The University of Georgia

Center for Agribusiness and Economic Development

College of Agricultural and Environmental Sciences

The Feasibility of Creating a Value Added Cooperative in East Georgia: Claxton Specialty Foods, Inc.

Christopher Ferland and John C. McKissick

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Purpose

This study examines the economic feasibility of operating a packing facility for green peanuts, cantaloupes, Asian pears, and pickling cucumbers in the southeast Georgia area. The main focus of this study is the financial aspects of adding value to vegetable commodities such as sweet corn and carrots.

This study focuses on the cooling and packing facility and does not address the marketing component of most feasibility studies. The figures used are relevant to operating a packing shed and came from various sources, case studies, farmers, The Center for Agribusiness and Economic Development, and the Food Science and Technology Department at the University of Georgia.

Quality in fruit and vegetables must be achieved during production prior to harvesting. Fruit and vegetable quality cannot be enhanced after harvest, it can only be maintained. Due to this issue, many producers and wholesalers quickly remove the product from the field and reduce the field heat. Rapidly reducing heat in produce increases shelf-life, maintains freshness, and slows the deterioration process occurring in the produce naturally, thus ensuring safety. Cooling cantaloupes also maintains soluble solids (sugar content) and flavor.

Packing Cantaloupes

Major operations at the packinghouse include receiving, sorting, sizing, waxing, packing, grading, cooling, and short-term storage. Receiving facilities should include a shaded area for trucks and wagons waiting to unload to avoid sun scald and increases in temperature that reduce shelf-life and increase cooling costs. Receiving activities can include data collection on the history of the shipment, unloading melons, and movement of melons into the packing area.

Different dumps can be used for the unloading of the cantaloupes, specifically a dry dump or a wet dump. The dry dump's slope should not exceed 10 to 15 degrees. Greater slopes could cause excessive speeds for the nearly spherical fruit. Decelerators can be placed strategically on the dry dump to reduce the speed of the melons but these will have to be replaced often due to wear caused by friction. These decelerators are made from thick plastic and hang down to meet the surface of the dump in a parallel manner. The full length of the side along the trailer or truck must open to prevent bridging of the melons as they roll out. Commercial padding is needed on contact surfaces. A relatively quick conveyor will be needed to remove the melons that have stopped at the base of the dump in order to allow more melons to continue their downward approach.

Wet dumps necessitate frequent monitoring for the proper chlorine level (150 parts per million) and water level. The chlorine serves to control bacteria in the water and on the melons themselves. The water level needs to be maintained at the desired depth to control the impact of

the melons when entering the wet dump. Again a conveyor system needs to be operating at a quick speed to remove the melons for space control of the load. If too many melons remain in the water, bruising will occur with impact. Research has shown little evidence of a significant quality differential in cantaloupes that were wet dumped versus dry dumped.

After the melons are dumped, either wet or dry, they move via conveyor to a washer. A brush type washer and sprayer lightly remove dirt particles remaining from the field. Markets prefer clean melons. The sprayer needs to be monitored for a chlorine count of 75-100 parts per million. From the washer, an adjustable height sorter will size the cantaloupes. These sorters can often be modified to distinguish a range of sizes and vegetables. When properly sorted, bulk bins of different counts will be packed.

Cantaloupes can be stored for two weeks once their field heat is dropped to 38°F or below. Moisture loss during the harvest and the heat reduction process creates an unattractive appearance but can be controlled by adding humidity into the storage areas. Research done by William Hurst, Extension Food Scientist at the University of Georgia, suggests humidity levels be kept around 90-95 percent. His research also shows that melons stored at 35.6°F or less results in chilling injuries and damages the internal quality. Symptoms of chilling injury include pitting or sunken areas, failure to ripen, off flavors and increased surface decay.

Dr. Hurst also indicated that cantaloupes produce high levels of ethylene. This ethylene limits the types of other fruits and vegetables that can be stored with cantaloupes. It also creates a situation where cantaloupes continue to ripen. Over ripening may be a problem during distribution and short-term storage. Cantaloupes should not be harvested until ¾ to full slip, allowing the sugar concentrations to develop to match consumers' preferences. Periodic ventilation of the storage room or truck is a low-cost method for keeping ethylene levels low.

Pickling cucumbers and green peanuts potentially can be affected by the ethylene produced by the stored cantaloupes. The Food Science Department at the University of Georgia suggest creating air flow breakers or partitioning the cooler to separate out the cantaloupes. The gases from the cantaloupes may over-ripen the pickles or assist in decaying and molding the green peanuts.

Claxton Facility Feasibility

This section investigates the cost and return of operating a packing facility in Claxton, Georgia. Equipment costs for the operation include components necessary for packing cantaloupes, cucumbers, green peanuts, and Asian pears.

Income

Income was derived by assuming the facility could pack and sell these products at 100% capacity. However, the limited cooler space of 7000 square feet requires a relatively quick turnover of these products. Cantaloupes and Asian pears need to be placed on the market as soon as chilled due to their limited shelf life. The cucumbers are chilled and sold as pickling cucumbers. The income amounts to $1,345,928 (see Appendix, page 18).

Capital Cost

These capital cost figures include all necessary equipment for both cantaloupes and cucumbers. The packing equipment cost was obtained from a functioning facility located in Georgia. Minor adjustment would be needed to run both products through the line. Incorporated into this line are a washer and sorter. The equipment cost totals $231,299 tax on the equipment is $16,191 producing a grand equipment total of $247,490. The warehouse and cooler cost totals $300,000, producing the total capital cost of $547,490.

Equipment Cost:	
Washer	$40,000
Sorter	$2,400
Conveyor and Drive	$20,000
Hydro Cooler	$50,000
Dump	$8,500
Guard Rails	$7,400
Forced Air Equip	$1,000
Computers	$15,000
Washer	$30,000
Scales	$15,000
Fork Lift	$42,000
Freezer	$40,000

Building Cost:	
Warehouse	$200,000
Cooler	$100,000

Direct Vegetable Cost

The figures for the cantaloupes and cucumbers were obtained from the Farmgate publication produced by the Center for Agribusiness and Economic Development. The green peanut and Asian pear prices were given to the researcher from the producers pursuing this operation. Prices of $0.33 per cantaloupe, $.50 per bushel of cucumbers, $12.75 per bushel of green peanuts, and $6.00 per box of Asian pears were used as the cost paid to the producers, regardless of sales. This figure was multiplied by the original pounds needed to reach 100% capacity. The total direct cost amounted to $584,187 (see Appendix, page 13).

Fixed Costs

Fixed costs associated with this fresh-cut facility include the depreciation on the building, equipment, and interest on investment funds. The projected fixed costs for this project is

$134,162. The depreciation is used to cover physical deterioration and function obsolescence. Built into this model is a return on investments of 10%. If needed, the deprecation can be substituted to cover the principals of a debenture (see Appendix, page 13).

Direct Labor

Labor cost calculations include both salaried and hourly labor required to run the packing facility. The labor figures are automatically adjusted with an increase in raw product. The regular hours of operation are 8 hours per day, for 27 weeks of the harvest season. The wages for the laborers are calculated at $6 per hour per employee (10) for 27 weeks of full-time (8 hour days) employment. Skilled labor will receive $10, and these employees (2) are responsible as shift supervisor and fork lift operator. The manager/salesperson receives an annual salary of $35,000 with the potential of commissions. This person is responsible for scheduling delivery of finished and raw products, ordering input supplies, and creating contacts for direct sales. The manager will be the only employee to receive benefits, estimated at $8,750. A part-time bookkeeper, with an estimated salary of $11,900, will be hired to assist the manager. The total labor cost is $140,800. If the packing shed decides to run a custom vegetable packing line for the remaining 25 weeks of the year, additional labor figures will need to be calculated (see Appendix, pages 13 and 16).

Variable Costs/Other Direct Costs

Variable costs associated with this project include labor, utilities, insurance, repairs, rental agreements, disposal, and operating costs. Operating costs include boxes, cleaning supplies, and packaging. This is subject to change depending on the pounds of product quick-frozen. Positive relationships exist among the pounds processed and the variable costs. The total for this category is $343,131. The largest component of this cost is the utilities used to operate the facility, freezer, and refrigerated rooms. Georgia Power provided the estimate on the electricity cost based on past performance and voltage requirements for the equipment (see Appendix, page 13).

Total Cost & Profit/Loss

Adding the variable and fixed costs together sums the total cost of $1,202,280. This is the total cost of operating the facility for 27 weeks. The packing line earns $143,648 annually. The operating efficiency appears extremely low for an agricultural-based product. The operating efficiency refers to the amount of income kept in the company. Out of every dollar the facility earns, $.11 and $.89 covers expenses. Throughout the year, large grocery store chains need assistance repacking various vegetables, from onions to potatoes. Co-packing other firms produce could be one aspect of the operation that may generate additional income. The only costs needed to be covered would be variable costs as fixed costs for the facility would be absorbed by the sweet corn and carrots (see Appendix, page 13).

HAACP

If the packing facility markets directly to retailers who do not repack, an HAACP plan needs to be implemented. Presently, the processing facility wishes to deliver large quantities to retail outlets and stores. The approximate cost for an HAACP plan ranges between $3000-$5000 for a single commodity plan. Additional products will increase the plan's cost. Further information can be obtained by contacting the Food Science and Technology Department at the University of Georgia.

Sensitivity Analysis

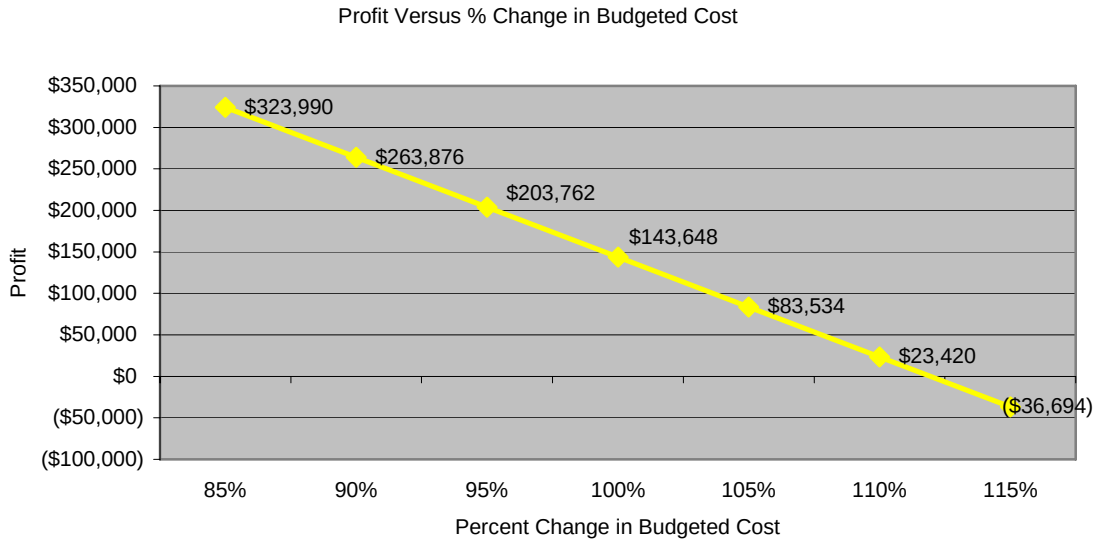
Profit Versus Budgeted Cost

Assuming the figures used in the economic feasibility section are closely related to actual numbers used to operate a packing line, the profitability sensitivity analysis can be seen in the graphs below.

The budget numbers include operating expenses (utilities, taxes, labor, supplies), fixed costs (interest on start-up cost, depreciation) and income from sales of processed sweet corn. Costs are subtracted from income, resulting in profit or loss.

Graph 1 indicates a profit when the costs are increased up to 15% of the budgeted cost. This information is useful for decision planning and risk aversion. Many costs are subject to change. Utilities for example can fluctuate periodically through the year depending on supply of their inputs. The Center for Agribusiness and Economic Development suggests a padding of 15-20% over budgeted cost to be safe. Often costs change after the start up of the business and the feasibility report.

Graph 1. Change in Profit Versus Change in Budgeted Cost.

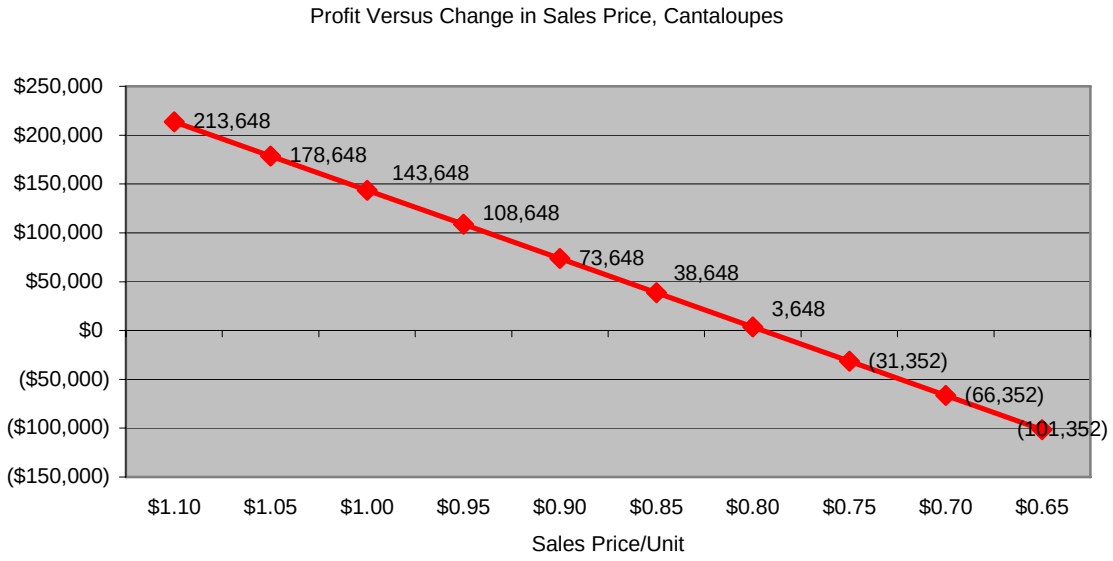


Graph 1 indicates the relationship between budgeted cost and profit. The cost estimates are moved incrementally at 5% intervals to see the results on profitability and risk. As seen in the graphs, when costs increase by 15% the scenario does not appear profitable.

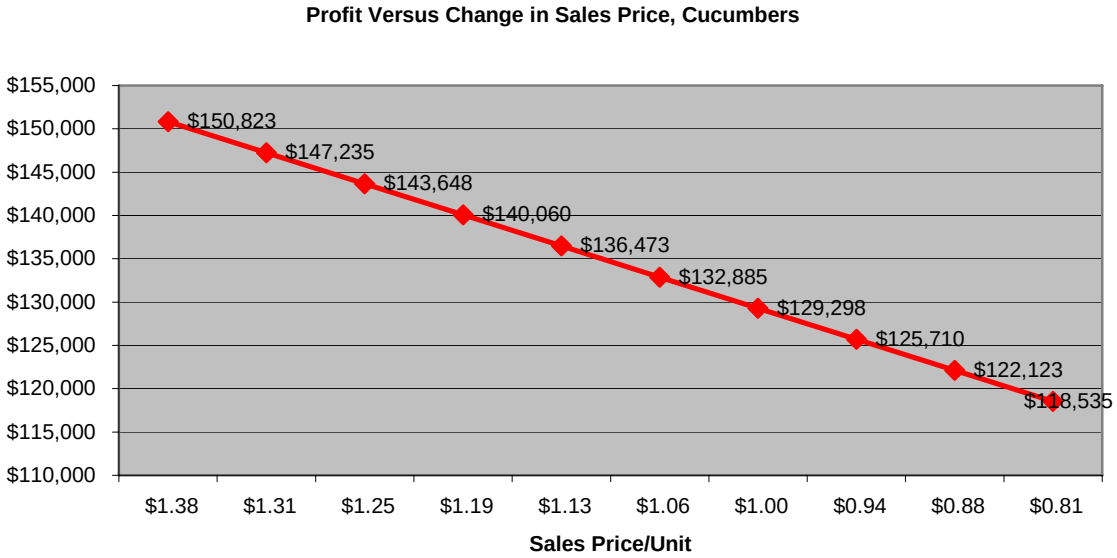
Profit Versus Percent Over/Under Estimated Sales Price

This section indicates how the change in the sales price of the packed produce affects the profitability of the facility. The obvious result is as prices decrease, profits decrease. Each product will be examined in this relationship to see how a price shift in one commodity affects the final outcome. As one product's prices change, the others are assumed to be constant.

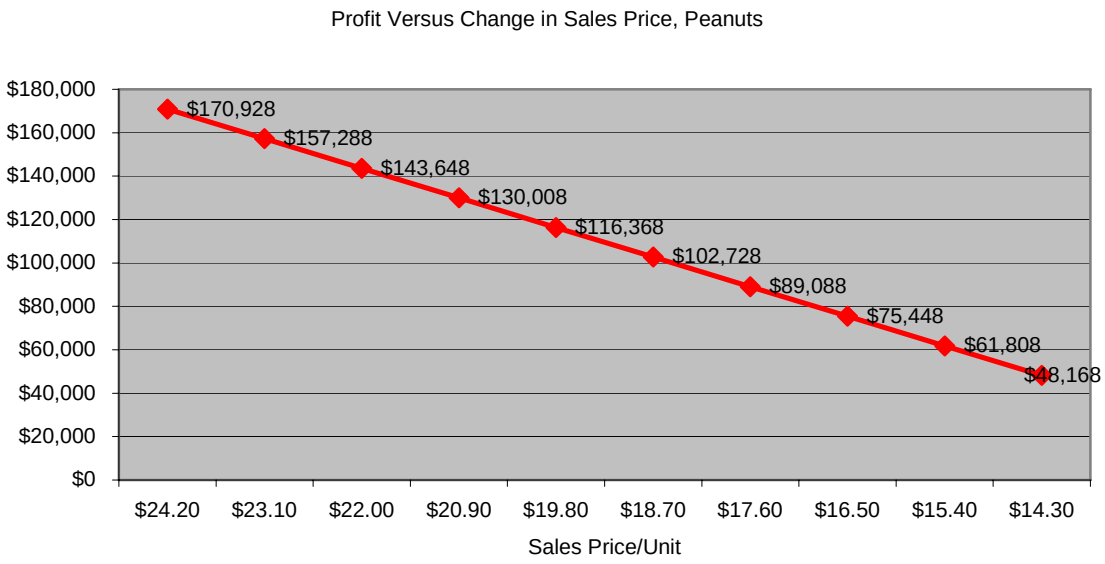
Graph 2. Profit Versus Over/Under Estimated Sales Price, Cantaloupes.



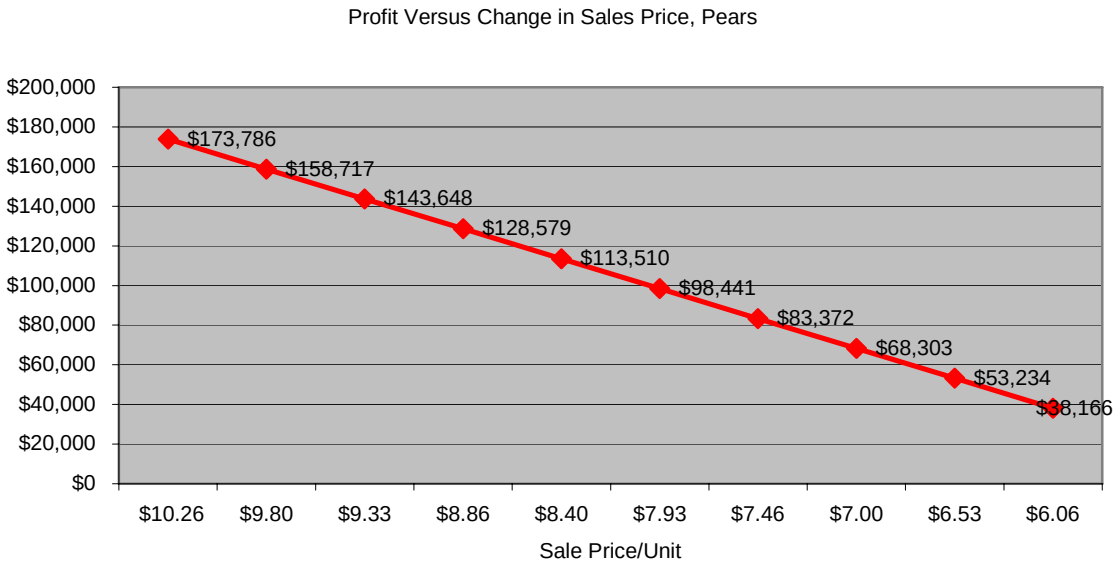
Graph 3. Profit Versus Over/Under Estimated Sales Price, Cucumbers.



Graph 4. Profit Versus Over/Under Estimated Sales Price, Peanuts.



Graph 5. Profit Versus Over/Under Estimated Sales Price, Pears.

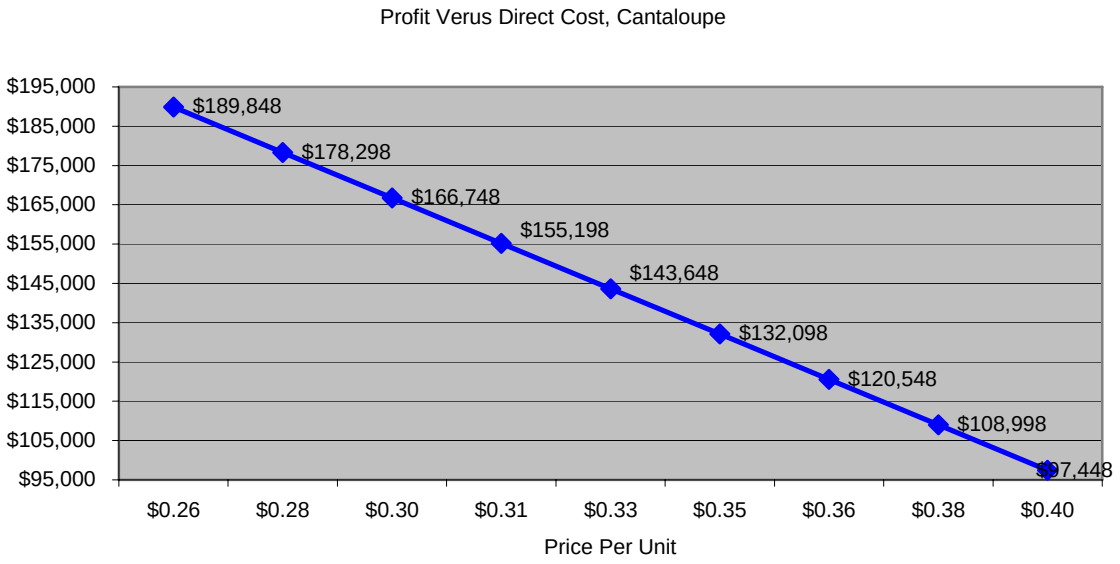


Graphs 2-5 indicate that a drop in price by any one commodity substantially affects the profitability. The price drops were in 5% increments and were dropped to 65% of the predicted sales prices. When the cantaloupe prices fall below $.75 the packing facility losses money. The other commodities can be reduced to 65% of their original sales price and retain a minor profit. The relationship of dropping two or more products was not directly visited, but using the charts above, one can calculate certain relationships.

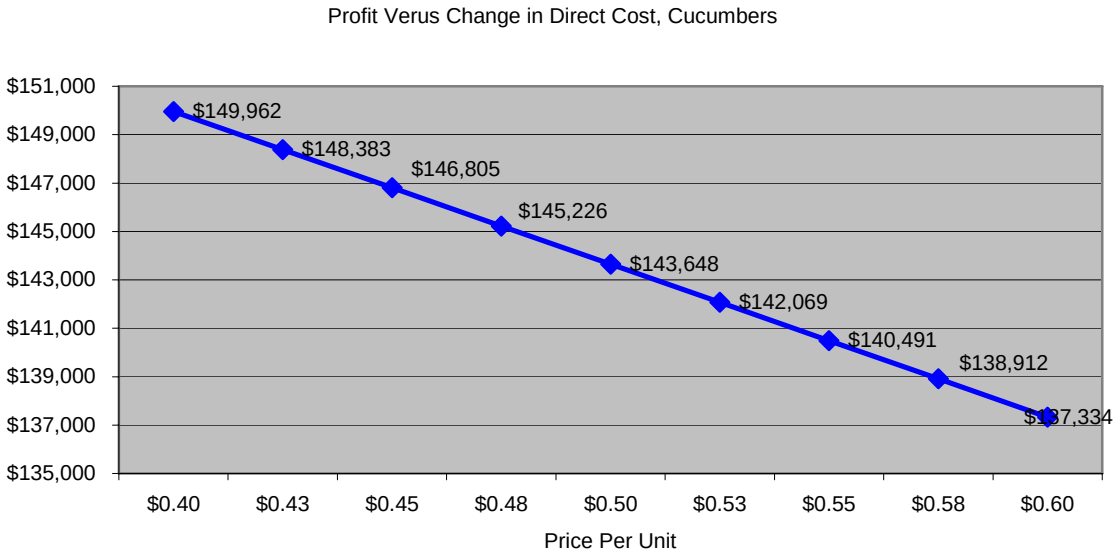
Profit Versus Change in Direct Cost (Farmgate Values)

Graphs 6-9 show how a change in the direct cost, or prices received by the producers selling the product into the facility affects profitability. Each price was modified in 5% increments of the assumed prices received. The assumed prices came from the Farmgate publication and producers.

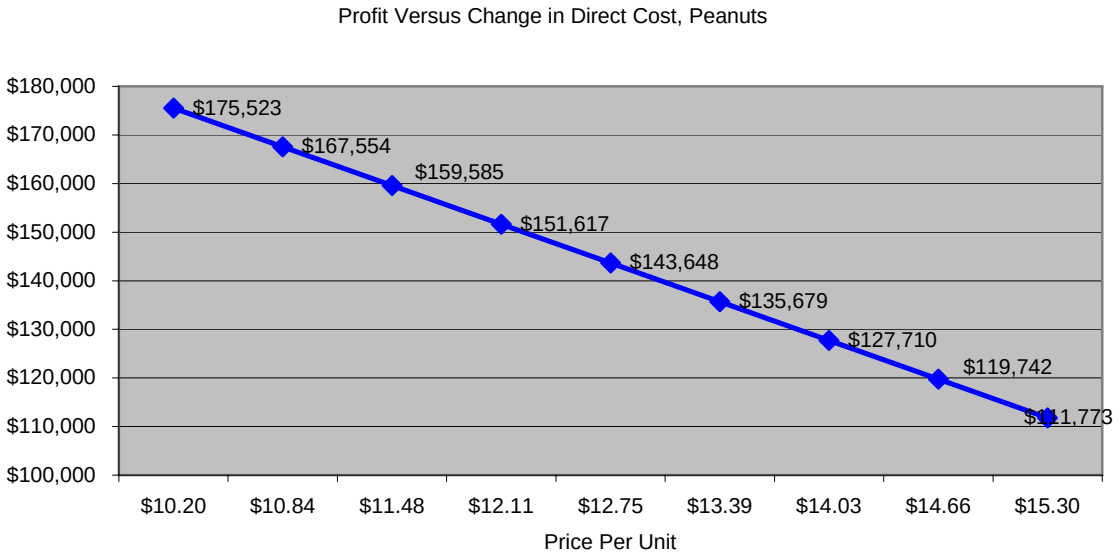
Graph 6. Profit Versus Direct Cost, Cantaloupes.



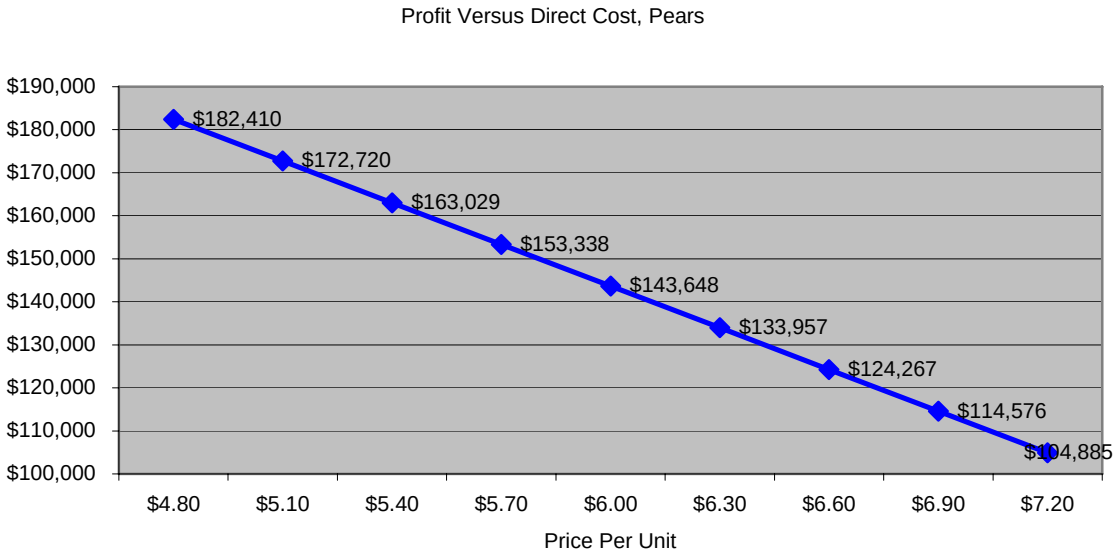
Graph 7. Profit Versus Direct Cost, Cucumbers



Graph 8. Profit Versus Direct Cost, Peanuts



Graph 9. Profit Versus Direct Cost, Pears



Increasing the direct cost of the cantaloupes proved to be the riskiest change. Cantaloupes appear to affect the operations profitability on a large margin. This stems from their sales compromising approximately 50% of income and 40% of the direct cost.

Financing, Operating, and Ownership Arrangements for an Individual Quick Freeze Processing Line

At present, a marketing cooperative is the only financing and ownership method being considered for the packing facility in Claxton, Georgia. The main purpose of this facility is to

increase the return to the fruit and vegetable producers through some means of value-added technology (packing, cooling, and cleaning).

Cooperatives

A special type of producer cooperative called a "New Generation Cooperative" (NGC) or a "closed cooperative" combines solutions to both financing and operating questions. Producers raise an initial portion of the packing equipment and working capital cost through stock or options on stock sales. The remaining capital could be raised through debt financing. Operation of the processing line could remain with the producer/owner. The raw product could be priced to the producer through various arrangements including profit sharing of the final product. Any funds generated through an assessment per pound marketed through the packing shed would be used to retire debt and would increase the producer's equity in the operation.

The recommended organizational structure would be a cooperative formed as a value-added packing facility, a closed cooperative of defined or selected membership whereby members invest through the purchase of shares of stock. These shares serve as a dual contract. Each producer has both the obligation and the right to deliver to the cooperative. Likewise, the cooperative is obligated to accept delivery given quality standards are met. These delivery rights and obligations are transferable. Each member is still granted only one vote regardless of the number of shares owned.

The basic concept of this new type of cooperative is that producers capture profits that occur beyond the farm gate by owning and controlling the local businesses that are positioned to earn those profits. The motivation of new generation cooperatives is more offensive than defensive, by taking take control of your own destiny and being proactive rather than reactive. The main emphasis in cooperatives of this type has been on value-added processing, niche marketing, and producer/members viewing themselves as producing a finished food product rather than a raw commodity.

Producers tend to take greater interest in operations developed as a producer cooperative since they are also investors. The typical amount of member equity required is 50-60% of the initial equity needed for the project. This gives potential lenders the security of sufficient producer commitment. Banks have been the primary institutions that help in financing the remaining 40-50% needed by new cooperatives. Many commercial banks are also funding cooperatives. The USDA also has numerous financial programs that can assist cooperatives that meet certain criteria. Credit unions and the Farm Credit System have also actively lent funds to farmers for investment in new cooperatives. Other helpful support systems in the development of these new cooperatives include communities, regional economic development commissions, individual rural electric cooperatives, and university extension services.

NGCs retain many principles of traditional cooperatives: democratic control through a one member, one vote policy; distribution of excess earnings among members as patronage refunds or dividends; and member-elected board of directors. The financing of NGCs allows the return of virtually all net earnings to members at year-end since members invest capital up-front. Future expansion is financed in the same way as original equity: members invest through the

purchase of shares. In some instances, preferred shares may be offered to the community or general public. This allows communities to support the project while keeping control in the hands of the members. Some of the advantages of the NGCs include the ability of producers to react quickly to opportunities or problems, the creation of wealth within a community, stability for producers, efficiency for the packing shed through restricted membership, consideration of the interests of the community through a diverse set of stakeholders, and commitment to the quality of the product by both the producers and processor.

One of the keys to success of a NGC is producer commitment. The group of producers must be motivated, determined, and committed. Other keys to success include public policy that supports cooperative formation, financial institutions willing to finance the cooperative, and consultants or facilitators to help producer groups through the process. These keys to success seem to be available in Georgia. Georgia Produce Growers must take ownership of the concept and drive the investigation into the possibility of operating a functional value-added packing shed in Georgia.

Another option for financing the plant is to contact local development authorities and submit grant requests to them and the state. Often development authorities will assist in part of the grant writing or organizing of application materials to be submitted to larger state funds. Currently, Georgia is taking submission for funds through the state authority, One Georgia.

Impact Analysis

Impact analysis is a key component of any feasibility study. An impact analysis shows the effect of a new venture on the economy. Starting a vegetable repacking facility in Georgia will impact the economy in several ways. The new plant will generate output as it begins selling product. These sales will, in turn, generate additional sales as the plant purchases inputs. The suppliers to the plant will increase the purchase of their inputs, thus increasing demand for those items. These increased sales will ripple through the economy. An input-output model will capture and quantify these effects.

The input-output model IMPLAN (Impact Analysis for PLANning, Minnesota IMPLAN Group) was utilized for this project. IMPLAN predicts the effects of a new venture on output (sales), employment, and tax revenue. IMPLAN models can be constructed for a state, a region, or a county. Input-output models work by separating the economy into its various sectors, such as agriculture, construction, manufacturing, and so forth. A direct change in production, such as the construction of a new packaging line, can be entered into the model for a certain sector. IMPLAN then measures the changes in the other sectors that occur because of the initial change. IMPLAN captures the relationship between industries in the region and shows how the change in one industry relates to the others. One limitation to this model is the backward linkages in which it calculates these figures. However, it is estimated this limitation is of minor significance to the overall model.

Sales from the repackaging facility are projected to be valued at roughly $1.3 million annually. The plant will directly employ 14 people. As a result of the plant's operation, another 11 jobs exist in the state. This brings total employment due to the plant's existence to 25. The

plant also has impacts on output. The sale of product is responsible for another $1 million of economic activity in the state. This brings total economic output due to the plant to $2.4 million annually. Non-education state and local taxes are also dependent on the facility. IMPLAN estimates total tax revenues of $76,615 from the re-packing facility per year. This information is shown in Table 1.

Table 1. Impacts of a Re-Packing Facility on Georgia's Economy

	Direct	Indirect	Total
Output (Sales)	$1,345,928	$1,014,587	$2,360,515
Employment	14	11	25
Tax Revenue	NA	NA	$76,615

Conclusion

The proposed facility is profitable at a slim margin. The operating efficiency is relatively low compared to industry averages obtained over the Internet. However, the operation appears to cover the capital cost after 5 years.

The facility needs to make sure the market exists to quickly turnover the products stored and maintain 100% sales of packed and cooled products. No estimates of shrink due to decay, mold, age, or any other situation were incorporated into this model. Further investigation into a 10-15% loss of product needs to be considered.

The Center for Agribusiness & Economic Development

The Center for Agribusiness and Economic Development is a unit of the College of Agricultural and Environmental Sciences of the University of Georgia, combining the missions of research and extension. The Center has among its objectives:

> To provide feasibility and other short term studies for current or potential Georgia agribusiness firms and/or emerging food and fiber industries.
>
> To provide agricultural, natural resource, and demographic data for private and public decision makers.

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Or contact:

John McKissick, Director
Center for Agribusiness and Economic Development
Lumpkin House
The University of Georgia
Athens, Georgia 30602-7509
Phone (706)542-0760
caed@agecon.uga.edu

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