Lentil Seed Export from Canada to Nepal

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Part 1

Lens culinaris., or more readily known as lentil, could very well be a remedy for Nepal's malnutrition (Thavarajah et al., 2011). Lentil is a pulse crop and legume that Canada has become a very well known country for, with production amounts that rank them first worldwide. (Government of Saskatchewan, 2010). Although there is a wide array of lentil, the most common variety of this crop around the world is red lentil. The name 'red lentil' is derived from the colour of the plant's leaves during germination and initial growth stages, and not the colour of its seed coat. Lentil is sold in dry seeds, either whole or split, and has similar taste and texture to green peas (Government of Saskatchewan, 2010).

Lentil germinates best in cool conditions, but certain breeds of lentil may be resistant to increased temperatures (Government of Saskatchewan, 2010). Growing is most effective when the seed is planted and grown in a dark, dry soil with a neutral pH and low salinity levels. Flowering typically occurs approximately 50 days after planting, and the height of the plant at this time ranges from 30-40 cm. In order to make harvesting lentil more efficient, farmers may roll their fields before planting to create a level plot (Government of Saskatchewan, 2010). Rolling a field requires a large cylindrical, heavy barrel, usually made of metal, to compress the soil in which the seeds have been planted. (UK Agriculture, 2010). Rolling the soil after the lentil is planted allows for water and nutrients in the soil to be more accessible to the seedling, offering the plant the resources it needs to grow faster and stronger. (UK Agriculture, 2010).

Different machines and combines may be used to ensure harvesting yields the most seed possible, although this depends on the height of the lentil and the degree to which the plants are tangled together (Government of Saskatchewan, 2010). Lentil's are usually harvested by a harvesting combine, although they can be harvested by hand. (Government of Ontario, 2009). Harvesting by hand is very labour intensive and time consuming. By using a combine, the

harvesting process is sped up drastically. These tractors are very complex machines that send plants through several steps before the plant and the seed have been separated. The mature plants are harvested by cutting them at their base. A series of internal processes happen inside the combine, before the left-over straw from the plant is blown out the back of the combine onto the ground, and the seed is separated into a trailer that collects all of the seed. Once this is done, the seed has to be filtered to remove items such as rocks, dirt and bad seed (Government of Ontario, 2009). Although harvesting is a fairly quick process, the machinery is extremely expensive. Depending on the size of the combine, and whether or not a used model is available to be purchased, prices can range from $10,000 - $100,000 CDN. (Kijiji- Saskatchewan, 2014). The price of the combine, along with the price of the land used to farm, manual labour, fuel, fertilizer, and the cost of the lentil seed to be planted are the major costs of lentil production. Other costs include warehouse/storage costs, equipment repair/upkeep costs, utilities, insurance, and other miscellaneous expenses. Fertilizer costs, although still high, would be significantly lower for lentil farmers than if the farmer were to grow other crops e.g. corn, due to lentil's ability to fix nitrogen. Lentil is able to capture nitrogen in its gaseous form from the air, convert it into a solid form, and store it in the soil where it can be accessed by the plant as needed (Government of Saskatchewan, 2014).

Since the prairie region of Canada has such an ideal climate for lentil to grow, the western region grows 100% of Canada's lentil production. (Government of Saskatchewan, 2010). The Canadian province Saskatchewan yields over 95% of Canada's lentil production, with the remaining 5% being produced by its neighbouring province, Alberta (Government of Canada, 2013). Lentil production is on the rise in Canada. In 2013, almost 1 900 000 tonnes of Lentil were produced in Canada, the second highest yearly yield ever, behind 2010's 2 000 000 tonne

output. In 2013, Canada exported over $825 000 000 CDN worth of lentil to more than 100 countries worldwide (Government of Saskatchewan, 2014). 38% of the lentil distributed by Canada was exported to India in 2013, which is the country that borders Nepal to the south (Government of Canada, 2013).

The trend of lentil production in Canada is heading upward, along with its total exportation. In 2012, Canadian world lentil export totalled 1 147 733 tonnes (estimated $530 000 000 CDN), while only one year later the amount exported grew by just under 500 000 tonnes, totalling 1 637 743 tonnes (estimated $825 000 000 CDN). These figures show how quickly the world's lentil market is growing , and how lucrative exporting lentil may be. (Government of Saskatchewan, 2014). In 1998, Canada's lentil production accounted for approximately 13% of the world's total production (Small, 1999). In 2013, Canada produced 47% of the world's total lentil; over 3 times what it used to be less than 15 years earlier (Government of Saskatchewan, 2014). Over the previous 14 years, lentil yields in Canada have risen dramatically due to increases in both research and technology, causing the legume to become an item of major export. In turn, exportation of lentil seeds has created jobs in several different Canadian industries, including farming, technology, logistics, and manual labor, which help Canadian families to generate income. (Government of Saskatchewan, 2010). Some examples of jobs that the increased lentil market has created include lentil farming, farming equipment manufacturing and research, lentil research and development, transportation of market-ready seed, retail jobs, and many others. (Government of Saskatchewan, 2010).

Not only does lentil benefit Canada and its citizens economically, but the nutritional value that the seeds contain are what many Canadians are lacking in their diets; protein, fibre and iron (Small, 1999). Just one serving of lentil contains over 230% of 'Canada Food Guide's

Recommended Daily Values' of dietary fibres for one person, and 80% of the recommended iron intake. (Government of Saskatchewan, 2010). Lentil's total mass consists of approximately 30% protein build up, making it an excellent source of protein for consumption as well. (Government of Saskatchewan, 2010). By increasing the production of lentil in Canada, not only do the primary producers benefit from the initiation of cash flow, but the end of the chain consumers also gain from the healthy aspects of the seeds. Since lentils have a low production cost, consumers do not have to spend a lot of money when purchasing the seed to eat and cook with. They pay a very little amount to get the health benefits they are looking for.

Although lentil is currently a niche product, it is increasing in popularity due to its high nutritional benefits to consumers, paired with its low cost.

Section 2

Nepal, located in Southern Asia, is a land-locked country, situated directly between India and China (worldatlas.com, 2014). The country of Nepal is divided into three regions; Himalayan region, Mid Hill region and Terai region (Naturally Nepal, 2012). These three regions differ vastly in geographical terrains, ranging from some of the world's tallest mountains to low valley's and planes. Nepal has 5 seasons, 4 of which are similar to Canada's seasons; spring, summer, autumn, winter, the fifth being monsoon. Monsoon is a season in Nepal dominated by heavy precipitation and high winds. (Naturally Nepal, 2012).

Nepal is one of the poorest countries in the world, with a USD per-capita income of $700. (UNICEF, 2003). Nearly 80% of Nepalese citizens that are employed, however, are working in the agricultural sector. This demonstrates how prominent agriculture is to Nepal's economy, compared to Canada, where a mere 2% of the population is employed in the agricultural sector.

(UNICEF, 2003). Nepal does not have as much land available to farm with as Canada does, which is evident just by looking at a world map. Canada's area is just under 10 000 000 km^2, while Nepal's area is only 165 000 km^2 (Stats Canada, 2005).

Much like Canada would benefit from lentil farming due to their nitrogen fixing ability, Nepal would benefit for the same reasons and more (Government of Saskatchewan, 2010). Increasing nitrogen levels in the soil by fixation would be even more beneficial to Nepalese farmers than it would be to Canadian farmers, since many of Nepalese farmers cannot afford to pay for fertilizers. As a result ,the end product would be of higher quality than if the farmer had the same budget but was growing a different crop, i.e. corn (Government of Saskatchewan, 2010).

The export of Canadian researched lentil to Nepalese farmers would rely heavily on transportation. Air and ground transportation would be the 2 main methods of product movement. First, the research lentil seed would be taken by the farmers in Saskatchewan to the post office, where it would be delivered using major air carriers to India. After the arrival of the seed in India, it would be transported by train to Nepal, arriving for local farmers to use. This process would create many jobs, and circulate money between both Nepal and Canada.

If Canadian lentil companies were to sell their heavily researched seeds to Nepalese farmers for growth in Nepal, many more jobs could be created in both Canada and Nepal. Transportation would be a benefitting industry, along with both of the farming parties involved, and all other business they support along the way. Once the seed is shipped from Canada to Nepal and the farmer received the seed, it could be planted, grown, harvested and sold exclusively in Nepal. However, that being said, most farmers in Nepal do not have sufficient

funds available to them, since the per-capita income of Nepal is so low. (UNICEF, 2003). The ideal recipients of the researched seed would be farmers in Nepal who already have a medium-sized scale farm i.e. farmable land, combine etc. since these are the most expensive assets throughout the whole lentil farming process. Most of these farmers would already be doing well enough on their own, and growing lentil would not be as beneficial to them as it would be to a poorer farmer, although the poorer farmer would not be able to afford the upkeep of the growing process.

Since Canada is much larger than Nepal in terms of area, Canada has more farmable land available to use, especially ideal lentil growing land with the prairies in Western Canada. A more logical idea, rather than shipping seed to Nepalese farmers to grow themselves, would be to ship market-ready seed to Nepalese retailers for them to sell to the lower class consumers. Canada has a lot of land in which they could increase lentil production to begin shipping market ready product to Nepal, whereas Nepal only has a limited amount of land to grow lentil. (Stats Canada, 2005). Nepalese consumers would benefit more from the import of market ready lentil as opposed to premature lentil which still needs to go through the growing and processing. Although sending researched seed to Nepalese farmers for them to grow in Nepal would generate income for the farmers, the prices of starting a lentil farm are too high for the poor farmers of Nepal, which would make it very difficult to successfully grow lentil.

Veikle Grains Ltd. is a small seed and grain company based out of Cut Knife, Saskatchewan, that produces a variety of different lentil products including red lentils. Their business has not yet entered international markets, but doing so would benefit both them and the global recipients. The lower class Nepalese population often lacks nutrients that lentil contains, such as fibre, iron and protein, which may cause many health issues including digestive

irregularity, anemia, extreme fatigue, and other cardiovascular health concerns, (UNICEF, 2003). These nutrients can be obtained by increasing the lower class population's consumption of lentils, since lentils are an excellent source of fibre, iron and protein. (Government of Saskatchewan, 2010). Having a healthy, low cost crop such as lentil, that local retailers can sell in Nepal to help combat these nutrient deficiencies can benefit all parties involved. Viekle Grains Ltd. can export their lentil products to Nepalese retailer in bulk orders, in return for payment from the Nepalese stores. The citizens of Nepal can then purchase the legumes to eat dry and mix into other foods, to increase nutritional intake leading to better overall health. Both members involved benefit from the introduction of highly researched lentil to Nepal, as the retailers in Nepal will generate income and the families that purchase the lentil should achieve suitable levels of fibre, iron and protein.

Conclusion

After weighing out both the benefits and the drawbacks of exporting researched Canadian lentil seeds to Nepalese farmers for them to grow and sell internally, it has been decided that it would be a greater benefit to both the importing and exporting nations if market-ready lentil seeds were instead exported from Canada to Nepal.

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