



CDN EXPORT TO NEPAL

Bimectin Pour-On

Abstract

An analysis into the export potential of an anti-parasite solution in the aid and prevention of parasitic related deaths found in Nepalese livestock

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Introduction

International trade is the backbone of the commercial world as producers in various nations try to expand their profit margin by expanding their exporting capabilities internationally. The success of international trade is largely due to the various benefits it offers to both the exporting and importing nations. International trade represents a large amount of the country's gross domestic product (GDP) and is one of the most important sources of revenue for a developing country (Economy Watch, 2010). The power of global trade is evident as it has the ability to greatly contribute to the reduction of poverty rates (Economy Watch, 2010). The purpose of this report is to analyze the export potential and success of an agricultural product in the Nepalese agriculture sector. The goal is to form an analysis of the export potential that could possibly lead to the establishment of a real-world business model that will both benefit the Canadian and Nepalese economies. The product being analyzed is Bimectin Pour-On®, which is manufactured and distributed by a European based company called, Bimeda. The positive and negative aspects of this product will be discussed to determine the export potential of the product.

Overview of Nepal

Nepal is located in the Ganges basin and is bordered by India and China (FAO, 2015). Over 31 million people inhabit Nepal which accounts for 147, 181 square kilometres (Central Intelligence Agency (CIA), 2015). The cultivable area is estimated at 4 million hectares, of which 2.6 million hectares are cultivated annually (FAO, 2015; CIA, 2015).

Nepal is primarily an agrarian society as the vast majority of the Nepalese population, live in rural areas where they depend heavily on agriculture for their livelihoods (Prennushi, 1999). Approximately 83 percent of Nepal's population works in the agriculture sector, accounting for 38 percent of the total GDP (Prennushi, 1999; USAID, 2014).

Large ruminants, including cattle and buffalo, play an essential role in the Nepalese agriculture system and have a huge influence on their rural economy (Abington, 1992). Statistics often underestimate the overall contribution of animals and the multipurpose role they play. Livestock provide major contribution to agriculture through draft power and manure (Sugiyama, 2003; Devendra & Thomas, 2002).

Parasites found in livestock are endemic to Nepal and are directly correlate with livestock malnutrition (Abington, 1992). If parasites are uncontrolled they have the potential to significantly hinder the production and efficiency of livestock species. Most cattle have parasites that are subclinical with no obvious signs of parasitism except for a significant loss in production (Hawkins, 1993). Effective parasite control will increase the overall efficiency of livestock by increasing weight gain and milk production as well as, reproductive performance (Hawkins, 1993). In order to improve the economic status in Nepal, it is essential to create a sustainable system for one of the top GDP producing system. By creating a system for farmers to access the pesticide supplies they need to be successful, it will increase the overall performance of the agriculture sector.

Section I: Production Information

Product Description

Bimeda is among the leading global manufacturers and distributors of animal health products and veterinary pharmaceuticals (Bimeda, 2015c). Presently Bimeda has established markets in more than seventy countries worldwide and has manufacturing and distribution capabilities across North and South America, Europe, Africa and Asia (Bimeda, 2015c).

The company Bimeda offers a line of de-worming products called Bimectin® that comes in several different application types including: topical pour-ons, pastes and injections (Bimeda, 2015c). Bimectin® Pour-On is an effective choice in the treatment and control of a wide variety of external and internal parasites commonly found in livestock (Bimeda, 2015a).

Bimectin's success is due to the drug present in the topical solution, Ivermectin. Bimectin Pour-On® contains 5 mg of Ivermectin per milliliter which effectively eliminates a wide range of external and internal parasites commonly found in cattle (Bimeda, 2015b). Ivermectin is a member of the macrocyclic lactone class of endectocides which have a unique mode of action (Bimeda, 2015b). Ivermectin poses as an antagonist for neurotransmitter function as inhibition occurred via glutamate-gated chloride ion channels in nerve and muscle tissue (Ōmura & Crump, 2004). This leads to an increase in the permeability of the parasite's cell membrane for chloride ions, resulting in paralysis and death of the parasite (Bimeda, 2015b).

Bimectin Pour-On® is topical treatment that quickly absorbs into the skin in one low volume application and dramatically reduces the stress on treated animals as no injection is required (Bimeda, 2015b). Bimectin Pour-On® is indicated for the effective treatment and control of Gastrointestinal Roundworms, Lungworms, Cattle Grubs, Mites, Lice and Horn Flies (Bimeda, 2015b).

Figure 1: Bimectin Pour-On® is indicated for the treatment and control of the following species of parasites (Bimeda, 2015b).

Parasite	Stage
Gastrointestinal Roundworms	
<i>Ostertagia ostertagi</i> (including inhibited stage)	(Adults and L4)
<i>Haemonchus placei</i>	(Adults and L4)
<i>Trichostrongylus axei</i>	(Adults and L4)
<i>T. colubriformis</i>	(Adults and L4)
<i>Cooperia oncophora</i>	(Adults and L4)
<i>Cooperia punctata</i>	(Adults and L4)
<i>Cooperia surnabada</i>	(Adults and L4)
<i>Strongyloides papillosus</i>	(Adults)
<i>Oesophagostomum radiatum</i>	(Adults and L4)
<i>Trichuris spp.</i>	(Adults)
Lungworm	
<i>Dictyocaulus viviparus</i>	(Adults and L4)
Cattle Grubs	(Parasitic stages)
<i>Hypoderma bovis</i>	
<i>H. lineatum</i>	
Mites	
<i>Sarcoptes scabiei var. bovis</i>	
Lice	
<i>Linognathus vituli</i>	
<i>Haematopinus eurysternus</i>	
<i>Damalinia bovis</i>	
<i>Solenopotes capillatus</i>	
Horn Flies	
<i>Haematobia irritans</i>	

Application of Bimectin-Pour Bimectin® requires the application of the solution in a narrow strip ranging from the tail head to the wither (Bimeda, 2015b). The amount for application is selected based on the weight of livestock. The required ratio for this application is 1mL per 22lbs (Bimeda, 2015b). Bimectin Pour-On® is applicable in 5 different sizes including: 1L, 2.5L, 5L, 10L and 20L (Bimeda, 2015b). Based on the average herd size in Nepal being 3 cattle per farmer (Maltsoğlu I, & Tangiguchi K, 2004), Bimectin Pour-On in the 1L size would

be more than sufficient for Nepalese farmers. Although there are larger farming operations in Nepal, the vast majority of the agriculture sector is made up of small, less commercial farms. By accommodating to the majority of the population instead of the minority it will contribute to the success of Bimectin Pour-On®.

Required Equipment

The proper application of Bimectin Pour-On® requires the usage of a solution applicator gun. This is the only additional equipment required to successfully apply the product. The benefits of this additional piece of equipment is evident as it is easily manageable and can be reused for many years.

Canadian Manufacturing Facilities

Bimeda houses four manufacturing facilities in Europe, and three facilities in North America (Bimeda, 2015c). There is currently one Canadian Bimeda facility in which is located in Cambridge Ontario (Bimeda, 2015c). The 58, 000 square foot manufacturing plant currently employs approximately 107 employees (Joseph, 2010) and is responsible for the distribution of market products, on-site research and distribution (Bimeda, 2015c.).

Potential Benefits to Canada

The Canadian benefits to exporting this product are endless. Not only will this trade export opportunity be a part of strengthening the agriculture sector in North America, but it will also enhance local economies by creating more local jobs.

Exporting Bimectin Pour-On® would create new trade relationships with Nepal, which could prove to be an extremely beneficial aspect to the Canadian trade economy. The UK Trade

and Investment Department reported that 41% of companies who exported overseas had increased the revenue available for investing in their product (UK Trade, 2013). There is evidence suggesting that venturing overseas can help to innovate, increase efficiencies and improve the credibility of their brand (UK Trade, 2013). By expanding Canada's exporting horizon to Nepal, Canada would become a bigger player on the international trading field which could open Canada up to a variety of new trading opportunities in the future.

Marketing Opportunity

The market for Bimectin Pour-On® in Nepal would be considered a niche market as it would only be of interest to the agricultural industry. Although, this could prove to be a benefit for Bimeda as over 70% of the Nepalese population works in the agricultural sector (USAID, 2014). This product has tremendous potential in benefitting the Nepalese agricultural industry. However, there are several factors such as: transportation, exporting challenges and global competition that could hinder the success of this product.

Section II: Export Potential to Nepal

Export Potential to Nepal

Exporting to a country as diverse as Nepal, realism is critical. There are many factors that could potentially affect the success and practicality of the exporting Bimectin Pour-On®. These factors include: financial, demographic and logistical issues that would require attention in order to increase the profit for the company but still keep the product price attainable for the Nepalese farmers.

Transportation Logistics

In Nepal, the transportation sector is arguably the biggest issue when it comes to exporting to Nepal. On average, travel time to reach a vehicle passable road varies between 10.5 and 22.8 hours (Maltsoglou & Tangiguchi, 2004). This issue raises concern as the means of transportation of the product to the consumer or vice versa will not always be applicable. A possible solution to this barrier would be to focus on specific regions of Nepal where the densest livestock population inhabit and where transportation is more prevalent. This technique would potentially prove to be a smart business venture and essentially a trial run to determine the most effect way to distribute the product. With more than 60% of the all-weather roads in Nepal concentrated in the lowland (Terai) areas of the country, the Terai region would be an excellent starting point for this export (The World Bank, 2013).

Table 1 represents the calculations for determining the amount of products required to represent Terai cattle population (A. Peever, 2015)

Cost	Element	Citation
330.69lbs*	Average Weight of Pahadi Cattle	(Nepal's Ministry, 2004)
1mL / 22lbs	Bimectin Requirements	(Bimectin-Pour-On, n.d.)
330.69lbs ÷ 22lbs = 15.03 x 1mL = 15.03mL	Required amount of application per livestock head calculation	
15.03 mL	Amount of Bimectin required per livestock head	
4 979 420**	Total Number of Livestock (Cattle and Buffalo)	(Statistical Information, 2013)
22	Number of Farms that can use 1L Container of Solution	Calculated in Table 2
15.05mL x 4 979 420 = 74 940 271 mL ÷ 1000 = 74 940 L / 22 = 3406	Required amount of Bimectin Pour-On® 1L containers	
TOTAL NUMBER OF PRODUCTS REQUIRED:		3406

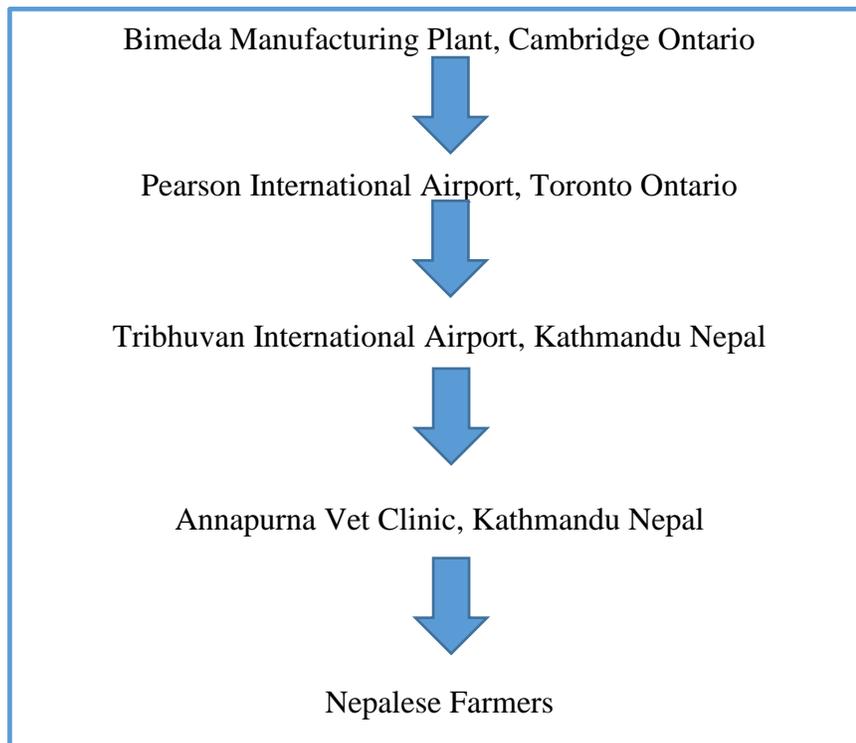
*This number was based on the average weight (~330.69 lbs) of the most abundant breed of cattle in Nepal, Pahadi Cattle, (Nepal's Ministry, 2004).

** This number represent the total estimate amounts of livestock (cattle and buffalo (non milking)) found in Terai region in 2013

Referring to Table 1: to supply the whole Terai region with Bimectin Pour-On®, it will required approximately 3406 containers of 1L solution. Shipping overseas requires one of two forms of transportation, air or freight. Although, beef and beef related products are prohibited to enter Nepal as a cargo shipment (Cargo Experts, 2013). The product will be shipped from Toronto, Ontario to Katmandu, Nepal at an approximate price of \$17 262.43 CAD (AlFreight, 2014).

In order for proper distribution of the product, it is required for the product to be sold from a veterinary clinic. A potential example of this transaction could take place at Annapurna Vet Clinic is located in Kathmandu Nepal. From there, Bimectin Pour-On® could then be sold to the Nepalese farmers.

Figure 2 Demonstrates the transportation logistics required in the shipment and distribution of Bimectin Pour-On® (A. Peever, 2015)



Required Documentation

There are requirements for legal entry into Nepal that requires the attention of the importer Bimeda. Upon arrival at the Nepalese border, Bimeda is required to submit customs bills and invoices showing the company's prices as well as any other documentation requested by the custom officers (SME Toolkit Nepal, 2015). Other possible documentation requirement could include: bill of lading, packing list, certificate of origin, certificate of insurance, BNN 4 form issued by a bank and/or an income tax registration certificate (SME Toolkit Nepal, 2015).

Cost Analysis

The total cost for Bimectin Pour-On® including the solutions applicator gun is: \$94.85 CDN which corresponds with \$4755.70 Rupees. However, since the total total number of cattle in Nepal is 3 (Maltsoglou I, & Tangiguchi K, n.d.), it is assumed that with the required dosage, a 1L container can be shared amongst approximately 22 farms. This would aid in cost of the product as the cost could then be divided amongst farms making the new cost \$4.50 CDN per farm or \$225.63 Rupees.

Table 2 represents the breakdown of costs for Bimectin-Pour® (A. Peever, 2015)

Cost	Element	Citation
\$29.95	Cost of Bimectin-Pour® 1L Solution	(Bimectin® Cattle, n.d.)
\$53.99	Cost of Solutions Applicator Gun	(T. Ryder, Cobden Animal Center, November 25 th , 2015)
\$53.99 + \$29.95 = \$83.94 X 0.13 = \$94.85	Total Cost Calculation (Including GST tax) for 1 1L Container	
3	Average Number of Cattle per farm	(Maltsoglou I, & Tangiguchi K, n.d.)
15.03mL	Amount of solution needed per animal	(Calculated in Table 1)
1000mL ÷ 15.03mL = 65 (amount of animals that can be vaccinated per bottle) 65 ÷ 3 = 21 (number of farms) \$94.85 ÷ 21 =\$4.50	Cost per Farm (assuming 3 cattle per farm and no spillage/over application occurs)	
TOTAL COST PER FARM	CAN \$4.50	RUPEES \$225.63

*This price does not include any additional fees that might be added by Bimeda to cover the cost of transportation or other taxes.

Trade Barriers

For Canada, trading with countries, such as Nepal, who are not part of the Free Trade Agreement (FTA), are normally problematic as Canadian companies often run into trade barriers such as tariffs. Although not a part of the FTA, Nepal has already established bilateral trade relations with Canada, meaning that there are currently no or very little tariffs for impacting Canadian exports to Nepal (Government of Canada, 2013). This is beneficial not only to Bimeda but the Nepalese farmers as the price of Bimectin Pour-On® would not be further taxed to compensate the company for the tariff expense

Yearly, Canadian companies export approximately 7.1 million dollars' worth of products to Nepal, however, there are currently no beef related products being traded (Government of Canada, 2013). This opens the door for Bimeda and Canada as they could establish a market for Canadian beef related products in Nepal.

Benefits to Nepal

Trade is essential in developing countries, as it is a principal mechanism in achieving the benefits of globalization (Pant, 2014). By implementing Bimectin Pour-On® into the Nepalese livestock production, it will create a more economic return to the producer, and strengthen the Nepalese economy by allowing the livestock based production to increase. Controlling parasites in livestock leads to increased productivity, faster weight gains, improved feed conversion, increased milk production, and improved reproductive performance (Hawkins, 1993). By increasing the overall health of the livestock it will increase the profitability of the animal and ultimately make investments more attainable for farmers as profits will be more abundant. By improving the foundation of agriculture (the livestock) it will help to strengthen the sector and

create a more sustainable form of living for the Nepalese people. By investing in the present it will ensure future long term gains.

Negative Aspects to Bimectin Pour-On®

There are several negative aspects to Ivermectin that have the ability to hinder the agricultural sector's production. These aspects are mutually exclusive to the product design. The three major issues that could potentially pose as a hindrance to the product's profitability are the negative environment effects of Bimectin Pour-on®, the required withdrawal period and the inappropriate sizing of the containers.

Effect on the Environment

Bimectin Pour-On® can impact the environment in three ways; through direct environmental application, animal excretion, and/or improper disposal. Multiple studies have indicated that in the event of Ivermectin coming into contact with soil, will cause tight bond with the soil causing soil infertility over time (Bimeda, 2015b). Ivermectin has the ability to adversely affect certain aquatic organism if Bimectin Pour-On® enters their habitat (Halling-Sørensen et al, 1997). This can occur if the product is improperly used by the farmer and as a result, it can enter the waterways via agricultural runoff. To prevent these negative effects, livestock are not permitted to enter lakes, streams, or ponds for at least 6 hours after treatment (Bimeda, 2015b).

Following the application of Bimectin Pour-On®, the solution is mostly eliminated from the body through feces (Strong, 1993). A unique trait to cattle is that their feces provide a microhabitat and breeding ground for a variety of invertebrate species (Strong, 1993). Once Bimectin is excreted from the treated animal, the remains of the anti-parasitic solution can inhibit the reproduction and growth of insects that rely on animal feces for food (Bimeda, 2015b).

Most of the environmental impact of Bimectin Pour-On® can be eliminated through the use of proper disposal upon completion of application. It is important that containers are disposed of in an approved landfill sites or by incineration (Bimeda, 2015b). This will ensure that only minimal amounts of Ivermectin will come into contact with the environment.

Milk Withdrawal Periods

Milk withdrawal period is determined by the length of time it takes for the drug to go through the blood stream and through the mammary system before the milk is determined to be drug free. Withdrawal periods vary among products, for Bimectin Pour-On®, the product is not compatible with dairy cattle of breeding age (Bimeda, 2015b). Milk production is a source of income for many Nepalese people as well as an important source of calcium for their diet. If this product was to be used on the milking livestock, the milk production could be hindered as the milk could potentially contain less nutritional quality. This product quality could also effect the profit margin for Bimeda as the market for this product would become more specific.

Global Competition

The market for livestock antiparasitics is competitive. Globally, there are several companies that manufacture similar products, the most popular being Ivomec® Pour-On which is produced by Merial. Currently manufacturing facilities for Merial are concentrated in Europe and the Americas (Merial, 2013). Every year on average, Merial manufactures 300 million doses of Ivomec® used in the treatment of ruminants (Merial, 2013). Both Ivomec® Pour-On and Bimectin Pour-On® products have been designed to treat the same ailments commonly found in livestock worldwide. However, there are two key factors that place Bimectin® at an advantage over Ivomec®. Ivomec® Pour-On is available in 250 mL, 1L, 2.5L, 5L or 20L containers

(Merial, 2015). Although Ivomec is available in a smaller size that may be more convenient to Nepalese farmers, it is significantly more expensive. For a 1L container of Ivomec® Pour-On the price is approximately \$109.99 (Tractor Supply Co., 2015). Referring to calculations from Table 2, the total average cost for Nepalese farmers using Ivomec® would be \$7.81. Prices for the both products are relatively inaccurate as there are several determined price variables that were left out of the calculations (transportation and other forms of tax). Since the manifesting of Ivomec® Pour-On is more local (Europe) in term of distance to Nepal, the price would in theory be less effected then it would be by the transportation costs associated with Bimectin Pour-On®.

Challenges of Exporting to Nepal

There are several social and geographical factors that could potentially pose an issue in the success of Bimectin Pour-On® and decrease the profit margin for Bimeda. These issues include poverty, no previous antiparasitic exports to Nepal, limited access to veterinary agents, and finally the lack of product knowledge. These factors must be taken into consideration in order to asses the overall exporting potential of the product.

Poverty in Nepal

Nepal is one of the least urbanized countries in the world as only 9 percent of the total population reside in urban areas (Chhetry, 2001). Nepal has an annual per capita income of around \$200.00 US, making Nepal one of the poorest countries in the world (Chhetry, 2001). The vast majority of the population who resides under the poverty line is found to inhabit the rural areas of Nepal (Janis, 1980). This poses as a profit issue for Bimeda as the majority market for Bimectin Pour-On® is found in the most poverty stricken areas of Nepal.

Limited Access to Veterinary Agents

In order to distribute veterinary pharmaceuticals to the farmer, the product must first be distributed to a veterinary agency where it can then be sold to the farmer. This is problematic as only 12 percent of the Nepalese households owning livestock have ever seen a veterinarian (Prennushi, 1999). Accessing veterinary services is not an easy endeavor for Nepalese farmers and with the average herd size being so small. It is hardly applicable to travel such a distance for a single product.

No Previous Antiparasitic Exports to Nepal

Looking at it from an business standpoint, this factor could potentially pose both as a positive and negative aspect of the success of Bimectin Pour-On®. The positive side is that there is no local competition between similar products which is of benefit to Bimeda, however, this could also pose as a challenge, as there is no selling statistics to base a market for this product. If Bimeda was to go ahead with this export idea, it would be difficult to estimate product profit as there is no prior data to reference as an accurate profit margin. From an investment standpoint this would be a risky venture for Bimeda as the success of this product would remain only a speculation.

Lack of knowledge

In Nepal, illiteracy rates range from 54 percent in the hill/mountain region to 77 percent in the Terai region (Chhetry, 2001). This poses as another challenge for Bimeda as proper application of this product is key in order to protect the farmer, the livestock and the environment. A possible solution to this problem could include pictures on how-to manually apply Bimectin Pour-On® correctly and safely. As a newly established company in Nepal, it is

essential that Bimeda accommodates to the needs of the consumer in order to create a product applicable for all Nepalese people.

Conclusion

To meet meet the increasing demand for food production, alleviate poverty and improve the livelihoods of agriculture dependent farmers, an increase in the productivity from livestock will be necessary (Devendra & Thomas, 2002). Agriculture plays an essential role as a source of employment and income for the vast majority of Nepali households. Although, there is evident potential to increase the productivity of livestock from the use of Bimectin-Pour®, the risks of this investment simply outweigh the financial gain. Several elements were not included in the pricing of the product which have the potential to skyrocket the overall cost. Additional costs such as: transportation fees, marketing initiatives, regulatory and licensing fees, all have the potential to double or even triple the price of Bimectin-Pour®. This is both unreasonable and unrealistic for Bimeda and the Nepalese farmers.

There are also several aspects to the product design that make Bimectin-Pour® an inappropriate ant parasitic choice. The milk withdrawal requirements, the negative effects on the environment and the required distribution methods make this product unrealistic for real world sales. Also, container sizes of this product are also problematic as the small herd sizes in Nepal would discourage bulk pour-on sales.

In summary, without an improvement in product design that better suits the Nepalese people, the export potential for Bimectin Pour-On® does not make enough sense financially to make the project realistic

Real-World Contact Info

Questions regarding Bimectin Pour-On® Sales can be directed to:

Carol Boyd

Sales Manager

Bimeda Canada

Email: cboyd@bimedamtc.com

Phone No: 1-(519)-654-8000

Questions regarding the Benefits of the Product can be directed to:

Dr. Andy Pender

Veterinarian

Pinnacle Animal Hospital

Renfrew, Ontario

Email: info@pinnacleanimalhospital.ca

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Question regarding the Pricing from a Canadian Veterinary Clinic

Dr. Tony Ryter

Veterinarian

Cobden Animal Center

Cobden, Ontario

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