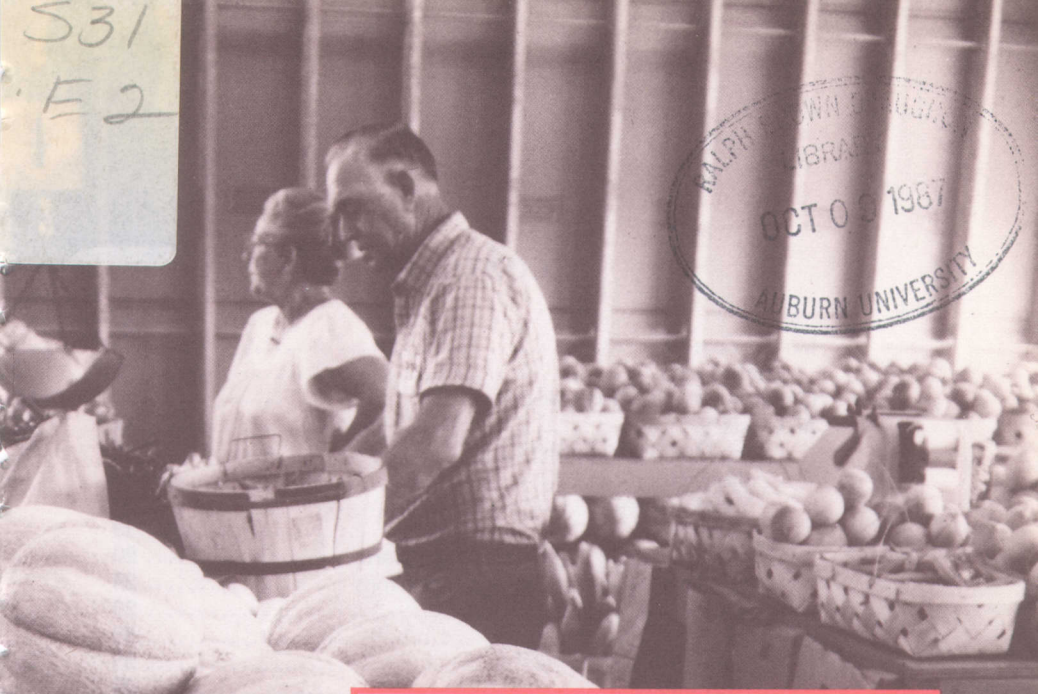

Wholesale Market Potential for Fresh Vegetables Grown in North Alabama

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CONTENTS

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Wholesale Market Potential For Fresh Vegetables Grown in North Alabama*

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INTRODUCTION

DEPRESSED prices for many traditional agricultural crops have caused some Alabama farmers to consider alternative farming enterprises. As farmers in Alabama evaluate nontraditional crop alternatives, many are attracted to fresh vegetable crop production because of the potential for high net income. While net income is an important measure of feasibility, producers also must evaluate alternative fresh vegetable enterprises in terms of the potential risks.

From a production standpoint, vegetable crops are plagued by a variety of insect, disease, weed, and weather related problems. Fresh vegetable production also tends to be labor intensive, with many vegetable crops requiring a readily available labor force for production and harvesting. Once produced and harvested, certain fresh vegetables can require a number of post-harvest functions such as washing, sorting, grading, packing, and cooling. These activities may necessitate purchase of capital items such as a hydrocooler, cold storage facilities, and packing and grading equipment. In addition to the production, harvesting, and packing activities, the producer must arrange for sale and sometimes transportation of the product. Beyond these factors, over which the producer may exercise some controls, are risks inherent in the marketplace, i.e., vagaries in supply and demand conditions. These are generally more pronounced for vegetable crops than for the more traditional crops produced in Alabama.

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Given these factors, fresh vegetable production can be characterized as "intensive production" because it requires a high level of management ability for success. Related to the identified factors is a high level of risk associated with yield and price variability. Also, barriers to successful market entrance, such as sufficient volume and quality, can be encountered by producers. Potential producers must recognize the importance of marketing activities.

To this date, few marketing studies have been undertaken to evaluate the potential for Alabama grown fresh vegetable crops which are marketed at the wholesale level. Results of this study will provide information to current and potential vegetable crop farmers to better enable them to make informed decisions relative to the viability of alternative vegetable crop enterprises.

Study Area

As a region, Sand Mountain is comprised of DeKalb and Blount counties, the southeast two-thirds of Marshall County, the northwest one-third of Etowah County, and the eastern two-thirds of Cullman County, figure 1. Elevation in the Sand Mountain area is typically above 500 feet, with approximately one-third of the area above 1,000 feet. Topography ranges from rolling plateaus to rugged mountains and soil type is primarily sandy. Because deep sand deposits are fairly uncommon, the soil drains well and crops respond well to commercial fertilizer (*1*).

Average total precipitation in the area is 55.8 inches per year. The growing season for vegetables in the region runs from March to October during which time 64 percent of the total annual rainfall occurs (3).[1] While the total is adequate for the production of a wide variety of vegetable crops, the variability and timing of the rainfall can be a problem. Thus, availability of irrigation for production of high valued crops is desirable.

The average size farm on Sand Mountain ranges from 133 acres in Cullman County to 205 acres in Blount County. Of 2,519 farms in the region, 405 are involved in some sort of vegetable production; 136 of the 405 farms produce $10,000 or more revenue from produce (*12*). Total acreage in the four counties in vegetables (including sweet corn and melons) is 3,925.

Given the favorable climatic condition, suitable soil type, generally abundant supply of water for irrigation, and relatively close proximity to several Southern and Midwestern wholesale markets, the north Alabama region is well suited to vegetable crop production.

[1]For this report, the term vegetables includes sweet corn, sweet potatoes, irish potatoes, and watermelons, plus the enterprises which are generally identified in this manner.

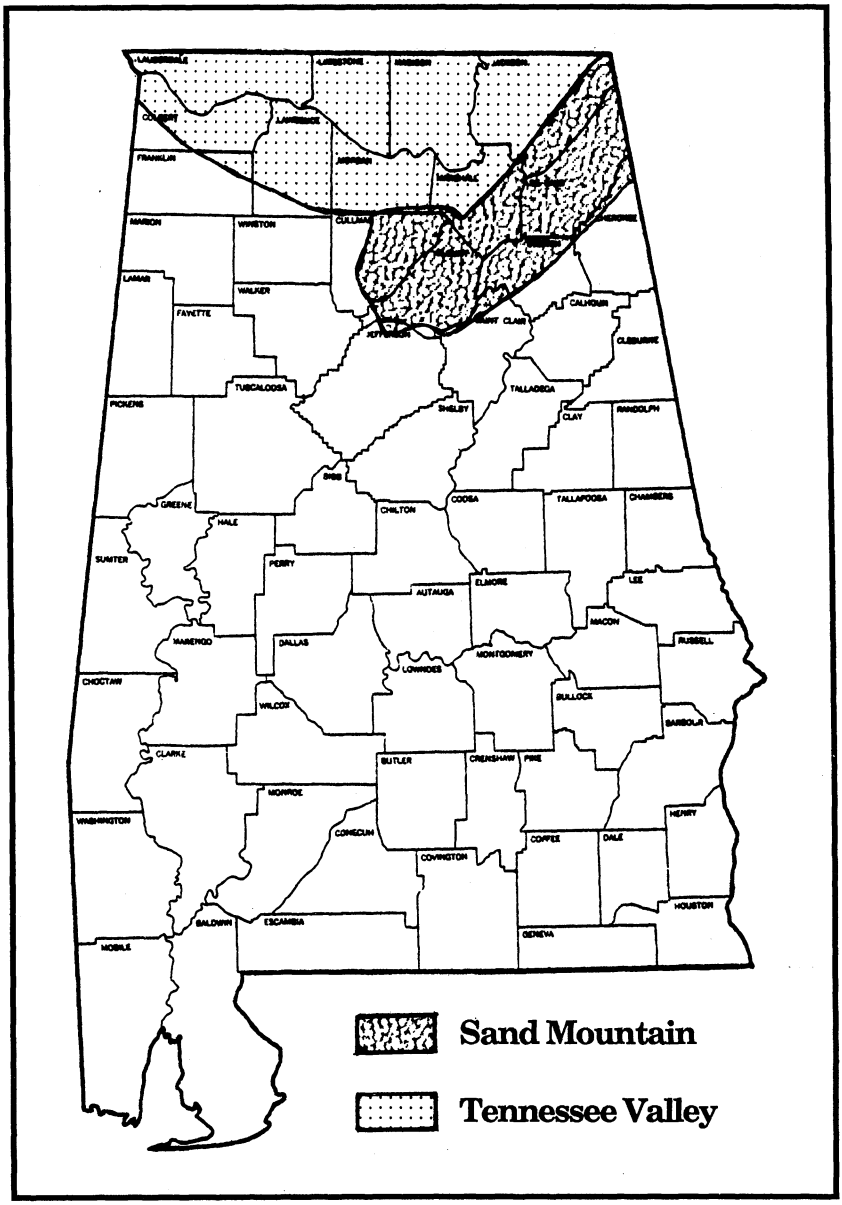

FIG. 1. Sand Mountain and Tennessee Valley areas of Alabama.

OBJECTIVES AND METHODOLOGY

The broad objective of this study is to provide information to farmers in north Alabama relative to the wholesale market potential of a variety of fresh vegetables suitable for production in the region. While the study focuses on the Sand Mountain region, the results are also valid for production in the Tennessee Valley area and much of the northern one-third of the State. Specifically, the objectives are to:

1. Determine those fresh vegetable crops which are capable of being commercially produced in the region along with feasible harvest and/or marketing periods;
2. Estimate all pre- and post-harvest costs for the selected crops;
3. Determine the timing of "market windows" and analyze the relative market potential of the chosen crops at six national wholesale markets (Atlanta, Baltimore, Chicago, Cincinnati, New Orleans, and St. Louis);[2] and
4. Compare the relative levels of average per acre net income and analyze the risk associated with price and yield variability as they affect average per acre net income of the selected crops.

In line with the objectives of this study, 15 vegetable crops were deemed to be sufficiently suitable to deserve detailed analysis for feasibility.[3] Of the 15 selected crops, 10 were capable of being produced during both the spring and fall seasons. Planting and harvest/marketing periods were determined for these chosen crops, table 1. To facilitate the analysis, harvest dates were converted to weeks (1-52) using the dates and corresponding weeks presented in table 2. Harvest weeks used for the study are presented in table 3.

Enterprise budgets were developed for the selected crops (Appendix tables 1 through 18) and costs of production and break-even costs/prices were calculated, tables 4-6.[4] Calculations were made for 100 and 70 percent yields.[5] Since irrigation is vital for yield maximization, timing of harvest, and reduction of risks resulting from insufficient rainfall, all budgets included irrigation expenses.

Weekly wholesale price data were collected at six terminal markets (Atlanta, Baltimore, Chicago, Cincinnati, New Orleans, and St.

[2]The term "market window" is defined as that period of time for a given crop and market during which prices are generally at or above the producer's break-even or "at market" cost. Thus, it would define a feasible marketing point for the area.

[3]Viability of the alternative enterprises was determined by discussions with research and extension personnel in the Horticulture and Agricultural Economics and Rural Sociology departments of Auburn University. Also, input for several current producers was used.

[4]Break-even cost-price refers to the per unit price that will just offset the per unit cost; there is no economic profit.

[5]Yields of 100 percent assume use of best management practices, recommended varieties, and irrigation.

TABLE 1. PLANTING AND HARVEST DATES FOR SELECTED VEGETABLE CROPS GROWN IN THE SAND MOUNTAIN REGION OF ALABAMA

Season and crop	Planting date	Harvest date[1]
Spring		
Beans, snap	4/1 - 4/15	5/20 - 6/25
Broccoli	3/1 - 3/10	4/22 - 5/20
Cabbage	2/15 - 3/31	4/27 - 5/24
Collards	2/15 - 2/28	5/24 - 8/20
Corn, sweet	3/7 - 4/30	6/1 - 7/24
Cucumbers	4/10 - 4/30	5/9 - 7/18
Okra	5/1 - 5/15	6/24 - 9/30
Peppers, bell	4/15 - 5/31	7/1 - 9/30
Potatoes, irish	3/1 - 3/20	6/8 - 7/31
Potatoes, sweet	5/1 - 5/15	8/7 - 9/15
Squash, yellow	4/15 - 5/10	6/4 - 7/31
Squash, zucchini	4/15 - 5/10	5/25 - 7/20
Tomatoes	4/15 - 5/10	7/7 - 9/25
Turnip greens	3/1 - 4/15	4/1 - 5/31
Watermelons	5/1 - 5/15	7/20 - 8/3
Fall		
Beans, snap	8/10 - 8/20	10/5 - 10/31
Broccoli	8/7 - 8/21	10/1 - 11/11
Cabbage	8/7 - 8/21	10/17 - 11/11
Cucumbers	7/15 - 8/20	9/15 - 10/25
Collards	6/15 - 7/31	9/15 - 11/15
Squash, yellow	6/1 - 8/15	7/20 - 10/25
Squash, zucchini	6/1 - 8/15	7/10 - 10/25
Tomatoes	6/7 - 6/21	8/25 - 10/25
Turnip greens	8/1 - 9/7	9/1 - 11/7
Watermelons	6/15 - 7/7	8/15 - 9/25

[1]Harvest dates vary according to planting date and variety.

TABLE 2. WEEKS AND CORRESPONDING DATES USED TO RECORD DATA

Week	Date	Week	Date
1	Jan. 7	27	July 8
2	Jan. 14	28	July 15
3	Jan. 21	29	July 22
4	Jan. 28	30	July 29
5	Feb. 4	31	Aug. 5
6	Feb. 11	32	Aug. 12
7	Feb. 18	33	Aug. 19
8	Feb. 25	34	Aug. 26
9	Mar. 4	35	Sept. 2
10	Mar. 11	36	Sept 9
11	Mar. 18	37	Sept. 16
12	Mar. 25	38	Sept. 23
13	Apr. 1	39	Sept. 30
14	Apr. 8	40	Oct. 7
15	Apr. 15	41	Oct. 14
16	Apr. 22	42	Oct. 21
17	Apr. 29	43	Oct. 28
18	May 6	44	Nov. 4
19	May 13	45	Nov. 11
20	May 20	46	Nov. 18
21	May 27	47	Nov. 25
22	June 3	48	Dec. 2
23	June 10	49	Dec. 9
24	June 17	50	Dec. 16
25	June 24	51	Dec. 23
26	July 1	52	Dec. 30

Source: Mizelle, *Vegetable Economics, a Planning Guide For 1983.*

TABLE 3. TYPICAL HARVEST WEEKS BY SEASON FOR SELECTED VEGETABLE CROPS GROWN IN THE SAND MOUNTAIN REGION OF ALABAMA[1]

Crop	Harvest season	
	Spring	Fall
	Weeks	*Weeks*
Beans, snap	20-26[2]	39-44
Broccoli	16-20	39-45
Cabbage	17-24	41-45
Collards	21-33	37-46
Corn, sweet	22-30	—
Cucumbers	23-29	37-43
Okra	26-39	—
Peppers, bell	25-39	—
Potatoes, irish	23-30	—
Potatoes, sweet	32-52	—
Squash, yellow	22-30	28-43
Squash, zucchini	21-29	28-43
Tomatoes	27-39	35-43
Turnip greens	13-22	35-45
Watermelons	28-32	34-39

[1]Harvest dates vary according to planting date and variety.

[2]Harvest week should be interpreted as a chronological week during the year. For example, snap beans produced on Sand Mountain in the spring would be typically harvested about the middle of May through the end of June, see table 2.

Louis) for the years 1979-1983 (*6,7,8,9,10,11*).[6] Since these data represent the price which the wholesale buyer receives for sale of a commodity, it was necessary to reduce this price by a marketing margin of 15 percent to estimate the price producers receive.[7]

Alabama does not have a tradition as a major supplier of fresh vegetables; therefore, wholesale prices for Alabama grown produce are difficult to obtain. For this reason, prices used were frequently for produce supplied by other Southeastern States, such as Florida, Georgia, North Carolina, and South Carolina. This is especially true during the spring and fall seasons, with prices during the summer representing production regions more local to the markets.

To evaluate the relative profitability potential of the crops identified, average per acre net incomes were calculated during the relevant harvest period for a given crop at a given market. The net incomes were then compared and ranked within each market. Average net income was also examined to determine if any seasonal trends existed, with the most profitable seasons being identified.

Average income can be used to evaluate potential for vegetable crops, but it is frequently a poor measure when used alone because its variability is extremely important from a risk perspective. Many times one or two price quotes during the harvest season in a given

[6]Data for 5 years were used in the anlaysis to provide a longer term view of prices for the respective markets and crops and to lessen the impacts of "abnormal" conditions influencing the markets.

[7]The 15 percent marketing margin was based on discussions with vegetable brokers.

year will "pull" the average up and not truly reflect the lower prices seen during other years. For this reason, individual weekly price quotations were examined and potential was measured as the percentage of weekly price quotations taken during the relevant harvest period which were at or above the producers "at market cost or break-even price" for a given crop at a given market (*4,5*).

For quotations below the "at market cost," an analysis was made to determine if they occurred during specific years or weeks. The timing of the quotations below "at market cost" indicated the number of years which a producer might expect to realize positive net returns. This "market window" analysis was performed using "at market costs" calculated at the 100 percent yield level (yield a good producer might expect to obtain by using irrigation and recommended production practices and crop varieties). Analyses were also made at 70 percent production levels. It should be noted that there is a high probability that most inexperienced producers will operate at the reduced (70 percent) production yield level. In fact, a recent statewide survey indicated that most producers produce at or below this level.

Risks associated with price variability were measured overall (between weeks and years) and within season (between weeks). Overall price variability was measured by the coefficient of variation, with seasonal variability being measured by the standard deviation of the first differences between weekly price quotations as a percentage of the mean price.

While price variability is an important measure of risk, ultimately the producer will be concerned with the effect of price variability on net income. For this reason, price quotations were translated into per acre net income and the variability in per acre net income was then measured by the coefficient of variation. Given equal price variability between two crops, the crop with the greater cost per unit would have a greater risk associated with price related income variability. Of course, this risk would be influenced by the timing of costs. For example, strawberries would involve greater relative costs early in production than would watermelons, whereas watermelons involve a major cost outlay for labor at harvest. Thus, strawberries would involve more inherent risk than watermelons.

As with price variability, yield variations can adversely affect per acre net income. Production risk, or risk associated with yield declines, was measured as the percentage decrease in average per acre net income resulting from a 30 percent decrease in yield.[8] For those

[8]Similar results can accrue from reductions in "marketable" product due to problems with product quality.

TABLE 4. ESTIMATED PER ACRE COSTS AND YIELDS FOR SELECTED FRESH VEGETABLE CROPS GROWN IN THE SAND MOUNTAIN REGION OF ALABAMA, CALCULATED AT THE 100 PERCENT YIELD LEVEL

Season and crop	Unit	Pre-harvest variable cost	Pre-harvest fixed cost	Harvest and packing cost	Total cost[1]	100% yield level[2]
		Dol.	*Dol.*	*Dol.*	*Dol.*	*Units*
Spring						
Beans, snap	Bu. carton	296	110	690	1,096	200
Broccoli	Carton 14's-18's	328	103	657	1,088	325
Cabbage	50-lb. carton	408	118	553	1,079	350
Collards (bunched)	1 1/9-bu. carton	454	146	546	1,146	300
Collards (loose)	1 1/9-bu. carton	458	153	628	1,239	400
Corn, sweet	4.5-5 doz. carton	365	135	600	1,100	250
Cucumbers	1 1/9-bu. carton	375	112	833	1,320	225
Okra	5/9-bu. carton	298	97	1,361	1,756	360
Peppers, bell	1 1/9-bu. carton	671	172	1,066	1,909	360
Potatoes, irish	100-lb. bag	648	116	321	1,085	170
Potatoes, irish	50-lb. bag	648	116	439	1,203	340
Potatoes, sweet	50-lb. carton	544	121	825	1,490	250
Squash, yellow	1-bu. carton	339	105	540	984	200
Squash, yellow	5/9-bu. carton	339	105	623	1,067	360
Squash, zucchini	5/9-bu. carton	326	100	623	1,049	360
Tomatoes	25-30-lb. carton	1,672	258	1,610	3,540	700
Turnip greens (loose)	1 1/9-bu. carton	220	90	628	938	400
Watermelons	Hundredweight	439	83	135	657	250

Table 4 Continued on page 11

TABLE 4 (CONTINUED). ESTIMATED PER ACRE COSTS AND YIELDS FOR SELECTED FRESH VEGETABLE CROPS GROWN IN THE SAND MOUNTAIN REGION OF ALABAMA, CALCULATED AT THE 100 PERCENT YIELD LEVEL

Season and crop	Unit	Pre-harvest variable cost	Pre-harvest fixed cost	Harvest and packing cost	Total cost[1]	100% yield level;[2]
		Dol.	*Dol.*	*Dol.*	*Dol.*	*Units*
Fall						
Beans, snap	Bu. carton	301	110	690	1,101	200
Broccoli	Carton 14's-18's	329	103	657	1,089	325
Cabbage	50-lb. carton	443	118	553	1,114	350
Collards (bunched)	1 1/9-bu. carton	454	146	546	1,146	300
Collards (loose)	1 1/9-bu. carton	455	146	628	1,229	400
Cucumbers	1 1/9-bu. carton	380	112	833	1,325	225
Squash, yellow	1-bu. carton	345	105	540	990	200
Squash, yellow	5/9-bu. carton	345	105	623	1,073	360
Squash, zucchini	5/9-bu. carton	345	105	623	1,073	360
Tomatoes	25-30-lb. carton	1,700	258	1,610	3,568	700
Turnip greens (loose)	1 1/9-bu. carton	237	90	628	955	400
Watermelons	Hundredweight	447	85	135	667	250

[1]Less transportation cost.

[2]The 100 percent yield level represents the output of an operation using good management practices, recommended varieties, and irrigation. These levels are based on information provided by research and extension personnel in Horticulture and Agricultural Economics departments at Auburn University and other published sources.

Source: Enterprise budgets in Appendix tables 1-18. Budgets for fall crops were not included in the Appendix because, except for irrigation and insecticide costs, there was little difference from the spring budgets.

TABLE 5. ESTIMATED PER UNIT TRANSPORTATION COSTS FROM SAND MOUNTAIN REGION TO THE SELECTED MARKETS[1]

Crop	Unit	Cost/unit, by selected markets		
		Atlanta	Cincinnati	St. Louis
		Dol.	*Dol.*	*Dol.*
Beans, snap	Bu. carton	0.20	0.57	0.55
Broccoli	Carton 14's-18's	.24	.67	.68
Cabbage	50-lb. carton	.30	.87	.85
Collards and turnip greens	1 1/9-bu. carton	.24	.70	.68
Corn, sweet	4.5-5-doz. carton	.30	.87	.85
Cucumbers	1 1/9-bu. carton	.33	.96	.94
Okra	5/9-bu. carton	.12	.35	.34
Peppers, bell	1 1/9-bu. carton	.24	.70	.68
Potatoes, irish	100-lb. bag	.60	1.74	1.70
Potatoes, irish	50-lb. bag	.30	.87	.85
Potatoes, sweet	50-lb. carton	.30	.87	.85
Squash, yellow	1-bu. carton	.24	.70	.68
Squash, yellow and zucchini	5/9-bu. carton	.12	.35	.34
Tomatoes	25-30-lb. carton	.18	.52	.51
Watermelons	Hundredweight	.60	1.74	1.70

[1]Based on a 40,000-pound load at a rate of $1.60 per mile with no back haul.
Source: The truck rate was determined from a personal interview with a commercial carrier based out of Knoxville, Tennessee.

crops with a higher per unit pre-harvest cost, the decrease in net income resulting from a yield decrease would be greater than for a crop with lower pre-harvest cost.

Both price (seasonal and overall) and income variability are measures of positive and negative fluctuations. While producers are concerned primarily with negative variability in expected price or income below some target level, the measures used in this study indicate which crops tend to have the greatest risk of negative net returns during some years. It should be noted that a coefficient of variation greater than 100 would indicate a high probability of negative net returns during some years.

To facilitate the analysis, crops were separated into five groups based on similarity of market periods and production practices. Group one consisted of early spring crops, such as broccoli, cabbage, and turnip greens. Yellow and white sweet corn were analyzed together in group two. Group three contained late spring-summer crops such as collards, cucumbers, snap beans, yellow squash, zucchini squash, and watermelons. The full season crops (bell peppers, okra, and tomatoes) were analyzed in group four. Group five contained irish and sweet potatoes. Group six consisted of fall crops such as broccoli, snap beans, collards, turnip greens, cucumbers, tomatoes, cabbage, watermelons, and yellow and zucchini squash.

Evaluation of individual crop's market potential was done mainly within groups. However, due to the overlapping nature of harvest pe-

riods, some cross group analysis was necessary primarily between the late spring-summer crops (groups two and three) and the full season crops (group four).

While six markets were examined, the following results focus on the three primary markets (Atlanta, Cincinnati, and St. Louis). The primary markets were designated as such due to the quality and consistency of data and proximity to the study region. The remaining three markets (Baltimore, Chicago, and New Orleans) are discussed when important relationships are identified.

In summary, the potential for the 15 identified crops was evaluated using six criteria: (1) average net income per acre, (2) percentage of

TABLE 6. PER UNIT BREAK-EVEN PRICE-COST CALCULATED AT THE 100 AND 70 PERCENT YIELD LEVELS AT THE SELECTED MARKETS

Season and crop	Unit	Break-even price, by market and yield level					
		Atlanta		Cincinnati		St. Louis	
		100% yield level	70% yield level	100% yield level	70% yield level	100% yield level	70% yield level
		Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Spring							
Beans, snap	Bu. carton	5.67	6.54	6.04	6.91	6.03	6.90
Broccoli	Carton 14's-18's	3.58	4.15	4.04	4.61	4.02	4.59
Cabbage	50-lb. carton	3.38	4.02	3.95	4.59	3.93	4.57
Collards (bunched)	1 1/9-bu. carton	4.14	5.03	4.60	5.49	4.58	5.47
Collards (loose)	1 1/9-bu. carton	3.33	3.99	3.79	4.45	3.77	4.43
Corn, sweet	4.5-5-doz. carton	4.69	5.55	5.26	6.12	5.24	6.10
Cucumbers	1 1/9-bu. carton	6.19	7.11	6.81	7.74	6.79	7.72
Okra	1-bu. carton	8.41	9.25	8.86	9.71	8.85	9.69
Peppers, bell	1 1/9-bu. carton	5.54	6.54	5.99	7.00	5.98	6.98
Potatoes, irish	100-lb. bag	6.98	8.90	8.12	10.04	8.08	10.01
Potatoes, irish	50-lb. bag	3.83	4.79	4.40	5.36	4.38	5.34
Potatoes, sweet	50-lb. carton	6.26	7.40	6.83	7.97	6.81	7.95
Squash, yellow	1-bu. carton	5.16	6.11	5.61	6.57	5.60	6.55
Squash, yellow	5/9-bu. carton	3.08	3.61	3.31	3.84	3.30	3.83
Squash, zucchini	5/9-bu. carton	3.03	3.54	3.26	3.76	3.25	3.76
Tomatoes	25-30-lb. carton	5.23	6.41	5.57	6.76	5.56	6.74
Turnip greens (loose)	1 1/9-bu. carton	2.58	2.92	3.04	3.37	3.02	3.36
Watermelons	Hundredweight	3.22	4.12	4.36	5.26	4.32	5.22
Fall							
Beans, snap	Bu. carton	5.70	6.58	6.07	6.95	6.06	6.94
Broccoli	Carton 14's-18's	3.58	4.15	4.04	4.61	4.02	4.59
Cabbage	50-lb. carton	3.48	4.16	4.05	4.73	4.03	4.71
Collards (bunched)	1 1/9-bu. carton	4.06	4.91	4.51	5.37	4.50	5.35
Collards (loose)	1 1/9-bu. carton	3.31	3.95	3.76	4.41	3.75	4.39
Cucumbers	1 1/9-bu. carton	6.21	7.15	6.84	7.77	6.82	7.75
Squash, yellow	1-bu. carton	5.19	6.15	5.64	6.61	5.63	6.59
Squash, yellow	5/9-bu. carton	3.10	3.64	3.33	3.86	3.32	3.86
Squash, zucchini	5/9-bu. carton	3.10	3.64	3.33	3.86	3.32	3.86
Tomatoes	25-30-lb. carton	5.27	6.47	5.61	6.81	5.60	6.80
Turnip greens (loose)	1 1/9-bu. carton	2.62	2.98	3.08	3.43	3.06	3.42
Watermelons	Hundredweight	3.26	4.18	4.40	5.32	4.36	5.28

Source: Break-even costs were calculated using production, harvesting, packing, and transportation costs in tables 4 and 5.

weekly price quotations above the calculated "at market cost or break-even price" (price-cost criterion) for the 100 and 70 percent yield levels, (3) sensitivity of average per acre net income to a 30 percent reduction in yield, (4) overall variability (between weeks and years) in weekly average prices, (5) within-season variability (between weeks) in weekly average prices, and (6) overall variability (between weeks and years) in six groupings with potential evaluated from the spring through to the fall season at six terminal markets.

ANALYSIS

The "market window" portion of this study, which compared individual weekly price quotations received at the six wholesale markets with the producers break-even costs, identified the crops that had the most favorable price-cost relationships based on historical prices received. Used in conjunction with the "market window" analysis, the risk analysis indicated which crops showed the greatest profit potential and the risks associated with yield and price-related income variability.

Group One: Early Spring Crops

Broccoli

Of the early spring crops (broccoli, cabbage, and turnip greens), broccoli showed the greatest market potential based on both a price-cost (break-even) criterion and average per acre net income, tables 7 and 8. All broccoli price quotations were above the break-even price-cost in the three primary markets and at both yield levels, table 8. Broccoli also showed low risk related to both yield and price related income variability, tables 9, 10, and 11. On average, producers would benefit by the earliest possible entry into the spring broccoli market (weeks 16 through 20), with mean prices declining an average of $1.52 during that period, figure 2.

While good market potential may be indicated, it is noted that broccoli prices at all six markets were those received by California producers (California supplies approximately 98 percent of all broccoli shipped into terminal markets) and may be approximately 30 percent higher than Alabama producers could expect to receive. As other producing regions outside of California recognize and react to the potential that is indicated for broccoli production, both prices and price stability could be adversely affected and thus lessen the attractiveness of broccoli production.

Because broccoli has not been traditionally produced in Alabama

TABLE 7. AVERAGE PER ACRE NET INCOME FOR SELECTED SPRING VEGETABLE CROPS AT ALTERNATIVE MARKETS AND YIELD LEVELS, RANKED BY CROP WITHIN MARKET, NORTH ALABAMA[1]

Crop	Net income/acre, by markets and yield levels					
	Atlanta		Cincinnati		St. Louis	
	100% yield level	70% yield level	100% yield level	70% yield level	100% yield level	70% yield level
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Beans, snap.....	561(10)[2]	271(9)	740(8)	396(5)	886(4)	499(3)
Broccoli.....	1,561(1)	963(1)	1,698(1)	1,060(1)	1,409(1)	858(1)
Cabbage	683(7)	320(6)	880(4)	459(3)	518(10)	205(9)
Collards.....	513(11)	171(12)	357(15)	66(15)	-34(16)	-207(16)
Corn, sweet (Y)[3]	194(16)	-15(16)	200(16)	-9(16)	48(15)	-116(15)
Corn, sweet (W)[4]	567(9)	247(10)	555(12)	240(11)	450(12)	166(11)
Cucumbers.....	502(12)	206(11)	657(10)	315(8)	589(9)	267(8)
Okra.....	590(8)	296(8)	1,113(2)	661(2)	1,258(2)	762(2)
Peppers, bell ...	851(3)	344(4)	740(7)	265(9)	771(5)	287(6)
Potatoes, irish...	756(5)	300(7)	488(13)	113(13)	379(14)	37(14)
Potatoes, sweet	350(13)	45(14)	468(14)	128(12)	459(11)	122(12)
Squash, yellow..	340(14)	105(13)	744(6)	387(7)	592(8)	281(7)
Squash, zucchini	750(6)	397(3)	737(9)	388(6)	709(7)	369(4)
Tomatoes[5].....	1,292(2)	326(5)	988(3)	112(14)	902(3)	52(13)
Turnip greens...	790(4)	460(2)	756(5)	436(4)	415(13)	197(10)
Watermelons ...	266(15)	30(15)	598(11)	262(10)	750(6)	368(5)

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are ranking of crops in ascending order from the highest to the lowest average per acre net income.
[3]Yellow sweet corn.
[4]White sweet corn.
[5]Based on limited data.

or the Southeast, information concerning production problems and characteristics and appropriate varieties may not be available for some time. Broccoli also has special harvest and packing requirements, such as immediate cooling after harvest, which may require the purchase of specialized equipment such as a hydrocooler. Given the uncertainties of production, caution should be exercised when considering broccoli as an alternative crop.

Turnip Greens

Turnip greens showed good market potential, with prices being above the break-even price-cost at both yield levels 100 percent of the time in all but the St. Louis market, table 8. Average per acre net income was approximately equal to that of spring cabbage in both the Cincinnati and St. Louis markets, where turnip green prices were slightly lower than in the Atlanta market, table 7.

Turnip greens showed no generally definable trend in average price levels during the spring harvest season (weeks 13 through 22), figure 3. Prices rose and then declined during the market period, but did

TABLE 8. PERCENTAGE OF WEEKLY PRICE QUOTATIONS WHICH ARE ABOVE THE BREAK-EVEN PRICE-COST AT ALTERNATIVE MARKETS AND YIELD LEVELS FOR SELECTED SPRING VEGETABLE CROPS RANKED BY CROP WITHIN MARKET, NORTH ALABAMA[1]

Crop	Income/acre, by markets and yield levels					
	Atlanta		Cincinnati		St. Louis	
	100% yield level	70% yield level	100% yield level	70% yield level	100% yield level	70% yield level
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Beans, snap.....	100(1)[2]	100(1)	100(1)	97(6)	100(1)	97(3)
Broccoli.....	100(1)	100(1)	100(1)	100(1)	100(1)	100(1)
Cabbage	95(7)	65(12)	100(1)	89(7)	77(11)	47(12)
Collards.....	100(1)	76(8)	83(13)	67(11)	32(16)	14(16)
Corn, sweet (Y)[3]	72(16)	38(16)	70(16)	45(16)	53(15)	28(15)
Corn, sweet (W)[4]	95(7)	86(5)	92(12)	76(9)	85(9)	69(9)
Cucumbers.....	91(10)	57(15)	100(1)	71(10)	94(6)	80(7)
Okra.....	87(12)	83(6)	100(1)	100(1)	100(1)	100(1)
Peppers, bell ...	95(7)	83(6)	95(10)	58(13)	81(10)	61(10)
Potatoes, irish...	82(12)	71(10)	78(14)	51(15)	73(13)	47(13)
Potatoes, sweet	75(14)	58(14)	75(15)	58(14)	72(14)	60(11)
Squash, yellow..	91(10)	71(10)	100(1)	100(1)	88(7)	83(6)
Squash, zucchini	100(1)	97(4)	100(1)	100(1)	87(8)	84(5)
Tomatoes[5].....	100(1)	76(8)	94(11)	63(12)	76(12)	44(14)
Turnip greens...	100(1)	100(1)	100(1)	100(1)	95(4)	90(4)
Watermelons ...	75(14)	60(13)	100(1)	80(8)	95(4)	80(8)

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are rankings of crops in descending order from the greatest percentage of price quotations above the break-even cost to the least.
[3]Yellow sweet corn.
[4]White sweet corn.
[5]Based on limited data.

TABLE 9. SENSITIVITY OF AVERAGE PER ACRE NET INCOME TO A 30 PERCENT DECREASE IN YIELD FOR SELECTED SPRING VEGETABLE CROPS AT SELECTED MARKETS, NORTH ALABAMA[1]

Crop	Net income decrease, by alternative markets		
	Atlanta	Cincinnati	St. Louis
	Pct.	*Pct.*	*Pct.*
Beans, snap.....	51.6	46.5	43.7
Broccoli.....	38.3	37.6	39.1
Cabbage	53.1	47.8	60.4
Collards.....	66.7	81.5	-514.8[2]
Corn, sweet (Y)[3]	107.5	104.5	343.8
Corn, sweet (W)[4]	56.5	56.8	63.2
Cucumbers.....	58.9	52.1	54.7
Okra.....	49.9	40.6	39.4
Peppers, bell	59.7	64.2	62.8
Potatoes, irish.....	60.0	76.8	90.3
Potatoes, sweet.....	87.0	72.6	73.4
Squash, yellow.....	69.3	48.0	52.6
Squash, zucchini	47.0	47.3	48.0
Tomatoes[5].....	67.6	88.7	94.2
Turnip greens.....	41.8	42.3	52.4
Watermelons	88.7	56.2	50.9

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]A negative number indicates negative average per acre income at both yield levels.
[3]Yellow sweet corn.
[4]White sweet corn.
[5]Based on limited data.

TABLE 10. AVERAGE WEEKLY PRICE, COEFFICIENT OF VARIATION, AND PERCENT SEASONAL VARIATION IN PRICE FOR SELECTED SPRING VEGETABLE CROPS RANKED BY CROP WITHIN ALTERNATIVE MARKETS, NORTH ALABAMA[1]

Crop	Unit	Atlanta			Cincinnati			St. Louis		
		Price per unit	Coefficient of variation	Seasonal variation	Price per unit	Coefficient of variation	Seasonal variation	Price per unit	Coefficient of variation	Seasonal variation
		Dol.	*Pct.*	*Pct.*	*Dol.*	*Pct.*	*Pct.*	*Dol.*	*Pct.*	*Pct.*
Beans, snap	1-bu. carton	8.48	19.86(5)[2]	22.17(11)	9.74	23.24(12)	22.28(15)	10.46	21.01(5)	22.94(10)
Broccoli	Carton 14's-18's	8.39	20.73(7)	9.54(5)	9.27	18.29(7)	6.69(2)	8.36	22.81(7)	10.29(2)
Cabbage	50-lb. carton	5.33	45.83(15)	17.45(8)	6.47	39.63(16)	16.38(11)	5.41	40.02(15)	25.51(13)
Collards[3]	1 1/9-bu. carton	5.85	17.88(1)	6.15(2)	4.69	17.50(5)	6.82(3)	3.69	16.50(2)	15.71(6)
Corn, sweet (Y)[4]	4.5-5-doz. carton	5.47	21.66(10)	19.20(10)	6.07	19.14(9)	16.97(12)	5.44	22.09(6)	23.35(12)
Corn, sweet (W)[5]	4.5-5-doz. carton	6.96	19.86(4)	15.80(7)	7.49	22.37(11)	18.96(13)	7.05	23.66(8)	18.01(8)
Cucumbers	1 1/9-bu. carton	8.42	27.49(13)	30.17(15)	9.74	23.37(13)	29.47(16)	9.41	18.62(4)	23.17(11)
Okra[6]	5/9-bu. carton	11.36	19.52(2)	17.69(9)	9.38	16.80(2)	13.54(6)	9.83	15.89(1)	13.84(5)
Peppers, bell	1 1/9-bu. carton	7.91	20.77(8)	15.68(6)	8.05	21.91(10)	15.53(8)	8.12	28.38(11)	18.72(9)
Potatoes, irish[7]	50-lb. bag	6.06	27.58(12)	7.10(3)	5.84	27.59(15)	11.13(5)	10.31	29.19(13)	13.29(4)
Potatoes, sweet	50-lb. carton	7.66	23.12(11)	6.14(1)	8.70	25.10(14)	8.52(4)	8.65	27.06(10)	9.36(1)
Squash, yellow[8]	5/9-bu. carton	6.86	23.24(12)	27.11(14)	5.38	17.96(6)	15.80(9)	4.95	25.13(9)	12.53(3)
Squash, zucchini	5/9-bu. carton	5.12	21.34(9)	24.61(13)	5.31	16.90(3)	16.20(10)	5.22	31.16(14)	29.89(14)
Turnip greens	1 1/9-bu. carton	4.56	19.64(3)	7.46(4)	4.69	9.73(1)	6.61(1)	4.06	18.26(3)	16.26(7)
Watermelons	Hundredweight	4.29	33.68(14)	24.00(12)	6.76	18.43(8)	19.82(14)	7.33	28.53(12)	37.93(15)

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are ranking of crops in descending order from most variable to the least variable.
[3]Prices for collards are for loose greens in the Cincinnati and St. Louis markets and for bunched greens in the Atlanta market.
[4]Yellow sweet corn
[5]White sweet corn.
[6]Price for okra in the Atlanta market is for 1-bushel carton.
[7]Price for irish potatoes in the St. Louis market is for a 100-pound bag.
[8]Price for yellow squash in the Atlanta market is for a 1-bushel carton.

TABLE 11. COEFFICIENT OF VARIATION AND PLUS AND MINUS ONE STANDARD DEVIATION (STD. DEV.) IN AVERAGE PER ACRE NET INCOME FOR SELECTED SPRING VEGETABLE CROPS RANKED BY CROP WITHIN ALTERNATIVE MARKETS, NORTH ALABAMA[1]

Crop	Atlanta			Cincinnati			St. Louis		
	Coefficient of variation	Net income/acre		Coefficient of variation	Net income/acre		Coefficient of variation	Net income/acre	
		+ One Std. dev.	− One Std. dev.		+ One Std. dev.	− One Std. dev.		+ One Std. dev.	− One Std. dev.
	Pct.	*Dol.*	*Dol.*	*Pct.*	*Dol.*	*Dol.*	*Pct.*	*Dol.*	*Dol.*
Beans, snap	60.02(4)[2]	898	224	61.21(7)	1,193	287	49.61(3)	1,326	447
Broccoli	36.23(1)	2,126	995	32.44(2)	2,249	1,147	43.99(2)	2,029	789
Cabbage	125.26(13)	1,538	-172	101.92(13)	1,777	-17	146.26(14)	1,277	-240
Collards	61.25(5)	827	199	91.80(12)	685	29	-724.70(16)	210	-278
Corn, sweet (Y)[3]	152.84(16)	490	-102	145.11(16)	491	-90	630.16(15)	348	-253
Corn, sweet (W)[4]	61.01(5)	912	221	72.08(8)	955	155	92.57(9)	867	33
Cucumbers	103.80(12)	1,023	-19	77.95(9)	1,169	145	66.93(4)	983	195
Okra	75.07(9)	1,035	147	44.89(4)	1,613	613	39.37(1)	1,753	763
Peppers, bell	69.45(8)	1,443	260	85.89(10)	1,375	104	107.69(10)	1,600	-59
Potatoes, irish	75.15(9)	1,324	188	112.32(14)	1,035	-60	135.10(13)	890	-133
Potatoes, sweet	126.54(14)	792	-93	116.69(15)	1,014	-78	127.55(12)	1,044	-126
Squash	93.72(11)	659	21	46.72(5)	1,092	396	75.62(7)	1,039	144
Squash, zucchini	52.42(3)	1,143	357	43.84(3)	1,060	414	82.61(8)	1,295	123
Turnip greens	45.34(2)	1,148	432	25.41(1)	948	564	71.57(6)	711	118
Watermelons	135.79(15)	628	-95	52.09(6)	909	286	69.72(5)	1,272	227

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are crops ranked in descending order from the most variable to the least variable.
[3]Yellow sweet corn.
[4]White sweet corn.

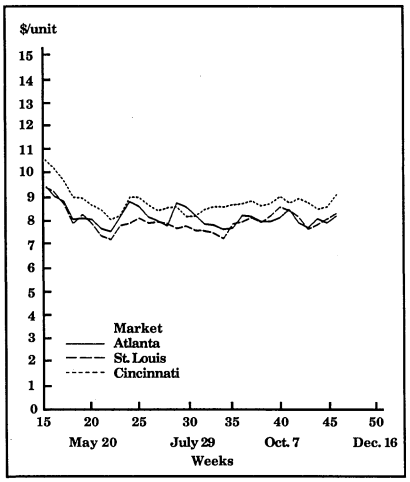

FIG. 2. Average weekly adjusted broccoli wholesale prices (wholesale price less 15 percent for marketing charge), Atlanta, Cincinnati, and St. Louis markets, per carton 14's-18's, 1979-83.

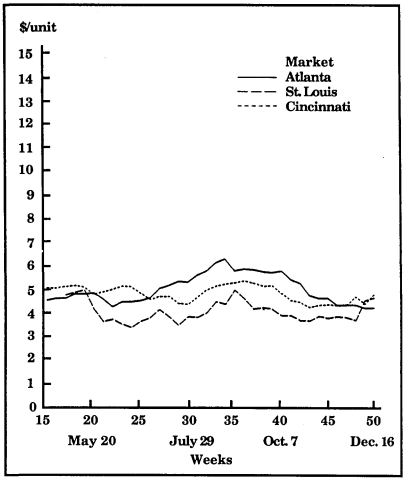

FIG. 3. Average weekly adjusted turnip green (loose) wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 1 1/9-bushel carton, 1979-83.

so at different times and at different rates in each market. Overall, average prices tended to remain fairly level during the relevant harvest period.

Turnip greens had low risk associated with both yield and price related income variability, tables 9, 10, and 11. Turnip greens, due to their low cost of production, demonstrated reduced risk associated with total crop failure or inability to find a buyer.

The potential indicated for turnip greens should be evaluated relative to their limited demand and the historically strong ties between large, mainly Georgia, producers and wholesale buyers. The existence of producers with large operations specializing in production of a number of types of greens may present emerging producers with barriers to market entrance. Opportunities to supply only turnip greens may be limited because wholesale buyers may require a variety of greens. Because of relatively limited demand, significant acreage increases could also result in a saturation of the market and, thus, a decrease in price levels. This could adversely affect profitability of this enterprise.

Cabbage

On average, cabbage showed favorable profit potential based on average per acre net income, table 7. Similar potential was exhibited using a price-cost criterion at the 100 percent yield level in all but the

St. Louis markets, table 8. Considerably less potential was evidenced at the 70 percent yield level (65, 89, and 47 percent in the Atlanta, Cincinnati, and St. Louis markets, respectively). Favorable price quotations decrease by 30 percent in both the Atlanta and St. Louis markets as a result of a 30 percent decrease in yield, pointing out the need for the highest economically feasible production levels.[9] Examination of the price quotations below the 70 percent break-even price level indicated that producers could expect to receive positive net returns in about 2 of 5 years in the Atlanta and St. Louis markets.

Spring cabbage also demonstrated a high degree of risk associated with overall and within season price variability and price related income variability relative to all other spring and summer crops, tables 10 and 11. As indicated by the coefficient of variation being greater than 100 in all markets, table 11, there is a high probability of negative net returns during some years with spring cabbage production. Because of the high degree of price and income variability, producers can expect to receive high prices during some years and extremely low prices during others. As such, average prices tend to be higher than could be expected during most years.

For weeks 10 through 50, the highest average prices received for cabbage were during the Alabama harvest period (weeks 17 through 24), figure 4. In all but the Atlanta market, prices generally peaked during the first 3 to 6 weeks of the marketing period and then declined. On average, producers would benefit from the earliest possible market entrance.

Group Two: Yellow and White Sweet Corn

Both yellow and white sweet corn were examined separately from other late spring-early summer crops because of the uniqueness of their production. Sweet corn, unlike crops such as snap beans, squash, or cucumbers, is basically harvested in a "once over" operation and thereby requires more careful consideration of planting and potential harvest dates. Producers are also able to manage and harvest more acres of sweet corn than most other vegetable crops.

Yellow sweet corn showed extremely low potential when evaluated using both a per acre net income and the price-cost criteria, tables 7 and 8. An average of 65 and 37 percent of the weekly price quotations were above the break-even price calculated at the 100 and 70 percent yield levels, respectively. A 30 percent decrease in yield resulted in

[9]An economically feasible production level would be one where the additional cost of producing one more unit of output would be less than or equal to the additional income generated by the additional unit of output.

an average 31 percent decrease in price quotations above the break-even price level and an average per acre net income decrease of 108, 105, and 344 percent in the Atlanta, Cincinnati, and St. Louis markets, respectively, tables 8 and 9. Examination of yellow sweet corn price quotations below the break-even price showed producers could expect to realize profits in 3 of 5 years at the 100 percent yield level and in 1 of 5 years at the 70 percent yield level.

White sweet corn had higher average per acre net income and showed much greater potential than yellow sweet corn at both break-even price-cost levels, tables 7 and 8. On average, 91 percent of the price quotations were above the price-cost break-even level for 100 percent yield with an average of 77 percent being above the price-cost break-even level for 70 percent yield. On average, a 30 percent decrease in yield resulted in a 14 percent decrease in favorable white sweet corn price quotations and an average 59 percent decrease in average per acre net income, tables 8 and 9. This indicates lower production risk with white than with yellow sweet corn.

While both types of sweet corn showed overall and within season price variability generally equal to each other and that of other alternative late spring-summer crops, table 10, yellow sweet corn had high risk associated with income related variability as indicated by coefficients of variation being greater than 100 in all markets, tables 10 and 11. It is generally agreed that the quantity demanded for white sweet corn makes up approximately 15 percent of the total demand for all sweet corn, with producers often growing both types and shipping them together in mixed loads. This renders specialization in the production of the more profitable and less risky white sweet corn varieties impractical, thereby pointing out the need for head-to-head evaluation of both varieties.

Overall, average prices during the harvest season for sweet corn (weeks 22 through 30) peaked at about week 26 and then declined, figures 5 and 6. Prices received for yellow sweet corn declined by $1.76 per 4.5- to 5-dozen carton during the period between weeks 26 and 30, while prices received for white sweet corn declined an average of $2.20 per 4.5- to 5-dozen carton during this same period. Generally, the most favorable market period for sweet corn existed between weeks 26 and 28. Producers of both yellow and white sweet corn should enter the market as early as possible to "hit" the favorable July 4 market. Less potential exists after the third week (week 30) in July for yellow sweet corn.

Aside from low market potential, sweet corn production presents producers with other problems which deserve consideration. Sweet

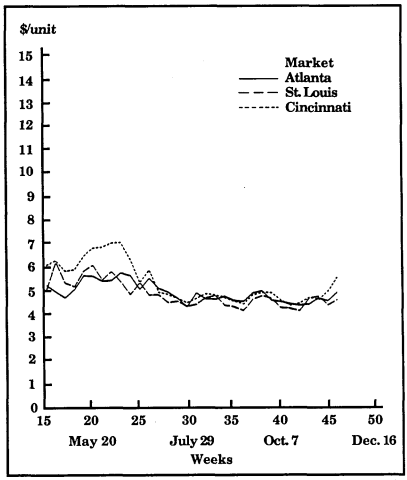

FIG. 4. Average weekly adjusted cabbage wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 50-pound carton, 1979-83.

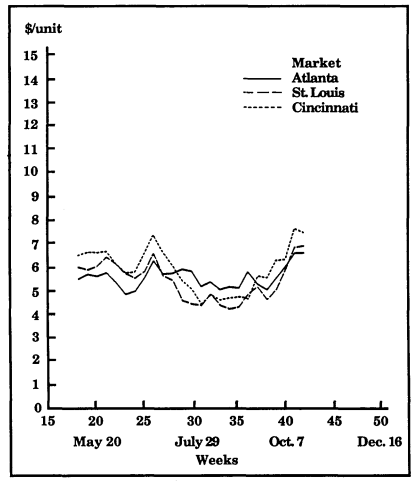

FIG. 5. Average weekly adjusted sweet corn (yellow) wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 4.5 - 5 dozen carton, 1979-83.

corn production requires an extremely high level of management to meet quality requirements. It also requires immediate cooling to remove field heat and maintain a high sugar content necessary for high quality. Thus, access to a hydrocooler is important.

Given the relatively high fixed cost of specialized cooling equipment, high variable cost of production, and low per acre net returns, profitable sweet corn must be on a larger scale than is recommended for other alternative vegetable crops. Because production characteristics of sweet corn allow producers to manage more acres than would be possible with most other alternative fresh vegetable crops, profit potential for sweet corn may be greater than indicated on a per acre basis.

If north Alabama producers are to compete favorably in sweet corn markets, they must maintain the highest possible economically feasible production levels. This requirement is indicated by the highly sensitive nature of income from yellow sweet corn production to yield decreases, along with the low potential shown at the 100 (250 crates) and 70 percent (175 crates) yield levels. If producers in Alabama are to be successful in sweet corn production, they must strive for yields greater than 250 crates per acre. With irrigation and proper production practices, yield levels as high as 300 crates per acre are possible in Alabama. Producers also must make every effort to get into mar-

kets as early as possible with acceptable varieties in order to "hit" the more favorable July 4 markets.

Due to high production costs, sweet corn producers must recognize the high degree of risk associated with low yields, crop failure, inadequate pest (primarily earworm) control, or the inability to find a buyer for the crop. Producers must also expect and be able to assume the risk of large negative net returns during some years.

Group Three: Late Spring-Summer Crops

This group consists of crops which are harvested starting in late May (snap beans, collards, and zucchini squash), early June (cucumbers and yellow squash), and mid-July (watermelons).

Snap Beans

Snap beans showed the greatest market potential of all late spring and summer vegetable crops, based on a price-cost criterion with an average 100 and 98 percent of the price quotations being above the 100 and 70 percent break-even price-cost levels, respectively, table 8. Snap beans had good net income potential and low risk associated with both yield and price related income variability, tables 7, 9, 10, and 11.

On average, prices received for snap beans during the spring har-

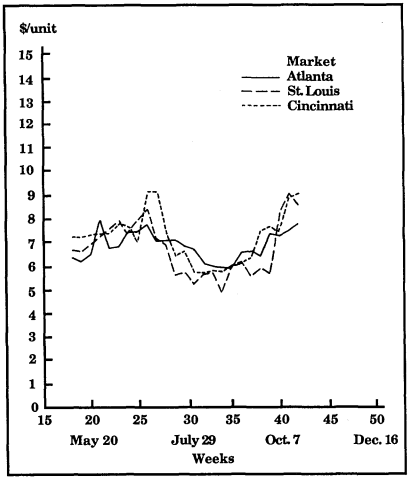

FIG. 6. Average weekly adjusted sweet corn (white) wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 4.5 - 5 dozen carton, 1979-83.

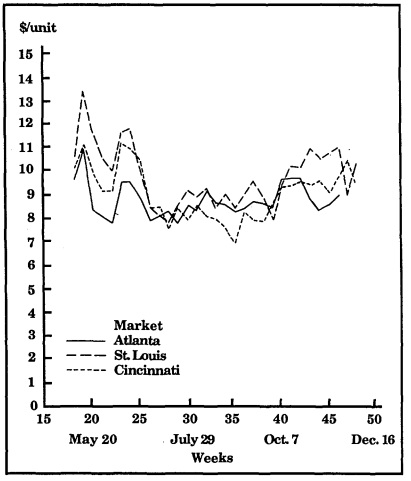

FIG. 7. Average weekly adjusted snap bean wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per one-bushel carton, 1979-83.

vest season (weeks 20 through 26) tended to rise during the first 2 to 3 weeks of the marketing period, reach a peak between weeks 23 and 24, and then decline, figure 7. This peak in average price occurs at a time when Florida, the major supplier of snap beans at the six markets during the early spring, is completing its year's production and other Southern States, such as Georgia and North Carolina, are just entering the market. An evaluation of the data showed that during this time incoming producing regions were, on average, receiving prices higher than Florida. This situation may reflect a potentially favorable market period for Alabama producers. As more producers entered the markets, prices declined.

Zucchini Squash

Zucchini squash had good market potential relative to other crops within this grouping, tables 7 and 8. Both seasonal and overall price variability and income variability were high in the St. Louis market relative to other alternative crops, with risk being moderate in the remaining markets, tables 9, 10, and 11. While showing less potential based on a price-cost criterion than snap beans in the St. Louis market, zucchini squash had greater income potential than snap beans in the Atlanta market. It should be noted that due to lower demand, zuc-

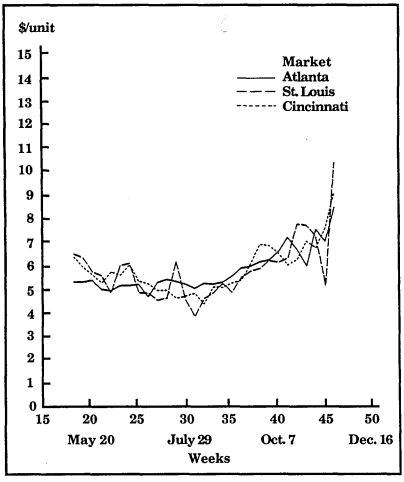

FIG. 8. Average weekly adjusted zucchini squash wholesale prices (wholesale price less 15 percent marketing Charge), Atlanta, Cincinnati, and St. Louis markets, per 5/9-bushel carton, 1979-83.

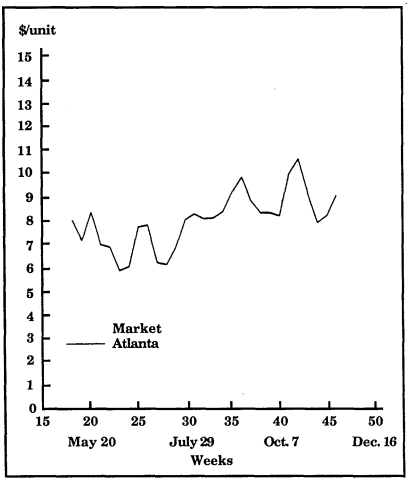

FIG. 9. Average weekly adjusted yellow squash wholesale prices (wholesale price less 15 percent marketing charge), Atlanta market, per one-bushel carton, 1979-83.

chini squash is usually produced and shipped in mixed loads with yellow squash and thus should be so evaluated.

In the Cincinnati and St. Louis markets, a downward trend in average prices for zucchini squash existed as the spring harvest period progressed (weeks 21 through 29), figure 8. Overall, squash producers would benefit through higher prices received by early market entrance.

Zucchini squash producers must maintain the highest production levels possible to enhance profit. Timely harvest of zucchini squash is necessary if producers are to receive the higher prices for small as opposed to medium sized squash.

Yellow Squash

Yellow squash (straightneck) had slightly less potential based on both average per acre net income and the price-cost criteria than either snap beans or zucchini squash, but greater potential than was noted for other crops within this grouping, tables 7 and 8. Due to lower average net income, yellow squash had a slightly higher degree of risk associated with both price and yield-related income variability than either snap beans or zucchini squash and less than other crops within this grouping, tables 9, 10, and 11.

Average price trends were similar to those of zucchini squash, with early spring markets being the most profitable, figures 9 and 10. As with zucchini squash, timely harvest of yellow squash is vitally important for profit enhancement.

Interestingly, in the Cincinnati and St. Louis markets, yellow and zucchini squash generated roughly equal income levels. This fact, combined with the large difference in income levels between zucchini and yellow squash in the Atlanta market where yellow squash was sold in 1-bushel rather than 5/9-bushel containers, may indicate the greater market potential for smaller sized packs.This price differential was also evidenced in the New Orleans market.

Cucumbers

Relative to the previously mentioned crops within this grouping, cucumbers showed less market potential, especially at the 70 percent break-even price-cost level, tables 7 and 8. An average of 69 percent of the price quotations were above the 70 percent yield break-even price-cost level. Examination of price quotations below the 70 percent level indicated that, on average, producers may realize positive net returns in 2 of 5 years in the Atlanta market and in 4 of 5 years in the Cincinnati and St. Louis markets.

While income reduction due to a 30 percent decrease in yield was moderate (averaging 55 percent) when compared with other alternative crops, an average 26 percent decrease in favorable price quotations resulted in the Atlanta, Cincinnati, and St. Louis markets, tables 7 and 9. As such, cucumbers have a higher degree of production risk; therefore, a greater emphasis on maintaining high production levels is necessary. Both overall and within-season price variability and the resulting income variability were high in the Atlanta and Cincinnati markets, tables 10 and 11.

The same relationship in average prices was seen with snap beans as was evidenced for cucumbers with producers in incoming production regions receiving higher prices than outgoing Florida producers. The rise in the average price level occurred prior to the start of the Alabama harvest season (weeks 23 through 29) in all but the Cincinnati market, with the peak generally occurring on or about week 23 or 24 (week 25 in Cincinnati market), figure 11. Prices tended to decline throughout the harvest period as supplies increased. Cucumber producers would tend to benefit from early market entrance.

Collards

Overall, collards had low market potential based on the price-cost criterion and low income potential relative to other alternative late

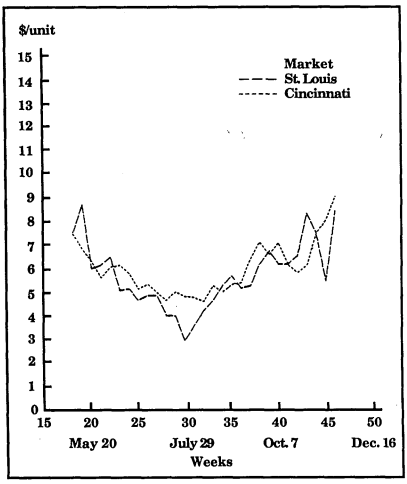

FIG. 10. Average weekly adjusted yellow squash wholesale prices (wholesale price less 15 percent marketing charge), Cincinnati, and St. Louis Markets, per 5/9-bushel carton, 1979-83.

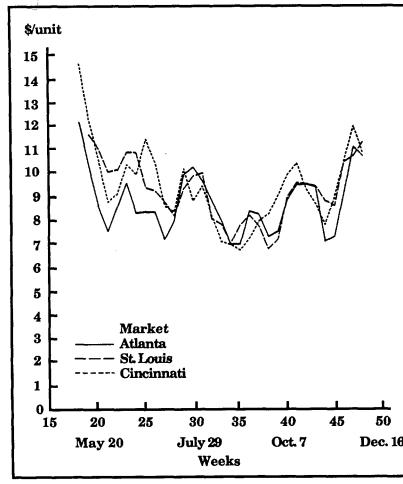

FIG. 11. Average weekly adjusted cucumber wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 1 1/9-bushel carton, 1979-83.

spring-summer crops in all but the Atlanta market, tables 7 and 8. Prices in the Atlanta market were for bunched collards, while prices in the remaining markets were for loose collards. Generally, prices for bunched greens (turnips and collards) are higher than for loose greens. This could account for the greater market potential. Favorable market conditions could also be a function of the regional nature of demand for collards in the Atlanta market. The Cincinnati market evidenced some potential for collards.

Collards showed low overall and within-season price variability. Due to their low net income shown in table 7, however, this crop demonstrated a high degree of price and yield-related income variability relative to other alternative crops in the Cincinnati and St. Louis markets, tables 9, 10, and 11. While collards and turnip greens received roughly equivalent prices, collards require greater field time until harvest, hence, greater cost are associated with additional insect, disease, and irrigation requirements. Thus, collards showed lower income potential and greater income risk than turnip greens.

On average, prices received for collard greens tended to decline throughout the first half of the spring-summer harvest season (weeks 21 through 33) and then rise during the latter half and on into the fall harvest season, figures 12 and 13. Because of a small number of relatively large producers who supply most wholesale markets with a variety of greens, significant barriers to market entrance may exist. To

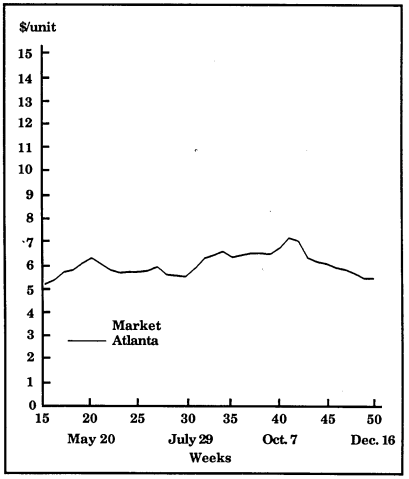

FIG. 12. Average weekly adjusted collard (bunched) wholesale prices (wholesale price less 15 percent marketing charge), Atlanta market, per 1 1/9-bushel carton, 1979-83.

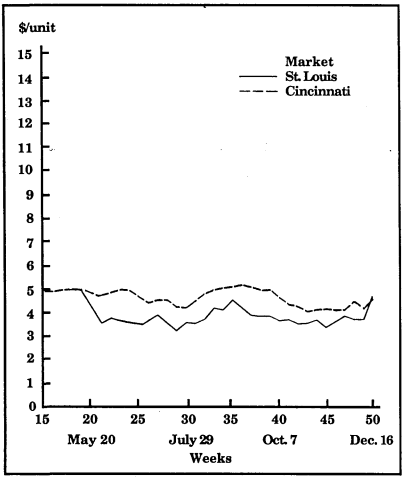

FIG. 13. Average weekly adjusted collard (loose) wholesale prices (wholesale price less 15 percent marketing charge), Cincinnati, and St. Louis markets, per 1 1/9-bushel carton, 1979-83.

overcome these institutional barriers, producers would most likely benefit from the earliest possible contact with wholesale buyers. For this reason, producers would benefit from the earliest market entrance possible.

Watermelons

With the exception of collards and cucumbers, watermelons showed less potential than other crops within this seasonal grouping. The Cincinnati and St. Louis markets showed good potential for watermelons at the 100 percent yield level with the least potential existing in the Atlanta market, table 8. An average of 90 and 73 percent of the price quotations were above the 100 and 70 percent yield break-even price-cost levels. In the Atlanta market, 75 and 60 percent of the price quotes were above the 100 and 70 percent break-even price-cost yield levels.

Greatly varying price levels existed at the three markets for the harvest period with St. Louis ($7.33 per hundredweight) having the highest prices followed by Cincinnati ($6.76 per hundredweight) and Atlanta ($4.29 per hundredweight), table 10. Watermelons had a high degree of seasonal price variability in all markets and there was a high degree of overall price variability in the Atlanta and St. Louis markets, table 10. Risks associated with both price and production-related income variability were great for watermelons sold in the Atlanta market, with less risk existing in Cincinnati and St. Louis markets where prices were higher, tables 9 and 11. The lower potential seen in the Atlanta market may be a result of the close proximity of the market to major watermelon producing regions in the Southeast.

A definite declining trend in the average price of watermelons was evidenced both throughout the year and during the relevant spring harvest period, figure 14. Also, a high degree of seasonal variability (weeks 28 through 32) was evident. Average prices declined by $1.60, $2.40, and $3.00 per hundredweight during the harvest period in the Atlanta, Cincinnati, and St. Louis markets, respectively. As with sweet corn, it is important for producers to get melons into marketing channels as early as possible in the spring in a effort to "hit" the more favorable early summer markets.

Group Four: Full Season Crops

Full season indeterminate crops (bell peppers, okra, and staked tomatoes) produced in north Alabama generally come into the marketing system in July and remain until the end of September. They differ from other summer crops in that they require land resources

for a longer time and thereby limit opportunities for double and triple crop rotations.

Tomatoes

Analysis of the market potential for staked tomato production presented problems for the following two reasons:

1. Wholesale tomato prices were for repacked tomatoes in most cases and, as such, did not adequately represent producer received prices, and
2. Tomato prices were recorded in a variety of container sizes which exhibited varying quality attributes such as size and color.

In an effort to be conservative in estimating market potential, prices for 6 x 6 sized, mature green or pink tomatoes were used when possible. To best determine producer received prices, only 25- and 30-pounds loose packed tomato prices were used. While loose packed tomatoes are becoming more of a standard in the industry, good price data were only available in the Cincinnati and St. Louis markets for 2 years and in the Atlanta market for 1 year. Data for 5 years were available in both the Baltimore and Chicago markets and, as such, they were the only markets suitable for analysis. Because of the lack of data, the "market window" analysis was performed in the Atlanta, Cincinnati, and St. Louis markets, but the results should be evaluated cautiously.

Tomatoes showed good potential at the 100 percent break-even price-cost yield level in the Atlanta and Cincinnati markets, with less potential being shown in the Baltimore, Chicago, and St. Louis markets, tables 7 and 12. Overall, low market potential was shown at the 70 percent break-even price-cost yield level. On average, a 30 percent decrease in yield resulted in a 27 percent decrease in favorable price quotations.

While tomatoes showed good income producing potential, the risks associated with both yield and price related income variability were high, tables 9, 10, and 12. Much of this risk stems from the high cost of staked tomato production. With total costs per acre of approximately $3,500, any reductions in gross income either induced by price reductions or any increases in pre-harvest cost resulting from yield reductions often result in large decreases in per acre net income. A 30 percent reduction in yield led to an average 84 percent reduction in average per acre net income, table 9. With pre-harvest costs of approximately $1,900, risks related to inability to find a buyer or crop failure are great, table 4. While seasonal and overall price variability were moderate compared to other alternative crops, the

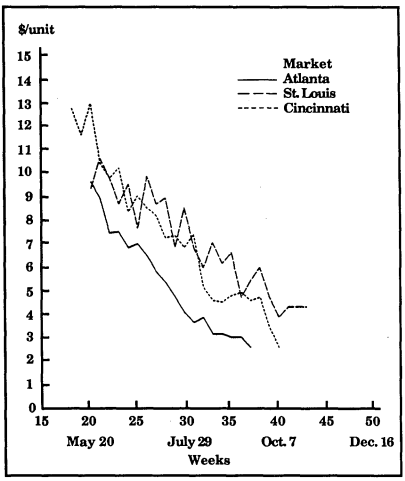

FIG. 14. Average weekly adjusted watermelon wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per hundredweight, 1979-83.

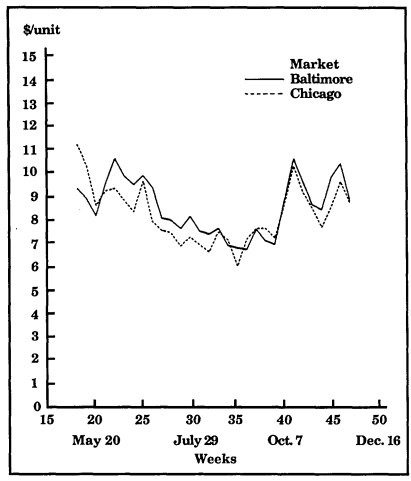

FIG. 15. Average weekly adjusted tomato wholesale prices (wholesale price less 15 percent marketing charge), Baltimore, and Chicago markets, per 25-pound and 30-pound box, 1979-83.

TABLE 12. ALTERNATIVE EVALUATION CRITERIA FOR SPRING AND FALL TOMATOES GROWN IN NORTH ALABAMA AND SOLD AT THE BALTIMORE AND CHICAGO WHOLESALE MARKETS.[1]

Evaluation criteria	Season and market			
	Spring		Fall	
	Baltimore	Chicago	Baltimore	Chicago
Average net income, dollar per acre	1,063	960	1,395	1,174
Percentage of weekly price quotations above break-even price level for alternative yields				
100% yield, pct.	81	74	77	85
70% yield, pct.	55	58	68	69
Sensitivity of average per acre net income to a 30% reduction in yield, pct. decrease	84.5	90.3	72.2	67.6
Overall variability (between weeks and years) in weekly average prices, pct.[2]	19.9	21.6	22.2	22.4
Within season variability (between weeks) in weekly average prices, pct.[3]	13.5	17.7	17.4	17.3
Overall variability (between weeks and years) in weekly average per acre net income resulting from price variability, pct. [2]	97.9	113.3	89.0	81.1

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Measured by coefficient of variation.
[3]Measured by the standard deviation of the first differences between weekly price observations as a percentage of the mean price.

resulting effect on average net income was substantial, table 12. With coefficients of variation of 98 and 113 percent in the Baltimore and Chicago markets, respectively, there was a high degree of risk of negative income during some years associated with price variability.

Because of inadequate quality data for tomatoes for other markets, price trends could be examined only in the Baltimore and Chicago markets. On average, prices tended to show a declining trend throughout the summer harvest season (weeks 27 through 39), pointing out the need for early market exploitation, figure 15.

It should be noted that prices for 6 x 6 sized tomatoes used for this study are lower than for tomatoes of larger 5 x 6 or 5 x 5 sizes. If producers follow recommended production practices, raise approved varieties, and strive to maintain the highest economically feasible production levels, they might achieve higher per acre net incomes than indicated. However, market entry barriers exist due to the presence of Florida tomatoes in the early spring-summer market.

Okra

Analysis problems were also present with okra. In both the Cincinnati and St. Louis markets, recorded prices alternated within years between 1/2-, 5/9-, and 5/8-bushel containers, with the most often quoted prices in 5/9-bushels. For ease of analysis, all costs were in terms of 5/9-bushel sizes. This compromise may have resulted in slightly distorted prices.

Okra showed varying degrees of income potential, but generally had greater average net income per acre than all other alternative crops except tomatoes, table 7. Good market potential, as measured by the price-cost criterion, was shown in the Cincinnati and St. Louis markets, with less potential existing in the Atlanta market, table 8. Prices recorded in the Atlanta market were for 1-bushel containers, while prices in the Cincinnati and St. Louis markets were for 1/2-, 5/8-, or 5/9-bushel containers, table 10. As seen with yellow squash, the difference in potential may indicate the wholesale market preference for smaller packs.

Because of low pre-harvest production cost, okra had a reduced level of risk associated with both yield and price related income variability relative to other alternative vegetable crops, tables 9-11. Also, okra had reduced risk resulting from total crop failure or inability to market the crop.

Average prices for okra tended to decline throughout the spring in the Atlanta market, with the lowest prices being received during the north Alabama harvest season (weeks 26 through 39), figure 16. Price

levels in the Cincinnati and St. Louis markets showed no generally definable trend. On average, producers would most likely benefit from early market entrance. However, okra production can be adversely affected by early season weather variations.

As with both yellow and zucchini squash, large decreases in price could be expected for medium, opposed to small-sized okra, increasing the importance of maintaining a timely harvest schedule.

Bell Peppers

Bell peppers had the lowest income potential of the full season crops, but approximately equaled the potential of snap beans and zucchini squash and showed varying degrees of potential in the selected markets, tables 7 and 8. At the 100 percent break-even price-cost yield level, bell peppers at the Atlanta and Cincinnati markets showed a high degree of market potential, with the St. Louis market reflecting less potential, table 8. At the 70 percent break-even price-cost yield level, low potential was shown in all but the Atlanta market. An average of 67 percent of the price quotations were above the 70 percent yield level. Because of a 30 percent yield drop, favorable (above break-even) price quotations decreased by 12, 37, and 20 percent in the Atlanta, Cincinnati, and St. Louis markets, respectively.

Price quotations for bell peppers which were below the break-even

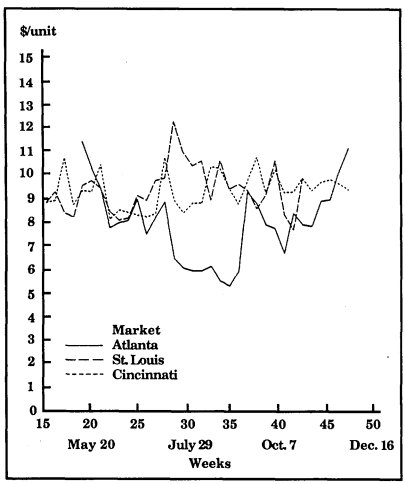

FIG. 16. Average weekly adjusted okra wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 5/9-bushel carton, 1979-83.

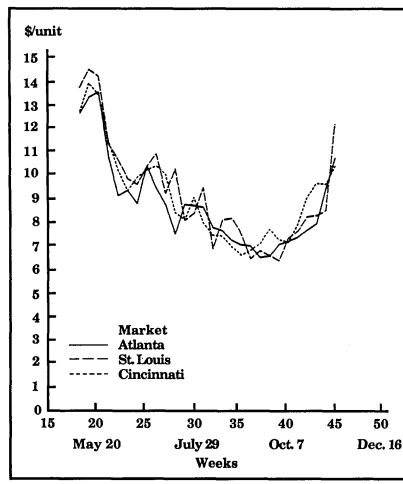

FIG. 17. Average weekly adjusted bell pepper wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 1 1/9-bushel carton, 1979-83.

price-cost level tended to occur during specific years. On average, producers might realize a positive net return at the 70 percent yield level 4 of 5 years in the Atlanta market, 3 of 5 years in the St. Louis market, and 1 of 5 years in the Cincinnati market.

A definite declining trend in average prices received for bell peppers was apparent during the relevant harvest period (weeks 25 through 39), figure 17. Bell pepper prices showed a definite upward movement within the first week or two of the north Alabama harvest season. As with cucumbers and snap beans, this peaking of price corresponded with declining Florida production and the beginning of harvest in other Southeastern production regions. Because average prices peak in the beginning of the harvest season (weeks 25 and 26) and then decline, it is important that producers enter markets as early as possible. During the harvest season, prices declined an average $3.80, $3.00, and $4.40 per 1 1/9-bushel container in the Atlanta, Cincinnati, and St. Louis markets, respectively.

Because of high production cost, bell peppers had generally greater risk associated with yield and price related income variability than other alternative summer crops except tomatoes, tables 9-11. The low market potential and average per acre net income shown at the 70 percent yield level emphasizes the importance of maintaining the highest possible production level given economic factors. Bell pepper producers can expect a high probability of negative net returns during some years if yield levels are not maintained.

Group Five: Irish and Sweet Potatoes

Irish and sweet potatoes differ from other crops examined in several ways. As with sweet corn, a far greater number of acres can be grown and managed by a single producer. Irish and sweet potato production also requires a greater capital investment in planting and harvest machinery than other vegetable crops. Because of the ability of producers to delay harvest of sweet potatoes or to store the product already harvested, identification of favorable market periods is of less importance than with other vegetable crops. This is true to a lesser degree for round red irish potatoes because storage time is considerably less than with sweet potatoes.

Overall, irish potatoes showed lower market potential than all other summer crops except collards, sweet corn, and sweet potatoes based on the price-cost criterion, table 8. Irish potatoes showed an average 78 and 56 percent of the individual price quotations above the 100 and 70 percent break-even price yield levels, respectively. An

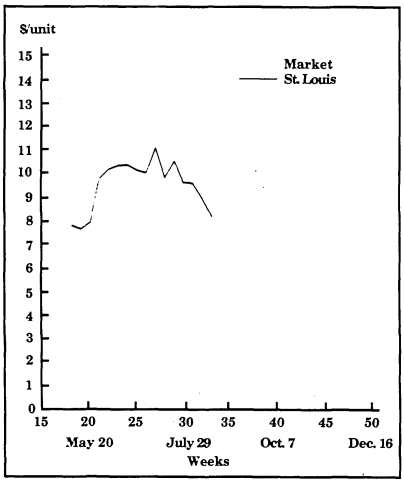

FIG. 18. Average weekly adjusted round red irish potato wholesale prices (wholesale price less 15 percent marketing charge), St. Louis market, per 100-pound bag, 1979-83.

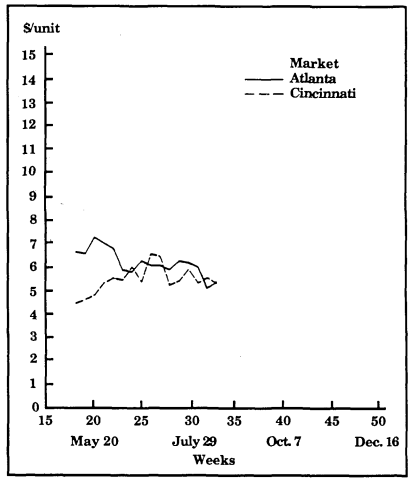

FIG. 19. Average weekly adjusted round red irish potato wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati markets, per 50-pound bag, 1979-83.

average 21 percent decrease in favorable price quotations resulted from a 30 percent decrease in yield.

Examination of the data showed that for irish potato price quotations below the 100 percent break-even price-cost yield level, all but three occurred during 1979. On average, producers could expect to realize positive net returns 4 of 5 years at the 100 percent yield level and 3 of 5 years at the 70 percent yield level. This point is substantiated by the consistency of price quotations between markets above both yield break-even price levels. While varying per acre net incomes were shown for irish potatoes, risk associated with both yield and price related income variability was high relative to other alternative crops, tables 7, 9, 10, and 11.

Generally, no definable trends in average prices for irish potatoes during the harvest period (weeks 23 through 30) existed across markets, figures 18 and 19. In the Atlanta market, average prices tended to remain constant, whereas prices in Cincinnati and St. Louis markets tended to peak on or about week 26 and then decline.

Sweet potatoes showed lower market potential based on the price-cost criterion than all other summer crops except collards and sweet corn and exhibited lower net income than most other alternative crops, tables 7 and 8. Sweet potatoes also showed a definite consistency between markets with respect to favorable price quotations above the break-even price at both yield levels. Farmers producing at

the 100 percent yield level might expect to receive prices above the 100 percent break-even price-cost an average of 74 percent of the time and above the 70 percent break-even level 59 percent of the time.

As with irish potatoes, almost all sweet potato price quotations below the break-even price-cost level occurred during specific years (1979 and 1982). Producers could expect to realize profits in 4 years of 5 at the 100 percent yield level and 3 of 5 years at the 70 percent yield level. There also existed a high degree of risk associated with

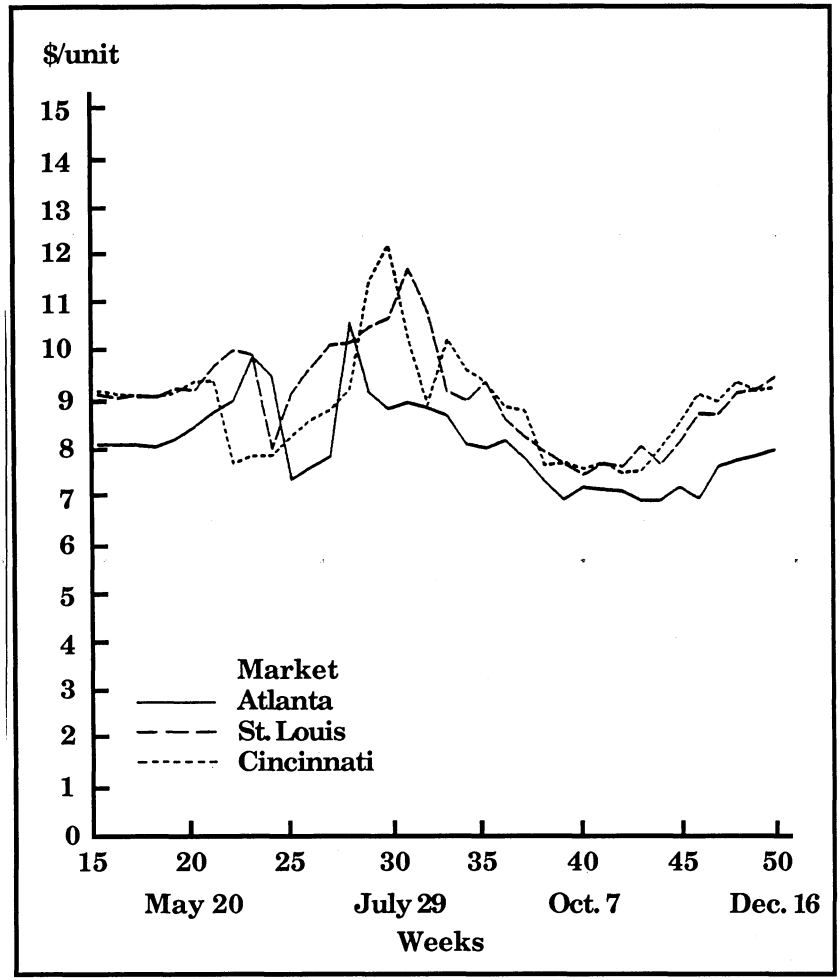

FIG. 20. Average weekly adjusted sweet potato wholesale prices (wholesale price less 15 percent marketing charge), Atlanta, Cincinnati, and St. Louis markets, per 50-pound carton, 1979-83.

both yield and price related income variability relative to other alternative crops, tables 9, 10, and 11.

As supplies of fresh sweet potatoes enter the marketing channel, prices typically rise, reach a peak, and then decline as ample supplies become available, figure 20. This peak in the price (week 28 through 30) occurred, in most cases, prior to the entrance of north Alabama producers, resulting in generally declining prices through to approximately week 44 followed by slight price increases as producers hold supplies in storage. Alabama producers should plan on entering the market as early as possible and prior to the generally less favorable market period existing between weeks 38 and 44. It should be noted that producers can, by growing earlier non-storable varieties, enter the markets approximately 3 weeks earlier than the market period used for this study. Some potential may exist for producers growing these varieties.

For irish and sweet potatoes, the high risk resulting from yield and price variability was due in part to the relatively high production costs. Examination of the data indicated that there is a good chance of negative net returns during some years with both of these enterprises. Evaluation of both irish and sweet potato enterprises should consider the cost of storage facilities and specialized harvest equipment. Producers must have sufficient resources necessary for the sizable capital investment required for these enterprises.

As with sweet corn, both irish and sweet potatoes may be produced on a larger scale than other alternative crops. Thus, income potential for irish and sweet potato enterprises may be greater relative to other crops than indicated on a per acre basis.

Group Six: Fall Crops

A high degree of production risk exists during the fall season due to increased insect, disease, and weather related problems. The increase in production risk may result in yield levels often being lower than those obtained during the spring or summer seasons. For this reason, market potential should be examined with a greater emphasis placed on the 70 percent yield level than with analyses of the previous crop groupings. Price-cost criterion conclusions for fall tomatoes and watermelons are based on limited data available in most markets.

Fall Tomatoes

As with the previous analysis, limited data were available for fall tomatoes. The Baltimore, Chicago, Cincinnati, and St. Louis markets were used for determining potential based on the price-cost cri-

terion and per acre net income, with the remaining risk analyses being performed in the Baltimore and Chicago markets only.

Of the early fall crops (snap beans, cucumbers, yellow and zucchini squash, tomatoes, and watermelons), tomatoes had the highest average per acre net income potential, along with varying degrees of

TABLE 13. AVERAGE PER ACRE NET INCOME FOR SELECTED FALL VEGETABLE CROPS CALCULATED, BASED ON 100 AND 70 PERCENT YIELD LEVELS, RANKED BY CROP WITHIN MARKET, NORTH ALABAMA[1]

Crop	Net income/acre, by markets and yield levels					
	Atlanta		Cincinnati		St. Louis	
	100% yield level	70% yield level	100% yield level	70% yield level	100% yield level	70% yield level
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Beans, snap	659(6)[2]	337(4)	631(6)	318(6)	750(4)	402(4)
Broccoli	1,452(1)	888(1)	1,541(2)	950(1)	1,343(1)	811(1)
Cabbage	307(8)	46(8)	153(9)	-62(9)	95(9)	-102(8)
Collards	721(4)	325(6)	296(8)	27(8)	-14(10)	-190(9)
Cucumbers	529(7)	223(7)	488(7)	194(7)	343(6)	93(6)
Squash, yellow	668(5)	333(5)	826(3)	442(3)	816(3)	435(3)
Squash, zucchini	966(3)	541(3)	812(4)	434(4)	838(2)	452(2)
Tomatoes[3]	—	—	1,591(1)	526(2)	554(5)	-199(10)
Turnip greens	1,050(2)	637(2)	631(6)	343(5)	342(7)	141(5)
Watermelons	—	—	35(10)	-135(10)	317(8)	62(7)

[1]Analyses were conducted using price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are crops ranked in ascending order from the highest average per acre net income to the lowest average per acre net income (based on limited data).
[3]Based on limited data.

TABLE 14. PERCENTAGE OF WEEKLY PRICE QUOTATIONS WHICH WERE ABOVE THE BREAK-EVEN PRICE-COST AT ALTERNATIVE MARKETS AND YIELD LEVELS FOR SELECTED FALL VEGETABLE CROPS RANKED BY CROP WITHIN MARKET, NORTH ALABAMA[1]

Crop	Markets and yield levels					
	Atlanta		Cincinnati		St. Louis	
	100% yield level	70% yield level	100% yield level	70% yield level	100% yield level	70% yield level
	Pct.	*Pct*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Beans, snap	100(1)[2]	100(1)	100(1)	89(5)	100(1)	96(2)
Broccoli	100(1)	100(1)	100(1)	100(1)	100(1)	100(1)
Cabbage	83(8)	54(8)	60(9)	36(9)	56(9)	36(8)
Collards	100(1)	62(7)	74(8)	52(8)	46(10)	12(10)
Cucumbers	91(7)	70(6)	82(7)	64(7)	79(6)	47(6)
Squash, yellow	95(6)	88(5)	100(1)	97(2)	90(5)	90(3)
Squash, zucchini	100(1)	98(4)	100(1)	97(2)	94(4)	86(4)
Tomatoes[3]	—	—	100(1)	66(6)	69(7)	23(9)
Turnip greens	100(1)	100(1)	98(6)	92(4)	98(3)	71(5)
Watermelons	—	—	35(10)	25(10)	68(8)	47(6)

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parentheses are crops ranked in descending order from the most variable to the least variable.
[3]Based on limited data

TABLE 15. SENSITIVITY OF AVERAGE PER ACRE NET INCOME TO A 30 PERCENT DECREASE IN YIELD FOR SELECTED FALL VEGETABLE CROPS DURING THE HARVEST SEASON; 1979-1983[1]

Crop	Net income decrease by alternative markets[2]		
	Atlanta	Cincinnati	St. Louis
	Pct.	*Pct.*	*Pct.*
Beans, snap	48.8	49.5	46.5
Broccoli	38.9	38.4	39.6
Cabbage	84.9	140.4	207.5
Collards	54.9	90.8	-1,264.0
Cucumbers	57.9	60.3	73.0
Squash, yellow	50.1	46.4	46.6
Squash, zucchini	44.0	46.6	46.1
Tomatoes[2]	—	67.0	136.0
Turnip greens	39.4	45.6	58.7
Watermelons	—	487.6	80.3

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]A negative number indicates negative average per acre net income at both yield levels
[3]Based on limited data.

market potential, as measured by a price-cost criterion, tables 12 and 13.

A slightly higher degree of market potential existed for fall tomatoes as compared with the spring-summer in all but the St. Louis market. On average, a 30 percent decrease in yield resulted in a 26 percent decrease in favorable price quotations above the break-even price-cost, tables 12 and 14.

Staked tomatoes showed moderate price and high yield related risks associated with average per acre net income variability, tables 12, 15, 16, and 17. Average per acre net income fell an average of 70 percent in the Baltimore and Chicago markets, table 12. While fall tomato prices exhibited an overall upward trend during the fall harvest season (weeks 35 through 43), figure 16, producers considering late fall harvest should give consideration to the high degree of yield related income reductions.

Yellow and Zucchini Squash

Both zucchini and yellow squash can be grown and harvested from late spring until the first frost, with the fall market being designated weeks 28 through 43 for this analysis. Taking into consideration the lower prices received for 1-bushel as opposed to 5/9-bushel containers, yellow squash showed slightly less market potential based on the price-cost and average per acre net income criteria than did zucchini squash in the fall. Both yellow and zucchini squash ranked favorably relative to other alternative fall crops based on these measures, tables 13 and 14.

Both yellow and zucchini squash prices showed a strong increasing

TABLE 16. AVERAGE WEEKLLY PRICE, COEFFICIENT OF VARIATION, AND PERCENT SEASONAL VARIATION IN PRICE FOR SELECTED FALL VEGETABLES RANKED BY CROP WITHIN ALTERNATIVE MARKETS, NORTH ALABAMA[1]

Crop	Unit	Atlanta			Cincinnati			St. Louis		
		Price per unit	Coefficient of variation	Seasonal variation	Price per unit	Coefficient of variation	Seasonal variation	Price per unit	Coefficient of variation	Seasonal variation
		Dol.	*Pct.*	*Pct.*	*Dol.*	*Pct.*	*Pct.*	*Dol.*	*Pct.*	*Pct.*
Beans, snap	1-bu. carton	9.00	28.72(7)[2]	28.33(8)	9.22	21.54(6)	21.58(8)	9.81	21.74(4)	19.06(6)
Broccoli	Carton 14's-18's	8.06	10.71(1)	8.81(4)	8.78	10.89(1)	7.18(1)	8.16	10.95(1)	9.68(1)
Cabbage	50-lb. carton	4.36	16.95(3)	4.59(1)	4.49	16.91(2)	9.80(4)	4.30	22.74(5)	12.33(4)
Collards[3]	1 1/9-bu. carton	6.46	19.46(4)	7.89(3)	4.50	20.41(3)	7.56(3)	3.72	14.38(2)	11.29(3)
Cucumbers	1 1/9-bu. carton	8.56	29.09(8)	17.17(7)	9.01	24.53(9)	21.53(7)	8.34	26.20(6)	28.18(8)
Squash, yellow[4]	5/9-bu. carton	8.53	25.88(6)	14.07(5)	5.62	22.87(8)	17.26(6)	5.59	30.16(8)	16.99(5)
Squash, zucchini	5/9-bu. carton	5.78	24.32(5)	14.36(6)	5.58	22.82(7)	17.03(5)	5.65	28.85(7)	19.29(7)
Tomatoes[5]	25-lb.-30-lb. carton	—	—	—	—	—	—	6.40	21.91(5)	23.75(8)
Turnip greens	1 1/9-bu. carton	5.25	16.45(2)	6.48(2)	4.66	20.59(4)	7.94(3)	3.92	17.17(3)	10.97(2)
Watermelons	Hundredweight	—	—	—	4.54	21.25(5)	22.25(9)	5.64	33.80(9)	41.49(9)

[1]Analyses were conducted based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parenthesis are rankings of crops in descending order from the most variable to the least variable.
[3]Prices for collards are for loose greens in the Cincinnati and St. Louis markets and for bunched greens in the Atlanta market.
[4]Price for yellow squash in the Atlanta market is for a 1-bushel carton.
[5]Based on limited data.

TABLE 17. COEFFICIENT OF VARIATION AND PLUS AND MINUS ONE STANDARD DEVIATION (STD. DEV.) IN AVERAGE PER ACRE NET INCOME FOR SELECTED FALL VEGETABLE CROPS RANKED BY CROP WITHIN MARKETS, NORTH ALABAMA[1]

Crop[2]	Atlanta			Cincinnati			St. Louis		
	Coefficient of variation	+ One Std. dev.	− One Std. dev.	Coefficient of variation	+ One Std. dev.	− One Std. dev.	Coefficient of variation	+ One Std. dev.	− One Std. dev.
	Pct.	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*	*Pct.*
Beans, snap	78.52(6)[2]	1,177	141	62.99(5)	1,028	234	56.85(2)	1,177	324
Broccoli	19.31(1)	1,733	1,172	20.17(1)	1,852	1,230	21.63(1)	1,633	1,052
Cabbage	84.30(7)	565	48	174.05(8)	418	-113	361.10(8)	437	-248
Collards	52.31(3)	1,099	344	124.30(7)	664	-72	-1,536.15(9)	200	-228
Cucumbers	106.02(8)	1,089	-32	101.89(6)	985	-9	143.48(6)	834	-149
Squash, yellow	66.10(5)	1,109	226	56.08(2)	1,288	363	74.36(4)	1,423	209
Squash, zucchini	52.42(4)	1,472	460	56.48(3)	1,271	353	69.98(3)	1,424	252
Tomatoes[3]	—	—	—	—	—	—	—	—	—
Turnip greens	32.92(2)	1,396	704	69.89(4)	1,014	247	78.81(5)	611	72
Watermelons	—	—	—	692.62(9)	276	-207	150.15(7)	794	-159

[1]Analyses based on price data for 1979-83 and cost data for 1985.
[2]Numbers in parenthesis are crops ranked in descending order from the most variable to the least variable.
[3]Insufficient data were available.

trend in the latter part of the fall season, figures 8, 9, and 10. Taking into account the small reduction in favorable (above break-even) price quotations (an average 3 and 4 percent for yellow and zucchini squash, respectively) and the moderate risk of income reduction (average of 48 and 46 percent for yellow and zucchini squash, respectively) resulting from a 30 percent yield decrease, both yellow and zucchini squash are good candidates for the risky late fall markets, tables 14 and 15. Yellow and zucchini squash also demonstrated moderate price variability in all but the St. Louis market, having low risk associated with price related average per acre net income variability relative to most alternative fall crops, tables 16 and 17.

Snap Beans

Overall, fall snap beans retained the high market potential seen during the spring harvest season. Average prices for fall harvested snap beans in Cincinnati and St. Louis markets tended to increase over the relevant harvest period (weeks 39 through 44), providing potentially favorable late season markets, figure 7. Higher price levels were indicated during weeks 40 through 43 in the Atlanta market.

While showing greater market potential as measured by the price-cost criterion than that for either yellow or zucchini squash, snap beans had slightly lower income potential and greater risk associated with both yield and price related income variability, tables 14 through 17. Snap beans demonstrated greater market potential and less production and price risk than most alternative fall crops. Because of the market and income potential exhibited at the 70 percent yield level, snap beans showed reduced risk associated with late fall production, making them good candidates for the risky late fall harvests.

Cucumbers

As indicated by their ranking, fall cucumbers exhibited lower income potential than other alternative fall crops such as yellow and zucchini squash and snap beans, table 13. Cucumbers also showed lower market potential, using the price-cost criterion, relative to other fall crops, with an average of 84 and 60 percent of the individual price quotations during the harvest season being above the 100 and 70 percent yield levels, respectively, table 14.

Examination of the cucumber price quotations below the 100 percent break-even price-cost yield level indicated that, on average, producers might expect to realize profits in 4 of 5 years in the Cincinnati market and 3 of 5 years in the St. Louis market. At the 70 percent yield level, positive net returns might be possible in 3 of 5 years in

the Atlanta and Cincinnati markets and 2 of 5 years in the St. Louis market.

On average, a 30 percent decrease in yield resulted in a 24 percent decrease in favorable price quotations above the break-even price level for cucumbers, table 14, and a 64 percent decrease in per acre net income, table 15, thereby emphasizing the need for high levels of production and the high degree of risk associated with late fall harvests. Cucumbers appear to be a poor candidate for late fall production.

There was an increasing trend in average prices received for cucumbers during the first 3 to 4 weeks of the fall harvest period (weeks 37 through 43), followed by a period of declining prices during the last week or two of the harvest period, figure 11. Because of lower potential indicated at the 70 percent yield level, producers generally should be concerned more with obtaining high yields than risking yield reductions to "hit" the favorable market period.

Watermelons

Watermelons showed low potential in all but the Chicago and New Orleans fall markets. Low generated net income and poor market potential were shown in the Cincinnati and St. Louis markets, tables 13 and 14. The lack of available price quotations may represent the low demand for watermelons during the fall season. Generally, watermelon prices tended to decline over the relevant fall harvest period (weeks 34 through 39), figure 14.

Because of widely varying prices and income levels between markets for watermelons, conclusions concerning risk and expected income levels were difficult to derive. Overall, the results of both the "market window" and risk analyses would tend to indicate fair to poor potential for fall watermelon production. Because of possible low demand, producers attempting to market fall melons would benefit from crate packed sales in conjunction with mixed loads.

Collards and Turnip Greens

Both turnip and collard greens can be produced over the entire fall market period. Turnip greens showed considerably greater market potential based on both price-cost and average per acre net income criteria than collards, tables 13 and 14. Both greens had widely varying degrees of potential between markets and, as such, showed varying risks associated with yield and price related income variability, tables 15-17. Generally, turnips showed low risk associated with yield

and price related income variability relative to other fall crops, including collards.

Overall, prices for both turnip and collard greens declined over the fall harvest season (weeks 37 through 44 for turnip greens and weeks 37 through 46 for collards), indicating less potential in the late fall season, figures 3, 12, and 13.

Broccoli

Of the late fall crops, broccoli showed the highest degree of market potential with 100 percent of the price quotations above both break-even price-cost yield levels and average per acre income levels exceeding all other fall crops, tables 13 and 14. Because of its low price-cost ratio, broccoli had low risk related to both yield and price related income variability relative to all other fall crops, tables 15-17. Broccoli prices remained, on average, fairly stable during the fall harvest period (weeks 37 through 43), figure 2.

Cabbage

Along with low income potential, fall cabbage showed low potential at both yield levels; on the average, quoted prices were above the 100 and 70 percent break-even price-cost yield levels 66 and 42 percent of the time in the primary markets, tables 13 and 14. A 30 percent decrease in yield resulted, on average, in a 24 percent decrease in price quotations above the producers break-even price-cost, with average per acre net income decreasing 85, 140, and 208 percent in the Atlanta, Cincinnati, and St. Louis markets, respectively, tables 14 and 15. Along with poor market potential and a high degree of risk associated with yield-induced income variability, cabbage had a high degree of price related income risk, tables 16 and 17.

Producers may realize positive net returns from fall cabbage production at the 100 percent break-even price-cost yield level in 4 of 5 years in the Atlanta market and 3 of 5 years in the Cincinnati and St. Louis markets, table 14. At the 70 percent yield level, production of fall cabbage was profitable in 3 of 5 years in the Atlanta market and 2 of 5 years in the Cincinnati and St. Louis markets.

Because cabbage showed only slight increases in average price levels over the fall harvest season (weeks 41 through 45) and due to the high degree of risk associated with yield related reductions, late fall harvests show low potential, figure 3.

CONCLUSIONS

Agricultural producers will choose which crops to grow after evaluation of several factors in relation to their goals. The most prominent

criteria involve their managerial ability, available resources, market potential, profit potential, and their attitudes concerning risk aversion. Results of this study indicate that varying degrees of market potential exist at the national wholesale market level for fresh vegetables grown in north Alabama. As interest in and production of fresh vegetable crops increase, so will supplies. An increased supply of a given crop, if greater than the consumption increase, will result in decreased price levels and lower market potential than indicated by the results of this study. As competition increases, only the most efficient producers will survive. Increased competition may also result in an increase in quality standards and may emphasize the importance of special packaging and handling procedures to attract buyers.

The analysis indicated that producers would generally benefit in terms of prices received from the earliest market entrance possible during the spring and summer. Producers would also benefit by staying in the fall markets as long as possible, given the generally higher late fall prices.

While higher price levels may exist during early spring and summer and late fall markets, producers must make decisions on crops, varieties, and planting dates considering the risk associated with weather related yield reductions resulting from early planting in the spring and late harvests in the fall. During the fall, crops having the highest potential at the 70 percent yield level and the least amount of sensitivity in per acre net income to yield reductions would generally have the least amount of risk associated with income variability.

While determination of favorable market periods is important, producers would generally benefit by producing a sufficient volume of a given crop over the longest possible time rather than trying to "hit" specific market periods. In many cases, these times of higher average prices also represent periods of greater price variability; therefore, price levels may differ greatly between years and thus increase the risks incurred by producers.

Given the importance of quality and yield levels, producers should also analyze the potential of a crop on the basis of their ability to grow, harvest, and ship that commodity. Crops such as okra, while showing a relatively high degree of market potential, may not be the best crop to produce in light of the available harvest labor and its highly perishable nature relative to other vegetable crops.

Crops such as cabbage, which have relatively less potential than other crops like broccoli during both the early spring and late fall, may be a better crop to produce given the ability of the producer and available resources. The producer's choice between cabbage and

broccoli production might be partially based on the ability to meet the necessary packing and cooling requirements required for broccoli.

The potential shown in this study is based on the assumption that producers can find buyers for their produce at the wholesale level. It is widely understood that rather large barriers to market entrance exist at the national wholesale market level. Producers should recognize that it is better to hold out a low quality product and thereby lose money in the short term than to tarnish one's reputation by marketing inferior produce. Producers should also realize that even if they can meet the market requirements, they may, during the first years in production, not be able to find a buyer for their produce. Inexperienced producers should expect limited success during the first years of production and should be willing and able to lose money during this time. Because of the high cost of fresh vegetable production, losses can be quite substantial. As one gains a reputation for producing high quality produce in sufficient quantity on a consistent basis, these institutional barriers may be reduced.

Overall, the Atlanta, Cincinnati, and St. Louis markets showed potential for north Alabama grown produce, with the New Orleans market primarily having potential during early spring and late fall seasons. The Baltimore market held little potential for all but fall produced vegetables and possibly tomatoes. Given the higher degree of potential indicated at the Cincinnati and St. Louis markets, Alabama producers would benefit from development and use of these markets. While not evaluated in this study, some consideration should also be given to development and use of Tampa, Orlando, and Miami markets during the "off-season" for Florida production.

North Alabama producers, because of their climatic conditions, land resources, and availability of water, are in a good position to develop a fresh vegetable industry. Close proximity to Midwestern markets may, given adequate backhaul opportunities, give Alabama producers a comparative advantage in transportation cost as compared to other Southern producers. The opening of a farmers market in Montgomery also provides an outlet for produce.

On a commodity basis, the following conclusions can be drawn from the analysis:

Snap beans offered good potential. They had good income potential and low risk associated with both yield and price related income variability.

Broccoli exhibited good potential based on the price-cost criterion and average per acre net income in the three primary markets for the

spring and fall marketing periods. Broccoli also showed low risk related to both yield and price related income variability. A degree of caution is necessary with this result because producers in several states have increased production in recent years and the market may adjust quickly to increased supplies since total per capita consumption of broccoli is low.

Cabbage showed good potential in the spring market. However, much overall and within season price variability was evident. This translates into high income variability and a high degree of risk. Fall produced cabbage exhibited low potential at both the 100 and 70 percent yield levels. As with spring cabbage, fall cabbage had a high degree of price related income variability.

Collards generally had low market potential based on the price-cost criterion and low income potential relative to other late spring and summer crops in all but the Atlanta market. Similar relationships were noted for the fall market. Collard production should be evaluated in conjunction with turnip green production to be able to gain and retain customers and supply more of the market.

Sweet corn appeared to have relatively low potential, with white sweet corn being slightly more favorable than yellow, especially in terms of per acre net income. Evaluation of break-even and market quotation prices for yellow sweet corn indicated that producers could, on average, expect to realize profits in 3 of 5 years at 100 percent yields and 1 of 5 years at 70 percent yields. While both types of sweet corn evidenced similar overall and within season price variability, yellow sweet corn had high risk associated with income related variability. Due to relatively high production costs, sweet corn producers must recognize the high degree of risk associated with low yields, crop failure, unacceptable quality, or the inability to find a buyer.

Cucumbers exhibited only moderate potential. Examination of price quotations below the 70 percent break-even price-cost yield level indicated that, on average, producers may realize positive net returns in 2 of 5 years in the Atlanta market and 4 of 5 years in the Cincinnati and St. Louis markets. Both overall and within season price variability and the resulting income variability were high in the Atlanta and Cincinnati markets.

Okra offered good income potential, but there are possible problems related to labor, handling procedures, a reduced possibility for crop rotations, and the regional nature of demand. The price-cost criterion reflected good potential in the Cincinnati and St. Louis markets, with less potential noted in the Atlanta market. Because of a low

pre-harvest production cost, okra exhibited reduced risk attached to yield and price related income variability.

Bell peppers had the lowest income potential of the full season crops (tomatoes, okra, and bell pepper), but income was good when compared with other crops evaluated. On average, producers could expect to realize positive net returns at the 70 percent yield level in 4 of 5 years in the Atlanta market, 3 of 5 years in the St. Louis market, and 1 of 5 years in the Cincinnati market. Because of a high production cost, bell peppers had generally greater risk associated with yield and price related income variability than other alternative summer crops. As with okra and tomatoes, bell pepper production reduces rotation options.

Potato (irish and sweet) production gives the producer somewhat more flexibility in marketing because the products can be stored for a limited period. Also, the producer can more effectively manage more acreage than with other vegetable crops and thus favorably affect gross income. Overall, irish potato production showed less market potential than all other summer crops except collards, sweet corn, and sweet potatoes based on the price-cost criterion. On average, irish potato producers could expect positive net returns in 4 of 5 years at the 100 percent yield level and 3 of 5 years at the 70 percent yield level.

Only collards and sweet corn in the summer crop grouping showed less market potential than sweet potatoes using the price-cost criterion. Per acre net income was also typically lower for sweet potatoes. A high degree of risk associated with both yield and price related income variability existed.

Squash (yellow and zucchini) offered good potential for both the late spring and fall markets, with zucchini squash being the most favorable. Both seasonal and overall price variability and income variability were high in the St. Louis market relative to other alternative crops, with risk being moderate in the remaining markets. Due to lower average net income, yellow squash had a slightly higher degree of risk associated with both price and yield related income variability than either snap beans or zucchini squash and less than other crops within the grouping.

Staked tomatoes are a high cost enterprise which offers good income potential. A slightly higher degree of market potential existed for fall tomatoes in all but the St. Louis market. Staked tomatoes showed moderate price and high yield related risks associated with per acre net income variability. Tomato production is management intensive with high input cost and is extremely risky.

Turnip greens showed good market potential with prices being consistently above the break-even price-cost at both yield levels in all but the St. Louis market. Turnip greens had low risks associated with both yield and price related income variability. Production decisions should involve consideration of the regional nature of demand and the compatibility of production and marketing with collards.

Watermelons exhibited moderate potential in the Atlanta market and good potential in Cincinnati and St. Louis markets in the spring season. Watermelons had a high degree of seasonal price variability in all markets, with a high degree of overall price variability in both the Atlanta and St. Louis markets. Fall produced watermelons showed low potential in all but the Chicago and New Orleans markets. Low generated net income and poor market potential were noted in the Cincinnati and St. Louis markets in the fall. Although not evaluated, Florida markets could offer good potential for late summer and fall.

If Alabama is to develop as a force in the fresh vegetable industry, producers must:

1. Recognize the importance of marketing activities associated with fresh vegetable production,
2. Produce and ship a high quality product properly packaged and handled,
3. Produce in sufficient quantity to attract wholesale attention,
4. Provide markets with a given crop for as long as possible,
5. Provide markets with a given crop from year-to-year to establish a reputation as a consistent (volume and quality) producer,
6. Recognize the importance of maintaining one's reputation as a viable member of the industry,
7. Maintain the highest yield levels of the highest quality possible,
8. Follow production and variety recommendations,
9. Explore market opportunities prior to the production of a given crop, and
10. Expect and be willing and able to assume the risk of negative net returns during some years and harvest periods.

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APPENDIX

ENTERPRISE BUDGETS[10]

APPENDIX TABLE 1. IRRIGATED SPRING SNAP BEANS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Snap beans	Bu.	200.00	8.48	1,696.00	
Total				1,696.00	
Variable Costs Preharvest					
Seed	Lb.	80.00	1.10	88.00	
Fertilizer (13-13-13)[1]	Cwt.	6.00	9.50	57.00	
Lime (Prorated)[1]	Ton	0.50	19.00	9.50	
Herbicide	Lb.	0.50	4.50	2.25	
Insecticide	Appl.	5.00	2.20	11.00	
Nematicide	Gal.	5.00	8.50	42.50	
Tractor and Equipment	Acre	1.00	28.88	28.88	
Irrigation	Acre	6.00	4.81	28.86	
Interest on Operating Capital	Dol.	53.60	.13	6.97	
Subtotal, Preharvest				274.96	
Harvest Costs					
Harvest Labor[2]	Bu.	200.00	2.25	450.00	
Baskets	Each	200.00	1.20	240.00	
Hauling (150 Miles)	Bu.	200.00	.20	39.00	
Subtotal, harvest				729.00	
Total Variable Cost				1,003.00	
Income Above Variable Costs				692.04	
Fixed Costs					
Tractor and Equipment	Acre	1.00	35.65	35.65	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	50.00	50.00	
Total Fixed Costs				110.41	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	4.07	4.25	17.30	
Irrigation Labor	Hour	.90	4.00	3.60	
Total Labor Costs				20.90	
Total Costs				1,135.00	
Net Returns to Land and Management				560.73	
Break-even Price, Cost of Production	Bu.			5.68	

Appendix Table 1 Continued on page 51

[10]The following enterprise budgets are for spring-summer plantings. Costs used for fall plantings differed by the amount of additional irrigation and chemical application expense. (*13*). The budgets were prepared by the senior author in cooperation with personnel from the Alabama Agricultural Experiment Station, Alabama Cooperative Extension Service, and Tennessee Valley Authority.

APPENDIX TABLE 1 (CONTINUED). IRRIGATED SPRING SNAP BEANS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times Over	Labor Hours	Machine Hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Apr.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	Apr.	1	.38	.26	2.39	3.22
Pest. Spray	May	3	1.06	.71	11.04	14.87
Row Cultivate	May	2	.81	.54	3.35	2.83
Pest. Spray	June	2	.71	.47	7.36	9.91
Totals			4.07	2.71	28.88	35.65

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Astro — Days to Harvest: 56
Planting Date: April 20 — Harvest Date: June 15 - June 30

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 2. IRRIGATED SPRING BROCCOLI IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Broccoli	28# Box	325.00	8.39	2,726.75	
Total				2,726.75	
Variable Costs Preharvest					
Plants	Thou.	10.00	8.00	80.00	
Planting Labor	Hour	8.00	4.00	32.00	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt.	2.40	10.00	24.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	6.00	8.85	53.10	
Tractor and Equipment	Acre	1.00	36.57	36.57	
Irrigation	Appl.	1.00	4.81	4.81	
Interest on Operation Capital	Dol.	59.35	.13	7.71	
Subtotal, Preharvest				304.44	
Harvest Costs					
Harvest Labor[2]	Box	325.00	.50	162.50	
Hauling (150 Miles)	Box	325.00	.24	78.00	
Ice and Cooling	Box	325.00	.60	195.00	
28# Boxes	Each	325.00	.92	299.00	
Subtotal, Harvest				734.50	
Total Variable Cost				1,038.94	
Income Above Variable Costs				1,687.81	
Fixed Costs					
Tractor and Machinery	Acre	1.00	42.90	42.90	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				102.66	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	5.63	4.25	23.91	
Irrigation Labor	Hour	.15	4.00	.60	
Total Labor Costs				24.51	
Total Costs				1,166.11	
Net Returns to Land and Management				1,560.64	
Break-even Price, Cost of Production	Box			3.59	

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Costs/acre	
					Variable	Fixed
Plowing	Feb.	1	0.26	0.17	1.09	1.15
Heavy Disking	Feb.	1	.25	.17	1.07	1.28
Herb. Appl.	Feb.	1	.35	.24	1.51	1.12
Transplanting	Mar.	1	1.43	.95	5.79	5.37
Pest. Spray	Mar.	3	1.06	.71	11.04	14.87
Row Cultivate	Mar.	2	.81	.54	3.35	2.83
Pest. Spray	Apr.	3	1.06	.71	11.04	14.87
Row Cultivate	Apr.	1	.40	.27	1.67	1.41
Totals			5.63	3.75	36.57	42.90

Appendix Table 2 Continued on page 53

APPENDIX TABLE 2 (CONTINUED). IRRIGATED SPRING BROCCOLI IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Transplanter	.50	2.59	.95
Variety: Green Duke		Days to Harvest: 53	
Planting Date: March 5		Harvest Date: April 27	

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.
[2]Based on hand harvest.

APPENDIX TABLE 3. IRRIGATED SPRING CABBAGE IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Cabbage	50# Carton	350.00	5.33	1,865.50	
Total				1,865.50	
Variable Costs Preharvest					
Plants	Thou.	10.00	11.00	110.00	
Planting Labor	Hour	8.00	4.00	32.00	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt.	2.40	10.00	24.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	7.00	8.85	61.95	
Tractor and Equipment	Acre	1.00	47.55	47.55	
Irrigation	Appl.	2.00	4.81	9.62	
Interest on Operation Capital	Dol.	70.27	.13	9.14	
Subtotal, Preharvest				360.51	
Harvest Costs					
Harvest Labor[2]	Ctn.	350.00	.48	168.00	
Hauling (150 Miles)	Ctn.	350.00	.30	105.00	
50-pound Carton	Each	350.00	1.10	385.00	
Subtotal, Harvest				658.00	
Total Variable Cost				1,018.51	
Income Above Variable Costs				846.99	
Fixed Costs					
Tractor and Machinery	Acre	1.00	57.69	57.69	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				117.45	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	6.68	4.25	28.40	
Irrigation Labor	Hour	.30	4.00	1.20	

Appendix Table 3 Continued on page 54

APPENDIX TABLE 3 (CONTINUED). IRRIGATED SPRING CABBAGE IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Total Labor Costs		29.60
Total Costs		1,165.56
Net Returns to Land and Management		699.94
Break-even Price, Cost of Production	50-Lb. box	3.33

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Costs/acre Variable	Costs/acre Fixed
Plowing	Feb.	1	0.26	0.17	1.09	1.15
Heavy Disking	Feb.	1	.25	.17	1.07	1.28
Herb. Appl.	Mar.	1	.35	.24	1.51	1.12
Transplanting	Mar.	1	1.43	.95	5.79	5.37
Pest. Spray	Mar.	2	.71	.47	7.36	9.91
Pest. Spray	Apr.	4	1.41	.94	14.67	19.75
Row Cultivate	Apr.	2	.81	.54	3.35	2.83
Pest. Spray	May	3	1.06	.71	11.04	14.87
Row Cultivate	May	1	.40	.27	1.67	1.41
Totals			6.68	4.45	47.55	57.69

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Transplanter	.50	2.59	.95

Variety: Stone Head — Days to Harvest: 71
Planting Date: March 15 — Harvest Date: May 25

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 4. IRRIGATED SPRING COLLARDS (BUNCHED GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Collards	Doz.	300.00	5.85	1,755.00	
Total				1,755.00	
Variable Costs Preharvest					
Seed	Lb.	2.50	5.00	12.50	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	16.00	5.60	89.60	
Fungicide	Appl.	11.00	5.70	62.70	
Rubber Bands	Box	3.00	2.75	8.25	
Seasonal Labor	Hour	8.00	4.00	32.00	
Tractor and Equipment	Acre	1.00	76.10	76.10	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	102.67	.13	13.35	
Subtotal, Preharvest				424.03	
Harvest Costs					
Harvest and Pack[2]	Doz.	300.00	.90	270.00	
Containers	Each	300.00	.92	276.00	
Hauling (150 Miles)	Doz.	300.00	.24	72.00	
Subtotal, Harvest				618.00	
Total Variable Cost				1,042.03	
Income Above Variable Costs				712.97	
Fixed Costs					
Tractor and Equipment	Acre	1.00	95.86	95.86	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				155.62	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	9.58	4.25	40.71	
Irrigation Labor	Hour	1.35	4.00	5.40	
Total Labor Costs				46.11	
Total Costs				1,243.76	
Net Returns to Land and Management				511.24	
Break-even Price, Cost of Production	Doz.			4.15	

Appendix Table 4 Continued on page 56

APPENDIX TABLE 4 (CONTINUED). IRRIGATED SPRING COLLARDS (BUNCHED GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Costs/acre	
					Variable	Fixed
Plowing	Jan.	1	0.26	0.17	1.09	1.15
Heavy Disking	Feb.	2	.50	.33	2.15	2.55
Herb. Appl.	Feb.	1	.35	.24	1.51	1.12
Planter	Feb.	1	.39	.26	2.42	3.27
Row Cultivate	Feb.	1	.40	.27	1.67	1.41
Row Cultivate	Mar.	1	.40	.27	1.67	1.41
Pest. Spray	Mar.	1	.35	.24	3.68	4.96
Row Cultivate	Apr.	1	.40	.27	1.67	1.41
Pest. Spray	Apr.	4	1.42	.94	14.72	19.82
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	May	4	1.42	.94	14.72	19.82
Row Cultivate	June	1	.40	.27	1.67	1.41
Pest. Spray	June	4	1.42	.94	14.72	19.82
Row Cultivate	July	1	.40	.27	1.67	1.41
Pest. Spray	July	3	1.06	.71	11.04	14.87
Totals			9.58	6.39	76.10	95.86

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy Disk	.90	4.65	.17
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
4-Row Planter	3.75	9.52	.26

Variety: Champion — Days to Harvest: 90
Planting Date: February 15 — Harvest Date: May 16-July 31

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 5. IRRIGATED SPRING COLLARDS (CUT GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Collards	1 1/9 Bu.	400.00	4.69	1,876.00	
Total				1,876.00	
Variable Costs Preharvest					
Seed	Lb.	2.50	5.00	12.50	
Fertilizer (8-24-24)	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	16.00	5.60	89.60	
Fungicide	Appl.	11.00	5.70	62.70	
Seasonal Labor	Hour	8.00	4.00	32.00	
Tractor and Equipment	Acre	1.00	74.39	74.39	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	100.18	.13	13.02	
Subtotal, Preharvest				413.75	
Harvest Costs					
Harvest and Pack	1 1/9 Bu.	400.00	.65	260.00	
Containers	Each	400.00	.92	368.00	
Hauling (435 Mi.)	1 1/9 Bu.	400.00	.70	278.40	
Subtotal, Harvest				906.40	
Total Variable Cost				1,320.15	
Income Above Variable Costs				555.85	
Fixed Costs					
Tractor and Equipment	Acre	1.00	93.69	93.69	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				153.45	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	9.17	4.25	38.97	
Irrigation Labor	Hour	1.35	4.00	5.40	
Total Labor Costs				44.37	
Total Costs				1,517.97	
Net Returns to Land and Management				358.03	
Break-even Price, Cost of Production	1 1/9 Bu.			3.79	

Appendix Table 5 Continued on page 58

APPENDIX TABLE 5 (CONTINUED). IRRIGATED SPRING COLLARDS (CUT GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Feb.	1	0.26	0.17	1.09	1.15
Heavy Disking	Feb.	2	.50	.33	2.15	2.55
Herb. Appl.	Feb.	1	.35	.24	1.51	1.12
Planting	Feb.	1	.38	.26	2.39	3.22
Row Cultivate	Mar.	1	.40	.27	1.67	1.41
Pest. Spray	Mar.	1	.35	.24	3.68	4.24
Row Cultivate	Apr.	1	.40	.27	1.67	1.41
Pest. Spray	Apr.	4	1.42	.94	14.72	19.82
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	May	4	1.42	.94	14.72	19.82
Row Cultivate	June	1	.40	.27	1.67	1.41
Pest. Spray	June	4	1.42	.94	14.72	19.82
Row Cultivate	July	1	.40	.27	1.67	1.41
Pest. Spray	July	3	1.06	.71	11.04	14.87
Totals			9.17	6.11	74.39	93.69

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Champion — Days to Harvest: 90
Planting Date: February 15 — Harvest Date: May 16-July 31

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 6. IRRIGATED SWEET CORN IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Sweet Corn (Yellow)	Crate	250.00	5.47	1,367.50	
Total				1,367.50	
Variable Costs Preharvest					
Seed	Lb.	12.00	2.85	34.20	
Fertilizer (13-13-13)[1]	Cwt.	5.00	9.50	47.50	
Ammonium Nitrate	Cwt.	3.00	10.00	30.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	1.00	15.00	15.00	
Insecticide	Appl.	15.00	5.25	78.75	
Tractor and Equipment	Acre	1.00	65.68	65.68	
Irrigation	Appl.	8.00	4.81	38.48	
Interest on Operation Capital	Dol.	63.82	.13	8.30	
Subtotal, Preharvest				327.41	
Harvest Costs					
Pick and Pack[2]	Crate	250.00	.85	212.50	
Containers	Each	250.00	.95	237.50	
Ice and Cool	Crate	250.00	.60	150.00	
Hauling (150 Miles)	Crate	250.00	.30	75.00	
Subtotal, Harvest				675.00	
Total Variable Cost				1,002.41	
Income Above Variable Costs				365.09	
Fixed Costs					
Tractor and Equipment	Acre	1.00	85.21	85.21	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	25.00	25.00	
Total Fixed Costs				134.97	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	7.61	4.25	32.34	
Irrigation Labor	Hour	1.20	4.00	4.80	
Total Labor Costs				37.14	
Total Costs				1,174.51	
Net Returns to Land and Management				192.99	
Break-even Price, Cost of Production	Crate			4.70	

Appendix Table 6 Continued on page 60

APPENDIX TABLE 6 (CONTINUED). IRRIGATED SWEET CORN IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Mar.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	Apr.	1	.38	.26	2.39	3.22
Row Cultivate	Apr.	1	.40	.27	1.67	1.41
Pest Spray	Apr.	1	.35	.24	3.68	4.96
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	May	6	2.12	1.42	22.08	29.73
Pest. Spray	June	8	2.83	1.89	29.44	39.64
Totals			7.61	5.07	65.68	85.21

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Bonanza — Days to Harvest: 85
Planting Date: April 15 — Harvest Date: July 9

[1]Fertilizer rates used (160-60-60) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 7. IRRIGATED SPRING CUCUMBERS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Cucumbers	1 1/9-Bu. Carton	225.00	8.42	1,894.50	
Total				1,894.50	
Variable Costs Preharvest					
Seed	Lb.	2.00	37.00	74.00	
Fertilizer (4-12-12)	Cwt.	7.00	7.60	53.20	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	1.00	10.67	10.67	
Fungicide	Appl.	7.00	4.00	28.00	
Insecticide	Appl.	7.00	2.20	15.40	
Nematicide	Gal.	5.00	8.50	42.50	
Hoeing Labor	Hour	5.00	4.00	20.00	
Tractor and Machinery	Acre	1.00	37.92	37.92	
Irrigation	Appl.	6.00	4.81	28.86	
Interest on Operation Capital	Dol.	68.01	.13	8.84	
Subtotal, Preharvest				348.89	
Harvest Costs					
Harvest Labor[2]	Carton	225.00	1.39	312.30	
Containers	Each	225.00	.92	207.00	
Grade and Pack	Carton	225.00	1.39	312.48	
Hauling (150 Miles)	Carton	225.00	.33	74.25	
Subtotal, Harvest				906.03	
Total Variable Cost				1,254.92	
Income Above Variable Costs				639.58	
Fixed Costs					
Tractor and Machinery	Acre	1.00	46.98	46.98	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	40.00	40.00	
Total Fixed Costs			93.00	111.74	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	5.18	4.25	22.02	
Irrigation Labor	Hour	.90	4.00	3.60	
Total Labor Costs				25.62	
Total Costs				1,392.27	
Net Returns to Land and Management				502.23	
Break-even Price, Cost of Production	1 1/9 Bu.			6.19	

Appendix Table 7 Continued on page 62

APPENDIX TABLE 7 (CONTINUED). IRRIGATED SPRING CUCUMBERS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Mar.	2	.50	.33	2.15	2.55
Herb. Appl.	Mar.	1	.35	.24	1.51	1.12
Planting	Apr.	1	.38	.26	2.39	3.22
Row Cultivate	Apr.	1	.40	.27	1.67	1.41
Row Cultivate	May	2	.81	.54	3.35	2.83
Pest. Spray	May	4	1.42	.94	14.72	19.82
Pest. Spray	June	3	1.06	.71	11.04	14.87
Totals			5.18	3.45	37.92	46.98

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	1797	.24

Variety: Sprint 440S — Days to Harvest: 60
Planting Date: April 15 — Harvest Date: June 14 - July 1

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime is custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 8. IRRIGATED OKRA (5/9 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Okra	5/9 Bu.	360.00	9.38	3,376.80	
Total				3,376.80	
Variable Costs Preharvest					
Seed	Lb.	10.00	2.80	28.00	
Fertilizer (4-12-12)[1]	Cwt.	7.00	7.60	53.20	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	5.00	2.10	10.50	
Nematicide	Gal.	5.00	8.50	42.50	
Tractor and Equipment	Acre	1.00	30.32	30.32	
Irrigation	Appl.	14.00	4.81	67.34	
Interest on Operation Capital	Dol.	52.72	.13	6.85	
Subtotal, Preharvest				270.47	
Harvest Costs					
Harvest Labor[2]	5/9 bu.	360.00	2.75	990.00	
Baskets (5/9 Bushel)	Each	360.00	1.00	360.00	
Hauling (435 Miles)	5/9 Bu.	360.00	.35	125.28	
Subtotal, Harvest				1,475.28	
Total Variable Cost				1,745.75	
Income Above Variable Costs				1,631.05	
Fixed Costs					
Tractor and Equipment	Acre	1.00	36.85	36.85	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				96.61	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	4.42	4.25	18.79	
Irrigation Labor	Hour	2.10	4.00	8.40	
Total Labor Costs				27.19	
Total Costs				1,869.55	
Net Returns to Land and Management				1,507.25	
Break-even Price, Cost of Production	Bu.			5.19	

Appendix Table 8 Continued on page 64

APPENDIX TABLE 8 (CONTINUED). IRRIGATED OKRA (5/9 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Apr.	1	0.26	0.17	1.09	1.15
Spike Harrow	Apr.	1	.17	.11	.64	.42
Heavy Disking	Apr.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	May	1	.38	.26	2.39	3.22
Row Cultivate	May	2	.81	.54	3.35	2.83
Dry Fert. Spread	May	1	.18	.12	.81	.78
Pest. Spray	May	1	.35	.24	3.68	4.96
Pest. Spray	June	1	.35	.24	3.68	4.96
Pest. Spray	July	1	.35	.24	3.68	4.96
Pest. Spray	Aug.	1	.35	.24	3.68	4.96
Pest. Spray	Sept.	1	.35	.24	3.68	4.96
Totals			4.42	2.95	30.32	36.85

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Spike Harrow	.15	.72	.11
Dry Fertilizer Spreader	.98	3.30	.12

Variety: Clemson Spineless — Days to Harvest: 55
Planting Date: May 7 — Harvest Date: July 1 - September 30

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 9. IRRIGATED BELL PEPPERS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Bell Peppers	1 1/9 Bu.	360.00	7.91	2,847.60	
Total				2,847.60	
Variable Costs Preharvest					
Plants	Thou.	6.00	15.00	90.00	
Planting Labor	Hour	8.00	4.00	32.00	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammoniun Nitrate	Cwt.	1.60	10.00	16.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Acre	1.00	30.00	30.00	
Insecticide	Lb.	187.50	.90	168.75	
Fungicide	Appl.	15.00	4.00	60.00	
Tractor and Equipment	Acre	1.00	71.69	71.69	
Irrigation	Appl.	15.00	4.81	72.15	
Interest on Operation Captial	Dol.	151.15	.13	19.65	
Subtotal, Preharvest				624.24	
Harvest Costs					
Harvest Labor[2]	Carton	360.00	1.48	533.23	
Containers	Each	360.00	.92	331.20	
Hauling (150 Miles)	Carton	360.00	.24	86.40	
Grading	Carton	360.00	.56	201.60	
Subtotal, Harvest				1,152.43	
Total Variable Cost				1,776.67	
Income Above Variable Costs				1,070.93	
Fixed Costs					
Tractor and Equipment	Acre	1.00	87.21	87.21	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	60.00	60.00	
Total Fixed Costs				171.97	
Labor costs					
Preharvest Labor (Tractor and Machinery)	Hour	8.76	4.25	37.23	
Irrigation Labor	Hour	2.25	4.00	9.00	
Total Labor Costs				46.23	
Total Costs				1,994.87	
Net Returns to Land and Management				852.73	
Break-even Price, Cost of Production	Bu.			5.54	

Appendix Table 9 Continued on page 66

APPENDIX TABLE 9 (CONTINUED). IRRIGATED BELL PEPPERS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Apr.	1	0.26	0.17	1.09	1.15
Heavy Disking	Apr.		.25	.17	1.07	1.28
Herb. Appl.	Apr.	1	.35	.24	3.67	1.12
Transplanting	May	1	1.43	.95	5.79	5.37
Pest. Spray	May	1	.35	.24	3.68	4.96
Row Cultivate	May	1	.40	.27	1.67	1.41
Herbicide Appl.	June	1	.35	.24	1.51	1.13
Pest. Spray	June	4	1.42	.94	14.72	19.82
Row Cultivate	June	1	.40	.27	1.67	1.41
Pest. Spray	July	4	1.42	.94	14.72	19.82
Pest. Spray	Aug.	4	1.42	.94	14.72	19.82
Pest. Spray	Sep.	2	.71	.47	7.36	9.91
Totals			8.76	5.84	71.69	87.21

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Transplanter	.50	2.59	.95

Variety: Keystone Resistant Giant #4 Days to Harvest: 75
Planting Date: May 1 Harvest Date: July 14 - September 30

[1]Fertilizer rates used (100-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 10. IRRIGATED IRISH POTATOES (100-POUND BAG) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Potatoes	100-Lb. Bag	170.00	10.31	1,752.70	
Total				1,752.70	
Variable Costs Preharvest					
Seed Potatoes	Cwt.	7.00	10.50	73.50	
Fertilizer (13-13-13)[1]	Cwt.	8.00	9.50	76.00	
Fertilizr (4-12-12)[1]	Cwt.	4.00	7.60	30.40	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Acre	1.00	30.00	30.00	
Insecticide	Acre	1.00	38.00	38.00	
Nematicide	Gal.	5.00	8.50	42.50	
Fungicide	Lb.	10.00	2.75	27.50	
Cultural Labor	Hr.	49.30	4.00	197.20	
Tractor and Machinery	Acre	1.00	32.60	32.60	
Irrigation	Appl.	6.00	4.81	28.86	
Interest on Operation Capital	Dol.	243.18	.13	31.61	
Subtotal, Preharvest				617.67	
Harvest Costs					
Harvest Labor	Bag	170.00	.29	48.55	
Containers	Each	170.00	1.10	187.00	
Hauling (425 Miles)	Bag	170.00	1.70	289.00	
Grade and Pack	Bag	170.00	.49	84.05	
Tractor and Machinery	Acre	1.00	11.85	11.85	
Subtotal, Harvest				620.45	
Total Variable Cost				1,238.12	
Income Above Variable Costs				514.58	
Fixed Costs					
Tractor and Machinery	Acre	1.00	43.96	43.96	
Irrigation	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				103.72	
Labor Costs (Tractor and Machinery)					
Preharvest Labor	Hour	4.95	4.25	21.04	
Harvest Labor	Hour	1.38	4.25	5.84	
Irrigation Labor	Hour	.90	4.00	3.60	
Total Labor Costs				30.49	
Total Costs				1,372.33	
Net Returns to Land and Management				380.37	
Break-even Price, Cost of Production	Cwt.			8.07	

Appendix Table 10 Continued on page 68

APPENDIX TABLE 10 (CONTINUED). IRRIGATED IRISH POTATOES (100-POUND BAG) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Jan.	1	0.26	0.17	1.09	1.15
Heavy Disking	Jan.	2	.50	.33	2.15	2.55
Herb. Appl.	Jan.	1	.35	.24	1.51	1.12
Planter	Mar.	1	.34	.23	1.90	2.48
Bedder	Mar.	1	.41	.27	2.05	1.46
Row Cultivate	Apr.	2	.81	.54	3.35	2.83
Pest. Sprayer	Apr.	2	.71	.47	7.36	9.91
Pest Sprayer	May	3	1.06	.71	11.04	14.87
Potato Combine	June	1	1.38	.92	11.85	5.98
Rake	June	1	.52	.34	2.15	1.61
Totals			6.33	4.22	44.45	43.96

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Potato combine	7.36	3.48	0.92
Chisel Plow	.70	3.61	.17
Heavy disk	.90	4.65	.17
Potato Bedder	1.99	2.35	.27
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Potato Planter	2.74	7.78	.23
Potato Digger	6.65	11.16	.66
Rake	.69	1.63	.34

Variety: Red LaSoda — Days to Harvest: 100
Planting Date: March 15 — Harvest Date: June 23

[1]Fertilizer rates used (120-150-150) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

APPENDIX TABLE 11. IRRIGATED IRISH POTATOES (50-LB. BAG) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Potatoes	50-Lb. bag	340.00	6.06	2,060.40	
Total				2,060.40	
Variable Costs Preharvest					
Seed Potatoes	Cwt.	7.00	10.50	73.50	
Fertilizer (13-13-13)[1]	Cwt.	8.00	9.50	76.00	
Fertilizer (4-12-12)[1]	Cwt.	4.00	7.60	30.40	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Acre	1.00	30.00	30.00	
Insecticide	Acre	1.00	38.00	38.00	
Nematicide	Gal.	5.00	8.50	42.50	
Fungicide	Lb.	10.00	2.75	27.50	
Cultural Labor	Hr.	49.30	4.00	197.20	
Tractor and Machinery	Acre	1.00	32.60	32.60	
Irrigation	Appl.	6.00	4.81	28.86	
Interest on Operation Capital	Dol.	243.18	.13	31.61	
Subtotal, Preharvest				617.67	
Harvest Costs					
Harvest Labor	Bag	340.00	.14	48.55	
Containers	Each	340.00	.90	306.00	
Hauling (150 Miles)	Bag	340.00	.30	102.00	
Grade and Pack	Bag	340.00	.25	84.05	
Tractor and Machinery	Acre	1.00	11.85	11.85	
Subtotal, Harvest				552.45	
Total Variable Cost				1,170.12	
Income Above Variable Costs				890.28	
Fixed Costs					
Tractor and Machinery	Acre	1.00	43.96	43.96	
Irrigation	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				103.72	
Labor Costs (Tractor and Machinery)					
Preharvest Labor	Hour	4.95	4.25	21.04	
Harvest Labor	Hour	1.38	4.25	5.84	
Irrigation Labor	Hour	.90	4.00	3.60	
Total Labor Costs				30.49	
Total Costs				1,304.33	
Net Returns to Land and Management				756.07	
Break-even Price, Cost of Production	50-Lb. bag			3.84	

Appendix Table 11 Continued on page 70

APPENDIX TABLE 11 (CONTINUED). IRRIGATED IRISH POTATOES (50-LB. BAG) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Jan.	1	0.26	0.17	1.09	1.15
Heavy Disking	Jan.	2	.50	.33	2.15	2.55
Herb. Appl.	Jan.	1	.35	.24	1.51	1.12
Planter	Mar.	1	.34	.23	1.90	2.48
Bedder	Mar.	1	.41	.27	2.05	1.46
Row Cultivate	Apr.	2	.81	.54	3.35	2.83
Pest. Spray	Apr.	2	.71	.47	7.36	9.91
Pest. Spray	May	3	1.06	.71	11.04	14.87
Potato Combine	June	1	1.38	.92	11.85	5.98
Rake	June	1	.52	.34	2.15	1.61
Totals			6.33	4.22	44.45	43.96

Machine	TVC/hour	TFC/hour	Hours/acre
Tractor (75 hp)	5.57	3.04	
Potato combine	7.36	3.48	0.92
Chisel Plow	.70	3.61	.17
Heavy disk	.90	4.65	.17
Potato Bedder	1.99	2.35	.27
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Potato Planter	2.74	7.78	.23
Potato Digger	6.65	11.16	.66
Rake	.69	1.63	.34

Variety: Red LaSoda — Days to Harvest: 100
Planting Date: March 15 — Harvest Date: June 23

[1]Fertilizer rates used (120-150-150) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

APPENDIX TABLE 12. IRRIGATED SPRING YELLOW SQUASH (1 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Squash	Bu.	200.00	6.86	1,372.00	
Total				1,372.00	
Variable Costs Preharvest					
Seed	Lb.	3.00	11.00	33.00	
Fertilizer (4-12-12)[1]	Cwt.	7.00	7.60	53.20	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Fungicide	Appl.	7.00	5.50	38.50	
Insecticide	Appl.	7.00	2.70	18.90	
Nematicide	Gal.	5.00	8.50	42.50	
Herbicide	Lb.	1.00	10.67	10.67	
Tractor and Machinery	Acre	1.00	36.24	36.24	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	61.16	.13	7.95	
Subtotal, Preharvest				313.75	
Harvest Costs					
Harvest Labor[2]	Bu.	200.00	1.50	300.00	
Baskets (Bushel)	Each	200.00	1.20	240.00	
Hauling (150 Miles)	Bu.	200.00	.24	48.60	
Subtotal, Harvest				588.60	
Total Variable Cost				902.35	
Income Above Variable Costs				469.65	
Fixed Costs					
Tractor and Machinery	Acre	1.00	45.56	45.56	
Irrigation	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				105.32	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	4.78	4.25	20.30	
Irrigation Labor	Hour	1.35	4.00	5.40	
Total Labor Costs				25.70	
Total Costs				1,033.38	
Net Return to Land and Management				338.62	
Break-even Price, Cost of Production	Bu.			5.17	

Appendix Table 12 Continued on page 72

APPENDIX TABLE 12 (CONTINUED). IRRIGATED SPRING YELLOW SQUASH (1 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	June	1	0.26	0.17	1.09	1.15
Heavy Disking	June	2	.50	.33	2.15	2.55
Herb. Appl.	June	1	.35	.24	1.51	1.12
Planting	June	1	.38	.26	2.39	3.22
Pest. Spray	July	4	1.42	.94	14.72	19.82
Row Cultivate	July	2	.81	.54	3.35	2.83
Pest. Spray	Aug.	3	1.06	.71	11.04	14.87
Totals			4.78	3.19	36.24	45.56

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Early Prolific Straightneck — Days to Harvest: 50
Planting Date: May 1 — Harvest Date: June 20

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 13. IRRIGATED SPRING YELLOW SQUASH (5/9 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Squash	5/9 Bu.	360.00	5.38	1,936.80	
Total				1,936.80	
Variable Costs Preharvest					
Seed	Lb.	3.00	11.00	33.00	
Fertilizer (4-12-12)[1]	Cwt.	7.00	7.60	53.20	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Fungicide	Appl.	7.00	5.50	38.50	
Insecticide	Appl.	7.00	2.70	18.90	
Nematicide	Gal.	5.00	8.50	42.50	
Herbicide	Lb.	1.00	10.67	10.67	
Tractor and Machinery	Acre	1.00	36.24	36.24	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	61.16	.13	7.95	
Subtotal, Preharvest				313.75	
Harvest Costs					
Harvest Labor[2]	5/9 Bu.	360.00	.83	298.80	
Baskets	Each	360.00	.90	324.00	
Hauling (435 Miles)	5/9 Bu.	360.00	.35	125.28	
Subtotal, Harvest				748.08	
Total Variable Cost				1,061.83	
Income Above Variable Costs				874.97	
Fixed Costs					
Tractor and Machinery	Acre	1.00	45.56	45.56	
Irrigation	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				105.32	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	4.78	4.25	20.30	
Irrigation Labor	Hour	1.35	4.00	5.40	
Total Labor Costs				25.70	
Total Costs				1,192.86	
Net Returns to Land and Management				743.94	
Break-even Price, Cost of Production	5/9 Bu.			3.31	

Appendix Table 13 Continued on page 74

APPENDIX TABLE 13 (CONTINUED). IRRIGATED SPRING YELLOW SQUASH (5/9 BU.) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Apr.	1	0.26	0.17	1.09	1.15
Heavy Disking	Apr.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	May	1	.38	.26	2.39	3.22
Pest. Spray	May	1	.35	.24	3.68	4.96
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	June	4	1.42	.94	14.72	19.82
Row Cultivate	June	1	.40	.27	1.67	1.41
Pest Spray	July	2	.71	.47	7.36	9.91
Totals			4.78	3.19	36.24	45.56

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Early Prolific Straightneck — Days to Harvest: 50
Planting Date: May 1 — Harvest Date: June 20-July 20

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 14. IRRIGATED SPRING ZUCCHINI SQUASH IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Squash	5/9 Bu.	360.00	5.12	1,843.20	
Total				1,843.20	
Variable Costs Preharvest					
Seed	Lb.	3.00	11.00	33.00	
Fertilizer (4-12-12)[1]	Cwt.	7.00	7.60	53.20	
Ammonium Nitrate	Cwt.	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Fungicide	Appl.	6.00	5.50	33.00	
Insecticide	Appl.	6.00	2.70	16.20	
Nematicide	Gal.	5.00	8.50	42.50	
Herbicide	Lb.	1.00	10.67	10.67	
Tractor and Machinery	Acre	1.00	32.56	32.56	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	58.78	.13	7.64	
Subtotal, Preharvest				301.56	
Harvest Costs					
Harvest Labor[2]	5/9 Bu.	360.00	.83	298.80	
Baskets	Each	360.00	.90	324.00	
Hauling (150 Miles)	5/9 Bu.	360.00	.12	43.20	
Subtotal, Harvest				666.00	
Total Variable Cost				967.56	
Income Above Variable Costs				875.64	
Fixed Costs					
Tractor and Machinery	Acre	1.00	40.61	40.61	
Irrigation	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				100.37	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	4.42	4.25	18.80	
Irrigation Labor	Hour	1.35	4.00	5.40	
Total Labor Costs				24.20	
Total Costs				1,092.13	
Net Returns to Land and Management				751.07	
Break-even Price, Cost of Production	5/9 Bu.			3.03	

Appendix Table 14 Continued on page 76

APPENDIX TABLE 14 (CONTINUED). IRRIGATED SPRING ZUCCHINI SQUASH IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Apr.	1	0.26	0.17	1.09	1.15
Heavy Disking	Apr.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	May	1	.38	.26	2.39	3.22
Pest. Spray	May	1	.35	.24	3.68	4.96
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	June	4	1.42	.94	14.72	19.82
Row Cultivate	July	1	.40	.27	1.67	1.41
Pest. Spray	July	1	.35	.24	3.68	4.96
Totals			4.42	2.95	32.56	40.61

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Seneca Zucchini — Days to Harvest: 40
Planting Date: May 1 — Harvest Date: June 10-July 10

[1]Fertilizer rates used (80-80-80) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 15. IRRIGATED SWEET POTATOES IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Sweet Potatoes, U.S. #1	Bu.	250.00	7.66	1,915.00	
Total				1,915.00	
Variable Costs Preharvest					
Plants	Thou.	13.00	20.00	260.00	
Planting Labor	Acre	1.00	40.00	40.00	
Fertilizer (5-10-15)	Cwt.	10.00	7.60	76.00	
Ammonium Nitrate	Cwt.	1.00	10.00	10.00	
Lime (Prorated)	Ton	.50	19.00	9.50	
Herbicide	Lb.	1.50	2.50	3.75	
Nematicide	Gal.	5.00	8.50	42.50	
Tractor and Machinery	Acre	1.00	15.30	15.30	
Irrigation	Appl.	9.00	4.81	43.29	
Interest on Operation Capital	Dol.	142.83	.13	18.57	
Subtotal, Preharvest				518.91	
Harvest Costs					
Harvest Labor	Bu.	250.00	1.25	312.50	
Boxes	Each	250.00	1.30	325.00	
Storage	Bu.	250.00	.75	187.50	
Hauling (150 Miles)	Bu.	250.00	.30	75.00	
Tractor and Machinery	Acre	1.00	8.08	8.08	
Subtotal, Harvest				908.08	
Total Variable Cost				1,426.99	
Income Above Variable Costs					
Fixed Costs					
Tractor and Equipment	Acre	1.00	23.57	23.57	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	65.00	65.00	
Total Fixed Costs				113.33	
Labor Costs (Tractor, Machinery, and Irrigation)					
Preharvest Labor	Hour	3.69	4.25	15.69	
Irrigation Labor	Hour	1.35	4.00	5.40	
Harvest Labor Costs	Hour	.99	4.25	4.22	
Total Labor Costs				25.31	
Total Costs				1,565.63	
Net Returns to Land and Management				349.37	
Break-even Price, Cost of Production	Bu.			6.26	

Appendix Table 14 Continued on page 78

APPENDIX TABLE 15 (CONTINUED). IRRIGATED SWEET POTATOES IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Apr.	2	.50	.33	2.15	2.55
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Transplanting	Apr.	1	1.43	.95	5.79	5.37
Row Cultivate	May	2	.81	.54	3.35	2.83
Rotary Mower	Aug.	1	.34	.23	1.42	1.15
Potato Digger	Aug.	1	.99	.66	8.08	9.39
Totals			4.68	3.12	23.38	23.57

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
Transplanter	.50	2.59	.95
Rotary Mower	.62	1.97	.23
Potato Digger	6.65	11.16	.66

Variety: Jewel — Days to Harvest: 150
Planting Date: May 1 — Harvest Date: August 8-August 28

[1]Fertilizer rates used (80-100-150) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 16. IRRIGATED SPRING TOMATOES (STAKED) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Tomatoes	Box[1]	700.00	7.18	5,026.00	
Total				5,026.00	
Variable Costs Preharvest					
Plants	Thou.	5.80	36.00	208.80	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt.	2.40	10.00	24.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Insecticide	Acre	1.00	142.00	142.00	
Nematicide	Gal.	12.00	8.50	102.00	
Fungicide	Acre	1.00	113.00	113.00	
Herbicide	Acre	1.00	30.00	30.00	
Stakes (Prorate 3 Years)	Each	834.00	.14	116.76	
Twine (Ball)	Each	24.00	4.00	96.00	
Hired Labor	Hour	35.00	4.00	140.00	
Labor (For Staking)	Hour	100.00	4.00	400.00	
Tractor and Machinery	Acre	1.00	78.09	78.09	
Irrigation	Appl.	12.00	4.81	57.72	
Interest on Operation Capital	Dol.	393.09	.13	51.10	
Subtotal, Preharvest				1,623.48	
Harvest Costs					
Harvest Labor[2]	Box	700.00	.60	420.00	
Buckets (Prorate)	Each	50.00	.50	25.00	
Containers	Box	700.00	1.10	770.00	
Grading	Box	700.00	.60	420.00	
Hauling (627 Miles)	Box	700.00	.75	526.68	
Subtotal, Harvest				2,161.68	
Total Variable Cost				3,785.16	
Income Above Variable Costs				1,240.84	
Fixed Costs					
Tractors and Machinery	Acre	1.00	98.66	98.66	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	110.00	110.00	
Total Fixed Costs				233.42	
Labor Costs (Tractor and Machinery)					
Preharvest Labor	Hour	9.76	4.25	41.48	
Irrigation labor	Hour	1.80	4.00	7.20	
Total Labor Costs				48.68	
Total Costs				4,067.25	
Net Returns to Land and Management				958.75	
Break-even Price, Cost of Production	25-Lb. box			5.81	

[1]25-Pound Box

Appendix Table 16 Continued on page 80

APPENDIX TABLE 16 (CONTINUED). IRRIGATED SPRING TOMATOES (STAKED) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Mar.	2	.50	.33	2.15	2.55
Herb. Appl.	Mar.	1	.35	.24	1.51	1.12
Transplanting	Apr.	1	1.43	.95	5.76	5.35
Row Cultivate	Apr.	2	.81	.54	3.35	2.83
Pest. Spray	Apr.	2	.71	.47	7.36	9.91
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	May	4	1.42	.94	14.72	19.82
Pest. Spray	June	4	1.42	.94	14.72	19.82
Pest. Spry	July	4	1.42	.94	14.72	19.82
Pest. Spray	Aug.	3	1.06	.71	11.04	14.87
Totals			9.76	6.51	78.09	98.66

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
Transplanter	.50	2.59	.95
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.27
PTO Air Blast Sprayer (500)	10.04	17.97	.24

Variety: Flora - Dade
Days to Harvest: 82
Planting Date: April 7
Harvest Date: June 28-August 30

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 17. IRRIGATED SPRING TURNIPS (CUT GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Turnips	1 1/9 Bu.	400.00	4.56	1,824.00	
Total				1,824.00	
Variable Costs Preharvest					
Seed	Lb.	2.00	2.25	4.50	
Fertilizer (8-24-24)[1]	Cwt.	5.00	10.90	54.50	
Ammonium Nitrate	Cwt	2.00	10.00	20.00	
Lime (Prorated)[1]	Ton	.50	19.00	9.50	
Herbicide	Lb.	.50	4.50	2.25	
Insecticide	Appl.	4.00	5.60	22.40	
Fungicide	Appl.	3.00	5.70	17.10	
Seasonal Labor	Hour	8.00	4.00	32.00	
Tractor and Equipment	Acre	1.00	25.18	25.18	
Irrigation	Appl.	2.00	4.81	9.62	
Interest on Operation Capital	Dol.	49.26	.13	6.40	
Subtotal, Preharvest					
Harvest Costs					
Harvest and Pack	1 1/9 Bu.[2]	400.00	.65	260.00	
Containers	Each	400.00	.92	368.00	
Hauling (150 Miles)	1 1/9 Bu.	400.00	.24	96.00	
Subtotal, Harvest				724.00	
Total Variable Cost				927.45	
Income Above Variable Costs				896.55	
Fixed Costs					
Tractor and Equipment	Acre	1.00	30.68	30.68	
Irrigation Equipment	Acre	.50	49.52	24.76	
General Overhead	Acre	1.00	35.00	35.00	
Total Fixed Costs				90.44	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	3.71	4.25	15.77	
Irrigation Labor	Hour	.30	4.00	1.20	
Total Labor Costs				16.97	
Total Costs				1,034.86	
Net Returns to Land and Management				789.14	
Break-even Price, Cost of Production	1 1/9 Bu.			2.59	

Appendix Table 17 Continued on page 82

APPENDIX TABLE 17 (CONTINUED). IRRIGATED SPRING TURNIPS (CUT GREENS) IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.07	1.13
Heavy Disking	Mar.	2	.50	.33	2.15	2.55
Herb Appl.	Mar.	1	.35	.24	1.51	1.12
Planting	Mar.	1	.38	.26	2.39	3.22
Row Cultivate	Apr.	2	.81	.54	3.35	2.83
Pest. Spray	Apr.	4	1.42	.94	14.72	19.82
Totals			3.71	2.47	25.18	30.68

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Variety: Shogoin		Days to Harvest: 30 and 45	
Planting Date: March 20		Harvest Date: April 19-May 7	

[1]Fertilizer rates used (120-120-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.

APPENDIX TABLE 18. IRRIGATED SPRING WATERMELONS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

Item	Unit	Quantity	Price or cost/unit	Value or cost	Your entry
			Dol.	*Dol.*	
Gross Receipts					
Watermelons	Cwt.	250.00	4.29	1,072.50	
Total				1,072.50	
Variable Costs Preharvest					
Seed	Lb.	2.00	10.50	21.00	
Fertilizer (5-10-15)[1]	Cwt	8.00	7.60	60.80	
Ammonium Nitrate	Cwt.	1.50	10.00	15.00	
Lime (Prorated)[1]	Ton	.33	19.00	6.27	
Fungicide	Appl.	4.00	8.00	32.00	
Insecticide	Pint	1.00	2.75	2.75	
Nematicide	Gal.	5.00	8.50	42.50	
Herbicide	Lb.	1.00	10.67	10.67	
Cultural Labor	Hour	40.00	4.00	160.00	
Tractor and Machinery	Acre	1.00	23.09	23.09	
Irrigation	Appl.	7.00	4.81	33.67	
Interest on Operation Capital	Dol.	101.94	.13	13.25	
Subtotal, Preharvest				421.00	
Harvest Costs					
Harvest[2]	Cwt.	250.00	.54	135.00	
Haul (150 Miles)	Cwt.	250.00	.60	150.00	
Subtotal Harvest				285.00	
Total Variable Costs				706.00	
Income Above Variable Costs				366.50	
Fixed Costs					
Tractor and Machinery	Acre	1.00	28.42	28.42	
Irrigation Equipment	Acre	1.00	24.76	24.76	
General Overhead	Acre	1.00	30.00	30.00	
Total Fixed Costs				83.18	
Labor Costs					
Preharvest Labor (Tractor and Machinery)	Hour	3.23	4.25	13.73	
Irrigation Labor	Hour	1.05	4.00	4.20	
Total Labor Costs				17.93	
Total Costs				807.11	
Net Returns to Land and Management				265.39	
Break-even Price, Cost of Production	Cwt.			3.23	

Appendix Table 18 Continued on back cover

APPENDIX TABLE 18 (CONTINUED). IRRIGATED SPRING WATERMELONS IN THE SAND MOUNTAIN AREA OF ALABAMA FOR REGIONAL AND NATIONAL FRESH MARKETS, SPRING 1985 ESTIMATED COSTS AND RETURNS PER ACRE FOLLOWING RECOMMENDED MANAGEMENT PRACTICES

MACHINERY OPERATIONS AND LABOR REQUIREMENTS

Operation	Month	Times over	Labor hours	Machine hours	Cost/acre	
					Variable	Fixed
Plowing	Mar.	1	0.26	0.17	1.09	1.15
Heavy Disking	Mar.	1	.25	.17	1.07	1.28
Herb. Appl.	Apr.	1	.35	.24	1.51	1.12
Planting	Apr.	1	.38	.26	2.39	3.22
Springtooth	Apr.	1	.17	.11	.63	.41
Row Cultivate	May	1	.40	.27	1.67	1.41
Pest. Spray	May	2	.71	.47	7.36	9.91
Pest. Spray	June	2	.71	.47	7.36	9.91
Totals			3.23	2.15	23.09	28.42

Machine	TVC/hour	TFC/hour	Hour/acre
Tractor (75 hp)	5.57	3.04	
Chisel Plow	.70	3.61	0.17
Heavy disk	.90	4.65	.17
4-Row Planter	3.75	9.52	.26
4-Row Cultivator	.67	2.23	.27
Herbicide Appl.	.85	1.74	.24
PTO Air Blast Sprayer (500)	10.04	17.97	.24
Springtooth	.13	.64	.11

Variety: Charleston Gray — Days to Harvest: 80
Planting Date: April 15 — Harvest Date: July 4

[1]Fertilizer rates used (90-80-120) based on medium level of soil fertility. Soil testing is recommended on individual farms for fertilizer requirements. Fertilizer and lime are custom applied.

[2]Based on hand harvest.