Economic Factors Affecting the Feasibility of Locating a Vegetable Processing Plant in the Vicinity of Americus, Georgia

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INDUSTRIAL DEVELOPMENT DIVISION

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Engineering Experiment Station
GEORGIA INSTITUTE OF TECHNOLOGY
Atlanta, Georgia

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Table of Contents

* * *

Figures

Acknowledgments

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Especial thanks are due the county agents in each of the counties in the study area who selected and contacted the farmers who participated in the survey; Mr. John W. Flatt, District Manager, Layne-Atlantic Company, Albany, who provided the information on groundwater availability and the types of well construction needed throughout the study area; Mr. Jerry Pilkinton, Soil Scientist, Soil Conservation Service office, Albany, who furnished the detailed information on soil characteristics and classifications; Mr. James M. Barber, Area Extension Horticulturist, Tifton, who supplied data on the types of vegetables which can be grown and the potential and anticipated yields for the study area; and Mr. Horace S. Carter, State Climatologist, who furnished all of the climatological information.

Summary

The 10-county area around Americus, Georgia, offers many advantages for the location of a vegetable processing plant. Frozen vegetable production in the South has been less than one-half the consumption in the region. Within the 10-county area, the soil, water, and climatic conditions are very favorable to farming, and nearly 29,000 acres of land suitable for vegetable production are available for contract farming. Other favorable plant location factors include available industrial sites, low construction costs, a plentiful supply of labor, and a convenient network of transportation facilities.

The economy of the 10-county area is oriented toward agriculture. Agricultural employment accounted for 18.3% of the area's civilian work force in 1969, while the land in farms was approximately 67% of the total land area in 1964. There are approximately 1.2 million acres of land suitable for vegetable production in the 10-county area according to the characteristics of the soils. This is about 56% of the total land within the area.

Supplies of both surface water and groundwater are generally abundant for farm land irrigation and industrial expansion. The estimated capacity of wells within the area varies between 100 and 1,500 gallons per minute.

Mean annual rainfall is about 49 inches. The rainfall pattern is distributed throughout the year, with a somewhat higher concentration occurring during the months of March, June, and July. The average length of growing season ranges from 239 to 266 days across the region.

The farmers within the area produced 15,619 acres of vegetables for sale in 1964, a 12.4% increase over 1959. A survey of selected farmers indicated that 28,923 acres of land suitable for vegetable production were available for contract farming. The average number of acres available for vegetable production per farm was about 536. The majority of the 28,923 acres, 19,414 acres, are located within 20 miles of Americus. Of the total land available for contract farming, the farmers indicated they would lease 17,173 acres to a manufacturer who desired to do a portion of the farming himself. The average rental price per acre was $46. With one exception all farmers surveyed are interested in contract vegetable farming.

Vegetables which are grown in the 10-county area are the following: southern peas, turnip greens, mustard greens, collards, turnip roots, soup beans, butterbeans, squash, okra, pimentos, sweet potatoes, kale, broccoli, and asparagus.

Two plant sites are recommended for the vegetable processing plant. One is located in the Americus and Sumter County Industrial Park two miles north of Americus and will soon have complete utilities. The other site is a 100-acre tract of undeveloped land located about 13 miles east of Americus. Construction costs in the vicinity of Americus averaged $7.77 per square foot for a food processing facility in 1968.

Within the labor market area for the proposed plant sites there were 3,668 persons available for manufacturing employment at wages which would compete with present wage rates. Vegetable processing plant average wage rates for Georgia in 1969 ranged from $1.80 to $2.62 per hour.

The highways within the 10-county area provide an adequate transportation system of farm-to-plant roads, and the Interstate Highway System which passes through the area provides access to the major food consumption centers of the nation. Railroad transportation also is available within the area.

A vegetable processing plant in the 10-county area would be in a favorable location with respect to the South's major food consumption areas. The estimated consumption of frozen vegetables, excluding potatoes, in the South was about 450 million pounds. This represented 25% of the nation's consumption of frozen vegetables in 1969.

A total of 154 plants in the South were known to can or freeze vegetables in 1964. Eighteen of these plants used freezing to process vegetables. They froze 188 million pounds of vegetables in 1964, which, when compared with the estimated consumption of 370 million pounds for 1964, would seem to indicate a need to expand the processing of frozen vegetables in the South.

Seventeen vegetable processing plants are now located in Georgia, three of which are freezing plants. Only one processing plant, a freezing facility, was located within the 10-county area under study.

INTRODUCTION

The purpose of this report is to examine some of the economic considerations which affect the feasibility of locating a vegetable processing plant in the vicinity of Americus, Georgia. The 10-county area which surrounds Americus -- Crisp, Dooly, Lee, Macon, Marion, Schley, Sumter, Taylor, Terrell, and Webster counties -- was chosen as the study area.

There are many considerations which enter into the establishment of a vegetable processing plant. This study began with an examination of the agricultural resources of the 10-county area measured in terms of human resources, farmland and farm structure, soils, climate, and the availability of water.

The area's past production of vegetables was reviewed, and a survey of selected farmers was conducted to determine the cost and availability of resources for vegetable production. The types of vegetables which are or can be grown and the expected yields for the 10-county area were determined.

With the resources and capabilities of the area for vegetable production established, two possible plant sites were identified. The availability of labor, power, water, waste disposal facilities, and transportation facilities and building construction costs were investigated for the two recommended plant sites near Americus, Georgia.

The final consideration of this study was the market for frozen vegetables in the South. Therefore, an analysis of the South's consumption of frozen vegetables was included, as well as an investigation of the structure of the existing frozen vegetable processing industry.

AGRICULTURAL RESOURCES

The agricultural resources of an area measured in terms of the area's human resources, farmland and farm structure, soils, and availability of water are all considerations which enter into the establishment of a vegetable processing plant.

Agricultural Employment

The agricultural employment within the 10-county area was 6,770 in 1969, or 18.3% of the area's civilian work force. (See Appendix A, Table 1.) The importance of agriculture to the economy of the area is evident when it is realized that for Georgia as a whole only 4.7% of the civilian work force was engaged in agricultural employment. This compares with the national percentage of 4.6% in 1969.

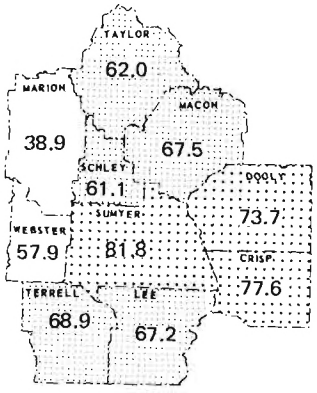
Direct farm employment in the 10-county area decreased 26.1% between 1959 and 1964. (See Appendix A, Table 2.) Direct farm employment is defined as follows: operators working 1 or more hours a day, unpaid family labor working 15 hours or more per week, and regular hired workers (i.e., those working 150 days or more per year). During this same period of time, the Georgia direct farm employment decreased 31.2%.

Farm Characteristics

The heavy reliance upon agriculture in the 10-county area is evident from the amount of land devoted to farming. The land in farms in 1964 was 1,441,909 acres, or 67% of an approximate total land area of 2,163,200 acres. (See Appendix A, Table 3.) Relative concentrations of farmland are shown by county in Figure 1. The overall proportion of land in farms decreased from 87.3% to 66.6% between 1950 and 1964, a decline of 447,111 acres. In Georgia during this same period, the proportion of land in farms decreased from 68.8% to 48.0%.

The number of farms within the 10-county area decreased 65% between 1950 and 1964 -- from 10,384 to 3,611. In the United States, farm numbers declined 39.1% -- from 5.648 million in 1950 to about 3.442 million in 1964 -- and Georgia and other southeastern states also recorded declines during the same period. Obviously, the drop in number of farms experienced in the 10-county area was part of a general trend.

FIGURE 1
PERCENT OF LAND IN FARMS, 1964



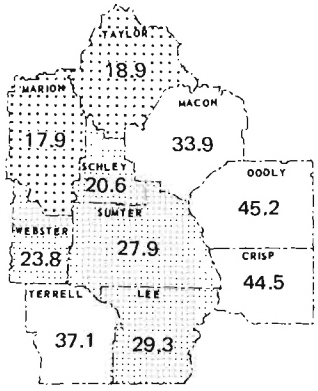
OVER 70%

60%–70%

UNDER 60%

SOURCE: See Appendix A, Table 5.

FIGURE 2
AMOUNT OF HARVESTED CROPLAND AS A PERCENT OF FARMLAND IN EACH COUNTY, 1964



OVER 30%

20%–30%

UNDER 20%

SOURCE: See Appendix A, Table 6.

While both the number of farms and total acreage in farmland in the 10-county area decreased over the 14-year period, the average size of a farm within the area increased from about 182 acres to 400 acres. During the 1959 to 1964 period, the number of farms below 499 acres in size declined, with the farms below 179 acres accounting for the majority of the decrease. The number of farms having 500 acres or more increased during this period by 4.2%.

Crop acres, as indicated by cropland harvested, provides a measure of farmland used in the production of crops. Crop acres as a proportion of farmland, by county, is shown in Figure 2. Concentration of harvested cropland as a percent of farmland in the county ranged from 17.9% of Marion County to 45.2% of Dooly County in 1964. For the region, the proportion of farmland in crops was 32% in 1964. (See Appendix A, Table 4.)

General Soil Characteristics

Two factors which enter into the evaluation of an area's potential for raw product production are the extent and location of soils best adapted to vegetable production. Appendix A, Table 7 indicates the soil associations[1/] located within each county and their characteristics.

Each soil association has been rated according to its suitability for cropland use. Approximately 56% (1.2 million acres) of the land within the 10-county area has only slight limitations for cropland use and difficulties due to soil conditions can be readily and economically overcome. Seven percent of the area has moderate limitations, which are difficulties due to soil conditions that can be corrected and it may be economical to do so. The remaining 37% of the area has severe limitations for cropland use and difficulties due to soil conditions will be both difficult and costly to overcome, if this is possible at all.

Approximately 1.2 million acres of land in the 10-county area are suitable for vegetable production and, with the proper management practices relative to drainage, fertility, water needs, and other production requirements, the soils of the area would not be a limiting factor in vegetable production for processing.

1/ A soil association is a main pattern of soils that is characteristic of an area. Each association is named for the major soil series in it, but soils of other series also may be present to a minor degree.

Water Resources

Water requirements are an important consideration in determining the economic feasibility of an area for vegetable crop production. When producing for processing, optimum moisture supplies become critical, not only for obtaining maximum profit yields for producers, but also from the standpoint of maintaining a normal rate of plant development to maturity.[1/]

The 10-county area, as well as the southeastern United States, is fortunate in having a good supply of water for farm land irrigation and industrial expansion. The studies conducted by the U. S. Geological Survey for the U. S. Study Commission, Southeast River Basins, published in 1963, corroborated the availability of water in the area.[2/] Figure 3 shows the major streams within the area. Table 1 contains hydrologic information about streamflow and watershed areas at various locations.

The geological characteristics of the 10-county area are productive of good groundwater storage. Figure 4 shows the different geological zones. The availability of groundwater within each county is shown on Table 2. The estimated capacity of wells within the area varies between 100 and 1,500 gallons per minute. Also shown are estimated well depth and type of well construction required.

Irrigation information on the farms within the 10-county area is limited. The 1964 Census of Agriculture showed 57 farms reporting irrigation of 58,772 acres. (See Appendix A, Table 8.) The average size of the farms using irrigation equipment was 1,031 acres. Although irrigation has been limited, the land and water supplies within most of the area are sufficient for the development of irrigation.

1/ "Feasibility of Producing and Processing Selected Vegetables," Agricultural Research, Manhattan, Kansas, March 1968.

2/ United States Study Commission, Plan for Development of the Land and Water Resources of the Southeast River Basins, Appendices 10 and 11, Atlanta, Georgia, 1963.

FIGURE 3
MAJOR STREAMS IN THE 10–COUNTY AREA

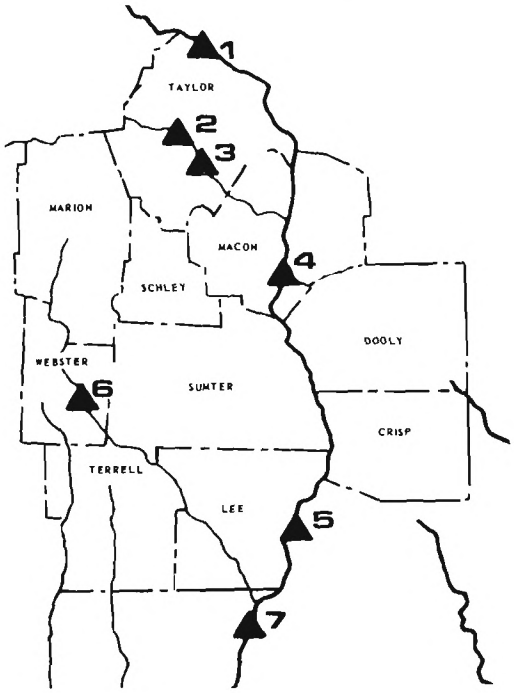


Table 1

STREAMFLOW DATA, MAJOR STREAMS, 10-COUNTY AREA, 1963

Location Code No.	Gaging Station	Drainage Area (sq. mi.)	Mean Annual Flood Discharge (cfs)	Mean Annual Flood Stage (ft.)	Minimum Discharge at Gaging Station (cubic feet per second) Median Monthly Median Annual	Median Monthly Second Lowest Annual	Median Monthly Lowest Annual	Minimum 7-Day Median Annual	Minimum 7-Day Second Lowest Annual	Minimum 7-Day Lowest Annual
1	Flint River near Culloden, Ga.	1,850	32,200	25.8	583	166	108	337	117	99
2	Whitewater Creek near Butler, Ga.	80	409	4.1	120	100	96	110	96	91
3	Whitewater Creek below Rambulett Creek near Butler, Ga.	93.4	-	-	-	-	-	-	-	-
4	Flint River at Montezuma, Ga.	2,900	32,700	20.1	1,341	804	639	1,087	665	618
5	Flint River at Oakfield, Ga.	3,860	31,300	22.2	1,604	864	858	1,324	800	741
6	Kinchafoonee Creek at Preston, Ga.	197	-	-	-	-	-	-	-	-
7	Flint River at Albany, Ga.	5,310	37,000	24.9	2,044	1,341	1,175	1,741	1,076	845

Source: United States Study Commission, Plan for Development of the Land and Water Resources of the Southeast River Basins, Appendices 10 and 11, Atlanta, Georgia, 1963.

FIGURE 4
GEOLOGICAL ZONES

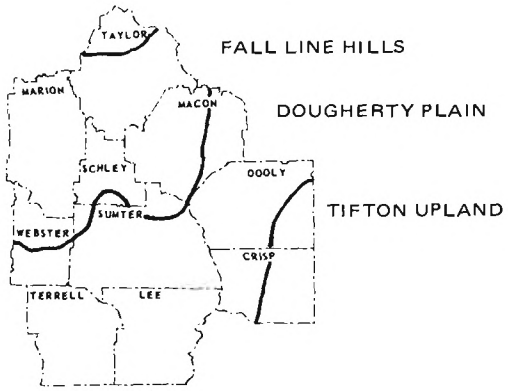


Table 2

AVAILABILITY OF GROUNDWATER IN THE 10-COUNTY AREA

County	Geological Zone	Estimated Capacity (gpm)	Estimated Well Depth (feet)	Aquifer	Well Construction
Crisp	Dougherty Plain	300 to 1,500	200 to 1,000	Combination - Ocala limestone, Clayton limestone and large sands	Combination - open limestone and gravel
Dooly	Same as above	Same as above	Same as above	Same as above	Same as above
Lee (west part of Worth)	Same as above	Same as above	Same as above	Same as above	Same as above
Macon (N. E.)	Fort Valley Plateau	800 to 1,500	400 to 1,000	Sand	Large gravel wall
Marion	Fall Line Hills	100 to 800	200 to 1,000	Sand, small amount limestone	Gravel wall
Schley	Same as above	Same as above	Same as above	Same as above	Same as above
Sumter	Dougherty Plain	300 to 1,500	200 to 1,000	Combination - Ocala limestone, Clayton limestone and large sands	Combination - open limestone and gravel
Taylor	Fall Line Hills	100 to 800	200 to 1,000	Sand, small amount limestone	Gravel wall
Terrell	Dougherty Plain	300 to 1,500	200 to 1,000	Combination - Ocala limestone, Clayton limestone and large sands	Combination - open limestone and gravel
Webster	Fall Line Hills	100 to 500	200 to 1,500	Sand and clays	Gravel wall

Source: See Appendix A, Exhibit 1.

Climatic Conditions

The frequency, distribution, and amount of rainfall are of primary importance when considering the potential raw vegetable supplies of an area. Weather information provided by the weather bureau located at Americus probably is representive of the climatic characteristics of the 10-county area. (See Appendix A, Table 9.)

The average annual rainfall for Americus was 49 inches. (See Appendix A, Figure 1.) The rainfall pattern was distributed throughout the year, with a somewhat higher concentration occurring during the months of March, June, and July. Precipitation generally ranged from 4 to 6 inches per month except for May and the period September through November, when the range was from 2 to 4 inches per month.

Normal precipitation values are useful comparative tools, but they give little information on the variability or dependability of precipitation. Precipitation probability tables have been constructed for the Southwest Branch Station of the University of Georgia located at Plains, Georgia, which is eight miles from Americus.[1/] The availability of precipitation probability tables and other rainfall data is an aid in evaluating the 10-county area's potential for vegetable production and determining the requirements for supplemental irrigation.

The level and range of temperature are among the factors that determine the suitability of an area for vegetable production. (See Appendix A, Table 9.) Monthly and annual growing degree days have been calculated for the 10-county area (Plains, Georgia) for 40^{o}, 45^{o}, 50^{o}, and 55^{o} base temperatures.[1/] The growing degree day is an indicator of plant growth and development. It is computed by obtaining the daily mean temperature and subtracting from it the base temperature at which plant growth processes begin functioning for the specific crop.

1/ F. L. Crosby, H. S. Carter, B. H. Quattlebaum, Jr., and Sam Burgess, Weather Data Analyses of the University of Georgia College of Agriculture Experiment Stations, University of Georgia, College of Agriculture Experiment Stations, Research Report 66, February 1970.

The average length of growing season ranges from 239 days at the northern edge of the area (Fort Valley) to 266 days along the southern boundary (Albany).[1/] The variance in the growing season is due primarily to the latitude and elevation changes. The evaluation in Albany is 196 feet above sea level and in Butler 670 feet, for a difference of 474 feet within a distance of about 70 miles. The length of the growing season at Americus, located approximately in the center of the 10-county area, was 240 days. Average date of the last spring freeze at Americus was mid-March and the average date of first fall freeze was mid-November. (See Appendix A, Table 9 and Figure 2.)

1/ Horace S. Carter, Georgia Temperatures, University of Georgia, College of Agriculture Experiment Stations, Research Report 69, March 1970.

THE PRODUCTION OF VEGETABLES

Georgia is located within a section of the United States where it is possible to harvest some type of vegetable every week throughout the year. (See Figure 5.) The information in the previous section on agricultural resources indicates that the 10-county area has the necessary human resources, soil qualities, and climatic conditions for producing per-acre yields of vegetables comparable to many other sections of the United States.

Past Production of Vegetables

The number of acres of vegetables produced for sale within the 10-county area decreased from 18,263 acres to 13,897 acres or 23.9% between 1950 and 1959. (See Table 3.) But between 1959 and 1964 this decline was reversed, with the amount of land used for production of vegetables increasing by 1,722 acres or 12.4%. The number of farms dropped continually between 1950 and 1964 from 2,259 to 915, a 59.5% decrease.

Table 3

VEGETABLES PRODUCED FOR SALE (OTHER THAN IRISH AND SWEET POTATOES) WITHIN THE 10-COUNTY AREA, 1950-1964

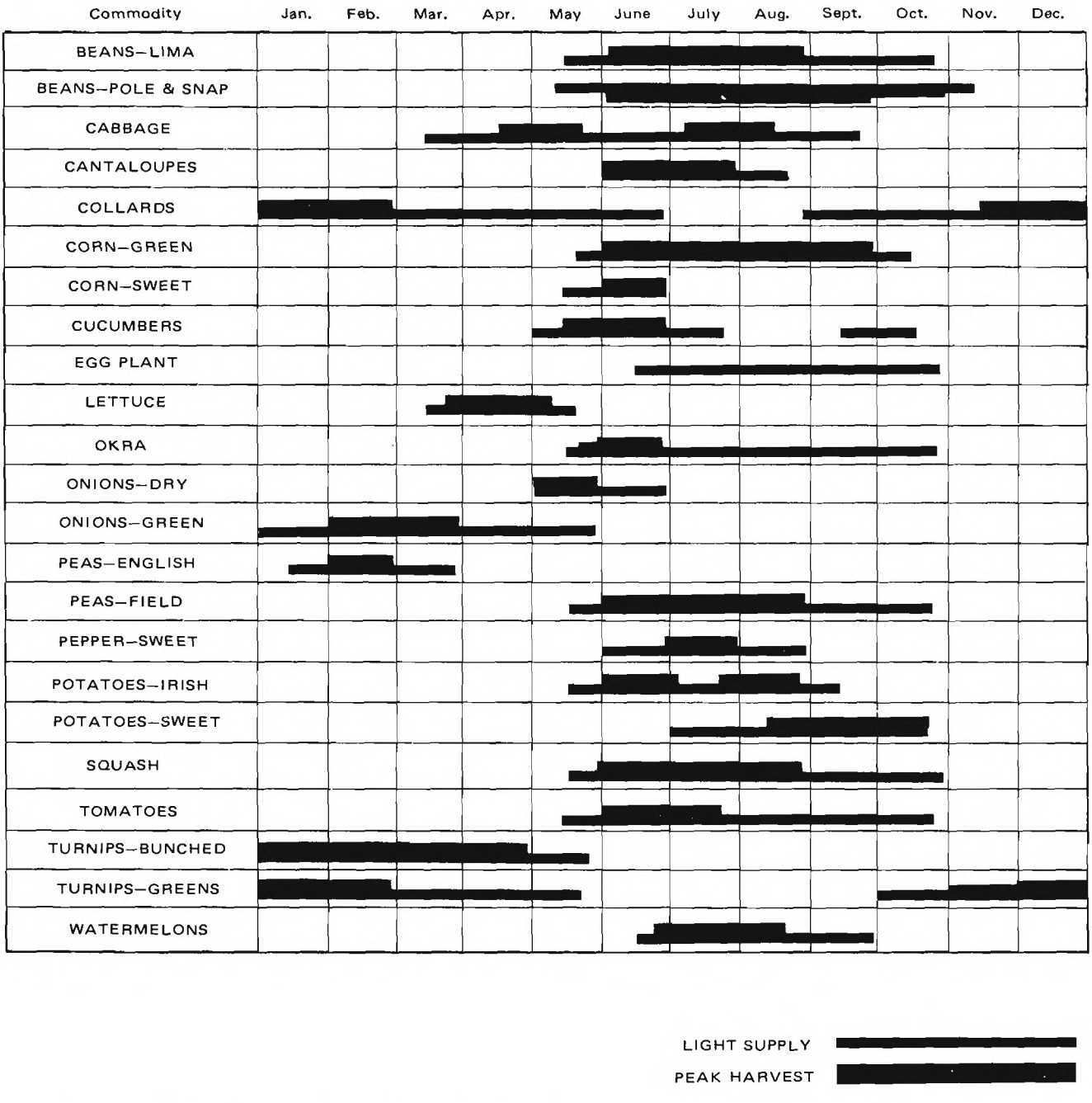
	1950[1/]		1954		1959		1964	
County	Farms	Acres	Farms	Acres	Farms	Acres	Farms	Acres
Crisp	456	3,791	472	5,902	270	4,305	185	3,512
Dooly	879	5,761	614	5,114	356	3,460	269	3,845
Lee	156	861	150	944	58	639	33	319
Macon	200	2,961	230	2,840	191	3,130	179	3,756
Marion	50	473	65	381	26	173	43	519
Schley	65	433	59	392	26	296	30	489
Sumter	99	639	156	741	61	326	45	201
Taylor	317	3,075	147	1,466	86	1,413	110	2,828
Terrell	31	166	28	105	17	119	17	99
Webster	6	103	12	58	8	36	4	51
Total	2,259	18,263	1,933	17,943	1,099	13,897	915	15,619
Acres/Farm		8.1		9.3		12.6		17.1

1/ Does not include farms reporting green cowpeas only.

Source: U. S. Department of Commerce, Bureau of the Census, Census of Agriculture, 1950-1964.

FIGURE 5

HARVEST SEASONS FOR GEORGIA VEGETABLES



SOURCE: Georgia Farmers' Markets 1968 Sales Report, Markets Division, Georgia Department of Agriculture, Atlanta, Ga.

In 1964 the farmers within the 10-county area produced 6,085 acres of watermelons for sale, which constituted approximately 41.3% of the total vegetables produced for sale as reported in the Census of Agriculture. Blackeyes and other green cowpeas accounted for 3,401 acres or about 23.1%; green lima beans for 2,112 acres or 14.4%; cantaloupes and mushmelons, 1,318 acres or 9.0%; and okra, 897 acres or 6.1%. The remaining types of vegetables produced for sale, ranked according to acreage, were cucumbers and pickles, squash, sweet corn, tomatoes, pimentos, cabbage, snap beans, and sweet peppers. They accounted for approximately 6.1% of total vegetable production in 1964.

The Cost and Availability of Agricultural Resources for Vegetable Production

The successful establishment of a vegetable freezing plant in the vicinity of Americus depends to a large extent on whether or not farmers in the area will produce the required volume of vegetables. To determine this factor and the answers to other important questions, a survey of selected farmers within the 10-county area was made. The purpose of the survey was not to undertake a complete enumeration of all farms, but to establish that the agricultural resources of the 10-county area are sufficient to support a vegetable freezing plant.

Fifty-five farmers were selected by the county agents for interviewing. The agents based their selections on their knowledge of the farmers' capabilities and previous interest in vegetable farming. Table 4 shows the results of the survey.

Seventy-eight percent of the farmers surveyed are located within 30 miles and 56% within 20 miles of Americus. The average farm size was 1,925 acres, with an average of 1,160 acres in cultivation. This farm size is almost five times larger than the reported 1967 census data for the 10-county area, which indicated a farm size of 399 acres.

The farmers have 28,923 acres suitable for irrigated vegetable production and available for contract farming. Of the total land available for contract farming the farmers indicated that they would lease 17,173 acres to a manufacturer who desired to do a portion of the vegetable farming himself. Approximately 67% or 19,414 acres are located within 20 miles of Americus. The average number of acres available for vegetable production per farm was about 536. At the present time only 1,136 acres of vegetables are under cultivation. Not

Table 4

SURVEY OF SELECTED FARMERS WITHIN 50 MILES OF AMERICUS, GEORGIA

	Distance in Miles from Americus, Georgia						
	0-10	10-20	20-30	30-40	40-50	Over 50	Total
Farmers surveyed	15	16	12	9	2	1	55
Total acres owned	18,650	37,282	14,740	27,411	1,825	6,000	105,908
Land in cultivation	10,470	30,125	8,420	9,181	1,635	4,000	63,831
Interested in contract farming	15	15	12	9	2	1	54
Contract experience - number	8	7	2	2	-	0	19
Contract experience - average years	3.8	5.2	3	1	-	0	4
Acres in vegetable farming	813	108	65	50	-	0	1,136
Acres in contract farming	985	1,564	260	40	-	0	2,849
Will lease all vegetable land	5	9	2	2	-	0	18
Will lease a portion of vegetable land	10	4	8	6	1	0	29
Acres available for lease	3,320	9,840	1,660	2,353	-	0	17,173
Will do other contract work (plant, harvest, etc.)	12	11	11	6	2	0	42
Have irrigation	7	5	2	2	1	1	18
Acres irrigated	1,540	180	755	435	300	680	3,690
Water source - well	5	2	2	0	0	0	9
Water source - other	3	3	0	2	1	1	10
Average depth - feet	405	118	500	-	-	-	341
Gallons per minute - average	620	433	900	-	-	-	651
Will lease existing irrigation	4	1	-	1	-	0	6
Will install new systems	13	8	11	6	2	0	40
Acres suitable for irrigated vegetable production	5,969	13,445	2,830	2,844	835	2,000	28,923
Permanent tenants on farm	62	93	33	29	4	40	261
Machine operators	53	42	34	22	4	30	185
Average wage per week - dollars	76	80	59	58	54	62	66
Interested in building processing plant	14	12	11	7	1	0	45
Number farmers answering rental question	6	5	4	4	-	-	19
Average rent price per acre quoted	35	40	60	76	-	-	46
Acres in above	1,140	8,140	1,110	1,825	-	-	12,215

- Indicates no response.

all farmers responded to the question concerning rent price of their land. The 19 which did respond quoted an average rental price of $46 per acre. Approximately 9,280 acres located within 20 miles of Americus were available for an average rental price under $40.

With one exception all farmers surveyed are interested in contract vegetable farming. Nineteen of the farmers have had previous experience with contract farming. One question was designed to determine the extent of the farmers' interest in producing vegetables. The question was: "If a group of farmers, such as yourself, decided to explore the possibilities of building their own plant to process vegetables and other farm products, would you be interested?" Forty-five or 82% of the total answered "yes."

Types of Crops and Yields

The distribution of 1970 value of principal crops produced as a percentage of total value showed that peanuts accounted for 30.4% and tobacco for 21.4% of total value in Georgia.[1/] Commercial vegetables accounted for about 2.6% of the total crop value of $477,447,000. The farmer in the 10-county area, like his counterpart in the rest of the state, probably will devote his best land and the most attention to the "money crops." There may be farmers who specialize in vegetables, but the majority plant vegetables as a sideline. Therefore, per-acre yields on vegetables will vary widely according to the land planted and the practices used.

A listing of vegetable crops that can be successfully grown in the 10-county area for processing is shown in Table 5. Fifteen vegetables are listed with their expected and potential yields. The basic difference in the definition of the yields is that the potential yield indicates better management, conditions, and permanent irrigation. Appendix B, Exhibit 1, contains a listing of planting and harvesting duties for vegetables grown in the 10-county area.

Historically, in the South, a number of the frozen vegetable processing plants have expanded their processing to include the freezing of fruits. Table 6 shows the types of fruits which are grown in the 10-county area and the average and potential yields. Further data are in Appendix B, Exhibit 3.

1/ Georgia Crop Reporting Service, Georgia Farm Report, Athens, Georgia.

Table 5

EXPECTED AND POTENTIAL YIELDS FOR VEGETABLES
GROWN IN THE 10-COUNTY AREA

Vegetables	Expected Yield/Acre[1/]	Potential Yield/Acre[2/]
Southern peas	1,500-2,000 lb. shelled	3,000 lb. shelled
Turnip greens	8-10 tons (1 cutting)	15-20 tons (2-3 cuttings)
Mustard greens	8-10 tons (1 cutting)	15-20 tons (2-3 cuttings)
Collards	8 tons	10 tons
Turnip roots	15-20 tons	25 tons
Snap beans	3 tons (60-75% size 4 and under)	4½ tons
Speckled butterbeans	2,400 lb. shelled	2,800 lb. shelled
Summer crookneck squash	8-10 tons (400-500 bu.)	12 tons (600 bu.)
Zucchini squash	10 tons	12-14 tons
Okra (emerald type)	8-12 tons	15 tons
Pimiento pepper	2½-3 tons	5 tons
Sweet potatoes	10-12½ tons (400-500 bu.) field run	18 tons
Kale, broccoli, asparagus (Middle Georgia)	Expected yields are unknown, but they are believed to be competitive and profitable.	

1/ Expected yield - Good growers using good management practices consistently make these yields or better now. Present average yields are not this high, however, since they include many marginal to average growers.

2/ Potential yield - Many of these yield figures have been reached and some exceeded by the better growers. Under permanent irrigation, very good management, and ideal conditions, it is felt that these are realistic potentials. With optimum use of irrigation and closer plant populations, greater yields can be expected on certain crops in the future.

Source: See Appendix B, Exhibit 2.

Table 6

AVERAGE AND POTENTIAL YIELDS FOR FRUITS
GROWN IN THE 10-COUNTY AREA

Fruit Crop	Average Yield per Acre	Potential Yield per Acre
Apples	Unknown	600 bu.
Peaches	100 bu.	250 bu.
Strawberries	8,600 qt.	14,500 qt.
Blueberries	8,000 pt.	14,000 pt.
Muscadine Grapes	4 tons	8 tons
Blackberries	2,000 qt.	3,200 qt.

Agricultural Research Services

The University of Georgia College of Agriculture maintains a staff of food scientists, horticulturists, and plant pathologists who are engaged in or qualified to work with vegetables. (See Appendix B, Exhibit 4.) The College provides services such as plant disease clinics to the people of Georgia. Research facilities are located in Athens, Tifton, and Experiment.

PLANT LOCATION FACTORS

A number of factors enter into the selection of a plant site. Probably the most important is the ability of the farmers within the 10-county area to produce vegetables in sufficient volume to support the operation of a vegetable processing plant. The preceding section, which was an examination of the area's agricultural resources, established this capability. The market for frozen vegetables in the South will be analyzed in the next section. The purpose of this section is to determine the cost and availability of labor, power, water, waste disposal facilities, and transportation facilities for the two recommended plant sites.

Recommended Plant Sites

The Americus and Sumter County Industrial Park, located two miles north of Americus, is one of two recommended locations for the vegetable processing plant. Appendix C, Exhibit 1 shows the location of the 330-acre industrial site in relation to Americus and provides an aerial photograph of the site.

The site is accessible by two paved roads which bound its east and west sides. These roads connect with Georgia Highway 27, which in turn connects with the Interstate Highway System approximately 29 miles away. Railroad access is provided by the Central of Georgia Railway main line which passes through the property.

Utilities either are already installed or are in the planning stage. A 4-inch natural gas main and 7.2-kv and 44-kv electric power are available at the site. No sewerage or water are presently available, but contracts are due to be solicited in August 1971. The system will include a 400,000-gallon water storage tank, a 10-inch water main from the city system, and an oxidation pond.

The second site is a 100-acre tract of land located about 1.2 miles east of DeSoto, Georgia, and 13 miles east of Americus. Appendix C, Figure 1 illustrates the location of the site in relation to DeSoto. The site is on high ground with a small drainage creek on the west side. The land slopes downward on all sides. The surrounding terrain is flat to gently rolling.

Direct access to the site is provided by U. S. Highway 280, which passes east and west on the north side of the property. This highway connects with

the Interstate Highway System 15 miles to the east. The Seaboard Coast Line Railroad main line passes through the property.

Electricity, 44-kv, is the only utility currently available at the site. A 1500-kva substation serves the small towns in the area. Although no public water mains extend to the site, a large quantity of groundwater is present in the general area. A private sewage treatment system would have to be constructed, and the topographical characteristics of the site are suitable for such construction. Along the west side of the site, there exists a drainage area that connects with a creek which passes through the property.

Building Construction Costs

Typical construction costs in Georgia range from $2.74 per square foot to $12.77 per square foot, depending on features.[1/] These cost figures are related to buildings completed in 1968 and 1969.

The publication which quotes these costs includes data on a food processing facility in Albany, Georgia, that probably would be very closely related to a facility for processing frozen vegetables. The cost breakdown for this facility is as follows:

Table 7

FOOD PROCESSING FACILITY COSTS IN ALBANY, GEORGIA, 1968

	Costs	Unit Cost (sq. ft.)	Percent of Total
Structure and Finish	$ 765,300	$5.38	69.2
Heating, Ventilation and Air Conditioning	80,000	.56	7.2
Plumbing	150,000	1.06	13.7
Electrical	110,000	.77	9.9
Total	$1,105,300	$7.77	100.0

The manufacturing area consists of 134,400 square feet and 7,800 square feet are in the office area. The building utilizes precast concrete exterior

1/ Cost Data on Industrial Buildings in Georgia, Twelfth Edition, Industrial Development Department, Georgia Power Company, Atlanta, Georgia.

walls, structural steel columns of 40 feet x 40 feet spacings, a 22-foot ceiling height with built-up roof, and 5-inch and 6-inch concrete floor with epoxy finish in some areas.

Special features include a complete sprinkler system, air conditioning throughout, and 1000-kva, 1200-ampere, 277/480-volt, 3-phase, 4-wire electrical service. The above construction figures, however, do not include cost of compressors, chillers, and air handling units. This facility was conventionally connected to the municipal sanitary system, and therefore, cost figures do not include any privately owned sewage treatment system. The building was completed in 1968.

The Cost and Availability of Labor

The labor market area would be essentially the same for the two proposed plant site locations. Within this labor market area, which consists of Crisp, Dooly, Lee, Macon, Schley, Sumter, Terrell, and Webster counties, a total of 3,668 persons were available in December 1970 for manufacturing employment which would compete with present wage rate levels. This labor pool was composed of 1,932 men and 1,736 women. It consisted mainly of surplus farm labor and marginal farm operators, high school graduates and dropouts, housewives, and the currently unemployed. Most of the labor supply is unskilled but easily trained.[1/]

The wage structure within the labor market area as compared with the state's wage structure for selected job titles for 1969 is shown in Appendix C, Table 1. Wage rates were not available for the labor market area in job classifications needed for a vegetable processing plant. However, such information does exist at the state level and is shown in Table 8.

Transportation Facilities

Consideration of transportation facilities is another important factor in the selection of the location for a vegetable processing plant. A satisfactory farm-to-market system is necessary for moving the raw products from the field to a processing plant in an efficient and economical manner. Figure 6 shows

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1/ Economic Data on Americus (Sumter County), Georgia, Industrial Development Division, Georgia Institute of Technology, November 1969 (revised to date from Georgia Institute of Technology survey).

Table 8

VEGETABLE PROCESSING PLANT WAGE RATES IN GEORGIA, 1969

Job Title[1/]	Number of Workers Surveyed	Most Prevalent Wage Rates			
		Rate Range			Maximum
		From	To	Average	Rate Found
Blanching Machine Operator	0	$1.750	$3.370	$2.505	$3.370
Cannery Worker	523	1.600	3.080	1.841	3.080
Cook, Kettle	31	1.600	3.370	2.176	3.370
Filling Line Set-up Man	52	1.750	3.370	2.622	3.370
Packager, Hand	123	1.600	2.960	1.893	2.960
Packager, Machine	107	1.600	3.370	2.286	3.370
Sorting Machine Operator	109	1.800	2.000	1.803	2.000
Washer, Agricultural Produce	24	1.600	1.880	1.802	2.250

1/ For clarification of job titles, see Appendix C, Table 2.

Source: Survey of Manufacturing Wage Rates, Georgia, 1969, Research Division, Georgia Department of Industry and Trade, Atlanta, Georgia.

the farm-to-market access roads within the 10-county area. They appear to be adequate for transportation of raw products to a processing plant in the Sumter County area.

In addition to the farm-to-market roads, an adequate transportation system must be available to facilitate movement of the processed products through the desired market channels and into the final merchandising phase. Interstate Highway 75 passes through two of the 10 counties, giving direct access to points in Florida and to Atlanta, which is a main hub of the nation's Interstate Highway System.

Figure 7 shows the main-line railroads serving the 10-county area. Rail access is available in all of the counties. Americus and Cordele are the railroad transportation centers for the area. Americus is on the main line of two railroads, the Central of Georgia Railway (Southern Railway System) from Albany to Macon and the Seaboard Coast Line Railroad from Savannah to Montgomery, Alabama.[1/] Principal interchange points on the Central of Georgia are Macon,

1/ Economic Profile of Americus (Sumter County), Georgia, Industrial Development Division, Georgia Institute of Technology, April 1970.

Atlanta, and Albany; the Seaboard Coast Line interchanges at Savannah, Columbus, and Montgomery. Pickup and delivery, drop shipments, and piggyback ramp service are provided by both railroads. Shipping times for carloads to New York, Chicago, and Detroit are four to five days.

Cordele is served by three railroads: the Georgia Southern and Florida Railroad Company's (part of the Southern Railway System) main line from Macon to Jacksonville, Florida; the Seaboard Coast Line Railroad's main lines from Atlanta to Waycross and Savannah to Montgomery, Alabama; and the Albany and Northern Railway Company's (part of the Southern Railway System) line between Albany and Cordele. Principal interchange points are Atlanta, Jacksonville, Macon, Montgomery, and Savannah.[1/] Piggyback ramps are available locally.

Trucking service is available for both interstate and intrastate shipments at most of the larger towns within the 10-county area. Delivery times vary according to location within the area; they are between second and fourth morning for truckloads and between third and fifth morning for less-than-truckloads to New York, Chicago, and Detroit. The major points of interchange are Albany, Atlanta, Birmingham, Columbus, Macon, Savannah, and Valdosta.

The two recommended plant sites probably would use the trucking facilities at Americus. Three truck lines -- Ryder Truck Lines, Inc., with terminal facilities in Albany, Georgia Highway Express, Inc., with terminal facilities in Cordele, and MR & R with terminal facilities in Americus -- serve Americus on a regular basis with intrastate and interstate shipments. Five other carriers are authorized to serve on an interstate basis only. Truckload shipments reach Chicago and Detroit on the third morning and New York on the fourth. Less-than-truckload shipments require one to two additional days in transit.

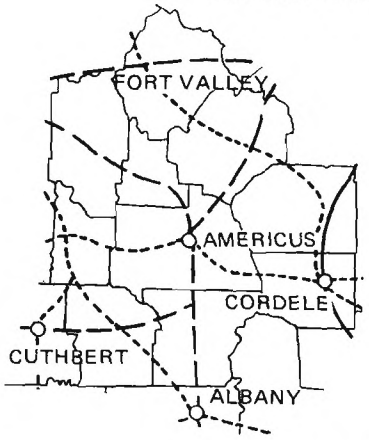
The airport facilities are shown on Figure 8. A number of local airports have both paved and lighted runways. Commercial airline service is available at the Albany, Columbus, and Macon airports, all of which are located outside the 10-county area. Air South, Eastern Airlines, and Southern Airways serve Albany with over 20 daily schedules. Delta Air Lines, Eastern Airlines, and Southern Airways operate 19 daily schedules at Columbus, while Eastern and Delta serve the Macon airport with 20 flights daily.

1/ Economic Profile of Cordele (Crisp County), Georgia, Industrial Development Division, Georgia Institute of Technology, April 1970.

FIGURE 6
HIGHWAY SYSTEM WITHIN THE 10–COUNTY AREA

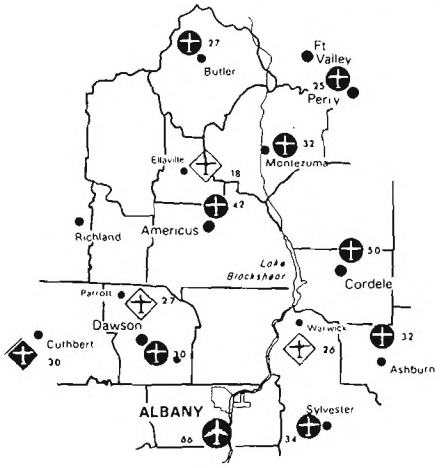
INTERSTATE U.S. STATE

FIGURE 7
RAILROAD SYSTEM WITHIN THE 10–COUNTY AREA



---------- SEABOARD COAST LINE RAILROAD
— — — — CENTRAL OF GEORGIA RAILWAY
———— SOUTHERN RAILWAY SYSTEM

FIGURE 8
AIRPORT FACILITIES AVAILABLE IN THE 10–COUNTY AREA



SCHEDULED AIRLINES
PAVED – LIGHTED
PAVED – UNLIGHTED
TURF – LIGHTED
TURF – UNLIGHTED
50 – RUNWAY LENGTH—100'S OF FEET

THE SOUTHERN MARKET FOR FROZEN VEGETABLES

The purpose of this section is to determine the market for frozen vegetables and investigate the structure of the existing frozen vegetable processing industry located in the South. The South is defined as the following 11-state area: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

The South's Consumption of Frozen Vegetables

The 11-state market for frozen vegetables was estimated by multiplying the per capita consumption of frozen vegetables for the United States by the population of each state within the market area.

The preliminary 1970 Census of Population total for the market area was 49,017,907 persons, which represented a 12.9% increase over the 1960 population. During this same time period, the United States population increased 11.7%. This higher than average growth rate of the southern states is an indication of the increased economic growth that they have experienced in the last decade.

The United States civilian per capita consumption of frozen vegetables, excluding potatoes, has decreased in the last two years from a 1968 high of 9.6 pounds to a 1970 consumption of 9.0 pounds. Before 1968 the general trend in per capita consumption of frozen vegetables had been upward. Part of the decline in per capita consumption probably can be attributed to a decrease in production from a 1968 high of 2,081 million pounds to 1,735 million pounds in 1970 due to decreased supply rather than a change in consumer demand.

The latest data on civilian population by states is for the year 1969. Civilian population is used by the Department of Agriculture in the calculation of the per capita consumption of frozen vegetables for the United States. Therefore, in order to be consistent, the 1969 civilian population data, and hence, the 1969 per capita consumption, was used for calculations rather than the 1970 census population data. The estimated consumption of frozen vegetables, excluding potatoes, for the market area was about 449,758,400 pounds, based on the 1969 per capita consumption of 9.1 pounds for the U. S. This represented 24.8% of the nation's consumption of frozen vegetables in 1969. However, the estimate does not take into account regional differences in fresh and frozen vegetable consumption.

The location of the proposed vegetable processing plant with respect to major consumption centers is shown in Figure 9, which illustrates the proximity of the 10-county area to counties where the retail food store sales were over $25 million in 1967.

The Structure of the South's Vegetable Processing Industry

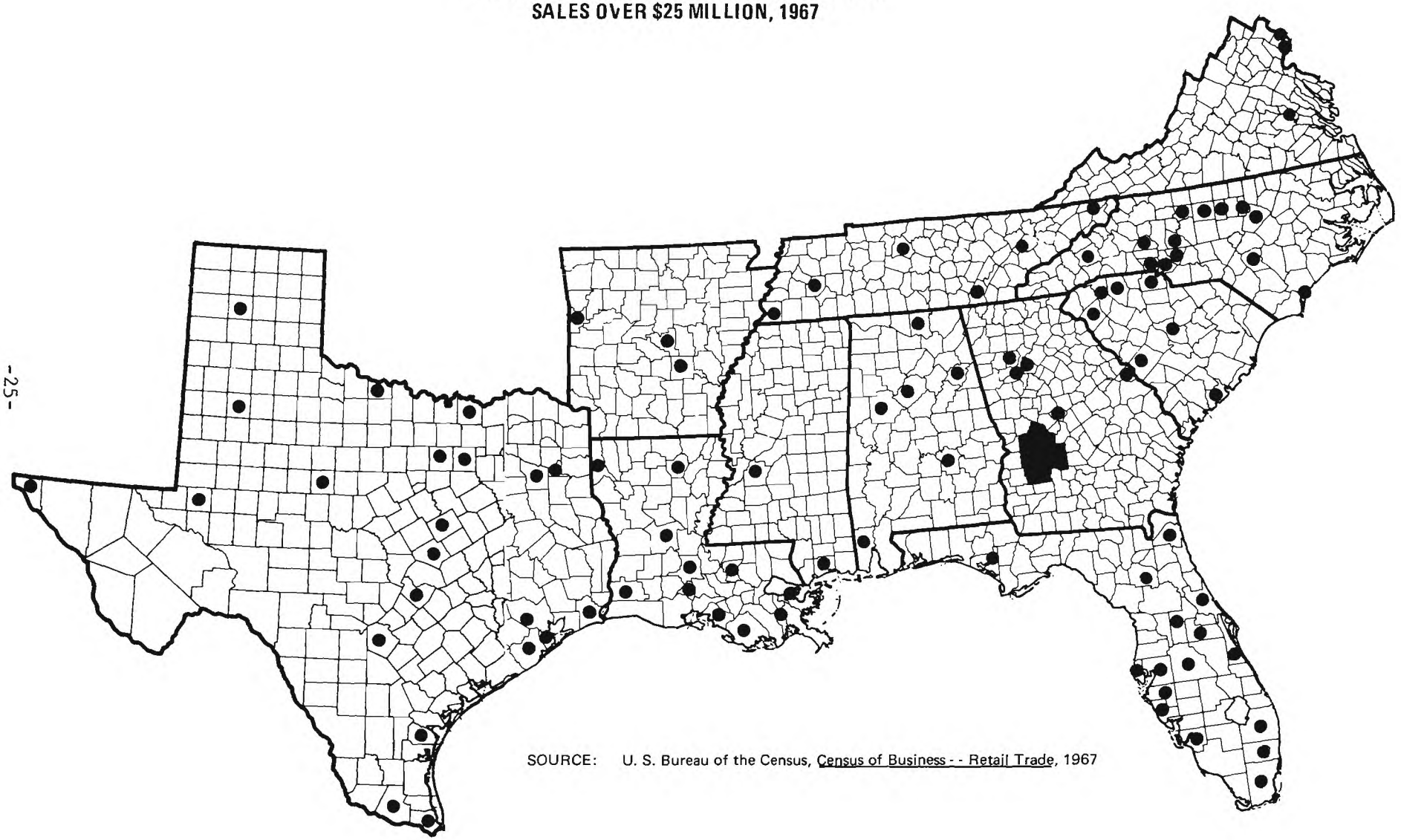
A comprehensive study of the vegetable processing industry in the southern states was conducted by the Florida Agricultural Experiment Station in 1963-1964 and published in 1968. All of the vegetable canning and freezing plants in the southern states were surveyed except for four non-cooperating canners. The results of the survey reproduced here are primarily on the vegetable freezing plants.

A total of 154 plants were known to can and freeze vegetables in the 11 southern states. Table 9 provides a breakdown of the plants by type and size. Eighteen plants, or 13% of the 150 vegetable processing plants, used freezing to process vegetables. Almost 40% of the freezing plants were located in Tennessee. The number of years the vegetable freezing plants have been in operation is shown in Table 10. Freezing is a relatively new technology, as can be seen, with less than 25% of the plants being over 20 years of age.

The 1971 Georgia Manufacturing Directory provided updated information on the vegetable processing industry in Georgia. A total of 17 plants are located in Georgia, of which three are freezing and the remainder canning plants. Figure 10 illustrates the location of the vegetable processing plants, only one of which is located within the 10-county area.

Freezing plants packed 218,409,000 pounds of all products, with vegetables comprising 188,166,200 pounds of the total. (See Table 11.) Leafy greens (including greens with roots) were by far the largest volume item frozen, accounting for about 33% of the total pack. They were followed in order by okra, southern peas, and green beans. The method used previously to calculate 1969 consumption for the 11-state area can be used to determine 1964 consumption. The civilian population of the area of 46,231,000 times the 1964 per capita consumption of 8.0 pounds would put the 1964 consumption of the 11-state area at approximately 369,848,000 pounds of frozen vegetables. This figure when compared with the 188,166,200 pounds frozen in the South in 1964, would seem to indicate the need to expand the processing of frozen vegetables in the South.

FIGURE 9
COUNTIES IN THE SOUTH WITH RETAIL FOOD SALES OVER $25 MILLION, 1967



SOURCE: U. S. Bureau of the Census, Census of Business - - Retail Trade, 1967

Table 9

NUMBER, TYPE, AND SIZE OF VEGETABLE PROCESSING PLANTS BY STATES, 1963-1964

State	Canning Plants[1/] Size[2/] I	II	III	IV	V	Idle	Total	Freezing Plants Size[2/] I	II	III	IV	Total	Combination	Total Plants
Alabama	0	0	0	1	1	0	2	0	0	0	0	0	0	2
Arkansas	2	1	6	3	2	0	14	1	1	1	0	3	0	17
Florida	0	6	7	1	1	0	15	0	0	0	1	1	1	17
Georgia	2	3	3	0	1	0	9	0	0	0	1	1	0	10
Louisiana	1	4	5	1	1	1	13	1	1	1	0	3	1	17
Mississippi	0	0	0	0	0	1	1	0	0	0	0	0	0	1
North Carolina	1	3	3	1	1	0	9	0	0	0	0	0	0	9
South Carolina	4	2	1	0	0	0	7	0	0	0	0	0	0	7
Tennessee	2	5	0	0	2	1	10	1	2	3	1	7	0	17
Texas	3	6	5	7	5	1	27	0	1	0	1	2	0	29
Virginia	13	1	1	1	1	6	23	0	0	0	1	1	0	24
Total	28	31	31	15	15	10	130	3	5	5	5	18	2	150

1/ Two canning plants in Georgia and one each in Arkansas and Texas did not cooperate.

2/ Plant sizes are as follows:

Size Group	Canning (Annual pack per plant in equivalent cases of 24/303's)
I	Under 50,000
II	50,000 - 190,000
III	190,001 - 500,000
IV	500,001 - 1,000,000
V	Over 1,000,000

Size Group	Freezing (Annual pack per plant in pounds)
I	Under 5,000,000
II	5,000,000 - 9,000,000
III	9,000,001 - 13,000,000
IV	Over 13,000,000

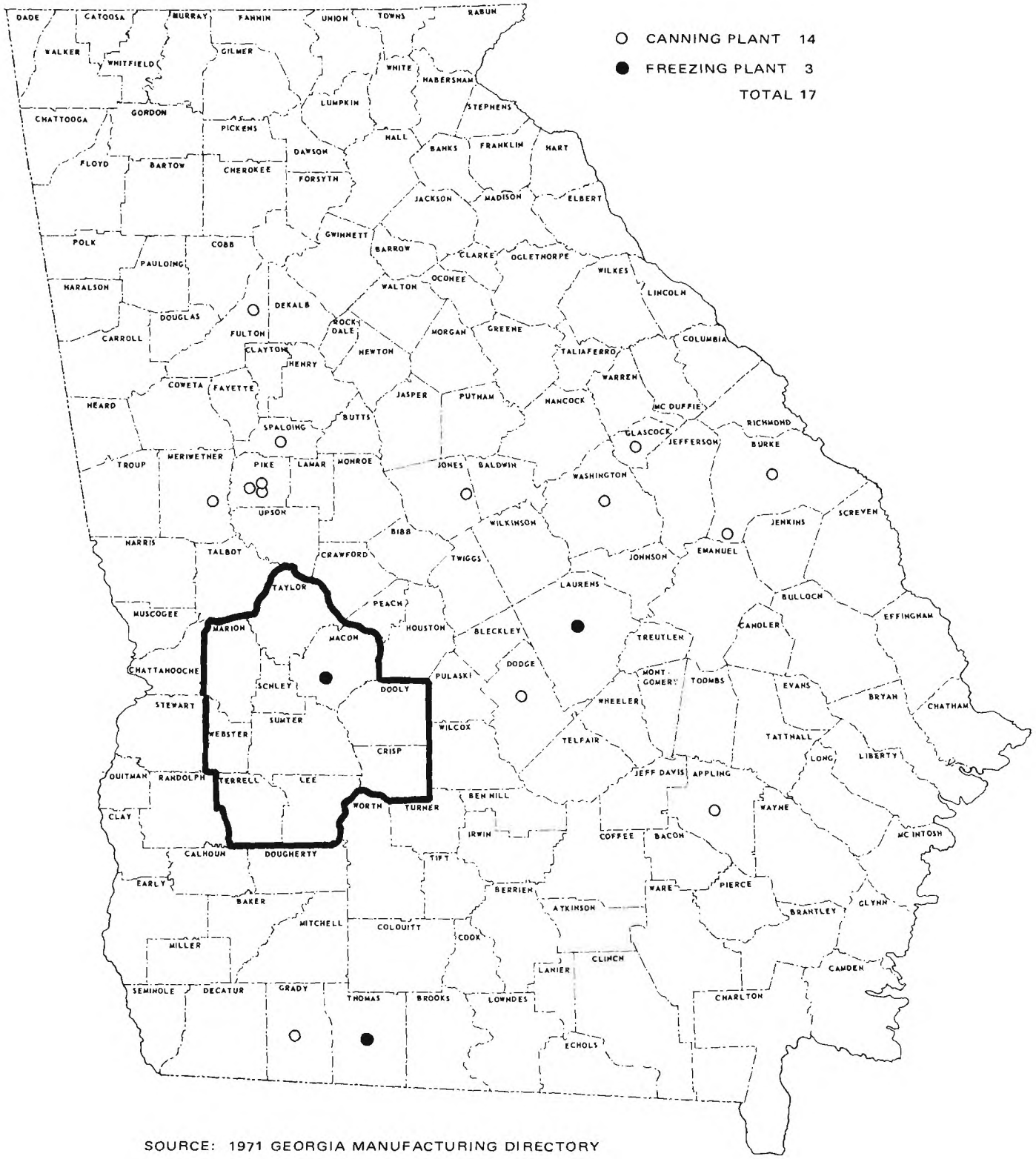
Table 10

NUMBER OF YEARS VEGETABLE FREEZING PLANTS OPERATED AT PRESENT LOCATIONS

Number of Years	Number of Plants				
	Size				
	I	II	III	IV	Total Freezing
Under 6	1	2	2	0	5
6 - 10	1	0	1	0	2
11 - 20	0	2	2	3	7
21 - 40	1	0	0	2	3
Over 40	0	0	0	0	0
Unknown	0	1	0	0	1
Total	3	5	5	5	18

Source: James L. Pearson, "Utilization of the South's Vegetable Processing Capacity," Department of Agricultural Economics, Florida Agricultural Experiment Stations, Gainesville, Florida, January 1968.

FIGURE 10
GEOGRAPHIC DISTRIBUTION OF VEGETABLE PROCESSING PLANTS IN GEORGIA, 1971



SOURCE: 1971 GEORGIA MANUFACTURING DIRECTORY

Table 11

POUNDS OF PRODUCT FROZEN IN VEGETABLE PROCESSING PLANTS IN THE SOUTH BY PRODUCT AND PLANT SIZE, 1963-1964

Product	Size of Plant I		III	IV	Total
Vegetables					
Beans, green	0	1/	25,846,100	1/	25,846,100
Beans, lima	2/	2/	0	6,377,000	6,377,000
Broccoli	0	2/	0	6,424,600	6,424,600
Greens, leafy & w/roots	0	9,637,700	11,005,000	42,117,200	62,759,900
Okra	3/	9,133,400	10,763,700	10,214,300	30,111,400
Peas, southern	3/	2,263,400	6,277,100	21,150,100	29,690,600
Potatoes, sweet	1/	0	3,993,700	1/	3,993,700
Potatoes, white	2/	0	0	3,454,000	3,454,000
Squash	0	824,100	1,458,800	3,573,600	5,856,500
Other vegetables 4/	2,730,000	0	0	10,922,400	13,652,400
Total vegetables	4,834,900	24,788,600	46,590,600	111,952,100	188,166,200
Percent of total vegetables	2.6	13.2	24.8	59.4	100.0
Fruits	0	3,856,800	5,471,700	1,096,400	10,424,900
Other	4,370,000	0	0	15,447,900	19,817,900
Total non-vegetables	4,370,000	3,856,800	5,471,700	16,544,300	30,242,800
Grand total	9,204,900	28,645,400	52,062,300	128,496,400	218,409,000
Percent of total pack	4.2	13.1	23.9	58.8	100.0

1/ Combined with size III of this type to avoid disclosure of individual plant's pack.
2/ Combined with size IV of this type to avoid disclosure of individual plant's pack.
3/ Combined with size II of this type to avoid disclosure of individual plant's pack.
4/ Other frozen vegetables were primarily onions, corn, cauliflower, green peas, turnips, and green peppers.

Source: James L. Pearson, "Utilization of the South's Vegetable Processing Capacity," Department of Agricultural Economics, Florida Agricultural Experiment Stations, Gainesville, Florida, January 1968.

Sixty-one percent of the freezing plants operated non-vegetable processing lines. Of the plants freezing products other than vegetables, only two freezing plants had more than 50% non-vegetables in their annual pack. However, nine plants had from 1% to 49% non-vegetables. Seven plants froze only vegetables. Of the eight plants reporting, most froze fruit as the non-vegetable product; however, three plants froze some other non-vegetable product.

The distribution of freezing plants according to annual pack in pounds is shown in Table 9. An almost equal number of plants operate in each size range. However, sizes I and II included almost 45% of the freezing plants but froze only 15.8% of the total vegetables. Almost 60% of the frozen vegetables were processed by size IV plants.

The numbers of products packed per plant by size of plant is shown in Table 12. Approximately one-third of the freezing plants processed three products or less, while none processed only one product. Three freezing plants processed 10 or more products. A breakdown by type of product frozen and the amount per area is shown in Table 13. Data for individual states and many products could not be reported without revealing specific information concerning the plants.

Arkansas, Georgia, Tennessee, and Virginia contained within their borders 12 of the 18 freezing plants and froze about two-thirds of the total pack of all products. Yet this area was much heavier in the pack of frozen vegetables with almost three-fourths of the total. Plants located in Florida, Louisiana, and Texas had a large pack of non-vegetables, which was composed of citrus, banana puree, seafood, and other products.

Table 12

NUMBER OF PRODUCTS PACKED PER PLANT BY SIZE OF FREEZING PLANT

Number of Products	Number of Plants				
	Size				
	I	II	III	IV	Total Freezing
1	0	0	0	0	0
2	2	0	1	0	3
3	0	2	1	0	3
4	1	0	1	0	2
5	0	0	2	0	2
6	0	1	0	1	2
7	0	2	0	0	2
8	0	0	0	1	1
9	0	0	0	0	0
10 or more	0	0	0	3	3
Total	3	5	5	5	18

Source: James L. Pearson, "Utilization of the South's Vegetable Processing Capacity," Department of Agricultural Economics, Florida Agricultural Experiment Stations, Gainesville, Florida, January 1968.

Table 13

POUNDS OF PRODUCT FROZEN IN VEGETABLE PROCESSING PLANTS IN THE SOUTH BY PRODUCT AND AREA, 1963-1964

Product	Area 1/ F-1 Arkansas, Georgia, Tennessee, Virginia	F-2 Florida, Louisiana, Texas	Total
Vegetables			
Beans, green	25,846,100	2/	25,846,100
Beans, lima	6,377,000	2/	6,377,000
Broccoli	6,424,600	2/	6,424,600
Greens, leafy & w/roots	39,573,000	23,186,900	62,759,900
Okra	22,396,300	7,715,100	30,111,400
Peas, southern	23,044,100	6,646,500	29,690,600
Potatoes, sweet and white	7,447,700	2/	7,447,700
Squash	5,065,700	790,800	5,856,500
Other vegetables 3/	11,844,400	1,808,000	13,652,400
Total vegetables	137,136,700	51,029,500	188,166,200
Fruits	2,424,100	8,000,800	10,424,900
Other	781,200	19,036,700	19,817,900
Total non-vegetables	3,205,300	27,037,500	30,242,800
Grand total	140,342,000	78,067,000	218,409,000

1/ No freezing plants in Alabama, Mississippi, North Carolina, and South Carolina.
2/ Combined with Area F-1 to avoid disclosure of individual plant's pack.
3/ Other frozen vegetables were primarily onions, corn, cauliflower, green peas, turnips, and green peppers.

Source: James L. Pearson, "Utilization of the South's Vegetable Processing Capacity," Department of Agricultural Economics, Florida Agricultural Experiment Stations, Gainesville, Florida, January 1968.

Appendix A
AGRICULTURAL RESOURCES

Table 1

AGRICULTURAL EMPLOYMENT WITHIN THE 10-COUNTY AREA, GEORGIA, AND THE U. S., 1969

	Agricultural Employment	Civilian Work Force	Agricultural Employment as a Percent of Civilian Work Force
Crisp	1,000	7,280	13.7
Dooly	1,090	3,340	32.6
Lee	650	2,160	30.1
Macon	930	4,030	23.1
Marion	300	1,390	21.6
Schley	190	1,000	19.0
Sumter	1,020	10,810	9.5
Taylor	580	2,200	26.4
Terrell	770	4,070	18.9
Webster	240	680	35.3
Total	6,770	36,960	18.3
Georgia	88,400	1,896,100	4.7
United States	3,606,000	77,902,000	4.6

Source: Georgia Department of Labor, Employment Security Agency, "Georgia Annual Average Work Force Estimates," May 1970.

Table 2

DIRECT FARM EMPLOYMENT IN THE 10-COUNTY AREA, 1959 AND 1964

Item	Year 1959	Year 1964	Percent Change 1959-1964
Operators working 1 or more hours per day	3,872	2,374	-38.7
Unpaid family labor (15 hours or more per week)	1,695	961	-43.3
Regular hired workers (150 days or more per year)	2,770	2,824	+ 1.9
Total	8,337	6,159	-26.1
Georgia	139,548	96,051	-31.2
United States		4,261,060	

Source: U. S. Bureau of the Census, Census of Agriculture, 1959 and 1964.

Table 3

FARM CHARACTERISTICS IN THE 10-COUNTY AREA, 1950, 1954, 1959, AND 1964

Year	Number of Farms	Land in Farms (acres)	Proportion of Area in Farms (percent)	Average Size of Farm (acres)
1950	10,384	1,889,020	87.3	181.9
1954	8,557	1,879,796	86.9	219.7
1959	5,245	1,560,615	72.1	297.5
1964	3,611	1,441,909	66.6	399.3

Source: U. S. Bureau of the Census, U. S. Census of Agriculture, 1959 and 1964.

Table 4

CROPLAND HARVESTED AS A PROPORTION OF FARMLAND FOR THE 10-COUNTY AREA, 1950, 1954, 1959, AND 1964

Year	Cropland Harvested (acres)	Land in Farms (acres)	Proportion of Farmland in Cropland (percent)
1950	663,919	1,889,020	35.1
1954	616,449	1,879,796	32.8
1959	522,223	1,560,615	33.5
1964	453,930	1,441,909	31.5

Source: U. S. Bureau of the Census, U. S. Census of Agriculture, 1959 and 1964.

Table 5

PERCENT OF LAND IN FARMS, 1964

County	Land in Farms (acres)	Approximate Land Area (acres)	Proportion in Farms (percent)
Crisp	146,951	189,440	77.6
Dooly	185,737	252,160	73.7
Lee	152,713	227,200	67.2
Macon	172,422	255,360	67.5
Marion	90,900	233,600	38.9
Schley	63,395	103,680	61.1
Sumter	253,778	310,400	81.8
Taylor	158,748	256,000	62.0
Terrell	144,995	210,560	68.9
Webster	72,270	124,800	57.9

Source: U. S. Bureau of the Census, U. S. Census of Agriculture, 1964.

Table 6

CROPLAND HARVESTED AS A PROPORTION OF FARMLAND, BY COUNTY, 1964

County	Cropland Harvested (acres)	Land in Farms (acres)	Proportion of Farmland in Cropland (percent)
Crisp	65,383	146,951	44.5
Dooly	83,980	185,737	45.2
Lee	44,728	152,713	29.3
Macon	58,498	172,422	33.9
Marion	16,300	90,900	17.9
Schley	13,057	63,395	20.6
Sumter	70,858	253,778	37.9
Taylor	29,957	158,748	18.9
Terrell	53,949	144,995	37.1
Webster	17,220	72,270	23.8

Source: U. S. Bureau of the Census, U. S. Census of Agriculture, 1964.

Table 7

EXTENT AND CHARACTERISTICS OF SOIL ASSOCIATIONS SUITABLE FOR CROPLAND BY COUNTY

County	Soil Association[1/]	Approximate Area of County in Association		Degree of Limitations of Soil Association for Use as Cropland[2/]	Main Limiting Properties of Soil Association for Use as Cropland
		Acres	Percent		
Crisp	Tifton-Alapaha-Fuquay	66,304	35	1	
	Tifton-Alapaha-Carnegie	34,099	18	1	
	Tifton-Alapaha-Dothan	28,416	15	1	
	Fuquay-Alapaha	13,261	7	2	Available water capacity
	Fuquay-Grady-Tifton	11,366	6	2	Available water capacity
	Cowarts-Carnegie-Fuquay	9,472	5	2	Root zone
	Lakeland-Fuquay-Plummer	7,578	4	3	Available water capacity
	Orangeburg-Lucy-Fuquay	7,578	4	1	
	Alluvial land, wet-Swamp	5,683	3	3	Flood hazard, water table
	Cuthbert-Susquehanna-Cowarts	5,683	3	3	Shrink-swell potential
	Total	189,440	100		
Dooly	Tifton-Norfolk-Orangeburg	126,080	50	1	
	Faceville-Greenville	63,040	25	1	
	Alluvial land, wet-Swamp-Chewacla-Wehadkee	20,173	8	3	Flood hazard, water table
	Wagram-Lucy-Norfolk	12,608	5	2	Available water capacity
	Wagram-Norfolk	10,086	4	1	
	Alluvial land, wet	7,565	3	3	Flood hazard, water table
	Cuthbert-Susquehanna-Cowarts	5,043	2	3	Shrink-swell potential
	Goldsboro-Ardille-Robertsdale	5,043	2	2	Flood hazard, water table
	Grady-Rains	2,522	1	3	Flood hazard, water table
	Total	252,160	100		
Lee	Tifton-Norfolk-Grady	63,616	28	1	
	Wagram-Lakeland-Lucy	40,896	18	3	Available water capacity
	Greenville-Tifton-Faceville	27,264	12	1	
	Alluvial land, wet-Swamp-Grady-Rains	22,720	10	3	Water table flood hazard

Table 7 (continued)

County	Soil Association[1/]	Approximate Area of County in Association		Degree of Limitations of Soil Association for Use as Cropland[2/]	Main Limiting Properties of Soil Association for Use as Cropland
		Acres	Percent		
Lee (cont.)	Wagram-Lakeland-Lucy-Grady	20,448	9	3	Available water capacity
	Orangeburg-Red Bay-Greenville-Faceville	15,904	7	1	
	Tifton-Greenville-Faceville	15,904	7	1	
	Orangeburg-Grady-Faceville-Tifton	11,360	5	1	
	Tifton-Norfolk	4,544	2	1	
	Lakeland-Lucy-Americus	2,272	1	3	Available water capacity
	Orangeburg-Lucy-Wagram-Norfolk	2,272	1	1	
	Total	227,200	100		
Macon	Orangeburg-Norfolk	71,501	28	1	
	Faceville-Greenville	51,072	20	1	
	Wagram-Lucy-Norfolk	51,072	20	2	Available water capacity
	Alluvial land, wet-Swamp	20,429	8	3	Flood hazard, water table
	Chewacla-Wehadkee-Alluvial land, wet	12,768	5	3	Flood hazard, water table
	Orangeburg-Red Bay-Americus	12,768	5	1	
	Vaucluse-Hoffman-Lakeland	12,768	5	3	Slope
	Lakeland-Eustis-Gilead (0% to 8% slopes)	10,214	4	3	Available water capacity
	Lakeland-Eustis-Gilead (8% to 12% slopes)	5,107	2	3	Available water capacity, slope
	Total	247,699	97		
Marion	Lakeland	74,752	32	3	Available water capacity
	Orangeburg-Lucy-Wagram	58,400	25	1	
	Cuthbert-Vaucluse	35,040	15	3	Slope
	Vaucluse-Lakeland	35,040	15	3	Slope
	Alluvial land, wet-Swamp	18,688	8	3	Flood hazard, water table
	Shubuta	11,680	5	2	Slope, productivity
	Total	233,600	100		

Table 7 (continued)

County	Soil Association[1/]	Approximate Area of County in Association Acres	Approximate Area of County in Association Percent	Degree of Limitations of Soil Association for Use as Cropland[2/]	Main Limiting Properties of Soil Association for Use as Cropland
Schley	Orangeburg-Red Bay-Greenville-Faceville	36,288	35	1	
	Vaucluse-Lakeland	32,141	31	3	Slope
	Lakeland-Vaucluse	21,773	21	3	Available water capacity
	Alluvial land, wet-Swamp	8,294	8	3	Flood hazard, water table
	Lakeland-Lucy-Americus	5,184	5	3	Available water capacity
	Total	103,680	100		
Sumter	Tifton-Greenville-Faceville	155,200	50	1	
	Orangeburg-Red Bay-Greenville-Faceville	74,496	24	1	
	Lakeland-Lucy-Americus	27,936	9	3	Available water capacity
	Alluvial land, wet-Swamp	21,728	7	3	Flood hazard, water table
	Carnegie-Henderson	21,728	7	3	Slope
	Tifton-Norfolk-Grady	9,312	3	1	
	Total	310,400	100		
Taylor	Lakeland-Eustis-Gilead (0% to 8% slopes)	89,600	35	3	Available water capacity
	Orangeburg-Norfolk	46,080	18	1	
	Vaucluse-Hoffman-Lakeland	30,720	12	3	Slope
	Wagram-Lakeland	30,720	12	2	Available water capacity
	Alluvial land, wet-Swamp	25,600	10	3	Flood hazard, water table
	Lakeland-Eustis-Gilead (8% to 12% slopes)	10,240	4	3	Available water capacity, slope
	Cecil-Davidson-Appling	7,680	3	1	
	Chewacla-Wehadkee-Alluvial land, wet	7,680	3	3	Flood hazard, water table
	Helena-Vance-Cecil	7,680	3	3	
	Total	256,000	100		

Table 7 (continued)

County	Soil Association[1/]	Approximate Area of County in Association		Degree of Limitations of Soil Association for Use as Cropland[2/]	Main Limiting Properties of Soil Association for Use as Cropland
		Acres	Percent		
Terrell	Greenville-Tifton-Faceville	75,802	36	1	
	Tifton-Greenville-Faceville	65,274	31	1	
	Lakeland-Lucy-Americus	21,056	10	3	Available water capacity
	Alluvial land, wet-Swamp-Grady-Rains	18,950	9	3	Water table, flood hazard
	Tifton-Norfolk-Grady	16,845	8	1	
	Orangeburg-Tifton-Norfolk	8,422	4	1	
	Orangeburg-Red Bay-Greenville-Faceville	4,211	2	1	
	Total	210,560	100		
Webster	Vaucluse-Lakeland	44,317	37	3	Slope
	Lakeland-Lucy-Americus	28,746	24	3	Available water capacity
	Orangeburg-Red Bay-Greenville-Faceville	23,955	20	1	
	Lakeland	9,583	8	3	Available water capacity
	Alluvial land, wet-Swamp	8,384	7	3	Flood hazard, water table
	Greenville-Faceville-Tifton	3,593	3	1	
	Greenville-Faceville-Orangeburg-Red Bay	1,198	1	1	
	Total	119,776	100		

1/ Soil associations which comprise less than 1% of the county not shown.

2/ Degree of Limitations:

1. Slight - Majority of soils in the soil association impose only slight limitations for cropland use; difficulties due to soil conditions can be readily and economically overcome.
2. Moderate - Majority of soils in the soil association impose moderate limitations for cropland use; difficulties due to soil conditions can be overcome and it may be economical to do so.
3. Severe - Majority of the soils in the soil association impose severe limitations for cropland use; difficulties due to soil conditions will be hard and costly to overcome, if at all.

Source: U. S. Department of Agriculture, Soil Conservation Service.

Layne-ATLANTIC COMPANY

Exhibit 1

April 14, 1971

Georgia Institute of Technology
Area Development Branch
Industrial Development Division

Attention: Mr. William T. Studstill
Southwest Georgia Branch

Gentlemen:

Following for your information obtained from our records.

GROUND WATER.

Within the area under consideration, ground water is a source for irrigation purposes in varying quantities. These areas are defined as geological zones as shown in Figure 1. (Map showing location of area and physiographic provinces.)

FALL LINE.

Chattahoochee, Muscogee, Talbot. Ground water limited. Irrigation not practical.

Quitman, Randolph, Stewart, Webster. Estimated capacity 100 to 500 gpm. Estimated well depth 200 to 1500 feet.
Aquifer - Sand and Clays.
Well Construction - Gravel Wall.

Marion, Schley, Taylor, Crawford (South part ONLY).
Estimated capacity - 100 to 800 gpm.
Estimated well depth - 200 to 1000 feet.
Aquifer - Sand, Small amount limestone.
Well Construction - Gravel Wall.

FORT VALLEY PLATEAU.

Peach, Houston and part of Macon County (N. E.)
Estimated capacity - 800 to 1500 gpm.
Estimated well depth - 400 to 1000 feet.
Aquifer - Sand
Well Construction - Large Gravel Wall
Chemistry - Some iron with high CO_2
Fairly corrosive on pumping equipment.

continued'

DOUGHERTY PLAIN.

Calhoun, Dougherty, Lee (West part of Worth).
Sumter, Crisp, Dooly, Pulaski.

Estimated Capacity - 300 to 1500 gpm
Estimated well Depth - 200' to 1000'.
Aquifer - Combination-Ocala limestone, Clayton limestone and large sands.
Well Construction - Combination-open limestone and gravel wall structures.

Respectfully,

SINGER
Layne Atlantic Company

John W. Flatt
District Manager

Table 8

IRRIGATED FARMS WITHIN THE 10-COUNTY AREA, 1964

County	Farms		Land	Average Farm Size
	Number	Percent of All Farms		
Crisp	17	3.9	10,699	629.4
Dooly	2	.4	1,261	630.5
Lee	9	4.3	19,252	2,139.1
Macon	12	2.8	11,364	947.0
Marion	-	-	-	-
Schley	-	-	-	-
Sumter	9	1.6	4,507	500.8
Taylor	6	1.5	8,383	1,397.2
Terrell	2	.5	3,306	1,653.0
Webster	-	-	-	-
Total	57		58,772	1,031
Georgia	6,907		2,104,388	304.6

Source: U. S. Bureau of the Census, Census of Agriculture, 1964.

Table 9

WEATHER DATA FOR AMERICUS, GEORGIA, 1941-1970

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
Temperature (°F)													
Mean Max.	59.7	62.5	68.8	78.2	85.5	90.1	90.8	91.3	86.5	78.4	68.6	60.8	76.8
Mean Min.	38.2	40.0	45.4	53.6	61.1	67.8	70.0	69.4	65.2	54.6	43.9	38.5	54.0
Mean	49.0	51.3	57.1	65.9	73.3	79.0	80.4	80.4	75.9	66.5	56.3	49.7	65.4
Highest	85.0	83.0	93.0	100.0	104.0	104.0	104.0	104.0	102.0	98.0	90.0	81.0	104.0
Year	1949	1957	1961	1956	1962	1954	1952	1968	1957	1954	1961	1946	1968
Lowest	3.0	13.0	18.0	30.0	41.0	47.0	55.0	58.0	39.0	29.9	12.0	2.0	2.0
Year	1966	1970	1960	1944	1944	1956	1967	1968	1967	1957	1950	1962	1962
Av. # Days Max. over 90°	0	0	*	1	9	18	19	21	11	1	*	0	80
Av. # Days Min. under 32°	11	8	4	*	0	0	0	0	0	*	4	10	37
Precipitation (inches)													
Average	4.37	4.27	5.41	4.06	3.45	4.73	5.43	4.16	3.87	2.05	2.56	4.64	49.00
Greatest Monthly Amount	13.73	8.01	12.11	12.26	7.54	11.28	12.32	11.16	11.54	7.78	9.36	12.29	78.91
Year	1964	1966	1944	1944	1966	1941	1964	1966	1954	1959	1951	1953	1964
Least Monthly Amount	0.64	0.95	0.48	0.35	0.00	0.71	1.42	0.72	1.10	0.00	0.12	0.42	26.53
Year	1954	1947	1955	1967	1962	1944	1952	1963	1958	1963	1960	1955	1954
Greatest One-Day Amount	6.70	3.15	4.26	5.16	2.63	4.63	5.30	3.54	5.23	3.17	3.51	4.11	6.70
Year	1943	1958	1944	1944	1953	1941	1957	1965	1956	1941	1951	1964	1943
Av. # Days .1 in. +	6	7	8	6	6	7	9	7	6	4	4	7	77.00

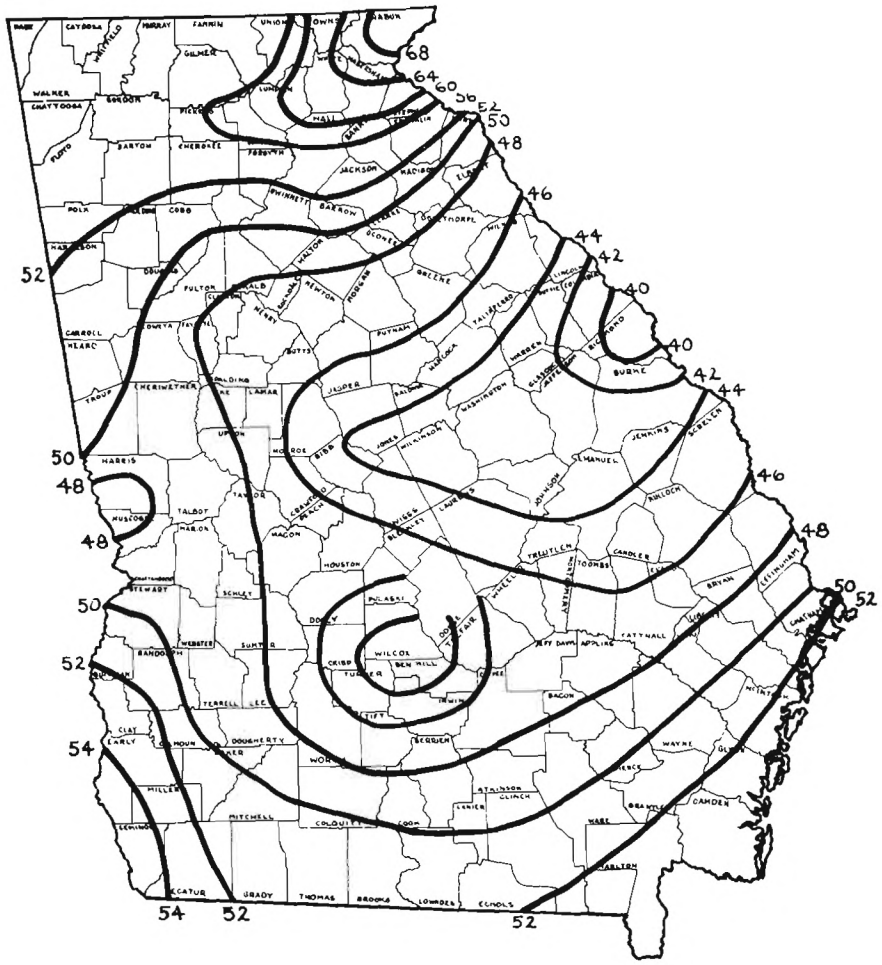
* Less than ½.

Average date of last spring temperature less than 32° - March 17.
Average date of first fall temperature less than 32° - November 12.
Average length of freeze-free period - 240 days.

Source: U. S. Department of Commerce, Environmental Science Service Administration, Weather Bureau.

FIGURE 1

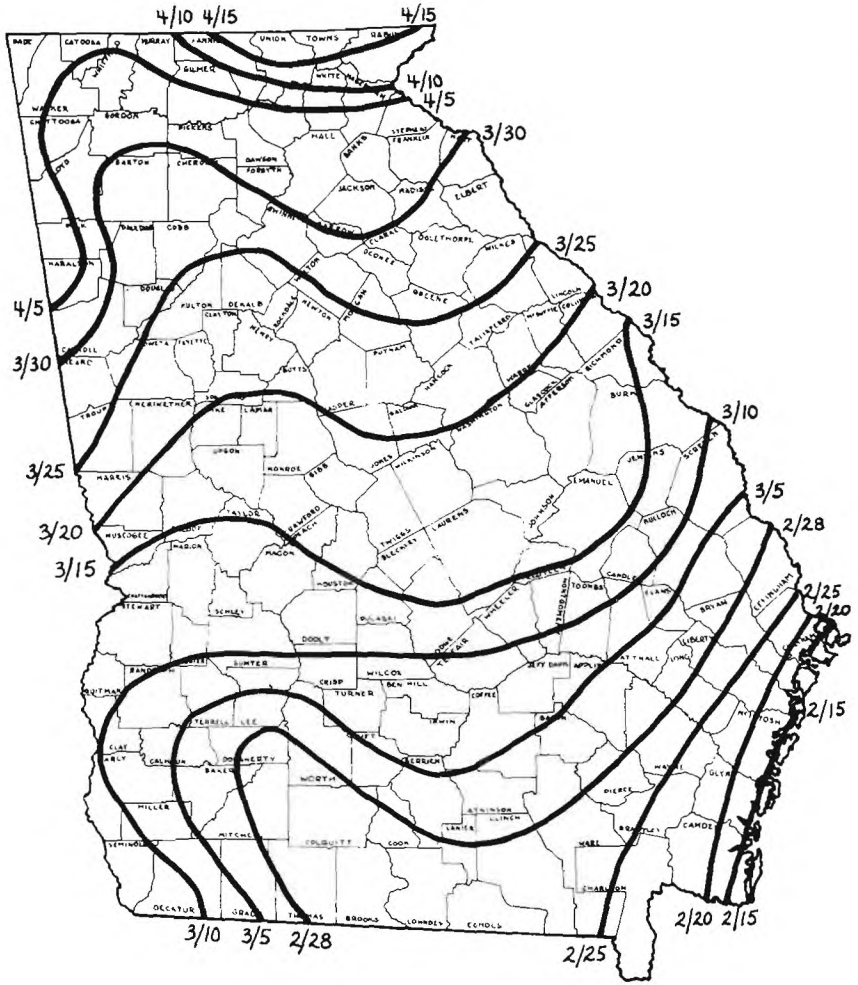
AVERAGE ANNUAL PRECIPITATION



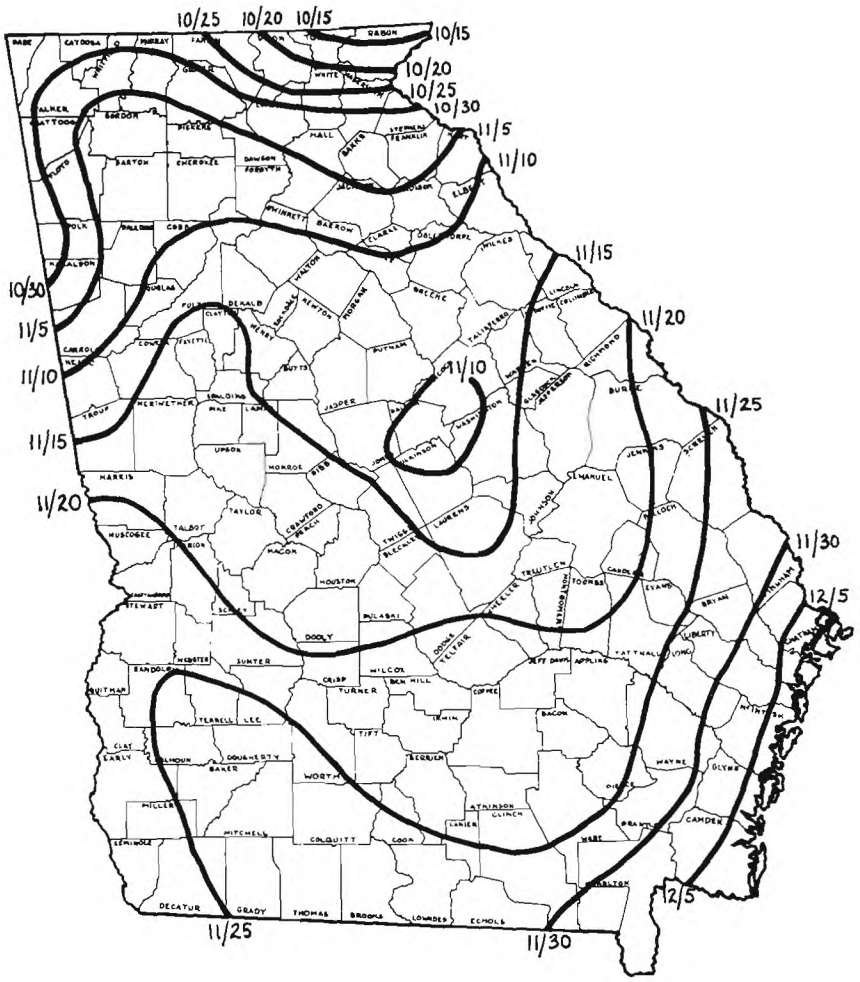
SOURCE: Georgia Agricultural Handbook, Fourth Edition, Cooperative Extension Service, University of Georgia College of Agriculture, Athens, Ga.

FIGURE 2

TEMPERATURE IN SPRING



AVERAGE DATES OF LAST 32°



SOURCE: Georgia Agricultural Handbook, Fourth Edition, Cooperative Extension Service, University of Georgia College of Agriculture, Athens, Ga.

Appendix B

THE PRODUCTION OF VEGETABLES

Exhibit 1

COOPERATIVE EXTENSION SERVICE
University of Georgia College of Agriculture
Athens, Georgia 30601

The University of Georgia and The U. S. Department of Agriculture Cooperating

P. O. Box 48
Tifton, Georgia 31794
February 24, 1971

Mr. Eric Newsome
Georgia Institute of Technology of Albany
P. O. Box 1785
Albany, Georgia 31702

Dear Mr. Newsome:

On the enclosed sheet are listed the approximate dates for planting and harvesting for the vegetables referred to you in a previous letter. These dates will vary somewhat, due to seasonal differences and from the southern part to the middle part of the state. For example, the early Spring planting dates are for South Georgia but would be about two weeks later in Middle Georgia. Possibly, the Fall planting dates would be a week or two earlier in Middle Georgia.

I hope this information will be helpful to you and that you realize that it is not an ironclad schedule. If I can help you in any way in the future, please feel free to call on me.

Sincerely,

James M. Barber
Area Extension Horticulturist

JMB:jd

Enclosure

	Planting Dates	Harvesting Dates
Southern Peas	March 25 - Aug. 5	June 1 - October 10
Turnip Greens - Spring	Feb. 20 - April 1	April 12 - June 1
Fall	Aug. 20 - Oct. 1	October, November
Mustard Greens - Spring	Feb. 20 - April 1	April 12 to June 1
Fall	Aug. 20 - Oct. 1	October, November
Collards - Spring	Feb. 10 - March 15	April 20 - May 20
Fall	August, September	Sept. 20 - Dec. 10
Turnip Roots	Aug. 15 - Sept. 15	Sept. 20 - Dec. 20
Snapbeans - Spring	March 15 - April 15	May 15 - June 10
Fall	August	Sept. 25 - October
Speckled Butterbeans	April - August 5	June 5 - Oct. 15
Squash	March 20 - April 10	May 10 - July 5
Okra (Emerald Type)	March 25 - April 15	May 20 - Sept. 15
Pimento Pepper	April	June 20 - Aug. 10
Sweet Potatoes	April - June	July - October

Exhibit 2

COOPERATIVE EXTENSION SERVICE
University of Georgia College of Agriculture
Athens, Georgia 30601

The University of Georgia and The U. S. Department of Agriculture Cooperating

P. O. Box 48
Tifton, Georgia 31794
April 13, 1971

Mr. Eric Newsome
Georgia Institute of Technology of Albany
P. O. Box 1785
Albany, Georgia 31702

Dear Mr. Newsome:

This is a revised listing of vegetable crops that can be successfully grown in South Georgia for processing. Included is an expected average yield and a potential yield of the best growers.

	Expected Yield/Acre*	Potential Yield/Acre**
Southern peas	1500-2000# shelled	3000# shelled
Turnip greens	8-10 tons (1 cutting)	15-20 tons (2-3 cuttings)
Mustard greens	8-10 tons (1 cutting)	15-20 tons (2-3 cuttings)
Collards	8 tons	10 tons
Turnip roots	15-20 tons	25 tons
Snap beans	3 tons (60-75% size 4 and under)	4½ tons
Speckled butterbeans	2400# shelled	2800# shelled
Summer Crookneck Squash	8-10 tons (400-500 bu.)	12 tons (600 bu.)
Zucchini squash	10 tons	12-14 tons
Okra (Emerald type)	8-12 tons	15 tons
Pimiento Pepper	2½-3 tons	5 tons
Sweet potatoes	10-12½ tons (400-500 bu.) field run	18 tons

Kale, Broccoli, Asparagus (Middle Georgia) - Don't know expected yields but believe they would be competitive and profitable.

*Expected yield - Good growers using good management practices consistently make these yields or better now. Our present average yields are not this high, however, since they include many marginal to average growers.

**Potential yield - Many of these yield figures have been reached and some exceeded by our better growers. Under permanent irrigation, very good management and ideal conditions, we feel that these are realistic potentials. With optimum use of irrigation and closer plant populations, greater yields can be expected on certain crops in the future.

I hope this additional information will be helpful to you in making up your report. If I can assist further in any way, please let me know.

Sincerely,

James M. Barber
Area Extension Horticulturist

JMB/jd
cc: Mr. R. L. Livingston

Exhibit 3

COOPERATIVE EXTENSION SERVICE
University of Georgia College of Agriculture
Athens, Georgia 30601

The University of Georgia and The U. S. Department of Agriculture Cooperating

April 13, 1971

Mr. Eric Newsome
Georgia Institute of Technology of Albany
P. O. Box 1785
Albany, Georgia 31701

Dear Mr. Newsome:

Mr. R. L. Livingston, Head, Extension Horticulture Department requested that I furnish you with the following information on fruits that may be produced in the Americus, Georgia area.

Fruit Crop	Average Yield Per Acre	Potential Yield Per Acre
Apples	Unknown	600 bu.
Peaches	100 bu.	250 bu.
Strawberries	8600 qts.	14,500 qts.
Blueberries	8000 pts.	14,000 pts.
Muscadine Grapes	4 tons	8 tons
Blackberries	2000 qts.	3200 qts.

The average yield for apples is shown as "unknown" because we have never had scientific research done on apples that far south. I am of the opinion that apples grown for fresh sales cannot be produced simply because of the excessively high night temperatures that inhibit the red color development. There might be a possibility for the production of processed apples if varietal selection is very carefully considered.

The small fruits respond to irrigation just as vegetables crops do. In fact, to be highly successful with strawberry production, irrigation is imperative especially in the fall of the year. They lay down the fruit buds in late summer for the next years crop so this is why irrigation is so important in September and October.

Blueberries, muscadine grapes and blackberries may be grown with less spraying than any of the other fruits. Strawberries would require some pest control while apples and peaches must have an intensive spray program carried out.

April 13, 1971

Fruit crops cost more to establish but the returns are higher and in most cases the plantings are more permanent with only replacement of a few plants being necessary in future years.

If I can help further, feel free to contact me.

Yours very truly,

C. D. Spivey
Extension Horticulturist

CDS/be

cc: R. L. Livingston

Exhibit 4

The University of Georgia College of Agriculture

Teaching • Research • Extension

ATHENS, GEORGIA 30601

OFFICE OF THE ASSISTANT TO THE DEAN

PLEASE REPLY TO:
110 CONNER HALL
404/542-4199

April 26, 1971

Mr. Eric A. Newsom
Georgia Institute of Technology
P.O. Box-1785
Albany, Georgia 31702

Dear Mr. Newsom:

Enclosed are listings of food scientists, horticulturist and plant pathologists employed by the University of Georgia College of Agriculture which you requested from Dean Henry W. Garren.

You will note I have listed them by degree and location. The lists include both research scientists and extension specialists. Joint U.S. Department of Agriculture and U.S. Forest Service appointments have been indicated.

Permit me to mention our modern food science facilities both here at the College Station and at the Georgia Station in Experiment. The faculity at Experiment has been in operation only five years and it includes several extremely well-equipped laboratories. Much of the work there is in product development and post-harvest research. If you have an opportunity to visit there, I'm sure you will be impressed with the total program.

You will likely want to include several professional staff members of the Richard B. Russell Agricultural Research Center located here in Athens. It is involved in a number of research and development projects under the Agricultural Research Service of the U.S. Department of Agriculture.

Unfortunately, I do not have an accurate listing of the professional staff. However, I feel sure that if you contact Dr. C. H. Harry Neufeld, center director, he will be able to provide all the information you need.

We hope the enclosed listings will be helpful to you. Call upon us if we can be of further help.

Regards,

Charles B. Cooper, Jr.
Assistant to the Dean

CBC:jh

FOOD SCIENTISTS

* = currently working with vegetables

all are qualified by experience and/or education to work with vegetables

COLLEGE OF AGRICULTURE EXPERIMENT STATIONS

AYRES, J.C., Ph.D., Division Chairman and Department Head, College Station, Athens

College Station, Athens:

CARPENTER, J.A., Ph.D.
EITENMILLER, Ronald, Ph.D.
FLANAGAN, W.P.
HAMDY, M.K., Ph.D.
KOEHLER, P.E., Ph.D.
LILLARD, D.A., Ph.D.
* POWERS, J.J., Ph.D.
SAFFLE, R.L., Ph.D.
SANDERS, D.H., B.S. (joint USDA)
* SMIT, C.J.B., Ph.D.
TOLEDO, R.T., Ph.D.

Georgia Station, Experiment:

* SHEWFELT, A.L., Ph.D., Department Head
* BOGGESS, T.S., M.S.
CECIL, S.R., M.S.
CHIPLEY, J.R., Ph.D.
* HEATON, E.K., M.S.
LANDES, D.R., Ph.D.
* LI, K.C., Ph.D.
* McWATTERS, Mrs. Kay H., M.S.
MILLER, Sara J., B.S.
* WORTHINGTON, R.E., Ph.D.
* YOUNG, C.T., M.S.

COOPERATIVE EXTENSION SERVICE

CHRISTIAN, J.A., Ph.D., Department Head, Athens
BADENHOP, A.F., Ph.D., Athens
SCHULER, G.A., Ph.D., Athens

HORTICULTURISTS

* = currently working with vegetables

all are qualified by experience and/or education to work with vegetables

COLLEGE OF AGRICULTURE EXPERIMENT STATIONS

HENDERSHOTT, C.H., Ph.D., Division Chairman and Department Head, College Station, Athens

College Station, Athens:

* COUVILLON, Gary A., M.S.
JOHNSTONE, F.E., Jr., Ph.D.
POKORNY, F.A., Ph.D.
RUTLAND, Rufus B., Ph.D.
SPARKS, Darrell, Ph.D.
TINGA, J.H., Ph.D.
* VINES, H.M., Ph.D.

Coastal Plain Station, Tifton:

* HARMON, S.A., Ph.D., Department Head
BRIGHTWELL, W.T., Ph.D.
* del VALLE, C.G., Ph.D.
* GLAZE, N.C., Ph.D. (joint USDA)
* HEGWOOD, D.A., Ph.D.
* JAWORSKI, C.A., Ph.D. (joint USDA)
WORLEY, R.E., Ph.D.

Georgia Station, Experiment:

* BRANTLEY, B.B., Ph.D., Department Head
CORLEY, W.L., M.S.
DANIELL, J.W., Ph.D.
DAVIS, T.S., B.S.
* DEMPSEY, A.H., Ph.D.
FRETZ, T.A., Ph.D.
SAVAGE, E.F., Ph.D.

COOPERATIVE EXTENSION SERVICE

LIVINGSTON, R.L., M.S., Department Head, Athens
BARBER, J.M., M.S., Tifton
CLAY, Henry, Jr., M.S., Savannah
COLDITZ, Paul, M.S., Blairsville
KEEBLE, Troy, M.S., Atlanta
SMITH, G.E., M.S., Athens
SPIVEY, C.D., M.S., Athens
TAYLOR, G.C., Ph.D., Tifton

PLANT PATHOLOGISTS

* = currently working with vegetables

all are qualified by experience and/or education to work with vegetable diseases

COLLEGE OF AGRICULTURE EXPERIMENT STATIONS

GARRETT, Wiley N., Ph.D., Division Chairman and Department Head, College Station, Athens

College Station, Athens:

BIRD, G.W., Ph.D.
CAMPBELL, W.A., Ph.D. (joint USFS)
DWINELL, L.D., Ph.D. (joint USFS)
HANLIN, R.T., Ph.D.
HENDRIX, F.F., Jr., Ph.D.
KOZELNICKY, G.M., M.S.
KUHN, C.W., Ph.D.
LEHMAN, Paul, Ph.D.
LUTTRELL, E.S., Ph.D.
MARX, D.H., Ph.D. (joint USFS)
* McCARTER, S.M., Ph.D.
PAPA, K.E., Ph.D.
POWELL, W.M., Ph.D.
POWERS, H.R., Ph.D. (joint USFS)
RONCADORI, R.W., Ph.D.
ROSS, E.W., Ph.D. (joint USFS)
ROWAN, S.J., Ph.D. (joint USFS)
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TAYLOR, Jack, Ph.D.
* WYNN, W.K., Ph.D.

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BELL, D.K., Ph. D.
DOUPNIK, B.L., Jr., Ph.D.
FLOWERS, Randal, Ph.D.
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GILL, D.L., Ph.D. (joint USDA)
* JOHNSON, A.W., Ph.D. (joint USDA)
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ARMSTRONG, Mrs. J.K., Ph.D.
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COOPERATIVE EXTENSION SERVICE

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MOTSINGER, Ralph E., Ph.D., Athens
THOMPSON, S.S., Ph.D., Coastal Plain Station, Tifton

Appendix C

PLANT LOCATION FACTORS

Exhibit 1
WEST CENTRAL GEORGIA AREA INDUSTRIAL SITE

Americus & Sumter County Development Corp. Property - 330 acres
Americus (Sumter County), Georgia

IZE: Approximately 330 acres.

OCATION: Two miles north of Americus, Ga., between Bumphead and Souther Field roads.

NVIRONMENT: Generally level to rolling farm and pasture land, except industrial area to the east.

CCESS: Bumphead and Souther Field roads; approximately 3 miles north of U. S. Highways 19 and 280.

RANSPORTATION: Central of Georgia Rwy. main line passes through the property. County airport, with 4,200- and 3,800-foot paved and lighted runways, is about one mile east. Five motor freight lines.

WATER: Not presently available.

SEWERAGE: Not presently available.

ELECTRIC POWER: 44-kv crosses property, 7.2-kv along east and west boundaries -- Georgia Power Co.

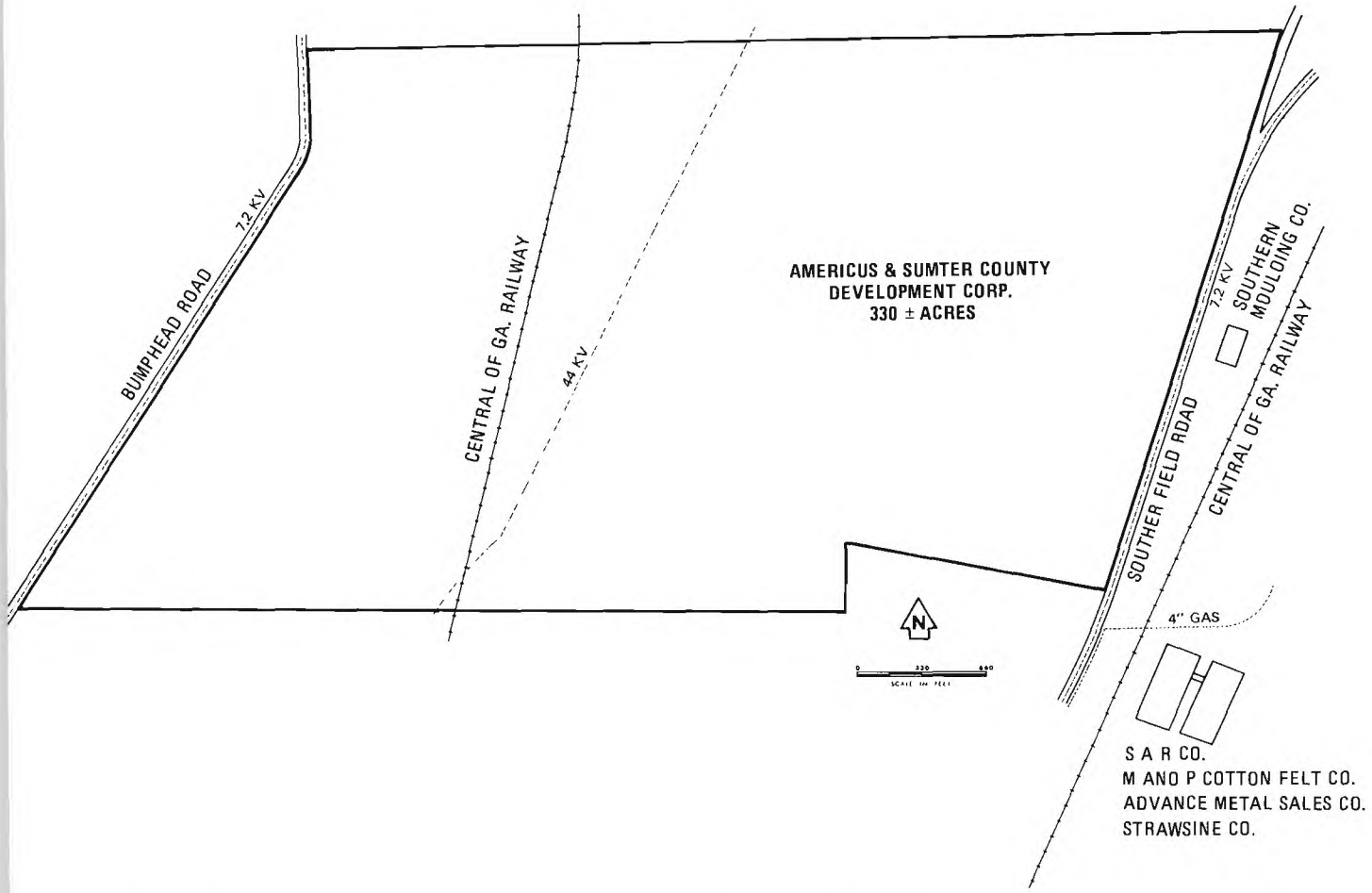
NATURAL GAS: 4-inch main to property -- Americus Utility Commission.

WASTE COLLECTION: Not presently available.

DRAINAGE: Natural.

OWNER: Americus & Sumter County Development Corp.

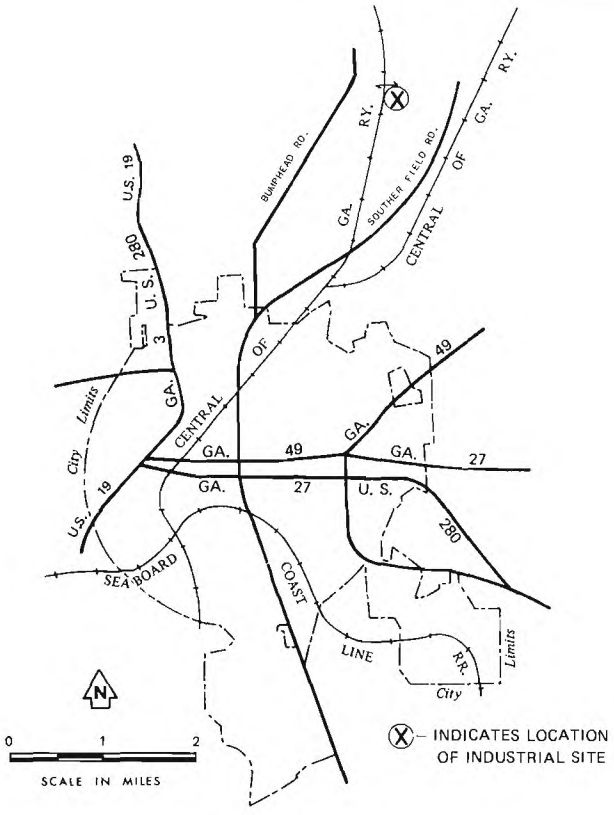
CONTACT: Mr. Woodrow James, President, Americus & Sumter County Development Corp., P. O. Box 734, Americus, Ga.



AMERICUS, GEORGIA

Americus, the county seat of Sumter County, is located 60 miles southeast of Columbus, 73 miles southwest of Macon, and 38 miles north of Albany, Georgia. U. S. Highways 19 (north-south) and 280 (east-west) pass through the city. Interstate Highway 75 (north-south) is 29 miles to the east. The Central of Georgia Railway and the Seaboard Coast Line Railroad provide main-line rail service. Nearest commercial airline service is at Albany. A local air facility has two paved runways for itinerant aircraft. Americus had a 1966 estimated population of 15,100, and Sumter County reported 25,500 persons.

Manufacturing activity in Americus is centered around the mobile home industry, apparel products, and light metal fabrication. Agricultural activity and forest products are also basic to the economy. The available labor supply from Sumter and surrounding counties was estimated to be 3,500 persons in March 1967.



AMERICUS, GEORGIA

FIGURE 1
PROPOSED PLANT SITE NEAR DESOTO, GEORGIA

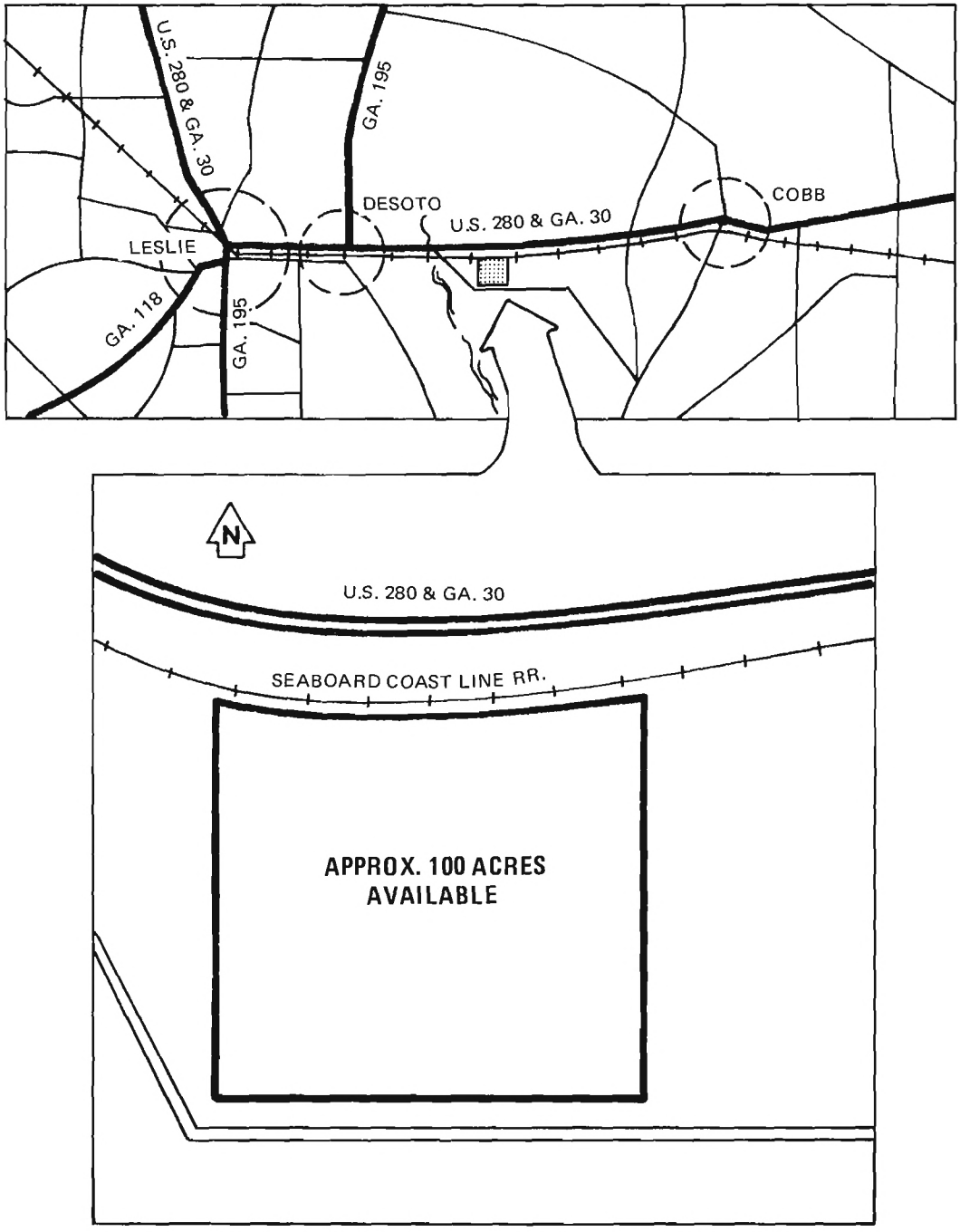


Table 1

STRAIGHT-TIME HOURLY RATES PAID EXPERIENCED WORKERS IN SOUTHWEST GEORGIA

Job Title	Most Prevalent Wage Rate			
	Rate Range		Area	Statewide
	From	To	Average	Average
Assembler	$1.600	$1.800	$1.755	$1.828
Batter Mixer	2.260	2.260	2.260	2.419
Batter Scaler	2.130	2.130	2.130	2.253
Battery Loader	1.670	1.960	1.804	1.860
Beam Warper Tender, Automatic	1.780	2.350	1.926	2.039
Body Wireman	2.130	2.800	2.455	2.344
Boner, Meat	1.750	1.750	1.750	2.093
Brake Operator, Sheet Metal I	1.600	2.980	2.488	2.453
Brazer Assembler	2.150	2.150	2.150	2.116
Brazing Machine Operator	1.800	2.300	1.942	2.017
Butcher, All Round	1.750	1.750	1.750	1.996
Cabinet Assembler	2.130	2.800	2.452	2.328
Chain Builder, Loom Control	1.650	1.900	1.816	2.015
Chicken Cutter	1.750	1.750	1.750	1.761
Chopping Machine Operator	1.750	1.750	1.750	2.101
Cloth Doffer	1.790	2.150	1.842	1.882
Cloth Examiner, Machine	1.670	1.800	1.761	1.962
Cracker and Cookie Machine Operator	1.850	3.045	2.834	2.588
Cutter, Machine I	2.000	2.750	2.358	2.419
Die Cutter	1.800	1.800	1.800	2.587
Door Assembler	2.130	2.800	2.460	2.336
Dough Mixer	2.360	3.045	2.955	2.671
Drawer-in Hand	1.700	2.020	1.971	2.053
Drawing-in Machine Tender	1.850	2.320	2.085	2.253
Drill-Press Set-up Operator, Multi Spindle	2.150	2.150	2.150	2.508
Drill-Press Set-up Operator, Single Spindle	1.600	1.850	1.725	2.424
Engine Lathe Set-up Operator, Tool	2.000	2.750	2.375	2.629
Folding Machine Operator	1.600	1.725	1.668	1.732
Foreman, Mobile Homes	2.130	3.500	2.651	2.650
Framer	2.130	2.800	2.499	2.339
Garment Inspector	1.600	2.300	1.955	1.860
Grader, Dressed Poultry	1.850	1.850	1.850	1.825
Harness Builder	1.650	1.970	1.750	1.996
Jacquard Loom Weaver	2.510	2.690	2.680	2.598
Laborer, Bakery	1.960	2.945	2.215	2.194
Lathe Operator, Production	2.250	2.250	2.250	2.632
Loom Blower	1.650	1.830	1.708	1.751
Loom Changer	1.700	2.420	2.156	2.326
Loom Fixer	2.500	2.760	2.671	2.713
Machine Assembler	1.600	2.300	2.241	2.444
Machinist I	2.500	3.230	3.039	3.234
Marker I	2.000	2.700	2.336	2.409
Metal Hanger	2.130	2.800	2.400	2.289
Milling Machine Operator, Production	2.100	2.500	2.333	2.610

Table 1 (continued)

Job Title	Most Prevalent Wage Rate			
	Rate Range		Area	Statewide
	From	To	Average	Average
Mobile Home Installer	$2.130	$2.250	$2.238	$2.226
Ovenman	2.130	3.045	2.614	2.451
Packager, Hand	1.600	2.610	2.484	2.184
Packager, Machine	1.600	2.945	2.767	2.346
Painter, Spray I	2.100	2.620	2.276	2.805
Patternmaker	2.920	5.870	4.395	3.084
Poultry Dresser	1.600	1.750	1.673	1.752
Presser, Hand	1.600	1.850	1.723	1.847
Presser, Machine	1.800	1.900	1.825	1.907
Sausage Maker	3.500	3.500	3.500	1.997
Sewing Machine Operator, Regular Equipment, Garment	1.650	2.100	1.892	1.907
Sewing Machine Operator, Special Equipment, Garment	1.900	2.100	1.963	1.913
Sewing Machine Repairman	2.000	3.750	2.987	2.811
Shear Operator II	1.800	2.710	2.386	2.554
Sheet Metal Worker	2.150	3.000	2.572	2.979
Slasher Tender	2.220	2.350	2.248	2.314
Smash Hand	1.700	2.040	1.973	2.126
Spreader	1.600	1.950	1.814	1.997
Tool and Die Maker	3.000	3.450	3.336	3.617
Tool Grinder Operator	2.250	3.000	2.437	2.614
Trim Attacher	2.130	2.800	2.468	2.233
Trimmer, Hand	1.600	2.000	1.836	1.819
Trimming Machine Operator	1.750	1.750	1.750	1.888
Turret Lathe Set-up Operator	2.800	2.800	2.800	2.720
Turret Punch Press Operator	1.750	2.200	1.814	2.432
Utility Man	2.250	2.800	2.541	2.299
Variety Saw Operator	2.130	2.800	2.404	2.308
Warp Tying Machine Tender	1.850	2.430	2.325	2.382
Weaver	2.050	2.690	2.413	2.366
Welder, Arc	1.700	3.000	2.236	2.674
Woodworking Machine Operator	2.250	2.800	2.494	2.332

Source: Survey of Manufacturing Wage Rates, Georgia, 1969, Research Division, Georgia Department of Industry and Trade, Atlanta, Georgia.

Table 2

DEFINITION OF JOB TITLES

BLANCHING MACHINE OPERATOR. Tends machine that blanches fruits and vegetables preparatory to canning and preserving. Observes gages, sets dials, and turns valves to fill machine with water and admit steam and to regulate temperature and blanching time.

CANNERY WORKER. Performs any combination of the following tasks in canning, freezing, preserving or packing food products: dumps or places food products in hopper, on sorting table, or on conveyor. Sorts or grades products . . . feeds products to processing equipment . . . trims, peels, and slices products with knife or paring tool. Fills containers, etc.

COOK, KETTLE. Cooks fruits, vegetables, meat, condiments, or fish products, preparatory to extraction of by-products or canning, using cooking equipment. Weighs or measures ingredients according to recipe.

FILLING LINE SET-UP MAN. Sets up, repairs, and maintains machines that fill containers with solids and liquids, and caps, labels, seals, and packs containers, using hand tools and power tools.

PACKAGER, HAND. Packages materials and products by hand.

PACKAGER, MACHINE. Tends machine that performs one or more packing functions such as cleaning, filling, marking, labeling, sorting, tying, weighing, inspecting, packing, wrapping, or closing containers.

SORTING MACHINE OPERATOR. Tends automatic sorting machine that separates fruits, vegetables, and pickles according to size.

WASHER, AGRICULTURAL PRODUCE. Tends machines that washes raw fruits or vegetables preparatory to canning, freezing, or packing. Opens valve to fill machine with water and adds prescribed cleaning agents.