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EXTENSION

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Economic Impacts of Florida's Agricultural and Natural Resource Industries¹

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Introduction

The economy of Florida is largely dependent upon its rich natural resource endowments, characterized by a warm-humid climate, extensive freshwater and coastal resources, and a broad array of ecosystems with unusual or unique flora and fauna. It is these natural resources that form the bedrock of the state's agricultural and natural resource industries. Florida's agricultural and natural resource industries comprise a complex and integrated network of enterprises associated with production, processing, and service activities, and are tied to other economic sectors through extensive inter-industry linkages. Figure 1 illustrates the economic structure of these industries, with each small box symbolizing a functional economic role. The economy receives renewable natural resource inputs in the form of sun, rain, soils, timber, etc. The local economy also trades goods and services with the rest of the United States and world economy. These inputs enable the production of raw agricultural commodities by the production sector. The raw commodities are processed into a variety of manufactured products in Florida, including meats, dairy products, preserved

fruits and vegetables, sugar and confectionery products, lumber and wood products, paper and allied products, and fertilizer. These products are then distributed through wholesale and retail channels to consumers in Florida or for export to customers outside the region. Agriculture input vendors and service firms provide critical goods and services to the agricultural and natural resource sector, and Florida residents supply labor to each regional industry. As commodities progress from one economic sector to another, value is added from labor, capital, and management.

Industrial activities stimulate the local economy in three primary ways. First, as direct effects, industries generate output and value-added and provide employment and wages to employees. Second, as indirect effects, purchases of goods and services as inputs from other industries support additional economic activity in these industries. Third, earnings by industry employees boost the local economy through personal consumption expenditures, known as induced effects. The total economic impact is the sum of the direct, indirect and induced effects. Exports of goods to customers

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outside the region have a greater impact than sales to local consumers, by introducing new money into the local economy, which is then recirculated. Also, inputs which are obtained from local firms rather than imported from outside the region are associated with greater economic impact because the money is retained within the region. This factsheet will summarize the direct and total impacts of the individual industries comprising Florida's agricultural and natural resources sector in an attempt to foster a greater public understanding of this sector's contribution to the state's economy.

Methodology

The economic impacts of the agriculture and natural resource industries in Florida were estimated with economic multipliers developed using the *IMPLAN PRO*TM software and associated databases for Florida. The *IMPLAN* system enables construction of regional input-output models for any county, group of counties, or state in the United States based on a combination of county-level and national economic data. Industries are classified into 528 sectors, corresponding to the U.S. Department of Commerce's four-digit Standard Industrial Classification (SIC) System. Multipliers for each sector are available from *IMPLAN* for the economic indicators of output, total value added, employment, employee compensation, labor income, other proprietary income, and indirect business taxes. Furthermore multipliers for direct, indirect, and induced effects are provided. The multipliers for output, value-added, and labor income are stated in terms of dollars per dollar of sales to final demand, while the employment multiplier represents jobs per million dollars of sales to final demand. Total economic impacts were computed by applying the economic multipliers as follows:

$$T_{(\text{Output, VA, Emp})} =$$

$$E \times M_{T(\text{Output, VA, Emp})} + (LFD + ID) \times M_{D(\text{Output, VA, Emp})}$$

where

$$T_{(\text{Output, VA, Emp})} = \text{total economic impacts}$$

E = export demand (sales)

LFD = local final demand (total final demand less exports)

ID = intermediate industry demand from non-agricultural sectors

$M_{T(\text{Output, VA, Emp})}$ = total effects multiplier (direct + indirect + induced effects) for output, value-added, employment

$M_{D(\text{Output, VA, Emp})}$ = direct effects multiplier for output, value-added, and employment.

The expression for total final demand less exports represents local (Florida) final demand. The base information on output and exports for each industry, as well as the multipliers, were provided by the *IMPLAN* system for 1997.

Direct Economic Impacts

Florida's agricultural and natural resource industries produce a wide array of food, fiber, and mineral products, and associated services, including fruits and vegetables, sugar, dairy, livestock and meats, seafood, ornamental plants, tobacco, wood and paper products, fertilizers, chemicals, and machinery. Information on economic characteristics were compiled for a total of 102 distinct industries and their associated commodities that were identified as dependent upon the agricultural or natural resource base in Florida. The gross value of sales, or economic output, of these products and services, was \$31.4 billion (B) in 1997, including \$18.0B exported to customers outside the state of Florida (Table 1). Local final demand by households, governments, and institutions for these products totaled \$5.4B, and intermediate sales by the agriculture and natural resource sector to other Florida industries totaled \$3.8B. The agriculture and natural resource industries provided employment for about 313,643 persons, and generated \$12.3B in value added, including \$7.1B in labor income and \$767 million in indirect business taxes paid to state and local governments. As a share of the overall Florida economy, the agricultural and natural resource industries represented 5.1 percent of economic output, 10.9 percent of exports, 3.3 percent of value added, and 3.9 percent of employment.

The leading industry groups in terms of economic output were fruit and vegetable products (\$5.5B), forest products (\$5.4B), agricultural inputs and services (\$5.1B), other food and tobacco products (\$5.0B), ornamental plants and landscape services (\$2.8B), and livestock and meat products (\$2.1B) [Table 1]. Value added represents sales revenues less purchased inputs, and is a good indicator of the net contribution of an industry to the economy, since it reflects the increase in value from each stage of processing and marketing, and avoids double counting the sales of products from production sectors to the manufacturing and processing sectors which is inherent in the values for economic output. Value-added consists of employee compensation, proprietor income, other property income, and indirect business taxes. In terms of value added, the largest industry groups were fruit and vegetable products (\$2.3B), ornamental plants and landscape services (\$2.1B), forest products (\$1.9B), other food and tobacco products (\$1.6B), agricultural inputs and services (\$1.6B), and mining (\$1.0B) [Table 1]. In terms of employment, the leading industry groups were agricultural inputs and services (79,005 jobs), ornamental plants and landscape services (78,062), fruit and vegetable products (46,388), forest products (28,261), livestock and meat products (23,858), other food and tobacco products (18,319), and seafood products (10,632) [Table 1]. As mentioned above, exports from a regional economy have a special role because they generate additional impacts through the multiplier effect. In terms of total exports, the leading industry groups were fruit and vegetable products (\$4.4B), agricultural inputs and services (\$3.6B), other food and tobacco products (\$2.8B), forest products (\$2.7B), and mining (\$1.1B) [Table 1].

Total Economic Impacts

The total economic impacts of Florida's agricultural and natural resource industries during 1997 were estimated at \$49.2 billion (B) in output, \$23.9B in value added, \$14.8B in labor income, \$1.8B in indirect business taxes, and 552,768 jobs (Table 2). The leading industry groups for output impacts were fruits and vegetables (\$11.1B), agricultural inputs and services (\$8.2B), other food and tobacco products (\$8.2B), forest products

(\$7.9B), ornamental plants and landscape services (\$3.6B), mining (\$2.9B), sugar and confectionery products (\$2.4B), and livestock and meat products (\$2.1B). In terms of value-added impacts, the leading groups were fruits and vegetables (\$5.7B), agricultural inputs and services (\$3.6B), other food and tobacco products (\$3.6B), forest products (\$3.6B), ornamental plants and landscape services (\$2.6B), mining (\$1.7B), and sugar and confectionery products (\$1.1B). In terms of employment impacts, the leading industry groups were fruits and vegetables (130,018), agricultural inputs and services (98,229 jobs), ornamental plants and landscape services (88,965), forest products (68,532), and other food and tobacco products (60,490) [Table 2].

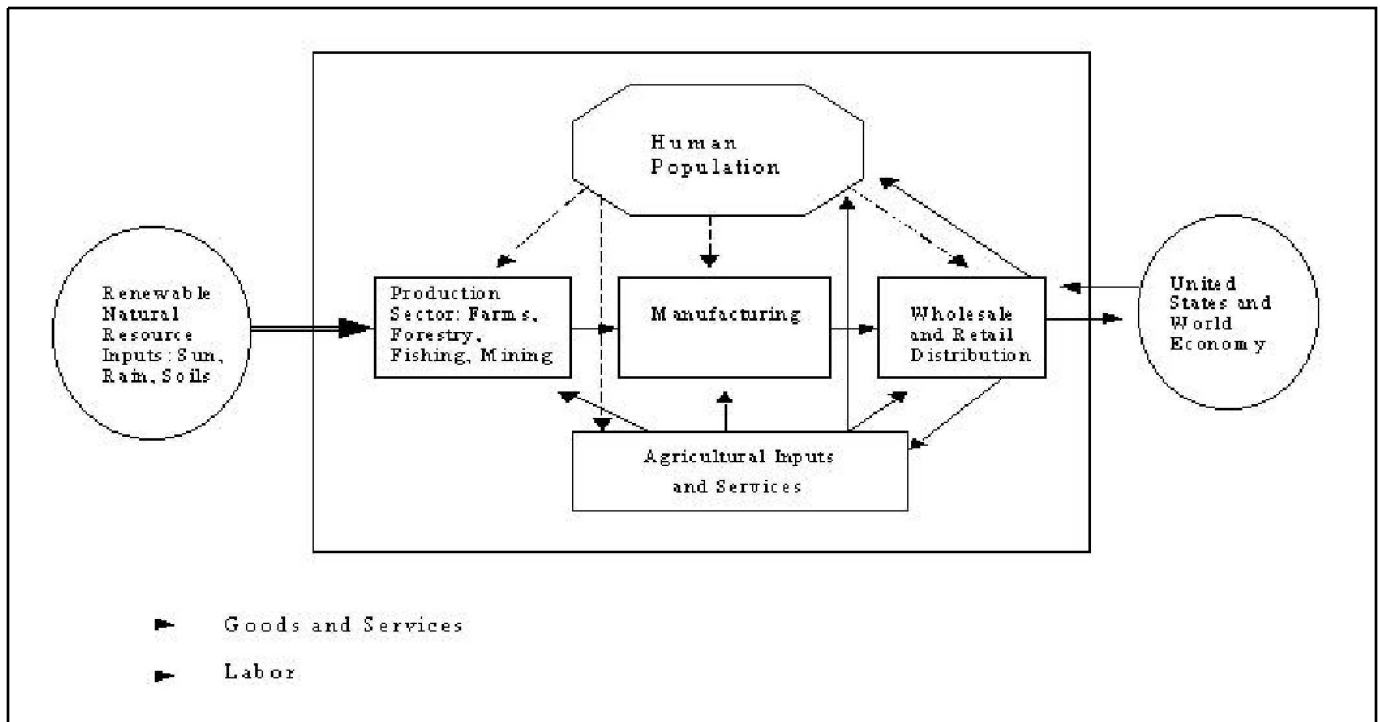


Figure 1. Economic structure of agricultural and natural resource industries.

[illegible]

Table 2. Total economic impacts on Florida's agricultural and natural resource industries.

Industry group	Output impacts (m\$)	Value added impacts (m\$)	Labor income impacts (m\$)	Indirect business tax impacts (m\$)	Employment impacts (jobs)
Fruits and vegetables	11,119	5,742	3,647	385	130,018
Agricultural inputs and services	8,248	3,631	2,361	247	98,229
Other food and tobacco products	8,151	3,601	2,116	480	60,490
Forest products	7,851	3,594	2,204	244	68,532
Ornamental plants and landscape services	3,639	2,604	1,720	105	88,965
Mining	2,859	1,654	775	122	24,054
Sugar and confectionery products	2,416	1,104	664	79	22,017
Livestock and meat products	2,107	670	483	40	25,666
Seafood products	1,230	663	396	37	17,882
Dairy products	993	299	210	15	5,435
Field crops	545	327	190	26	11,482
Total	49,158	23,889	14,766	1,780	552,768
Note: Total impacts represent exports times total effects multiplier plus local final demand and local intermediate demand from non-agricultural sectors times direct effects multiplier.					
Source: Minnesota Implan Group, 1999.					