

## Economics of Local Foods in Portland Public Schools

Report prepared by FarmSmart Business Services

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### Purpose

The purpose of this report is to determine opportunities for more local food inclusion in the Portland Public Schools, and to identify and create recommendations for expenses where local foods might be substituted for a comparable or lower cost.

### Main products, pricing, demand

During an interview with Jane McLucas, Food Service Director for the Portland Public Schools, we identified the four crops that Jane felt had the most potential for sourcing locally as:

1. Baby carrots (most important to Jane)
2. Chopped Romaine
3. Grape tomatoes
4. English (European) cucumbers

Of these, Jane felt that the biggest impact this project could have to increase the amount of local foods purchased is to develop a sustainable enterprise to process carrots into baby carrots. Chopped romaine is a secondary possibility as well.

While Jane likes working with distributors, she'd be willing to work with a farm directly if they were the sole and consistent supplier of a product.

Jane then asked her primary produce supplier (Native Maine produce) to provide data showing her usage of these top four products during the last non-pandemic school year (2018-19). I then cross referenced this data with typical market pricing a Food Service Director might pay for each product, and calculated a total of 7,000 lbs. for \$12.2k in sales. When divided by the PPS' 6,500 students, this amounts to 1.08 lbs or \$1.88 per student.

Product Name	Price paid by public schools	Lbs. used per year by PPS	Total potential Sales	Lbs. used per student @6,500 students	\$ sales per student annually
Carrot Sliced/Baby	\$1.20	1,613	\$1,935.00	0.25	\$0.30
Chopped Romaine	\$1.95	2568	\$5,007.60	0.40	\$0.77
Persian Cuke Wrapped	\$1.80	1332	\$2,397.60	0.20	\$0.37
Grape Tomato	\$1.92	1494	\$2,868.48	0.23	\$0.44
<b>Totals</b>		<b>7,007</b>	<b>\$12,208.68</b>	<b>1.08</b>	<b>\$1.88</b>

### Feasibility of Carrot Processing Enterprise

Maine has many farmers who raise high quality carrots; and a few who raise and harvest them mechanically and at a scale large enough to economically serve the school markets. However, there is no capacity in the state to currently process raw carrots in baby carrots, cut carrots, or other fresh processed carrot products. This study looks at the feasibility of the Portland

Public Schools to develop their own carrot processing business in house; and potentially to sell baby carrots to other schools systems as well.

**Equipment Needed & Cost**

In order to convert raw carrots into baby carrots, the carrots need to be:

1. Washed;
2. Peeled;
3. Cut;
4. Weighed into portions;
5. Inspected for metal shards or other food safety hazards;
6. Bagged.

A previous study conducted by Ron Adams in conjunction with the Good Shepherd Food Bank identified the equipment needed for these processes, along with costs. The total equipment cost (including installation but NOT construction of building or facility needed) was \$58,190.

Item	Capital Cost
Wash Sink/Spray	\$5,500
Batch Peeler - 50 pounds	\$4,725
Dicer/Shredder Large CL60	\$7,350
Logical Machine Portioner	\$11,000
Goring Kerr Model TEK-21	\$13,650
Band Sealer/PE Bag 3 mil	\$15,965
<b>Total Capital costs required</b>	<b>\$58,190</b>

**Variable Costs per lb.**

The going rate for most local carrots is well beyond what a school system is willing to pay - \$1.25 to \$1.75 a lb., depending on the market. However, there are a few growers (referenced above) who may be large enough and able to sell to the Portland Public Schools at a more palatable price of \$.65 per lb. This would be a low price for these farmers, and something they would do out of a sense of wanting to support local foods in the schools, more than economic self interest.

Assuming that the peeling and cutting process removes 15% of the raw carrots, this brings the raw product cost for baby carrots to \$.76 per lb.

Labor costs would add about \$.20 per lb. to the baby carrots, and packaging costs about \$.106, bringing the total variable costs to \$1.07 per lb. When compared with a price of \$1.20 per lb., this leaves a gross profit left of \$.13 per lb., which can be used to pay overhead costs.

		Notes
Average Price per lb.	\$1.20	
<b>COGS per lb.</b>		

Raw product cost per lb.	\$0.65	This is on the low end, most farms would feel this price was cutting the schools a favor.
Product Recovery rate	85.00%	Percent of the raw product that gets retained in the final baby carrots (after peels & ends are removed)
Product cost per lb. of baby carrots	\$0.76	raw product cost divided by recovery rate
<b>Labor Costs</b>		
<b>Task/Equipment</b>	<b>Cost per lb. @ 20/hour</b>	<b>Lbs. per hour</b>
Cleaning-Equipment with Wash Sink/Spray	\$0.02	813
Peeling with Batch - 50 pounds	\$0.05	406
Cutting with Dicer/Shredder Large CL60	\$0.01	3,226
Portion with Logical Machine Portioner	\$0.04	488
Metal Detector with Goring Kerr Model TEK-21	\$0.04	488
Packing with Band Sealer/PE Bag 3 mil	\$0.04	488
<b>Total Labor Cost per lb.</b>	<b>\$0.20</b>	
Packaging cost per lb.	0.106	\$.09 2 lb bag plus \$.40 per 25 lb master bag
<b>Total Variable Costs per lb.</b>	<b>\$1.07</b>	
Gross Profit/lb.	\$0.13	
Gross Margin	10.51%	

**Overhead Costs & Breakeven Point**

In addition to variable costs, whoever operates the carrot processing will need to pay overhead costs, such as insurance, licensure, and repairs and maintenance, as well as a portion of equipment depreciation (spread over 12 years). This is estimated to be \$15,850 annually. No labor is included in overhead, although in reality managing a carrot processing enterprise will consume ample staff time.

These overhead costs will require sales of \$150,000 annually (at 13% gross margin) to break even. This equates to just over 125,000 lbs. Of baby carrots sold annually. Since this exceeds the amount needed by the Portland Public Schools alone by a wide margin, the business will need to sell baby carrots to other schools or institutions. At the PPS' per capita rate of .25 lbs. Per year per student, the business would need a market that covered 506,000 students - if schools were the only market. In reality, the business would probably sell to other, higher value markets in addition, and sell baby carrots to schools as part of its values driven mission.

<b>Overhead Costs</b>	
Insurance	\$5,000

Repairs/Maintenance	\$2,500
Licensure	\$1,000
Other	\$2,500
Depreciaton	\$4,849
<b>Total Overhead Costs</b>	<b>\$15,849.17</b>
Breakeven point (sales)	\$150,740.24
Breakeven point (lbs.)	125,616.86
Students served to meet breakeven point	506,363

### Feasibility of Chopped Romaine Enterprise

Similar to the baby carrots, we also ran numbers on feasibility of chopped romaine. This would require \$55,597 in startup costs; post a 12% gross margin, and require \$130,000 in annual sales to break even; although the number of students required to breakeven would be far less at 169,000 (students consume more dollars' worth of chopped romaine per capita than baby carrots).

<b>Chopped Romaine Enterprise</b>		<b>Notes</b>
Average Price per lb.	\$1.95	
<b>COGS per lb.</b>		
Raw product cost per lb.	\$1.20	This is on the low end, most farms would feel this price was cutting the schools a favor.
Product Recovery rate	85.00%	Percent of the raw product that gets retained in the final chopped romaines (after ends are removed)
Product cost per lb. of romaine	\$1.41	raw product cost divided by recovery rate
<b>Labor Costs</b>		
<b>Task/Equipment</b>	<b>Cost per lb. @ \$20/hour</b>	<b>Lbs. per hour</b>
Cleaning-Equipment with Wash Sink/Spray	\$0.02	813
Cutting with Bowl Choppers	\$0.14	146
Portion with Logical Machine Portioner	\$0.04	488
Metal Detector with Goring Kerr Model TEK-21	\$0.04	488
Packing with Band Sealer/PE Bag 3 mil	\$0.04	488
<b>Total Labor Cost per lb.</b>	<b>\$0.28</b>	
Packaging cost per lb.	0.02	\$.40 per 20 lb master bag

<b>Total Direct Costs per lb.</b>	<b>\$1.72</b>	
Gross Profit/lb.	\$0.23	
Gross Margin	11.99%	
<b>Overhead Costs</b>		
Insurance	\$5,000	
Repairs/Maintenance	\$2,500	
Licensure	\$1,000	
Other	\$2,500	
Depreciaton	\$4,633	
<b>Total Overhead Costs</b>	<b>\$15,633.08</b>	
Breakeven point (sales)	\$130,392.24	
Breakeven point (lbs.)	66,867.82	
Students served to meet breakeven point	169,253	
	Capital Cost	
Wash Sink/Spray	\$5,500	
Bowl Choppers	\$9,482	
Logical Machine Portioner	\$11,000	
Goring Kerr Model TEK-21	\$13,650	
Band Sealer/PE Bag 3 mil	\$15,965	
<b>Total Capital costs required</b>	<b>\$55,597</b>	

**Other Crops**

In addition to baby carrots and chopped romaine, two other crops mentioned by JAne were persian (English or European) cucumbers and grape tomatoes. Both these crops are grown in greenhouses in Maine, and available deep into the fall/early winter; grape tomatoes can be harvested semi-green and ripened even in the winter. The pricing for these products is around \$1.50 a lb., which makes them reasonably profitable for the farmer and not too expensive for the school.

In addition, one crop not mentioned by Jane but promising for a farm to school relationship is whole-head Salanova lettuce. Salanova is a head lettuce variety with many shapes and colors, which can be cut at the base end with one swipe of the knife and fall apart into multiple baby leaves. This could be used as a sub for mesclun or chopped lettuce.

Native Maine sells a comparable to an 8 lb. "Mixed baby heads" product which they charge \$28 for. This equates to \$3.50 per lb. This price would be acceptable to many growers.

Salanova can be harvested from April to December in unheated high tunnels, and through the winter in heated greenhouses, though the economics of heating may discourage it.

## **Conclusions**

While lightly processed vegetables such as baby carrots and chopped romaine are in high demand at the Portland Public Schools, the economics and scale required to process these products in house are not feasible. Maine badly needs a business to process produce for fresh market use; but this business will require a market size much larger than that which the PPS (or even Maine schools as a whole) can provide. Most likely, this business will emerge with a focus on higher value retail markets; sales to schools would be added as a means of this business to achieve a values driven mission. Alternatively, the State or other entity could subsidize the purchase of baby carrots by schools so that the pricing was at parity with premium retail pricing.

In the short run, the greatest gains to be had in the realm of farm to school probably lie with farms who can sell grape tomatoes, European cucumbers, salanova lettuces, and other easy-to-use produce directly to their local schools.