

PROJECT 6c:
INNOVATION INSIGHTS

**Innovation and Off-Grade Food
(Due to Imperfections):
Drivers and Deterrents**
An overview of the issue



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a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

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About the CAPI Processed Food Research Program

Food and beverage processing is one of the country's largest manufacturing sectors and an essential channel for Canadian agricultural products. Companies are succeeding yet the sector has been facing challenges, including record trade deficits in secondary processing. Working closely with a variety of partners, CAPI's research is focused on better understanding the issues and opportunities facing this sector and their implications for policy and strategy, and to generate a dialogue on ways to support the sector's future growth and competitiveness.

Project 6c: *Food Processing Innovation and Off-Grade Food: Drivers and Deterrents:* Waste in the food industry is an issue getting increased publicity. Yet, one largely unknown aspect of this issue is the use of off-grade food ingredients as an economic opportunity for some players in food processing and production. This brief paper examines how food processing companies in British Columbia are successfully using off-grade ingredients in a variety of processed foods and the advantages and deterrents to using such ingredients.

PHASE 1 Diagnosis	PHASE 2 Inspiring practices	PHASE 3 Competitive advantage
1a. Diagnosing the trade deficit 1b. Reasons for the trade deficit 2. Explaining the trade deficit 3a. Food manufacturing performance 3b. Plant openings, closings & investments	4a. Case studies on company success 4b. Cross-case study analysis 5. Consumers and markets 6a. Capital investment 6b. Talent, skills and people 6c. Innovation and off-grade food	7. Conclusions 8. Implications for policy & strategy 9. Dialogues on outcomes

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Executive Summary

Off-grade foods are fruits or vegetables that fail to meet aesthetic specifications such as suitable shape or colour. Using off-grade food can reduce food waste and provide both a benefit to society and profitable opportunities for companies. This report investigates how select firms in British Columbia create these foods and what drove them towards using these materials.

Some companies use off-grade food because they need to find ways to add value to their product line because of low returns to the premium product. Making value-added product from produce that initially went to waste provides an extra source of income. The availability of the right raw materials is integral. Successful companies have expanded into other lines by utilizing leftovers and byproducts that come from processing raw materials. Some small-scale processors will simply find the raw material right in their backyards, eliminating significant transportation costs. Certain large firms have control over much of the supply chain, from farm to distribution, and thereby have direct access to the supply of the product they require.

Marketability is another important factor. The firms must consider carefully whether a market exists for the given product. A smaller firm that is just entering the market can aim for a small niche and build from there. A medium-sized firm, on the other hand, must consider whether a new product will fit within its brand. There are also some deterrents to using off-grade food. Securing a reliable supply of produce and a way to use all elements of it can play a large role. This problem can be further exacerbated by the distribution of farms, which can impose communication and transportation costs. Another issue related to the acquisition of the right amount of off-grade food is handling. Using off-grade food can also be fairly difficult for processors, as this creates an extra level of processing they must integrate into their operation.

Many small businesses have succeeded by acting as both processor and producer. At the same time, producer/processors have an inherent integration of their supply chain by linking two parts together directly. Many of the processors interviewed for this report have a strong background with premium products. And some firms have demonstrated the potential uses of off-grade food. However, there are many issues that need to be examined before moving into a business based on off-grade food. There are formidable deterrents to using off-grade foods that every player will need to take into account when considering how to maximize their potential.

Introduction

Waste in the food industry is a major issue for policy-makers, retailers, distributors, processors, and producers alike. Waste occurs in various forms at every level of the supply chain. Every apple that isn't consumed represents a waste of money, labour, land, water, and energy. It is not uncommon to see large amounts of unharvested fruit left on trees or rotting on the ground. Farmers consider this fruit waste because they know it will be deemed off-grade for not meeting aesthetic specifications for shape or colour.

Off-Grade Food Products

Using raw materials that otherwise would go to waste can benefit society and provide profitable opportunities. Some companies in British Columbia are creating products based on or augmented by off-grade food. This report investigates how these firms create foods from off-grade raw materials and what drove them to the practice. Several common themes are revealed across different products and act as guiding principles in innovation of food processing. Generally, the creation of a food product begins by either identifying a market gap or having an abundance of unused raw materials. These two ideas will be evident in how these firms have sought to innovate and expand into new product lines.

Methodology

This study takes a qualitative approach to examining the off-grade food industry in B.C. The examination is based on identifying those firms currently using off-grade food, the major drivers influencing this practice, and the deterrents to using off-grade food. Initially, the research was intended to focus on specific data in the off-grade food environment of B.C. However, upon looking at the methodology of similar studies performed by the George Morris Center and the Food and Agriculture Organization of the United Nations, the authors concluded that procuring these data (were they available) would likely lead to similar conclusions as those of these bodies. Therefore, a qualitative approach was selected.

Marketability

Producers considering using off-grade products must first determine if a market exists. Small firms just starting up have more room to take risks with market placement, by simply aiming for a small niche. But medium-sized firms must consider whether new products fit within their brand. Does expanding into the soup market make sense for a juice company? This is a question that Randal Lus, one of the founders of Happy Planet, must have asked himself. The answer is evident in grocery store aisles where Happy Planet soups are displayed. Expanding its brand into soups did not undermine the company's brand image of products made with fresh ingredients. Like many juice companies, Happy Planet procured off-grade apples to use as ingredients in their juices. This demonstrates that just because produce is considered off-grade, it does not mean that it cannot be a high-quality fruit in terms of freshness or taste. In fact, the use of off-grade produce should not be seen as a deterrent to marketing a product at a premium price point. It is by emphasizing freshness that Happy Planet markets its product as high quality, whether it is juices or fresh soups that are not condensed.

The methods of marketing new products are also often determined by the product itself. According to John Coughlan, President and CEO of Transcold Distribution (the Western Canada Distributor of Unilever Ice Cream Products), the ice cream industry rolls out different flavours every year alongside classic favourites. New flavours are not created simply on demand from customers. Instead, new flavours come out because they are different, but still taste good. The market has reached a point where consumers no longer know what new flavours they want; they just want to try something new. Ice cream itself provides the possibility to use off-grade food in various flavourings because processed fruit in a scoop of ice cream looks little like whole fruit.

One group involved with processing this fruit is Sandel Foods, based in Chilliwack. The company makes glazes, glace fruit, baking fillings, and purees for ice cream. Many of these products, including the bakery fillings and purees, are derived from off-grade fruit. Sandel Foods often develops these products to sell to other food processors, allowing them to reduce the level of processing that they must do, especially if the ingredient is only a small component of the finished product. The company understands the marketing element better because it is in the middle of the supply chain and rarely sells its product at the retail level. Sandel Foods has moved into various product lines simply because that is what its customers want.

Competitive Survival

There are few better motivators than competitive survival. Tabletree Juice, based in Creston, B.C., is an example of a company for which necessity resulted in the creation of an award-winning juice. As cherry farmers, the Snow family needed a way to create better profit opportunities for their produce. The local cherry industry had declined, with three of five packers in the area closing down and half the growers no longer in operation at all. The high costs of picking cherries were generating small returns. Proprietor Susan Snow stated that in the last five years, they earned only \$0.85 per pound of cherries, but it cost \$1.70 per pound to pick, pack and produce them. At the same time, much of the crop that was produced was culled by the packing houses. On average, 30% of the cherries sent to the packing houses were deemed off-grade, even though 90% of those cherries were still edible. Given the low prices for their product, and with so much going to waste, the Snows needed a new way to utilize the cherries. Therefore, they created a new juicing process and the machinery necessary to make their cherry juice. The juice itself is a high-quality product, and won Best Pure Juice Product at the 2012 World Juice Awards in Barcelona, Spain. As well, the Snows won a B.C. Innovation Council Award. While major obstacles remain, the Snows are well on their way to producing an innovative product from off-grade fruit that had previously been going to waste.

By creating a value-added product, the Snow family was able to moderate the levels of risk that comes with relying on a single fruit. With the fresh product fetching lower prices, having a value-added product allowed for another method of sales, one less sensitive to price variation.

Diversification also proved profitable for Glenwood Valley Farms, a company whose primary product is fresh produce, but which found itself able to make products from off-grade food such as jams, jellies, pickles, relishes, and chutneys. Making value-added products from produce that had been going to waste provided an extra source of income. Many other farms could benefit from an alternative source of income by using off-grade produce, particularly when unfavourable weather or quality issues with their produce threaten their main source of income.

Availability of Raw Materials

The success of Tabletree Juice illustrates the importance of having raw material readily available. Though the need for an alternate income source generated the company's interest in creating their own juice, the initiative seems to be rooted in the availability of so many unused cherries. Better yet, the product that Tabletree Juice creates all comes from produce but does not cannibalize the supply of fresh, whole cherries that go into market. Tabletree has expanded into other lines, simply by exploiting leftovers and byproducts that come from processing raw materials. Their apple and cherry sauces come from byproducts of their other production processes.

The approach taken by Tabletree can work for a much larger firm. Ocean Spray, the large cranberry cooperative, also produces sauces and juices. However, unlike Tabletree, it is on the opposite end of the size scale, being the biggest name in cranberries in North America. Its approach to using cranberries is highly dependent on having a considerable amount of the produce available and using as much as possible.

Smaller cranberries that don't make grade go into cranberry sauces. The size of the cranberries has little impact on the quality of the product itself. The sauces are canned and keep for a significant amount of time, minimizing concerns about waste from rotting. Larger cranberries that do make grade are processed into a successful line of raisins. The juice extracted during processing becomes cranberry cocktail.

This method of production is fairly different from the processes used by other fruit industries. In most others, the fruit that makes grade would be left whole and moved towards retail, while off-grade would go towards juicing. However, the majority of sales for Ocean Spray do not come from fresh fruit, but from processed products. Its various products allow Ocean Spray to decrease waste at the farm level and simultaneously increase profits by adding value through processing. Both a producer and processor, Ocean Spray is able to assure that supplies of the raw material can support its processing. As a processor, it has greater incentive to put to use off-grade food that comes from its own production in lieu of letting it go to waste.

The fact that each of these firms is both a producer and a processor makes the ingredients they depend on for success readily available. To a small-scale processor like Tabletree Juice, the raw material is essentially in their backyard, eliminating significant transportation costs. Ocean Spray is a large firm that controls much of the supply chain, from farm to distribution, and thus has direct access to the supply of its product.

Deterrents

There are deterrents to using off-grade food. For example, securing a reliable supply of produce and a way to use all elements of it can play a large role. Processors who aren't also farmers need to recognize that the cost of acquiring off-grade food will be higher for them than for a processor/producer. Many farmers will leave off-grade food unharvested because it is not profitable enough to make it worthwhile. If a processor wants to acquire an off-grade product, then he or she would need to pay the farmers adequately for it.

Transportation costs are also a factor. Tom Demma of the B.C Vegetable Marketing Commission states that these costs are a major deterrent to using off-grade food. Unlike a processor/producer, a small-scale processor needs to either arrange transportation itself or pay a higher price to a farmer to arrange delivery to the processing level. A producer/processor eliminates this cost by having the produce already on site (e.g., as does Tabletree).

This problem can be exacerbated by the distribution of farms that have the produce the processor requires. If the farms are not individually capable of meeting the demand of a processor, more communication and transportation costs are involved. The processor would need to weigh the benefit of dealing directly with multiple farmers against simply getting retail produce from a packer, co-op, or marketing agency.

Another issue with acquiring the right amount of off-grade food is the handling of off-grade food. Once a farmer or packer knows that a product is of lower grade and will likely go towards juicing, then it is handled with less care. According to Tamarac Fresh Cut Foods, a company that cuts different fruits and vegetables into more consumable forms, the handling makes use of off-grade food more difficult. For example, when making prepackaged apple slices with off-grade fruit, shape and size would not necessarily be as much of an issue. However, large amounts of bruising may occur if the product is handled with less care, which leads to a higher chance of rotting. In fact, handling is the reason that Tamarac Fresh Cut Foods does not use off-grade fruits.

Randal Ius of Happy Planet stated that for a medium-sized firm like his, using off-grade food can also be fairly difficult for a processor because it can require extra levels of processing. Usually, the ingredients for their products will be provided by a supplier that performs most of the cleaning and preparation themselves. With off-grade food, some of the cleaning will not be performed as readily by the supplier and would need to be done by the processing firm. This increases food safety risks, along with other compliance issues. For a smaller firm, this may not be a problem; but as a processor grows in size, it can become a significant challenge.

Conclusions

Most small businesses that have found success using off-grade produce are those that act as both processor and producer. Tabletree Juice and Glenwood Valley Farms were launched by farmers who moved into the processing business because of the abundance of product and a need to create a value-added product. Bernice Neff of Glenwood Valley Farms reports that processed products still make up only a minority of earnings for her entire farm group. In a sense, their off-grade food product acts as a method to supplement their main source of income, leaving more room for possible financial shortfalls. If a prospective company was to solely move into the processing sector, this type of risk-minimization begins to disappear.

At the same time, producer/processors can integrate a supply chain by linking two parts directly together. A processor will not have such a relationship with its suppliers and would thus need to foster one. This relationship could prove important in securing off-grade food that otherwise would not get sent to a packing house. Not-for-profit food gleaners provide a good example of the importance of close ties with a supplier. Food gleaners operate by reaching agreements directly with farms to acquire food that is not harvested. This food is often dried for use in aid projects for developing countries. There are also other ad hoc relationships between livestock and dairy farmers to acquire off-grade food from farmers to use as feed. To a small processor, it could be possible to form these types of relationships with producers. As such, this bond could be just as important as the one formed with customers.

Those interested in determining whether a viable business opportunity exists to utilize off-grade food should examine how the drivers and deterrents described in this report might apply to them. Naturally, the first priority is to consider the factors that apply to any potential business opportunity, such as financial issues, the market, procurement, safety, and so on. From there, a variety of factors will play a role in the development of a marketable product. A product won't necessarily find a niche solely because the raw material is readily available. A number of factors and drivers come into play.

As illustrated in this report, various companies in B.C. are having success using off-grade food. Why more firms aren't taking advantage of off-grade food is a pressing question. While this report has addressed some of the reasons that affect processors, major deterrents can exist throughout the supply chain. All players involved face their own potential deterrents, and often will need to introduce changes to make use of off-grade food viable. The next step is to examine the factors preventing the use of off-grade food at each stage of the supply chain, and to investigate measures to overcome such obstacles.

Appendix

Commodity	Company	Product	Scale
Cherry	Tabletree Juice	Cherry Juice	Small
Apples	Happy Planet	Apple Juice blended with others	Medium
Cucumbers, Peppers, Berries, others	Glenwood Valley Farms	Jams, Jellies, Chutneys, Pickles, Relishes	Small
Apples and Carrots	Tamarac Fresh-Cut Foods	Trimmed Individually Packed Fruits and Vegetables	Small
Cranberries	Ocean Spray	Sauces	Large
Cherries, Pineapples, Berries	Sandel Foods	Bakery Fillings, Glacé Fruit, Ice Cream Flavourings	Medium
Grapes, Raspberries, Apricots, Plums	Vinegar Works at Valentine Farms	Vinegars	Small

Organizational Leads

The Small Scale Food Processor Association is a federally chartered not-for-profit entity that was incorporated by Letters Patent on March 7, 2002. Since incorporation the association has undertaken many complex issues affecting the small scale food and beverage processing sector. In 2010 the association agreed to participate as an administrator for the Agriculture and Agri-Food Canada Advance Payments Program. This is a loan-guarantee program that provides low- and no-interest loans to Canadian farmers and the security for the loan is their crop. Over the course of administering this program the SSFPA board of directors deemed there may be an opportunity to add value to off-grade foods. In discussions with the Canadian Agri-Food Policy Institute, it became apparent that this research may be of benefit to the broader Canadian agri-food community and it was decided to undertake a joint project. We are appreciative of the numerous partners that have provided their input to assist the student researchers.

The project "Food Processing Innovation and Off-Grade Food" in British Columbia tries to find the drivers and deterrents of using off-grade food to make new products. By finding more opportunities to use off-grade food, we hope firms in B.C. can use this "new" source of raw ingredients and develop value-added food products for markets here and abroad.

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