

Canadian Export to Nepal

Fence Row Farming Bundles

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This paper is an evaluation on an export product, a fence row farming bundle, from Canada to Nepal. There are two parts to this report, the first goes into depth about the product, what it is and the potential benefits and costs for Canada. The second part describes the benefits for Nepal. The product was analysed with local and global factors in mind. The conclusion contains recommendations for this export idea.

PART 1 – Product Information

I) The Bundle

The proposed product is a fence row farming start up bundle. It will contain a booklet on how to start up the farms with the plant markers to allow fence row farming to occur by hand without the high tech precision machinery currently being used today.

Fence row farming is a relatively new farming method that has increased yields dramatically. It uses a mix of strip farming and no till farming practices that produce large yield increases. On a farm in the Haldimand Norfolk area, the average test plot yield of corn was 270 bushels per acre (bu/acre) in 2010, for soybean it was 62 bu/acre (Glenney & Glenney, 2015). The Haldimand County's average yield for corn in 2010 was 169 bu / acre (AFRA a., 2015). Soybeans had an average yield of 46 bu / acre in 2010 (AFRA b., 2015).

Fence row farming is very focused on minimizing the amount of soil disturbance, improving the soil quality, reducing costs for the farmer and reduction in erosion (Islam & Glenney & Lazarovits, 2015). The soil structure of the test plots have been vastly improved by planting the seed exactly where the last plant had been planted the year before. Keeping the

machinery off the area where the plants grow has helped to minimize compaction (Islam & Glenney & Lazarovits, 2015).

II) The Book

The book will be a series of pictures with minimal words due to the fact that Nepal has a diverse population with many languages. Fence row farming is used in crop rotation style planting, with the plants planted very precisely. This is why the plant markers will be used to show the precise location of the previously planted crops.

The pictures in the book will have to be descriptive and simple in order to decrease printing costs while still conveying the information. Some pictures will be needed to show how the markers and the planting



Figure 1 soybeans and corn are grown together in strip rows. Taken from: ULR
http://www.agriculture.com/crops/corn-high-yield-team/sixrow-strips-boost-yield-success_545-ar21543



Figure 2 worms in the soil pull the leaves and dead plant material into the ground to further help in fertilization of the soil. Source (Glenney & Glenney, 2015).

will take place. The planting can be done with traditional methods of drippling or other similar hand planting methods. Pictures for this will have to be drawn up but some sample picture ideas are as follows.

Figure 2 should be included to show that this is a normalcy. The book will focus on explain the start-up method with some pictures of the unique things that may occur but are beneficial so the farmers will let them occur.

The booklet will be printed in Canada and Table 1 will highlight the different companies that can provide this service.

Table 1: Canadian* companies that publish booklets

Company	Product Description	Limitations / Comments	Prices **
PrintingPeach.ca	5.5" x 8.5" 12 page book Full Colour AQ Gloss, 100lb Booklet	1) Only comes in full colour AQ Gloss, 100lb 2) Minimum required to be printed is 250	Range between 250 – 10000 booklets 250 books cost \$354.00 500 books cost \$543.00 1000 books cost \$738.00
Blurb	5" x 8" 24 page book Soft cover Economy B&W, white uncoated paper Trade Book	1) Must have between 24 and 480 pictures 2) Many different options	1-9 books cost \$2.49 each 10 -50 books cost \$2.24 each 51 – 100 books cost \$2.12 each 101+ books cost \$1.99 each
Club Card	5.5" x 8.5" 12 page book Full colour Stitched cardstock cover	1) little to no alteration allowed 2) Have to have 32 pages 3) Quite a bit more expensive	50 books cost \$113.90 100 books cost \$212.80 250 books cost \$502.70

* Blurb is American but has connections in Canada ** Prices are in Canadian dollars

There don't seem to be many options on where to print these books in Canada, so Blurb from USA was added to contribute alternative methods. Blurb's best deal was for an order over 100 book at \$1.99 per book (Blurb, 2015). The PrintingPeach.ca's best deal was \$0.738 per book but 1000 books needed to be ordered (PrintingPeach.ca, 2015). The Club Card best deal was \$2.011 per book when 250 books are purchased.

The booklets from PrintingPeach.ca will be used in further cost analysis of the fence row farming bundle later on in this report.

III) The sticks

There are different styles and makes of the plant markers that could be used, each coming from a variety of companies. In Table 2, the different styles from the various Canadian companies are being compared.

Table 2: Plant Marker Comparison

Type of Plant Markers	Company	Product number	Price *	Pros	Cons
Plastic 5"	Vesey's Canada	82902	Pack of 25 cost \$1.95 Pack of 100 cost \$ 5.20 Pack of 1000 cost \$42.00	1) Relatively inexpensive 2) light to package 3) Many group bundles will be better to be able to mark all the plants 4) small and easy to transport	1) Unsure of how long they will last
Plastic 8"	Vesey's Canada	82908	Pack of 25 cost \$2.25 Pack of 50 cost \$ 8.95	1) Larger than the 5", potentially easier to see and use 2) Plastic is still easy and light to bundle and carry around	1) Unsure of how long they will last 2) Cost is a lot more compared to the 5" markers
Wooden 5"	Vesey's Canada	80337	Pack of 25 cost \$2.25 Pack of 100 cost \$ 7.40 Pack of 1000 cost \$65.00	1) Made out of biodegradable material / renewable resources	1) Will be heavier than the plastic markers 2) they rot
Stake Flags, 2.5" X 3.5" flags on a 21" wire	Home Depot	40-0825	\$0.66/ each	1) will be very easy to see and take out of the ground	1) Sometimes the flags come off 2) very long, and unnecessary

				2) Metal should stand up to the elements better	3) Metal will be heavier and costly
Steel rods 1/8" diameter 18" long	Lee Valley	SX104	1 Pack of 6 cost \$ 8.70 3+ Pack of 6 cost \$7.40 each	1) Thin and easy to ship 2) Won't be flexible	1) Very long 2) Expensive
6' Aluminum	Home Hardware	5093-198	Pack of 10 cost \$10.99	1) Aluminum won't rust 2) Light to package	1) Very expensive
* Prices are in Canadian dollars					

Using Table 2 one can discern that the 5" plastic markers, shown in figure 3, would be most cost effective to get the product circulating, and to get as many of the markers for the least amount of money. During the remainder of this report, the numbers will be based on the cost of the 5" markers from Veseys. One consideration is shipping: because the plant markers come from PEI, they will have to cross Canada to the Pacific Ocean as well. This will be further discussed in Part 2 sections IV and V.

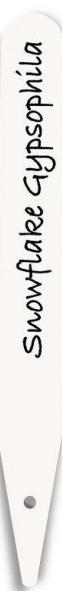


Figure 3: 5" plastic plant marker

IV) Suppliers in Canada

In Table 3 and table 4, the contact information of the companies compared in Part 1 section II and III are listed. The companies generally use mail order, but the plant marker businesses also had the option to pick up the markers to reduce costs if the fuel cost are less.

Table 3: Contact Information and Location of companies that print booklets			
Company	Location	Contact Info – Phone	Email
Printing Peach.ca	Toronto , ON	1-888-587-2383	info@printingpeach.ca
Blurb	Ships to Canada from USA	1-888-998-1605	N/A
Club Card	Vancouver, BC	1-866-801-6364	sales@clubcard.ca

Table 4: Contact Information and location of the companies that make the plant markers

Company	Location	Contact Info - Phone	Email
Vesey's Canada	411 York Rd, York, PEI	1-902-368-7333	Commercial Sales – Angus: angus@veseys.com
Home Depot	2388 Cambie St. Vancouver, BC	1-800-628-0525	N/A
Lee Valley	590 King Street Toronto, ON	416-366-5959	N/A

V) Benefits to Canada

The impact on Canada will be minimal due to the fact that not much effort or resources are needed to get the bundles ready for shipping. There may be a few more people needed to help package them or print the booklets, but nothing significant.

Regardless of how the bundles work well in Nepal, there are places in Canada that could benefit from this farming method. The bundle would have to be modified to fit larger farms. For example, it could be used in the prairies. In 2007, 45% of the farm income was derived from exported products. To sustain this, the land has been intensified for agricultural uses and a significant increase of fertilizers are needed (Kissinger & Rees, 2009). In Kissinger and Rees's (2009) study, nitrogen fertilizer was being used at 1,237,970 Mt in 2006 compared to 844,330 Mt in 1991, even though the land area had decreased by 584,900 Ha.

With this in mind, the jobs that this product would create would most likely be full time employment, not just for a year or two.

VI) Environmental Aspect of Producing the Bundle in Canada

Environmental impact on Canada will be a small increase in trees cut for paper and oil used to make the plastic markers. There will also be the added use of gasoline and other fuels to make and ship the products around the country as well as to Nepal.

VII) Market Opportunity in Nepal

In Nepal, these bundles could have a large market base because this is a new technology that is coming at a low price. The bundles are light and easy to carry, they could be sold at a local grocer's or at farm products shops.

Once the fence row farming methods are in place, the books will not need to be sent to Nepal, but the markers will be needed when farms expand or when damaged markers need to be replaced. Therefore, this product is not just a short term profit source but also creates a lasting partnership between Canada and Nepal.

PART 2 – Export potential to Nepal

I) Introduction to Nepal

Nepal is a geographically and ethnically diverse country that is situated between India and China (Aubroit, & Bruslé, 2012). There are 125 different ethnic groups and 123 different languages with a population of 31,551,305 (CIA, 2015). Nepal is a land-locked country that has a land mass of 142,251 sq. km, containing three primary ecological regions (CIA, 2015). The three regions, shown in figure 4, are the mountain, hill and terai regions (Aubroit & Bruslé, 2012). On the northern border, there are 52,817 sq. km of the mountain region (CBS, 2006). This region contains 7% of the population and only 25% of the farmers are self-sufficient (Aubroit & Bruslé,

2012). The middle section has the largest land mass of 61,345 sq. km, and is home to 43% of the population. Here, only 13% of the farms are self-sufficient (CBS, 2006; Aubroit & Bruslé, 2012). The southern part that borders on India consists of 34,019 sq. km of land and 50% of Nepal's population (CBS, 2006; Aubroit & Bruslé, 2012).

Figure 4: Ecological regions of Nepal (United Nations Nepal Information Platform, 2000).



Nepal has a Labour force of 17.76 million people of which 75% work in the agricultural sector, contribution 30.7% to the country's GDP (CIA, 2015). Nepal's GDP per capita in 2014 was \$2,400 USD, which is roughly 159,359 Nepalese rupees (CIA, 2015).

II) Agricultural Problems

Nepal is currently working on improving its agricultural sector because there are issues with crop yields and soil degradation. The average size of a Nepalese farm is 0.008 sq. km, and 90% of the farms in Nepal have less than 0.02 sq. km of land (Aubroit & Bruslé, 2012). In addition, a large problem is that 61% of the farms in Nepal are not self-sufficient, causing considerable food security issues across the country (Aubroit & Bruslé, 2012).

Soil erosion due to deforestation is a prevalent issue. There was a study done by Bahadur (2012) that stated that in 2000, 88% of all the soil losses were from upland areas and that water erosion was responsible for the erosion in the ten year study period. Also in the study, it was hypothesized that if current practices were maintained, land will be unproductive within the next 6 years (Bahadur, 2012).

III) Benefits of the fence row farming bundle

Although the problems facing the agricultural sector are severe, the fence row farming bundle would mitigate and work towards solving the problems. Fence row farming practices have shown to increase yields without an increase in fertilizer input (Islam & Glenney & Lazarovits, 2015). In Nepal, a study has shown that nutrient removal during crop harvest is much higher than nutrient removal caused by water erosion. There is an estimated 1.3 million tons of plant nutrients displaced every year (Tiwari, et al., 2009). This can be combated by leaving the crop residue on the fields, allowing it to be used as mulch. Some of it will break down and be reabsorbed into the soil. In Figure 2 from part 1, the worms take the plant material underground to eat and digest it. This results in fertilizing and aerating the compacted soils that result from repeated tilling and traffic on the soil (Glenney & Glenney, 2015).

Having crops and an ecosystem that develop fertilizer and boosts a beneficial soil structure decreases the farmer's amount of work. Some fertilizer will still be needed because the fertilizers coming from the plant material isn't balanced, depending on the crop that was planted and harvested (Glenney & Glenney, 2015).

IV) Packaging and Transportation

Due to the product not actually existing, dimensions are difficult to estimate to get exact shipping costs. These numbers will have to be determined once a package has been assembled.

The bundles themselves will have around 1000 plant markers and 1 book. Smaller bundles could be made, cost of one of these bundles from product costs alone will be \$42.00 for the plant markers plus the \$0.74 for the cost of the book (Veseys, 2015: PrintingPeach.com, 2015). The total cost is approximately \$43.00, with an estimated shipping cost of \$15, making the total cost approximately \$60.00 for one bundle. This is then converted to Nepalese rupees, which is 4790.22 rupees.

V) Cost analysis to achieve profitability

As calculated in section IV of Part 2, this bundle will end up costing approximately 4,800 Nepalese rupees. This will be able to be recovered indirectly at first through less fertilizer applications and subsequently with increased yields.

The initial price is high due to estimated shipping costs which might be reducible.

VI) Canadian Government/International loan/grant program to get program started

The Canadian government has grants that can assist in starting this initiative. The foreign trade zones-marketing program has \$10,000 to \$150,000 available that is a non-repayable grant for a 12 month period. This grant will match up to 50% of expenditure (CTCS, 2015). Another funding option from the Canadian government is for international development projects. It works in partnership with Canada and other countries around the world to reduce poverty in developing nations. Through this grant, there are a couple of options such as the *Canada Fund for Local Initiatives* that helps start up smaller projects that focus on helping developing nations (GAC, 2015).

The United Nations and banks around the world also have funds for people and businesses seeking to implement programs that help impoverished nations (GAC, 2015).

VII) Potential Competitors

Given that Canada is almost half way around the world from Nepal, there are potential competitors for this product that are closer and therefore more competitive. The bordering countries of India and China both have large industrial sectors and cheaper labour than Canada.

On the DHgate.com website, plant markers are sold at 3-4 cents apiece for 2,000 pieces. This would result in an end price of \$112.5-116.78 (DHgate.com, 2015). These plant markers are made and sold out of China. This particular company's costs are higher than the Canadian markers, which for 2,000 would only be \$84 (Veseys, 2015). There are other companies that sell the plant markers for less. Alibala.com, also a Chinese company, sells them for \$0.01-0.05 per marker (Alibala.com, 2015). This puts Canada's pricing in the middle, resulting in competitive pricing for the markers from neighbouring countries.

The book will be unique, creating a market advantage for it. If the competition drives the prices of the bundles too low, then the plant markers could be dropped from the bundle and just the books could be marketed.

VIII) Recommendations, Marketing Plans, and Conclusion

There are many benefits that this product could provide for the Nepalese people but there are some issues that still need to be confirmed. The parcel cost is high due to shipping. Shipping the booklets to Nepal and purchasing the plant markers from China would provide an economical alternative. The product could still be sold as a bundle, but be assembled in Nepal or close by.

Another recommendation is to have test plots in the three ecological regions to see how well they adapt to the new method before switching over many field. Having these test plots could also demonstrate the increase yields to the Nepalese people first hand. If the test plots are successful, the transition will go smoothly as well.

REFERENCES

- (AFRA a.) Ministry of Agriculture, Food and Rural Affairs. (2015). *Grain Corn: Area and Production, by Country 2010*. [Data file]. Retrieved from
<http://www.omafra.gov.on.ca/english/stats/crops/ctygrcorn12.htm>
- (AFRA b.) Ministry of Agriculture, Food and Rural Affairs. (2015). *Soybeans: Area and Production, by Country 2010*. [Data file]. Retrieved from
<http://www.omafra.gov.on.ca/english/stats/crops/ctysoy12.htm>
- Agriculture and Agri-Food Canada, (2014). An Overview of the Canadian Agriculture and Agri-Food System 2014. *Agriculture and Agri-Food Canada*. Retrieved from
<http://www.agr.gc.ca/eng/about-us/publications/economic-publications/alphabetical-listing/an-overview-of-the-canadian-agriculture-and-agri-food-system-2014/?id=1396889920372>
- Alibaba.com (2015). *PP Plastic garden 5 inch Plant markers*. Retrieved from
http://www.alibaba.com/product-detail/PP-Plastic-garden-5-inch-Plant_864477851.html?spm=a2700.7724858.35.15.Brib0n
- Aubroit, O. & Bruslé, T. (2012). Nepalese peasant agriculture and migration: the complementarity breaking links?. *Autrepart*, 141-158. doi: 10.3917/autr.062.0141.
- Bahadur, K. K. (2012). Spatio-temporal patterns of agricultural expansion and its effect on watershed degradation: a case from the mountains of Nepal. *Environmental Earth Sciences*, 65, 2063-2077. doi: [10.1007/s12665-011-1186-6](https://doi.org/10.1007/s12665-011-1186-6)
- Blurb. (2015). *Pricing Calculator*. Retrieved from http://www.blurb.ca/pricing-calculator#?book_type_selection=trade_book&book_type=pocket&cover_type=softcover&paper_type=economy_trade_bw_matte_paper&linen_type&clu=false&endsheet_type
- (CBS) Central Bureau of Statistics. (2006). Agriculture Monograph. Retrieved from:
http://cbs.gov.np/agriculture/agriculture_monograph_preface_and_contents?search_text=climate%20regions
- (CIA) Central Intelligence Agency. (2015). *South Asia: Nepal* [Data file]. Retrieved from
<https://www.cia.gov/library/publications/the-world-factbook/geos/np.html>
- Club Cards. (2015). *Custom Digital Booklets, 12 Pages*. Retrieved from
<http://clubcard.ca/product/short-run-booklet-printing-rush-12-pages>
- (CTCS) The Canadian Trade Commissioner Service. (2015). *Foreign Trade Zones - Marketing Program (FTZ-MP)*. Retrieved from
<http://www.tradecommissioner.gc.ca/eng/funding/ftz-marketing-program/home.jsp>
- DHgate.com. (2015). *Free Shipping Wholesale Garden Accessories Plastic Plant Labels PVC Gardening Label Waterproof Labels/Tags 2000pcs/lot*. Retrieved from
http://www.dhgate.com/product/wholesale-garden-accesories-plastic-plant/216700272.html#cart_view-2-null

- (FAO) Food and Agriculture Organization of the United Nations. (2015). *Nepal* [Data file]. Retrieved from <http://faostat3.fao.org/browse/area/149/E>
- (GAC) Global Affairs Canada. (2015). *Funding for International Development Projects*. Retrieved from <http://www.international.gc.ca/development-developpement/funding-financement/fun-fin.aspx?lang=eng>
- Glenney, D., & Glenney, D. (2015). *Fence Row Farming*. Retrieved from <http://www.xlsengineering.ca/index.html>
- Home Depot. (2015). *Stake Flags – “Glo Orange”*. Retrieved from <https://www.homedepot.ca/en/home/p.stake-flags----glo-orange.1000114696.html>
- Home Hardware. (2015). *10 Pack 6" Aluminum Plant Markers*. Retrieved from http://www.homehardware.ca/en/rec/index.htm/Outdoor-Living/Yard-Decor/Planting/Accessories/Miscellaneous/10-Pack-6-Aluminum-Plant-Markers/_N-2pqfZ67I/Ne-67n/Ntk-All_EN/R-I5093198?Ntt=Plant+Markers
- Islam, R., Glenney, D., & Lazarovits, G. (2015). No-till strip row farming using yearly maize-soybean rotation. *INRA and Springer-Verlag France*, 35. retrieved from <http://beyondagronomy.com/cmsFiles/documents/document55a269b5c1f8d.pdf>
- Kissinger, M., & Rees, W. E., (2009). Footprints on the prairies: Degradation and sustainability of Canadian agricultural land in a globalizing world. *Ecological Economics*, 68, 2309-2315. doi: [10.1016/j.ecolecon.2009.02.022](https://doi.org/10.1016/j.ecolecon.2009.02.022)
- Lee Valley. (2015). *Plant Stakes*. Retrieved from <http://www.leevalley.com/en/garden/page.aspx?p=56693&cat=2,43319,33282>
- Nevans, J. (2015, May 31). Dunnville farmer gains national attention with new technique. *Niagara This Week*. Retrieved from <http://www.niagarathisweek.com/community-story/5653551-dunnville-farmer-gains-national-attention-with-new-technique/>
- PrintingPeach.ca. (2015). *Booklet Printing ... Located in Toronto, Shipping Across Canada*. Retrieved from <http://printingpeach.ca/booklet-printing/>
- Shrestha, J. K., & Benta, A., & Lopes, R. B., & Lopes, N., (2014). A multi-objective analysis of a rural road network problem in the hilly regions of Nepal. *Transportation Research Part A: Policy and Practice*, 64, 43-53. doi: 10.1016/j.tra.2014.03.005
- Tiwari, K., & Sitaula, B., & Bajracharya, R., & Børresen, T. (2009). Effects of soil and crop management practices on yields, income and nutrients losses from upland farming systems in the Middle Mountains region of Nepal. *Nutrient Cycling in Agroecosystems*, 82, 241-253. doi: [10.1007/s10705-009-9289-0](https://doi.org/10.1007/s10705-009-9289-0)
- United Nations Nepal Information Platform. (2000). *Ecological Zone Map of Nepal* [Data file]. Retrieved from <http://un.org.np/node/10274>
- Veseys seeds, (2015) Plastic Garden Markers. *Veseys seeds*. Retrieved from <https://www.veseys.com/ca/en/store/tools/plantmarkers/plasticgarden>

Veseys. (2015). *All Natural Wooden Stakes*. Retrieved from
<https://www.veseys.com/ca/en/store/tools/plantmarkers/allnatural>

Veseys. (2015). *Plastic Garden Markers*. Retrieved from
<https://www.veseys.com/ca/en/store/tools/plantmarkers/plasticgarden>