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Industry Analysis:
Apple Processors in the Northeastern U.S.

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Industry Analysis: Apple Processors in the Northeastern U.S.

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Abstract

Apple processors are an important link in the marketing chain from apple growers to consumers, and their perspective is critical in understanding the industry's situation and projecting the industry's future. This paper reports the results of a survey of Northeastern U.S. apple processors. The survey was conducted to provide a snapshot of current strategic issues in the industry, to assess the industry's strengths and weaknesses, to identify opportunities and threats, to forecast future trends, and to provide background data for additional research in this industry. The survey results provide an overview of trends, issues, and processor perspectives in the Northeastern apple processing industry.

The outlook of many processors for future of the industry is negative or uncertain. Processors' concerns reflect many of those held by the industry's apple growers. The processing sector faces a number of challenges in a rapidly changing and globalizing market. Looking forward, the industry must consider how to make its products relevant in current and future markets and how to compete effectively with global rivals. Although the outlook of many respondents was negative or uncertain, the survey responses also reveal several industry strengths and opportunities.

This survey was completed as a part of a larger research project focused on the Northeastern apple processing industry. The final project results will identify and analyze marketing strategies and opportunities in the industry. The research will convey important data about consumer trends relevant to the processed apple industry, and this data will be interpreted in the context of the industry's current situation. The information collected should be useful to growers and processors in assessing future opportunities and enhancing competitive capabilities in their efforts to strengthen this important sector of the regional apple industry.

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Section I

Introduction

The Northeastern United States is an important apple growing region of the U.S. This region, including Maine, New Hampshire, Vermont, Massachusetts, and New York¹, accounted for about 15% of the nation's apple harvest in 1999. In this region, the processing sector has been a particularly important segment of the industry. In 1999, the processing sector accounted for 46% of this region's apples (USDA NASS, 2000).

Among the Northeastern states, New York has the largest apple industry. In 1999, New York growers produced 30 million bushels of apples, or 12% of U.S. total harvest (USDA NASS, 2000). New York is the second largest apple producing state in the U.S. The processing sector has traditionally been an important segment of the New York apple industry. Over half of the apples grown in New York are utilized for processing. Apple processors provide an important marketing outlet for the state's apple growers.

In recent years, Northeastern processing apple growers have experienced increasing economic pressures: declining prices for raw product supplies, stagnant consumption of apple products, closure of major regional apple processors, competition with low-priced imports of apple juice concentrate, increased levels of environmental regulation, and increased production costs. Apple processors in the region also face several competitive challenges: increasing customer bargaining power, heightened competition from consolidated food manufacturing firms, stagnant consumption, product maturity, and consumer concerns about food safety. Facing these challenges, the industry's growers and processors need to respond with new competitive strategies that will help them to survive and thrive in the market.

This paper focuses on the current situation of the Northeastern apple processing industry. The paper summarizes the results of interviews with the region's apple processors. The purpose of the survey was to provide a snapshot of current strategic issues in the industry, to assess the industry's strengths and weaknesses, to identify

¹ Data for Rhode Island were not collected by USDA.

opportunities and threats, to forecast future trends, and to provide background data for additional research conducted through the project described below.

Cornell University Processing Apple Industry Research

This survey was an initial step in a larger research project focused on the Northeastern apple processing industry entitled “Development of an Environmentally Sound, More Profitable System for Production and Marketing of Value Added Processing Apple Products in the Northeastern United States.” The purpose of this project is to assist growers and processors in the industry to face the challenges of the changing market and to take advantage of opportunities offered by new information and technologies related to production, pest control, product development, and marketing. This research is conducted with the support of a grant from an anonymous donor.

The goals of the project are:

1. To develop a more environmentally sound, cost-effective apple production and integrated pest management system,
2. To stimulate growth of apple processing industry with new technologies that support commercial production of diversified, high value apple products, and
3. To assess economic impacts, marketing potential, and consumer reactions to new products.

The project includes faculty and staff from six Cornell Departments: Entomology, Plant Pathology, Horticulture, Food Science, Cornell Cooperative Extension, and Applied Economics and Management.

Objectives of This Paper

The survey described in this paper was conducted in order to develop an overview of the market for processing apples in the Northeast. Information sought through the survey interviews included:

- Processor capacity and demand for raw product supplies
- Distribution channel dynamics
- Preferred supplier characteristics
- Range of apple products produced in region

- Industry trends
- Industry issues of primary importance
- Processor outlook

The interviews also included a discussion of processor interest in eco-labeled apple products to complement the project's research on pest management techniques.

The survey results are presented here to provide an overview of the industry and to assess processors' outlook for the future. These results have been used in this project to assist in setting research priorities focused on the issues of greatest importance to industry leaders.

Organization of this Paper

This paper begins with a description of the survey methods. Results are presented in Section III. The results are used to develop a strategic analysis for the industry in Section IV. The final section of the paper summarizes the major findings and discusses areas for future research.

Section II

Methods

In the summer of 1999, an interview guide was developed for the survey. The interview guide included two sections. The first section focused on objective data concerning processor capacity, purchases, products, and sales. The second section included open-ended questions that addressed purchasing processes and preferences, industry strategic issues, product development, promotion, industry outlook, and eco-labeling. A copy of the interview guide is included as Appendix A.

Next, a list of Northeastern apple processor contacts was developed from industry and university databases. The list included some large processors that are located south of New York State because these processors purchase substantial amounts of processing apples from the Northeast. The list was not comprehensive in that it did include all Northeastern region apple processors, but it included all major processors and several medium and small processors from this region.

The processor contacts were mailed the interview guide with a request for an in-person interview. The letter was followed with a phone call to schedule the interview. Of the twenty-five processors that were contacted, twenty agreed to an interview. One processor declined an in-person interview, but provided written responses to all of the questions. Although these written responses were not as detailed as those from the in-person interviews, they are included in the data. The remaining four processors declined to participate or did not respond.

The interviews were conducted in-person, usually at the processor's facility. Interviews were conducted in July, August, and September, 1999. Most interviews took an hour to an hour and a half to complete. Interviewees included top officials at each of the processing sites. The roles of the interviewees varied and included owner, general manager, processing subsidiary manager, fruit procurement manager, and financial officer.

Some of the interview questions involved the discussion of information that some respondents considered sensitive. Interviewees were promised that their responses would be kept confidential. They were promised that information about individual firms would

not be disclosed. To comply with the need for confidentiality, firm names are not given in this report and results are presented in a manner that avoids disclosure of firm level data.

After the interviews were complete, interview notes were analyzed. Results were prepared with the goal of summarizing the interview discussions. With some data, quantitative measures could be developed (e.g., total amount of estimated apple purchases). However, most of the results are qualitative and summarize responses concerning important strategic issues for the industry.

Section III

Results

As noted in Section II, Appendix A is a copy of the interview guide used in this survey. The results are organized here generally according to topic areas of the questions in the interview guide.

Geographic Range of Respondents

The processors interviewed were located in states throughout the Northeast and Mid-Atlantic, but primarily in New York State where the Northeastern processing industry is focused. Respondents were distributed geographically as follows:

New York State	15
Pennsylvania	2
Virginia	2
Massachusetts	1
Vermont	1

Respondents' Products

The respondents produced a wide range of apple products and other products. The following is a list of the apple products produced by respondents and the number of respondents producing each product.

<u>Product</u>	<u>Number of Respondents Producing This Product</u>
Apple Juice	10
Applesauce	5
Apple Cider	5
Frozen Apples	3
Apple Pie Filling	3
Canned Apples	3
Apple Juice Concentrate	2
Apple Cider Vinegar	2
Hard Cider	2
Fresh Apple Slices	2
Apple Butter	2
Baby Food	1
Dried Apples	1

All five of the respondents that produced applesauce made both single-serve and multi-serve products. Three produced branded applesauce products, and four produced private label applesauce products. Two produced fruit-flavored applesauce. All five of the respondents made products for both the retail and foodservice sectors.

Of the ten respondents that produced apple juice, eight produced multi-serve products, and six produced single-serve products. Seven produced branded apple juices, and seven produced private label apple juices. Five of the respondents produced at least one apple juice product that is 100% fresh-pressed (not from concentrate). Eight produced at least one product that blends fresh juice and concentrate, and four produced at least one product that is made from 100% concentrate. Nine of the respondents used concentrate in at least some of their products. Five produced products that blend apple juice with other fruit juices. Three produced apple juice drink products that were not 100% juice. Of the two respondents that produced apple juice concentrate, both produced concentrate for internal use, and one produced a retail apple juice concentrate product.

Cider was produced by five of the respondents. Two of these respondents made products that blended cider with other juices. One produced a carbonated cider, one produced a sparkling cider, and one produced an organic cider. While most packaged their ciders in plastic bottles, one respondent also packaged cider in aseptic juice boxes.

The one respondent that produced baby food made several apple products including applesauce, apple juice, and cereal with apples.

Of the two respondents that produced hard cider, one used only fresh apple juice, and the other used a blend of concentrate and fresh juice. In addition to these two respondents, one other respondent recently stopped producing hard cider, and another respondent had plans to start producing hard cider in the near future.

The frozen apple product producers among the respondents produced a variety of types of frozen products (e.g., dehydrofrozen, individually quick frozen). Each of them usually packed their products in bulk and prepared their products (e.g., sliced, whole) to customer specifications.

Of the two respondents that prepared fresh apple slices, neither produced a retail product. Both produced slices for bakery products, and one produced slices for salad bars.

Pie filling was packaged in metal cans by two respondents and in re-sealable plastic containers by one respondent. Two produced branded pie filling products, and two produced private label pie filling products. One produced a lite pie filling product, one produced a golden delicious varietal pie filling, and one produced an apple and raisin pie filling.

Canned apple products made by respondents included apple rings, apple slices, scalloped apples, spiced apples, fried apples, and baked apples.

In addition to apple products, many respondents also produced non-apple products. Other products included a wide variety of drink, condiment, and fresh fruit products. The most frequently mentioned products and the number of respondents producing these products are listed below.

<u>Product</u>	<u>Number of Respondents Producing This Product</u>
Juice Blends (100% juice)	6
Juice Drinks (not 100% juice)	5
Fresh Apples	5
Spring Water	4
Iced Tea	3
Frozen Fruit	3

Apple Procurement

All but one of the respondents purchased apples for use in their products. The one respondent that did not purchase apples bought fresh cider as an ingredient for his company's products. Eight of the respondents bought apple juice concentrate. Two of the respondents bought bulk single-strength apple juice. Two purchased apple puree. One respondent purchased apple peels and cores and distressed apple juice. Distressed apple juice is juice that has bad color or bad flavor or that is in danger of spoilage as a result of problems in distribution, storage, or marketing.

Fifteen of the respondents said that they purchased apples directly from apple growers. Six respondents used brokers at least some of the time to procure apples. Two

of the respondents were cooperatives. Three of the respondents grew apples as well as operating processing businesses, and they supplied most of their apple needs for processing internally.

Three respondents said that they purchased most of their apples in the fall. However, most of the processors noted that they ran their processing operations year-round.

Answering this question, two respondents expressed concern about the impact of a recent state regulatory change that will tighten payment cycle requirements, if enforced.

Quantity of Apples Purchased

The respondents were asked to report the average amount of apples purchased for their operation annually. Only one processor surveyed did not report an amount purchased. For those that reported amounts, the total volume of apples reportedly purchased was approximately 34.6 million bushels. Of this total, respondents estimated that about 12.4 million bushels were purchased from New York State apple growers.

The survey did not include among its respondents at least one medium sized New York State processor that declined to participate. It is estimated that this processor may buy up to 1 million bushels, primarily from New York State growers.

The total reported here also does not include cider vinegar processor purchases because most vinegar processors purchase peels and cores or distressed juice. These purchases are not included to avoid double-counting.

This total does not include utilization of apples by farm-stand cider operations. Only large cider operations were included among those interviewed. Small cider operations utilize a significant amount of the state's apple harvest. However, their utilization may decline in the coming years as a result of new regulatory requirements for pasteurization and related labeling.

Supply Sources

All but one of the respondents sourced apples from New York State. The respondent that did not buy apples in New York State did not purchase apples, but instead purchased bulk apple cider, which was sourced in New York State.

Other sources of apples for the respondents included a wide geographic range in the U.S. and Canada. The most popular states for sourcing apples, after New York State, were North and South Carolina. Nine respondents purchased apples in these states. These respondents often noted that the availability of early season apples made the southern states an attractive source in the late summer. Seven respondents said that they sourced apples from Michigan. On the East Coast, Virginia, Pennsylvania, and West Virginia were popular sources of apples. Two respondents said that they sourced apples from New England. On the West Coast, Washington State was a source of apples for six respondents. In some recent years, the price of Washington State processing apples has been sufficiently low that the savings have offset the costs of transportation from the west coast. A few respondents had also sourced apples from California, Oregon, Idaho, and Colorado. Two processors said that they sometimes sourced apples from Ontario, Canada.

The use of multiple geographic sources of apples was a strategy for many respondents. One stated that his company likes to keep several sources open to them. He said, “We don’t like to keep all our eggs in one basket.” In using multiple sources, his company sought to maintain a “good average delivered price” and to control costs.

Sources of apple juice concentrate included Europe, South America, Washington, and California. None of the respondents reported that they use Chinese apple juice concentrate.

Varietal and Other Supply Preferences

Respondents’ comments about varieties and other supply preferences are summarized by apple product type below.

One characteristic that was noted as important across several categories was storability. Because most of the processors were interested in running their operations throughout most of the year, apples that can hold up well in storage were considered desirable.

At least twelve of the respondents said that they used fresh market culls for processing. Many mentioned that culls are a source of apples after the harvest season

ends. Some respondents stated concerns about using culls, including the need to remove PLU code stickers for some processing uses.

Juice: Generally, juice apple buyers will take almost any variety. Most respondents noted that they sought to blend varieties to meet their brix:acid specifications for the product. Varieties mentioned most frequently by respondents included Red Delicious, Golden Delicious, and McIntosh. Other varieties mentioned included Rome, Tideman, Polar Red, Ginger Gold, Spartan, Granny Smith, Empire, Ida Red, Jonathan, Mutsu, and Northern Spy. Apples mentioned for providing high acid to juice blends included Northern Spy, Jonathan, Ida Red, and Mutsu (Crispin).

Cider: As with juice, cider processors will usually take any variety. Again, the respondents sought a blend to meet their brix:acid specifications. Some processors produced a sweet cider, while others produced a tart cider.

Two respondents mentioned that apple quality was important for cider. One said “Better quality gives better juice.” He also noted, “The notion that you can use anything for juice or cider is baloney.” However, another respondent said that in purchasing apples for cider, “We know we’re getting the bottom of the barrel.” Although he preferred hard apples for cider processing, he did not hold high expectations for apple quality.

Two respondents said they prefer to use Empire and McIntosh for cider. One of them liked these varieties because they are grown in abundance in the region, and their availability allows the processor to make a consistent cider blend.

Apple Sauce: The varieties mentioned most frequently by applesauce processors were Rome, Ida Red, Golden Delicious, Greening, and York. One respondent listed several traits considered in procuring raw product apples for sauce: acid, brix, grain, size, shape, oxidation rate, skin color, internal color, and pressure. Storability was mentioned by two respondents as an important trait in sauce apples. Storability is related to hardness, another trait mentioned by at least two respondents.

Two major processors disagreed over the impact of the shift to use of Bartaki/Bauder centrifugal machines in applesauce production. These machines extrude apple flesh from the skin and eliminate the need for peeling in applesauce production. Apple size and hardness are important to yields when using traditional apple peeling

equipment. However, one processor stated that size and hardness do not matter with the centrifugal machines. On the other hand, another processor said that size is still important to yields with the centrifugal machines. Another processor, who does not produce applesauce, said that the new equipment would lead to decreased importance for apple size in the processing market and that the market price for sauce apples would drop to a level between prices for peeler and juice apples.

Two respondents considered McIntosh poor sauce apples. One stated that McIntosh produces runny sauce and poor yields. One respondent stated that Yorks are the best sauce apples and that they also store well. This variety is more common in areas south of New York, such as Pennsylvania and Virginia.

Baby Food: For baby food, natural sweetness, availability, and low pesticide residues were noted as important characteristics. Pesticide residue tolerances set by processors for baby food are generally strict and require growers to exceed EPA tolerances. Varieties preferred for baby food include Golden Delicious, Rome, and Fuji.

For baby food fruit juices, the use of juice concentrate is preferred because it provides consistent flavor to apple and blended juices. Concentrate purity is an important concern to any juice producer, but particularly for producers of juice products targeted to babies and young children.

Hard Cider: For hard cider, bittersweet and bittersharp apples are needed to attain the desired, traditional flavor profile. Currently, traditional cider varieties are not produced in commercial quantities in the U.S. Both respondents that produced hard cider noted a need for apples that provide acid and tannins to the product. Some hard cider processors use other ingredients (e.g., malic acid, grape tannins) to provide these characteristics.

Both processors used single strength apple juice sourced in New York or New England in their hard cider blends. One noted that his company used high acid juice concentrate (less than 3.6pH), including concentrate sourced from France, to attain the desired flavor profile. One of these processors noted that McIntosh provides good aromatics for hard cider.

Canned Apples and Pie Filling: Two respondents that made canned apple products preferred York and Golden Delicious apples. One of these respondents said that

York is the premier variety for slices and pie filling. One respondent prefers Ida Red from New York for canned products.

For pie filling, one respondent said that his company did not purchase soft varieties, summer apples, McIntosh, Red Delicious, or Northern Spy, but did purchase Ida Red, Rome, Greening, Mutsu, Monroe, and Cortland. Two respondents said that they preferred York, and one said that he prefers Rome.

Dried Apples: For dried apples, Ida Reds are very desirable, and they also store well. Rome is used, but it was reported to have too many strains and too much crop year variation to make it desirable. Size, shape, color of flesh, and solids content are important in the production of dried apples. The preferred shape is large and round. Yields are best from Crispin and Golden Delicious. McIntosh does not provide good yields. Varieties such as Granny Smith, Fuji, and Gala are desirable for drying, but they are not readily available in this region.

Cider Vinegar: One respondent explained that his company does not press apples every year, and the decision on whether to use apples instead of concentrate depends on the price of concentrate. “Distressed” juice is often used in the production of vinegar. Distressed apple juice is juice that has bad color or bad flavor or that is in danger of spoilage as a result of problems in distribution, storage, or marketing. If apples or apple cores and peels are pressed for vinegar, a blend of varieties is preferable, and almost any varieties are acceptable.

Fresh Slices and Frozen Apples: The respondents that made fresh slices produced the product for use primarily in bakery products. The primary use of frozen slices is also bakery products. Two respondents making these products said that they produce and pack most of their production to their customers’ specifications. One said, “We give them exactly what they want.”

Preferred characteristics mentioned for this category include firmness, flavor, consistency, storability, size, hardness, and freezability. Texture is an also important trait for apple slices. One respondent noted that bakery customers currently are interested in firmness more than flavor in apple slices. He said that this preference fluctuates over time.

Customers and Competitors

Respondents market their products in a variety of ways, including retail and foodservice channels, both directly and using intermediaries. The respondents described their customers as follows:

<u>Customer</u>	<u>Number of Respondents</u>
Retail food store chains	10
Brokers/wholesalers	9
Foodservice	5
Direct sales to independent retail stores	3
Direct marketing	3
Bakeries	3
Other food processors	3
Government	3

Of the three processors selling products to bakeries, two sell to industrial bakeries and one sells to small bakeries. Of the five selling in foodservice channels, two indicated that they sell their products directly to restaurants.

Responses about competitors were more complex. Some respondents answered this question by considering with whom they compete in finished product sales, but some answered by considering with whom they compete to purchase raw apple supplies. Some answered the question both ways. In naming competitors for sales of finished products, some narrowly defined their product categories, while others perceived competition from across a broad range of related product categories.

At least 12 respondents mentioned other East Coast processors, most of who were included in this survey, as competitors. Six mentioned West Coast apple processors, including Jewel, TreeTop, and SnoKist, as competitors. Six respondents named other apple processors as competitors, including Petersen, Schmelzer, Tastee Apple, Northland, and Bulmer's Woodchuck Draft Cider. Five respondents mentioned other large food processing companies such as Heinz as competitors.

One juice processor said that "anyone who makes a drink" is our competitor. This processor also noted that his company competes with food processors that use 100% concentrate to make juice and juice drink products.

Two of the processors included in the survey had a strategic alliance to jointly market pie filling. Together these two companies hold approximately 80% of the national pie filling market.

In the dried apple market, the two companies with the largest market share recently merged. As a result, a New York State dried apple processor is now the second largest dried apple processor in the U.S., although this processor has only a small share of the market. Another source of competition in this market is imports of dried apples from China.

Preferred Supplier Characteristics

For the respondents, long-term relationships, loyalty, honesty, and dependability were the most important characteristics that they seek in their suppliers. At least eight mentioned long-term relationships with suppliers, and five said they look for suppliers that are loyal and dependable. For example, one respondent said he looks for growers that will “supply year after year” and “stand by agreements.” A respondent from an out of state processor mentioned that his company purchases New York State apples in large crop years from growers who are willing to supply them in short crop years. Another respondent described his preferred suppliers as those that “send me what they tell me they’re sending me.”

Quality is also an important factor. Seven mentioned quality and quality standards in describing their preferences in suppliers. Three also noted that they require pesticide spray records from their apple suppliers.

Four respondents said that they only purchase apples from suppliers that can deliver apples in bulk trailers, as opposed to bins. Other preferred characteristics that were mentioned by one to three respondents each include: willingness to accept payment terms, local growers, apple size, decent totes, and good documentation. In answering this question, three respondents described difficult tension between processors and growers over prices.

Apple Prices

Market forces prevail in setting processing apple prices. Seventeen respondents mentioned the market price, supply and demand, and competitor prices as a primary factors in setting their prices. At least six respondents specifically mentioned Mott's prices as driving the market price in the region's processing apple markets. A few respondents specifically mentioned the recent effect of low apple juice concentrate prices on the price of processing apples.

Specific comments about prices included:

- "Everyone waits for Mott's price and then announces within 24 hours,"
- "The Mott's price comes out in mid-September...pretty much sets the price."
- "We wait and see what everyone else does so we can be fair"
- "We're in the ballpark if not a little better."

Offering better prices than the competition was a common theme in responses. Some said they offered the market price plus 5 to 25 cents more per hundred-weight as an incentive for quality and to draw supply away from other processors. Some respondents suggested that they offered slightly better prices than competitors to maintain good relations with growers. Similarly, a respondent from a co-operative processor said "we take very seriously maximizing returns to growers." Another respondent said that in addition to market factors, his company must consider local costs of production and the need to keep growers in business to maintain a long-term supply.

Two respondents mentioned the increased availability of price information in the apple market. One specifically mentioned the New York Apple Association (NYAA) Hot Sheet, which lists processing apple prices. This respondent felt that the Hot Sheet had raised prices to the detriment of processors and that as a result, processors were less willing to share price information with the NYAA.

Only two respondents mentioned apple size, and three mentioned quality in response to this question. However, a review of available price sheets reveals that these factors clearly play an important role in price schedules.

New York State Factors

Respondents with processing operations in New York State mentioned several factors, positive and negative, that affect their operations in the state. Four in-state respondents said that proximity to apple growers was an advantage of their location in New York State. Five respondents mentioned that New York State electric rates are substantially higher than those in other parts of the country are (e.g., West Coast, Michigan). A few also mentioned high state taxes. Strict environmental and labor regulations were mentioned as a disadvantage in New York State by two respondents, but three other respondents said that these regulations were not a disadvantage or that they were no different than in other parts of the U.S.

Three in-state processors said that West Coast apple prices affected the amount of apple purchases that they make from in-state sources. Other factors mentioned by one or two New York State respondents included: apple quality, wastewater treatment costs, crop size, hail, loyalty, varieties, and good availability of apples. One in-state respondent felt that the state's Apple Marketing Order was a burden on apple buyers. Another New York State respondent felt there was a "dedicated work force" available to its processing plant in New York State.

Electric costs are a significant concern in the costs of apple storage for processors. A respondent from an out of state processor said his company would store more apples and deal more in New York State if storage prices were lower. He felt that storage costs are "exorbitant" in New York State because of electricity costs.

Out of state respondents mentioned the following factors as affecting their apple purchases in New York State: size of crop, quality, consumer demand for finished products, finished goods inventory, needs, and long-term relationships with growers. One out of state respondent said that New York State varieties were generally not good for processing and more oriented to the fresh market.

One in-state respondent felt that the structure of the New York State apple industry was advantageous for processing, but not for juice production. This respondent said, "the East Coast is unique in that people grow processing apples by intent rather than by mistake," and felt that this is an advantage for the East Coast industry because "fresh apples make bad processing apples." Thus, the East Coast offers better apples for sauce

and other processed apple products, excluding juice. “Mistake apples” or culls from packing house lines are suitable for juice production, and West Coast juice processors have an almost year round supply of juice apples from packing house culls, while East Coast processors do not have a good year round supply of juice apples. In summary, this respondent felt that the East Coast has a competitive advantage for producing processed apple products (excluding juice) because the industry produces processing apples intentionally, while the West Coast had a competitive advantage for apple juice production as a result of its fresh market focus.

Industry Analysis

Respondents were asked to discuss the major factors affecting the market for processed apple products and to identify opportunities and threats for the industry. Responses to this question were open-ended. Some discussed many factors and issues, while others mentioned only a few. Responses are summarized below by topic area.

International Trade: Most of the respondents mentioned foreign trade issues as a critical factor in this industry. Several respondents expressed concern about the need for a “level playing field” among international apple producing nations relative to environmental and other regulations. They felt that strict U.S. regulations put them at a disadvantage to competitors in other nations.

Many respondents specifically referred to recent, rapid increases in imports of low-cost Chinese apple juice concentrate and a related anti-dumping petition filed with the U.S. government. A few expressed concern about the future impact of China’s massive apple production.

At least two respondents also mentioned trade issues with Canada. One felt that Canadian apple processors could export products to the U.S. more freely than U.S. processors could export to Canada.

West Coast Competition: At least four respondents said that the low price of processing apples on the West Coast had a major, negative effect on the East Coast processing industry. One suggested that the West Coast industry had grown so large because “free water and electricity” on the West Coast encouraged investment in the

industry. The Washington State apple crop is very large, and factors such as crop size and export markets affect how much they “push it eastward.”

Another respondent said that “fruit is so cheap out there it’s hard to compete.” Prices for processing apples on the West Coast can be as low as one-cent per pound. Two respondents said that a shift in varieties on the West Coast away from Red Delicious toward newer varieties such as Braeburn, Gala, and Granny Smith would encourage growth in the apple processing industry there.

Labor Issue and Year Round Production: At least seven respondents said that they had difficulty finding labor. Some have attempted to address the labor issue by moving to year round production and offering full-time, permanent positions, as opposed to seasonal work. Year round production was mentioned as important for other reasons including the shorter shelf life of products in plastic packages (as opposed to glass) and just-in-time production strategies. To support year-round production, needs for apple varieties that extend the processing season and better storage technology were noted.

Loss of growers and processors: Four respondents were concerned about the loss of processing apple growers. One said that increasing real estate values and the inability to attract young people to the industry threatened to increase the loss of apple farmers in the Northeast. The same respondent said that growers have to increase their involvement in the fresh side of the industry to survive financially. He noted that shifting into the fresh market requires growers to learn new marketing techniques and that adapting to the new market takes time.

The loss of processors on the East Coast was also mentioned by several respondents. At least two major processors (Seneca and Zeropak) have left the region over the past few years, and another (Gerber) has shifted more of its operations more to Michigan. Since the survey, one respondent processor has ceased operations in the region.

Marketing: Respondents had wide-ranging comments on marketing issues, which usually concerned their specific finished goods markets.

One respondent said that his company prefers to focus on direct marketing because it offers better margins. However, direct markets are not adequately large to

support the business, and therefore, the company must stay involved in wholesale markets as well.

Another respondent noted that his company's products are a commodity for which there is a high level of price competition. As a result, services are becoming more important to his company's customers (e.g., tighter turn around on orders, narrow delivery times, just-in-time delivery requests that require two half loads per week instead of one whole load, pre-printed packaging).

Two respondents said that in this industry, only Mott's is making an adequate investment in its products through promotion, advertising, and innovation.

Several respondents mentioned a high level of price competition in their finished product markets. One said that they experienced "mostly price competition except in a few strongholds for each brand." Prices for finished goods were a concern to three respondents. One respondent said that there has been "no change in price for our product for last 25 years." Another said that while the "price of products at retail has increased," "the price to us is the same," and "the margin is decreasing." The third said that current market prices for finished products make it difficult to maintain product quality.

Finished Product Markets: As noted above, many respondents made comments specific to the markets for their finished products.

Regarding apple juice, one respondent said that consumers are not loyal to apple juice and that even premium apple juice is very price sensitive. Two respondents noted growth and opportunity in the juice drink and ades category (products that are not 100% juice).

Of the pie filling market, one respondent said that the market was flat and declining, while another called it stable but sensitive to promotion and price. One said that most pie filling is sold in rural markets: "we don't sell much in Manhattan." Two respondents from cooperative processors were engaged in a marketing alliance on pie filling to cut costs in promotion and slotting fees. One of these respondents said that the market is impulse driven and very seasonal, with 80% of sales in the last quarter of the year.

In other apple product markets, one respondent said that apple cider vinegar sales are decreasing because of new, exotic types of vinegar in the market.

Another respondent viewed the dried fruit market with some optimism. He noted that the dried fruit market is currently experiencing substantial growth and that this trend offers an opportunity for producers of dried apple products.

Customers: Consolidation of food retailers and other customers is a major factor in the food processing industry, and this trend was mentioned by several respondents as a concern. Respondents noted that consolidation was increasing the size and bargaining power of their customers, and they also noted that this shift has affected relations with customers. One respondent observed that there is “not as much of a relationship between retailers and wholesalers as there used to be.” Another noted that “It seems: get bigger or go by the wayside.” Other comments included: “the middle is gone,” “you can’t gradually upgrade, you have to jump in volume”, and “the elephants are dancing, and we’re just getting squashed.” Even the largest apple processor respondents noted difficulty in competing with larger food processors and dealing with consolidated retail chain customers.

A few respondents mentioned the recent consolidation of Mrs. Smith’s pie company because this merger had a significant effect on the regional industry. As a result of consolidation, Mrs. Smith’s production operations have been moved to Oklahoma, reducing the proximity of this customer for East Coast suppliers and increasing proximity for West Coast suppliers.

One respondent expressed a high level of frustration with slotting fees and reclamation center fees charged by retail food chains. He said of slotting fees, “they’ve been around for awhile but it’s getting to be more of a game.”

Several respondents are actively producing products for the private label sector, and one expressed a high level of enthusiasm over recent and expected growth in this sector.

Environmental regulation: Four respondents mentioned pesticide issues as a factor of concern. Three were concerned about the impact and cost of increased regulation, while another respondent was concerned that the industry was not being proactive enough in managing pesticide concerns. Most respondents did not specifically mention the Environmental Protection Agency's rule-making related to the Food Quality Protection Act; however, their comments indirectly addressed this policy process.

Apple Production: Two respondents expressed concern over crop size and oversupply of apples as a threat to the industry. Despite the large crop size, another respondent noted the need for growers to maintain investment in new production systems. He said that younger trees produce better apples.

Opportunities: Several respondents offered their ideas about opportunities for the industry. A few offered ideas for new apple products, including a mineral water/apple juice blend, a premium apple juice marketed by a national distributing juice manufacturer, organic cider, and carbonated cider (non-alcoholic). Some also offered new packaging ideas. A few respondents felt that the fresh cut market offered an opportunity for expansion. In general, respondents emphasized the need to introduced value-added features, to look at specialty products, and to “have some uniqueness in the marketplace.”

One respondent said that the purity of New York State and U.S. apples is an industry strength. This respondent suggested that growers should seek to de-commoditize their product by offering crop identity and trace-ability to fulfill needs related to customer concerns about food safety.

The high acidity of many New York State apple varieties is often considered an advantage. However, one respondent said that his company could not obtain a premium price for high acid juice or concentrate. He said that buyers are looking for middle level acidity. Another respondent felt that there was an opportunity to create a juice blending facility, which would mix offshore concentrate with locally pressed juice. This facility would use the high-acid qualities of the region's apples to balance the low-acid juice characteristic of many imported concentrate products in order to produce a medium acid, flavorful juice product.

One respondent thought that development of a premium, not from concentrate, refrigerated juice in partnership with a national juice company was currently the “best outlet for processing apples.” A pilot effort to create such a partnership was attempted by a New York State processor with Tropicana in 1995, but Tropicana’s ownership was in transition at that time, and the initiative was short-lived. Another respondent doubted that refrigerated apple juice could be successful because of the need to store apples for year round production. Juice processors usually depend on some use of juice concentrate to support production throughout the year. Another concern was the new and different distribution channels needed for this product. Another respondent noted that he felt the flavor of not from concentrate apple juice was not distinct enough from other apple juice products to distinguish the fresh product in the market and justify a price premium. Finally, the need to make a substantial marketing investment to compete with refrigerated orange juice was also noted as a concern for a fresh juice product.

Apple Processing Technology

Most of the respondents agreed that there were neither recent major technological developments in the industry nor were “revolutionary” changes on the horizon.

Several mentioned the shift to Bartaki/Bauder extruder technology to replace apple peelers. This equipment has been recently adopted by some apple processors in the Northeast, but it has been used in the food processing industry for many years (e.g., chicken de-boning). As noted above, some respondents disagreed about the impact of this technology change.

One respondent anticipated a new technology to process apple sauce without peeling apples. The skin would be retained in the sauce to enhance antioxidant benefits, but it would be invisible and unnoticeable in the sauce.

Packaging innovation was frequently mentioned in response to this question. For example, bag-in-box packaging for foodservice, aseptic plastic bottles, and grip-handle plastic bottles for sauce were mentioned as recent innovations. Bulk solids packaging for transporting sauce was anticipated in the near future by one respondent. A respondent from a hard cider producer was interested in the recent development of the use of plastic in beer bottling.

Two respondents mentioned the need for better storage procedures and technology to improve upon available controlled atmosphere storage methods in order to support the availability of quality apples year round.

Processor Research and Development

Thirteen respondents reported that they conduct research and development (R&D) on processed apple products. The size of R&D operations varied widely among the respondents. Several considered quality control testing as a part of their R&D operations.

One respondent said “we do not take advantage of Cornell like we should” with respect to research and new technology development. The same respondent mentioned a research alliance supported by three New York State processors to support research at Cornell on processed apple products. The alliance, known as the Apple Research Association, formerly had several more members (as many as 14), but many processors have left the alliance over time. One respondent was concerned that the alliance is getting too small and therefore limited in the amount of research it can support, but he still believed the alliance was a worthwhile investment. At the time of the survey, the alliance provided about \$30,000 in research support annually.²

A respondent from a private label processor said that the company conducts R&D to copycat brand name products. Another respondent felt that his company’s research was critical to the ability of his company to differentiate its own brand from its private label products. Another reported that his company focuses most R&D on packaging, not new ingredients, for its apple products.

Eco-Label Marketing

Because this survey is a part of a research project that includes a focus on integrated pest management production methods, respondents were asked to discuss their interest in using IPM labels or other eco-labels for their products. Fifteen respondents

² At the time of publication, the alliance had lost all but one member. The remaining member plans to disband the alliance, but to continue to fund \$20,000-30,000 in research annually through an alternate arrangement.

did not have interest in or expressed concern about eco-labeling apple products. A few others were interested in eco-labeling.

At least two respondents pointed out that climatic difference between the East and West Coasts gives the West an advantage in the ability to reduce chemical applications. One respondent felt that with this advantage, West Coast producers could “smother us” in eco-labeled markets.

One respondent mentioned difficulty in tracking pesticide use from the field to the retail shelf. Another said that there was not enough certified fruit to support eco-label products. A few expressed concern that eco-labeling could backfire because it might attract media attention to problems or inconsistencies in labeling programs.

Many respondents expressed concerns about eco-labeling such as “the consumer still buys with their eyes,” “you don’t know if it is what they say it is,” “it would not sell more, but it would cost more,” and “we’re trying not to open that can of worms.” Three respondents referred to the Alar issue ten years ago. One said that margins in the industry have not recovered since the Alar issue made headlines. Similarly, another said that the industry had never recovered.

IPM labeling received many negative comments including: “why put doubts on a system you’re already using,” “high damage potential,” “it’s a marketing tool – not because its valid but because of public ignorance,” “it won’t increase per capita consumption,” and “it draws attention to something that shouldn’t be an issue.” Most of these respondents felt that IPM labels would draw unwanted attention to chemical use. One respondent’s company had explored IPM labeling in focus groups, and he said that it “raised red flags” with consumers. The focus group participants said that they felt that processing eliminates pesticide residues. This processor felt that IPM labeling would raise the issue in the consumers’ minds unnecessarily.

A few respondents were interested in eco-labeling. One respondent’s company was a certified organic processor, but he felt that IPM labels could be a “nightmare” and would require substantial consumer education. Another respondent’s company had produced a few batches of organic products, but he said consumers are “not willing to pay for it.” One respondent felt that this issue was a “growing concern in the marketplace” and that the industry should not “wait to be forced into new methods.”

Another was interested in organic cider as a result of customer requests and planned to implement a bar code system to improve tracking of apple sources. Another respondent said that his company was interested in IPM labeling, but that an interested customer (e.g., retail chain) was needed.

One respondent was not interested in eco-labeling, but felt that the industry should promote apple health benefits and educate people about IPM. He added “the chemical companies have some responsibility in this.” Another said that the industry needs “to get information out there that growers and processors are responsible with chemicals.”

Two respondents from hard cider processors believed that they would not be able to market their products with an eco-label because of the use of sulfates and sorbates in their products.

Failed Apple Products

Most respondents could give examples of failed products. For example, one mentioned an applesauce with pieces of fruit that consumers perceived as rotten. The respondent concluded “chunks are bad.” One respondent referred to a new foodservice pouch for sauce. While the packaging offered convenience over cans, the foodservice sector was too price competitive to provide an adequate margin to make production in the pouches worthwhile.

Two respondents mentioned that fresh slices had been tried and abandoned by all but one regional processors. The failed fresh slice operations experienced problems with distribution, slotting fees, volume, and shelf life.

One respondent felt that apple chips would not be successful because of the potential difficulty of competing with potato chips, a product for which there is ample investment in marketing. This respondent said, “there aren’t as many businesses willing to put money behind apple products.”

In addition to the two respondents that are currently producing hard cider, another respondent had developed a hard cider product that failed in the market as a result of distribution problems.

Another respondent's company had a dessert and breakfast-topping product that failed in the market despite success in advance marketing tests. The same company had tried to produce private label fruit blended applesauce, but could not compete successfully with the branded product from the major competitor in that category.

One respondent mentioned a few failed products and said his company now sticks with basic products: "we don't get too much away from center."

One respondent observed that there is generally a lack of advertising and marketing support for apple products throughout much of the industry. He said that the industry lacks resources to continuously educate consumers about products because margins are too low in the industry to support intensive marketing.

Apple Product Promotion

Respondents were asked to describe which characteristics of their products were emphasized in product promotional efforts. Five or more respondents each mentioned health, nutrition, convenience, quality, and price. Other characteristics mentioned included appeal to kids and families, naturally sweet, good digestive aid, natural, pure, service, flavor, and consistency. Two mentioned the use of category management in marketing and promoting their products. A few commented on the immediate need to invest more resources in marketing in this industry.

One respondent said that his company has an Internet presence. Several of the respondents actually do have web sites on the Internet.

One respondent said that his company had observed that its products sell best to kids and elderly consumers. This company has tried to create new packaging sizes to appeal to ages in between, but was unsuccessful. As a result, the company focuses on its traditional, core consumer groups.

Industry Outlook

Respondents were asked to discuss their outlook for the Northeastern apple processing industry and to describe the industry's strengths and weaknesses. Responses are summarized below.

In summary, processors were generally negative about the future of the industry:

<u>Outlook</u>	<u>Number of Respondents</u>
Negative	8
Neutral	4
Positive	2

These respondents with a negative outlook expressed concerns about profitability, oversupply, foreign concentrate, lack of innovation, stiff price competition, and food industry consolidation. One was believed that as a result of consolidation, the number of major apple processors might shrink to two or three. This respondent expressed concern for growers' ability to be profitable in a consolidated processing industry with sustained low prices for fruit supplies.

Another noted the trend toward consolidation of food processors and retail chain customers and said "the big guys are getting bigger and it's not going to change." He was also negative about alternative market opportunities and said "there aren't enough niche markets to go around."

Another said that until we find a product that increases consumption and that does not pull away sales from other products, the situation will not get better. He said that most new products pull sales away from other apple products. Another said "I just don't see that much good in the industry at this point" and "there used to be good things coming along, not now."

Of the respondents with a neutral or stable outlook for the industry, one expected the status quo with no growth and believed that the region would not lose any more major processors. Two of the neutral respondents referred to the industry's "peak and valley" nature, and one of these respondents said that "we're in a valley" and "it's going to get tougher and tougher."

Of the respondents with a positive outlook, one juice processor said that there was more growth "on the other side of the business" referring to juice drinks (not 100% juice) as a fast growing beverage category.

The strengths and weaknesses of the regional industry were discussed with respondents. Responses are summarized below.

Strengths

- Consistency of supply
- Availability of supply
- Long length of season
- Presence of a peeler market for processing apples
- Natural sugars in raw product
- Strong brands
- Inexpensive products
- Competitive producers
- Good climatic conditions

Weaknesses

- Need for more competitive thinking
- Low productivity (yield per acre)
- Slowness to change
- Inadequate marketing and political muscle
- Oversupply of apples

Some of the responses about strengths and weaknesses appear contradictory. While some respondents noted as a strength that the region has “competitive producers” among its apple growers, others noted as a weakness a low productivity average for the region, in terms of yields per acre, and a “need for more competitive thinking.”

In addition to the weaknesses listed above, one respondent noted that a regional focus McIntosh production was a weakness in the industry because the variety is easy to grow, but hard to store, not well liked by consumers, and ill-suited for sauce making.

Recommendations to Northeastern Apple Growers

Four respondents generally encouraged growers to be more competitive, modern, and pro-active. A few said growers should use more updated production methods, including new varieties, increased yields, irrigation, and younger trees. Two said that growers should diversify into fresh apples or other agricultural products. Two respondents said that growers need to work with processors to improve the market. Two respondents said that growers should work together more.

Foreign Markets and Suppliers

Export markets do not appear to be very important for apple products from this region. Two respondents said that exports were important to their companies, but nine respondents said that they export little or none of their products. Some of these respondents shipped small amounts of their finished products to foreign customers, but did not consider export sales an important part of their business. Some respondents cited limits in the export market including: freight costs, the abundance of apples around the world, and the widespread production of apple juice around the world.

Foreign sources of supply were only mentioned in discussing juice concentrate and, in one case, ascorbic acid. Foreign sources of apple juice concentrate are important for several processors. Factors affecting the purchase of foreign concentrate included: price, tariffs, quality, supplier relationships, and the need for a consistent year-round supply. Several respondents commented both in favor of and in opposition to the apple juice concentrate anti-dumping suit against China. Two of these respondents expressed concern that the anti-dumping tariffs on Chinese juice concentrate may lead to increased Chinese production and competition in other processed apple product markets.

A hard cider producer among the respondents has considered using foreign concentrate, but prefers the quality of fresh cider. Another hard cider producer relies heavily on foreign concentrate, primarily from Europe. This respondent said that his company would like to be able to test concentrate supplies for adulteration.

Summary

This section has summarized the responses collected in the interviews with processors. The next section includes an analysis of important themes and issues that recur throughout the survey responses.

Section IV

Analysis

This survey was administered with the goal of improving the understanding of current trends and strategic issues in the Northeastern apple processing industry. The survey responses illustrate the range of perspectives in the industry. The survey does not provide statistically valid quantitative results, but rather, it was designed to collect current qualitative data in order to identify points of common interest and current research priorities. Any analysis of qualitative data is subjective in nature. The analysis presented here attempts to elucidate common themes, concerns, and projections of future trends.

Industry Analysis

A summary of the industry's main strengths, weaknesses, opportunities, and threats, as described by the respondents, is summarized below.

Strengths

- The Northeastern apple processing industry is based on production of processing apples by intent, not on by-products of the fresh market. In other words, apple growers produce apples specifically for the processing industry, and the industry is not based primarily on fresh market culls, as it is on the West Coast.
- The region has many competitive apple growers that produce a consistent supply of good quality processing apples.
- The regional industry produces a wide range of processed apple products. The industry is not dependent on one product category or one processor.

Weaknesses

- Apple product marketers have not made adequate investment in marketing and product innovation.
- Most apple products are marketed as commodities. The driving factor in the market for apple products is price competition.

- Most of the region's apple processors indicated a negative or uncertain outlook about the industry's future.

Opportunities

- Fresh apple slices appear to have strong market potential as a product that appeals to consumers' interests in health and convenience.
- Premium juices are carving out a new segment in the market. The trend to quality in juices by a substantial segment of consumers appears to have staying power. Apple juice has traditionally been marketed on price. A focus on apple juice quality could offer a new opportunity in the current market.
- Hard cider is a small, but rapidly growing alcoholic beverage market in the U.S. However, at this time, apple varieties needed to produce quality ciders are not available in commercial quantities in the U.S. These varieties may present a niche opportunity for some apple growers. Also, more research on the use of commonly available U.S. varieties in hard cider is needed.
- Consumer interest in food safety and environmental concerns is strong and not likely to wane. As a result, some processors are developing an interest in improving their ability to track their ingredient supplies to their sources. Growers that can offer traceability as a service will be well-suited to supply these processors. The development of better tracking methods for apple sources may also facilitate compliance with environmental and food safety regulations in the future.

Threats

- The loss of two apple processors on the East Coast in the year prior to the survey interviews created fears about further closings and market losses. Since the survey, one of the respondent processors has closed its regional processing operation.
- Consolidation in the food industry has increased the bargaining power of apple processor customers, including retail food chains and foodservice distributors. Furthermore, consolidation of food processors has increased competitive pressures on apple processors.

Some important trends in the industry are viewed positively by some and negatively by others. The availability of low cost apple juice concentrate on the world market adversely affects apple prices received by growers and increases price competition among juice producers. A global oversupply of apples puts further downward pressure on grower prices, and growth in the global supply of apples does not appear to be slowing. However, while this trend is adverse for growers, it benefits most processors by reducing the costs of supplies.

Similarly, low prices for West Coast apples are viewed as a threat by many Northeastern apple growers, but several regional processors benefit from the availability of low cost apples from the West Coast. In recent years, prices for West Coast processing apples have been sufficiently low to completely offset the costs of shipping to the East Coast. Price competition in the market for apple supplies benefits processors by keeping costs low.

The survey responses identified several industry level strategic needs, as perceived by regional apple processors:

- Apple growers should work with processors to develop markets for processed apple products.
- Apple growers need to work together with other growers to improve market conditions.
- Apple growers should continue to invest in new production technologies for processing apples. Growers must be able to produce low-cost, high-quality processing apples to gain competitive advantage in the current market.
- Competitive processing operations are now well-established as year-round producers. New apple varieties and storage technologies are needed to improve the availability of high quality apples on a year-round basis.
- Investment in apple product marketing and new product development by processors, perhaps in alliance with producer associations, is needed to improve the competitive position of apple products in the market. Because many apple products are drink and snack products, they compete with many products that are supported with strong marketing investments (e.g., orange juice, potato chips, soda).

- Apple growers and processors that are able to de-commoditize their products with unique features or services have a good opportunity to develop more profitable markets.

Furthermore, apple processors need to consider how relevant their products are in today's market. The apple industry has many mature products that are experiencing little to no growth. Currently, consumer interests favor food and beverage products that offer convenience, food safety, health, and gratification. Apple processors need to consider how their products are relevant to these consumer interests and whether new product could be developed to improve their products' appeal.

Another important strategic issue for the industry is how to answer the question, "who is the competition?" The competitive scope for apple products is broadening, both geographically and conceptually. The respondents made clear the importance of impact of globalization in their markets. Processors and growers must consider how to compete effectively with emerging global rivals. Many U.S. producers and processors may find it difficult to maintain effectively a competitive strategy of low-cost commodity production. New value-added and niche market strategies may become more appropriate for many processors.

At the conceptual level, apple products compete in markets of broad product categories, and in these categories, new, exciting, and relevant competing products are drawing consumers away from traditional apple products. For example, apple juice processors must compete successfully in the beverage market, not just the juice market. Market changes are creating pressure for strategic changes in the apple industry. Only by considering a broadened scope of competition can effective strategies be developed.

Unanswered Questions

The industry analysis provided by processors in this survey is fairly consistent, both internally and relative to other analyses of the industry. However, in some areas, the responses raised important questions about the industry. Questions arise from the areas of disagreement among respondents about industry trends and also from the inconsistency of some responses with broad food industry trends. These questions are discussed below.

High Acid Apple Supply: Strength or Weakness?

Several of the apple varieties that grow well in the Northeast are characterized by high levels of acidity (e.g., Ida Red, McIntosh, Cortland, Greening). High acid apples can be important to add flavor and achieve desired brix (sugar) to acid ratios in processed apple products. The availability of high acid varieties has been noted as a competitive advantage for the Northeast industry in other analyses. However, the region's high acid apples were generally not mentioned as an advantage by the survey respondents. One respondent felt that high acid apples were a disadvantage for the region.

High acid apple varieties do not grow well in many apple producing regions with which the Northeast industry competes, including China, South America, and Washington State. Apples and apple products from these regions are generally sweeter and have lower levels of acidity. However, producers in Eastern Europe compete with the Northeast in the production and supply of high acid varieties.

High acid apple varieties would seem to offer a clear flavor advantage for the production of high quality processed apple products. A lack of enthusiasm for the region's high acid apple varieties may have been an oversight by the respondents when answering open-ended questions. However, it may also indicate a trend toward sweeter, lower acid flavors in apples and apple products. New apple varieties popular with consumers such as Fuji, Gala, and Honeycrisp are very sweet.

Do high acid apple varieties offer the Northeast a competitive advantage? The regional industry should consider this question carefully. New popular low-acid apple varieties are becoming more common in Northeastern orchards. As this trend continues, apple production in the Northeast becomes less differentiated from production in competitive growing regions. Some apple processors and fresh apple markets will continue to require high acid varieties, and the Northeast region is well-suited to supply these markets. Moreover, the development of new products based on high acid flavors is needed to improve the market for these varieties. For example, most apple juice products are very sweet and low acid in flavor. These products generally do not appeal to adult tastes, and therefore, consumption is driven by sales to families with young children.

However, the development of a higher acid, less sweet flavored juice could be an opportunity to expand the apple juice market to new consumers.

Preferred Supplier Characteristics: Keeping Up with the Times?

Respondents noted that the most important characteristics that they seek in apple suppliers are dependability, loyalty, and long-term relationships. The importance of these traits to processors is easily understood. The responses regarding supplier relationships were remarkable, however, for what the processors did not say. Although food industry trade publications are heralding the importance of electronic procurement and billing, none of the respondents mentioned the use of electronic communication with apple suppliers. They also did not indicate that they anticipated a future trend in this direction. One of the processors noted that processor to grower relations were still fairly “old-fashioned”. This processor also lamented problems with inaccuracy and inadequacy of record keeping in the industry.

A 1999 survey of food retailers administered by the Cornell Food Industry Management Program and the Produce Marketing Association provides data on the current use of electronic communication in the produce industry. Survey results indicated that 65% of retail produce executives work for companies that use e-mail and 51% work for companies that utilize the Internet through a web page. At that time, 19% of respondents indicated that their companies use the Internet as a platform for business-to-business transactions (McLaughlin et al, 1999).

Food industry trends would seem to indicate that electronic procurement will soon be commonplace and that suppliers will need to offer these services to remain competitive in the market. At the August 2000 meeting of the U.S. Apple Association meeting, three fruit industry business-to-business web companies explained their services and discussed the likely importance of Internet based trading to the industry in the near future. The three speakers asserted in agreement that within 18 months, most of the people in the room would need to be adept at trading fruit using electronic communication (US Apple Association, 2000). Similarly, a survey of food processors conducted the Thomas Food Industry Register in 1999 indicated that while almost 80% food processors are not currently using electronic communication for placing orders, over

80% believed that they would be using electronic communication for most of their orders in the next few years (FoodTrends, 1999).

Is the Northeastern apple industry adequately prepared for electronic commerce? How soon will electronic commerce become commonplace in the apple processing industry? According to the survey respondents, this issue is not an immediate concern for growers or processors. However, regional apple growers should be careful to anticipate the need to offer these services in a timely manner, as necessary to maintain their competitive positions.

Eco-Labels: Marketing Opportunity or Liability?

Most of the respondents indicated that they were not interested in eco-labeled apple products. A few said that they produced or planned to produce organic products for niche markets. However, most respondents did not have an interest in using IPM (integrated pest management) labels for apple products, and many felt that IPM labels would have an adverse effect on product sales. They also felt that IPM labels could draw negative public attention to pesticide practices in the industry, and thereby, adversely affect all apple products.

On a global scale, however, the market for eco-labeled products is growing. In 1997, the global market for organic products was estimated at over \$10 billion and continued growth was expected as a result of consumer interest, new product development, aggressive promotion, and supportive government policies (USDA FAS, 1999). While eco-labels are sometimes perceived as a fad or niche market, their appeal to consumer desires for food safety and environmental protection appears to have developed a mainstream market with staying power. Consumers that demand information about the products that they purchase have become an important market segment, as well as important stakeholders and opinion leaders.

The appeal of IPM labels to consumers and producers raises a number of important questions. IPM is a complex management process that is not easily communicated and explained to consumers. Research on IPM labels shows mixed responses from consumers. While some IPM labels have been successful, a number of concerns surround the use of such labels:

- A recent research study shows that the small portion of consumers that are familiar with IPM practices are less likely to purchase IPM labeled fresh apples (Blend and van Ravenswaay, 1998).
- Processors are concerned that IPM labels will draw attention to pesticide practices that might otherwise be ignored by consumers of processed products. One of the respondents noted that in focus groups, consumers indicated that they do not associate pesticide residue concerns with processed products.
- The development of IPM label requirements that account for the complexity of this production technique could be quite arduous. Complexity could cause a public perception of a lack of transparency in the labeling requirements. Furthermore, some producers fear that enforcement of label standards could lead to adverse publicity for the industry.

Eco-labels have established a foothold in the mainstream U.S. and many global markets. Some producers will be able to create a competitive advantage by supplying these markets. The Northeast apple industry considers itself at a disadvantage in its ability to supply eco-labeled products due to climatic conditions that increase the relative difficulty and cost of using organic and low spray growing methods. Some respondents said that the drier western states are better suited to “eco-friendly” production methods.

The Northeastern industry needs to consider the importance of supplying eco-labeled markets. In addition, the industry should consider the potential spill-over effect of the growth in these markets on consumers of non-eco-labeled products. While demand for eco-label products may be limited to certain consumer segments, the trend toward consumer demand for information about product origins will be likely affect all food product markets.

To address this concern, some respondents indicated a need to educate consumers about pesticide use in apple production in order to illustrate the industry’s efforts to maintain environmental and consumer safety. While this information is likely to be beneficial, it is important to recognize that sophisticated consumers will also likely view industry claims with some skepticism, especially when they will be comparing claims to those offered by eco-labeled products.

Costs of Production: Competitive Disadvantage in the Northeast?

Several respondents stated concerns about the relative costs of production of apples and apple products in the Northeast and specifically in New York State. The regional costs of apple production were frequently compared by respondents to production costs in Washington State. Respondents mentioned electric rates, property taxes, and other taxes as significantly higher in New York State.

Respondents did not address differences in the costs of production at the grower level. However, they did emphasize the substantial difference in processing apple prices between Washington and New York. To an extent, this price difference may reflect differences in the costs of production. It also reflects the primary focus of the Washington industry on fresh market sales, with processing apples treated largely as a by-product.

How do the costs of production actually differ between Washington and New York? At the grower level, productivity is lower in New York than in Washington. Average yields per acre were 769 bushels in Washington and 498 bushels in New York during the period 1997-1999 (USDA NASS, 2000). With lower yields per acre and higher prices for processing apples, New York growers appear to be higher cost producers than those in Washington.

At the processor level, a recent survey of food industry leaders from New York State also demonstrated concern about relative costs of production (White et al, 1998). In this survey, respondents indicated that they felt they were being “nickel and dimed” by the costs of doing business in New York State, relative to other states. New York offers the advantage of proximity to markets, but on most other business factors (e.g., electric rates, worker’s compensation), respondents did not feel that the state compares favorably.

Indeed, New York’s electric utility rates are relatively high. In New York, the rate for industrial users is about 8% higher than the national industrial average, and for all users, New York’s electric rates are 56% higher than the national average (USDOE EIA, 2000). The effect of this cost differential and other costs of doing business on the region’s competitive landscape for food processors is a significant concern that will continue to grow in importance as the food industry continues to globalize in competitive

scope. Industry leaders should analyze these cost issues and determine whether political action is necessary to improve the business climate for food processors.

Summary

Although the outlook of respondents was generally reported as negative or uncertain, a strategic analysis based on their responses reveals several industry strengths and opportunities. The development of a competitive advantage for the regional industry will be critical to its future success. Defining and developing that advantage should focus on the industry's unique strengths and ability to exploit current opportunities. The unanswered questions discussed in this section draw attention to important strategic issues for the industry in the coming years.

Section V

Summary

The results of this survey provide an overview of trends, issues, and outlook in the Northeastern apple processing industry. The region's processors are an important link in the marketing chain from growers to consumers, and their perspective is critical in understanding the industry's situation and projecting the industry's future.

A high level of pessimism was evident among the region's processors in this survey. This pessimism reflects similar concerns held by the industry's apple growers. The processing sector has long been an important segment of the region's apple industry and a market on which many of the region's growers are dependent. The processing sector now faces a number of challenges in a rapidly changing and globalizing market. For the most part, processed apple products are mature products, and a lack of investment in marketing and new product development has limited growth potential in this sector. Looking forward, the industry must consider how to make its products relevant in current and future markets and how to develop a unique competitive advantage in the global market. Although the outlook of respondents was generally negative or uncertain, their responses reveal several industry strengths and opportunities.

This survey was completed as a part of a larger research project focused on the Northeastern apple processing industry. This research project is interdisciplinary, with components aimed at improving techniques in production, pest control, product manufacturing, and marketing. The marketing component is focused on the development of new product concepts and new marketing strategies. Throughout the remainder of the project, marketing research efforts will attempt to identify market opportunities for processed apple products. Additional surveys and focus groups are being used in this research.

The final project results will identify and analyze marketing strategies and opportunities in the industry. The research will convey important data about consumer trends relevant to the processed apple industry, and this data will be interpreted in the context of the industry's current situation. The results are unlikely to unveil a single "silver bullet" solution to address the industry's multiple challenges. However, the

information collected should be useful to growers and processors in assessing future opportunities and initiating the strategic steps needed to revitalize this important sector of the regional apple industry.

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Appendix A

Apple Processors Questionnaire

SECTION 1: Please complete this section prior to the interview meeting.

Your name _____

Company Name _____

Address _____

Phone Number _____ Fax _____

E-mail _____

Web site _____

Processed apple products:

What are your processed apple products? If possible, please indicate the importance of each product to your company by proportion of sales.

What are your other products?

Apple supplies:

Please estimate the amount of raw apple product supply that you purchase annually (specify units).

In what form(s) do you buy apple supplies (raw, concentrate, juice, sauce, etc.)?

What portion of your apple supplies comes from NY State?

From where else do you purchase apple supplies?

Which apple varieties do you use in your processing operations (please indicate varieties used for each type of product)?

What raw product characteristics do you prefer in apples for your processing operations?
Which varieties do you prefer?

Do you use fresh market culls?

Industry analysis:

Who are your primary customers (retail chains, wholesalers, brokers, foodservice, etc.)?

Who do you consider your main competitors?

SECTION 2: The following are questions for discussion at the interview meeting.

1. Describe your process for purchasing apple supplies. (from whom, when, storage, transportation, payment terms)
2. What characteristics do you prefer in a supplier of raw apple products (characteristics of apples, services provided by supplier, etc.)?
3. How do you set the rate that you pay for raw product apples?
4. What factors affect your operations and apple purchases in New York State?
5. What are the major factors impacting the market for processed apple products? What are the major opportunities and threats facing the industry?
6. Do you foresee any new, major technical developments in apple processing or processed apple products?
7. Do you conduct R&D on processed apple products?
8. Do you have an interest in “eco-labeled” apple products? (such as IPM labeling, organic)
9. Would you comment on any failed processed apple products (yours or others) – why do you think they failed?
10. How do you promote your processed apple products? On what characteristics (price, convenience, nutrition, quality)?
11. What is your outlook for the NE processed apple industry? What are the industry’s strengths and weaknesses?
12. What recommendations do you have for Northeast processing apple growers?
13. How important are foreign markets for your processed apple products? How important are foreign sources to your raw product supply?