Gateway to the Market for Southwest Virginia: A Feasibility Study

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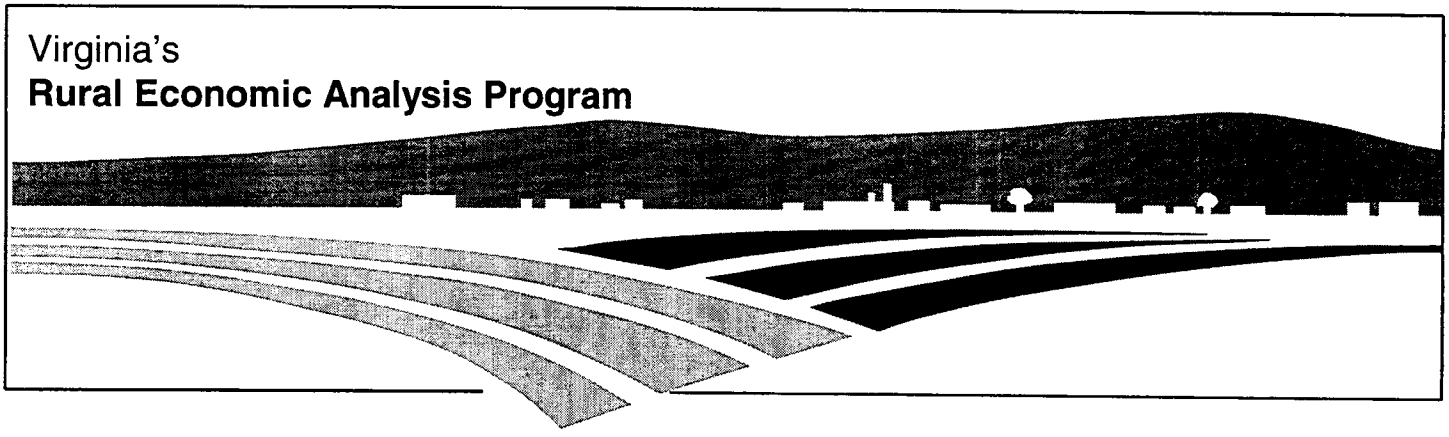

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INTRODUCTION

The production and marketing of high value, fresh horticultural products have become increasingly concentrated on large farms in Florida, California, and other primary production regions. Secondary production regions with small farms, such as those found in Southwest Virginia, have seen their market share shrink. This structural change in horticultural production and marketing has resulted from the ability of primary production regions to deliver large quantities of produce in a timely manner to the warehouses of major retailers. Growers with small farms may have an inherent transportation cost advantage in supplying the local region, but they find it difficult to assemble and deliver the required quantities and quality in a timely fashion.

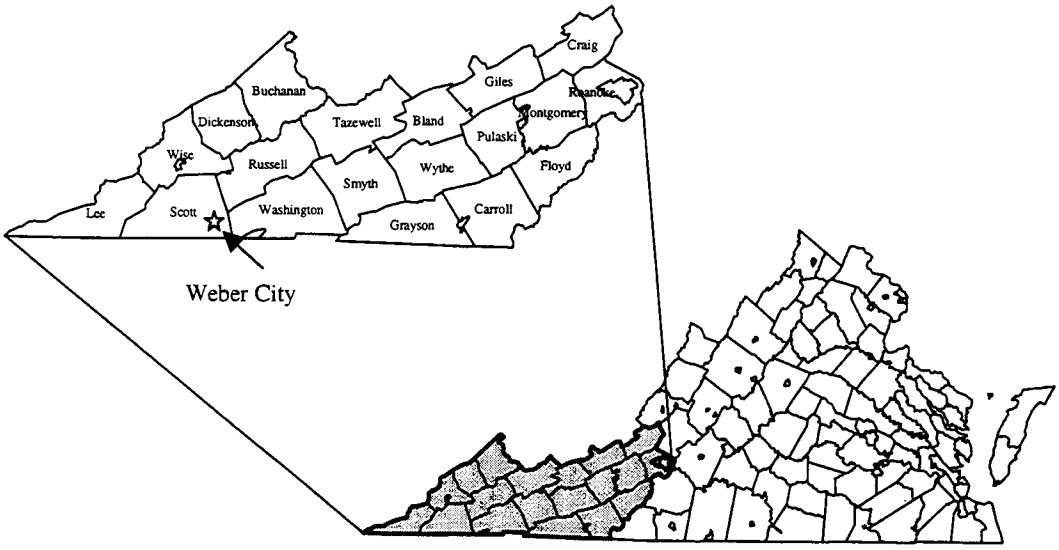
Community leaders and growers in Southwest Virginia have expressed an interest in establishing a shipping-point market facility to help overcome these problems. A shipping-point market is a facility where fresh horticultural products can be cooled, graded, packaged, and, in some cases, processed. This market sells to the larger distribution centers for supermarkets. Several regional extension specialists and growers believe that if a shipping-point market were available, local growers would expand production. Growers could concentrate on the production tasks at which they are most efficient, leaving the tasks of post-harvest handling and marketing to the management of the shipping-point market.

These community leaders, growers, and extension specialists believe that there is a need for public financial and technical assistance in establishing the facility. The nonprofit Southwest Virginia Agricultural Association has taken the lead in seeking this assistance in the form of a federal grant designated for purchasing equipment, providing technical assistance for crop variety trials, marketing expenses, and managing the facility.

The specific objectives of the feasibility study[1] were to (a) identify present and potential producers and production in the 19-county area of the Ninth Congressional District (the study region, Figure 1), (b) determine suitable horticultural crops and develop budgets for them, (c) survey produce buyers to determine market requirements, and (d) conduct profitability and market-window analyses for the potential crops. In meeting these objectives, efforts were made to determine whether the proposed regional facility could profitably market the increased amount of products that might be produced. Both the financial viability of the potential facility and the organizational structure or structures needed to establish the shipping-point market were assessed.

Data for the financial feasibility analysis were gathered through surveys of extension agents in the study region, farmers with interest in horticultural production, and potential purchasing agents for horticultural crops produced in Southwest Virginia. Information was also obtained through personal interviews with growers, purchasing agents, and regional horticultural and marketing specialists. Published data on production, acreage, and prices were also collected.

[1] The full report is available from Charlie Coale, Department of Agricultural and Applied Economics, Virginia Tech, Blacksburg, VA, 24061 or Va. Tech Ag. Exp. Station Bulletin No. 96-1 at: *http:////web.vaes.vt.edu/VAES/Publications/vaesnumpubs.html*



Bland, Buchanan, Carroll, Craig, Dickenson, Floyd, Giles, Grayson, Lee, Montgomery, Pulaski, Roanoke, Russell, Scott, Smyth, Tazewell, Washington, Wise, and Wythe. Market location: Weber City, Scott County.

HORTICULTURAL PRODUCTION IN SOUTHWEST VIRGINIA

According to the 1992 Agricultural Census, there were 376 farms in Southwest Virginia that produced horticultural crops, including fruits, vegetables, nuts, and greenhouse and nursery crops. Of these 376 farms, 159 farms produced 1,587 acres of vegetables, including 901 acres of cabbage, 187 acres of sweet corn, 55 acres of tomatoes, and 37 acres of peppers. All agricultural extension agents in the study region were surveyed. They reported that in 1995 there were 387 vegetable growers with 2,300 acres. They estimated that cabbage acreage was down to 500 acres, but pepper and tomato acreages were up to 157 and 68 acres, respectively. They also reported that the study region has 8,000 acres of *potential* land for horticultural production based on land type and *potential* interest of land owners.

Horticultural production in the study region is currently centered in three primary areas: (1) Roanoke County, (2) Carroll, Floyd, and Wythe counties in close proximity to the Southwest Virginia State Farmers' Market in Hillsville (Hillsville Market), and (3) Scott, Washington, and Smyth counties (*1992 Census of Agriculture*). Roanoke County has 144 acres in production to serve small outlets, including a downtown farmers' market in Roanoke City. The bulk of regional production, 1,193

acres, occurs near the Hillsville market. However, 901 acres of this total includes cabbage that is primarily field packed and marketed directly.

One hundred acres of vegetables were reported in Scott, Washington, and Smyth counties in the 1992 Census and 171 acres were reported in 1995 by extension agents. These counties are a considerable distance from the Hillsville Market, which is the nearest facility with even minimal grading and processing equipment. At one time these counties supported two vegetable cooperatives which no longer operate. The cooperatives appear to have failed for a variety of reasons including low quality produce due, in part, to lack of irrigation and post-harvest cooling, inadequate coordination among growers, and price instability. When these cooperatives were functioning, there were still a considerable number of local outlets for produce. These outlets no longer exist which partially explains the interest in establishing a shipping-point market to provide a substitute outlet for expanding local production.

Horticultural Market Trends

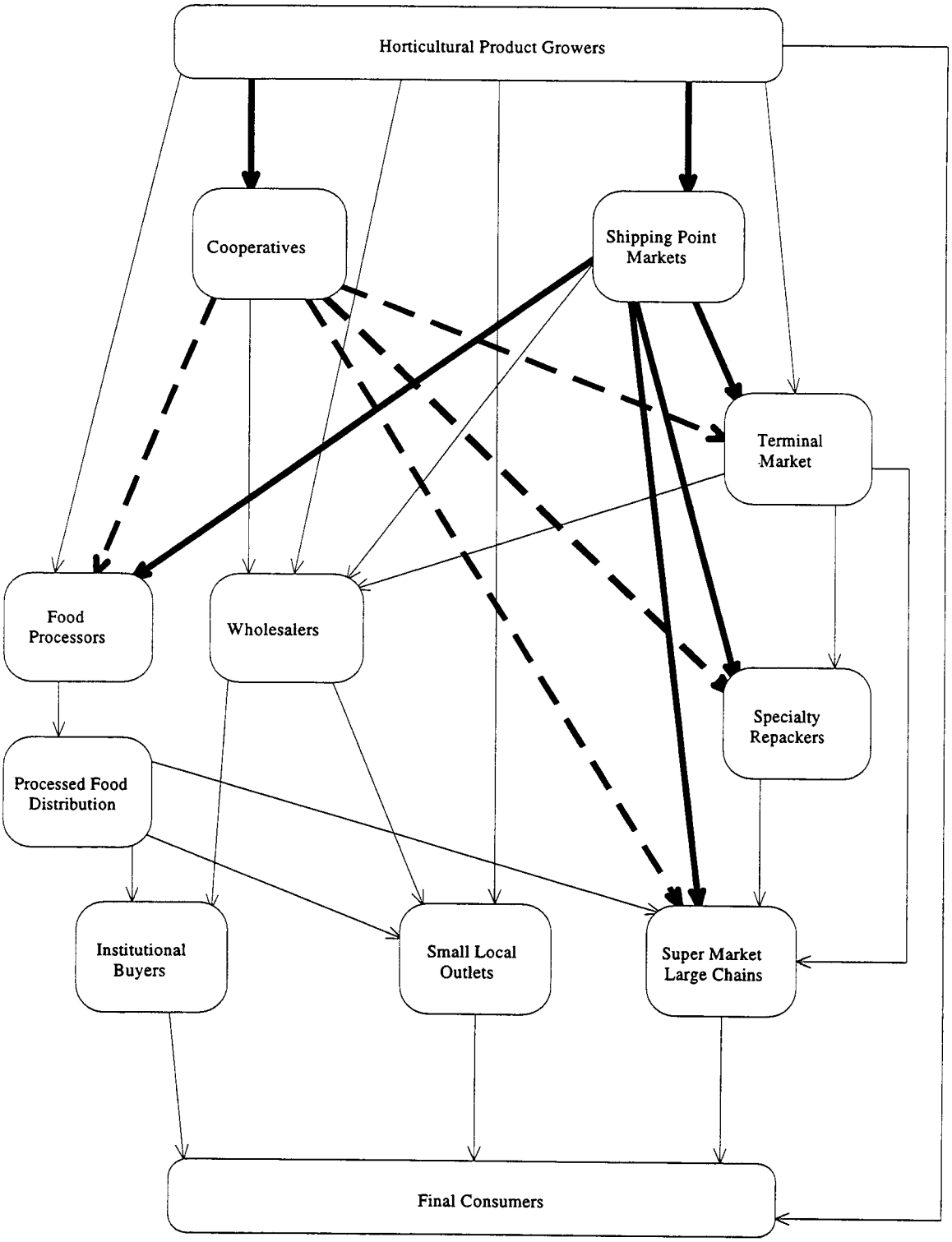
The national produce marketing system has become increasingly sophisticated, with production highly integrated with processing and marketing firms. The fresh produce industry is driven by the market requirements of the large supermarket chains, through which most produce is sold to consumers. These chains not only demand high quality, but require adequate volume, reliability, value-added processing such as pre-cut salads and pre-peeled vegetables, as well as precise packaging standards.

In the past, terminal markets near large cities were the major distribution centers for horticultural produce. Growers delivered their products to the terminal market, and from there produce was distributed to retail outlets. The importance of terminal markets is rapidly decreasing. Currently, about 20 percent of all fresh produce passes through terminal markets with only 7 percent of the larger supermarkets purchasing produce in this fashion (Coughenour, Zilverberg, and Hannaum).

With the decline of terminal markets, shipping-point markets located within large production regions have become more important. At shipping-point markets, individuals or grower groups integrate their production operations with processing and marketing to enable them to sell directly to large supermarket chains and food processing companies. Private firms that operate shipping-point markets are becoming multi-state enterprises with land and contract growers in various regions of the country. This geographic diversity enables these enterprises to maintain a nearly year-round stream of product in order to take advantage of established reputations for high quality produce and reliable deliveries as a supplier for the large buyers. Reputation is important because supermarket chains no longer process produce extensively or conduct detailed inspections. Therefore, suppliers are largely chosen based on their past reputation, more so than on the price and current condition of the produce.

Supermarket chains are increasing their market share relative to independent grocers and are not suited to purchasing from small growers. Typically, chain stores cannot even accept produce directly from growers who do not have the volume, quality, and processing ability to market through the chains' warehouse distribution systems. The flow chart of the marketing channels for horticultural produce shown by Figure 2 indicates the complexities of the distribution system.

Figure 2. Horticultural product market flows[a]



[a]Primary product flows are shown by bold, solid and dashed, arrows. Solid, bold arrows denote shipping-point market flows.

Large supermarket chains dominate the retail market for fresh produce in the study region, and they purchase almost exclusively from suppliers outside the state, even during peak periods of local production.[2] The proposed shipping-point market, to be successful, must be able to serve the distribution warehouses of the chains located in or close to the study region.

The bulk of the produce currently grown in Southwest Virginia is marketed through local outlets that include direct farm sales; pick-your-own operations; roadside stands; independent grocers; local restaurants; small, local supermarkets; and small wholesale operations.[3] Small wholesale operations generally serve the local restaurants and supermarkets as well as institutional buyers such as hospitals, schools, food processors, and prisons. These outlets are profitable for growers who have developed a niche in the local marketing system. However, local outlets for horticultural products are disappearing as supermarket chains increase their market share based on economies of size.

In an attempt to offset the decline in local produce market outlets, the Southwest Virginia State Farmers' Market was established in Hillsville, Carroll County, Virginia, with state and county governmental support for constructing a shell building and for hiring a market manager. However, this facility has been only partially successful in replacing lost outlets and stimulating regional production. The facility has served primarily as a location for small wholesale operations to receive, break-down, and reload produce shipments from outside the study region for redistribution to small retail operations and institutions within the study region.[4] In addition, the facility also serves as a location for a farmers' market.

Wholesalers at the Hillsville Market purchase some local produce including apples, cabbage, tomatoes, and peppers. However, the wholesalers at the market do not serve the large supermarket chains in the study region such as Food Lion, Kroger, Harris Teeter, Winn-Dixie, and Mid-Mountain, or the food processors, and hence, have not opened new markets for the study region's horticultural growers.

There are three primary reasons why the Hillsville Market has not succeeded in providing an opening into larger markets for the study region's growers.

1. The small, private wholesalers using the facility are not prepared to develop reciprocal contract growing relationships with farmers to ensure high product quality and quantities because they are brokers not managers.

2. These wholesalers do not offer growers incentives to work together to produce homogenous, high quality products for the larger supermarket chains since they are not marketing to these chains.

3. The Hillsville Market lacks adequate hydro-cooling and grading equipment to process large volumes.

[2] Based on a survey of local purchasing agents.
[3] Based on surveys of farmers, extension agents, marketing specialists, and purchasing agents.
[4] From a survey of Hillsville Market wholesalers and regional experts.

Any new shipping-point market would need to address these organizational and infrastructure problems. By addressing these issues at a central location, transaction costs would be reduced, and it may be possible to assemble the large quantities of high quality produce required by the large supermarket chains. The experience of the Hillsville Market shows that simply constructing infrastructure is not sufficient to establish a shipping-point market that functions well. The study region's growers must coordinate their efforts to meet market requirements. This coordination would be needed whether a new shipping-point facility were established or changes were made at the Hillsville Market to enable it to market local produce to the larger chains.

CROPS SELECTED FOR ANALYSIS

The selection of horticultural crops for analysis was made based on interviews with and surveys of growers, extension agents, produce buyers, marketing specialists, and horticultural experts. Produce purchasing agents were asked which specific crops they were interested in purchasing. They were then asked to respond to a list of selected horticultural products derived from grower and extension agent interviews and surveys.

Initially, an exhaustive list of horticultural products was considered including herbs, spices, fresh and dried flowers, fruits, Christmas trees, ornamental plants, specialty vegetables, and vegetables traditionally grown in the study region. Although specialty crops are highly profitable, farmers, extension agents, and buyers indicated that the more exotic horticultural crops are not suitable for the establishment of the shipping-point market.

County extension agents believed that it would be most efficient to take advantage of the knowledge, experience, and machinery available in the study region to produce traditional vegetable crops. Purchasing agents were skeptical of the quality of nontraditional commodities that might be produced in the study region. The surveys indicated that the shipping-point market is not needed for fruits such as apples and peaches, because marketing facilities for these products already exist.

Growers and extension agents[5] ranked the horticultural crops they thought best suited for the shipping-point market. Their ranking was based on agronomic feasibility, regional experience, farmer interest, and expected profits. The three top crops from the farmers' ranking were vine-ripened, string-weave tomatoes, green bell peppers, and Halloween pumpkins. The extension agents ranked vine-ripened, string-weave tomatoes, sweet corn, Halloween pumpkins, and green bell peppers highest (Table 1).

A sample of purchasing agents from the following firm types was surveyed: large supermarket chains (4), small independent grocers (6), wholesalers (8), processing firms and firms providing food for institutions and restaurants (3). The 4 supermarket chains represent 467 total stores in the study region, each with almost $6 million in annual produce sales. Purchasing agent responses were classified as very positive, positive, medium interest, and negative. These agents desired bell peppers the most, with 33 percent of firms responding very positively and 50 percent responding positively. Tomatoes ranked second with 17 percent responding very positively, and 58 percent responding positively. Three supermarket chains were interested in tomatoes, but indicated they wanted the tomatoes to go through their repacking firms. Cucumbers ranked 25 percent very positive and 33 percent positive. Other favorably ranked products, in order of importance, are cabbage,

[5] Forty-four growers and 17 extension agents participated in the study.

cantaloupe, squash, strawberries, and pumpkins. Two crops that received mixed responses were sweet corn and broccoli. Several firms expressed great interest in these crops, while others doubted the ability of growers in the study region to produce a product of comparable quality to that of their current suppliers.

Table 1. Ranking of potential crops for sale at the shipping-point market.

Crop	Producers	Extension agents	Buyers
Tomatoes	1	1	2
Green bell peppers	2	4	1
Halloween pumpkins	3	3	8
Sweet corn	4	2	9
Green beans	5	13	no interest
Cucumbers	6	9	3
Cantaloupe/melons	7	7	5
Berries/small fruit	8	6	no interest
Cabbage	9	12	4
Potatoes	10	5	no interest
Squash	11	no interest	6
Strawberries	12	no interest	7
Garlic	13	no interest	no interest
Christmas trees	14	no interest	no interest
Asparagus	15	11	no interest
Broccoli	no interest	8	10
Cauliflower	no interest	10	no interest

Source: Surveys and interviews. Producers and extension agents responses were ranked based on an assignment of points: 5 for the crop being selected most often, 4 points for the next, and so forth down to one point for the crops selected fifth or below.

The selection of crops for financial analysis was influenced by the results of the three surveys and by the researchers' interpretations of the most knowledgeable survey respondents, horticultural experts, and marketing specialists interviewed (Table 2). The basis for selection of six of the ten crops was the general agreement among some combination of growers', extension agents', and produce buyers' responses. These crops included tomatoes, green peppers, pumpkins, cucumbers, cabbage, and green beans. Four of the selected crops did not receive unanimous agreement, but these crops received particularly strong recommendations from selected surveys and individuals. These crops were sweet corn, strawberries, broccoli, and asparagus. Asparagus is the only crop selected that can be characterized as a "specialty" item. Its selection was based on strong recommendations from horticultural experts. Its perishability also gives local producers an advantage over California and Mexican growers because of the time-lag from harvest to market. While there may be a high potential for asparagus production in the study region, the lack of widespread production requires that further on-farm field trials be conducted before agronomic feasibility and grower acceptance can be adequately determined.

Another factor in selecting this mix of crops was their harvest periods. Experts noted that maximizing the time the shipping-point market facility is used defrays costs and assists in establishing a good reputation. Crops selected for this reason are strawberries, cabbage, asparagus, and beans (early crops), and pumpkins and fall broccoli (late crops).

Table 2. Crops selected for profitability analysis (in alphabetical order)

Crop	Reason Selected	Comments
Asparagus	Highly recommended by horticultural experts.	Growers have little experience in the study region, but the crop is well suited to local climatic conditions.
Cucumbers	Ranked high in all surveys.	High quality standards; uniform shape.
Fall bunched broccoli	Highly recommended by selected extension agents and purchasing agents.	Well suited to climatic conditions, but past broccoli co-op failure warrants caution. The crop requires high quality standards and reputation is important.
Green beans	Ranked high in all surveys of growers and extension agents.	The study region has experienced growers; the crop is an early season revenue generator.
Green bell peppers	Ranked high in all surveys.	The study region has an established reputation for high quality; the crop is marketable directly to the large supermarket chains.
Green cabbage	Ranked well by extension agents and purchasing agents.	Traditional crop with experienced growers; the crop is an early season revenue generator.
Pumpkins	Ranked well by extension agents and farmers.	Traditional crop that is a late season revenue source. Purchasers require high shape uniformity and the crop is costly to transport (transportation advantage for study region).
Strawberries	Ranked high by selected extension agents, horticultural experts, and purchasing agents.	New crop for the study region, but well suited to the climate and is an early source of revenue. Post-harvest handling is delicate.
Sweet corn	Ranked high by extension agents and growers.	The study region has experienced growers and is less labor intensive than other crops. However, it is highly perishable, susceptible to pests, and very high standards are required for large markets.
Vine-ripened tomatoes	Ranked high in all surveys.	Traditional crop with experienced growers in the study region. However, very high quality standards are required and supermarket chains purchase through repacking firms. It is labor intensive.

Market Potential

Large supermarket chains are potentially the best market for produce from the proposed shipping-point market. For selected crops, these chains will pay high prices for a reliable supply; they can receive large quantities of produce at central warehouse locations; they are looking for long-term relationships; and they possess a preference for Virginia-grown produce. Secondary markets are food processing and food service firms. Food processing firms alter the nature of the produce through thermal processing, cooking, freezing, or some combination of these processes. Food

preparation firms that service hospitals, schools, prisons, and restaurants can also absorb large volumes of produce. They tend to offer the lowest prices, but have less stringent requirements for physically attractive produce than other markets; however, they still have very specific size requirements.

The retail food industry publication, *Progressive Grocer*, defines 3 market areas that cover the 19-county study region and nearby markets. The Charlotte market is the largest in terms of population, food sales, and store numbers, followed by the Nashville and Richmond markets (Table 3).

Table 3. Regional market statistics[a]

Market area	Population	Food store sales	Small food stores	Supermarkets
		($000)	----------Number----------	
Charlotte	8,316,931	15,920,768	10,265	1,336
Nashville	5,263,044	9,692,998	6,344	807
Richmond	3,712,026	8,355,386	4,486	478
Total	17,292,001	33,969,152	21,095	2,621

[a]Source: *Progressive Grocer* (1995)

These 3 markets have 17 distribution centers for the major supermarket chains within the study region and bordering areas. These distribution centers are warehouses where fresh produce is received by the supermarket chains. They are located primarily along the Interstate-77 and Interstate-81 corridors within five hours of the proposed shipping-point market. The proximity of the market, which would be located in Weber City, Scott County, to the distribution centers would minimize transportation costs, thereby giving the market a transportation cost advantage over current produce suppliers.

Many purchasing agents were reluctant to report actual yearly or weekly volumes. However, the results of the purchasing agent interviews indicate that processors are more likely to have minimum quantity limits than are supermarket chains, but that both probably have them.

The ability of the study region's retailers to absorb increased production was assessed by estimating demand for selected crops in the markets surrounding the study region. The demand for large quantities of produce were found to exist in the 3 market areas, with yearly consumption in the largest market (Charlotte) at 49,956,000 pounds of tomatoes and 8,643,000 pounds of peppers (Table 4). The demand in the Charlotte market alone would require 1,000 acres of tomatoes and 620 acres of peppers, far beyond the anticipated regional acreage.

Table 4. Retail Regional demand for tomatoes and peppers[a]

Crop	Food Sales	Charlotte Area)	Nashville Area	Richmond Area
	$/1,000	----------1,000 lbs.----------		
Tomatoes	3.12	49,956	30,415	26,217,568
Pepper	0.52	8,643	5,262	4,535,769

[a]Source: *Progressive Grocer* (1994) and purchasing agent survey

Profitability Analysis

The profitability of the crops listed in Table 2 is projected based on crop production budgets and market-window analyses. The major source of production costs used is the cost and return budgets for horticultural crops developed by Virginia Tech (Table 5). These budgets were updated with yield data from similar geographic regions in Tennessee and North Carolina. The budgets include transportation, grading, and field packing costs. However, the profitability analysis described below can be considered conservative as packing and grading costs are assumed to take place in the field. The costs attributable to packing and grading should decline with a shipping-point market. The shipping-point market would charge the growers "at-cost" for grading, packing, and marketing their produce.

Table 5. Summary of production budgets[a]

Crop	Unit size	Yield	Hours labor	Cost/acre ($)	Unit cost ($)
Green beans	bushel	250	147	2,624	10.50
Fall bunch broccoli	box	500	100	3,219	6.44
Green bell peppers	box	500	146	3,384	6.77
Fresh cucumbers	bushel	300	227	3,679	12.26
String-weave tomatoes	box	2,000	510	10,203	5.10
Sweet corn	dozen	1,400	234	3,629	2.59
Pumpkins	each	2,400	280	3,456	1.44
Asparagus	pound	8,712	178	1,845	0.09
Green Cabbage	crate	800	278	4,772	5.69
Strawberries	quart	6,200	115	7,480	1.01

[a] Source: *45 Selected Costs and Returns Budgets for Horticultural Food Crops Production/Marketing, 1994.*

Price data used for the market-window analyses are from terminal markets in Atlanta, Georgia; Baltimore, Maryland; Cincinnati, Ohio; and Columbia, South Carolina, for 1992-1994. The prices are given in broad ranges, and prices at the same terminal market vary substantially depending on the source of the produce.[6] High, average, and low prices based on averages across all terminal markets were used for the market-window analyses.

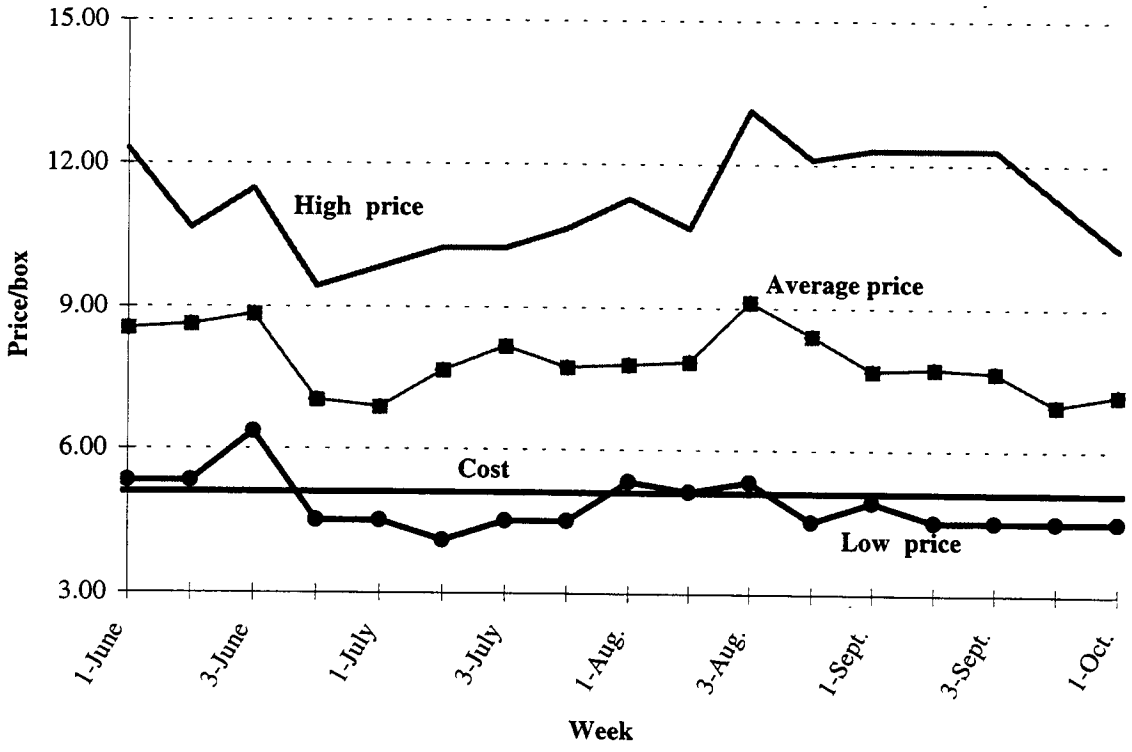
These three price levels reflect high, average, and low quality produce within a given product category. These quality differences are price-defined since terminal market data do not indicate physical factors that contribute to price variations within the specific product categories. Market-window graphs of product returns by week were constructed from this data. The market-window analysis for string-weave tomatoes is shown in Figure 3. (The market-window analysis graphs for the other commodities listed in Tables 5 and 6 can be found in Appendix A.)

Two types of budget estimates were calculated:

1. returns per acre at each quality level using prices averaged for the production period, and
2. returns per acre at each quality level using prices for the best feasible marketing period as identified from the market-window analysis.

[6] Terminal market price is the price the commodity sold for at the terminal market. Based on expert opinion, 18 percent was deducted from the terminal market prices to obtain the expected prices paid to the shipping-point market.

Figure 3. Stringweave Tomatoes



A summary of these results is presented in Table 6. Tomatoes are the most profitable crop with returns to management and land of $12,589 per acre for high quality produce during the feasible harvesting period (July 10-October 1) and $15,015 acre in the best harvest period (August 21-30).

The profitability analysis reveals both the potential for success of the proposed shipping-point facility and the reason profits are currently low for horticultural products as reported by the study region's growers. All the selected crops are profitable at high quality levels. These prices could be obtained by an efficiently functioning shipping-point market if the growers provide the highest quality produce. At low quality prices, all crops are unprofitable or only marginally profitable, except asparagus (Figure 1A). Currently, most growers in the study region produce products that fall into the average or low quality categories.

Other Selection Criteria

The selection of optimal crops to be marketed through the shipping-point facility cannot be based solely on the profitability analysis. Other factors that must be considered include grower experience, potential for producing large volumes, ability to manage labor, irrigation requirements, level of initial investment required by growers, purchasing agent interest, and suitability for processing through the shipping-point facility.

Table 6. Crop profitability per acre[a]

Crop	Profit: best harvest[b]	Profit: high quality price	Profit: low quality price	Production cost[c]	Feasible harvest period[d]
			$/acre		
Tomato	15,015	12,589	(804)[e]	10,203	July 10-Oct. 1
Asparagus	8,649	6,516	3,233	1,845	April 15-June 15
Cucumber	5,744	4,782	(2,691)	3,679	July 25-Oct. 1
Strawberry	3,891	3,383	163	7,480	May 15-June 15
Pumpkin	4,416	2,448	(3,353)	3,456	Sept. 1-Oct. 30
Broccoli	3,340	2,110	(3,123)	3,219	Sept. 1-Nov. 1
Pepper	3,175	11,902	(549)	3,384	July 15-Oct. 1
Green bean	2,090	1,219	(1,203)	2,624	June 15-Oct. 1
Cabbage	2,448	1,022	(4,678)	4,772	May 10-Oct. 30
Sweet corn	2,093	556	(1,541)	3,629	June 20-Oct. 1

[a] The prices are based on an average of high and low quality prices at the terminal markets of Atlanta, Baltimore, Cincinnati, and Columbia for 1992-1994.
[b] Based on the optimal market-window analysis.
[c] The costs are from *45 Selected Costs and Returns Budgets for Horticultural Food Crops Production/ Marketing, 1994.*
[d] Based on horticultural expert opinion.
[e] "Profit" in parentheses indicate losses.

A ranking of selected potential crops based on all these factors is presented in Table 7. It is a subjective ranking based on profitability, survey results, and expert opinion from interviews.

Table 7. Crop ranking and rationale

Rank/Crop	Rationale and Comments
Vine-ripe tomatoes	Highest profit (for all examined prices); main problem: quality.
Green bell peppers	Medium profitability, low risk, broad local knowledge, high willingness by large chains to purchase directly.
Pumpkins	High profit, but risky for low quality. Not a core crop to run the facility but complementary with core crops to keep the facility in use late in the season.
Strawberries	High profit, but risky due to limited local knowledge; could become a key early season crop for facility utilization.
Green cabbage	Low profit, but broad regional experience provides the potential for increasing crop value. Allows for early facility utilization.
Cucumbers	Highly profitable for high quality; very unprofitable for low and medium quality.
Green beans	Medium profitability for high price; allows early facility utilization.
Asparagus	High profit crop with limited local knowledge and reputation; initially difficult to convince farmers and purchasers.
Broccoli	Good profitability for quality product, high losses for low quality. Purchasing agents were mixed on acceptance.
Sweet corn	Moderate profit for high quality, risky to produce. Hydro-cooling is required and costly.

CONSTRAINTS TO EXPANDING PRODUCTION

Farm Level

Constraints to increasing horticultural production to be marketed through the shipping-point market were identified through the surveys (Table 8). The grower survey revealed a number of key issues that must be addressed for horticultural production to be successful.

1. Irrigation: Only 38 percent of farmers surveyed have some type of irrigation system. Irrigation is needed to produce the reliable volume of high quality produce that buyers require.

2. Labor: 76 percent of the growers reported that family members were their principal source of labor. Nearly all the county extension agents reported that migrant labor would be needed to expand production, while only 43 percent of the growers anticipated using migrant labor. Eighty-two percent of the growers said they do not have housing for migrant workers. Extension agents and farmers also noted that vegetable production and tobacco production, if carefully planned, can be complementary. Tomatoes and peppers are crops that can use equipment and migrant labor that are also used for tobacco production. Utilization of labor for other crops could be a cost savings since workers are often retained during periods of low labor demand.

3. Marketing infrastructure: 94 percent of the producers responded that their primary market is local outlets such as fruit stands, local retail stores, and pick-your-own operations that move small volumes of produce. Fifty-six percent of the farmers responded that they would expand horticultural production if a shipping-point facility existed. Twenty-five growers said they would plant 430 additional acres if a facility were established.

4. Farmer experience: 44 percent of the extension agents indicated that a general constraint to horticultural production is the lack of farmer experience in the production of high quality horticultural products.

Results from the survey of extension agents are similar to those from the grower survey (Table 9). Eighty-one percent of the extension agents indicated that the Hillsville Market was the closest market for producers in their counties, and 44 percent said it was too far to be a viable outlet for their producers.

Horticultural experts emphasized that a consistent supply of high quality produce can only be ensured with the proper use of irrigation. A previous horticultural effort in the study region failed when a year of low rainfall prevented growers without irrigation from achieving their production volume commitment. The shipping-point market management must ensure that growers signing marketing contracts, thereby committing acreage to be marketed through the facility, possess adequate irrigation capabilities. Growers in some areas of the 19-county study region lack adequate sources of water for irrigation; therefore, they may not be able to take advantage of the services offered by the shipping-point market. Scott County, where water is readily available for a high percentage of the local growers and because of its proximity to distribution centers, was chosen as the location of the shipping-point market.

Table 8. Constraints identified by growers[a]

Survey question	Grower response categories	Responses (percent)[b]
Experience in horticultural production	Yes	51
Have irrigation	Yes	38
Current source(s) of farm labor	Family	76
	Local	44
	Migrant	22
If horticultural production were expanded, sources of additional labor needed	Migrants	43
	Local	41
	None	34
Experience with migrant labor	Yes	33
Housing for migrant labor	Yes	18
Current use(s) of land that might be converted to horticultural use	Pasture	54
	Grass	54
	Tobacco	8
	Corn	15
Nearest market to sell fresh produce	Hillsville	80
	Other	20
Primary market for horticultural produce	Local outlets	94
	Hillsville	22
	Outside Region	3
Interest in using shipping-point market if one existed in the study region	Yes	56
Willing to commit to horticultural production to be marketed through a marketing cooperative	Yes	52
	No	37
	Unsure	11

[a]Seventy-six growers in the region were surveyed.
[b]Responses may not sum to 100% because only the most frequent responses are reported, or may sum to greater than 100% because multiple answers were given for some questions.

Market Based

Several constraints to establishing a successful shipping-point market exist from the purchasing agents' perspective. While 50 percent of the purchasing agents responded very positively and 17 percent responded positively, 33 percent expressed only mild interest in purchasing from the shipping-point facility. The 33 percent that expressed limited interest were skeptical of farmers' ability to produce quality produce in sufficient volumes and to deliver predetermined quantities in a reliable manner. Seventy-five percent noted that they are interested in a broad range of products, while 25 percent indicated that they are interested only in a few, specific products. The latter group tended to be from processing firms.

Current purchasing patterns in the study region and the types of delivery systems were identified. Only 8 percent reported extensive local purchasing, 67 percent reported limited local purchasing, and 17 percent reported no local purchasing. Many purchasing agents reported that their firms are not well-suited to dealing with small, local growers. No large supermarket chains reported purchasing from the Hillsville Market.

Table 9. Selected responses to extension agent survey questions

Question	Responses	Responses (percent)	Comments
What is the nearest market?	Hillsville Market	81	Smaller percentage of responses for specific, small, local outlets.
What are the principal constraints to production?	Lack of marketing infrastructure	44	The extension agents near the Hillsville facility did not consider market infrastructure a problem.
Is migrant labor needed for increased production?	Migrant labor needed	81	Most growers use family labor with the exception of some larger growers who use migrant labor for tobacco production.
What are other constraints to increased production?	Lack of experience and grower attitudes	44	Growers currently have skills suitable for selling to local outlets but not to larger markets.
What advantage does the study region have in horticultural production?	Cool weather crops	31	Several extension agents noted that the study region's high elevation gave an advantage in producing cool weather crops.
	No advantage	50	

Purchasing agents were asked to identify the problems they have had purchasing produce from the Southwest Virginia Region (Table 10). Ninety-two percent of the firms best suited to buying locally noted general poor quality, with 83 percent attributing this poor quality to lack of proper cooling. The lack of adequate cooling equipment implies the need for a well-equipped shipping-point market. Lack of farmer reliability and product availability were also stated as major problems by 67 percent and 33 percent, respectively, of the firms best suited to buying locally. *Purchasing agents said that growers do not understand the need to meet exacting standards.*

Table 10. Purchasing agent concerns for Southwest Virginia produce

Firm Type	Poor availability	Poor reliability	Lack of cooling	Poor quality
		----------percent----------		
Large chains	25	50	50	75
Small independents	0	0	0	0
Wholesalers	13	63	88	88
Processors/preparation	66	66	100	100
Best firms[a]	33	67	83	92

[a]This category represents a subset of the sample that is best suited to purchasing from the shipping-point market. It includes supermarket chains, large wholesale operations, and processing firms.

MANAGEMENT AND ORGANIZATIONAL ISSUES

Management and organization of the shipping-point market facility are crucial factors that will influence its potential for success. The management of the facility must select the product mix to be sold through the facility, coordinate market demand with grower capabilities and interests, coordinate grower awareness and evaluation efforts, and ensure quality control.

Management

The shipping-point market cannot market all crops that farmers may want to produce. Once management has selected the product mix, contracts should be signed with producers who agree to sell their crops through the shipping-point facility and who agree to adopt specified agricultural practices. A preplanting contract will enable management to estimate the volume of produce available for distribution and to select appropriate purchasing firms. Such contracting will enable the market to meet commitments and to establish a favorable reputation.

Improving grower skills and market awareness will require a joint effort between shipping-point market management and Cooperative Extension agents. The development of detailed production guides, which specify production and harvesting procedures that must be followed for the selected crops, should ensure that the growers possess the technical knowledge to meet the market's standards for quality.

A major role of shipping-point market management is to ensure quality control. Quality and grading must be based on the standards of the large purchasers in the study region. A shipment of low quality produce can ruin the reputation of a supplier. Purchasing agents stressed that they did not want to carefully inspect produce, but preferred to rely on the supplying firm's reputation.

The establishment of reputation takes time and effort, and the initial returns may be low. Only after a good reputation is acquired can higher returns to quality be expected. Creating a reputation for high quality makes establishing the shipping-point market more difficult, but growers must realize they will face a rising price curve if they can produce high quality vegetables. High quality standards can cause conflicts between management and producers leading disenchanted producers to withdraw. Educational effort is needed to ensure that farmers understand that larger markets have different standards than the local outlets to which they may be accustomed.

Organization

The two primary alternative types of organizational arrangements for managing the shipping-point facility are private ownership and grower cooperative.

Private firm

A private firm purchasing directly from growers and marketing through the shipping-point facility to large buyers would have the greatest incentive to be efficient and to minimize costs. However, there are several potential drawbacks to having a single firm own or manage the shipping-point market facility. Such a firm would be the sole large-scale produce purchaser in the study region. As such, the firm could exercise market power that might reduce grower returns. This type of power is common in markets that deal with perishable produce.

To minimize the possibility of market power, attempts could be made to entice multiple firms to rent space at the shipping-point market to encourage competition. However, attracting multiple firms may result in firms that are individually too small to be competitive in the large markets, as has occurred at the Hillsville Market where small wholesale operations at the facility only serve small, regional outlets.

The growers' willingness to organize themselves and work together will help provide the necessary incentive to attract private firms to own and manage the shipping-point market. The growers must also convince the potential market owners and managers of their ability to provide sufficient, high quality produce to meet the expected demands. Even if a private firm were attracted, the problem would remain that this firm is best suited to working with larger operations. It is less well-suited to coordinating production decisions of small operations or providing needed market information to growers so that they can participate in the industry.

Cooperative

A benefit of cooperative management is that it would allow producers to capture a greater share of the profits. Also, growers in their dual roles as producers and marketers would have greater incentive to coordinate production to meet the requirements of large buyers. It is advantageous for a cooperative to provide information to growers because members are committed to marketing through the cooperative. For example, the Cumberland Products Vegetable Cooperative in Kentucky provides its growers with detailed technical production advice through frequent newsletters which relate the latest production research and optimal times for production activities such as pesticide use.

There are several drawbacks to cooperatives which have lead to the failure of previous vegetable cooperatives in the study region. The farmer survey indicated a mixed response to the use of cooperatives, with 52 percent of the interested growers expressing a willingness to market through a cooperative. Regional experts noted a variety of reasons for the failure of previous cooperatives, including internal conflicts regarding pricing practices, lack of a professional broker, lack of farmer commitment, and lack of coordination of many individuals with different goals and objectives.

To minimize these problems, strong cooperative management and a strategy-oriented role for the board of directors are necessary (Harstin and Leuthold). In the 5-state region of Virginia, West Virginia, North Carolina, Kentucky, and Tennessee, the number of fruit and vegetable cooperatives has increased from 18 in 1979 to 25 in 1987 (USDA). Fruit and vegetable cooperatives have followed the market trends of increasing firm concentration. From 1960 to 1988 the number of cooperatives declined 55 percent, but the overall volume of cooperative sales increased 550 percent.

The Cumberland Products Vegetable Cooperative is an example of a successful cooperative shipping-point market that might serve as a model for Southwest Virginia. This cooperative serves farmers similar to Southwest Virginia farmers in a region with similar physical characteristics: farms are also small, most having less than 10 acres, and the farmers primarily produce tobacco and cattle. This cooperative successfully markets cabbage, tomatoes, green bell peppers, and pumpkins to the region's large supermarket chains and processors.

Role of Government Assistance

Attracting private ownership and management to operate a shipping-point market facility is unlikely, and organizing a cooperative to own and manage the facility will be difficult. The study region is characterized by small farms and hilly terrain. The small acreage per grower makes private investment in establishing the shipping-point market expensive and risky. Transaction costs involved in dealing with numerous farmers increases expenses, and the risk that growers on small farms with their modest capital investments may switch crops following short-term market swings is increased.

There is anecdotal evidence that such market swings partially accounted for past failures of vegetable cooperatives in Smyth and Halifax counties.

Gathering market information is costly relative to the amount of product produced on small farms. The produce market is complex, requiring detailed knowledge to receive high prices. Individual farmers do not produce sufficient volumes to establish a reputation that produce purchasers favor. The cost of purchasing adequate grading and packing machinery for small farms is prohibitive. Although it may appear profitable to produce horticultural crops, these marketing constraints will spell failure unless growers organize and find ways to:

1. overcome the initial investment costs in cooling and grading facilities, irrigation equipment, and so forth;

2. consistently produce high quality products to establish a reputation for quality that will enable them to command top prices; and

3. develop educational programs to explain how to produce a standard high quality product.

The apparent existence of market failure raises the possibility that it may be desirable for the public sector to assist in establishing the shipping-point market. In the long run, a viable horticultural industry in Southwest Virginia could generate sufficient economic development that it would reward society for investing in the industry to help it become established. Governmental assistance can be justified based on the positive benefits that can accrue to the national and local economies by creating a new source of food production. Legal authority for governmental intervention can be found in three federal acts: the Capper-Volstead Act of 1922, the Agricultural Marketing Agreement Act of 1937, and the Agricultural Fair Practices Act of 1967.

CONCLUSIONS

Based on interviews and surveys, broad interest exists in establishing the facility, but farmers are unaware of market requirements. Strong management will be required along with a one-time investment of public capital if the shipping-point market is to succeed. The two top ranked crops are vine-ripe tomatoes and green bell peppers, but others such as pumpkins and strawberries are potentially profitable and would extend the length of the season in which the market would be in operation.

A shipping-point market has the potential to provide the marketing services necessary to stimulate horticultural production in Southwest Virginia. The market needs to be structured differently from the Hillsville Market and attract the large supermarket chains, among other outlets. **However, success will be achieved only if farmers meet strict market requirements. Meeting these requirements depends upon the use of proper production techniques, education, and the farmers becoming a cohesive group.**

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APPENDIX A

Figure 1A. Asparagus

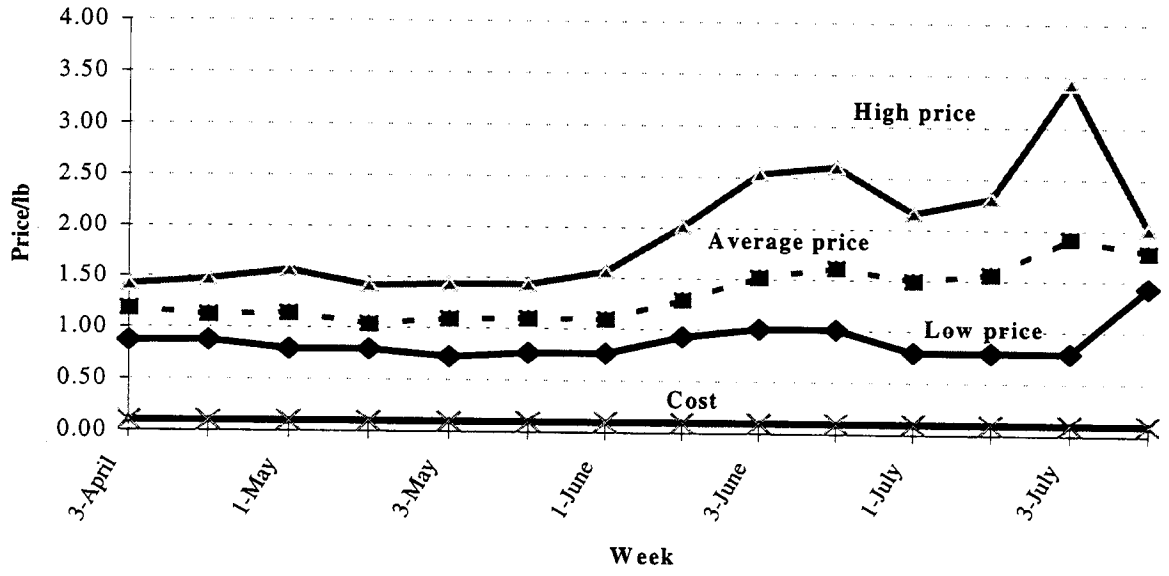


Figure 2A. Green beans

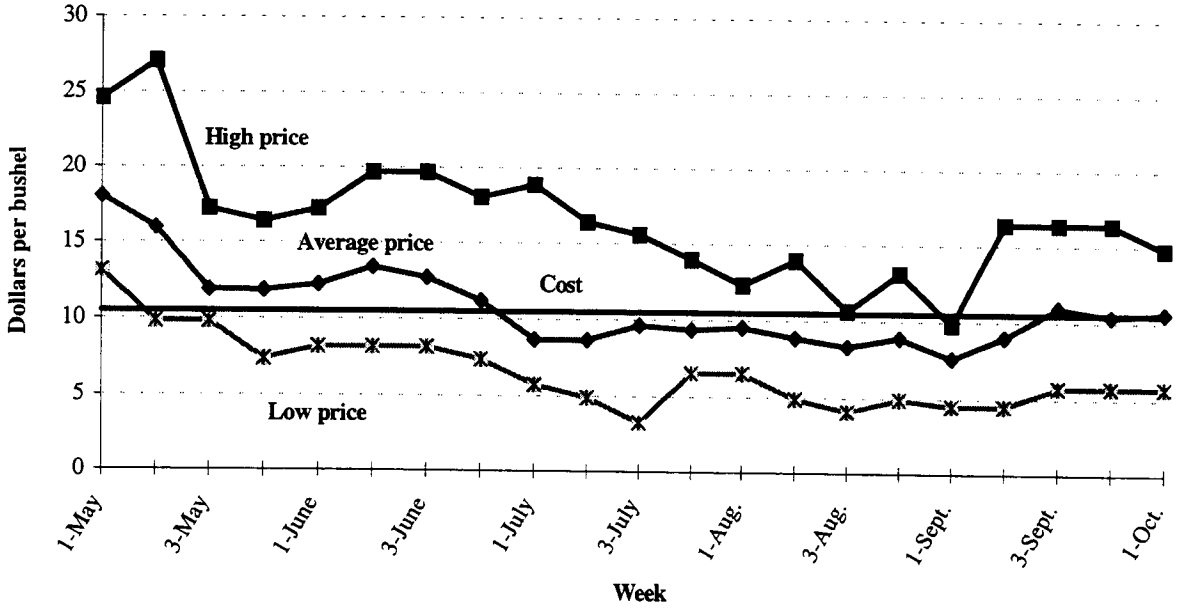


Figure 3A. Fall buching broccoli

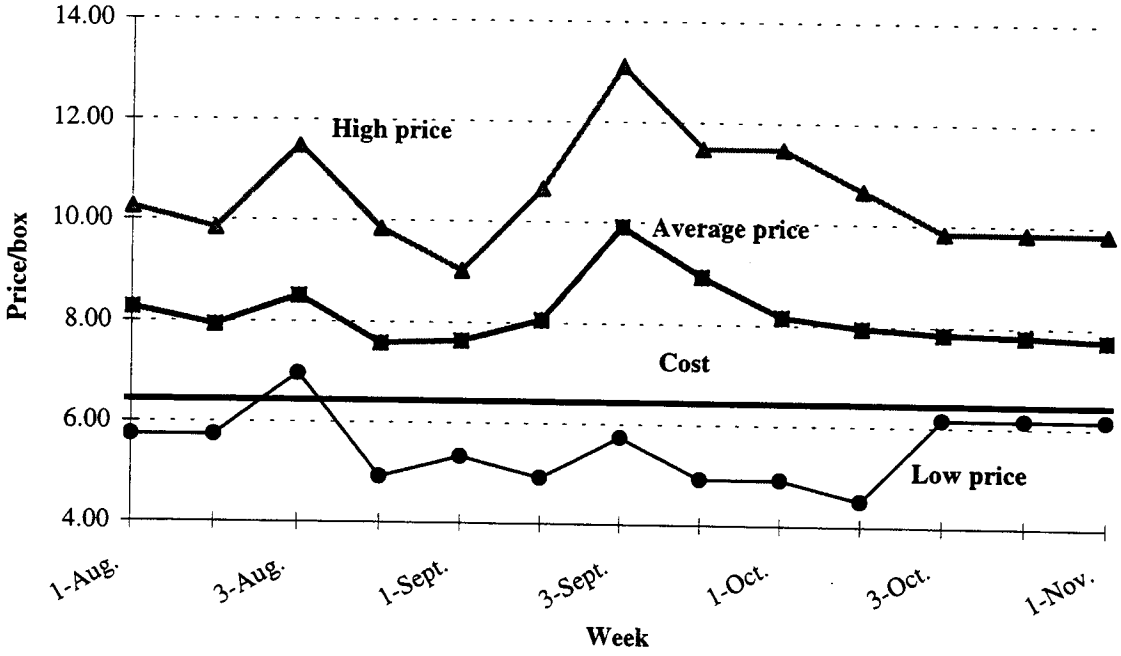


Figure 4A. Cabbage

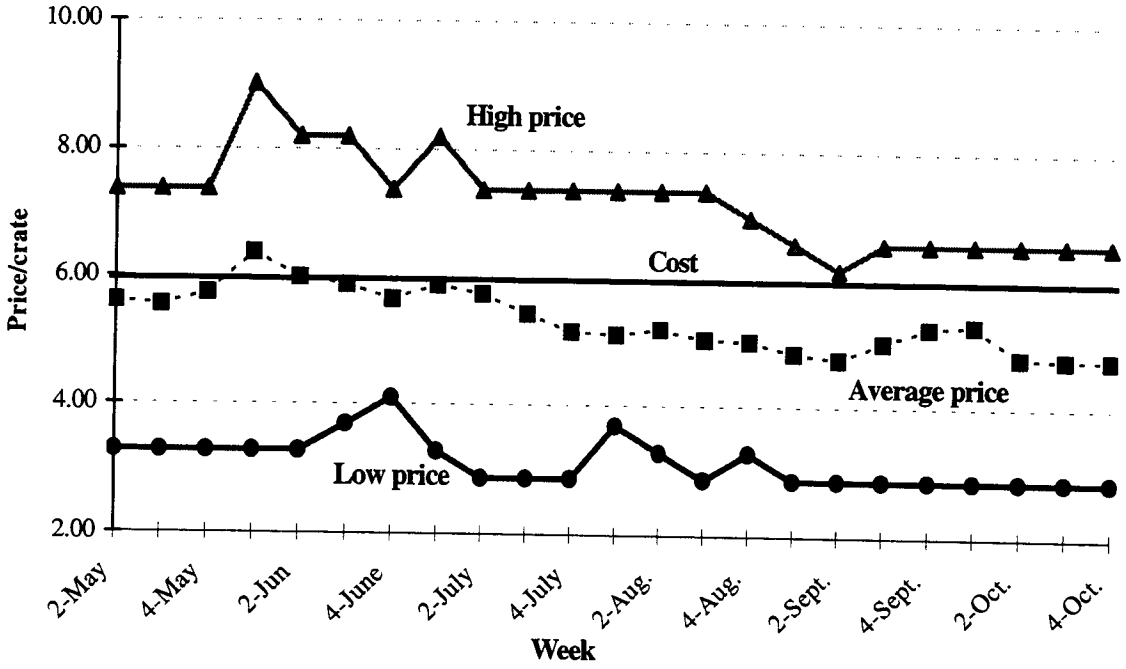


Figure 5A. Cucumbers

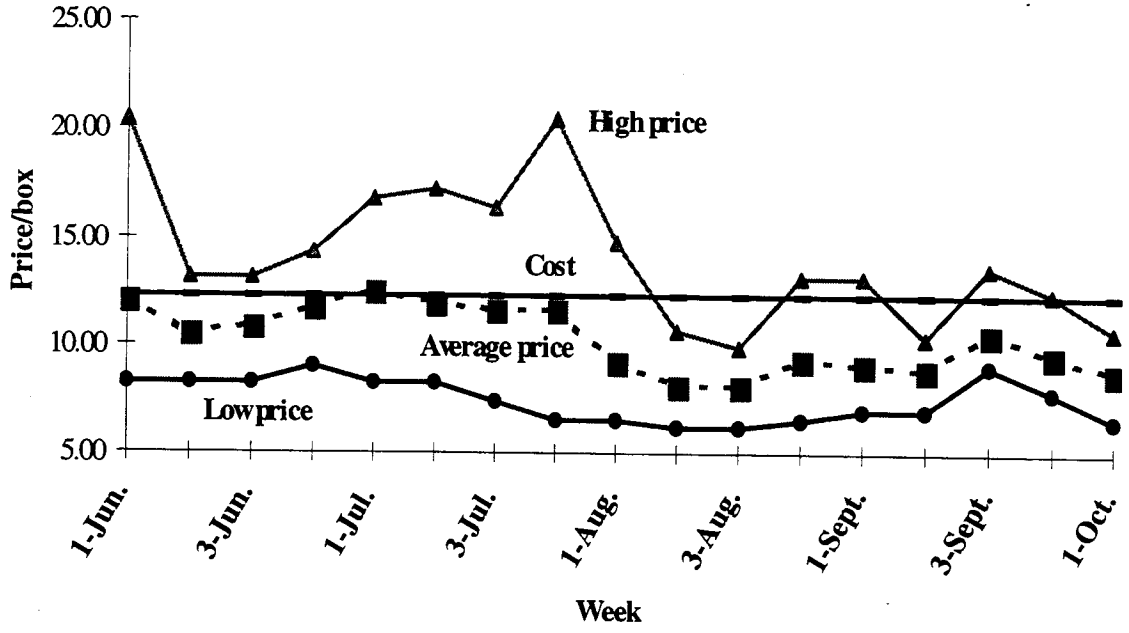


Figure 6A. High-density green bell peppers

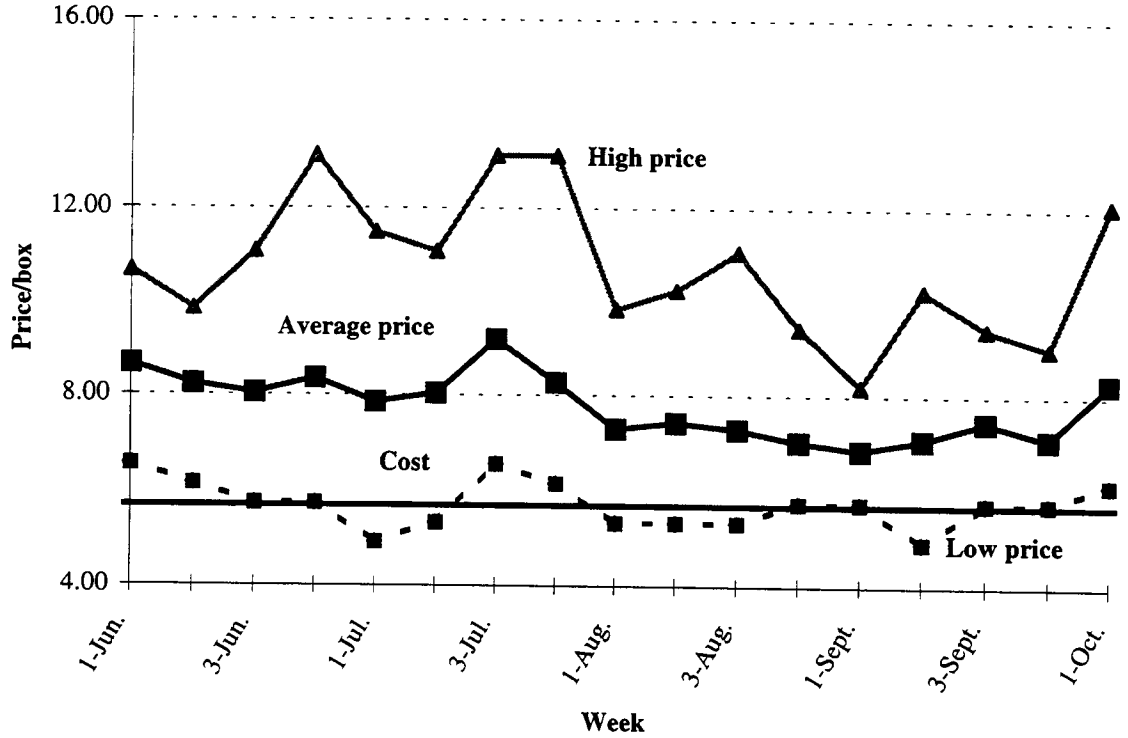


Figure 7A. Pumpkins

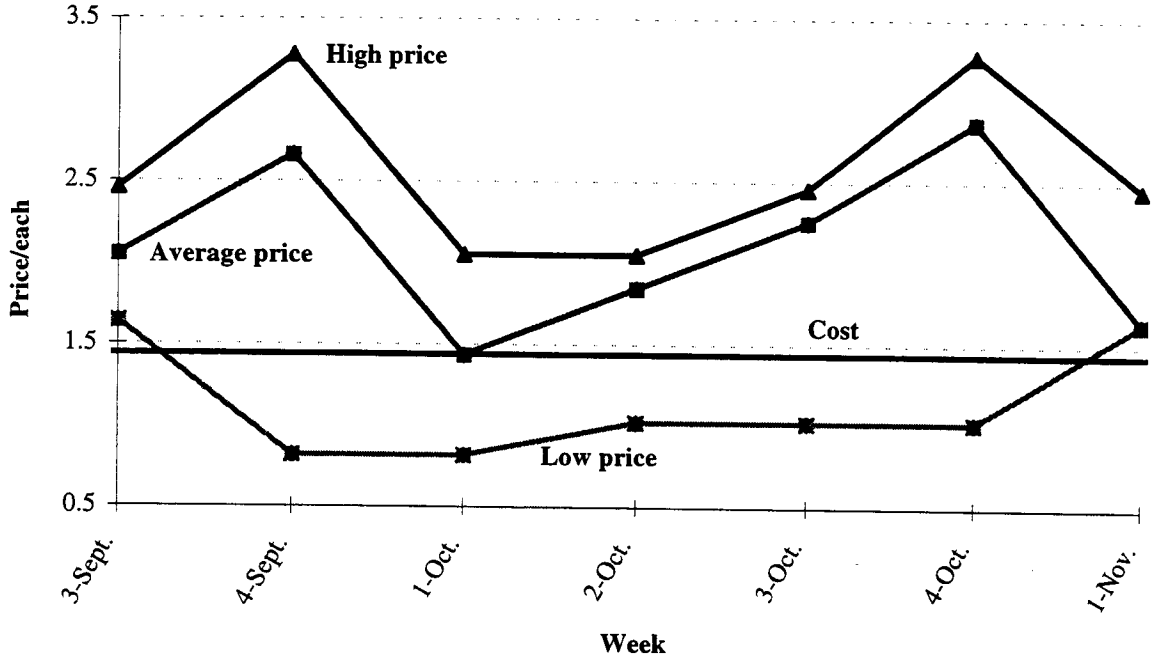


Figure 8A. Strawberries

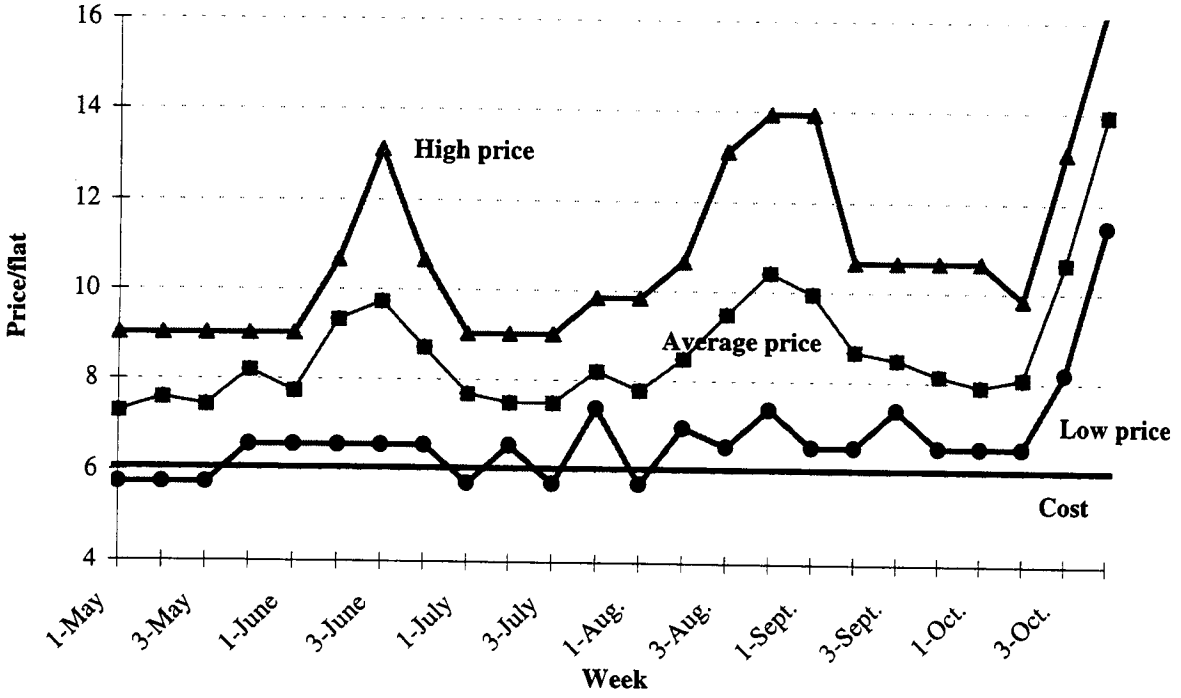
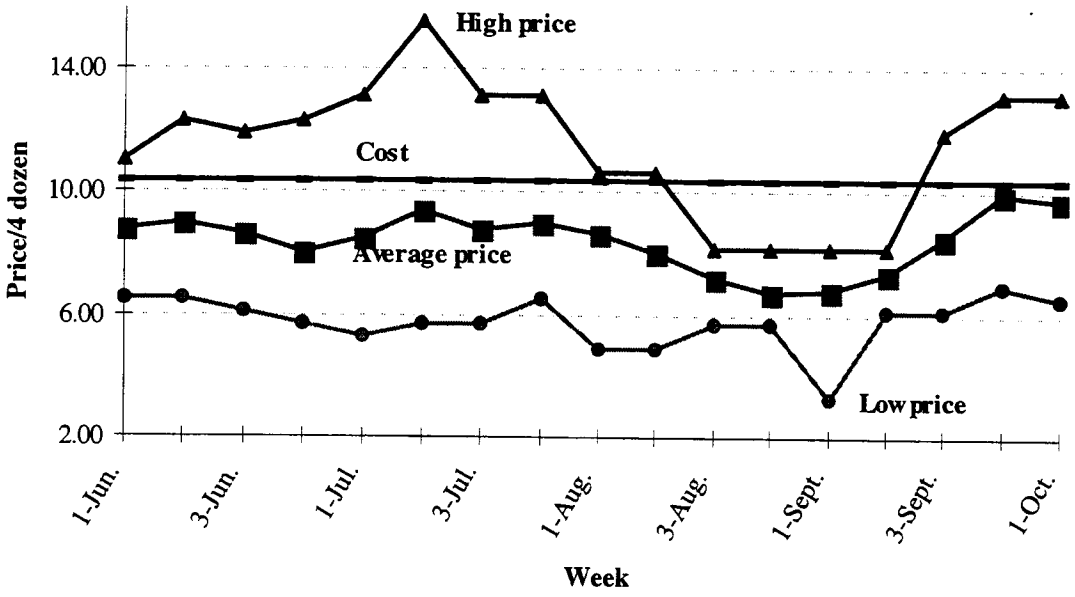


Figure 9A. Sweet corn



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