Developing Organic Fertilizer from Agricultural Waste in BC – Transform’s story

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Untapped potential. In two words, this is how I sum up the possibility of a new industry in the Fraser Valley that is organic fertilizer, one that I communicated to our local MLA Simon Gibson in January 2014. I see it as a scenario that would be a win-win-win:

- For the local economy—sustainable jobs, support for local contractors, and tax revenue.
- For organic farmers—giving them a tool currently unavailable on a large scale, for improve production, organically.
- For the environment—reducing the risk of surface and water pollution from excess nutrients and potential pathogenic organisms, and feeding depleted soil by transforming farm animal waste into a value-added product.

I have strived to turn this winning scenario into reality since 1994. Yet 20 years later, it is still untapped. The story actually begins in the early 1970s, when I was applying our dairy cattle manure to our fields. We lived near Hwy # 1 in Abbotsford, and I couldn’t help thinking that our urban neighbours may be able to benefit from some of this agricultural manure.

There are a number of things that we know now are important, but that I did not realize at the time:

1. Farms in the Fraser Valley were producing excess manure, which was potentially causing surface and ground water pollution.
2. It is increasingly important to recycle phosphorus because world fertilizer supplies are limited and are contaminated with heavy metals and radionuclides.
3. Good Agricultural Practice Guidelines would require manures to be properly composted to ensure that our food and vegetable crops are safe.
4. There was increasing interest in reducing pesticide use and increasing the health of our soils naturally.

In 1994, I worked for Agriculture and Agri-Food Canada at Agassiz as a waste management scientist. In 1995, we pelletized and crumbled a combination of composted poultry litter and hog manure. The composting process was a six week process in an aerated vessel containing poultry litter, sawdust and liquid hog manure. We also successfully produced an organic based fertilizer with a combination of biosolids composted with poultry litter.

The fertilizer performed very well in container experiments with ryegrass. Some of our organic

Figure 1. We produced a pelletized and crumbled organic fertilizer produced from a combination of composted manures in 1995.
based fertilizer blends performed better than commercial fertilizer or other leading organic fertilizers.

Although the performance was great, we were not satisfied with the shape of the particles. The irregular shape and sharp edges would result in excessive dust formation during storage or in a bag.

I participated in a “Marketing Plan for Pelleted and Crumbled Poultry Manure Product,” funded by Environment Canada through the Fraser River Action Plan. This was a practical document to follow up a 1994 study to assess the market potential for poultry waste generated in the lower Fraser Valley, in response to “environmental concerns over the quantities of poultry waste being produced and disposed of in relation to the local carrying capacity of the land.”

We followed the development of the fertilizer product with two years of field experiments with broccoli. With these experiments, we added some other amendments to the organic fertilizer to enhance performance.

After I began working with Transform in 1998, we developed a blend of spent mushroom compost and other amendments. We worked with a company in Pennsylvania in 2000 to provide the granulation technology for the fertilizer. We were very satisfied with the shape and integrity of the granule, as this granule did not readily produce dust. We proceeded to test the performance of the blend of composted product, which performed very well.

The next steps were to develop a business plan, to find a location to manufacture the fertilizer, and to find investment. Transform developed a business plan in 2001 together with Community Futures in Mission, BC. We realized that finding investment was difficult without a location to do the work. We realized that the Agricultural Land Commission (ALC) rules don’t encourage value-adding compost products anywhere other than on the farm that the waste is produced. Because we used a combination of manures, this required non-farm use permission from the ALC.

We worked with a local farm to obtain non-farm use permission for composting and fertilizer production in 2000. We produced a high quality compost in preparation for the next step of fertilizer production. A local trucker, who had been hauling compost and soils for many years, called Transform’s compost the
best quality compost that he had ever worked with.

One of the challenges that we addressed with both the City of Abbotsford and the Agricultural Land Commission in 2001, was the prevalence of companies that were choosing not to abide by provincial or municipal regulations. Due to this, in 2001, we had to abandon our efforts because we realized that we could not compete with other companies that were:

1. Operating on farms without obtaining non-farm use exclusions, which had cost us money and time.
2. Operating without regard for either the Agricultural Waste Control Regulation or the Organic Matter Recycling Regulation.

In 2003, we worked with the City of Abbotsford and the University of the Fraser Valley to develop a vision for organic waste recycling that included (Oct 31, 2003 meeting notes):

1. **“A thriving local business that is able to create profit and encourage supporting industries in the area through engineering, manufacturing, trucking and other related supporting businesses.**
2. **In partnership with the University of the Fraser Valley, a training center for local students in the area of agriculture, environmental management, business and marketing, and a training site for technology purchasers from around the world, and**
3. **A community that demonstrates and encourages sound environmental waste management, and utilizes naturally based fertilizers, mulches, and growing media on its green space.”**

There were extensive discussions with the City of Abbotsford, the Ministry of Agriculture, the Ministry of Environment, and the Agricultural Land Commission regarding if or how an organic fertilizer manufacturing process could happen on agricultural land.

We were producing an organic lawn fertilizer in powder form that showed exceptional promise as the new organic fertilizer. We used this successfully on many lawns locally and in Vancouver – with comments such as “this is magic!”
At about the same time, Transform was able to acquire a used granulation system. During the next few years, as resources became available, Transform set up the equipment and further developed and defined the blend that would be granulated.

In 2007, we again expressed concerns to the City of Abbotsford regarding companies that were choosing not to be compliant with regulations. Both staff and council members voiced support for creating a level playing field for local businesses.

We began producing and marketing compost after we received the non-farm use permission in 2008. Again, Transform became known as the supplier of some of the highest quality compost available from Vancouver to Hope.

In 2009, Transform completed a business plan for a phased approach for the organic fertilizer production from the one tonne per hour plant to a 20 tonne per hour plant with up to $27 million in sales.

In March 2011, Transform completed installation and commissioning of the 1 tonne per hour pellet plant.

We were unable to put this plant into production.

In the meantime, there is still an excess amount of manure and agricultural waste produced in the lower Fraser Valley. The environmental concerns regarding excess nutrients remain. There is increased concern regarding the use of antibiotics in farm animals and their fate in the environment. The interest in growing local healthy foods using healthy soils is only increasing. CanadaGAP, an organization dedicated to the safety of our fruits and vegetables, recently announced that any organic waste utilized for vegetable production would require certification to be free of potential pathogenic organisms.

The opportunities remain: 40 years after the vision was first conceived, and 20 years after specific products were produced and we clearly understood the environmental and social importance of this vision. The potential is great. I remain dedicated to finding a way to tap this potential and bring this win-win-win scenario into fruition. The hurdles remain high—but with a slight shift towards the political will to ensure regulatory compliance, they are surmountable.

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