costs and time, an estimate can be created via the UPS Canada website. The estimate will show how to ship a Lyon's Super Beak Trimmer, with dimensions of 14 x 6 x 8 inches and weighing 11 pounds to Himalaya Organic Farm in Nepal. Using UPS Air Freight Service, shipping would cost \$264.40 CAD and would take a week, arriving at the UPS location in India, ground freight to the UPS Kathmandu location to its final destination of the farm. As the beak trimmer is small and light weight, ocean freight services would not be necessary for one or two machines. The \$264 shipping fee covers base transportation, fuel surcharges, security fees, NAV Canada fees, declared value surcharges and miscellaneous origin fees (UPS, 2016).

Nepal has regulations on products that are to be imported and shipped into the country. A beak trimmer is considered a commercial shipment and requires formal clearance. Beef products, weaponry, drugs or alcohol, ice, paint, perfume, precious stones and metals, radios and telephone equipment and much more are strictly prohibited from entering the country. Customs documents, packing list, company registration certificate and invoices are some of the required documents for commercial shipping to Nepal (UPS, 2016).

Prohibited or Restricted Items To Enter Nepal	Documentation Required
<ul style="list-style-type: none">• Alcohol or drugs• Eggs, larva, insects and animals• Antiques• Currency, money orders or credit cards• Chemicals• Firearms, accessories or ammunition	<ul style="list-style-type: none">• Customs Declaration Form• Packing list• Certificate of origin• Copy of company or firm registration certificate• Letter of authority for clearance

<ul style="list-style-type: none"> • Jewellery • Pornography • Perishable plants or items • Human remains • Fur, ivory or endangered species • Precious metals or stones • Medical samples • Meat or meat products 	<ul style="list-style-type: none"> • Airway bill • Certificate of origin from chamber of commerce • Order invoice
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Table 3: Restricted items and documentation required for export (UPS, 2016)

Cost Analysis

Nepal is a low income economy and information on the salary of a Nepalese chicken farm is unavailable. However, using two case studies conducted by the Food and Agriculture Organization of the United Nations in 2014, it is possible to create a close estimate of how affordable this product is for the poultry farmers of Nepal. The case study shares the success story of an illiterate woman named Uma Sapkota, who became a very successful poultry farmer in Chitwan. Her farm holds over 27,000 layers, bring in a minimum of NRs 133,920 (\$1,635 CAD) a day. The meat business carries on in the family with her son owning a meat shop and her two daughters owning their own poultry farms (Shrestha, 2014). A gentleman named Khem Limbu makes a living from selling broilers with a profit of NRs 300,000 (\$3663 CAD) per a batch of chickens. His success has also lead to hiring an assistant at NRs 5,000 per a month for his business in Tehrathum and rents out his land for organic vegetable farming to bring in extra income (Shrestha, 2014). These two stories share the possibility of success in the poultry sector. They may not represent the average poultry farmer, but they are the target consumer to purchase this product to bring it into the industry in Nepal.

Item	Cost (CAD)	Quantity	Cost (NPR)
Beak Trimmer Model: Lyon USA 230 volt Uses: KH Blades	\$499.99	1	40,952

14 x 6 x 8, 11 lbs Comes with stand and foot pedal Stand: 5 x 5 x 40, 6 lbs From Berry Hill Ltd.			
KH Blades: All purpose	\$44.90	10	3,678
Shipping & Handling to Belleville	\$15	1	1,229
Shipping & Handling to Kathmandu UPS	\$264.68	1	21,695
Total	\$824.57		67,554

Table 4: Total cost of import of a beak trimmer

For a single Nepalese poultry farmer, the cost of a beak trimmer and the raising costs for replacement blades and shipping would be far too much. It is suggested that a farmer interested in this product should ask ten or more farms to contribute to the costs and get a share of the product, then lease it out to smaller farms to help pay for replacement blades and use the machine as an investment. For larger chicken producers such as Uma, this is under a single days worth of profit. Yet, the profits may not include variables as feed, veterinary care, equipment or daily living costs.

What is Unknown and Suggestions

There are many unknowns regarding the potential export of the product. It is clear that the poultry industry could benefit from farms using a beak trimming machine to avoid mortality from feather pecking and aggression, but it is hard to find information on the average salary of poultry farms to see if the machine itself is affordable. Another question that comes to mind is how can the farmers interested in using the beak trimmer find formal training? For Canada, there are no manufacturers of these debeaking machines, only distributors. Therefore, is it possible to produce this machinery at a lesser cost to make it affordable to export? Some suggestions for making this export work would be to find a potential manufacturer in Canada that can produce the same product for a lesser price and possibly create one that can be battery operated to it is portable and convenient. Also, creating a training program in Nepal through the Ministry of Agriculture Development to provide knowledge, awareness and insight on this product and teach poultry industry employees how to use the machine properly and carefully.

Canadian Government Assistance

There are a few government grants and opportunities available that would assist in making exporting a beak trimmer more tangible for Nepal. One program that stands out for this idea to increase export potential is called “CanExport” by the Government of Canada. The program provides small to medium sized enterprises that want to develop opportunity with other countries with high growth markets and sectors (GAC, 2016). The program first launched in January 2016 and provides up to \$50 million over the span of five years. This would be a great idea for a potential company to create the beak trimmers to ship to Nepal, since there are only distributors available in Canada. Not only can this help Nepal, but also allows for more availability to Canadian poultry farmers and food companies to have access to this technology improving their production.

Conclusion

Due to the growing poultry industry in Nepal, the beak trimmer would be a very beneficial by reducing mortality rates in large flocks, reducing injury and stress among birds leading to increased production rates. Though there some challenges to exporting the machine such as farmers being able to afford it, it is still possible for larger and more successful poultry farm owners to purchase and share among smaller farms and hatcheries. With proper training programs, government funding and interested consumers, this product could become an important tool in farm management and assist the Nepalese economy through agriculture and export partnerships with other countries.

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