Exportation of Float Bed Trays to Nepal

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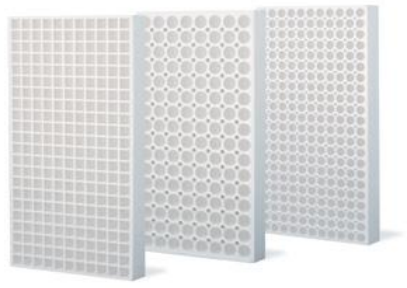
Introduction of Product

Tobacco float bed trays, or just float bed trays are used to house seeds for germination. There is potential for this product to be exported to Nepal upon further investigation. These trays are made of Styrofoam and come in hundreds of different shapes/sizes. This paper will look into one company and its ability to make float bed trays and ship them to Nepal. Through analysis of this company, this paper will help to see if these float bed trays will benefit the Nepalese people in the agricultural field.

Company Information

The company in question for producing and sending their product to Nepal is Beaver Plastics. Beaver Plastics is based out of Acheson Alberta (Beaver Plastics, 2015) which is not far from Edmonton. The company can make trays ranging in size from trays with 11/16-inch diameter cells to 6-inch diameter cells (Beaver Plastics, 2015), depending on the type of tray. The trays are made of Styrofoam (Beaver Plastics, 2015) which is known to be very durable and lightweight. Beaver Plastics has a plant also located in British Columbia, Canada as well as Mexico (Beaver Plastics, 2015). In relation to Nepal, there are 3 trays that will be focused on that will give the most benefit to Nepalese farmers. Hortiblock trays, Copperblock containers and Styroblock containers (Beaver Plastics, 2015).



*Hortiblock trays (**Figure 1a)***

*Copperblock Tray (**Figure 1b**)*

*Styroblock Trays (**Figure 1c**)*

*Lettuce Raft **(Figure 1d)***

All above pictures retrieved from http://bpgrower.com

Figure 2a – Provides tray dimensions for Hortiblock circle and square mould cells
***Note only trays that were thought to benefit Nepal were selected**

Tray Model	Number of Cells	Diameter of Cells (1)(Inches)
15/1000-R	15	3 15/16
18/290-R	18	3 ½
24/175-SQ	24	
32/210-R	32	3
50/100-R	50	1 7/8
72/100-R	72	1 7/8
72/95-SQ	72	1 15/16

Retrieved from http://bpgrower.com

Figure 2b – Provides tray dimensions for Styroblock style trays
***Note only trays that were thought to benefit Nepal were selected**

Tray Series	Number of Cells	Diameter of Cells (1) (Inches)
8	8	6.19
15	15	3.97
20	20	3.00
24	24	3.24
28	28	2.33
35	35	3.01
45	45	2.33

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Figure 2c – Provides tray dimensions for Lettuce rafts
***Note all raft sizes are included**

	18	**28 (Staggered)**	**36**	**72**
Number of Cavities (Holes for growth)	18	28	36	72
Size of Cavities	8 Inches	8 inches (Horizontal) 5.75 inches (Diagonal)	8 inches (Horizontal) 5.75 inches (Diagonal)	4 Inches (Horizontal)

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Product Descriptions

As previously mentioned, this paper will be focused on 4 main products; the Hortiblock tray, the Styroblock container, the Copperblock container and the Lettuce raft.

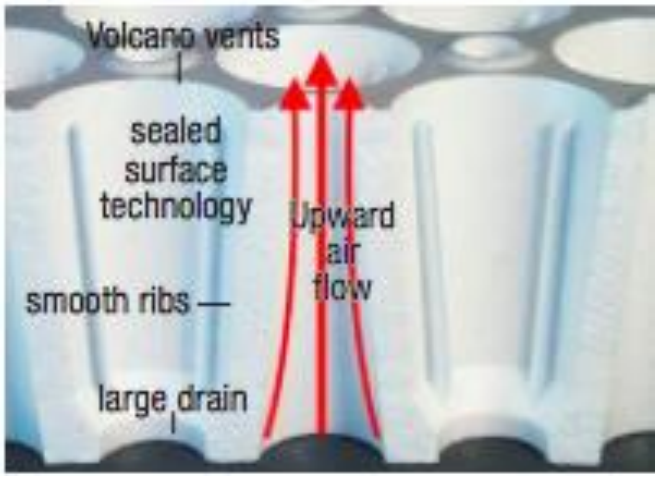
First, the Hortiblock tray. As seen in (Refer to **Figure 1a**), the Hortiblock tray is commonly used for germination of vegetables and horticulture products. These trays are built to help propagate seeds with an insulated, sturdy container. They are commonly used to grow peppers, melons, tomato's and much more (Beaver Plastics, 2015). The trays can be purchased with square or circle cell moulds (Refer to **Figure 1a**) (Beaver Plastics, 2015), depending on the needs of the farmer. Hortiblock style trays have large drains to ensure the plant does not drown (Beaver Plastics, 2015) as well as a durable material that is resistant to root penetration (Beaver Plastics, 2015). The dimensions of the tray are standard at 26 ½-inches by 13 ½-inches (Beaver Plastics, 2015), however the cell dimensions can be altered to suit the needs of the buyer (Refer to **Figure 2a**). Hortiblock trays are relatively smaller than other styles due to the product they are built to house.

Next, is the Styroblock style tray (Refer to **Figure 1b)**. This tray is primarily designed for nursery growths like spruce trees (Beaver Plastics, 2015), but can be used for generally any type of crop. The tray is designed with thermal technology to better protect the seed against temperature variations (Beaver Plastics, 2015). The interesting thing about the Styroblock tray is the cell size (Refer to **Figure 2b),** as the cells in this tray can be as big as 6 inches (Beaver Plastics, 2015). The dimensions of this tray are 23 5/8 by 13 7/8 inches (Beaver Plastics, 2015). Similar to the Hortiblock tray, this design is supposed to prevent root penetration for easy extraction when transplanting (Beaver Plastics, 2015). With this tray, propagation will be much more uniform then if the seeds were planted in the field. This container would not recommend for Nepalese people as it is a bigger and bulkier tray which will cost more, and it does not carry many more benefits than the Hortiblock style tray.

Then there is the tray with the most technology, the Copperblock tray (Refer to **Figure 1c)**. This tray is very unique as it contains copper strips in every individual cell (Beaver Plastics, 2015). The copper strips are designed to train roots to grow downwards (Beaver Plastics, 2015). As the root from the organism in the tray comes in contact with the copper strip, the root "prunes" and starts to grow downwards (See **Appendix A**) (Beaver Plastics, 2015). Once transplanted, the roots continue their lateral growth due to the fact that there are more root tips developing and they evenly split up (Beaver Plastics, 2015). All of this technology is designed to prevent the crop from lodging (Beaver Plastics, 2015). Lodging is when the stalk of the plant (Stalk lodging) or the whole plant (Root lodging) bend (Lovell, 2012). Testing has also shown that pruned organisms from this tray collect more nutrients and water then the average organism (Beaver

Plastics, 2015). This container would not recommend for Nepal as the organisms they grow would not greatly benefit from the technology in this tray.

Finally, the lettuce raft. These rafts are much larger then previous products shown. These rafts have dimensions of 2 by 4 feet (Beaver Plastics, 2015). This product goes hand in hand with Hortiblock trays, specifically the HB 242/26 (Beaver Plastics, 2015). The lettuce raft is designed to grow leafy greens to maturity inside the raft (Beaver Plastics, 2015). It is ideal for areas with deep water, like that of Nepal. To use this product right, the seeds of the preferred crop must be propagated in the smaller Hortiblock tray (Beaver Plastics, 2015), then when at right size can be transplanted to the lettuce rafts and grown to harvest (Beaver Plastics, 2015). This ensures that the organism is protected its whole life cycle and is grown in ideal conditions.



*Technology incorporated into each Beaver Plastic Tray (**Figure 3)***
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As seen in (**Figure 3**), each tray has some integrated technology. This technology does not apply to the Copperblock tray. In between each cell there is a vent that promotes the flow of upward

air (Beaver Plastics, 2015). This helps to radiate warm air through the tray and promote healthier growth.

Type of Tray	Price (Canadian Dollars)
Hortiblock	$4.00
Styroblock	$5.00
Copperblock	$7.00
Lettuce Raft	$9.60

Pricing Figure 4 – Shows the price of each tray (Per one unit) before taxes. It is clear that these trays are affordable for Nepalese farmers to purchase
Retrieved from http://bpgrower.com

Each tray has a different price, but all 3 are fairly cheap and affordable. As seen in **Figure 4,** the Hortiblock tray is the cheapest. They are the smallest unit and contain the least amount of integrated technology. For pricing reasons these trays would be the best option for the Nepalese farming sector. Styroblock containers are the next cheapest container. The hike in price is due to the reason that these trays are bulkier and are a bit heavier. These trays also have a smooth surface so that the organism comes out of the tray with no issues for transplanting (Beaver Plastics, 2015). The size of these trays also make it more durable than the competitor Hortiblock tray. Finally, the Copperblock container. This container is the most expensive due to the fact that it contains copper strips, as mentioned earlier. These strips,

along with a bigger tray make this container the highest quality. Each tray has its pros and cons, and could benefit different farmers in Nepal based on their specific crop growth.

Benefits to Canada

With the exportation of these agricultural tools to Nepal, Canada will benefit in different ways. Since the company being used is located in Canada, the money generated will be put into the Canadian economy. In 2012-2013 Canada exported a total of 7.1 million dollar's worth of goods to Nepal (Canada-Nepal relations, 2014). In the last 40 years, Canada has invested 470 million dollars to the Nepalese services, businesses and more (Canada-Nepal relations, 2014). It is clear that the opportunity to export to Nepal is logistical and beneficial to Canada. Beaver Plastics (Company in question) also has a distribution plant located in Mexico (Beaver Plastics, 2015). This shows that the company is willing to expand. Agriculture in Nepal is such a large industry, it is clear that farming plays a large role in creating jobs and generating revenue in Nepal. This brings opportunity to Canadian companies like Beaver Plastics, who are known to expand to other countries as they could see the opportunity to open a manufacturing plant in Nepal. This would help increase the revenue for the Canadian company and in turn, benefit Canada.

Background on Importing Nation: Nepal

Nepal is a small country located on the eastern side of the world between China and India (The world factbook, 2001). Nepal is 147,181 sq. km (The world factbook, 2001) and has 3 different geographical landscapes. These include the Terai region, Hilly region and the Mountain region (The world factbook, 2001). Nepal is also home to the worlds largest mountain, Mount Everest, which reaches heights of 8,850 meters (The world factbook, 2001). This mountain is a large

attraction for tourists and benefits the Nepalese economy. Just under 29% of the land in Nepal is agricultural land (The world factbook, 2001). As mentioned earlier, agriculture in Nepal plays a very large role in generating money as the GDP in Nepal for agriculture is 35% (Department of agriculture, 2015) as well as providing 70% of the population of Nepal with jobs (The world factbook, 2001). As of 2014, the average income for one Nepalese citizen is roughly $970 Canadian, which converts to 77781 Nepalese Rupees (Project map, 2015). Nepal was also a victim of a recent devastating earthquake (Goldberg, 2015). This earthquake was responsible for killing over 8500 people and displacing 2.8 million (Goldberg, 2015). 432 million dollars was the amount decided to use to help the Nepalese (Goldberg, 2015) and as of May 2015, 88 million has been received Goldberg, 2015). With major cities like Kathmandu hit hard by the disaster, the Nepalese economy was also hit hard. Businesses and stores were destroyed in the disaster causing people to lose their jobs all over the country. The United Kingdom was the biggest player in donating money for relief funds with 31 million dollars being sent to Nepal (Goldberg, 2015) for food, clean up supplies, shelter and more.

Benefits to Nepal

Nepal is a primarily agriculture country. Most of the jobs there are incorporated somehow into the agriculture sector and this is why the need for new innovative products is very important for their success. Exporting the tray product to Nepal could be a big player in the success of the crop there. Nepal is home to an abundance of cereal crops, vegetables and cash crops (Ministry of agricultural, 2015). The grain crops include rice paddies, barley, wheat, buckwheat, millet and maize (Ministry of agricultural, 2015). Cash crops grown in Nepal include oilseed, potato, tobacco, sugar cane, jute, rubber and cotton (Ministry of agricultural, 2015). There are also

many vegetables grown like tomatoes, peppers, cabbage, shallots and more (Pathak and profile, 2012).

Figure 5 – Shows the yield of each cereal crop in Nepal for 2014.

Crop	Yield (Kg/ha)
Paddy	50,470,47/3,394
Maize	22,832,22/2,458
Millet	30,410,5/1,121
Wheat	18,831,47/2,496
Barley	34,824/1,236
Buckwheat	10,335/983

Retrieved from http://www.doanepal.gov.np/index.php

Organisms like cabbage, lettuce, and rice paddies could be grown to maturity inside a lettuce raft from Beaver Plastics. Other organisms like tomatoes, peppers and shallots could be germinated in a plug style Hortiblock tray from Beaver Plastics, then transplanted to a field. This may sound like one extra step for the farmer of Nepal but there are benefits. As mentioned earlier, the technology in the Beaver Plastics trays, containers and rafts have the ability to protect organisms, radiate better temperatures and allow for better air flow (Beaver Plastics, 2015), thus leading to healthier crops and higher yields. In Nepal there is a common method for growing crops in highly flooded areas (See **Appendix B).** This involves first, taking a water based

hyacinthine and placing it in the water, then taking a layer of bamboo shoots and laying it on top of the plant (Floating gardens, n.d.). Next they take more hyacinthine plants and lie them on top of the bamboo for added support (Floating gardens, n.d.). Finally, a layer of soil and manure is added for the crop to grow on (Floating gardens, n.d.). this method is excellent for Nepalese farmers as it provides them food during the Monga, which is the annual food shortage (Floating gardens, n.d.), and these rafts are moveable making it easy for people who have lost their homes or move from home to home (Floating gardens, n.d.). This method of growing can be strenuous and take valuable time away from workers. With the help of Beaver Plastics lettuce raft and Hortiblock style plug tray, the Nepalese farmers can cut out this process to save time and resources. The trays and rafts exported to Nepal will be lighter, stronger and long lasting due to the Styrofoam material and integrated technology (Beaver Plastics, 2015). The trays could be distributed once in Nepal to local retail stores all across the country. This way all Nepalese farmers who are interested in the product have the same chance as everyone else to purchase the Hortiblock trays and Lettuce Rafts. This would then generate more money for not only farmers in Nepal but small business owners who could be representatives of the product and sell them.

Competitor Brands

There is close to no competition with Beaver Plastics. There is a company based out of China called Hebei Guangxing Machinery Technology Co., Ltd (Hebei Guangxing, n.d.). This company specializes in manufacturing of automated machines that produce products like Rockwool (Hebei Guangxing, n.d.). This company is not an immanent threat due to the fact that their products are meant for people who are looking to manufacture their own trays. The machines

they sell are also highly priced, some going for about 15,000 to 35,000 American dollars (Hebei Guangxing, n.d.). If the trays succeeded in Nepal, one of the tray manufacturing machines could be exported from China to give the Nepalese their own surplus of trays. This is not a major threat for Beaver Plastics succeeding in Nepal because, as stated prior, the price for this machinery is much to high for the average Nepalese farmer and this product is specialized for big companies with large markets to sell to.

Shipping

The products in question would ideally be shipped from Edmonton, Alberta to Kathmandu, Nepal via air cargo planes. The shipping companies being investigated are FedEx and A1 Freight Forwarding. FedEx has shipping world wide including Kathmandu, Nepal, and 32 other cities in Nepal (Shipping options, n.d.). FedEx offers multiple shipping methods that can help limit costs including priority, economy and next flight shipping (Shipping options, n.d.). Economy shipping would be the best option for this project due to its lower costs. To ship 2 packages of Hortiblock trays (80 trays), rough estimates on shipping would cost $889.35 Canadian before taxes (Shipping options, n.d.). To ship 2 packages of lettuce rafts, since they are bigger, would roughly cost $1087.87 Canadian before taxes (Shipping options, n.d.). As seen in (**Figure 6a),** total costs, before taxes, for one Hortiblock tray is $15.11 and the price for one Lettuce raft, before taxes, is $23.20. This means that a farmer can purchase one Hortiblock tray and one Lettuce raft together for $38.31, before taxes. This converts to 3069.29 Nepalese Rupees. As referenced earlier, the average Nepalese income is 77781 which means the Nepalese would have to spend about 4 percent of their yearly income (Refer to **Figure 7).**

Shipping can also be done through A1 Freight Forwarding. A1 Freight Forwarding offers shipping from all major cities in Canada and ship to Kathmandu Nepal, but no other spots in Nepal (Freight Shipping, 2015). This company offers shipment by boat, truck and air (Freight Shipping, 2015). The most efficient way to ship to Nepal would be by air. Shipping costs for 80 Hortiblock trays to Kathmandu would cost $912 Canadian (Freight Shipping, 2015). This means the shipping costs on one Hortiblock tray would be $11.40 Canadian. Shipping costs for Lettuce rafts were not available through A1 Freight Forwarding. As seen in **(Figure 6b)**, the total cost of the Hortiblock tray before taxes is $15.40 Canadian. This is 39 cents more per tray compared to shipping with FedEx (Refer to **Figures 6a-6b**). Although prices for Lettuce rafts were not available through A1 Freight Forwarding, it is fair to assume the rate will go up and cost more compared to FedEx. With the data collected it is clear that FedEx offers cheaper shipping, and gives more range for places to ship and types of shipping.

Figure 6a – Shows total costs of tray and raft with shipping prices from FedEx.
***Note: Taxes are not included**

	Hortiblock Tray	**Lettuce Raft**
Cost Per One Unit	$4.00	$9.60
Shipping costs (Per One Unit)	$11.11	$13.60
Total Price (Per One Unit)	$15.11	$23.20
Total Price (5 units)	**$75.55**	**$116**

Data retrieved from http://bpgrower.com/copperblock.html and http://www.fedex.com/ca_english/ship/

Figure 6b – Shows total cots of tray and raft with shipping prices from A1 Freight Forwarding
***Note: Taxes are not included**

	Hortiblock Tray	**Lettuce Raft**
Cost Per One Unit	$4.00	$9.60
Shipping Costs (Per One Unit)	$11.40	N/A
Total Price (Per One Unit)	$15.40	N/A
Total Price (5 Units)	$77.00	N/A

Some stats retrieved from http://bpgrower.com and http://www.fedex.com/ca_english/ship/

Figure 7 – Shows percent of Nepalese income spent on Beaver Plastics products with shipping costs from FedEx
***Note: Taxes are not included**

	Cost for One Unit of Hortiblock tray and lettuce Raft (Nepalese Rupees)	**Average Nepalese Income (Nepalese Rupees)**
	3,069.29	77,781
Percentage of Income	3.97%	100%

Some stats retrieved from http://data.worldbank.org/country/nepal

Unknown Information

Through the analysis of this product, more information has to be gathered to make a proper decision. The prices of shipping from both listed companies would have to be looked into more in depth and include taxes. The price models from both companies do not include taxes, as stated earlier and both quotes were generated via the company website. To gather more accurate price models, each company should be contacted to discuss exact costs.

Exporting and importing limitations and documentation would also need to be required, but current data was not available from the NEFFA (Nepal Freight Forwarding Association) website. Possible limitations on exporting goods from Canada to Nepal may limit this product from reaching its destination and providing assistance.

Finally, it should be looked into that a representative from the company in question, Beaver Plastics, travel to Nepal to show locals how to properly use the product.

Conclusion

In conclusion, the Styrofoam float bed trays from Beaver Plastics are the product in question. The products are designed to help propagate seeds with more accuracy and better results. With inexpensive materials being used in the manufacturing of these products they are within the reasonable prices of the Nepalese people. With trays being distributed into local retail or specialty stores it gives a chance to all farmers to purchase the trays as well as generating

money for small businesses in Nepal. This product may not be beneficial to all farmers in Nepal if money is an issue because as mentioned earlier, they already have the technology to propagate seeds in water. The method used is not as efficient or as successful but it is a way to cut back on costs and use natural resources. This product could have the potential to succeed but it depends greatly on the Nepalese farmers being willing to change their ways. They would have to increase spending slightly, but in the long run, this product has the technology and value to increase yields and help create a bigger and stronger crop for Nepalese farmers to harvest. The trays could be distributed once in Nepal to local retail stores all across the country. This way all Nepalese farmers who are interested in the product have the same chance as everyone else to purchase the Hortiblock trays and Lettuce Rafts. This would then generate more money for not only farmers in Nepal but small business owners who could be representatives of the product and sell them.

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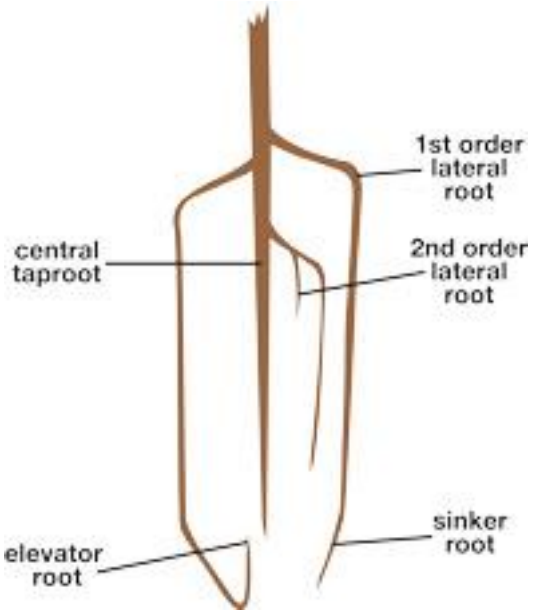
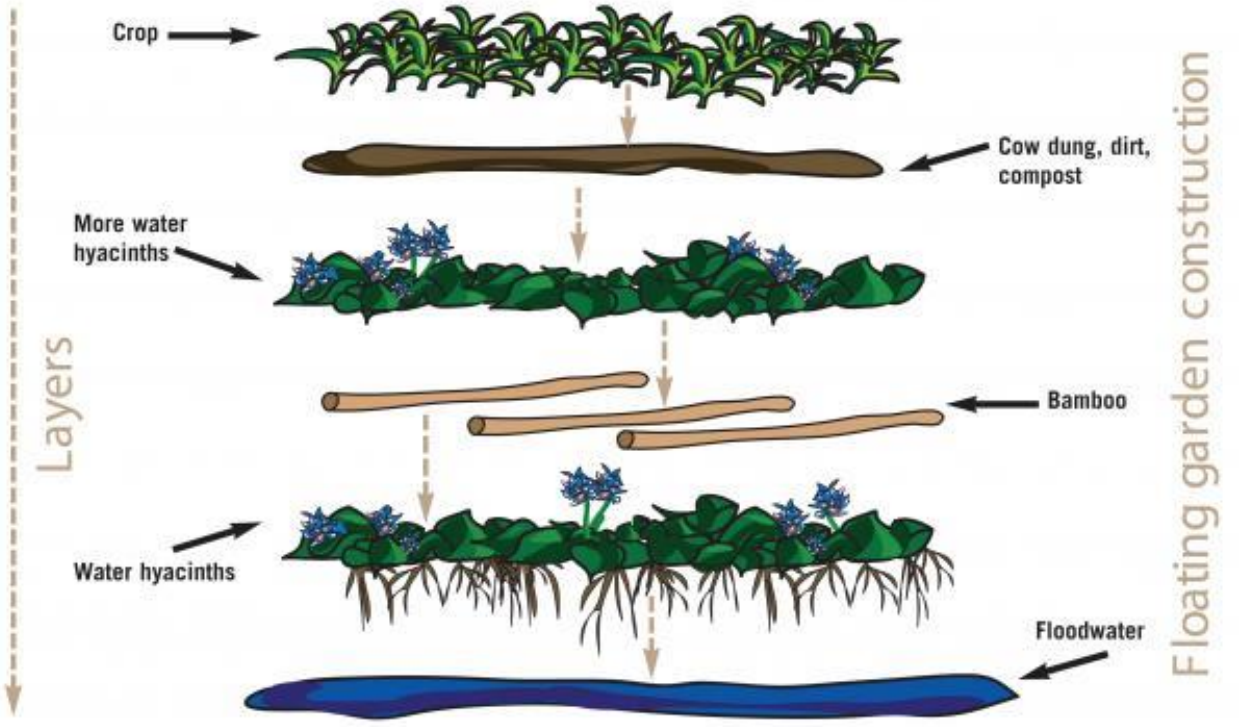
Appendix



Appendix A - Shows the root growing pattern for roots growing inside Copperblock container Retrieved from http://bpgrower.com/copperblock.html



Appendix B – Shows Nepalese method of growing crop in water
Retrieved from http://practicalaction.org/floating-gardens

Reference List

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