

Calf Resuscitator/Aspirator Kits: Canada to Nepal Exportation Report

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Part I: Product Information:
Introduction to Product

The McCulloch Medical Calf Resuscitator/Aspirator Kit is very effective in ensuring that newborn animals are breathing and stable immediately after birth. The kit is used when a newborn calf requires resuscitation or aspiration. This kit is beneficial to all farmers because it ensures that valuable calves live a healthy life. This American product has been considered for potential exportation to Nepal to benefit dairy farmers. This paper will analyze the McCulloch Medical calf resuscitator/aspirator kit, and its potential benefits in Nepal if exported from Canada.

Description of Companies

Norma McCulloch established McCulloch Medical in 1993 with a vision to build a resuscitator for livestock. McCulloch Medical is located in Elmwood, Wisconsin in the United States of America. It has expanded to establish locations in Europe, Australia, and New Zealand (McCulloch Medical, n.d.). McCulloch Medical sells the resuscitator/aspirator kits to 32 countries worldwide (McCulloch Medical, n.d.). MIA Animal Health is the manufacturer and distributor of the calf resuscitator/aspirator kit, which is also located in Elmwood Wisconsin (MAI, n.d.). Veterinary Purchasing Company Limited (V.P.) purchases the resuscitators from MAI Animal Health (Veterinary Purchasing, n.d.). V.P. is located in St. Marys Ontario, Canada (Veterinary Purchasing, n.d.). V.P. is one of the largest North American distributing companies with over 40 years of experience (Veterinary Purchasing, n.d.). V.P. sells to over 1400 veterinary clinics in Ontario gathering \$268 million in sales annually (Veterinary Purchasing, n.d.). Once the V.P. sells to the vet clinics, the product is available for Canadian farmers to purchase.

Description of Product

McCulloch Medical provides a variety of resuscitator/aspirator kits for many types of livestock. Products for foals, kids, lambs, piglets, alpacas, puppies, and kittens are available. This is an effective form of targeting all areas of livestock production (McCulloch Medical, n.d.). It is essential that newborn livestock be cared for immediately after birth. The kit ensures that newborns are breathing immediately after birth as every second counts in such a situation. The cost of each resuscitator varies depending on the livestock type (see **Figure 1a**). Each resuscitator kit includes an aspirator mask, a resuscitation mask, a hand pump, protective carrying case, and illustrated instructions (see **Appendix A**) (McCulloch Medical, n.d.). The illustration of the instructions ensures that the undereducated population understands how to use the kit. The calf resuscitator/aspirator kit is a dual function product (McCulloch Medical, n.d.). Resuscitation is required when a calf is no longer breathing, and used as a form of CPR (McCulloch Medical, n.d.). To resuscitate a calf, it is important that the calf remains in sternal recumbency position (see **Appendix B**), which ensures the lungs will be equally inflated (Grove-White, 2000). Next, pump small amounts of air into the calf's lungs until the natural muscle rhythm takes over (Grove-White, 2000). The aspiration function is used when the newborn cannot breathe due to fluid build-up in the lungs (McCulloch Medical, n.d.). McCulloch Medical also supplies additional masks for the kits (see **Figure 1b**) (McCulloch Medical, n.d.). Hand pumps with an additional mask are available for \$114.75 USD for animals between 3-10 kg (McCulloch Medical, n.d.). Hand pumps for animals between 11-78 kg cost \$144.75 USD (McCulloch Medical n.d.).

Type of Resuscitator/Aspirator Kit	Price (USD) \$	Price (CAD) \$
Puppy/Kitten	199.00	266.15
Raptor	250.00	334.36
Calf	155.00	207.30
Foal	275.00	367.80
Lamb/kid/alpaca/cria/miniature foal)	65.00	86.93
Piglet	65.00	86.93

Figure 1a: A price comparison between six resuscitator/aspirator kits displayed in both USD and CAD before taxes. The Canadian price is correct as of November 29, 2015. The calf resuscitator is among the cheaper kits, and is therefore more economical for Nepalese farmers. The data was gathered from McCulloch Medical.

Type of Resuscitator/Aspirator Kit	Price (USD) \$	Price (CAD) \$
Puppy/Kitten	43.50	58.18
Raptor	40.00	53.50
Calf	43.50	58.18
Foal	*Already supplied with original kit*	Not applicable
Lamb/kid/alpaca/cria/miniature foal	43.50	58.18
Piglet	43.50	58.18

Figure 1b: A price comparison of additional oxygen recovery masks available through McCulloch Medical displayed in both USD and CAD before taxes. The Canadian price is correct as of November 29, 2015. In the case of the foal kit, the oxygen recovery mask has already been included in the resuscitator/aspirator kit. The data was gathered from McCulloch Medical.

Research Regarding the Product

Extensive research has been done to ensure the resuscitator/aspirator kits are a safe, effective strategy of pumping air into the lungs of newborns (McCulloch Medical, n.d.). 12 university institutions have studied the kit including the University of Guelph in Canada, the Royal Veterinary College in the United Kingdom, University of Wisconsin in the United States, and Massey University in New Zealand (McCulloch Medical, n.d.). Each of the universities concluded that when used appropriately, the resuscitator is very effective (McCulloch Medical, n.d.).

Description of the Canadian Dairy Industry

The Canadian dairy industry produces milk to be processed and sold within Canada. Canada has 981, 000 dairy cattle out of the total 254, 898, 000 dairy cattle in the world (Government of Canada, 2012). Canada may measure small on the ranking, however the Canadian dairy industry is very successful. To date, the Canadian dairy industry has earned over \$10 billion in total sales, and has contributed over 20% of the world's dairy genetics (McGill University n.d.). Holstein cattle are the prevalent breed of Canadian dairy industries (McGill University, n.d.). In 2011, there were 12, 746 dairy farms with milk shipments in Canada, which shows a large decline in the number of dairy farms from 1992 (see **Figure 2**) (Government of Canada, 2012). The dairy industry has experienced a decline in the number of farms, however many farms are expanding to have more cattle (Government of Canada, 2012). The overall number of dairy cattle in Canada has also been experiencing a decline (see **Figure 3**) (Government of Canada, 2012).

The Canadian dairy industry is supply managed by the sale of Quota (Government of Canada, 2012). Quota helps to manage farms and ensures that Canadian milk stays in Canada, with little dairy imports (Government of Canada, 2012).

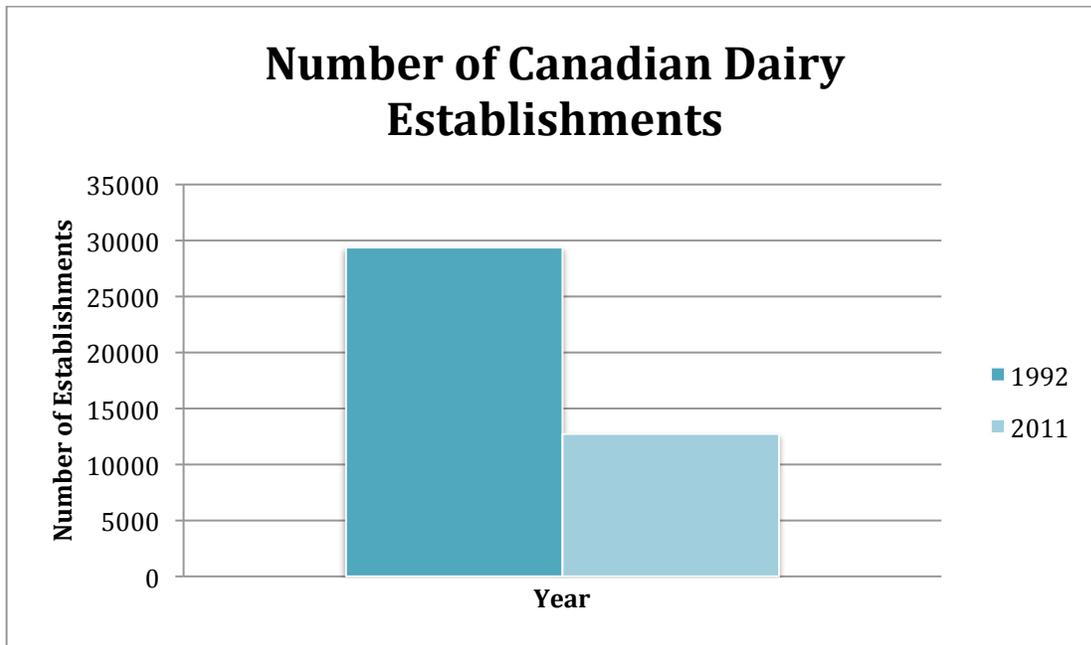


Figure 2: The graph displays the decline in Canadian dairy establishments from 1992 to 2011. This decline means less Canadians are farming dairy animals, however the size of farms has been increasing allowing for more cattle to be housed. The data was gathered from Government of Canada.

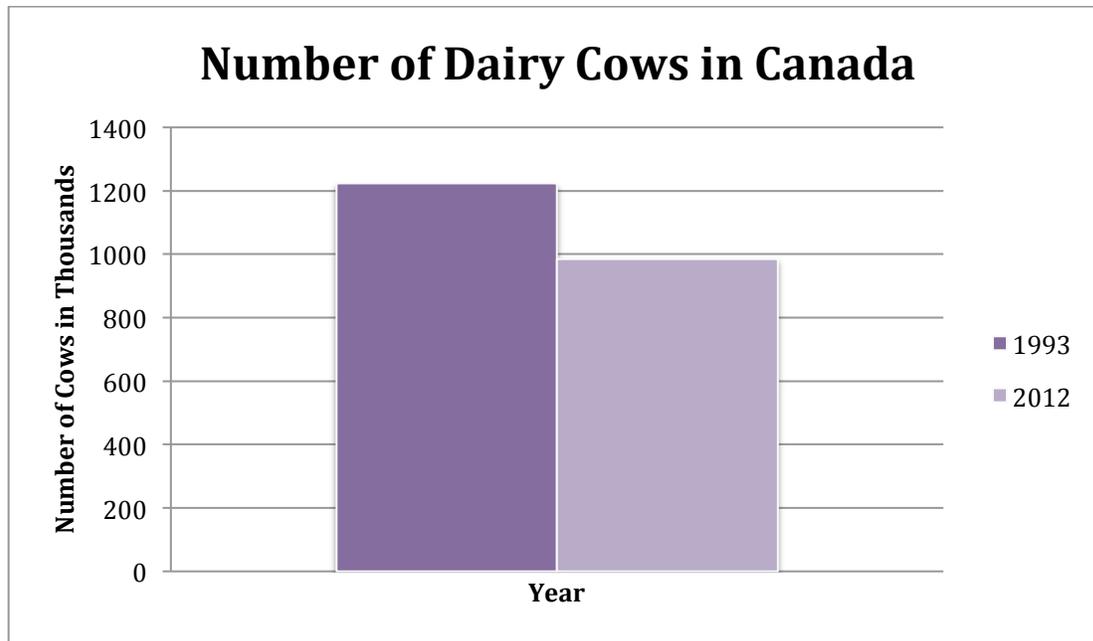


Figure 3: The graph displays the decline in the number of dairy cattle in Canada. This decline is much less compared to Figure 2. This indicates that farms are in fact expanding to have larger herds. Therefore, the cattle number decrease is much less than the decrease than the number of dairy farms. The data was gathered from Government of Canada.

Benefits of Dairy Consumption

Consuming dairy products ensures that the calcium and phosphate levels stay high in the human body (The Dairy Council, n.d.). Calcium and phosphate promote the strength of both the skeletal structure and teeth (The Dairy Council, n.d.). The body cannot produce calcium and therefore it must be consumed (The Dairy Council, n.d.), hence, it is important that dairy products be consumed in order to maintain healthy functions of the body.

Uses in Canada

The use of the resuscitator/aspirator kit in Canada is primarily to ensure the healthy start of newborn livestock (McCulloch Medical, n.d.). With the resuscitator/aspirator kit, the mortality rate should decline in newborn calves, which benefits farmers because livestock is very valuable. The vitality of the newborn animal is

linked to the profitability of the farming establishment. Realistically, farmers should have the kit as a precaution for newborns in distress.

Required Inputs

There are minimal inputs necessary to be able to use the resuscitator/aspirator kit. The kit can be used with one to two people and is hand-pumped for simplicity. The kit does not require electricity or a mechanical pump of any kind, and is therefore easy for the Nepalese to use. It is extremely portable and stored easily when needed. The kit appears to be mainly plastic components (see **Appendix A**). The diaphragm on the mask appears to be rubber to painlessly fit onto the calf's nose (see **Appendix C**).

To prevent calves from having health issues, farmers should provide their cattle with good feed and housing to maintain a healthy herd. When the herd is healthy, it is presumed that the calf mortality rate should decrease.

Market Opportunity

The resuscitator kit would logically be a niche product, because it is known that the Canadian agriculture industry is small. The resuscitators only target livestock production farmers. Since the market is so small for resuscitator/aspirator kits, Veterinary Purchasing Company Limited could consider exporting the kits to other countries to increase the markets, while benefiting Canada's economy.

Benefits to Canada

The sale of resuscitator/aspirator kits currently benefits the Canadian economy. Since, the kits are not actually made in Canada, Veterinary Purchasing Company Limited must purchase them from MIA Animal Health (MIA Animal Health, n.d.). Veterinary Purchasing Company Limited employs many Canadians, and sells to fellow Canadian

veterinary clinics (Veterinary Purchasing, n.d.). Once the resuscitator/aspirator kit reaches farmers, the kit is most beneficial. The life of a calf is very valuable, and the calves saved will then benefit the agricultural industry by providing milk and meat to the Canadian population.

By expanding the exportation market for the kits, many Canadian jobs would be created. Veterinary Purchasing Company Limited would export the kits and if successful, the company could expand. This would promote Canadian jobs and furthermore assist the economy. The exportation of the resuscitator/aspirator kits would be very beneficial to Canada, as well as underdeveloped countries. Some real world company names and contact information can be found in **Figure 4**.

Company Name	Contact Information
McCulloch Medical	Email: info@mccullochmedical.com Website: http://mccullochmedical.com/contact/
MIA Animal Health	Phone: 1-800-477-0687 Email: sales@maianimalhealth.com Location: Elmwood, Wisconsin in the United States of America Website: http://maianimalhealth.com/contact/
Veterinary Purchasing Company Limited	Phone: 519 284-1371 Email: generalinquiries@vpcl.on.ca Location: St. Marys Ontario, Canada Website: https://www.vpcl.on.ca/contact-us/

Figure 4: This table shows the contact information for the companies involved with manufacturing and distribution to Canada should further inquiries arise. The contact information was found the websites of McCulloch Medical, MIA Animal Health, and Veterinary Purchasing Company Limited.

Part II: Export Potential to Nepal

Introduction to Nepal

Nepal is landlocked between India and China (CIA, 2014). Nepal is approximately 147, 181 kilometers squared and populated by 31, 551, 305 people (CIA, 2014). The population is growing an average of 1.79% each year, which is problematic considering 25.2% of the population is below the poverty line (CIA, 2014). 28.8% of the land is used for agricultural purposes (see **Figure 5**) with major commodities varying from rice, corn, wheat, jute, root crops, and milk (CIA, 2014). 70% of the Nepalese population is involved with the agricultural industry (see **Figure 6**) (CIA, 2014). 81.3% of Nepal's population practices the Hindu culture, and therefore do not eat most meat products (CIA, 2014). Nepal is one of the poorest countries in the world, and therefore has very underdeveloped transportation routes or infrastructure (CIA, 2014). Minimal road access indicates that Nepalese people have difficulty reaching markets to purchase goods. The road and railway systems are extremely limited in Nepal, as well as airport access (CIA, 2014). Nepal's main airport is located in Kathmandu (Tribhuvan International Airport, n.d.). Since transportation is limited, Nepal imports 29.6% of its goods from China (CIA, 2014). Nepal's main imports include machinery, equipment, electrical goods, and medicines (CIA, 2014). Much of the population involved with the agricultural industry is illiterate and has minimal equipment to use (CIA, 2014). Nepalese people need practical farming goods available to them in order to improve the agriculture industry.

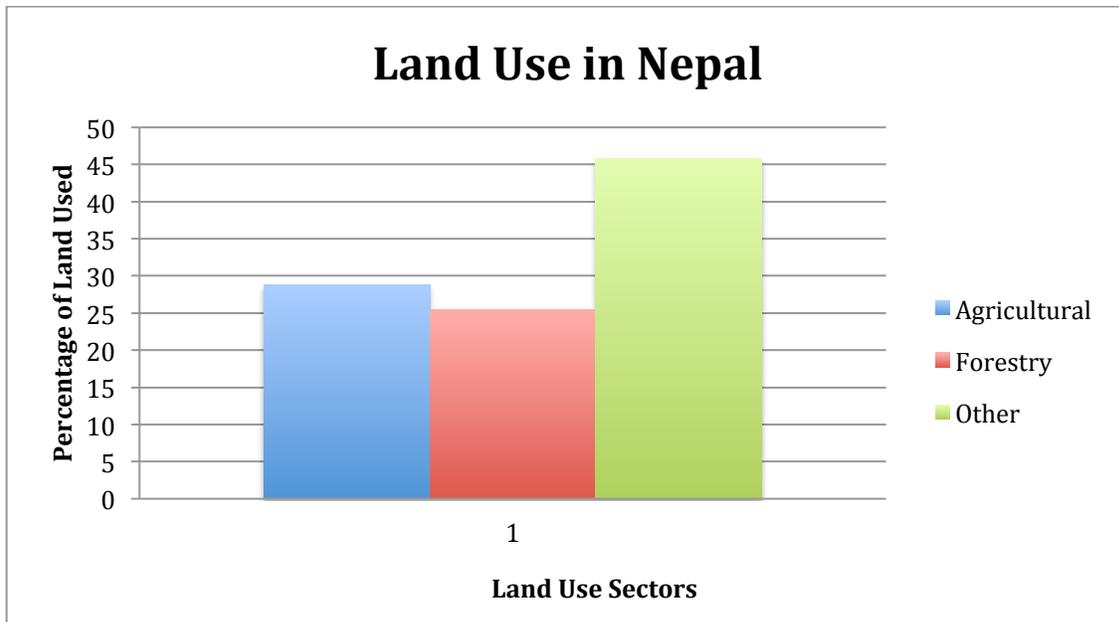


Figure 5: This graph displays how land is used in Nepal. 28.8% of the land is used for agriculture, though most of the land is used for other purposes. Nepal has a small amount of land to farm. This is potentially problematic considering most Nepalese people are employed in the agriculture industry. The data was gathered from Central Intelligence Agency.

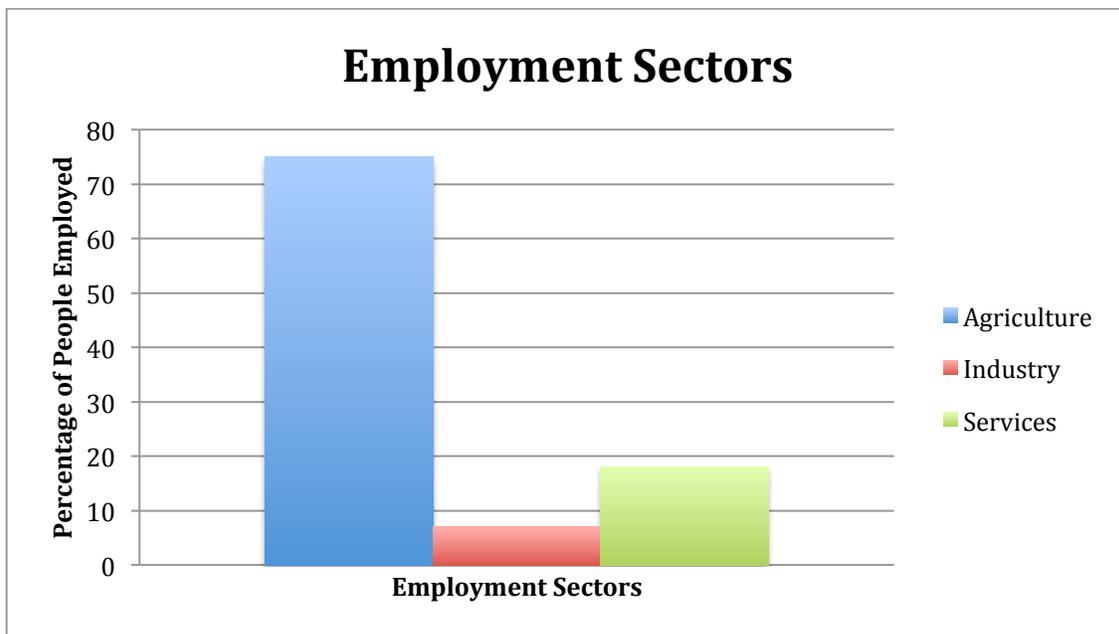


Figure 6: This graph shows the number of Nepalese people employed in each sector. Agriculture by far provides the most employment, followed by services, then industry. This graph indicates the importance of improving the agriculture industry so the farmers can have more efficient agricultural practices. The data was gathered from Central Intelligence Agency.

Dairy Industry in Nepal

Nepal has a much smaller dairy industry than Canada, with approximately 250 dairy farms in operation (United Nations, 2010). These farms are private sector dairy farms and vary in herd size (United Nations, 2010). Nepal founded The Nepal Dairy Association (NDA) in 1998 to add more order to the dairy industry (United Nations, 2010). An establishment such as the NDA is effective in overseeing the proper production of milk, and would ensure good milk quality within Nepal. This is essential because the Nepalese need nutritious dairy products that are of good quality. It was determined that the Nepalese do not have a known supply managed system in place. Milk is carried by farmers to the nearest milk processing plant (United Nations, 2010). At the processing plant, the milk is measured, sampled, and recorded to ensure good quality (United Nations, 2010). Once the milk has been recorded, it is transported to a milk or cheese production centre via car, bicycle or carts (United Nations, 2010). When the processing is complete, the milk can then be sold on the market to Nepalese consumers (United Nations, 2010). Buffalo are popular commodities because they produce milk and meat, whereas cattle are mainly used for milk production (United Nations, 2010).

Benefits to Nepal

Livestock is valuable to farmers all over the world, and is therefore it is not any different in Nepal. Farmers care for their animals because it is their livelihood. The health of a calf is linked to the productivity of the farm, and if a calf dies, the productivity decreases. The resuscitator would help Nepalese farmers ensure their calves have the opportunity to stay healthy. The resuscitator/aspirator kit would increase productivity as a result because the farmers would have the equipment to keep their livestock healthy. This

creates a chain reaction of greater overall productivity of a farm. Since the resuscitator/aspirator kit is available for many types of livestock, the agricultural industry should become more productive. The kit will decrease the mortality rates of newborns. More jobs could be created if the export became successful, as people would be needed to sell and transport the resuscitator/aspirator kits. This would help the economy in Nepal, and as a result more jobs would cause that the poverty rate to decrease. Overall, the exportation of the resuscitator/aspirator kits from Canada to Nepal would be very beneficial in many areas of the country.

Transportation Logistics from Canada to Nepal

The resuscitator/aspirator kit would travel from St. Marys Ontario to Toronto Pearson International Airport in Mississauga Ontario, Canada. The kits would then be flown to Tribhuvan International Airport in Kathmandu, Nepal (see **Figure 7**). The kits would travel using FedEx International Priority Freight by plane, reaching its destination within 1-3 business days (FedEx, 2015). The kits can travel in 40-foot equivalent container units (FEU) to be flown to Nepal, or using 10-kilogram boxes (FedEx, 2015). Using 10-kilogram boxes, the total cost of the shipment to Nepal is \$503.89 (FedEx, 2015). An advantage of shipping with FedEx is that no minimum weight needs to be met (FedEx, 2015). This means that the resuscitator/aspirator kits can be shipped according to demand in Nepal, therefore ensuring that the kits are selling. Since Nepal has limited railway access, the kits would have to travel by trucks (Woodburn et al., 2008). When the kits reach the markets, farmers would then be able to purchase them.

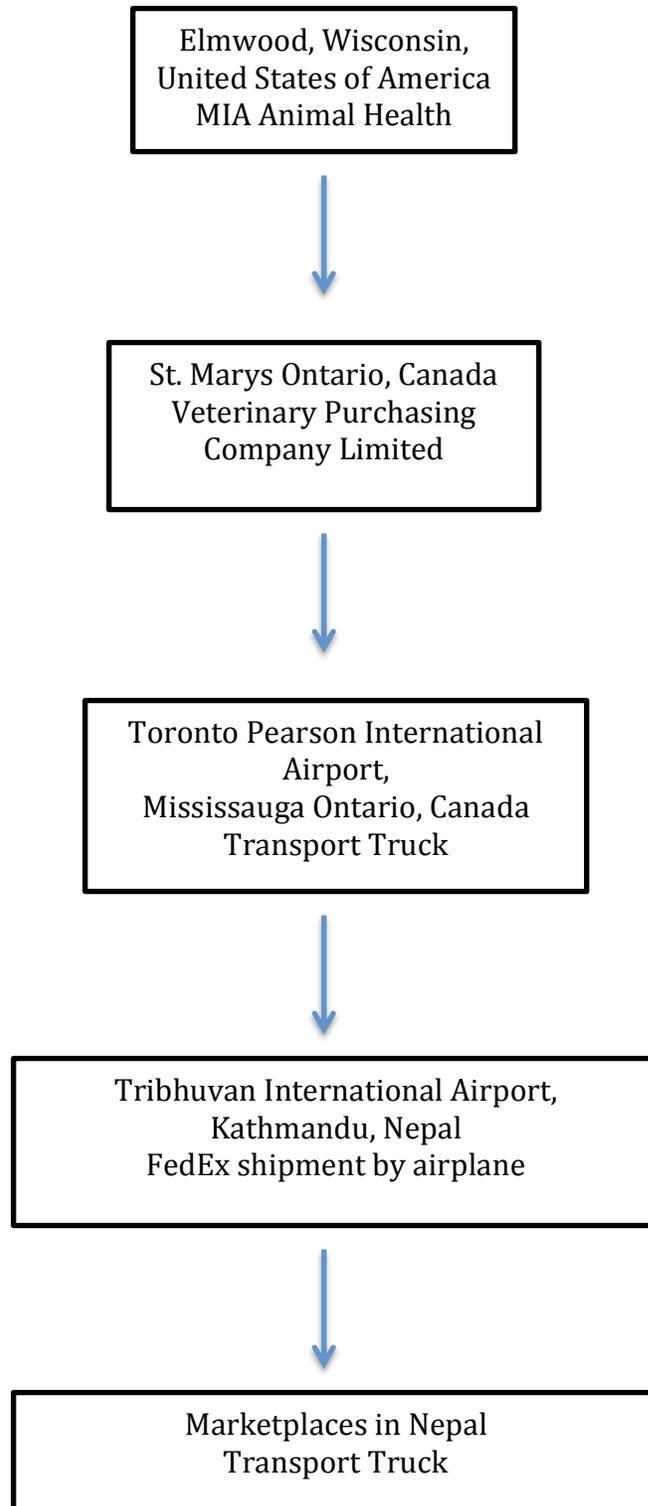


Figure 7: This flowchart displays the entire transportation chain for the resuscitator/inspirator kit to travel from St. Mary's Ontario, Canada, to Kathmandu, Nepal.

Government Finance

The Canadian government offers some financial assistance when starting an exporting company (Canada Business Network, 2015). The government has a non-repayable bursary worth 1 million dollars to an agricultural business wishing to expand (Canada Business Network, 2015). There are also many other bursaries available for Canadian companies (Canada Business Network, 2015). This money could help Veterinary Purchasing Company Limited expand to begin exporting their products out of Canada. Their business would grow which would help the Canadian economy. It is recommended that financial insurance be used when expanding a business (Canada Business Network, 2015).

Documentation Required

When exporting from Canada, a lot of documentation is required (Canadian Border Services Agency, 2014). An exportation permit, certificate and license are all needed to begin the process (Canadian Border Services Agency, 2014). Some documents will also be required by the Nepalese government to allow the kit into their country. An export declaration is needed prior to the export of the kit (Canadian Border Services Agency, 2014). The export declaration is required to be submitted a minimum of two hours before the product is scheduled to fly out of the airport (Canadian Border Services Agency, 2014). The declaration can be submitted at any of the 524 export offices in Ontario (Canadian Border Services Agency, 2014). A Certificate of Origin is to be provided when the kits reach Nepal (Canadian Border Services Agency, 2014). Once the exportation is successful, all copies of required documents must be kept a minimum of six years after the exportation date (Canadian Border Services Agency, 2014).

Competition

There is no known company competition for the manufacturing of a resuscitator/aspirator kit, however there is present competition in the distribution sector. Valley Vet distributes the kits, and is located in Kansas (Valley Vet, 2015). Leedstone is another company that distributes the resuscitator/aspirator kits, and is located in Minnesota (Leedstone, 2015). Since these companies are located in the United States of America, it is not direct competition to Veterinary Purchasing Company Limited. Connacht Agri Supplies Limited is another distributor located in Claremorris, Ireland (Connacht Agri Supplies Limited, 2015). This company would compete with Veterinary Purchasing Company Limited more so than the distributors located in the United States. Since Connacht Agri Supplies Limited is located in Ireland; it is automatically closer to Nepal than Veterinary Purchasing Company Limited in Canada. It is more realistic to sell to Nepal from Ireland, since they kits are already exported to Ireland.

Future Studies and Conclusions

Unknowns

There are still some limitations in the export plan due to unknown information. The total number of employees currently involved with the manufacturing and distribution of the resuscitator/aspirator kit is undetermined. The information was not available to conclude a total labour cost. A list of materials was not provided, however some materials were inferred from **Appendix A** and **Appendix C**. The manufacturing process is also unknown. Total transportation costs are to be determined, however the price of the flight from Toronto, Canada to Kathmandu, Nepal is known. There are still

many factors and costs to consider before the resuscitator/aspirator kit could be exported to Nepal.

Recommendations

After careful analysis of many factors during exportation, it is recommended that the resuscitator/aspirator kit be exported to Nepal. The resuscitator/aspirator kit would be very successful in saving many calves lives. This in turn would benefit the agricultural industry overall. Since resuscitator/aspirator kits are available for many types of livestock, it is also recommended those be exported to reduce the mortality rate of all livestock in Nepal. The less livestock deaths there are, the higher the profitability of the farm.

It is recognized that the price of the resuscitator/aspirator kits are high for the average Nepalese farmer. It is suggested that farmers purchase and share a resuscitator/aspirator kit until each can afford to purchase their own. It is an effective way of keeping calves healthy and ensuring profit of the livestock. To share a resuscitator/aspirator kit, the farmers must be within close proximity of each other to be able to have the kit in the case of an emergency.

It is also recognized that the distributing company, Connacht Agri Supplies Limited is located in Ireland, which is much closer to Nepal than Canada is. Realistically it makes the most sense to export the kits from Ireland, as they do not have to travel as far. However, it is still possible to create an exportation opportunity from Canada to Nepal for the resuscitator/aspirator kits. This would benefit the Canadian economy and create new opportunities for partnership between Canada and Nepal.

Conclusion

In conclusion, the resuscitator/aspirator kit is a suitable product designed to improve the agriculture industry in Nepal. The resuscitator/aspirator kit will increase productivity of farms. This productivity would increase with the number of kits in Nepal. As the productivity of agriculture increases, more families will be above the poverty line. This is beneficial to the economy of Nepal as a whole.

The implementation of the resuscitator/aspirator kits will be very beneficial to many areas of the Nepalese economy. It is important for the agriculture industry to see improvement, so that Nepalese people have a better quality of life.

Appendix



Appendix A: This is an image of the resuscitator/aspirator kit made by McCulloch Medical. This image was taken exactly from <http://mccullochmedical.com/calf-aspirator-resuscitator-kit/>



Appendix B: This is an image of a calf in a sternal recumbency position. This image was taken exactly from <http://www.vitaplus.com/sites/default/files/Dr.%20Frank%20Garry%20-%20Vita%20Plus%20Calf%20Summit%202014.pdf>



Appendix C: This is an image of the oxygen mask used with the resuscitator/aspirator kit to display the rubber diaphragm. This image was taken exactly from <http://mccullochmedical.com/calf-aspirator-resuscitator-kit/>

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