

# Impact of Agricultural Exports on Alabama's Economy



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FIRST PRINTING 4M, FEBRUARY 1985

*Information contained herein is available to all persons without regard to race, color, sex, or national origin.*

# Impact of Agricultural Exports on Alabama's Economy

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## INTRODUCTION

**T**HE IMPORTANCE of international trade in agricultural products may not be fully appreciated by the general public, administrators, educators, and policy makers. Since the early 1970's, it has become such an important consideration in agricultural policy that it can no longer be ignored. While a few agricultural economics departments around the United States have been pioneers in the field of international agricultural trade, most have had little or no work in this area.

Now there is increasing public demand for information on trade. Although national figures are available, there is usually a lack of specific knowledge at the local level. Many are not aware of the interrelationships of agricultural trade with different sectors of the economy. Also, non-agricultural citizens may be surprised to know that agricultural trade affects them to a great extent also.

This publication reports data concerning the importance of international trade in agricultural products to Alabama and was conducted under Alabama Agricultural Experiment Station Project 550 entitled "Impact of International Trade on Alabama Agriculture."

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## **Study Method**

The impact of the agricultural sector in general, and international trade in particular, on the Alabama economy was computed using an updated input-output model of the Alabama economy constructed by Trenchi and Flick (3). An input-output model is a table with all sectors of the economy of a region, state, or country arrayed by columns and rows so as to show sales and purchases occurring between different sectors. Computations called "Type II multipliers" were used to derive the impact of agriculture in general and agricultural trade on selected sectors of the economy. A Type II multiplier is computed from the transactions table of the input-output model and is a number by which an original transaction must be multiplied to obtain the total amount of business generated as a result of the transaction. For agriculture, this would include not only the value of the original sale off the farm, but the business generated for suppliers of inputs to the farmer and the purchase of consumer products by the farm firm and farm family from the money received. It also includes the business induced by all these non-farm firms as they spend the money received from the original transaction.

Other than the use of the input-output model to determine impact of agriculture and agricultural trade on the Alabama economy, other figures and tables in this publication are mostly derived from secondary sources. Some computations were done to derive Alabama's exports of different commodities and products, however.

## **Evolution of U.S. International Agricultural Trade**

The evolution of international agricultural trade in the United States and Alabama has been characterized by a tremendous upsurge in agricultural exports since the early 1970's. Since that time, agricultural exports increased rapidly relative to agricultural imports, resulting in an increasing balance of trade surplus for agriculture, figure 1. At the same time, non-agricultural trade was showing the exact opposite trend, resulting in a deficit in the balance of non-agricultural trade, figure 2. The dramatic net effect of these opposite trends in agricultural and non-agricultural trade can be seen in figure 3. Without the positive balance of agricultural trade, the net overall balance of trade in recent years would have been much worse.

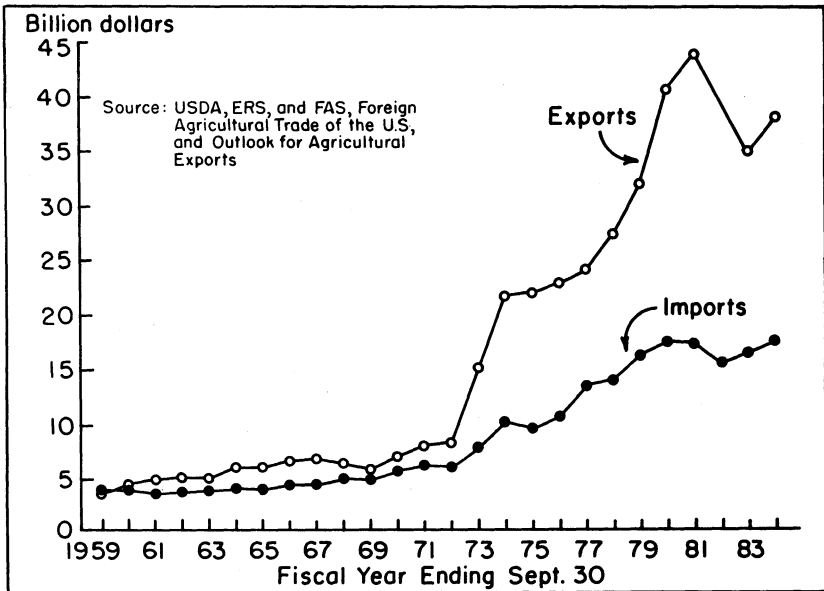


FIG. 1. U.S. exports and imports of agricultural products, 1959-83.

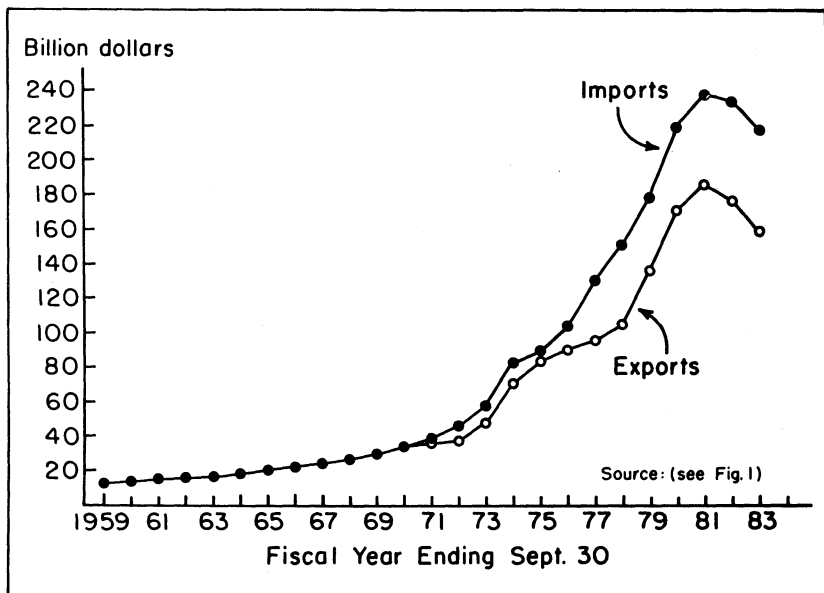
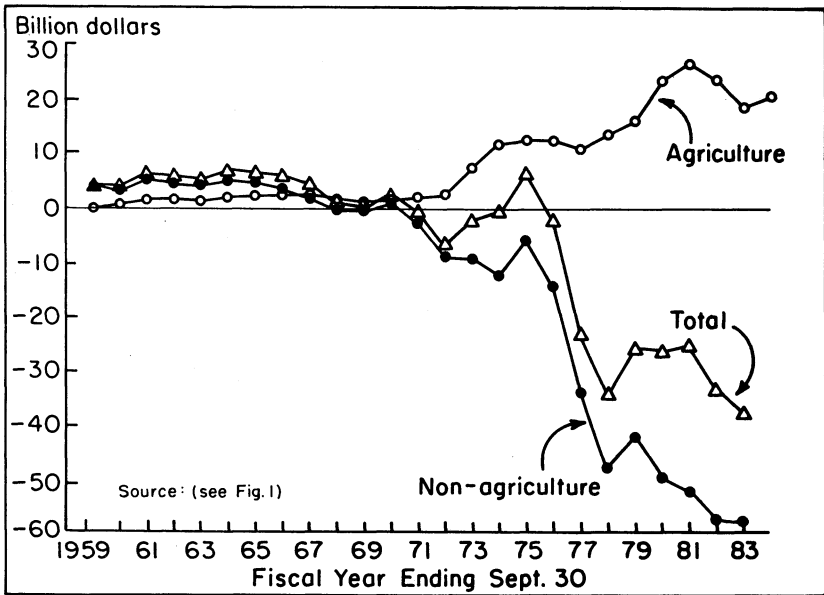


FIG. 2. U.S. exports and imports of non-agricultural products, 1959-83.



**FIG. 3. U.S. balance of international trade: agricultural, non-agricultural, and total.**

Some of the reasons for this increased importance of United States international agricultural trade since the early 1970's are rapid population growth in developing countries; substantial worldwide increases in per capita income; U.S. agriculture's ability to respond to the increased need due to the freeing of rigid controls; a more favorable exchange rate for the U.S. dollar with other currencies than previously, making U.S. farm products more attractive; the expediting of sales overseas by the USDA's Foreign Agriculture Service, the General Sales Manager, and the Commodity Credit Corporation; and promotion of overseas sales by different private commodity organizations, state organizations, the USDA's Foreign Agricultural Service, and other agencies of the Federal Government, such as the State Department and Department of Commerce.

**Trends by Commodities**

Most of the upsurge in agricultural exports since the early 1970's has been in plant and plant products, figure 4. During this period, much U.S. acreage was used that had been in diversion

programs. The resulting surpluses above domestic needs, along with U.S. prices which were more in line with world prices than earlier, increased world demand, and other factors resulted in a peak of \$43.8 billion agricultural exports in fiscal year (FY) 1981. Plants and plant products accounted for \$39.7 billion (90.6 percent) of the total, and animals and animal products \$4.1 billion (9.4 percent).

Three categories of commodities have led the way in increased exports of agricultural products in the 1970's: soybeans and soybean products, wheat and wheat products, and feed grains and products, figure 5. These three accounted for \$26.6 billion (60.7 percent) of the \$43.8 billion exports in the peak year of FY 1981, \$8.0, \$8.1, and \$10.5 billion, respectively.

The decline in agricultural exports since the 1981 FY has been severe and appears to be due to a variety of reasons: a worldwide recession; increasing strength of the dollar, which makes U.S. goods more expensive in other countries' currencies; and the PIK (Payment in Kind) program, which resulted in less of various export crops being planted in 1982-83.

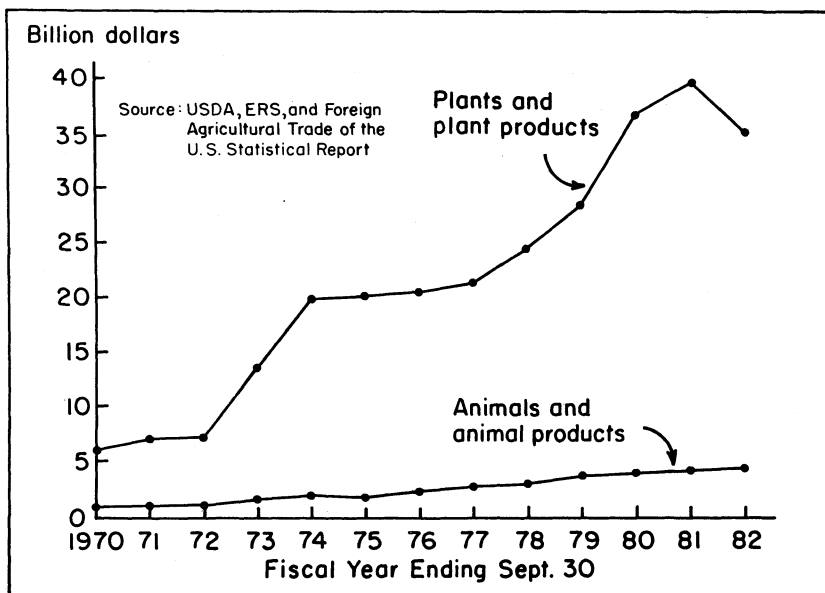


FIG. 4. U.S. exports of animal and plant products, 1970-82.

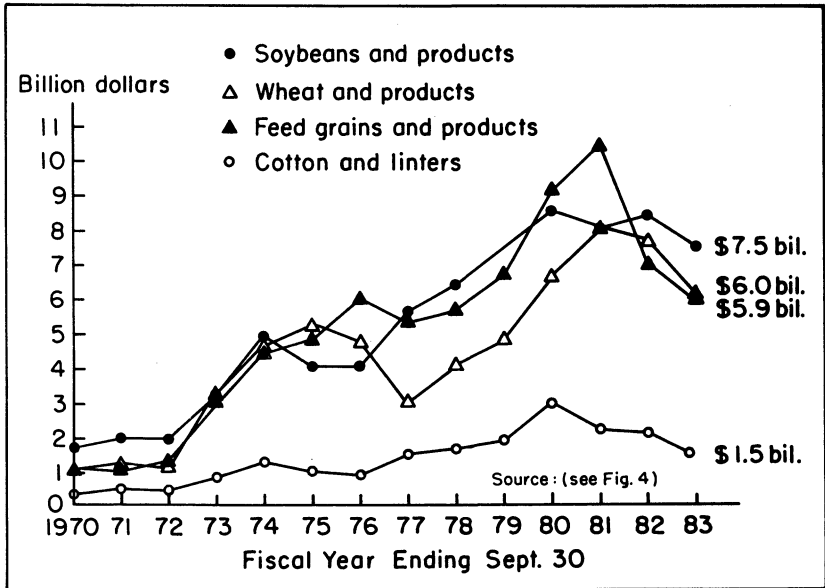


FIG. 5. U.S. exports of selected commodities, 1970-82.

### ALABAMA'S EXPORT SHARES

The evolution of agricultural trade in Alabama is tied to that of the United States as a whole, because most of what U.S. agriculture produces are "fungible" products (i.e., a bushel of soybeans from Alabama is, with minor exceptions, the same as a bushel from Illinois). Therefore, Alabama's "export share" of agricultural trade can be expressed as the percent of the various U.S. agricultural products exported applied to Alabama's production. It can be argued that this concept is better than the actual amounts of different commodities physically exported from Alabama for several reasons. One reason is that much grain is shipped into Alabama from Illinois, Indiana, and Ohio and transshipped out of the Port of Mobile. Seasonality is another problem which makes export share a better concept than actual exports. For instance, some grain from Alabama stays in the State and is consumed in some seasons of the year, while at other seasons, most Alabama grain of a certain type leaves the port to be replaced later by grain imported from the Midwest. Another problem is that some Alabama grain goes into poultry and other



animals and is later exported in another form as broilers or eggs. For these and other reasons, the concept of "export share" is usually used by the USDA and researchers when talking about the importance of trade to any state.

### By Commodity Groups

Use of the concept of "Alabama's export share" shows the importance of international agricultural trade to Alabama's economy. Table 1 indicates that the value of Alabama's export share reached a high of \$480.9 million in FY 1982. This is nearly a quarter of the value of all agricultural production in the State. Soybeans and their products have contributed most to export shares, followed usually by poultry and poultry products and cotton and linters, depending upon the year. It can be seen, however, that wheat and wheat products made a dramatic increase in FY 1982. From a percentage standpoint, Alabama's export share represents more than 50 percent of some products, especially wheat, soybeans, and cotton, figure 6. In other words, more than 1 of every 2 acres of these crops depend upon foreign exports for a market.

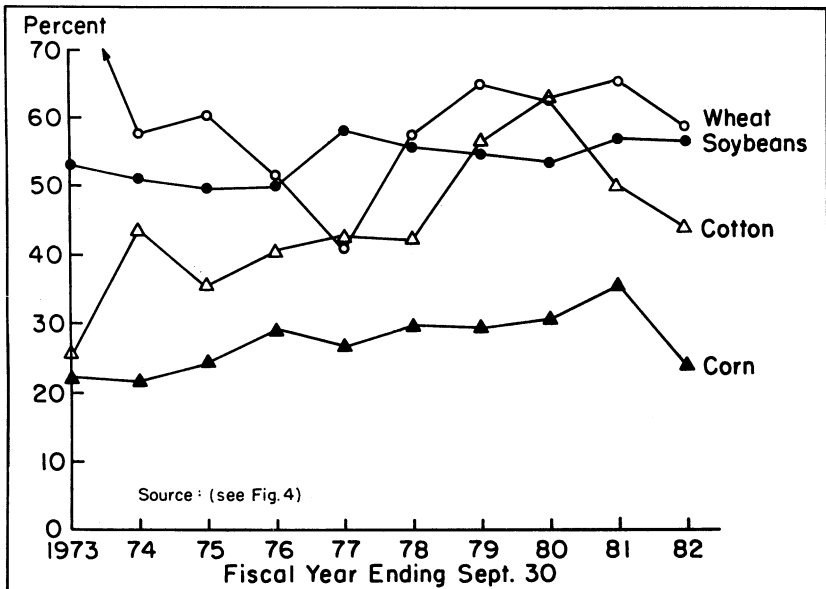


FIG. 6. U.S. and Alabama export shares as a percentage of production, by selected commodities.

Table 1. Alabama's Share of U.S. Exports of Agricultural Commodities, By Commodity Groups, 1977-1982

Year ending Sept. 30	Soybeans and prod- ucts <sup>1</sup>	Wheat and prod- ucts <sup>2</sup>	Cotton and prod- ucts <sup>3</sup>	Poultry and prod- ucts	Peanuts and prod- ucts <sup>4</sup>	Feed grains and prod- ucts <sup>5</sup>	Live animals and meat except poultry	Hides and skins	Fats, oils, and greases <sup>6</sup>	Other <sup>7</sup>	Total
	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>
1977 .....	122.9	3.7	56.3	27.8	28.3	26.8	8.9	9.7	9.7	31.7	325.8
1978 .....	122.3	5.4	36.8	28.6	45.9	7.0	9.4	9.4	8.8	29.0	302.6
1979 .....	165.5	4.9	56.2	31.3	42.0	16.6	12.9	16.3	11.8	32.2	389.7
1980 .....	203.5	11.4	73.1	47.3	41.1	21.0	14.5	11.3	12.0	6.8	442.0
1981 .....	141.4	22.9	60.7	64.4	17.7	15.5	14.6	8.9	10.2	7.5	363.8
1982 .....	195.8	73.7	63.8	47.7	37.3	18.1	14.6	10.1	9.6	10.2	480.9

Source: USDA, ERS, Foreign Agricultural Trade of the U.S.

<sup>1</sup>Includes oil and meal.

<sup>2</sup>Includes wheat flour and bulgar wheat.

<sup>3</sup>Includes linters, oil, and meal.

<sup>4</sup>Includes edible peanuts, peanuts for use as oilseeds, oil, and peanut butter.

<sup>5</sup>Includes corn, barley, oats, grain sorghum, rye, corn gluten feed and meal, corn-soy blends, corn oil, popcorn, and other coarse grain products.

<sup>6</sup>Of animal origin.

<sup>7</sup>Includes live vegetables and preparations, nuts and preparations, fruits and preparations, dairy products, and other miscellaneous.

Table 2. Impact of Agriculture and Agricultural Trade on the Alabama Economy, 1977-82

Measure	Impact by year					
	1977	1978	1979	1980	1981	1982
	Mil. \$	Mil. \$	Mil. \$	Mil. \$	Mil. \$	Mil. \$
Alabama gross state product <sup>1</sup> .....	25,348.0	28,671.0	31,811.0	33,407.0	37,005.0	41,901.0
<b>Agricultural sector</b>						
Direct cash receipts <sup>2</sup> .....	1,571.4	1,912.2	2,130.5	1,920.5	2,244.2	2,249.5
Indirect and induced activity <sup>3</sup> .....	2,251.8	2,731.9	3,049.5	2,745.0	3,230.5	3,244.2
Total economic activity <sup>3</sup> .....	3,823.2	4,644.1	5,180.0	4,665.5	5,474.7	5,493.7
Percent of G.S.P. ....	15.1	16.2	16.3	14.0	14.8	13.1
<b>International agricultural trade</b>						
Alabama's export share <sup>4</sup> .....	325.8	302.6	389.7	442.0	363.8	480.9
Percent of agr. cash rec. ....	20.7	15.8	18.3	23.0	16.2	21.4
Indirect and induced activity <sup>3</sup> .....	491.7	456.7	588.2	667.1	549.1	725.8
Total economic activity <sup>3</sup> .....	816.8	758.7	977.0	1,108.1	912.1	1,205.7
Percent of G.S.P. ....	3.2	2.6	3.1	3.3	2.5	2.9

<sup>1</sup>Source: Office of State Planning and Federal Programs, Office of the Governor, State of Alabama, *Alabama Economic Outlook, 1982*.

<sup>2</sup>Source: Alabama Crop and Livestock Reporting Service in cooperation with USDA, SRS, *Alabama Agricultural Statistics*, Various issues.

<sup>3</sup>Source: Computed from multipliers generated in an input-output model of the Alabama economy constructed by Warren A. Flick and Peter Trenchi III of Auburn University.

<sup>4</sup>Source: USDA, ERS, *Foreign Agriculture Trade of the U.S.*, Various issues.

## **IMPACT ON DIFFERENT SECTORS**

### **General Impact on Alabama Economy**

Before analyzing the impact of agricultural trade on different sectors of the Alabama economy, it may be helpful to look first at the impact of agriculture in general. Table 2 presents the Alabama gross state product (GSP) and compares the impact of agriculture in general, and then international agricultural trade, on the total Alabama economy.

In this table, direct cash receipts include receipts from direct sales of all farm products off the farm plus cash receipts from any federal programs related to these products. This does not include forest products that are not sold directly from farms, nor does it include income of the farm family from non-farm related activities. Direct receipts are then multiplied by a multiplier generated in a state input-output model which also accounts for activity generated in the farm input industries from farmer purchases to produce the farm sales as well as farm families spending for consumer goods as a result of the sales (3). Also included are the so-called "induced" effects as these purchases stimulate additional income and consumer spending.

When direct, indirect, and induced effects of agriculture are considered, it can be seen that agriculture accounts for a large percentage of the GSP, averaging about 15 percent over the years 1977-1982. More accurately, if the agricultural sector were not present, total economic activity in the State would be reduced by 15 percent. Much of this economic activity is generated by sales of insecticides, pesticides, fertilizers, farm machinery, petroleum products, feeds, seed, hired labor, and electricity. These are inputs purchased by agricultural firms to produce the direct farm sales. Also included are the purchases, by households, of groceries, automobiles, homes, televisions, clothing, and a wide variety of consumer goods which could not have been purchased if the income from the sale of farm products had not been received. Further included are the so-called "induced" effects of purchases by the suppliers of production inputs and consumer goods as a result of sales to the farm firm and family.

### **Impact on Major Sectors**

While the importance of international agricultural trade to the agricultural sector is frequently not recognized, its importance for many non-agricultural sectors also may not be recognized, as farm

Table 3. Estimated Economic Activity Created in Different Sectors of the Alabama Economy by Alabama's Agricultural Exports, 1982

Sector	Economic activity, by export commodity								Totals
	Soybeans and products	Wheat and products	Cotton and products	Poultry and products	Peanuts and products	Animals and products excluding poultry	Feed grains and products	Other agricultural products	
	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>	<i>Mil. \$</i>
Alabama's agricultural export share <sup>1</sup> .....	195.8	73.7	63.8	47.7	37.3	34.3	18.1	10.2	480.9
	<b>Sum of direct, indirect, and induced effects of trade on different sectors<sup>2</sup></b>								
Agriculture .....	210.9	79.4	68.7	65.4	40.2	47.0	19.5	11.0	542.1
Chemical and allied .....	64.3	24.2	21.0	3.6	12.3	2.6	5.9	3.4	137.3
Finance, insurance, and real estate .....	42.8	16.1	14.0	5.8	8.2	4.2	4.0	2.2	97.3
Wholesale and ret. ....	19.4	7.3	6.3	4.8	3.7	3.5	1.8	1.0	47.8
Services .....	16.7	6.3	5.4	2.6	3.2	1.8	1.5	.9	38.4
Transportation .....	5.6	2.1	1.8	1.4	1.1	1.0	.5	.3	13.8
Misc. manuf. ....	7.6	2.9	2.5	1.1	1.4	.8	.7	.4	17.4
Commun. and util. ....	8.9	3.4	2.9	1.7	1.7	1.3	.8	.5	21.2
Construction .....	9.7	3.7	3.2	2.0	1.9	1.4	.9	.5	23.3
Other misc. sectors .....	18.3	6.7	5.9	3.2	3.3	2.3	1.8	.9	42.4
Households: wages, etc. ....	92.5	34.8	30.1	21.2	17.6	15.2	8.5	4.8	224.7
Total economic activity .....	496.7	186.9	161.8	112.8	94.6	81.1	45.9	25.9	1,205.7

<sup>1</sup>Source: USDA, ERS, *Foreign Agricultural Trade of the U.S.*, Mar./Apr. 1983.

<sup>2</sup>Computed from direct, indirect, and induced requirements table (revised) from Trenchi, Peter, III, and Warren A. Flick (3).

inputs and consumer goods are purchased by farm firms and families from money earned from trade. Table 3 shows Alabama's export share from trade for seven major groups of farm products, other agricultural products, and totals for 1982, the most recent year for which data were available.

Soybeans and soybean products are the most important category of agricultural products benefiting from trade, accounting for \$195.8 million in 1982. Over the last 5 years, international trade has accounted for approximately 55 percent of the United States's and Alabama's production of soybeans, or over 1 out of every 2 acres harvested. While no other category of products is as important as soybeans in trade, the total economic activity created from all agricultural trade amounted to \$480.9 million in Alabama in 1982.

When the multiplier effect of Alabama's direct export share is accounted for by purchases of inputs and consumer goods and their induced effects, it can be seen in table 3 that \$1,205.7 million of economic activity is generated from international agricultural trade in Alabama. Specific sectors of the total economy of Alabama are shown with the agricultural sector benefiting most as farm firms buy from other farm firms (i.e., beef producers buy calves and other livestock from other farmers, and crop producers buy seed). This does not include the farm firms' profit, which is a cost of doing business that goes to the entrepreneur.

The second most important sector benefiting from international agricultural trade, but listed last in table 3, is the household sector. This includes the profits of farm and other firms as well as wages and salaries resulting from trade. This is the second largest sector after receipts by the agricultural sector.

An important non-agricultural sector benefiting from agricultural trade is the chemical and allied products sector. Crops and crop products make up about 90 percent of all agricultural exports and to grow these crops requires a large quantity of materials from the chemical and allied sector in the form of insecticides, pesticides, fertilizers, and related products. This sector benefited by \$137.3 million from all agriculture as a result of trade in 1982.

Other non-agricultural sectors benefiting from international agricultural trade include the finance, insurance, and real estate sector with \$97.3 million due to trade. This is mostly from interest on loans to farmers. Wholesale and retail trade benefited by \$47.8 million as the middlemen in the handling and processing of farm products. Services, which include grain elevators and stock yards, benefited by \$38.4 million.

## **SUMMARY AND CONCLUSIONS**

U.S. international agricultural trade has increased dramatically since the early 1970's, reaching a peak of \$43.8 billion in FY 1981. Most of this, about 90 percent, has been from plants and plant products. There has been a surplus in the balance of agricultural trade during this period, which has helped reduce the effect of a large negative balance of non-agricultural trade.

The evolution of international agricultural trade for Alabama has generally followed that of the United States, with Alabama's export share of its total value of agricultural production in the State reaching a high of \$480.9 million in 1982. Of this amount in 1982, soybeans and soybean products ranked first, accounting for \$195.8 million.

Direct value of sales of agricultural products is not the only benefit to the Alabama economy, however, whether these products are used domestically or are shipped overseas. Indirect and induced benefits also account for much of the business generated by the agricultural sector. In Alabama, total business generated by agriculture accounts for approximately 15 percent of the Alabama GSP with international agricultural trade accounting for approximately 3 percent. Total economic activity generated by Alabama agriculture in 1982 was \$5,493.7 million out of direct cash receipts of \$2,249.5 million. Total economic activity generated by Alabama's share of international agricultural trade was \$1,205.7 million out of exports of \$480.9 million. Other than the agricultural sector itself, the chemical and allied sector, from which farmers buy their pesticides, insecticides, and fertilizers, benefited most from Alabama's exports in 1982, with \$137.3 million in generated business.

## REFERENCES

- (1) Alabama Crop and Livestock Reporting Service in Cooperation with USDA, SRS. Alabama Agricultural Statistics, various issues.
- (2) Office of State Planning and Federal Programs, Office of the Governor, State of Alabama. Alabama Economic Outlook, 1982.
- (3) TRENCHI, PETER, III AND WARREN A. FLICK. 1982. An Input-Output Model of Alabama's Economy, Bull. 534, Ala. Agr. Exp. Sta. (plus more recent updates of data by the authors).
- (4) USDA, ERS. Foreign Agriculture Trade of the U.S., various issues.
- (5) \_\_\_\_\_ and FAS. Outlook for Agricultural Exports, May 17, 1984.
- (6) \_\_\_\_\_. U.S. Foreign Agricultural Trade Statistical Report, various issues.