

# **Canadian Export Potential of Monsanto's Titan Emesto Seed Treatment for Potatoes to Nepal**

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Potatoes are a rising agricultural commodity in underdeveloped countries such as Nepal. Potatoes are a reliable source of high fiber, it is low in calories, and offers significant protection against cardiovascular disease and cancer. This delicious and nutritious vegetable can be prepared in numerous ways making it a great field crop option for the Nepalese farmers. The next step in increasing potato yield in Nepal is to protect the planted potato seeds from potential competitor plants, damaging insects and the natural climate/ elements of Nepal. There are many factors that should be taken into account for, some include but are not limited to, what the actual product consists of and is designed to do thus deciding whether or not the product would even be considered innovative or useful to the farmers in Nepal. Information on the importing country, the population including the population trend, major religions that may affect some of the processing steps and how they might be influenced by religious perspective. The manufacturing process and required raw materials, health and nutritional effects of Titan Emesto Seed Treatment on the potato seeds, marketing opportunities in Nepal, environmental sustainability, benefits to Canada, destination and transportation, potential profitability, helpful organizations, and public perspective. All these factors should be considered in order to determine whether or not this specific product would be a realistic business opportunity for Monsanto or not, while taking into consideration whether or not the benefits too Nepal, the importing country, would outweigh the profitability.

## **Product Description**

Titan Emesto is a liquid, group four insecticide and a group seven, three fungicides that can be given in low volume/ high volume and low concentration/ high concentration, originally produced by a Canadian agricultural supply company by the name of Bayer. However, the company recently merged with another Canadian supplier called Monsanto who now manufactures the potential export product. The product is currently only registered and used by Canadian farmers to protect their potato crops investments by controlling a variety of common pests such as Aphid, Colorado Potato Beetle, Fusarium Tuber Rot, Potato Flea Beetle, Potato

Leafhopper, Seed-Borne Rhizoctonia, Silver Scurf, and Wireworm with Titan Emesto (Bayer CropScience, 2016). The product is sold over the counter at various agricultural retail shows as well as sold directly from Monsanto, it can be applied by in-furrow application or through potato seed piece treatment. The product is sold in 1L, 3.8L, 10L, 200L and 1000L volumes. Titan Emesto contains 1,2-benzisothiazolin-3-one at 0.04% and 5-chloro-2-methyl-4-isothiazolin-3-one at 0.001% and 2-methyl-4-isothiazolin-3-one at 0.0004% as preservatives with the addition of a colorant (Bayer CropScience, 2016). The colorant of choice must be added to the solution before treatment in order to distinguish between the treated and untreated potatoes to avoid accidental consumption of the product.



Figure 1 (left): The traditional Bayer Titan Emesto Seed Treatment product label

<https://www.cropscience.bayer.ca/Products/Seed-Treatments/Titan-Emesto.aspx>

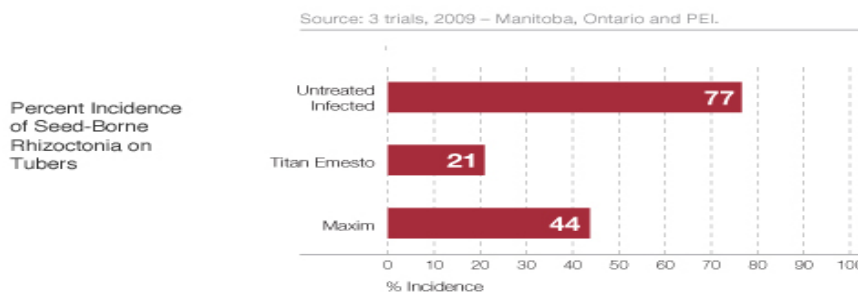
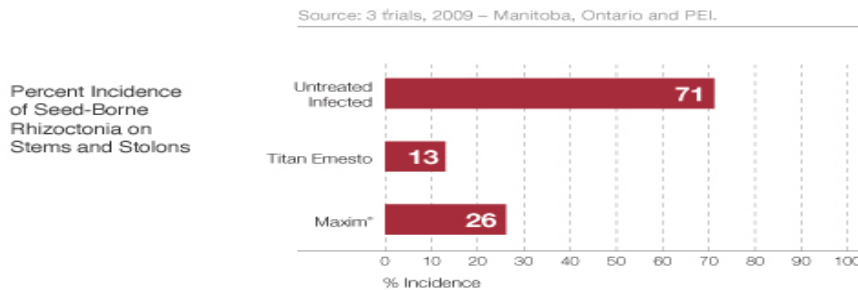


Figure 5: (left) a table that compares treated seeds with Titan Emesto versus a competitive product and untreated seeds.

<https://www.cropscience.bayer.ca/Products/Seed-Treatments/Titan-Emesto.aspx>

## Machinery Required and Associated Cost

There are costs associated with the production of every consumer product. Titan Emesto Seed Treatment is a profitable fabrication in Canada, however, in Nepal the production, export and sales of the product would be a large, long term investment for the company with little to no profitability. The product requires numerous production steps that must be accurately followed. At the manufacturing site in Calgary, Alberta located at 200- 160 Quarry Park Blvd. S. E. and can be reached on the phone at 1- (888)- 283- 6847 (Bayer Canada, 2016). The chemicals previously mentioned are combined following a lengthy and detailed procedure- that was not available to the public, to ensure work place, and the individuals safety. Once manufactured, a single 3.58-liter unit sells in Canada for around \$12.00 Canadian.

### **Health/ Nutritional Information**

Titan Emesto Seed Treatment is a poisonous product if excessively inhaled, in contact with or consumed by an individual. When applied to the selected potatoes, the product should be handled with extreme precaution. After the product is applied, the PPE (personal protective equipment) is cleaned separately from other laundry. The applicator should thoroughly wash their hands and any exposed skin to prevent irritation. The application instruction manual that is given to the consumer along with the purchase of the Titan Emesto Treatment should be followed as close as possible to avoid injury. If the product were to be ingested, skin was to come into contact with or the product was to get in contact with an individual's eyes, the most important line of action is to contact a poison control center, a doctor or emergency services shortly after the incident since the health effects of Titan Emesto Seed Treatment take affect approximately fifteen to twenty minutes after initial contact. (Bayer CropScience, 2016). In order for the product to be at its prime, and function as close to perfect as possible, the product should be stored at a cooler temperature. The products may be stacked (layered) but must be kept in a dry environment and out of the way of direct sunlight.

### **Marketing Opportunities**

Since the target market audience is only potato farmers, specifically in the Terai region, Titan Emesto Seed Treatment is for a niche product market. This makes it hard for the marketers to find

consumers and convince them of the products effectiveness, however, once the target audience is reached Titan Emesto Seed Treatment is a product that can be easily intergrade into the Nepalese replanting process. Since Titan Emesto is a niche product the competition in the market is quite minimal since the chances of profiting are extremely unlikely due to a number of factors such as currency, manufacturing expenses, minimal resources, transportation expenses, and labor costs.

### **Environmental Sustainability**

Titan Emesto Seed Treatment is extremely hard on the surrounding environment. As a result of the chemicals used in manufacturing, the product is extremely toxic to aquatic wildlife. The treated seeds are also poisonous to birds and other small mammals if consumed. The product is toxic to bees if exposed to the nectar of the flower, leaves, pollen or flower. Contamination of groundwater is a common side effect of the use of Titan Emesto in areas where the soil is permeable. With the majority of Nepal using wells (ground water) as the main source of water used for cooking, drinking, cleaning and bathing, the use of Titan Emesto in these areas proves to be a major health risk and environmentally unsustainable. (Bayer CropScience, 2016).

### **Benefits to Canada**

Benefits to Canada include strengthening international business relationships with India by exporting more Canadian goods, developing a new business relationship with an underdeveloped country such as Nepal, as well as provide Canadian owned and operated companies with work in the process. Canada is also already working on initiative projects in Nepal, this allows large corporations to get involved by using this long term investment opportunity to help finance possible agricultural solutions that would help a developing country advance all while exploring the effectiveness of the product outside of Canada. As previously mentioned, the Monsanto and any other investor company would not profit from this export product, and is seen as a financial support or product research opportunity.

### **Destination and Transportation**

A single product unit is 3.58 liters and weighs 4.00 kilograms including product and packaging. Fifty units weighing two hundred kilograms is packaged and ready for shipping by Bayer. The product is picked up by B and R-eckel's Transport, a Canadian owned and operated transport company from the Bayer CropScience Incorporated location in Calgary. The product is driven to

Vancouver International Airport where it is loaded onto an A1 Freight Forwarding plane for an estimated \$2400.00 Canadian dollars where it will arrive in Mumbai India. (A1 Freight Forwarding Inc, 2011). The product is moved from Mumbai to Kathmandu by I.P Roadlines, a transport company who already moves agricultural products and pharmaceuticals from India to Nepal. (IP Roadlines, N.D.). Once in Nepal the product is on the market for potato farmers in the Terai region which is the most appropriate location for the product.



Figure 2: (Above) Canadian transport company logo  
<http://www.breckels.com>



Figure 3: (Above) I.P Roadlines Transport vehicle  
<http://nationalfact.com/ViewProfile.aspx?RegistrationNo=10801071984>

### **Importing Country**

Nepal, an underdeveloped landlocked country with a total area of one hundred forty-seven thousand one hundred eighty-one square kilometers that is divided into three geographic sections. Starting with the Himalayan mountain range that consists of sixteen percent of the land, which consists of that largest mountains in the world can reach altitudes of over twenty-four thousand feet (seven thousand three hundred meters) or more above sea level. (Encyclopedia Britannica, 2016). At this altitude this section of land is not usable for planting crops and is therefore used mainly for livestock grazing. The second part referred to as the hills and accounts for sixty-five percent of Nepal's land space, it is the almost perpendicular hill side, used for mainly small amounts of crop farming and livestock grazing. (Encyclopedia Britannica, 2015.) The third section is the Terai Region, consists of the remaining seventeen percent of Nepal's land space. With relatively flat terrain, majority of agricultural field crops are located in this region. (Encyclopedia Britannica, 2015.) Nepal is located in the continent of Asia. The neighboring country to Bhutan, India, Bangladesh, Pakistan, and Myanmar. Nepal currently has a population of twenty-eight million eight hundred fifty thousand seven hundred seventeen and annually

increasing. Nepal is a multiethnic country with eighty percent of the country being Hindu. Nepal's currency is called the Nepalese Rupee. In terms of equivalency, one Canadian dollar is equated to approximately 49.84 rupee. The capital of Nepal is Kathmandu it is also where the consulate of Canada is located. The Nepal Embassy in Canada is located in Ottawa, Quebec. The country is currently led by Prime Minister Pushpa Kamal Dahal. Common Nepalese imports from Canada include paper, paperboard, vegetables and simple machineries designed to improve the quality of life for Nepalese farmers.



Figure 4: (left) a map of Nepal including surrounding countries and labeled cities.

<http://www.infoplease.com/atlas/country/nepal.html>

Acute malnutrition and low weight to height ratio are at emergency levels making food production and security a priority. Titan Emesto Seed Treatment is an easy to use product that is effective at increasing crop yield thus helping to establish food security.

## Profitability

When it comes to business agreements everyone wants to profit, however when importing from an economically strong country such as Canada, where the currency is far from equivalent there are certain factors that have to be taken into consideration, such as target consumer, costs involved in manufacturing the product in the exporting country, expenses involved in shipping/transporting the product, applicable taxes, regulations, marketing strategies and economical differences. As previously mentioned, the target consumer for Titan Emesto Seed Treatment are the Nepalese potato farmers in the Terai region. Since Titan Emesto is a niche product so there is very minimal competition which is good in terms of profitability since Titan Emesto is the only available product of its kind. In Canada a 3.8-liter container of liquid Titan

Emesto is sold for \$12.00 Canadian, and the company profits. The export of only fifty 3.8-liter units would cost Monsanto \$2400.00 Canadian just to get the product into Mumbai, India. Thus in order for Monsanto to at the very least, break even on this investment, each 3.8-liter unit would have to sold for \$48.00 Canadian which is approximately 2392.32 rupee. With the import taxes in India being 11.9% which is higher than average since Titan Emesto Seed Treatment by Monsanto contains chemicals that fall under the chemical miscellaneous import category adding on an extra \$285.60 Canadian to the export cost. Making the total investment cost for fifty. 3.80-liter units is \$2685.60 Canadian. As stated earlier, each independent unit would have to be sold for 2392.32 rupee. There is a division of social class from high income to the completely opposite being extremely poor. The average person in Nepal receives an annual paycheck of 54 750 rupees and thus would not be able to afford to pay such a large amount for a single treatment of Titan Emesto.

Ultimately, Monsanto would not be profiting from this product export, regardless of the fact that the competition is extremely low, but the overall currency is not nearly equivalent enough nor is the average annual salary enough for a company to make the price of the product affordable while simultaneously making a profit or even breaking even.

In contrast, Bayer has an industrial manufacturing center in India. The cost of shipping raw materials from outside sources would be less costly. More over the distance that the final Titan Emesto Seed Treatment would have to travel to reach the consumer is much less than if the finish product were to come from Canada. Also the product would reach the consumer a lot sooner with very minimal delay. Importing from a neighboring country would involve less restrictions and minimal government import/export laws.

### **Helpful Organizations**

With the potential financial support of NARC, (the Nepal Agricultural Research Centre) who is actively looking for ways to protect the young seedlings from insects, funguses and helps defend against the geographic elements of Nepal's varying regional climates. By using the Monsanto Titan Emesto Seed Treatment the seeds would stand a higher chance of surviving against harsher external elements and fighting against insects and funguses, thus increasing the annual potato

crop yield. By increasing annual crop yield there would be more product which means farmers would be able to sell their product for slightly cheaper, ultimately making the potatoes slightly more affordable for low income families in the country. By increasing the availability of certain food products then the potential of maintaining food security is also increased. Titan Emesto Seed Treatment is designed to protect potato seeds from a variety of pests and elements and is therefore an effective potential export to Nepal benefiting the next both the exporting country Canada and the importing country Nepal.

### **Public Opinion**

There is going to be a mix of opinions when it comes to the public's perspective on Titan Emesto Seed Treatment. Focusing on mainly two sides of the use of chemical treatment. The first side being the support of using Titan Emesto Seed treatment because of the various benefits it has to offer Nepal. These benefits include the most important goal which is ensuring food security for the Nepalese by increasing the potato crop yield, creating jobs in Canada through production, strengthening business relationships, and helping improve the lifestyle of the Nepalese farmers.

On the other hand, the use of chemicals to control and reduce the amount of loss in the potato yield as a result of pests, for reasons such as environmental impact. The thought of introducing technology such as Titan Emesto Seed Treatment into areas where technology is not as advanced or commonly used scares some individuals. With the right idea that technology should be introduced slowly into the country in order to have an effective impact. The technology should also be easily integrated into the processes already used by the Nepalese potato farmers to ensure their acceptance of the product regardless the price. The public would need to be educated on the use of Titan Emesto, the pros and cons of the product and the effects on nutrition/ health when the product is used correctly versus incorrectly. Education is an important aspect when introducing new technology in order to minimize public fear, and impose public acceptance.

In conclusion, the previously mentioned concepts including the products chemical ingredients and how the product is designed to work and thus aid in deciding whether or not the product would even be considered innovative or useful to the Nepalese potato farmers. Information on the importing country should strongly be considered such as the population, the population trend, major religions present in what regions, the geographic layout of the country, neighboring



countries and conflicts that might affect business, as well as religious perspective that may affect some of the processing steps. The manufacturing process and required raw materials is a major aspect that should be investigated when discussing profitability. Health and nutritional effects of Titan Emesto Seed Treatment on the potato seeds should also be discussed, also how the company is going to inform the farmers on proper use, storage and planting of the seeds. Marketing opportunities are limited in Nepal as a result of concentrated population in certain sections of the country. Environmental sustainability has become a major area of interest with studies showing the negative effects of chemical treatments such as herbicides and insecticides on major waterways, marine life and wildlife. Benefits to Canada which includes mainly the expansion of Canadian owned and operated companies through the process of developing stronger business relationships. Destination and transportation are the most costly portions of the product export, potential profitability which is the ultimate goal of the export, however it is understood that the exporting company will not be profiting right away from the product and that it would be a slow repayment process. The investor companies would find alternative options to justify their investment such as a research or further product development opportunity. Helpful organizations currently in Nepal who are working on developing or advancing agricultural techniques as well as improve the Nepalese quality of life would be able to help cover a percentage of the associated costs if the product proved to have a significant effect on the crops seasonal yield. Public perspective is the final area of discussion, most importantly focusing on education. Educating the Nepalese potato farmers on proper handling, storage and usage of the product is essential to how well the product will perform. In addition, proper safety precautions must be followed in order to keep individuals safe during use.

Through analysis of the above, listed information, the export of Monsanto's Titan Emesto Seed Treatment for potatoes from the Canadian manufacturing plant in Alberta to the Terai region in Nepal, shipped from Alberta to Kathmandu, India to Nepal Terai region at the approximated cost of \$2685.60 Canadian to be sold for 2392.32 rupee is not a worthy enough business venture as a result of one of the largest business factors, that being the lack of profitability.

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