

Bruce Sorte
Community Economist

Bruce Weber
Professor and Extension Economist

Department of Agricultural and Resource Economics
Oregon State University

Contents

Introduction	1
Farm and Ranch Production	3
Farmgate Sales	9
Processing	10
Agricultural Support Services, Wholesale Trade, Transportation and Warehousing, and Retail Trade	12
Economic Footprint	14
Oregon's Economic Dependence on Agriculture	15
Implications for Agriculture and Oregon	19
References	20

Tables

Table 1.—Oregon farm profiles (1997, 2002, 2005)	3
Table 2.—Profile of farms in three Oregon counties (2004).....	5
Table 3.—Number of Oregon farms by type (2002).....	6
Table 4.—Oregon farmland acreage by farm type (2002)	7
Table 5.—Change in Oregon agricultural commodity sales 2004–2005.....	9
Table 6.—Oregon agricultural processing in food, fiber, and related products (2005).....	11
Table 7.—Oregon agricultural output, employment, and value added (2005)	13
Table 8.—Oregon agriculture's economic footprint (2005).....	14
Table 9.—Exogenous demand for Oregon agriculture (2005).....	15
Table 10.—Summary of Oregon agricultural economic impacts (2005)	16
Table 11.—Oregon agricultural value-added economic impacts detail (2004–2005)	17

Figures

Figure 1.—Percentage of Oregon farms by type (2002)	6
Figure 2.—Percentage of Oregon farmland acreage by type (2002)	7
Figure 3.—Oregon agricultural land use (2005).....	8
Figure 4.—Oregon agricultural commodity sales (2005)	10
Figure 5.—Oregon agricultural processing: sectors with more than 1,000 jobs as percentage of total employment.....	12

Acknowledgments

The authors thank the Oregon Department of Agriculture (ODA) for its support of this project and the helpful ideas and perspectives provided by Brent Searle, Special Assistant to the ODA Director. We also appreciate the reviews and suggestions provided by Linda Brewer, Senior Faculty Research Assistant, and Greg Perry, Professor and Interim Department Head, in the Department of Agricultural and Resource Economics, Oregon State University; and William Lazarus, Professor of Applied Economics, University of Minnesota. Their comments improved the theoretical integrity and clarity of the report.

Cover photos by Lynn Ketchum, editing and production by Ariel Ginsburg and Andrea Dailey; Department of Extension & Experiment Station Communications, Oregon State University.

Employment in natural resources and mining actually increased as a percentage of employment in 2005. This is due to the continuing strength of Oregon's agricultural economy. Despite the growth in agriculture, food manufacturing employment declined due to improved productivity, mechanization, and import competition.

Michael Meyers
Oregon Labor Market Information System
October 27, 2006

Introduction

Agriculture in Oregon is changing rapidly in ways that are very similar to the changes in other industries. Agricultural producers, scientists, and teachers have worked together to reach high levels of efficiency that could not have been imagined 150 years ago in Oregon—or even 25 years ago, when agriculture was struggling through its worst downturn since the 1930s.

Globalization has provided market opportunities to some producers and severe competition to others. While consumers have been quite pleased with changes that have allowed them to spend ever-smaller portions of their income for agricultural products, producers have struggled to maintain sufficient profit margins while using sustainable production processes. Convincing young people that agriculture is the place to spend their future remains a challenge.

Policies that support and regulate agriculture play a large role in these changes. Policy makers consider an industry's economic impacts as they make their decisions. Economists typically measure economic impacts in terms of sales, jobs, or value of added contributions to the economy. Industries that can demonstrate the largest impacts and/or fastest growth receive considerable attention and encouragement from policy decisions. As industries like agriculture become more efficient and provide products and services at lower costs, the growth of their economic impacts as traditionally measured is slower than in newer industries that have not matured to agriculture's levels of efficiency.

Agriculture and forestry were the primary economic engines of the Oregon economy for more than 100 years. Though a number of other industries now share that role, it should be remembered as we progress through this analysis that achieving and maintaining high levels of efficiency for necessities such as food, fiber, and fuel create the foundation for a standard of living that allows increasing portions of income and time to be allocated to civic, cultural, and recreational pursuits.

This report provides economic impact measures based on sales, employment, and value added—and it goes beyond those traditional measures as well. It also describes the scope

and diversity of the agriculture industry and discusses the challenges that may lie ahead for maintaining and even increasing agriculture's economic impacts.

In this analysis we:

- Profile agriculture
- Estimate agriculture's "economic footprint"
- Calculate the extent to which Oregon's economy depends on agriculture or agriculture's economic impacts
- Discuss the challenges agriculture faces in maintaining its pivotal role in Oregon's economy

It is important to remember that the metrics in the tables and figures throughout this report are different ways of describing agriculture. While they can be considered together for a comprehensive summary of agriculture, the individual metrics should not be added together.

This report generally follows the format of and updates information in *Agriculture and the Oregon Economy* (SR 1014, OSU Extension Service) by Jim Cornelius, David Holland, Edward Waters, and Bruce Weber, in 2000.

Farm and Ranch Production

We define agriculture broadly to include activities necessary to cultivate, harvest, and process biologically based products. This section describes primary agricultural production, including fishing. Processing and other aspects of the agricultural industry are discussed in the next section.

The United States has formally gathered information to describe agriculture since the first Decennial Census in 1790 (when 94.9 percent of people lived in rural areas) through the most recent Decennial Census in 2000 (when an estimated 21 percent lived in rural areas in both the U.S. in general and Oregon specifically). The first Census of Agriculture (Ag Census) was taken as part of the 1840 Decennial Census. The Ag Census is completed every 5 years, and portions of it are updated every year.

The types of data collected in each census have become more extensive over time. Definitions and data-gathering techniques have changed regularly to match the diversification of the agriculture industry.

For this report, we have used the most recent complete Ag Census (2002, issued in 2004) and any partial updates that have been completed since 2004. Our definition of a farm

Table 1.—Oregon farm profiles (1997, 2002, 2005).

Category	1997	2002	2005
Total land in agriculture (acres)	17,658,213	17,200,000	17,100,000
Total ag land & buildings value (\$000)	17,744,663	20,383,264	20,383,264
Average value/acre (\$)	1,005	1,185	1,192
Number of farms	39,975	40,033	39,300
Average farm size (acres)	442	430	435
Market value of farm sales (\$000)	3,890,848	3,798,435	4,725,064
Purchased inputs (\$000)	-1,738,004	-1,802,943	-1,904,708
Net govt. payments to farmers minus taxes (\$000)	-44,715	-14,935	-5,637
Gross value added (\$000)	2,108,129	1,980,557	2,814,719
Capital consumption (\$000)	-340,608	-370,910	-428,763
Net value added (\$000)	1,767,521	1,609,647	2,385,956
Payments for labor, landlords, & lenders (\$000)	-1,101,280	-1,114,051	-1,333,039
Net farm income (\$000)	666,241	495,596	1,052,917
Average gross sales/acre (\$)	220	221	276
Average net income/farm (\$)	16,666	12,380	26,792
Average net income/acre (\$)	38	29	62

Sources: U.S. Department of Agriculture, 1997 Census of Agriculture (1999) and 2002 Census of Agriculture (2004); and U.S. Department of Agriculture/Economic Research Service, Farm Income: Data Files, May 2007.

comes from the 2002 Ag Census: "...agricultural places that produce and sell, or would normally sell, \$1,000 or more of agricultural products [per year]."




As Table 1 indicates, Oregon agricultural acreage decreased 3.16 percent between 1997 and 2005, the number of farms declined by 1.6 percent, and the average size of a farm declined by 1.6 percent as well. This is a continuing trend, as farms larger than 50 acres have decreased in number and total acreage. The decline has been slowed to some degree by the increase in number of adaptive farms of fewer than 50 acres. Adaptive farms are typically smaller farms that produce a variety of outputs and initially are not intended to be the primary source of household income.

Still, the changes seem smaller than might be expected given the commodity price fluctuations during the period and the pressure from residential development, particularly in the Willamette Valley, where farmgate sales dollars are highest statewide. Farmgate sales are grower sales from primary agricultural production.

While the declining average size of Oregon farms remains a concern, the potential of adaptive farms to grow into larger commercial operations may be underestimated. A recent USDA study showed that adaptive farms tend to have average gross sales per acre that are about twice as high as the overall average, their average age of operator is lower than for farmers in general, and the number of their off-farm work days tends to decline over time (Newton 2005). Vineyards, nursery and tree products, vegetables and melons, floriculture, other noncitrus fruit, and tree-nut farming were more likely than other types of farming to follow this trend.

Throughout this report, we summarize agricultural statistics to report information concisely for all of Oregon. Combining information from an industry as diverse as agriculture and a state as varied as Oregon leaves out some important distinctions that must be remembered as we evaluate the economic impacts of agriculture. To illustrate these distinctions, consider three counties that represent areas from the Pacific Ocean to the Idaho border. Table 2 (page 5) profiles the differences in farms and agricultural production in Tillamook, Sherman, and Malheur counties.

Table 2.—Profile of farms in three Oregon counties (2004).

	 Tillamook	 Sherman	 Malheur
Number of farms	333	210	1,272
Land in farms (acres)	39,526	507,705	1,175,280
Land in farms (%)	5.60	96.40	18.60
Average farm size (acres)	119	2,418	924
Market value of land & buildings (\$000)	557,675	187,605	699,988
Average value/acre (\$)	14,109	370	596
Total net farm income from operations (\$000)	25,000	6,051	37,053
Average income/farm (\$000)	75	29	29
Average income/acre (\$)	632	12	32
Average income/acre divided by average value/acre (%)	4.48	3.23	5.29
Jobs directly employed in farm production (%)	7.76	27.16	23.77

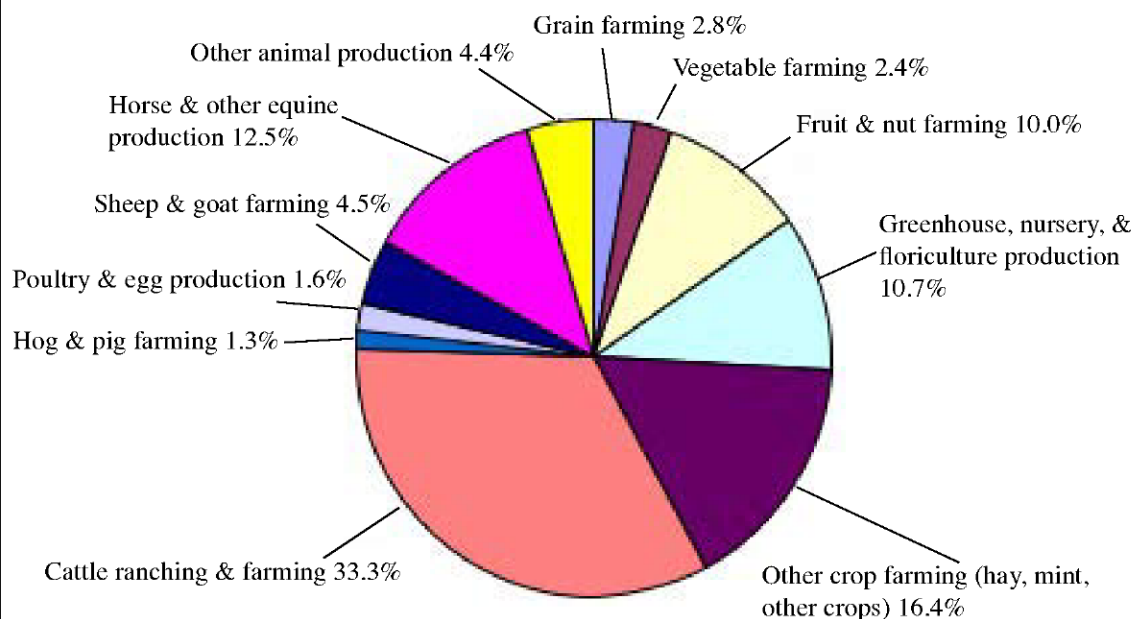
Sources: U.S. Department of Agriculture, *2002 Census of Agriculture—County Data*, June 2004; and Minnesota Implan Group, Inc. IMPLAN 2004 Data.

Farms are classified by type in Table 3 (page 6) and are shown graphically in Figure 1 (page 6) following the recently implemented North American Industrial Classification System (NAICS). Two sectors have shown small increases: greenhouse, nursery, and floriculture production, increasing from 10.5 percent in 1997 to 10.7 percent in 2002; and fruit and nut farming, increasing from 9.8 percent in 1997 to 10 percent in 2002.

Table 3.—Number of Oregon farms by type (2002).

Type	Units	Share (%)
Cattle ranching & farming	13,345	33.3
Other crop farming (hay, mint, other crops)	6,570	16.4
Horse & other equine production	5,013	12.5
Greenhouse, nursery, & floriculture production	4,291	10.7
Fruit & nut farming	3,995	10.0
Sheep & goat farming	1,816	4.5
Other animal production	1,768	4.4
Grain farming	1,105	2.8
Vegetable farming	974	2.4
Poultry & egg production	622	1.6
Hog & pig farming	534	1.3
Total	40,033	100.0

Source: U.S. Department of Agriculture, 2002 *Census of Agriculture*, Table 50, June 2004.

Figure 1.—Percentage of Oregon farms by type (2002).


Source: U.S. Department of Agriculture, 2002 *Census of Agriculture*, Table 50, June 2004.

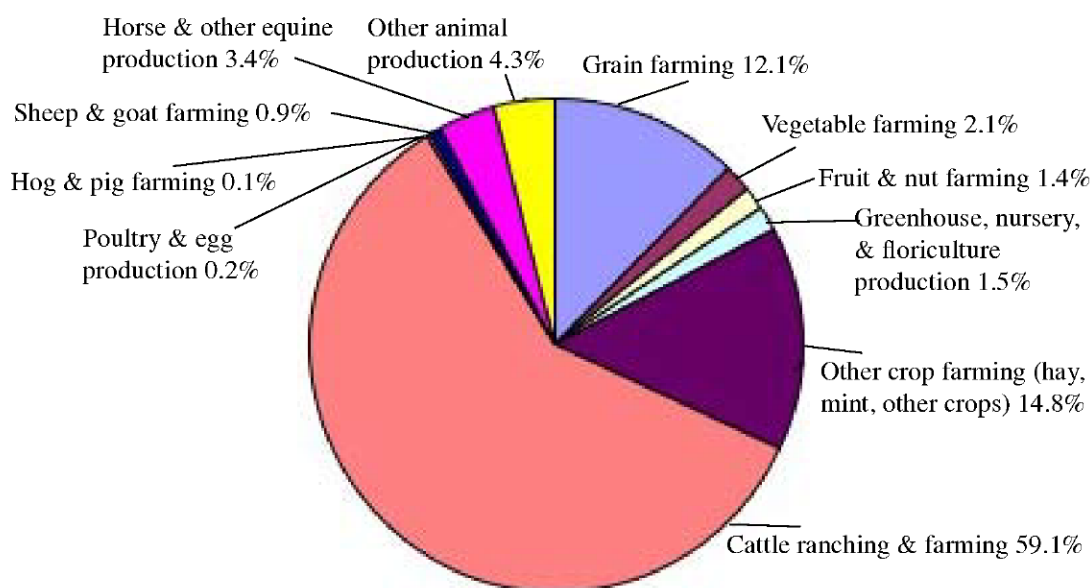
There are 61.44 million acres in Oregon, more than 17 million (28 percent) of which are in farm and ranch production. Table 4 details how the acreage is used, and Figure 2 shows the proportion of land used by each type of farming and ranching operation. Cattle ranches and farms, which are about a third of the farms by type, use the highest number of acres at just over 10 million, or almost 60 percent. Most of the cattle ranches and farms are in arid portions of the state where acreage requirements to sustain cattle are higher.

Table 4.—Oregon farmland acreage by farm type (2002).

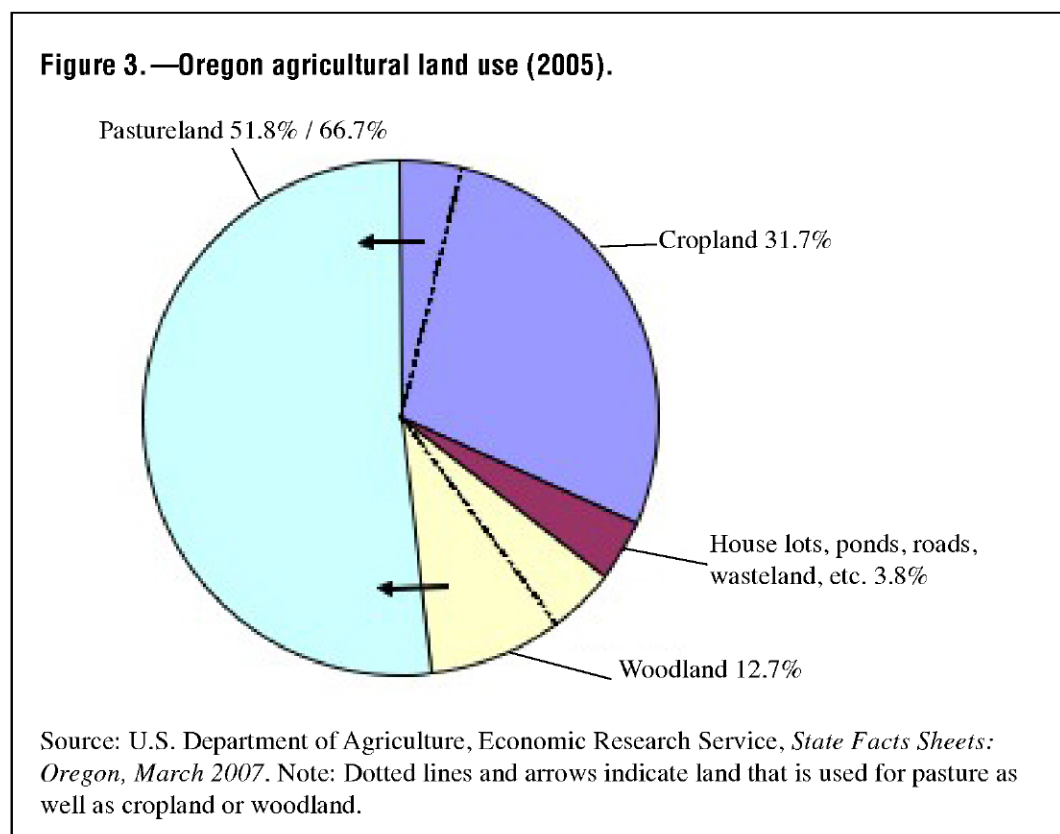
Type	Acres	Share (%)
Cattle ranching & farming	10,102,698	59.1
Other crop farming (hay, mint, other crops)	2,520,942	14.8
Grain farming	2,065,090	12.1
Other animal production	734,306	4.3
Horse & other equine production	582,548	3.4
Vegetable farming	350,869	2.1
Greenhouse, nursery, & floriculture production	256,597	1.5
Fruit & nut farming	246,861	1.4
Sheep & goat farming	162,158	0.9
Poultry & egg production	41,348	0.2
Hog & pig farming	17,005	0.1
Total	17,080,422	100.0

Source: U.S. Department of Agriculture, 2002 *Census of Agriculture*, Table 50, June 2004.

Figure 2.—Percentage of Oregon farmland acreage by type (2002).



If land uses are further aggregated (Figure 3), the 17.1 million agricultural acres include 5.42 million acres (31.7 percent) classified as cropland, 2.17 million acres (12.7 percent) as woodland, 8.86 million acres (51.8 percent) as pastureland, and 0.64 million acres (3.8 percent) for structures and facilities. Note that 2.54 million acres classified as cropland and woodland are used as pasture some of the time, so the total use for pasture is approximately 11.4 million acres (66.7 percent), as illustrated by the dotted lines and arrows in Figure 3.



Farmgate Sales

Farmgate sales are estimated on an annual basis by the Oregon Agricultural Information Network (OAIN) using a number of databases, including information from about 70 local Oregon State University Extension Service agents in all 36 counties. The OAIN includes local estimates from Extension Service agents in its database to distinguish and compare OAIN and Agricultural Census data.

The estimates that follow are from the preliminary 2005 data, which are compared with 2004 data. Farmgate sales of crops in 2005 were \$2.92 billion and accounted for 71.7 percent of total sales. Livestock farmgate sales were \$1.15 billion and accounted for 28.3 percent of total sales. The more than \$200 million of growth in Oregon agriculture's farmgate sales in just 1 year between 2004 and 2005 is significant. In addition, only 4 of 14 industries in Table 5 experienced a decrease in sales between 2004 and 2005, and those decreases were small.

Table 5.—Change in Oregon agricultural commodity sales (2004–2005).

Commodity group	2004 (\$000)	2005 (\$000)	Change (%)	Share of total sales (%)
Hay & forage	225,913	258,202	14.3	6.4
Vegetables & truck crops	230,995	261,644	13.3	6.4
Small woodland, hybrid poplars, fee hunting & recreation, and other specialty products	333,670	375,500	12.5	9.2
Grass & legumes	351,136	373,490	6.4	9.2
Nursery crops, bulbs, greenhouse crops, & turf	743,689	776,410	4.4	19.1
Field crops	196,732	203,105	3.2	5.0
Tree fruit & nuts	244,691	244,486	-0.1	6.0
Small fruit & berries	98,658	97,205	-1.5	2.4
Grains	212,522	198,829	-6.4	4.9
Christmas trees	137,265	126,436	-7.9	3.1
<i>All crops</i>	<i>2,775,271</i>	<i>2,915,307</i>	<i>5.0</i>	<i>71.7</i>
Cattle & calves	592,361	619,491	4.6	15.2
Dairy products	327,080	340,062	4.0	8.4
Poultry	82,940	97,276	17.3	2.4
Other animal products	78,699	92,333	17.3	2.3
<i>All livestock and poultry</i>	<i>1,081,080</i>	<i>1,149,162</i>	<i>6.3</i>	<i>28.3</i>
Total sales	3,856,351	4,064,469	5.4	100.0

Source: 2005 Oregon County and State Agricultural Estimates, Special Report 790-05, revised April 2006, Oregon State University Extension Service.

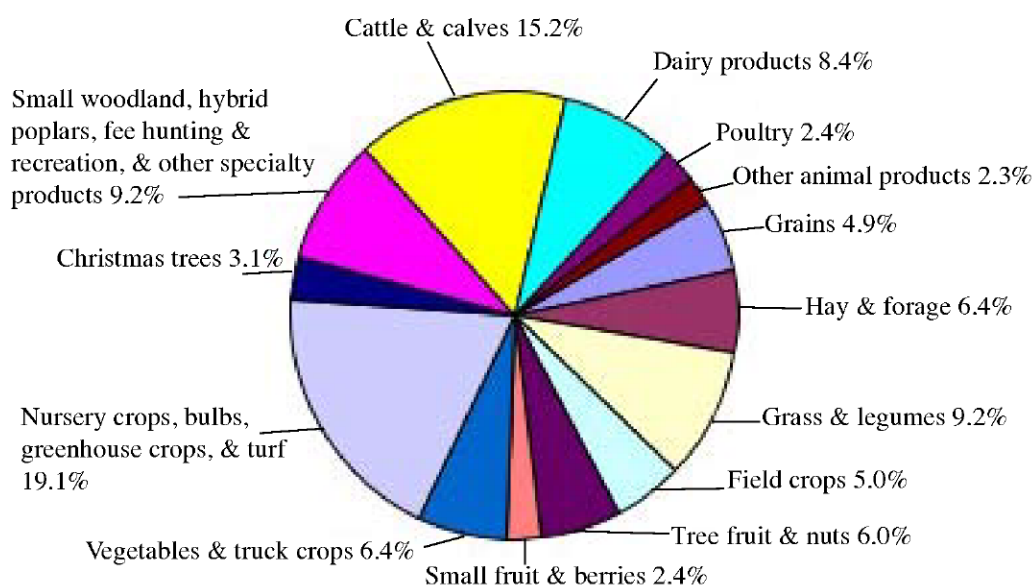
In the 2000 report of Cornelius et al., nursery crops were 16.7 percent, dairy 7.4 percent, and beef cattle 11.6 percent of total sales. As seen in Figure 4, those industries have continued to increase their proportion of total sales. Also in the Cornelius et al. report, grains were 9.0 percent, vegetables 8.9 percent, and field crops 8.8 percent of total sales. Those sectors' proportions of total sales have decreased.

Processing

Crops and livestock produced on farms and fish harvested from the ocean provide the basic inputs for a large processing industry in Oregon. For clarity of presentation, we used the sectoring system of the basic IMPLAN (*IM*pact *PL*ANning) input/output model. We aggregated 41 processing sectors into 22 sectors in Table 6 (page 11) and sorted them in descending order by value of output. We have included all the processing sectors that do or could use agricultural inputs. Most of the processing sectors are modest in size, and some may not be using significant amounts of Oregon agricultural inputs at the current time. Yet, traditionally they have been considered part of the agricultural processing industry and, with changes in markets or policies, their use of Oregon agricultural inputs may again become significant.

Four sectors make up more than half (51 percent) of processing output in Oregon: frozen food manufacturing (\$1,724,056,000); dairy (\$1,250,557,000); fruit and vegetable canning and drying (\$1,127,602,000); and baked goods, pasta, and tortilla manufacturing (\$840,672,000).

Figure 4.—Oregon agricultural commodity sales (2005).



Source: 2005 Oregon County and State Agricultural Estimates, Special Report 790-05, revised April 2006, Oregon State University Extension Service.

In Figure 5 (page 12), we show all food processing sectors with more than 1,000 jobs, which are shown as a percentage of total food processing employment. The sectors with fewer than 1,000 jobs are included in “All other processing.” These jobs vary within and between sectors from very seasonal part-time jobs to year-round, full-time jobs.

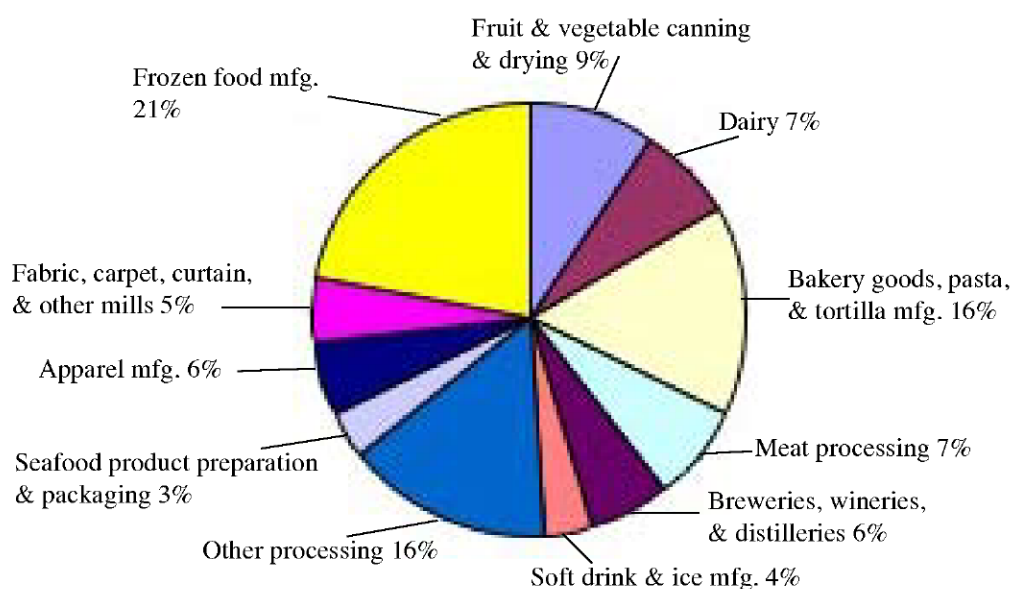
Five sectors together account for 60 percent of all jobs in agricultural processing: frozen food manufacturing (21 percent); baked goods, pasta, and tortilla manufacturing (16 percent); fruit and vegetable canning and drying (9 percent); dairy (7 percent); and meat processing (7 percent).

Table 6.—Oregon agricultural processing in food, fiber, and related products (2005).

Industry	Output (\$000) Sales	Employment Full- & part- time jobs	Value added (\$000)
Frozen food manufacturing	1,724,056	6,421	393,226
Dairy	1,250,557	2,161	162,758
Fruit & vegetable canning & drying	1,127,602	2,758	223,689
Bakery goods, pasta, & tortilla mfg.	840,672	4,601	323,647
Meat processing	817,905	2,048	103,043
Breweries, wineries, & distilleries	687,986	1,732	161,751
Soft drink & ice mfg.	558,947	1,047	93,679
All other food mfg.	269,474	1,075	51,064
Seafood product preparation & packaging	240,188	1,006	28,691
Coffee & tea mfg.	239,169	489	27,833
Food milling	228,438	308	29,307
Roasted nuts, peanut butter, & snack food mfg.	222,016	422	57,537
Breakfast cereal mfg.	219,207	247	16,574
Animal food mfg.	212,123	307	20,275
Fabric, carpet, curtain, & other mills	206,627	1,447	66,553
Apparel mfg.	189,596	1,630	52,133
Confectionery mfg.	137,150	461	25,278
Sugar mfg.	130,727	248	12,217
Flavoring syrup, dressings, sauces, & spices mfg.	121,515	258	31,731
Soybean processing	94,482	37	1,983
Leather tanning, finishing, & product mfg.	89,455	675	23,984
Fats & oils refining & blending	58,209	42	2,896
Total	9,666,099	29,420	1,909,850

Source: Minnesota Implan Group, Inc. IMPLAN 2004 Data

Figure 5.—Oregon agricultural processing: sectors with more than 1,000 jobs as percentage of total employment.



Source: Minnesota Implan Group, Inc. IMPLAN 2004 Data

Agricultural Support Services, Wholesale Trade, Transportation and Warehousing, and Retail Trade

Four major sectors provide producer and processor specialized services, an extensive distribution and marketing network, and multiple modes of transportation to get agricultural products to markets. Those sectors are agricultural support services (e.g., well drilling); wholesale trade; transportation (land, air, and water) and warehousing; and retail trade.

These industries' economic relationships to agriculture are not regularly reported on a separate basis. Economic discussions typically focus on producer prices for a specific industrial sector. However, large portions of the wholesale trade, transportation and warehousing, and retail trade industries' expenditures bring agricultural products and services to the consumer. Those expenditures are added to producer prices to establish the final retail prices that consumers pay.

We used IMPLAN margins that are estimates of the percentages of wholesale and retail prices attributable to wholesale trade, transportation and warehousing, and retail trade activity. Based on those margins or percentages, we determined the portion of the

wholesale trade, transportation and warehousing, and retail trade sectors that are engaged in the distribution and sale of agricultural goods and services.

Table 7 brings together all six major parts of the agricultural industry: production, processing, agricultural support services, wholesale trade, transportation and warehousing, and retail trade. It provides the output (sales), employment (full- and part-time jobs), and value-added expenditures (employee compensation, proprietor income, special business taxes, and leases and rents) for each part of the industry to give a summary of the direct economic activity of the agricultural industry in Oregon.

Table 7.—Oregon agricultural output, employment, and value added (2005).

Aggregated sector	Output (\$000) <i>Sales</i>	Employment <i>Full- & part- time jobs</i>	Value added (\$000)
Production	4,209,375	66,367	2,805,904
Processing	9,666,099	29,420	1,909,850
Agricultural support services	335,080	10,160	190,252
Wholesale trade	1,493,853	8,883	1,021,141
Transportation & warehousing	489,671	4,670	273,785
Retail trade	1,723,678	27,145	1,100,909
Total agriculture	17,917,756	146,645	7,301,841
Total all Oregon sectors	242,673,884	2,116,589	129,937,290
Portion agriculture (%)	7.38	6.93	5.62

Economic Footprint

The direct expenditures and employment profiled in Table 7 are associated with a number of other expenditures and jobs in the Oregon economy. Each of the listed agricultural sectors purchases a wide range of inputs from suppliers. These purchases are the *indirect expenditures* associated with the agricultural industry. Another type of expenditure includes those that members of households make when they receive their salaries or other income from businesses directly or indirectly related to agriculture. These are *induced expenditures* that include purchases for food, medical services, retail goods, and many others.

While all these linked industries do not necessarily depend on exports from the agricultural industry, they are likely to be disrupted if the agricultural industry experiences an economic shock, such as a serious drop in prices and resulting drop in production.

The output, employment, and value-added measures of these direct, indirect, and induced expenditures are the “economic footprint” of the agriculture industry in Oregon. They are summarized in Table 8.

In compiling Table 8, it was important to avoid double counting (e.g., counting commodity inputs as part of production final sales and also as inputs or part of processing’s economic footprint). We avoided double counting by, for example:

- Counting farmgate sales separately if they were sold directly to the consumer or exported. If these sales were inputs to a processing sector, they were counted in the processing sector.

Table 8.—Oregon agriculture’s economic footprint (2005).

Aggregated sector	Output (\$000) Sales	Employment Full- & part-time jobs	Value added (\$000)
Production, processing, & agricultural support services	18,846,703	142,898	8,031,841
Wholesale trade	2,933,782	22,247	1,894,516
Transportation & warehousing	916,250	8,753	516,352
Retail trade	3,073,815	40,613	1,892,439
Total agriculture	25,770,550	214,511	12,335,149
Total all Oregon sectors	242,673,884	2,116,589	129,937,290
Portion agriculture (%)	10.62	10.13	9.49

- Counting wholesale-trade and transportation-and-warehousing margins for a processed commodity only as an input to the respective processing sector's producer price. We assumed that exports of agricultural goods and services would be at wholesale prices, so no retail trade component or margin is included for exports. Since the linkages were particularly difficult to attribute uniquely to one sector among production, processing, and agricultural support services, they are combined in Table 8.

Oregon's Economic Dependence on Agriculture

Determining what “drives” the Oregon economy, or the extent to which each major industrial sector is critical to that economy, can be estimated in a number of ways. One approach, called export base theory, suggests that economies are primarily dependent on the goods and services they can export to bring in outside money to maintain growth and economic vitality. The IMPLAN model we used for this report is an input/output model that relies on export base theory. We used it to calculate how a change in demand from outside Oregon (or *exogenous demand*) can cause economic changes in Oregon. These changes (known as *responding*) are often called the *ripple effect*. An estimate of the size of the responding caused by a change in exogenous demand as it ripples through the economy is called the *multiplier*.

In addition to the goods and services that are currently exported from Oregon, the economy also depends on transfer payments, such as Social Security, and on dividend and interest payments from investments initiated in the past.

Table 9 shows the exogenous demand for goods and services related to the major parts of agriculture in Oregon.

We estimated the impacts of the exogenous demand for agriculture throughout the Oregon economy and summarized those impacts in Table 10. These calculations were

Table 9.—Exogenous demand for Oregon agriculture (2005).

Aggregated sector	Total (\$000)	Share (%)
Production	2,311,450	2.26
Processing	6,244,602	6.10
Agriculture support activities	13,105	0.01
Wholesale trade	1,251,992	1.22
Transportation & warehousing	388,636	0.38
Total agriculture	10,209,786	9.98
Total all Oregon sectors	102,337,600	100.00

made by analyzing the changes from the 75 sectors in the IMPLAN model that are related through suppliers or consumers of agricultural goods and services.

The amounts in Table 10 are smaller than those in Table 8 because Table 8 shows all the expenditures in the Oregon economy that are related to agriculture both in and outside Oregon (exports). As mentioned above, any changes to an economic footprint (Table 8) can disrupt an economy in the short run. However, according to export base theory, structural changes (e.g., contraction of the economy due to a negative economic shock) are likely only if exports are affected, causing an economic impact (Table 10).

Table 10.—Summary of Oregon agricultural economic impacts (2005).

Aggregated Sector	Output (\$000) <i>Sales</i>	Employment <i>Full- & part-time jobs</i>	Value added (\$000)
Production	3,446,712	47,854	2,495,910
Processing	11,089,392	62,389	3,901,441
Agricultural support services	24,708	525	13,962
Wholesale trade	2,062,631	15,641	1,331,962
Transportation & warehousing	723,456	6,911	407,703
Total agriculture	17,346,900	133,320	8,150,979
Total all Oregon sectors	242,673,884	2,116,589	129,937,290
Portion agriculture (%)	7.15	6.30	6.27

In Table 11 (pages 17–18), we provide a more detailed summary of the value-added economic impacts from Table 10. Value-added includes employee compensation, proprietor income, other property income (rents and leases), and indirect business taxes. The columns in Table 11 show the economic impacts of each agricultural sector on itself, the other agricultural sectors, and nonagricultural sectors. The sectors are aggregated at the NAICS two-digit level.

Table 11.—Oregon agricultural value-added economic impacts detail (2005).

	Production				Processing								Ag. support services * (\$000)	Wholesale trade ** (\$000)	Transportation & warehousing ** (\$000)
	Greenhouse & nursery	Crops	Livestock	Commercial fishing	Feed	Grains & sugar	Frozen & canned foods	Dairy, meat, & seafood	Baked goods & snacks	Beverages	All other food	Cloth & leather			
Greenhouse & nursery	673,407	720	295	98	62	302	1,397	478	278	1,321	3,325	124	304	835	302
Crops	2,200	974,561	18,939	341	8,277	95,943	144,273	20,202	9,720	16,654	19,065	761	87	2,066	797
Livestock	1,061	850	42,842	173	847	907	12,360	44,337	338	1,796	2,695	338	141	1,142	435
Commercial fishing	34	24	4	50,315	13	21	173	571	8	30	10	7	1	42	16
Feed	7	6	127	1	16,230	5	45	133	2	9	9	2	1	10	3
Grains & sugar	33	25	40	6	397	63,747	460	77	197	382	200	8	1	39	16
Frozen & canned foods	110	78	11	25	33	108	489,141	185	125	2,407	608	21	2	131	49
Dairy, meat, & seafood	1,151	819	159	207	1,200	1,188	14,892	63,970	430	1,478	469	300	21	1,378	526
Baked goods & snacks	1,429	1,014	131	251	146	1,393	2,664	495	81,521	1,591	529	269	26	1,679	751
Beverages	134	95	13	214	31	56	292	59	27	188,702	82	25	2	164	64
All other food	249	177	23	59	66	194	5,127	828	299	15,741	55,060	47	4	288	110
Cloth & leather	107	83	12	28	11	49	196	37	20	87	26	67,909	3	131	49
Agricultural support services	3,741	6,012	2,088	20	97	662	1,593	2,179	88	290	339	39	6,508	125	52
Forestry	325	286	62	75	68	299	1,202	176	96	960	884	167	17	334	182
Mining	557	550	132	136	126	519	2,344	370	191	1,096	263	254	14	730	396
Utilities	8,177	5,974	1,842	1,210	1,294	9,172	29,467	5,509	2,633	9,299	3,058	3,043	134	11,114	3,565
Construction	1,741	1,402	440	6,437	296	1,948	6,238	1,418	667	2,285	796	630	40	3,480	1,271
Manufacturing (other than ag.)	26,286	28,872	6,186	7,764	6,975	19,603	118,607	16,879	9,180	65,671	13,931	13,506	821	34,342	18,923
Wholesale trade	25,319	22,337	7,277	10,630	10,239	67,489	222,575	30,545	16,073	86,287	26,199	15,311	670	849,557	15,582

* Exported

** Related to agricultural exports

Table 11 (contd.).—Oregon agricultural value-added economic impacts detail (2005).

	Production				Processing										Ag. support services * (\$000)	Wholesale trade** (\$000)	Transportation & warehousing** (\$000)
	Greenhouse & nursery	Crops	Livestock	Commercial fishing	Feed	Grains & sugar	Frozen & canned foods	Dairy, meat, & seafood	Baked goods & snacks	Beverages	All other food	Cloth & leather					
Transportation & warehousing	11,843	9,576	3,707	7,570	5,988	25,627	87,302	12,459	7,038	28,831	11,488	6,558	277	26,273	226,716		
Retail trade	33,956	24,206	3,306	6,878	3,215	17,379	75,383	11,426	7,183	27,013	8,140	6,528	622	45,491	16,490		
Information	4,564	3,428	847	955	832	4,805	15,929	3,225	1,610	7,063	2,282	1,619	114	11,081	3,300		
Finance & insurance	22,034	17,591	3,612	5,112	3,027	15,395	57,087	11,820	5,743	25,829	12,842	5,850	441	35,142	13,255		
Real estate & rental	23,625	23,999	7,085	4,783	2,914	14,810	64,102	14,911	6,688	29,105	9,119	6,106	409	43,949	14,764		
Professional, scientific, & tech. services	13,898	11,183	4,563	3,641	3,758	27,285	75,625	14,764	7,677	36,197	11,323	7,210	618	46,736	13,052		
Management of companies	4,170	3,522	722	1,086	2,059	10,447	66,823	10,748	6,356	19,371	6,825	4,596	97	20,032	3,681		
Administrative & waste services	7,772	6,192	1,581	2,059	1,584	8,631	31,900	5,873	2,960	13,008	4,575	4,074	170	30,776	10,944		
Educational services (private)	3,910	2,791	360	688	333	1,617	6,434	1,189	675	2,571	896	732	71	5,183	1,774		
Health & social services	43,425	30,707	3,740	7,436	3,306	15,822	63,910	11,984	6,889	25,170	8,899	7,509	774	48,251	18,091		
Arts, recreation, & entertainment	4,178	2,990	420	1,131	422	2,117	8,089	1,534	864	3,287	1,183	893	85	5,602	1,867		
Accommodation & food services	14,230	10,219	1,443	2,558	1,540	7,776	29,711	5,468	3,160	12,114	4,400	3,318	261	19,615	7,924		
Other services	13,244	9,982	2,099	2,369	1,727	9,399	36,408	7,296	3,443	13,256	4,628	3,683	241	20,112	7,408		
Government	55,215	39,575	5,777	9,788	5,144	26,429	103,270	18,440	10,336	40,416	14,444	11,562	986	66,132	25,347		
Totals	1,002,132	1,239,849	119,885	134,044	82,257	451,145	1,775,021	319,581	192,512	679,318	228,592	172,999	13,962	1,331,963	407,703		

* Exported

** Related to agricultural exports

Implications for Agriculture and Oregon

Farmers, ranchers, processors, distributors, and shippers have a significant impact on Oregon's economy. When compared to national changes in agriculture, the number of Oregon farms and their agricultural acreage has remained more stable than expected for almost three decades. Agriculture still is one of the most reliable industries in Oregon in terms of sales.

A number of market trends suggest that the agriculture industry will remain healthy and continue to grow in Oregon, possibly at an increasing rate. These trends include:

- More intense consumer interest in where food is grown and processed, and consumers' increasing preference to buy "locally," which can be helpful to some producers and many processors.
- Producers who differentiate their products can gain access to a much wider market through agricultural cooperatives.
- More flexible land-use policies give producers more options to manage their assets.
- The number and sophistication of adaptive farms is growing, and cooperation among producers also is growing.
- Communication and learning among all parts of the agricultural industry are more effective, particularly with greater access to Internet resources in rural communities.

At the same time, global and local economic and political factors continue to increase costs and challenge agriculture:

- Producers must maintain machinery, pay competitive wages, retain farmland, and find ways to manage pests and soil fertility in ways that are acceptable to all groups participating in those decisions.
- As fewer people work in agriculture and related industries, there are fewer options for young people who would like to work in agriculture and live in rural communities.
- Over the past 20 years, lifestyle- and recreation-based economies have filled some of the gaps caused by technological and policy changes in rural communities' natural-resource-based economies. But slowdowns in the housing market, higher fuel prices, and —eventually— baby boomers' reduced discretionary spending may seriously distress those communities.
- Accelerating development of renewable energy is increasing commodity prices and is giving individual growers the ability to utilize untapped assets (such as wind) and to control some of the uncertainty of their input costs, to the extent that they can grow and manufacture part of their own fuel. On the other hand, many of the new renewable-energy facilities (e.g., ethanol and wind) are owned by firms outside Oregon, which significantly reduces the economic impacts to Oregon of those developments.
- The momentum for trade protection is growing. As real wages decline for many people in the U.S., there will be more pressure to protect local jobs and secure borders against illegal immigration.

- The decline of real wages, with ever-greater inequity in the distribution of wealth, forces consumers to become more dependent on large retail firms that purchase goods globally at lower cost and thus can keep retail prices low (90 percent of Americans live within 15 miles of a large retailer).
- Increasing demands for water continue to challenge agriculture in many parts of Oregon. While there are some positive examples of collaborative efforts to bring together competing interests, there are still tensions in the western U.S. that do not exist in other states and nations with which Oregon producers must compete for markets, labor, and investments.

The strength of an industry's economic impacts depends on where its owners reside, where it purchases its inputs, the value it adds to its products, and its ability to differentiate itself from producers in other places. Many competing locations in the U.S. and the world have a more robust set of incentives to encourage their agricultural (and other) industries than we have in Oregon. Government at all levels in Oregon can affect agriculture's contribution to local and statewide economies by creating public policies that encourage and add incentive for local ownership, purchase of inputs locally, production of finished products rather than exporting of unfinished or raw products, and creativity to differentiate products to maximize the value added in Oregon and achieve a premium in the marketplace. Although such policies are open to equity challenges and retaliatory strategies in competing communities, states, and nations, implementing this course of action in Oregon could further increase agriculture's economic impacts and provide critical job opportunities for people who are being left out of the new economy.

References

- Cornelius, Jim, David Holland, Edward Waters, and Bruce Weber. 2000. *Agriculture and the Oregon Economy* (Special Report 1014). Oregon State University Extension Service, OSU Rural Studies Program; Corvallis, Oregon.
<http://extension.oregonstate.edu/catalog/pdf/sr/sr1014.pdf>
- Holland, David W., Hans T. Geier, and Ervin G. Schuster. 1997. *Using IMPLAN to Identify Rural Opportunities* (General Technical Report INT-GTR-350). USDA Forest Service, Intermountain Research Station, 324 25th Street, Ogden, UT 84401.
- Meyers, Michael. 2006. *Structural Employment Changes in Rural Oregon Over the Past 25 Years*. Salem, Oregon: Oregon Labor Market Information System (OLMIS), Oregon Employment Department.
- Minnesota Implan Group, Inc. 1725 Tower Drive, Suite 140, Stillwater, MN 55082.
http://implansupport.com/index.php?option=com_frontpage&Itemid=1
- Newton, Doris J. 2005. Small Farms Can Grow Into Large Enterprises. *Amber Waves*, Vol. 3, Issue 2. U.S. Department of Agriculture, Economic Research Service.
<http://www.ers.usda.gov/briefing/farmstructure/>

Northwest Area Foundation. 2004.
<http://www.indicators.nwaf.org/>

Olson, Doug, and Scott Lindall. 1999. *IMPLAN Professional Version 2.0 Social Accounting and Impact Analysis Software—User's Guide, Analysis Guide, and Data Guide*. Minnesota IMPLAN Group, Inc., 1725 Tower Drive West, Suite 140, Stillwater, MN 55082.
<http://www.implan.com>

Oregon Agricultural Information Network (OAIN). Oregon State University Extension Service—Agricultural and Resource Economics Department.
<http://ludwig.arec.orst.edu/oain/SignIn.asp>

Oregon State University Extension Service. 2005 *Oregon County and State Agricultural Estimates* (SR 790-05). Revised April 2006.
<http://extension.oregonstate.edu/catalog/pdf/sr/sr790-05.pdf>

U.S. Department of Agriculture, Economic Research Service. 2007. *Farm Income: Data Files*.
<http://www.ers.usda.gov/data/FarmIncome/finfidmuWk4.htm>

U.S. Department of Agriculture, Economic Research Service. March 2007. *State Facts Sheets: Oregon*.

U.S. Department of Agriculture, National Agricultural Statistics Service. 1999. *1997 Census of Agriculture*.
<http://www.nass.usda.gov/census/index1997.htm>

U.S. Department of Agriculture, National Agricultural Statistics Service. 2004. *2002 Census of Agriculture*.
http://www.nass.usda.gov/Census_of_Agriculture/index.asp

© 2008 Oregon State University. This publication may be photocopied or reprinted in its entirety for noncommercial purposes. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties. Oregon State University Extension Service offers educational programs, activities, and materials without discrimination based on age, color, disability, gender identity or expression, marital status, national origin, race, religion, sex, sexual orientation, or veteran's status. Oregon State University Extension Service is an Equal Opportunity Employer.

Published February 2008.