

“Promoting Canadian Agri-Food Exports in Nepal”

Laura Scott

Introduction

Situated in the peaks of the Himalayas between China and India, Nepal is home to approximately 27.8 million citizens (as of 2013) (WorldBank). Its current National GDP sits at \$20.88 Billion (USD) with an inflation rate of 7.9% in 2015 (World Bank). Nepal's landmass totals 147 181 square kilometers and is made up of three different elevations, allowing agriculture across the country to vary drastically. The three regions include the Terai Region (the lower elevation of land), the Hill Region, whose name describes the land type and the Mountain Regions (The Himalayas) (FAO Stat). Each region supports a different sector of agriculture. Much of the grain crop production in Nepal occurs in the lower region, known as the Terai, where, the ground is level, the soil is rich and the land is best suited to be cropped. The Hill region could be best described as the transition area – some areas have land that is still rich enough to be suitable for cropping. Other areas are best suited to hay or pasture land and grazing livestock. This leads into the mountain ranges, where the only agriculture production that is suited to this land type is livestock. As you move further into the mountains, the less suited to crops and people the land becomes.

Because so much of Nepal consists of Mountains and hillsides that aren't suitable to cropping, much of their agricultural production is focused in livestock. The top three items produced in Nepal are eggs (hens), milk from buffalo and milk from cows (FAO Stat). Because bovine animals are so crucial to agriculture production in Nepal, fly and pest control could allow Nepalese producers to become exponentially more efficient in both meat and milk production, allowing them to see greater profits.

When cattle are not treated for flies and parasites, it creates surface issues that turn in to larger health problems. External parasites such as flies and lice cause problems such as hair loss and scabbing, which further leads to blood loss and anemia. Symptoms of lice and flies can also include skin irritation, decreased weight gain (daily weight gains are lessening), and hide damage (which takes away from the

post-slaughter value of the bi-product) (Wool Growers). It can also create expenses for the producer as they will have to repair gates, walls and other structure as the animals will scratch and rub against almost anything to get rid of the itch.

Product

In Canada, fly, pest and parasite control is common practice. Both beef and dairy producers go to great lengths to eliminate flies that can be irritating and potentially dangerous to cattle. One product that is commonly used in Canada is called Vetolice. Vetolice is a pour-on insecticide that aids in the controlling and prevention of horn flies and lice in both beef and dairy animals (Drugs.com). It is applied through a simple process. There is a special instrument that attaches to the top of the bottle and allows the producer to measure out an appropriate amount of the chemical based on the animal's body mass. In terms of this product, 15mL of solution for every 100lbs of body weight is applied (Drugs.com). This solution is poured along the topline of the animal from the top of their poll to the tip of their tail head, zigzagging slightly as it is poured. The solution then soaks into the skin and is effective in preventing lice and flies anywhere from 14-28 days. After this time, the solution would need to be reapplied (Drugs.com).



Figure 1. Applicator gun for pour-on insecticide

Vetolice can be used on both beef and dairy cattle, as well as veal calves (Drugs.com). In the case of dairy cattle, the product can be used at any point in the bovine animal's life, whether it is lactating (raising a calf) or not (Drugs.com). There is a one day withdrawal period on the product (Drugs.com). This means that the producer must leave a simple 24-hour window between the application of the solution and the time of slaughter for the animal, especially if the animal is being slaughtered for human consumption.

Vetolice has very little to no restrictions on storage, so it does not need to be in a temperature-controlled storage space (the refrigerator) or out of direct sunlight (Drugs.com). The only storage requirement is that the container is closed and sealed properly after every use, as well as kept away from children and pets. To dispose of the container, producers must triple rinse the container of the residual product and then it can be disposed of in a manner similar to that of recycling a water bottle.

The product can be purchased in 4L or 10L jugs, for a cost of approximately \$46.99 CAN in retail stores. (TSC Stores LP, 2016) Using the Nepal Rupee value as of November 21, 2016, this would cost 3818.14 Nepalese Rupees. While this may seem expensive, a 4-litre jug would treat almost 26, 700 pounds of bovine animal. If the average animal weighs 1500 pounds, this would treat 17 animals of this size once, as well as one animal that is approximately 1100 pounds, if there is no spillage. The cost per treatment then becomes 215.71 Nepalese Rupees – much more affordable to producers in Nepal when the number of animals treated is accounted for. See Figure 2 for a table comparing costs of different products for a 1500 pound cow.

Figure 2. Table Demonstrating Cost Analysis of the Different Products Using a 1500lbs cow and a 4L amount of product (except for the Injectable Ivomec)

	Container Size	Price	Price (Rupee)	Store Referenced	Dosage for a 1500lbs animal	# of Animals Treated	Product lasts for...
Ear Tags	20 tags/box	\$60.00 CAD	4,881.42	Canadian Wool Growers	1-2 tags	10-20/box	16 weeks
Ivomec Injection	50mL	\$44.99 (USD)	3,653.14	Tractor Supply Co.	13.6mL	14	21 days
	200mL	\$129.99 (USD)	14,167.14				
Ivomec Pour on Solution	250mL	\$44.99 (USD)	3,653.14	TSC USA	67.5mL	59	56 days
	1L	\$109.99 (USD)	8,931.07				
	2.5L	\$199.99 (USD)	16,238.97				
	4L	\$399.96 (USD)	43,590.20				
Dusting Powder	1 kg	\$19.99 (CAD)	1,626.33	TSC Store Canada		6-8	14-28 days
Vetolice	4L	\$46.99 (CAD)	3,815.54				

Manufacturing

Vetolice is manufactured by a French Company known as Vetoquinol. Vetoquinol originated in France in the early 1930s, however, they are now international, including four locations in Canada – Belleville, Ontario, Princeville, Saint Hyacinthe, and Lavaltrie, Quebec. Three of the four locations manufacture product for Canada while the fourth location is the head office in Canada. Vetoquinol is the ninth largest veterinary pharmaceutical company in the world. More than 85% of their sales come from Europe, the United States and Canada. They employ over 2000 employees worldwide.

Benefits to Canada (Direct & Indirect)

Even though the manufacturing company, Vetoquinol is an international company, there are still added benefits to Canada in selling this product to Nepalese farmers. The obvious reasoning is that by having manufacturers, distribution centers and head offices in Eastern Canada, Vetoquinol is contributing to both Canadian employment levels, as well as the Canadian Gross Domestic Product (GDP) levels and other economic factors. Having locations in Canada helps the Canadian producers that use this product. By being manufactured and distributed in Canada, it saves Canadian producers shipping costs, the poor dollar exchange to foreign countries, as well as paperwork in trying to get the product across the Canadian borders. For already being a domestic product, it helps to contribute to both the local and global economy.

Comparable Products

In researching the Vetolice product and its benefits to Nepal, it was discovered that there were other products on the market that were of comparable quality and purpose to that of Vetolice. Products such as Ivomec Pour-on Insecticide, Ivomec Injectable Solution, Dusting Powder and Eliminator brand ear tags are all proven to accomplish similar results in different manners.

To start off, the product manufactured by Ivomec is advantageous in the sense that it is the longest lasting insecticide on the market to prevent lice and flies, as well as worms and parasites. Ivomec comes in different sized jugs including 250mL, 1L, 2.5L or 5L. It has an application rate of 1mL per 10kg (approximately 22lbs) of body weight (CCWG). This is a much lesser application rate than the Vetolice, working out to be 4.5mL per 100lbs of body mass. (Recall that the Vetolice required 15mL per 100lbs of body mass (Drugs.com)). This product is applied to the animal through the same method as the

Vetolice – an applicator gun measures out the solution required, based on the set rate and then the solution is poured on the cow's spine from head to tail. There are disadvantages to the Ivomec product though. It can only be used on beef cattle, and it needs to be applied 28 days prior to calving and cannot be applied while the cow is lactating (CCWG). Ivomec also has a 42 day withdrawal period, meaning that the animal cannot be sold or slaughtered for 42 days after the product is applied (CCWG). Vetolice has a mere 1 day withdrawal period (Drugs.com). Pour-on Ivomec requires that it be reapplied after 56-60 days (every two months) (Drugs.com). In terms of cost effectiveness, the prices range from \$44.99USD for the 250mL jug to \$199.99USD for the 2.5L container (at retail cost) (Tractor Supply Co.).

In addition to the Pour-on Ivomec, there is also an injectable form of Ivomec. It comes in three different sized bottles; 50mL, 200mL, and 500mL. The advantage to this product is that it also fights against internal parasites, which can cause even more extensive damage than external parasites. Internal Parasites can cause appetite suppression, loss of ability to properly digest food and nutrients, a weakened immune system as well as tissue and organ damage (Drugs.com). Preventing any of these things automatically will improve herd health and production. However, the withdrawal period is also 42 days (Drugs.com) and in addition to the expense of the product, needles, syringes and a handling system are required to administer the drug. That is the advantage that the pour-on products have over both ear tags and the injectable solution – nothing more than a holding pen is required to apply these products, as the animal just has to be comfortable enough to allow you to come near. The injectable Ivomec has to be re-administered to the animal every 21 days (Drugs.com). Cattle are creatures of habit and will catch on very quickly to the producer bringing them in every three weeks to get a needle. Eventually, the cattle will become impossible to corral and administer the drug, proving it useless to the producer.

As well as Ivomec, there are the previously mentioned fly tags. Eliminator brand fly tags are impregnated with a serum that helps to repel flies for up to 16 weeks at a time. They do nothing for parasites and lice, but do prevent pink eye and skin sores in cattle (Vetoquinol). They require a handling

system to process cattle, pliers to apply the tag and the tags themselves. The tags are advantageous for shipping purposes as they are lighter so therefore will be cheaper to ship, however, they fight off fewer parasites.

Finally, a product was found that may be even more effective to Nepal producers than the Vetolice product. Dusting Powder is a product that resembles baby powder in terms of texture and appearance. It is applied along the top line and legs of a cow, being careful to avoid the rear underbelly near the udder (DVL.com). The producer can then rub it in using either a gloved hand or a plastic stiff bristled brush. The powder wards off ticks, lice and horn flies, and can be used on cattle, sheep, hogs, horses, northern fowl, chickens, turkeys, ducks, geese and domestic game birds (DVL.com). The product label recommends that it is applied every 14-28 days, however it cannot be applied more than twice per week (DVL.com). The only withdrawal period on the product is 7 days for poultry – there is no wait time on all of the other livestock it protects (Drugs.com). It comes in a one kilogram container, with a lid designed to shake the powder onto the animal. In Canada, one of these containers retails for \$19.99 (DVL). There is no set application rate, however, using an averaged sized cow, one container should complete 6-8 animals one time.

The other major benefit to using the Dusting Powder is that it is an entirely Canadian-based company. It is manufactured by a company known as Dominion Veterinary Laboratories Inc, based out of Winnipeg, Manitoba (DVL.com). Exports account for more than 60% of all sales, so the necessary permits and paperwork to export should already be in place. Adding to the advantages list, Dominion Veterinary Laboratories already have distribution centers established in Trinidad, Dubai, Saudi Arabia, Kuwait, Jordan and Korea (DVL.com). Geographically, both Dubai and Kuwait would have ease of access to Nepal with minimal extra shipping required. So, Dusting Powder may be proven to be a more effective method of controlling parasites in Nepal in terms of multi-purpose, ease of handling and cost effectiveness compared to Vetolice.

Target Consumers in Nepal

There is potential for this export product to target many different markets and types of producers in Nepal. First and foremost, sales would be directed towards small, individual farmers, primarily those with either beef or dairy cattle. Other livestock producers would not be a target market as the product can not be used on another species. Moving to a broader spectrum than the individual farmer, there is potential to export this product to villages in Nepal and allow producers to share a jug of product. Average herd size is small, so an entire 4L jug would not be an ideal quantity to import, especially considering there is a shelf life of anywhere from 1-2 years (Drugs.com). However, if a group of producers wished to get together and purchase the quantity of jugs that they needed for each year, they could share the 4L containers and reduce both spoilage and waste of the product. This will, in turn, reduce expenses over time.

This product most likely would not appeal to a larger company, whether they were a start-up or an established company. The market for this product would not be great as herd sizes are nowhere near comparable to that of operations in Canada. However, if a store such as a feed supplier or a vet wished to carry the product, there is potential to be met with success.

The third and final target market that Vetolice may appeal to would be either government funded research or Universities/Colleges in Nepal that are conducting research. These places tend to have a large budget toward different studies and research products, thus opening the door for more extensive research on the uses and success rates of Vetolice in Nepal. As of right now, there are very few, if any, formal studies on the use of fly and parasite control in cattle in Nepal.

Marketing Tools

Because Nepal is not as economically advanced in many sectors, the marketing tactics will look distinctly different from those that are used in Canada. Some ideas that can be implemented to increase awareness of this product and its success rates include word of mouth, as well as government grants as incentives to purchase Vetolice. Word of mouth between farmers is an excellent way to convince producers to give the product a try. If one producer uses Vetolice and sees positive results (as they should) then there is a high probability that they will tell other producers. The same tactic can be applied to different organizations. If a sales person were to approach a market or a slaughterhouse for a few days and spend their time explaining how the product can be used to producers, they may be more willing to give it a try.

Implementing a government program is also an excellent way to encourage farmers to purchase and use Vetolice. If the cost of the product is subsidized in some form or another, then it becomes more appealing to purchase, even if it is purchased on a trial basis. Another incentive would be distributing free samples to farmers and allow them to see the results of the product on their own animals before investing large amounts of money. There are both similarities and differences in marketing strategies used in Nepal compared to those in Canada but both can be proven effective.

Transportation

Transportation from either location in Quebec or Ontario would add significant cost to the price of importing Vetolice. Because the smallest quantity to order Vetolice in is 4L, and the product is in liquid form, the product is quite heavy as well as bulky. Each jug weight is approximately 4 kilograms, and there are four jugs in every case. To ship this product, a pallet would be needed, with the

dimensions of 48" x 60" x 48" with a total of 64 cases of product on it. This works out to be 256 4L jugs of Vetolice on a pallet, weighing just over 1025 kilograms. The product is most easily shipped out of Montreal, as there is a port there that leads straight out to the Atlantic Ocean. If the product was to come out of Toronto, it would be required to travel by truck or train to a location east of Kingston, Ontario to a port on the St. Lawrence. From Montreal, the product would sail on an freighter to Bombay, India, as that is the most accessible port near Nepal. Once the product is unloaded at the port in Bombay, it would proceed by truck from Bombay to Kathmandu, Nepal. Finally, the product would be individually distributed to villages around Nepal, using Kathmandu as the central distribution center. See the flow chart below to see how the product would move.

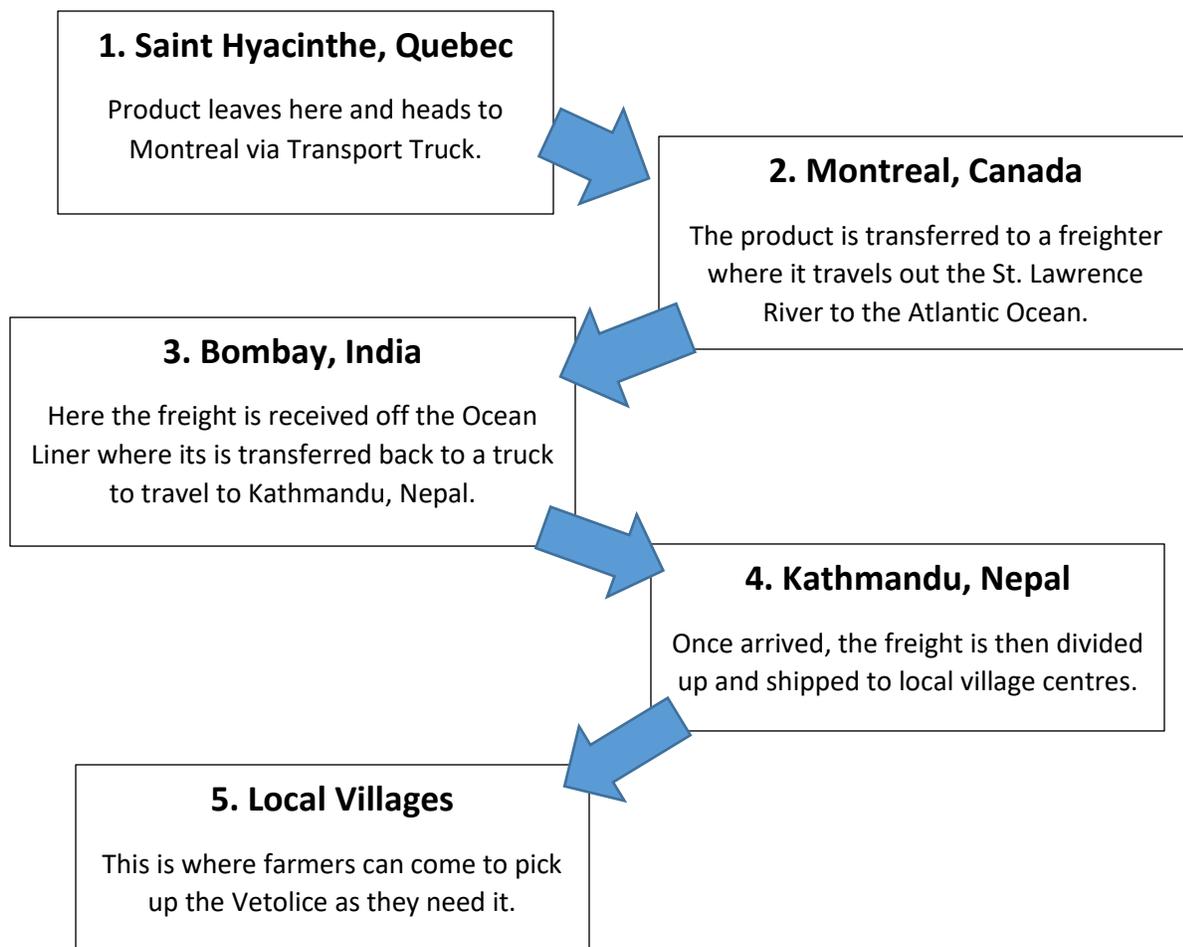


Figure 3. Flow Chart Demonstrating the movement of Vetolice While in Transportation.

However, there are manufacturers of Vetoquinol found internationally, so there is potential to find a closer distribution center at lower freight costs. Vetoquinol manufacturers can be found on the east coast of India as well as in Shanghai, China. (Vetoquinol.com) Both locations would eliminate the need for overseas shipping, which would substantially lower expenses. The Vetolice would only need to be transported using ground transportation from either location, although coming from China would require coming over the mountains, so it is more practical to import the Vetolice from the distribution center in East India.

While it has become apparent that there are much more cost effective methods of importing the Vetolice product to Nepal, Canada still plays a role in the export-import process as India does not have a manufacturing facility, only a distribution center.

Recommendations

My final recommendations come with a couple of different options. Realistically, if the producers in Nepal wish to use Vetolice as their product and continue to import it, I would eliminate Canada entirely in the production process and import Vetolice from the location in India. I would do this solely to eliminate the huge shipping costs. The shipping costs on the freighter greatly exceed any profits or gains that may be achieved by trying to cover the cost of shipping. Also by importing from India, it eliminates all the paperwork involved in importing the product from Canada to India and then from India to Nepal. This also reduces tariff expenses.

Along with the decision to import Vetolice, the Nepalese government and Vetoquinol need to work together to create a training program in which Nepalese farmers are taught how to properly apply the product, properly judge weights of cattle so they can estimate the appropriate dosage for each animal. In doing this, both the company and the farmers benefit. I would also recommend that the farmers are taught how to ensure they avoid skin contact and ingestion of the product, as well as how to

properly dispose of the container when it is empty. There will be less product waste, more effective use of the product, allowing for proper research to occur, as well as ensuring that both the people who handle the product and those who indirectly encounter it are protected from ingesting it or having a reaction to it.

The best option that I see for Nepal cattle farmers is the Dusting Powder manufactured by the Winnipeg-based Dominion Veterinary Laboratories. This product is sold in more manageable sized quantities in relation to the herd size in Nepal. It's also substantially lighter to ship, so freight costs are again much lower as compared to the Vetolice product. In terms of shipping costs, the dusting powder is lighter, and although it needs to be applied more frequently, it is not as harsh on human skin as the Vetolice can be. Finally, because Dominion Veterinary Laboratories have distribution centers in many locations close to Nepal, the freight costs are again reduced due to the product already being more local.

Conclusion

While Nepal needs fly, pest and parasite control, there are a couple of different products on the market that would be ideal for any one of the producers to use. Vetolice is proven effective in reducing flies and parasites in both beef and dairy cattle, however there are more versatile products on the market. If Nepal decides to import Vetolice from Canada, the freight costs are going to lower any benefits that may present themselves in the use of the product. Importing Vetolice from India cuts Canada out of the processing equation entirely, cutting any potential benefits to Canada with it. Dusting Powder is appearing to be the most ideal product for Nepalese farmers, as well as to Canada, as it is a Canadian-based manufacturer.

By using Vetolice, Nepalese farmers will see improvements in production, including weight gains, strengthened immune systems and overall health. Nepalese producers should be able to increase

profits, and herd health, eventually leading to improvements in quality of life and health of the general population. Increasing these factors will contribute to overall exports, GDP and the countries economic status.

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