

# **OHFOOD: An Ohio Food Industries Input-Output Model (Version 3.0)**

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by  
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and  
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## *Abstract*

This manuscript provides the basic documentation for a sophisticated input-output model, called **OHFOOD** for Ohio food. The model is designed specifically to capture the interdependencies and linkages among various industries composing the complex economy of Ohio. The input-output model of Ohio's economy also maintains a high degree of detail on the food and agricultural sectors. The interindustry model describes the linkages among various sectors of the economy and provides estimates of the economic influence that expansion of the agricultural and food sectors have on the general manufacturing and service sectors of the economy. Also, **OHFOOD** may be used to investigate the economic influence of "shocks" to the economy, such as entry of new firms into the state.

This documentation provides a succinct analysis of the importance of food and agriculture to the state's economy, based on the interindustry model. The analysis indicates that for 1992 the food and agricultural sectors of Ohio's economy contribute approximately 13 percent of the output, 11 percent of the value added, 16 percent of the total employment, and 11 percent of total income.

Of the 5 basic components within the food and forestry production and distribution chain, the food and forestry processing sector is the largest in terms of output, but the food and forestry wholesaling and retailing sectors and the food service sector are the most significant in terms of employment. The entire food and agriculture complex accounts for over 935,400 jobs in Ohio, or about 1 of every 6 jobs.

Keeping this model updated with the latest data available is an on-going task of the Farm Income Enhancement Program and the Agribusiness Research Group within the Department of Agricultural Economics of The Ohio State University.

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Table 1. Ohio Output, Value Added, Income, and Employment, 1992

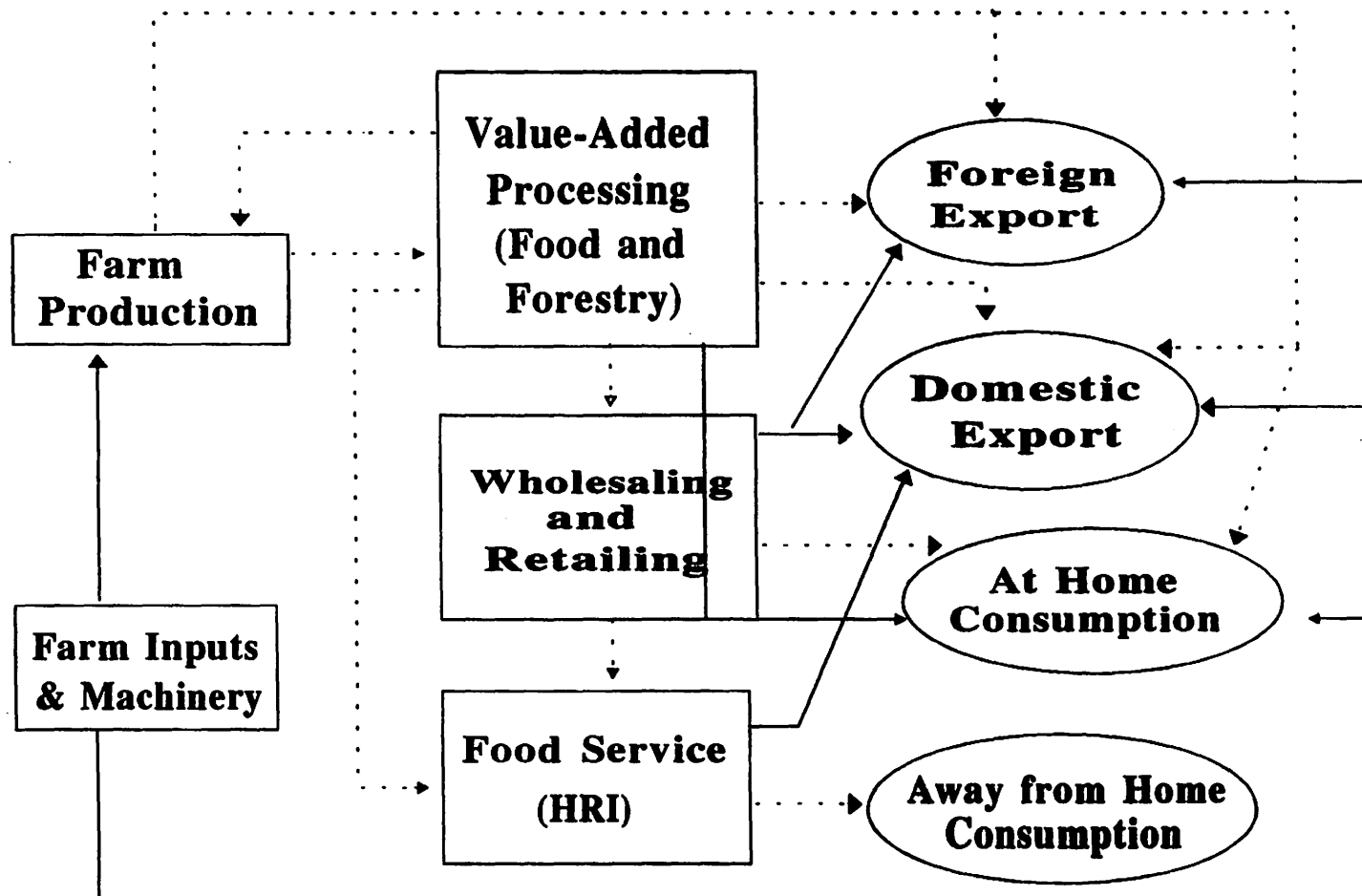
	Total Output	Value Added	Income	Employment
	-----\$ Millions-----			Person Years
<b>Food and Related Agricultural Sectors</b>				
Farm Inputs/Machinery	6,020	2,420	2,317	26,478
<b>Farming</b>	<b>4,903</b>	<b>2,400</b>	<b>2,336</b>	<b>132,188</b>
Dairy Farms	573	101	99	5,916
Poultry/Eggs	331	93	92	3,844
Cattle Feeding	445	89	84	4,745
Swine	314	76	71	3,534
Sheep and Goats	42	15	14	746
Food Grains	113	51	48	1,276
Feed Grains	522	339	320	6,489
Nursery/Horticulture	1,403	1,074	1,073	91,569
Fruits/Vegetables	179	61	59	1,441
Oil Bearing Crops	654	349	331	6,910
Hay/Sugar/Nut Crops	192	102	94	2,163
Forestry/Fishing/Ag Services	135	49	49	3,555
<b>Processing</b>	<b>25,528</b>	<b>8,350</b>	<b>8,072</b>	<b>129,894</b>
Food Processing	16,908	4,930	4,770	62,364
Meats/Eggs Processing	2,303	237	232	8,575
Dairy Processing	3,832	904	891	10,094
Proc. Food & Kindred Products	6,577	2,568	2,529	32,170
Grain Milling/Flour	969	299	296	2,474
Fats/Oils	1,263	230	224	2,403
Beverage Processing	1,964	692	598	6,648
Wood/Paper/Furniture Manufacturing	8,620	3,420	3,302	67,530
<b>Food &amp; Forestry Wholesaling/Retailing</b>	<b>11,058</b>	<b>7,576</b>	<b>6,270</b>	<b>307,887</b>
Food Service <sup>a</sup>	8,716	4,911	4,302	338,970
Subtotal	56,225	25,657	23,295	935,417
<b>General Manufacturing &amp; Service Sectors</b>				
Mining	2,156	1,404	1,245	17,649
Construction	29,236	13,554	13,428	341,452
Apparel/Yarn/Leather	2,256	919	908	25,236
Motor Vehicle Equipment	35,178	9,928	9,459	131,641
Metal Industries	34,731	13,319	12,824	219,678
Chemical/Petroleum	35,073	12,872	11,667	150,547
Publishing	8,027	4,114	4,007	77,639
Stone/Clay/Class	5,212	2,749	2,673	45,658
Machinery/Equipment	22,396	10,380	10,156	180,567
Technology Industries	9,321	4,231	4,169	71,656
Misc. Services	23,048	16,074	15,784	628,693
Transportation/Communication	22,131	11,810	10,763	237,835
Electricity/Gas/Sanitation	10,197	5,630	4,947	35,864
Wholesale/Retail	30,986	21,229	17,570	678,931
Financial/Legal	27,831	13,480	12,455	336,431
Real Estate/Development	31,475	24,277	17,315	116,187
Recreation/Amusement	3,057	1,775	1,723	80,316
Health Services	24,823	18,483	18,357	516,018
Education Services	3,775	1,788	1,788	104,394
Government/Nonprofit	29,993	26,575	26,546	947,758
Others	271	271	271	42,633
<b>Subtotal</b>	<b>391,173</b>	<b>214,861</b>	<b>198,054</b>	<b>4,986,783</b>
<b>Total</b>	<b>447,398</b>	<b>240,518</b>	<b>221,351</b>	<b>5,922,200</b>

Note: Each sector's output, value added, income, and employment are provided through U.S. Census information. The wholesaling and retailing sector is treated as one sector for purposes of the input-output model definition, but this sector is disaggregated for purposes of Table 1. The disaggregation procedure used is to estimate the percentage of all wholesale/retail payroll and employment solely from food wholesale/retail in Ohio using data published by County Business Patterns, 1991. The percentage of payroll (26.3%) is used to estimate the proportion of agriculture and food output, value added, and income. The percentage of employment (31.2%) is used to adjust employment in a similar fashion.

<sup>a</sup> Excludes hotel/motel food service.

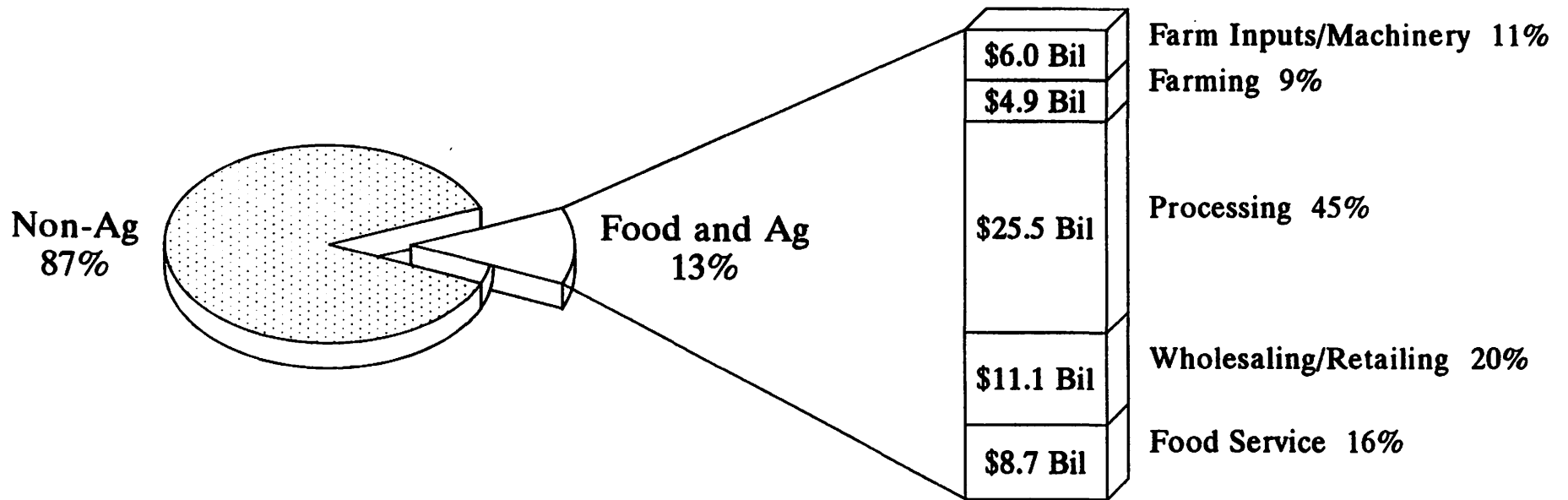
# Fig. 1. Major Linkages in Food System

## Economic Transaction Flows Among Sectors



# Figure 2. Ohio Economic Output Food and Agriculture, 1992

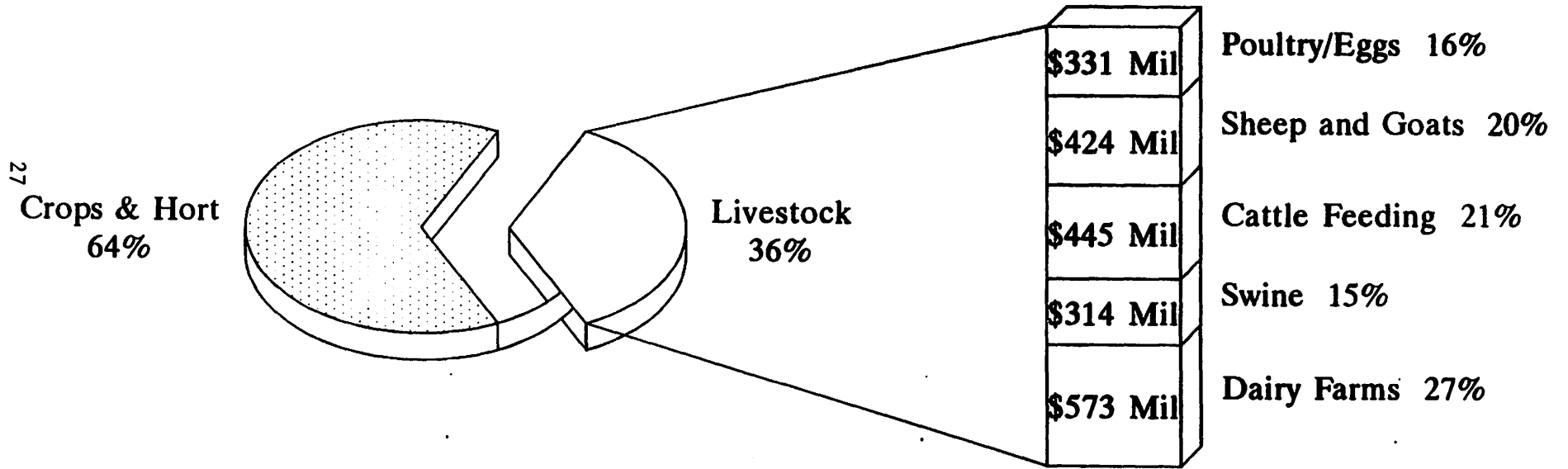
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**Total Output:  
\$447.4 Billion**

**Food & Ag Sectors:  
\$56.2 Billion**

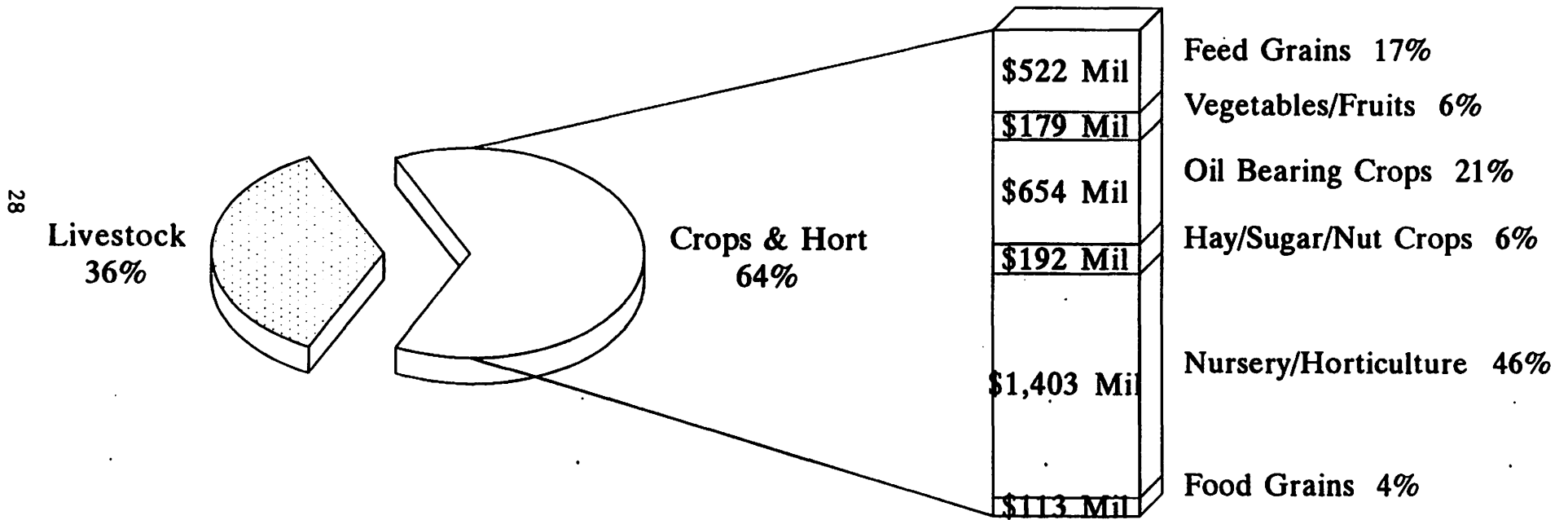
# Figure 3. Ohio Agricultural Output Livestock Sectors, 1992



Total Livestock, Crops, & Hort:  
\$4.8 Billion

Livestock Sectors:  
\$1.7 Billion

# Figure 4. Ohio Agricultural Output Crops & Horticulture Sectors, 1992

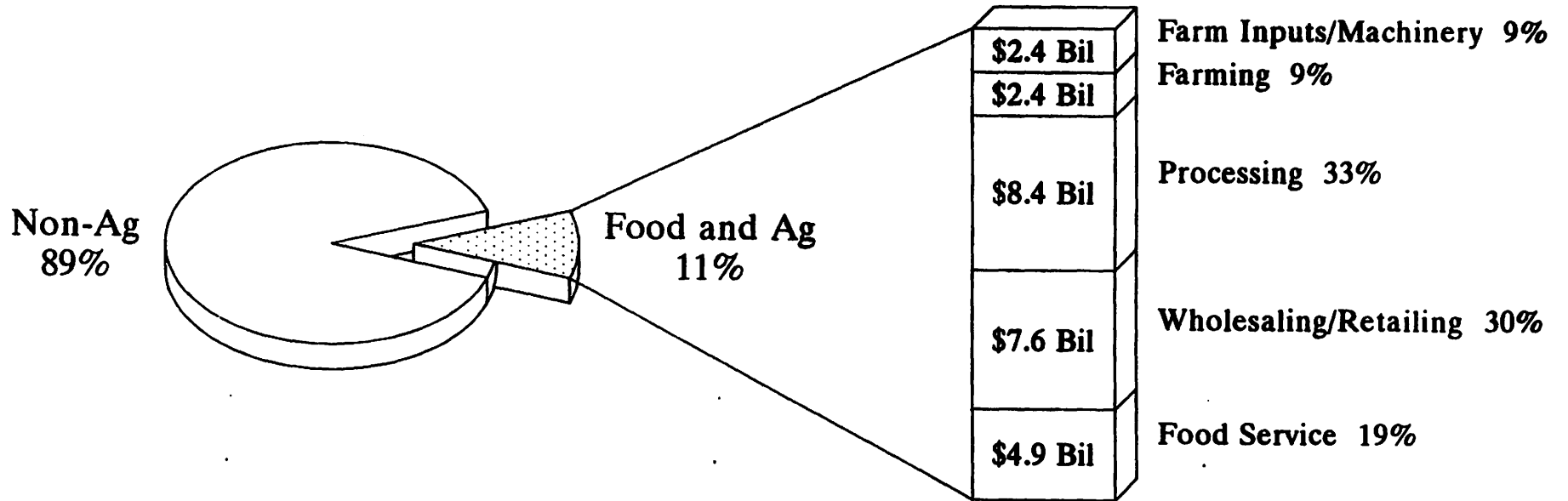


Total Livestock, Crop, & Hort:  
\$4.8 Billion

Crops & Hort Sectors:  
\$3.1 Billion

# Figure 5. Ohio Value Added Food and Agriculture, 1992

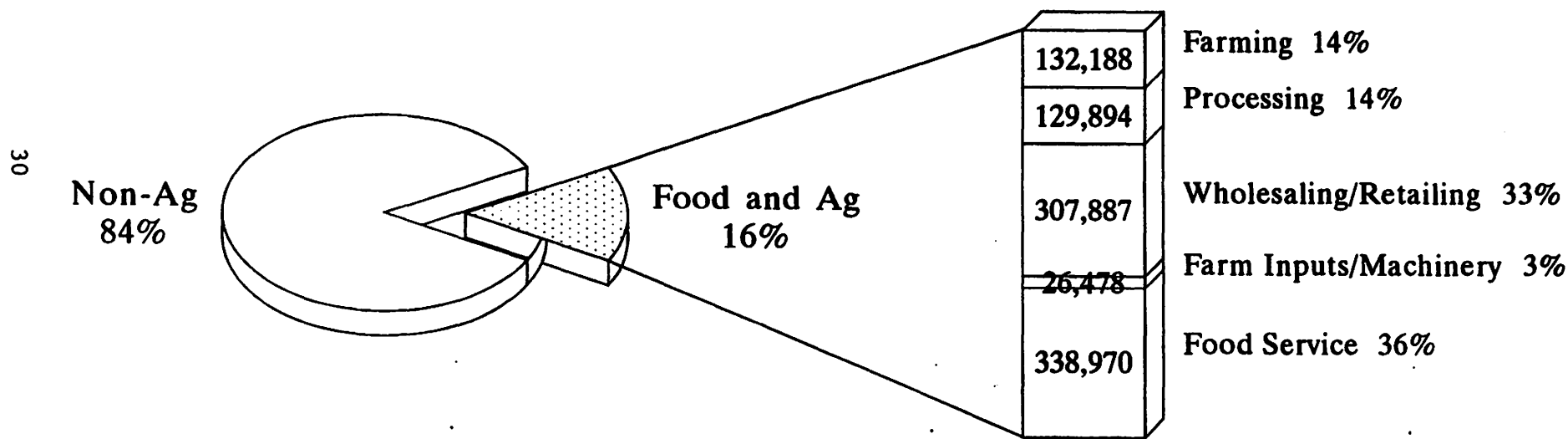
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**Total Value Added:  
\$240.5 Billion**

**Food & Ag Sectors:  
\$25.7 Billion**

# Figure 6. Ohio Employment Food and Agriculture, 1992

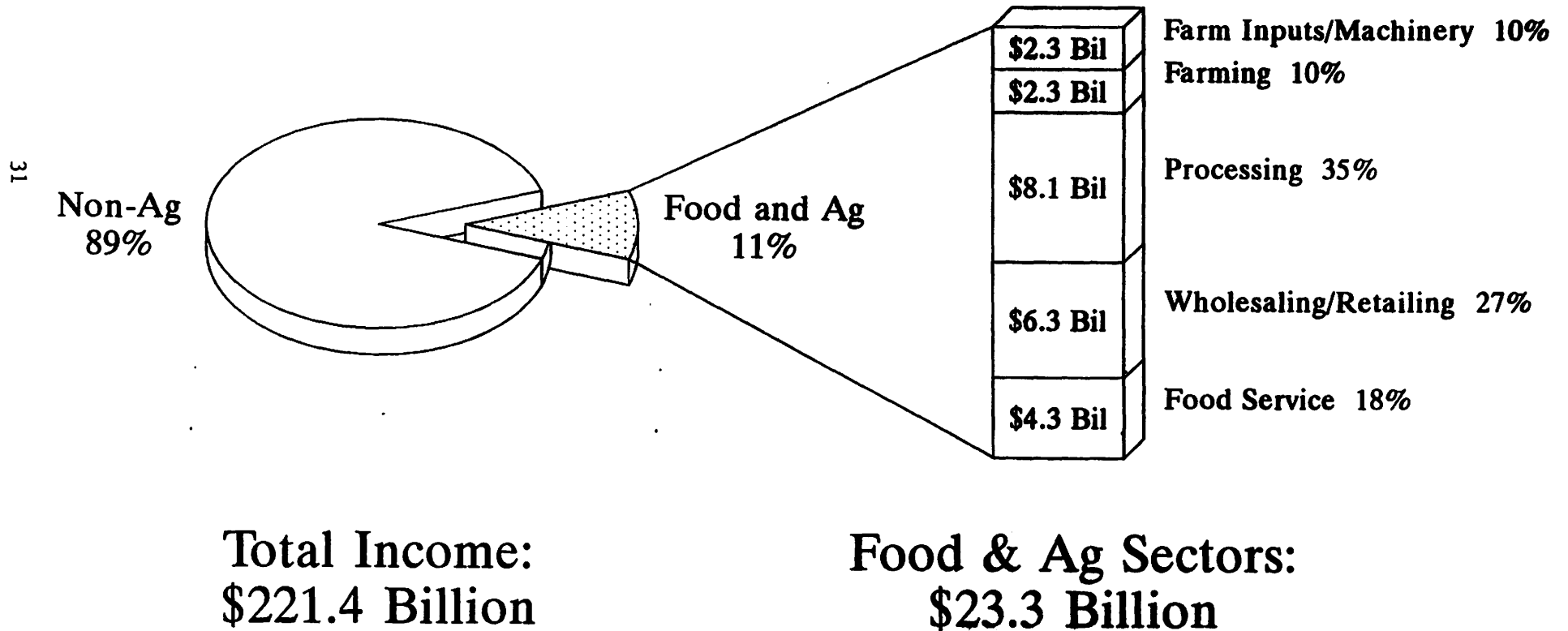


**Total Employment:**  
5.9 Million

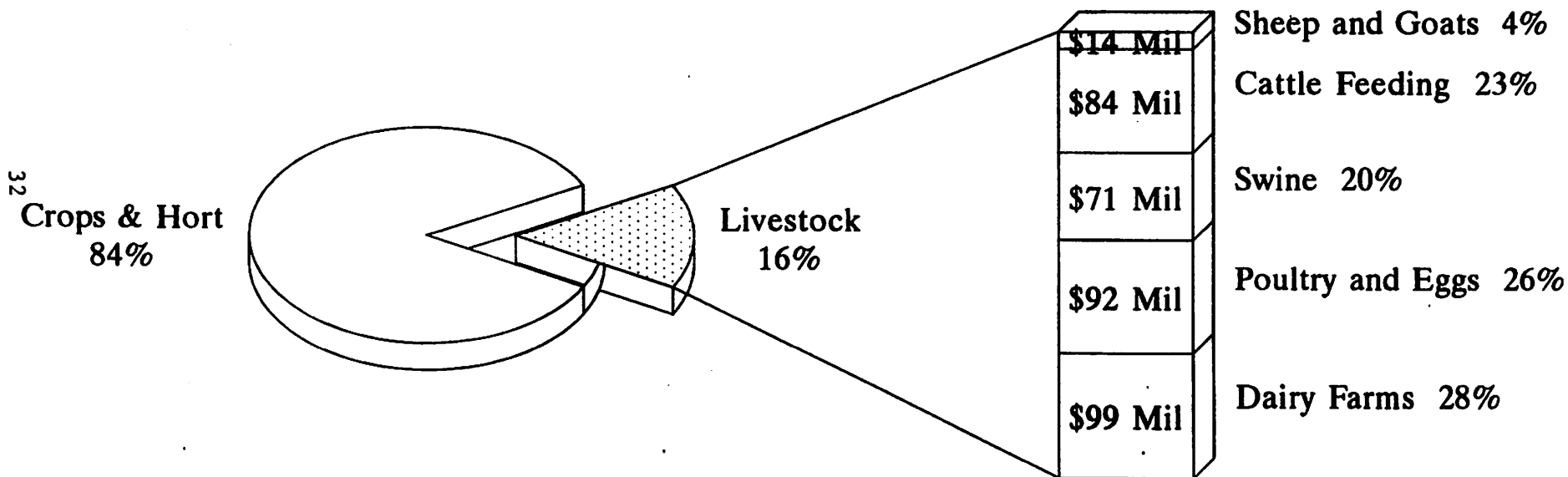
**Food & Ag Sectors:**  
935,417



# Figure 7. Ohio Income Food and Agriculture, 1992



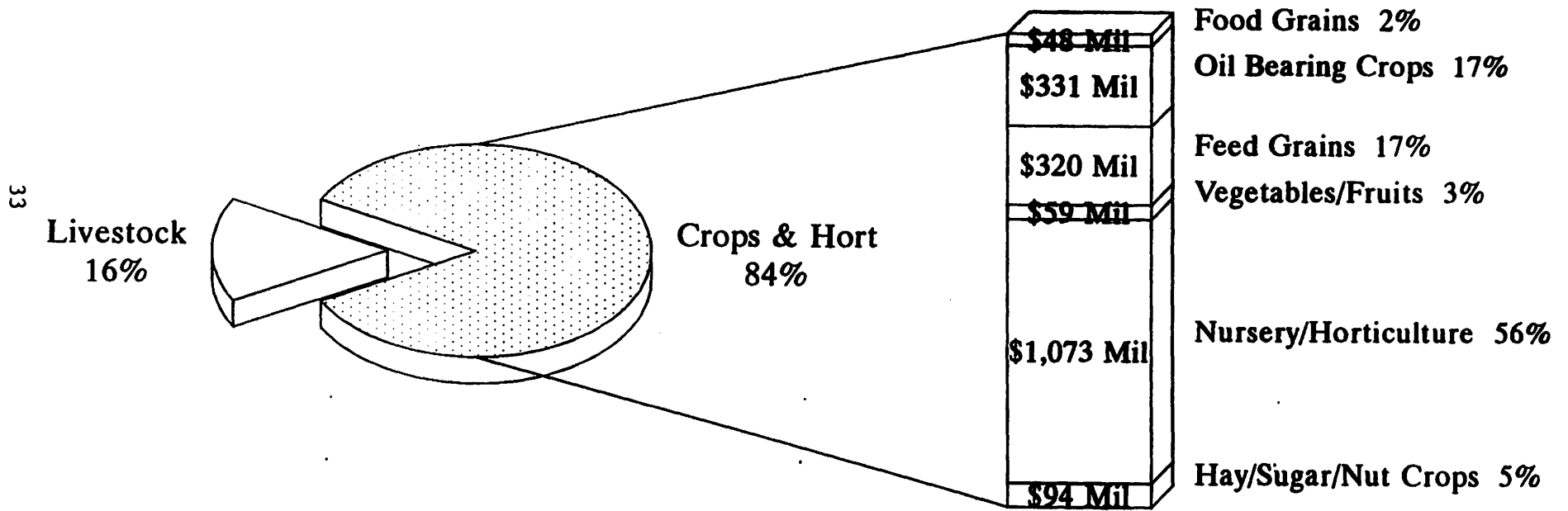
# Figure 8. Ohio Agricultural Income Livestock Sectors, 1992



**Total Livestock, Crops, & Hort:  
\$2.3 Billion**

**Livestock Sectors:  
\$360 Million**

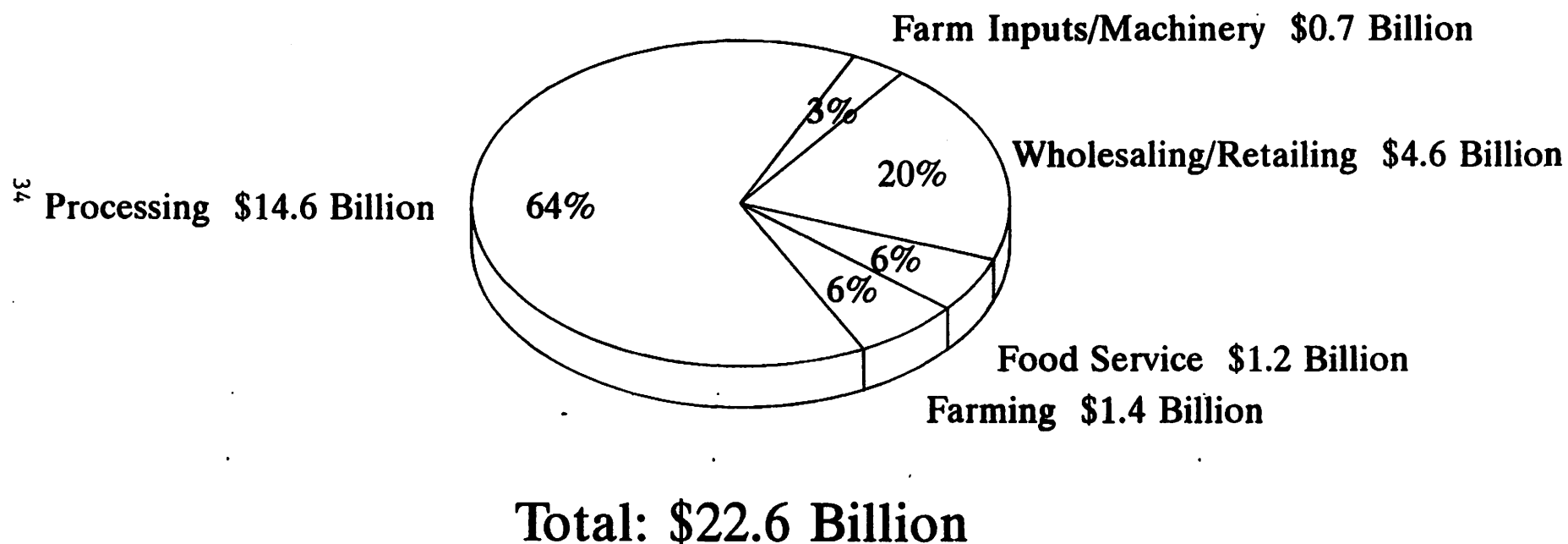
# Figure 9. Ohio Agricultural Income Crops & Horticulture Sectors, 1992



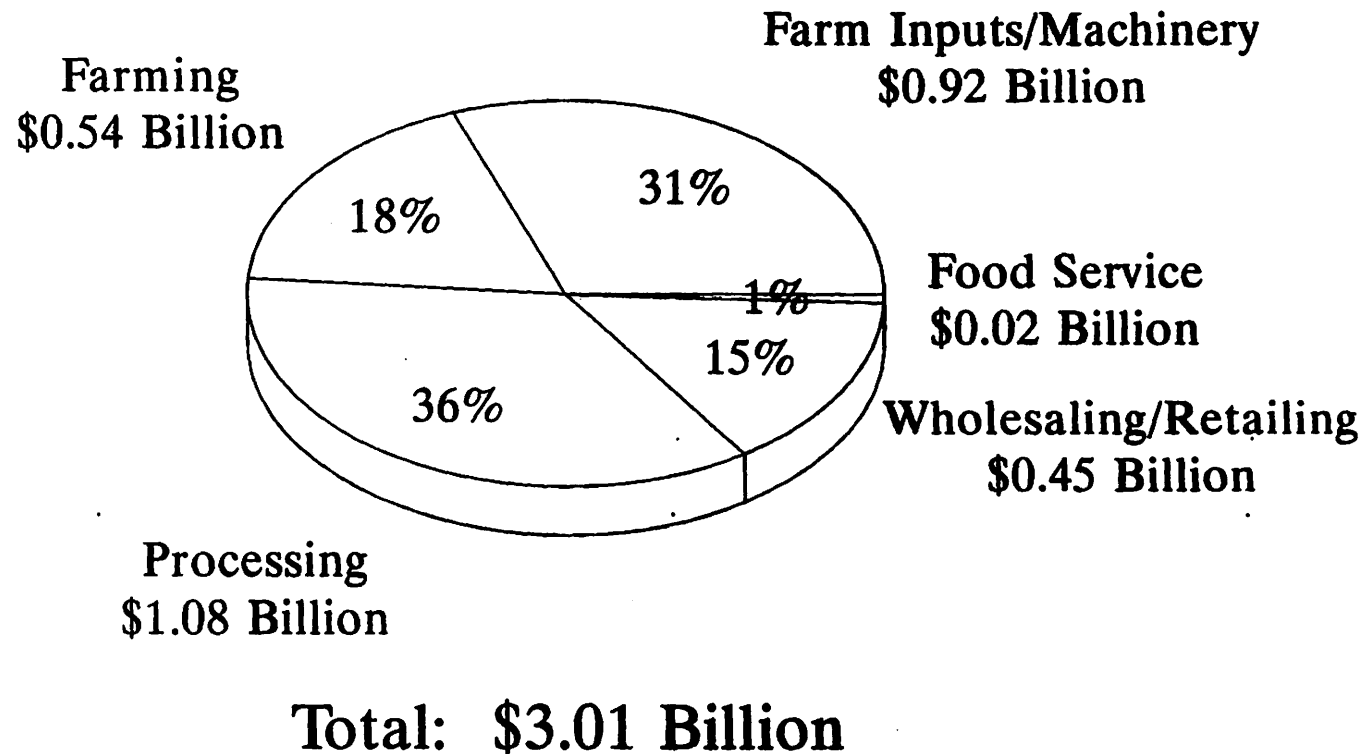
Total Livestock, Crops, & Hort:  
\$2.3 Billion

Crop & Hort Sectors:  
\$1.9 Billion

# Figure 10. Ohio Domestic Exports Food and Agriculture, 1992



# Figure 11. Ohio Foreign Export Shares Food and Agriculture, 1992



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