

Thymox Hoof Bath: Export From Canada To Nepal

Madeleine Baker

Part 1 Product Information.

Company Description

Thymox is a Canadian company based in Sherbrooke Quebec that specializes in producing environmentally friendly cleaning products used in food processing plants, farms, and have expanded into cleaners used in households and medical facilities. The company has expanded to fungicide and insecticide that is used mainly in the organic crop industry as it is environmentally safe as well (Thymox, n.d). Lastly, Thymox has made a hoof bath that can be used to treat and prevent interdigital and digital dermatitis, and lessening lesions on hooves (Thymox, n.d).

Fig 1. Map of Canada including specific placement of Sherbrooke Quebec



<http://ca.epodunk.com/profiles/quebec/sherbrooke/2002644.html>

As of 2013 the company has 7 employees (Guay, 2013) and currently has patented its thymol technology, which is in all its cleaners and hoof bath (Thymox, n.d). Thymox holds the first UL Ecologo in Canada, this is an achievement given by passing rigorous testing done by a third-party company to ensure that the product is environmentally friendly through the entirety of its life. Thymox products also do not contain phosphates or Ethylenediaminetetraacetic acid (EDTA) which is a corrosive substance, they do not contain any colouring or aromas, halogenated solvents, or any other compounds that are toxic to aquatic life (Thymox, n.d).

Thymox also has created ties with many different countries throughout the world, including China where the company Uniterumen is the official distributor of the Thymox hoof bath. Another new agreement by the company has been to Europe through the company Cargill who also is distributing the hoof bath throughout dairy farms in Europe, the UK, the Middle East, and Africa (Thymox, n.d).

Product Description

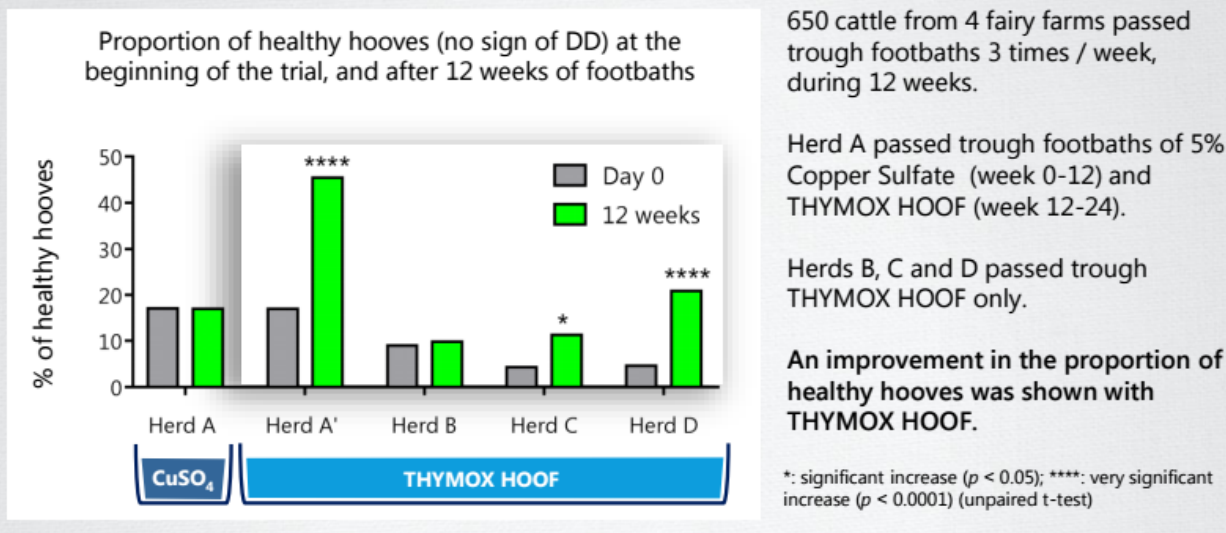
The Thymox hoof bath contains the anti-disinfectant technology that Thymox has patented (Thymox, n.d), which is thymol. Thymol is a derivative of the herb thyme, the derivative causes instability in microorganisms' cell membrane which leads to leakage of the cell and then death, it kills 99.9% of microbes in 3 minutes or less. The product is only needed in very dilute amounts, 1 part compound to 1000 parts water, because of how effective and concentrated the formula is, the animals must walk through the solution and then it is manually washed off with water. Since it contains no harsh chemicals and is non-toxic the hoof bath is not an irritant to either animal or human, and the solution also does not harm the environment by adding any metals to the soil. It has a shelf life of 4 years and is easily transported with a freezing point of -11 degrees Celsius (Thymox, n.d).

Thymox Hoof bath was tested over a period of a couple of weeks on a dairy farm and it was discovered that the amount of foot lesions was lessened and the number of healthy hooves increased when compared to a commercial chemical hoof bath (Thymox, n.d). The University of Wisconsin-Madison also did a field study on the Thymox Hoof and it was found that the levels of starting lesions were lowered, there was a steady decrease in M4 lesions (the last stage), and most importantly there was a significant increase in healthy hooves (Thymox, n.d).

Figure 2. Graph showing the Ratio of Healthy Hooves compared to Hooves with Digital Dermatitis, and Comparison of Copper Sulfate Solution effectiveness and that Thymox Hoof

THYMOX HOOF COMPARED TO COPPER SULFATE

A field trial conducted in Quebec (Canada) was designed to measure the effect of footbaths on the infectious hoof disease Digital Dermatitis (DD).



This image was retrieved from an email exchange directly from a representative from Thymox.

The largest drawback of the Thymox hoof bath is the cost, however the cost must be assessed with environmental impact kept in mind. The use of the common copper sulfate hoof bath, and formalin hoof treatments has caused accumulation of copper and formaldehyde in soils which prevent plant growth and appears to be unsustainable (Epperson, 2007).

Table 1. Prices of Thymox Hoof Bath, Number of Litres with Dilution. The prices are correct as of October 28 2016, and were collected from the CDMV website.

Product Size (L)	Price	Number of Litres (1:1000)
20	280 CAD	20,000
200	2352 CAD	200,000

Market Opportunity

Hoof baths are very niche as they are only needed for animals with hooves, this then becomes even more specified when it is noted that hoof baths would only be used in livestock industries that need the animals to live healthy lives for an extended period of time. This means that Thymox hoof bath would be used in the dairy industry, the equine industry, and some fibre industries. Thymox has recognised how limited their market for this product and has started making international deals, in China, throughout the European continent and in parts of Africa, which was discussed above (Thymox, n.d).

Benefits to Canada

The main benefits to Canada would be increasing the number of research jobs, increasing the business for shipping companies, strengthening the international ties between Nepal and

Canada, and diversifying the Canadian export economy. This is important because it means that more money is coming into Canada which increases the national economy, as well as production in Canada means an increase in the production industry (Thymox, n.d).

The companies that would benefit the most out of this trade would be Thymox, the CDMV, and A1 Freight Forwarding. Thymox would have an increase of research jobs because of the increase in demand would mean an increase of supply of their product, the company would also receive more press and media coverage thus free marketing and would have an increase in revenue. The CDMV which employs many Canadians and has three offices spread across the west, central, and east of Canada (CDMV, n.d) would also have an increase in revenue since the product would be purchased through the company. Lastly A1 Freight Forwarding would gain more revenue as well as publicity internationally.

Figure 3. Logos from all Canadian Companies Involved, Includes Thymox Laboratoire M², A1 Freight Forwarding, and CDMV

Laboratoire 

<http://www.thymox.com/laboratoire-m2/>


Canada & Worldwide Cargo Express

<http://www.a1freightforwarding.com/>



<https://www.cdmv.com/en/index.sn>

References

CDMV. (n.d) Business offices. Retrieved November 26, 2016 from <https://www.cdmv.com/en/business-offices.sn>

CDMV. (n.d). Products. Retrieved November 26, 2016 from https://www.cdmv.com/en/pivot.sn?s=Home_R

Epperson, B. (2007). Copper Sulfate for Footbaths - Issues and Alternatives. Retrieved November 26, 2016, from <ftp://s173-183-201-52.ab.hsia.telus.net/Inetpub/wwwroot/DairyWeb/Resources/3SDNC2007/Epperson.pdf>

Guay, J. (2013). Laboratoire M2 : La force de la nature au service de la biosécurité // Profil d'entreprise - Sherbrooke Innopole. Retrieved October 19, 2016, from <http://sherbrooke-innopole.com/fr/laboratoire-m2-force-nature-au-service-biosecurite-profil-dentreprise/>

Thymox. (n.d.). Patents. Retrieved October 19, 2016, from <http://www.thymox.com/technology/patents/>

Thymox. (n.d.). Registration / Certification. Retrieved October 19, 2016, from <http://www.thymox.com/technology/registration-certification/>

Thymox. (n.d.). Technology. Retrieved October 19, 2016, from <http://www.thymox.com/technology/>

Thymox. (n.d.). World - THYMOX Footbath & THYMOX Hoofcare. Retrieved October 19, 2016, from <http://www.thymox.com/animal-health-dairy-footbath/world-thymox-hoof/>

Phone Call to Thymox, (819)-563-0698, and to Campbellville Equine, (905) 854-0286

Part 2 Export Potential to Nepal

Introduction to Nepal

Nepal is located in Asia, it is a landlocked country in between India and China. It has three different regions which are divided horizontally across the country, these regions are Terai, hill region, and mountain region (Chapagain, 2016). The Terai region is fairly flat with a humid and wet climate, it has many cash crops like the rice paddies and has seen an increase in the livestock industry, the Terai region is not as populated as the hill or mid-hill region (United Nations, 2010). The mid-hill or hill region contains the capital city Kathmandu and other highly populated cities, this region also has agriculture but has terrace farming. The terrace farming style is unique and practical for the inclining hills and increase in food demand because of population growth. Lastly, the mountain region has the steepest inclines and the least amount of crop agriculture, but traditionally this region has had the most amount of livestock agriculture using wandering techniques so not to over graze the land (Chapagain, 2016). The product will mainly be used in the growing livestock industry in the Terai region.

Figure 4. Map of Nepal Including Different Regions in separate colours, the Capital city Kathmandu, and Other More Populated Cities.



<https://joeniemczura.files.wordpress.com/2015/09/threeregionsnepal.gif>

The population of Nepal is 27.8 million people with the majority being Hindu (World Bank, 2016), which means that beef is not consumed (Flood, 1996). Nepal has been struggling with battling political parties, the communist party has affected the rural population by forcing them out of their home and declared war on the people of Nepal in 1996. This quick urbanization has caused slums to form in many cities meaning the majority of the population lives below the poverty line (Oshiro et al, 2010) (World Banks, 2016). The poverty line is described by the UN as, a person which makes less than 1.9 USD per day (United Nations, 2016). The current exchange rate is 81.6 Nepalese Rupees to 1 Canadian dollar, which may provide issues with prices and affordability of the Thymox hoof care to the Nepalese farmers (Exchange Rates, 2016).

Nepalese Dairy Industry

The dairy industry in Nepal is very important since cattle cannot be used for consumption, because of the main religion Hinduism, 65% of milk comes from buffalo since they also produce meat while the rest comes from cattle. Common dairy practices that differ from typical Canadian dairy farming include bringing the grass and other feed to the cattle in the Terai region, and having open sided barns (United Nations, 2010) (Grindley, 2014). These conditions would provide a wet and pot holed terrain since the livestock are not moving to different areas and water is free to move into the barn, this would create a great area for bacteria to grow and cause hoof issues. The Nepal dairy industry is also much smaller than that of Canada it had about 250 farms in 2010, these are private operations and the herd size varies in size but is usually small compare to that of Canadian industry. The industry is also important because milk and other milk products provide a wide variety of nutrients needed by the population. The Nepal dairy industry produces about 1.2 million metric tonnes of milk, and a processor can buy 1 litre of raw milk from a small family owned practice for about 57 cents CAD however even this cheap form of milk is being threatened by importing powdered milk from India and remixing it in Nepal. Cheaper milk is needed to be produced in Nepal to help put money into the economy and reduce the amount of money spent on imports (United Nations, 2010).

There has been an increase in milk production companies which was at 180 across Nepal in 2005, sadly the milk industry is not as strong as it should be as it faces issues with political instability. The largest struggle that small dairy farmers face is in the form of road blocks, which means that farmers cannot transport their product to market and most often end up dumping it since it would have spoiled before it could be transferred to a refrigerated tank. The road blocks are a caused because of protests against the politic leaders in Nepal, and not only are dairy farmers halted by these protests but they also participate in protesting the government by dumping the milk (Sharma, n.d).

Benefits of Product to Nepal

Livestock is extremely valuable to farmers across the globe and this is no different in Nepal, livestock might be considered even more valuable in Nepal since it is a poorer country and livestock can be used as currency in these places (Fafchamps et al, 1998). The health of these animals is thus important as well, this means farmers must take care and treat their livestock when faced with an outbreak in disease or injury. By using Thymox hoof care farmers are able to treat many different diseases that face hooved animals, cattle, buffalo, and goats would be Nepal's main hooved livestock population. Thymox hoof care is specially designed to treat interdigital and digital dermatitis which are common in damp, and hot climates which is what the southern region of Nepal has, thus this product would be very beneficial to dairy farmers in Nepal because they could be faced directly with these issues (Thymox, n.d). The dairy industry is mainly focused on the cattle and buffalo population and if these animals are fighting an infection their energy shifts from milk production to getting rid of the disease (Hiyashi, 2005). The decrease in milk production results in a decrease in revenue for the farms, since these farms are small and do not have a large amount of extra money they would benefit from the herd being healthy and using their energy to produce milk.

Another sector in Nepal that could benefit is the veterinary industry, since in Canada Thymox hoof care must be prescribed by a veterinarian (Thymox, n.d). If this is the case in Nepal, then the number of veterinarians should increase to meet the growing demand of livestock care. This outlet would have to be explored by contacting the Nepal Veterinary Council and it would be decided whether the product would be considered a veterinary drug in Nepal when the export is confirmed.

Lastly Nepal would benefit from using Thymox hoof care because of the environmental friendliness, this means that instead of polluting the soils with run off from copper sulfate or Formalin which decreases crop production there is no pollution because the Thymox solution does not contain any phosphates and is biodegradable within two weeks (Thymox, n.d) (Epperson, 2007). This would help set Nepal on the right path to environmental sustainability in the agriculture sector.

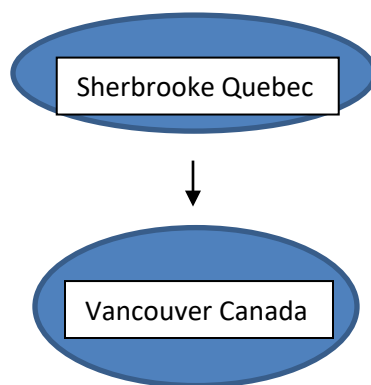
Transportation Logistics from Canada to Nepal

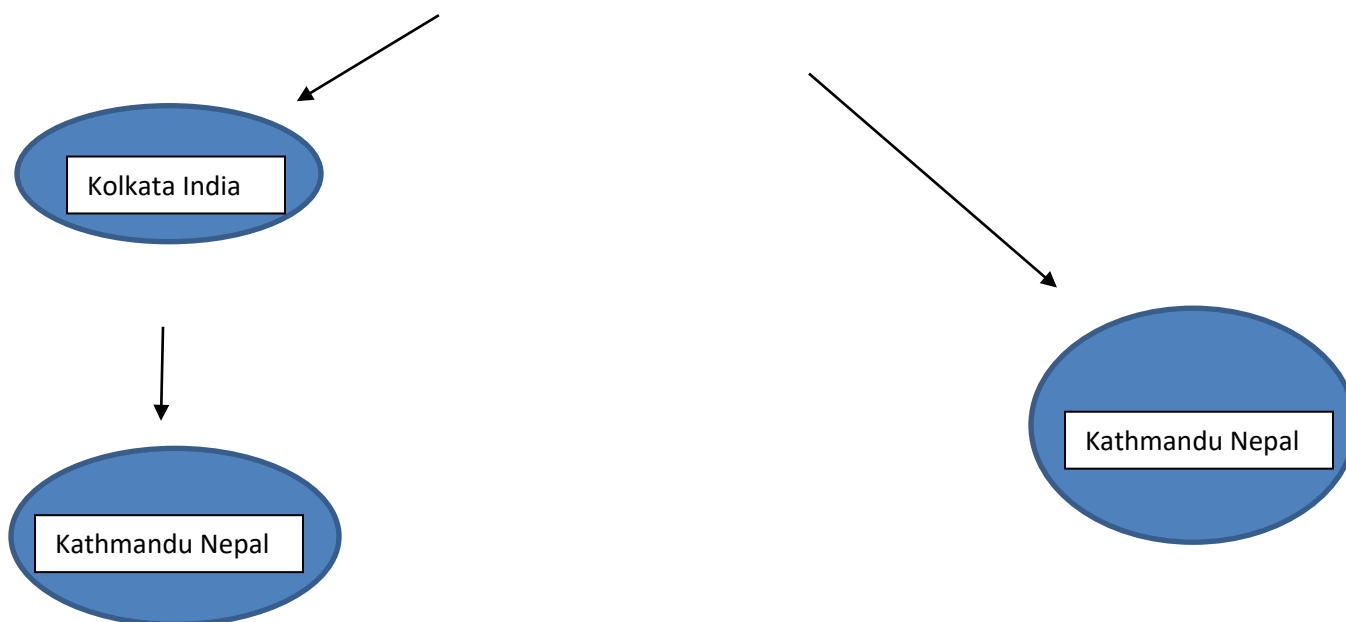
There are two transport routes that could be taken to get the product from Sherbrooke Quebec to Kathmandu Nepal, the product could either be shipped by boat or by plane. Thymox ships anywhere in Canada when the shipment is over 500 CAD, thus for 5 units of 20 L containers the cost for just the product is 1400 CAD so it can be shipped to a Vancouver warehouse or to even to the dock so that it can be put directly onto the boat. The cost for shipping 5 units is 482.20 CAD by boat, the boat would then dock in Kolkata and then must be put on a train to get to Kathmandu (A1 Freight Forwarding, 2016). The other option is to directly fly the product from Vancouver to Kathmandu, this would cost 550 CAD for 5 units. The cost differences for the totals would be 1882.20 CAD for transportation via boat or 1950 CAD via plane, each having 5 units (A1 Freight Forwarding, 2016). However, the cost of the train is unknown so either option is viable because they could be similar in cost.

Table 2. Costs of Transportation and Total Costs

Type of Transportation	Price of Transportation for 5 units (CAD)	Total Costs (CAD)
Plane	550	1882.20
Boat	482.20	1950

Figure 5. Flowchart Display of Transport Chain of Thymox Hoof Care.





The material can be shipped in 20 L industrial grade jerry cans or whatever container the hoof bath is packaged in from Thymox, but it must be labelled specifically with “For Veterinary Use Only” and have the drug identification number on it (Government of Canada, 2016). The import documentation for Nepal could not be found in English so it is not known what the regulations are for veterinary medicine in Nepal.

Marketing

It can be difficult getting around in Nepal due to limited road access, so distribution and marketing would be quite hard unless the farmer was located in an urban setting. Because of this hurdle traditional ways of marketing cannot be applied, instead a door to door approach must be taken instead. The Centre for International studies and Cooperation (CECI) has been in Nepal aiding farmers in the northern provinces, including Lalipur, Makwenpur, and Rapundahi, and focuses on the improving women’s lives so the Thymox hoof care bath could be handed out to the organization to be sold to farmers in the northern region of Nepal, this would expand the area of distribution that was originally thought of (CECI, 2012). Another organization that would be wonderful if their aid was provided in marketing is the Nepal Veterinary Council (NVC), which is set in the capital city Kathmandu. The NVC is a government council that ensures veterinarians are properly trained, and it passes legislation to aid in the main goal of ensuring animal welfare regardless of the economic situation or cultural practices. To be backed and recommended by this proud organization would be very beneficial because it would put the Thymox hoof care bath in the hands of every practicing veterinarian that is registered with the NVC in Nepal (NVC, 2016). So although there are challenges on getting the product to the farmers in it can be done through proper networking and persistence.

Competition

Formalin and copper sulfate solutions are commonly used for treatment and prevention of interdigital and digital dermatitis. Both are competitors for the Thymox hoof care, with copper sulfate being 2.40 USD a pound (Cook, n.d.) and Formalin being 80 USD for a kilogram (Alibaba, 2016), it is offered on Alibaba which reduces shipping costs. Although both are competition copper sulfate reduces and treats digital dermatitis three times better than Formalin, and is also cheaper making it a better option out of the two (Holzhauer et al, 2012)..

Although there are cheaper options none of them work in the same way as Thymox hoof care, the Thymox solution is different and better than the competition because of its minimal to no environmental impact and how effective it is on not only preventing digital dermatitis but treating it and interdigital dermatitis as well as other hoof diseases. However, Thymox has made a distribution deal with Uniterumen a Chinese company leading in animal health so it would be better and less expensive for the farmers of Nepal to purchase the Thymox hoof care bath from the Chinese distributor since that will reduce costs by almost a half because of transportation fees from Canada (Thymox, n.d.).

References

A1 Freight Forwarding (8 November 2016) Free Instant Quote. Retrieved Nov 8 2016 from <http://www.a1freightforwarding.com/country/air/nepal-2/>

CECI (2012) Dairy cooperatives in Nepal: big changes for small communities. Retrieved Nov 8 2016 from <http://www.ceci.ca/en/news-and-media/news/dairy-cooperatives-in-nepal-big-changes-for-small-communities/>

Chapagain, T., (2016) Agriculture and Agri-foods Systems in Nepal. Retrieved Nov 16 2016 from file:///C:/Users/owner/Downloads/AGR1110_Guest%20lecture_Nepal_Sept%2016_2016.pdf

Cook, B. N., (n.d.) Footbath Alternatives. Retrieved Nov 16 2016 from https://www.vetmed.wisc.edu/dms/fapm/fapmtools/6lame/Fotbath_Alternatives.pdf

Epperson, B. (2007). Copper Sulfate for Footbaths - Issues and Alternatives. Retrieved November 26, 2016, from <ftp://s173-183-201-52.ab.hsia.telus.net/Inetpub/wwwroot/DairyWeb/Resources/3SDNC2007/Epperson.pdf>

Fafchamps, M., Udry, C., Czukas, K., (April 1998) Drought and saving in West Africa: are livestock a buffer stock? Retrieved Nov 16 2016 from <http://www.sciencedirect.com/science/article/pii/S0304387898000376>

Government of Canada. (26 October 2016) Food and Drug Regulation.. Retrieved Nov 8 2016 from http://laws.justice.gc.ca/eng/regulations/C.R.C.,_c._870/page-96.html#h-170

Grindley, D. (24 June 2014) Milking dairy cows 'Nepalese style'. Retrieved Nov 8 2016 from <http://www.abc.net.au/news/2014-06-25/dairying-27nepalese-style27/5550658>

Hayashi, Y., Shah, S., Shah, S. K., Kumagai H (1 July 2005) Dairy production and nutritional status of lactating buffalo and cattle in small-scale farms in Terai, Nepal. Retrieved Nov 8 2016 from <http://lrrd.cipav.org.co/lrrd17/7/haya17075.htm>

Holzhauser, M., Bartels, C., Bergsten, C., van Riet, M. M. J., Frankena, K., Lam, T. J. G. M. (September 2012) The effect of an acidified, ionized copper sulphate solution on digital dermatitis in dairy cows. Retrieved Nov 16 2016 from <http://www.sciencedirect.com/science/article/pii/S1090023312002973>

NVC (2016) Nepal Veterinary Council. Retrieved Nov 8 2016 from <http://www.vcn.gov.np/index.php>

Oshiro, A., Poudyal, A. K., Poudel, K. C., Jimba, M., Hokama, T. (June 28 2010) Intimate Partner Violence Among General and Urban Poor Populations in Kathmandu, Nepal. Retrieved Nov 16 2016 from <http://jiv.sagepub.com/content/early/2010/06/03/0886260510372944.full.pdf+html>

Phone Call to Thymox, (819)-563-0698, and to Campbellville Equine, (905) 854-0286

Sharma, B., Banskota, K. (n.d) Smallholder Dairy farming in Nepal: Characteristics, Constraints, and Development Opportunities. Retrieved Nov 8 2016 from http://lib.icimod.org/record/21368/files/c_attachment_79_555.pdf

Thymox. (n.d.). Technology. Retrieved October 19, 2016, from <http://www.thymox.com/technology/>

Thymox. (n.d.). World - THYMOX Footbath & THYMOX Hoofcare. Retrieved October 19, 2016, from <http://www.thymox.com/animal-health-dairy-footbath/world-thymox-hoof/>

United Nations (2010, June). Dairy Sector Study of Nepal. Retrieved from <ftp://ftp.fao.org/TC/CPF/Country%20NMTPF/Nepal/thematic%20studies/Dairy.pdf>

Worldbank (2016) FAQs: Global Poverty Line Update. Retrieved Nov 8 2016 from <http://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq>

Part 3 Conclusions

Unknowns

There are limitations that could heavily affect the trade of Thymox hoof care bath but are unknown due to unknown information. One of the major unknown factors is if this product is needed in Nepal, there are no scientific studies that specifically look at the diseases affecting the livestock industry but there have been studies done in Nepal's neighbouring country China and how it is the costliest disease to the Chinese dairy industry. Another unknown factor is how this product is manufactured, there was no information provided on the website and contacting the company did not provide any further information.

Recommendation

Through thorough analysis of the many different factors affecting the exportation of Thymox hoof care bath it is recommended that the product not be exported from Canada because of costs to the Nepalese farmers being too high for the average income and not knowing if there is a solid result. The hoof bath would be very effective in treating the problems that most dairy farmers face however since there is no concrete evidence that the Nepalese dairy farmers face a significant loss from interdigital and digital dermatitis it cannot be confidently said that exporting Thymox hoof care bath would be profitable to the Canadian market.

It would be better if Nepal imported Thymox hoof care bath from the distributor Uniterumen in China because of transportation costs, however these costs are still extremely high for a farmer living below the poverty line. The best solution to this issue would be to break up the 20 L units into one litre units, this would leave the cost at about 14 CAD per litre, still expensive but more manageable when reviewing the small herd sizes of Nepal and that the ratio of product to water is 1 part solution to 1000 parts water.

Conclusion

The Thymox hoof care bath is not an economically suitable product to export to Nepal from Canada. Although Thymox hoof care bath does increase productivity in dairy farms, helps to treat interdigital and digital dermatitis, causes no harm to the environment, and improves animal welfare it is not economically sustainable for the people of Nepal to purchase. The export could increase the veterinary sector and could improve the productivity of dairy farms but there is no concrete evidence found that the dairy industry of Nepal faces issues with interdigital and digital dermatitis.

Word Count: 3243 words