

**Canadian Exports to Nepal**

**Apple Cider Vinegar Livestock Supplement**

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## **Introduction to Nepal**

Nepal is a landlocked country located in South-Central Asia bordered by China to the North and India to the south. Nepal is a developing country populated by approximately 29 million people (World Population Review, 2015) that has a very low income economy and continuously struggles with high levels of hunger and poverty. The country of Nepal is classified and divided into three different topographical regions. The lowest lying region is known as the Terai or the plains region and stretches along the southern border of Nepal. The land here is very fertile, and tropical climate makes it good for growing a variety of crops. The hill region runs throughout the middle of the country south of the mountains and is known as the political and cultural capital of Nepal (Ramani, 2008). The land situated in the hills region has some of the most fertile soil in the country for growing a wide variety of crops and raising livestock. It is also the heaviest populated region of the three as Kathmandu, Nepal's capital city, is located within. Higher still, in the mountains of the sparsely populated north, crops are limited to potatoes, barley and buckwheat, with yaks providing meat, milk and wool (Smith, 2009) and most other farming practices are not suitable for this area.

Over seventy percent of Nepal's population works in the agriculture sector, accounting for 38 percent of the GDP (Gupta, 2015). Nevertheless, Nepal struggles to produce an adequate supply of food for its citizens. Farmers have limited access to improved seeds, new technologies, and market opportunities and declining agricultural production has depressed rural economies, increased widespread hunger and urban migration (Gupta). Livestock is closely united with the livelihood of Nepal, and without the use of animals, most rural families would be unable to support themselves (IRIN News, 2013). Agricultural productivity in Nepal is also known to be one of the lowest in South-Asia, and though livestock and agricultural productions are a vital part

of the economy, it is in decline. Factors such as over-working the animals, poor care taking and feeding paired with sparse veterinary care (IRIN News, 2013) play a role in the overall productivity rates being low. Figure 1 represents household livestock ownership Nepal: Proportion of owners, herd sizes and types (Maltsoglou & Taniguchi, 2004).

Region	Livestock owners	Herd size (TLU)		Own LR	Own SR	Own Poultry	Own Pigs
	%*	Mean**	sd	%***	%***	%***	%***
Mountains	95.1	3.3	2.7	94.6	52.4	47.0	11.3
Rural hills	93.9	2.9	2.3	94.7	58.5	60.0	13.2
Rural terai	86.2	2.3	2.5	84.7	55.1	44.7	12.2
Other urban	37.1	0.6	1.1	69.8	44.0	44.7	2.5
Katmandu	13.7	0.1	0.6	54.3	23.9	50.0	2.2
Total	76.3	2.2	2.4	88.7	54.8	51.2	11.7

Figure 1: <http://www.fao.org/ag/againfo/programmes/en/pplpi/docarc/wp13.pdf>

## **Part 1: Product Information**

### **Product Description:**

For potential export to Nepal, aspects of apple cider vinegar as a supplement for livestock will be investigated throughout this research report. Widely known for its powerful healing, cleansing and natural antibiotic properties, apple cider vinegar has been used by a variety of livestock farmers for years (Stockhealth, 2012). Apple cider vinegar is rich in vitamins, minerals and trace elements, particularly potassium, which helps maximize the nutrition from feed, especially calcium, phosphorus and copper (Homestead Organics, 2015). Apple cider is particularly recommended if forage contains low levels of potassium (Homestead Organics). The acetic and malic acid in apple cider vinegar naturally raises the acidity in the stomach which balances the pH and creates an un-favorable environment for bacteria and pathogens and helps

overall digestion (Homestead Organics). Not only does apple cider vinegar act as an immune boosting supplement when ingested, it can be applied externally as well, acting as a natural disinfectant and can be sprayed onto the animals as a fly or other biting insect repellent. It can also be used to clean cages, pens and other equipment, and when added to water sources it keeps troughs clear of algae and destroys potential breeding habitats for mosquito larvae (Homestead Organics). Note that over time, apple cider vinegar can cause damage to metal troughs so it is advised that plastic or other material is used (Beginning Farmer, 2015).

### **Health Benefits**

The product may also be applied externally for treating common issues such as ringworm, fleas, and other itchy or problem areas (Stockhealth). Another common health issue that apple cider vinegar has been known to help treat naturally is mastitis. Mastitis is a condition in which the mammary gland and udder tissue in dairy cattle becomes inflamed in an immune response to a bacterial infection of the teat canal (AHDB Dairy, 2015). It is most often transmitted by contact with the milking machine, and through contaminated hands or other materials, in housing, bedding and other equipment (AHDB Dairy). Mastitis is most frequently recognized in its clinical form, defined by the presence of visibly abnormal milk that may be watery, thickened or discolored with blood, pus, or clots (Royster & Wagner, 2015). Cows with clinical mastitis may experience swelling, redness, or pain in the affected quarter and in some cases become systematically ill with symptoms such as fever, dehydration, weakness and in-appetence (Royster & Wagner, 2015). Severe acute cases can be fatal, but even in cows that recover there may be consequences for the rest of the lactation and subsequent lactations (AHDB Dairy, 2015). Mastitis is one of the major economic burdens for dairy farmers around the world (Dhakal, Sharma & Prasad-Dhakal, 2011). In developing countries like Nepal, its impact and

prevention measures are lacking due to a dearth of knowledge in its epidemiology and environment also plays a critical role in its pathogenesis. (Dhakal et al., 2011). The milk produced by infected cows is contaminated and must be thrown away and not consumed, which results in losses for Nepalese farmers. Apple cider vinegar aids in treating mastitis by adding to feed or water sources, the most common being added to the water supply . However, for treating the affected cow, it is important that the cow receives a larger dosage than would normally be given. It is known that due to religious reasons, many Nepalese who practice Hinduism do not consume meat, and cattle are primarily used for milk and producing milk products. Apple cider vinegar, when given to livestock is a health tonic but also improves feed efficiency, increases average daily weight gain and even stimulates butterfat (or intramuscular fat) production (Winter, n.d.).

Fig. 2 shows the dosages for each animal recommended by Homestead Organics.

Note: the dosage increases when being used to treat an illness.

	Regular Dosage
Animal	in water/day
Horses	60ml
Cows/Yak	20-30ml
Hogs	5-10ml
Poultry	25ml/L of water
Sheep	5ml
Goats	2-3 ml

Figure 2

### **Company Description:**

Homestead Organics is a family run, organic certified farming company and everything started on the home farm in Berwick, Stormont County, Ontario and their mission is to serve and develop organic agriculture (Homestead Organics, 2015). Homestead Organics is immersed in

organic agriculture, with a team consisting of managers, agricultural specialists, a millwright, customer service and production staff and is certified organic by EcoCert Canada (Homestead Organics, 2015). At Homestead Organics, Tom Manley (owner), his family and team are convinced that the production of organic food is the sustainable and profitable way to meet the needs of the population in concert with the needs of our planet (Homestead Organics, 2015). Today, Homestead Organics consists of fourteen people serving hundreds of farmers, with one million dollars in infrastructure, offering multiple products and services and handling over seventy five hundred tonnes of grains (Homestead Organics, 2015). Recently in December of 2013, the company expanded and acquired an industrial building in Morrisburg, Ontario and transformed it into a food grade processing facility, which includes a seed cleaning system for grains destined to food manufacturers and a food grade organic flour mill (Homestead Organics).

### **Production:**

Apple cider vinegar goes through a fermentation process, beginning with locally grown organic Ontario apples that are crushed and the liquid is extracted and separated. Bacteria and yeast are added to the liquid which starts the alcoholic fermentation process and turns the sugars into alcohol (Wikipedia, 2015). The process takes weeks to months of sitting in a cool dark place to form, covered by terry cloth which allows oxygen to reach the vinegar and aid in fermentation.

Most apple cider vinegar has an Food and Drug Administration (FDA) required official shelf life of three to five years after the bottling date, however, experience has shown that the product is safe, usable and effective for an indefinite period if kept out of direct sunlight (Bragg Foods, 2012). Once opened, apple cider vinegar with at least five percent acidity does not need to be refrigerated and because of high acidity, it will not mold over time (Ireland, 2013). For best

flavor and to preserve the quality of the vinegar, it's best if the opened container or barrel is kept indoors, a barn or shed would be an appropriate storage location on Nepalese farms.

### **Benefits to Canada**

By potentially exporting apple cider vinegar as a livestock supplement to Nepal, many aspects of Canadian entrepreneurs will benefit. Firstly, the Ontario-based company Homestead Organics will benefit as they would be the ones exporting the product. The company does not ship to the United States, let alone Nepal, (Jeannette Campbell, Homestead Organics) so this would be broadening their range of products and making their name more widely known, ideally increasing business. Homestead Organics does have a solid support staff at the moment, but with the increase in productions needed would enable them to hire more and add to their team, creating new career opportunities in the agriculture sector for Canadians. Homestead Organics does not actually manufacture the cider vinegar at their plant, rather they have it sent to them from via their Ontario supplier. There is a process to creating the cider vinegar, starting with growing organic apples in an orchard to the fermentation of the vinegar, packaging and having it shipped to Homestead Organics for retail. The organic farmers who grow the apples and produce the vinegar will benefit as well as their company would be creating new job opportunities and need to hire on more employees as productions increase. Further research is required on the supplier.

### **Target Market**

The target market for the apple cider vinegar supplement are farmers who raise and keep livestock, but who want to remain as natural and organic as possible. Potentially, livestock who need extra nutrition in their diets would benefit from this all natural supplement. The most

common type of livestock that apple cider vinegar is fed to as a supplement is cattle. However, apple cider vinegar is very beneficial to the health of horses, sheep, pigs, goats, chickens and has its benefits for human consumption as well.

## **Part 2: Export Potential to Nepal**

### **Transport**

The first step to exporting is to determine whether or not Nepal will allow the product to be imported to the country. The apple cider vinegar comes in three sizes. The first size is a four liter jug, and retails for approximately thirteen dollars and forty cents Canadian. The second size is a larger twenty liter container and costs about fifty three dollars and twenty five cents and the largest barrel comes in fifty five liters which costs roughly one hundred dollars and twenty cents Canadian. Relative to what the recommended dosages are for the livestock, the product will go a long way if several neighboring farmers split the costs on purchasing the barrels.

Due to the size and the weight of the vinegar in its containers, it is best to have the products loaded onto ships and shipped across the ocean. Machinery will be required to move the barrels and locate them, and therefore further research is needed on delivery methods. For the rest of the transportation and getting the product to Nepal, further research is also required as well as the prices that it will cost to ship each unit. For storage of apple cider vinegar, it is appropriate to leave it in the barrels or containers that it comes shipped in. To ensure that the vinegar stays at its best it should be stored properly in a cool and dark place and always keep in mind that the vinegar should be tightly sealed when not in use (Can It Go Bad, 2015). Any contaminants, even dust particles, that will get into the bottle might cause the liquid to deteriorate faster (Can It Go Bad, 2015).

## **Benefits to Nepal**

Apple cider vinegar as a livestock supplement would greatly benefit Nepal in several ways. If consumers tried the product and were happy with the results, a market could potentially be created for locally produced apple cider vinegar in Nepal. As far as elevation is concerned, apples can be grown throughout mid and high mountain areas from the Eastern to the far Western region (FAO, n.d.). The growing conditions in the region regarding climate and soil are very favorable for the growth of quality apples (Dahal, 2013). Additionally, the apples are easy to store (Dahal, 2013) and the cider vinegar can be sold in farmers markets as a supplement for livestock and as a health supplement for humans as well. The process of creating cider vinegar is not very challenging, and if a market was created for this product it would be less costly than constantly importing the vinegar from Canada. This then creates jobs for the Nepalese and potentially makes it easier for all farmers to have access to the cider vinegar. Another benefit to Nepal that is associated with apple cider vinegar is that the livestock would be more healthy, happy and capable of work, thus increasing agricultural productivity as well as income for farmers. The vinegar aids in combating illness due to the alkalizing effect it has on the body and promotes good health by making the body an inhospitable environment in which illness cannot thrive (Beginning Farmers, 2015). Apple cider is another way to control biting insects as it works from the inside out to make animals unappetizing to biting insects, which also deters internal parasites and worms (Beginning Farmers, 2015). Apple cider vinegar has well known health benefits for people too, such as blood pressure reduction, easing of arthritis pain, (Beginning Farmers, 2015) killing bacteria and has antibacterial properties that can help fight certain infections (Grumman-Bender, 2014). If exported to Nepal, apple cider vinegar would prove very beneficial to farmers and their livestock due to its all natural healing and preventative qualities.

## **Challenges**

Despite some progress in poverty reduction in recent years, Nepal remains one of the poorest countries in the world and over thirty percent of Nepalese people live on less than US \$14 per person, per month (IFAD, 2013). Approximately eighty percent of Nepal's people live in rural areas and depend on subsistence farming for their livelihoods, and household food insecurities are major concerns in these areas (IFAD, 2013). Poverty tends to be higher in rural areas than it is in urban areas, and a challenge with exporting this product may be that the farmers on their own could not afford it. However, if farmers living within close proximity to each other purchased a barrel or containers together, this would thin out the costs. One Canadian dollar is equivalent to approximately seventy-nine Nepalese rupees, and the twenty liter container which costs around fifty dollars Canadian would cost closer to four thousand rupees.

## **Trade Barriers**

Nepal is among South-Asia's most open and trade dependant economies with virtually no quantitative restrictions, exports have been growing since the 1990's - and there seems to be a potential for further growth (World Bank, 2013). Nepal also became a member of the World Trade Organization in April of 2004, which enables them with considerable opportunities as well as challenges in enhancing its capacity and competitiveness (World Bank, 2013).

## **Competition**

The competition that faces Homestead Organics brand of apple cider vinegar are the other organic apple cider vinegars on the market. For example The H.J. Heinz company is an American food processing company, who manufactures containers of apple cider vinegar for less than Homestead Organics brand costs. However, Heinz' brand is not organically produced.

Another competitor on the market is Bragg's Organic apple cider vinegar which is another American food processing company. However, the largest size container that Bragg's retails is 3.7 liters and costs twenty dollars and seventy nine cents (Bragg's Foods, 2012). It would be more efficient as well as economical to export the larger containers or barrels from Homestead Organics to Nepal.

### **Future Studies**

In order to better understand exactly who, as Canadians, will be benefiting from the increased production of apple cider vinegar, further research is required on the supplier of the organic cider vinegar, since Homestead Organics does not produce it at their plant in Berwick (Jeanette Campbell, Homestead Organics). Extended research is also required regarding transportation methods and costs. According to Jeanette Campbell, customer service rep employed at Homestead Organics, it would be cheaper to ship over containers instead of shipping over a few barrels full. The company also does not ship anywhere internationally, so it would need to be arranged and discussed further with the owners that shipping their products to Nepal would be something they wish to pursue.

### **Conclusion**

Overall, exporting Canadian made Homestead Organics apple cider vinegar to Nepal as a livestock supplement would prove very beneficial for Nepali farmers as well as Canadian entrepreneurs involved in the process. Though there are some minor cost implications with exporting products to a developing country like Nepal, further research will provide answers to the limitations. Exporting apple cider vinegar as a livestock supplement to Nepal is a promising agricultural business that should be further looked into.

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