

AGRICULTURE'S CONTRIBUTIONS TO OREGON

OREGON EXPORTS AND TRADED SECTOR ECONOMY

A traded sector brings in new dollars to the state's economy through exporting of products, thus stimulating additional economic activity and multipliers throughout other business sectors.

More than 80 percent of Oregon's agriculture production leaves the state (over \$3.8 billion in raw product and processed food products), with about half of that going overseas (\$1.8 billion). The amount of additional employment and economic activity provided by these exports at Oregon ports and other locations, through production, warehousing, transportation, and other associated activities is significant.

Oregon's agricultural exports, including raw and processed foods, have fluctuated with the value of the dollar, world trade policy, and overseas competition. The trend, however, has generally been upward.

The 1970s and 1980s marked the peak export era for US agriculture, which led to fence-row to fence-row production and inflated land values. This crested in the latter 1980s and early 1990s with a fall out of demand and corresponding depreciation of land,

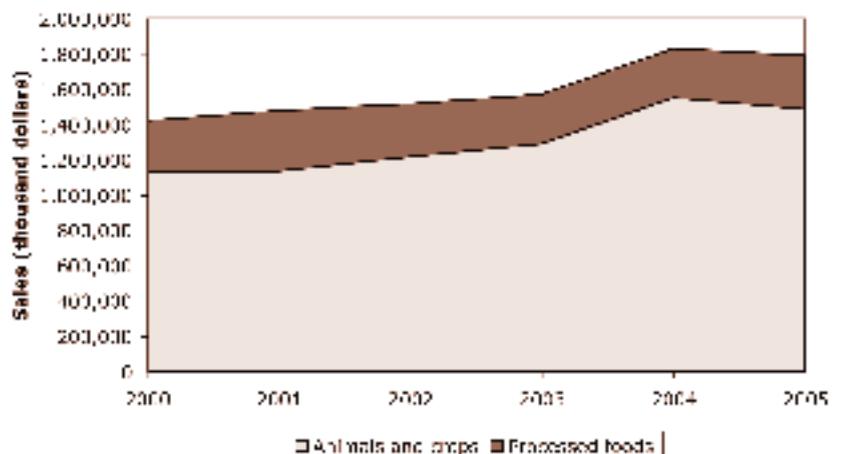
calling of loans, and a depression-like effect on the industry.

While Oregon's economy picked up in the 1990s, along with the US economy, the dollar value increased as well. This again hurt agriculture along with other exporting industries. The value of Oregon wheat exports dropped from \$270 million in 1997 to \$97 million in 1999.

The dollar eventually softened with the dot-com bust, and exports began to pick up again in 2002, more so in 2003 and 2004. Competition in global trade and costlier shipping slowed ag exports in 2005.

In addition to agricultural exports originating in Oregon, the Columbia River System and western rail lines feeding the Port of Portland make it the number

Oregon agricultural exports (Excluding lumber)



Top 10 agriculture and food export destinations account for 85 percent of total agriculture and food exports.

one wheat exporting port in the nation. Large volumes of corn and soybeans also move through the Port of Portland, amounting to an additional \$1 billion in export

value per year of cargo loaded from Oregon for overseas destinations.

Agricultural goods are the largest category of product exported through the Port of Portland.

2005 Oregon food and agriculture exports, by country of destination

Description	Percent	Air value	Ship value	Ground value	Total value
1. Japan	31.7%	\$ 7,700,193	\$ 687,714,897	\$ 106,017	\$ 695,521,107
2. Canada	14.5%	\$ 1,599,533	\$ 47,512	\$ 316,847,801	\$ 318,494,846
3. Korea	10.1%	\$ 1,263,647	\$ 221,643,575	\$ 5,009	\$ 222,912,231
4. Philippines	7.1%	\$ 7,796	\$ 156,229,012	\$ 8,988	\$ 156,245,796
5. Taiwan	6.8%	\$ 95,334	\$ 149,215,338	\$ 0	\$ 149,310,672
6. Egypt	4.4%	\$ 71,175	\$ 95,964,884	\$ 0	\$ 96,036,059
7. China	4.3%	\$ 137,281	\$ 95,311,015	\$ 56,536	\$ 95,504,832
8. Rep. Yemen	2.6%	\$ 0	\$ 57,135,009	\$ 0	\$ 57,135,009
9. Mexico	2.0%	\$ 86,800	\$ 337,885	\$ 42,895,612	\$ 43,320,297
10. Great Britain	1.9%	\$ 826,306	\$ 20,734,006	\$ 21,149,355	\$ 42,709,667

2005 Oregon food and agriculture exports, by product

Description	Percent	Air value	Ship value	Ground value	Total value
1. Cereals	52.4%	\$ 0	\$ 1,151,186,771	\$ 451,751	\$ 1,151,638,522
2. Wood	16.5%	\$ 1,107,410	\$ 200,986,932	\$ 161,122,594	\$ 363,216,936
3. Oil seeds	9.4%	\$ 3,252,353	\$ 181,134,534	\$ 22,121,611	\$ 206,508,498
4. Fruits and nuts	3.6%	\$ 3,940,143	\$ 50,371,130	\$ 24,772,062	\$ 79,083,335
5. Proc. fruits/vegs	3.3%	\$ 279,031	\$ 46,034,582	\$ 25,937,159	\$ 72,250,772
6. Vegetables	2.7%	\$ 7,235,493	\$ 25,762,138	\$ 26,947,496	\$ 59,945,127
7. Seafood	1.9%	\$ 519,544	\$ 35,393,717	\$ 6,280,429	\$ 42,193,690
8. Live plants	1.7%	\$ 1,377,192	\$ 1,585,487	\$ 34,450,094	\$ 37,412,773
9. Prepared meats	1.6%	\$ 155,488	\$ 10,986,712	\$ 24,401,203	\$ 35,543,403
10. Cereal/milk prod.	1.4%	\$ 197,783	\$ 15,837,265	\$ 14,323,119	\$30,358,167

Oregon origin totals

2004 total value=\$905 million

2005 total value=\$885 billion

Source: USDA

From Oregon origin

1. Wheat	\$171.4 million
2. Vegetables	\$158.3 million
3. Seeds	\$111.2 million
4. Fruit and proc. Fruit	\$106.4 million
5. Grass straw/forage	\$65.2 million
6. Nursery products	\$35.5 million
7. Tree nuts.	\$32.0 million
8. Dairy Products	\$17.6 million
9. Christmas Trees	\$14.5 million
10. Animal feeds	\$12.1 million

More than 40 percent of the state's production leaves through Oregon ports to destinations in Asia, Europe, and other export markets. Midwestern commodities find their way to many countries for livestock feed and food processing.

The charts (at left) show all natural resource products exported through Oregon ports. The oil seeds (soy) are from the Midwest; likewise, much of the cereal is wheat and corn from the Midwest.

Grand total: \$ 2,197,350,971

Japan

Japan has been and will endure as the shining star in Oregon's export universe. Since the late 1940s, ODA and Oregon agriculture have cultivated Japan's market and have developed long-lasting, important trade relations. In fact, more Oregon agricultural products are sold to Japan than are purchased in Oregon.

Japan has higher per capita income than the US and is less than 50 percent self sufficient in food production. These two factors, along with a preference for high-quality products, position Japan as an ideal market for Oregon agricultural products.

In addition, all of Japan's major "trading companies" have offices in Oregon that serve as important trade portals for Oregon producers. Many Oregon producers rely on these trading companies to handle the myriad of details in the export and distribution of products to the Japanese market. No other export destination has this kind of organized trading structure.

Japan is a key importer of wheat, processed vegetables such as French fries and sweet corn, fresh fruit like cherries and blueberries, onions, hay and straw, seafood, and high-value processed products like wines and gourmet items. It is likely that Japan will continue to predominate the export market landscape in the foreseeable future.

Canada

Canada is critically important for a number of Oregon agricultural products. Its geographic proximity and efficient transportation system combine to make it Oregon's second largest export market. Canada's market basket tends to include processed food products and fresh fruit and vegetables. Ornamental nursery products and trees are another important export product. The North American Free Trade Agreement (NAFTA) has eased access for some products into Canada, but dairy and poultry products still suffer from restrictive tariffs and quotas.

South Korea

It is easy to think of Korea as a mini-Japan, but that characterization would be incorrect. Korea has enjoyed one of the world's fastest growing economies and has rapidly moved from a poor developing country to a market with exceptional per capita income. Korea is an important destination for grain, intermediate food ingredients, hay and straw, seafood, and higher value products like wines and specialty foods. Like Japan, it is less than 50 percent self sufficient in



food production, so the long-range outlook for export of both basic and specialty food products to Korea looks favorable.

Taiwan

Taiwan is Oregon's fifth leading agricultural export market and, like Korea, has seen a rapidly expanding economy and a relatively high per capita income. Increasingly, Taiwan finds itself in the shadow of much larger China. In real terms, however, it is still 50 percent greater than all of China in terms of purchases of Oregon agricultural products. Its range of purchases is much greater as well. Wheat, processed vegetables, tree fruits, and seafoods are all important Oregon export products to Taiwan.

China

With a population of 1.3 billion, China represents the 800-pound gorilla of potential consumer demand but, in reality, is a much smaller factor for Oregon agriculture. While Oregon dominates the Chinese market with grass seed exports, other agricultural products are relatively small in comparison to the size of the marketplace. However, there has been significant growth in the export of intermediate food ingredients (for reprocessing and re-export to the EU and the US), hazelnuts, and seafood products. Export of Oregon wheat has been problematic due to non-tariff barriers, despite the fact that China is among the world's largest wheat importers and exporters. China has also discovered the benefit of Oregon's nursery products

to control greenhouse gases and desertification in rapidly growing municipalities.

Mexico

The third NAFTA country, Mexico is a significant export market with considerable upside for Oregon—if phytosanitary trade barriers can be worked out. Mexico is an important buyer of Oregon apples, pears, and Christmas trees. However, fresh potatoes are constrained by an artificial barrier that limits shipment to only the northern-most 200 kilometers (120 miles) of Mexico. This is due to concerns from the Mexican government about plant pests and diseases from Oregon being introduced to their country.

The European Union (EU)

The EU, with over 300 million high-income consumers, is a rich market—but it is also highly protected by tariffs, quotas, and generous price support programs that keep its smaller, inefficient producers competitive in world markets. This notwithstanding, the EU represents an important market for some products like pears, cherries, hazelnuts, and niche products like fresh blueberries, dried peppermint for tea, and wild mushrooms. The market would probably have better promise for Oregon if tariffs and quotas were reduced below the average 18 percent currently in effect.

Concessionary markets

One doesn't normally think of Yemen, the Philippines or Egypt

Table 1. Oregon farm and ranch commodity sales and value-added by processing, by commodity groups, 2005 (\$X1,000)

Commodity groups	Income received by producers	Value-added by processing ¹				Total processed value
		Payroll	Packaging materials	Other ²	Total	
Livestock						
Meat animals	656,595	7,366	11,431	34,615	53,412	710,007
Dairy products	340,062	70,123	27,488	197,956	295,567	635,629
Poultry and eggs	97,527	75,520	22,599	36,628	134,747	232,274
Other livestock and products	55,220	2,587	94	2,101	4,782	60,002
Total livestock	1,149,404	155,596	61,612	271,300	488,508	1,637,912
Crops						
Grain and hay	456,841	35,948	17,371	80,961	134,280	591,121
Fruit and nuts	343,490	140,702	50,650	206,652	398,004	741,494
Vegetables	377,945	242,102	143,851	310,035	695,988	1,073,933
Nursery and greenhouse	853,507	40,789	7,481	76,577	124,847	978,354
Christmas trees	126,436	15,669	-	12,615	28,284	154,720
Grass seed	255,707	31,424	14,841	30,747	77,012	332,719
Other crops	298,403	94,400	18,087	48,390	160,877	459,280
Total crops	2,712,329	601,034	252,281	765,977	1,619,292	4,331,621
All commodities	3,861,733	756,630	313,893	1,037,277	2,107,800	5,969,533

1. Includes all the activities performed by processors or first handlers, such as meat packers, canners, freezers—or simply cleaning, grading, and sacking as in the case of grass seed. It also includes delivery when generally practiced and costs associated with selling the product. It does not include wholesaling and retailing.
2. Includes all items not previously accounted for, such as depreciation, utilities, repairs, insurance, supplies, licenses, rent, taxes, bad-debt loss, and profit or margin to the processing firm.

fries, hundreds of examples exist that create jobs and economic development, and add value to Oregon's natural resources.

The value-added to Oregon's agricultural production once it leaves the farm is estimated at \$2.1 billion, representing a 52 percent increase in value. This compares to \$1.3 billion in value added in 1994 with 49 percent of value added to production.

The top commodity to which the most value is added in dollar amount is milk and dairy products, followed by potatoes, farm forest products, wine grapes, nursery products, broilers, onions, hay, and winter pears. The top commodities to which value was added over a decade earlier were, in order, potatoes, farm forestry, dairy, pears, sweet corn, snap beans, dry onions, sweet cherries, nursery crops, and grass seed.

Table 2. Top 15 Oregon agricultural commodities, ranked by farm gate sales and value-added, 2005.

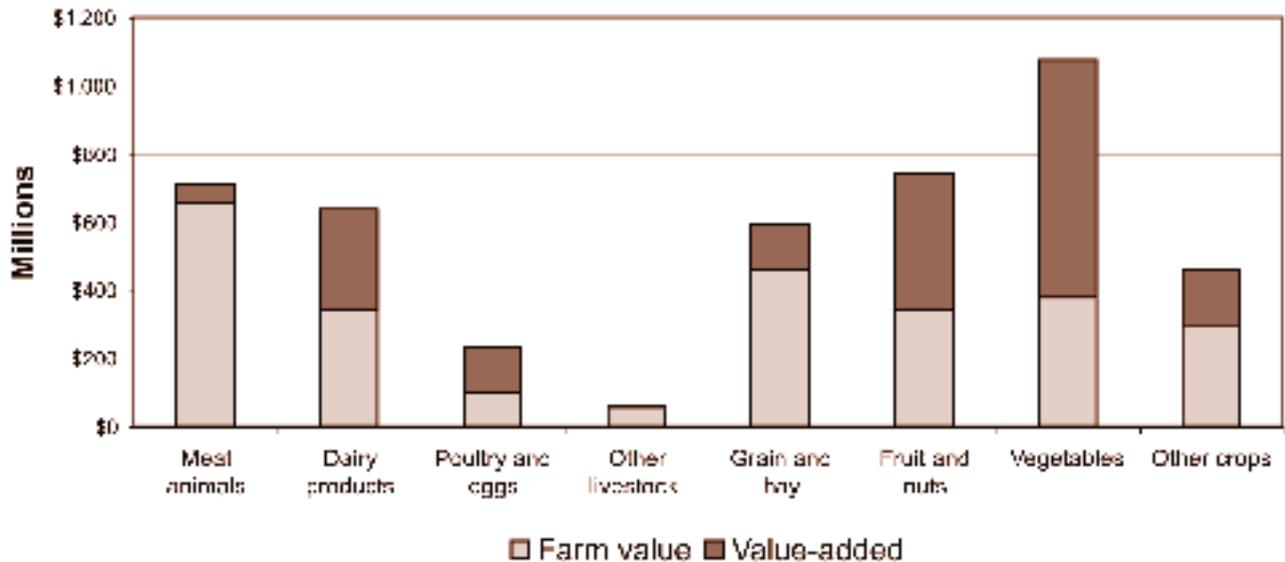
Rank	Commodity ranked by farm gate sales value	Estimated farm gate sales	Commodity ranked by value-added	Estimated value-added
1	Nursery, Greenhouse & Specialty Ornamental Crops	\$853,507,000	Milk	\$295,567,000
2	Cattle and calves	619,491,000	Potatoes	217,087,000
3	Milk	340,062,000	Farm forest products	158,185,000
4	Farm forest products	285,431,000	Wine grapes	135,786,000
5	Hay	218,015,000	Nursery, Greenhouse & Specialty Ornamental Crops	124,847,000
6	Wheat	171,248,000	Broilers	121,262,000
7	Perennial ryegrass	146,510,000	Onions	104,266,000
8	Christmas trees	126,436,000	Hay	78,486,000
9	Potatoes	116,301,000	Winter pears	59,169,000
10	Tall fescue	109,197,000	Cattle and calves	48,632,000
11	Onions	73,406,000	Hazelnuts	46,916,000
12	Winter pears	55,936,000	Wheat	34,591,000
13	Broilers	46,663,000	Perennial ryegrass	28,672,000
14	Hazelnuts	39,536,000	Christmas trees	28,284,000
15	Wine grapes	36,699,000	Tall fescue	23,762,000
Group total		\$3,238,438,000	Group total	\$1,505,512,000
% of Oregon total		80%	% of Oregon total	71%

Table 3. Top 10 Oregon agricultural commodities ranked by percentage value-added to farm value

Rank	Commodity	2005 Farm value	Value-added	% Value-added
1	Wine grapes	\$36,699,000	\$135,786,000	370%
2	Snap beans	\$22,832,000	\$63,552,000	278%
3	Sweet corn	\$16,415,000	\$38,061,000	232%
4	Potatoes	\$116,301,000	\$217,087,000	187%
5	Onions	\$73,406,000	\$104,266,000	142%
6	Bartlett pears	\$25,096,000	\$32,087,000	128%
7	Hazelnuts	\$39,536,000	\$46,916,000	119%
8	Winter pears	\$55,936,000	\$59,169,000	106%
9	Blueberries	\$23,442,000	\$19,655,000	84%
10	Nursery, greenhouse	\$853,507,000	\$124,847,000	15%
Group subtotal		\$1,263,170,000	\$841,426,000	66.6%
All commodities		\$4,066,320,000	\$2,122,892,000	52.2%
Group % of total		31.1%	39.6%	

*Value-added statistics
provided by OSU,
Agricultural and Resource
Economics / Extension Service*

Farm value and value-added by processors and by commodity group, 2005.



As a percentage of value added (incremental value), the change over the past decade is even more dramatic. In 1994, the top products ranked by percentage value added were beets, squash, cucumbers, wine grapes, green peas, carrots, snap beans, sweet corn, plums/prunes, and broccoli. In 2005, the leading value added products by percent value added are: wine grapes, snap beans, sweet corn, potatoes, onions, bartlett pears, hazelnuts, winter pears, blueberries, and nursery products.

The shift from vegetable processing in the Willamette Valley to grapes, hazelnuts, blue berries and nursery is significant. Snap beans and sweet corn are the only two vegetable crops that remain in the top ten. Potatoes and onions still reign in Eastern Oregon for value added processing.

OREGON'S FOOTPRINT ON URBAN AND RURAL ECONOMIES

Agriculture production exists in every county of Oregon, urban and rural. Many of the top producing counties in the state are considered urban counties in the Willamette Valley—partly because that is where some of the best soils in the state exist. Six of the top 10 counties by sales are in the urban counties in the Willamette Valley.

According to research conducted by Oregon State University, there are more than 150,000 jobs supported by agriculture throughout the economy. The sectors with the most significant impact (based on processing value-added and exports bringing in new dollars to the state) include potatoes, dairy, pears, sweet corn and snap beans, wine grapes, dry onions, and sweet cherries.

RELATED INDUSTRY SECTOR JOBS

Because jobs often are categorized and reported by official state and federal publications in ways that cloud the connections to agriculture, members of the public don't always see the relationship between their own employment, the agriculture industry, and the rest of the economy. Here is a brief listing of some of the occupations associated with the agriculture industry—occupations that have a link in providing food, fiber, flora (nursery/plants, etc.), feed (for animals), and fuel for all of society.

Scientists, engineers and related professionals

Agriscience, with its related occupations of engineering, biochemistry genetics and physiology, is the fastest growing area within the agricultural industry. This is agriculture's cutting edge.

- Agricultural engineer
- Landscape architect
- Rangeland scientist
- Animal scientist
- Microbiologist
- Research technician
- Biochemist
- Molecular biologist
- Resource economist
- Cell biologist
- Natural resources scientist
- Soil scientist
- Entomologist
- Nutritionist
- Statistician
- Environmental scientist
- Para-vet/animal health technician
- Toxicologist
- Food engineer
- Pathologist
- Veterinarian
- Food scientist
- Physiologist
- Waste management specialist
- Forest scientist
- Plant scientist
- Water quality specialist
- Geneticist
- Quality assurance specialist
- Weed scientist
- Wildlife specialist

County rank by agricultural sales (2005)

1.	Marion	\$540 million
2.	Clackamas	\$362 million
3.	Washington	\$275 million
4.	Umatilla	\$275 million
5.	Yamhill	\$264 million
6.	Linn	\$248 million
7.	Morrow	\$233 million
8.	Malheur	\$206 million
9.	Klamath	\$201 million
10.	Polk	\$130 million

Source: Oregon Agricultural Statistics Service and OSU Extension Service

We get a very different picture of the importance and impact of agriculture when comparing counties based on agricultural income (sales) per capita.

County rank by agricultural sales per capita (2005)

1.	Morrow	\$19,539
2.	Gilliam	\$14,469
3.	Sherman	\$13,862
4.	Harney	\$8,929
5.	Wheeler	\$7,412
6.	Lake	\$7,393
7.	Malheur	\$6,491
8.	Wallowa	\$6,104
9.	Tillamook	\$4,240
10.	Grant	\$3,934

Abraham Lincoln stated, in a speech he made in 1959

“...no other human occupation opens so wide a field for the profitable and agreeable combination of labor with cultivated thought, as agriculture. I know of nothing so pleasant to the mind, as the discovery of anything which is at once new and valuable—nothing which so lightens and sweetens toil, as the hopeful pursuit of such discovery. And how vast, and how varied a field is agriculture, for such discovery. ... Every blade of grass is a study; and to produce two, where there was but one, is both a profit and a pleasure. And not grass alone; but soils, seeds, and seasons—hedges, ditches, and fences, draining, droughts, and irrigation—plowing, hoeing, and harrowing—reaping, mowing, and threshing—saving crops, pests of crops, diseases of crops, and what will prevent or cure them—implements, utensils, and machines, their relative merits, and [how] to improve them—hogs, horses, and cattle—sheep, goats, and poultry—trees, shrubs, fruits, plants, and flowers—the thousand things of which these are specimens—each a world of study within itself.”

Agricultural marketing, merchandising and sales

There are many demands for agricultural products today. Consumers expect to walk into supermarkets and find the shelves overflowing with choices. These and related occupations keep the shelves full.

- Account executive
- Florist
- Marketing manager
- Advertising manager
- Food broker
- Purchasing manager
- Commodity broker
- Grain merchandiser
- Retail food sales
- Consumer information
- Insurance agent
- Export sales manager market analyst
- Grocery stocking clerk

Education and communications

These occupations provide the next generation of professionals with the skills to do their jobs, and to convey to the public the critical information about agriculture.

- Professors in agriculture and related sciences
- High school teacher/FFA advisor
- Agriculture personnel specialist
- Computer software
- Design for agricultural publications
- Illustrator
- Agricultural public relations representative
- Cooperative extension agent
- Information specialist
- Agricultural radio/television broadcaster
- Farm organization staff

Managers and financial specialists

In order for today's agricultural industry to operate, it must have management and financial specialists. From the local bank's agricultural loan officer to USDA economists, this is an area that demands both agricultural and business skills.

- Accountant
- Agricultural economist
- Insurance agency manager
- Appraiser
- Financial analyst
- Insurance risk manager
- Auditor
- Food service manager
- Policy analyst
- Agricultural banker
- Customer service manager
- Government programs
- Retail manager
- Wholesale manager

Social service professionals

Like most other industries, an increasing number of social professionals are related to the agriculture, food, and rural development sectors.

- Career counselor
- Food inspector
- Peace Corps
- Community development
- Labor relations
- Regional planner
- Conservation officer
- Naturalist
- Regulatory agent
- Consumer counselor
- Nutrition counselor
- Rural sociologist
- Dietitian
- Outdoor recreation specialist

- Youth program director
- Park manager

Source: Agriculture in the Classroom

More about these occupations, how they connect to our economy, and educational resources to incorporate these into classroom settings can be found from the Oregon Agriculture in the Classroom program. This organization is a 501(c)(3), non-profit entity. The purpose of the AITC foundation is to help children grow in their knowledge of agriculture and natural resources for the benefit of Oregonians today and in the future. Agriculture is more than just food. It's forestry and horticulture, bioengineering, renewable energy, and other natural resource topics. It's food science and processing, international trade, ag lending, marketing, new technologies, and many other related careers and segments of the industry.

- <http://AITC.oregonstate.edu>

ENVIRONMENTAL PROGRESS AND CONTRIBUTIONS

Conservation acreage

Oregon growers have enrolled more than 540,000 acres in the Conservation Reserve Program (CRP). This federal acreage “retirement” program places marginally productive agricultural lands, or those subject to erosion and environmentally-sensitive habitats, into long-term rental agreements for habitat and native plant restoration, planting of trees, and other erosion control efforts. Another 20,000 acres of

agricultural lands are enrolled in the Conservation Reserve Enhancement Program (CREP), which focuses on streamside restoration and fish habitat. Several thousand more acres are involved in wetland restoration.

These and other efforts by Oregon farmers and ranchers—and the benefits to Oregon’s environment—are outlined in more detail below.

Soil erosion improvements over time

Soil erosion rates from rain and runoff declined 35 percent on cropped acreage between 1982 and 1997. The total soil savings from reduced sheet and rill erosion on all agricultural lands amounted to 8.1 million tons per year.

Much of the reduction in Oregon was due to the adoption of conservation cropping systems that left more residue on the surface and to the installation of physical erosion treatment measures, such as terraces.

Another significant reason for lower erosion rates was highly erodible and environmentally-sensitive cropland being converted to permanent vegetative cover through enrollment in the voluntary Conservation Reserve Program (CRP). Estimated erosion rates were dramatically reduced on cultivated croplands enrolled in CRP.

These cultivated croplands, which were eroding at an average rate of 7.2 tons per acre per year in 1982 before they were enrolled in CRP,



were eroding at an average rate of 0.4 tons per acre per year in 1997, after establishment of permanent cover. This is a 94 percent decrease in the erosion rate. Statewide results for all agricultural lands indicate that these CRP lands accounted for 37 percent of the total tons of erosion reduction from 1982 to 1997 in Oregon. In 2006, there were 541,000 acres of Oregon land enrolled in CRP.

Agricultural plastic recycling

Oregon has a unique success story in Agri-Plas, Inc., the only agricultural plastic recycling center in the nation that collects all types of plastic—types that other recyclers won't touch, like high-density polyethylene (HDPE) pots, pesticide containers, and styrene trays. They also accept hoop house (greenhouse) film, five-gallon plastic buckets, 55-gallon drums, berry trays, and seed sacks. At least 50 nurseries send their agricultural plastic to Agri-Plas, but this alone creates 80,000 pounds of waste every week for the company to clean, chip, and resell.

Hundreds of other Oregon farms take used containers and plastic products to Agri-Plas for recycling. More than 25 million pounds per year are now processed, and Agri-Plas is looking to expand its facilities.

Agri-Plas, Inc. sells the clean plastic pellets it produces to a variety of manufacturers to be melted into new products. Polypropylene from old nursery pots is melted and blended into new plant containers, reducing the need for virgin material by 10 to

20 percent. Baling twine formerly used to hold hay is refashioned into auto parts. The plastic film used to cover greenhouses—replaced every one to four years—is turned into plastic lumber.

It's a labor-intensive effort with low margins, but reflects the commitment of dedicated owners and industry efforts to make it work.

Water conservation/recycling

Container nurseries are big business in Oregon and part of the leading industry segment. Irrigation is a key component of container nursery operations, also serving as a method of delivering plant nutrients through irrigation water. Virtually all container nurseries have a water recycling system that is designed to capture and reuse irrigation water, eliminate runoff from the nursery property, and maximize water conservation and efficiency.

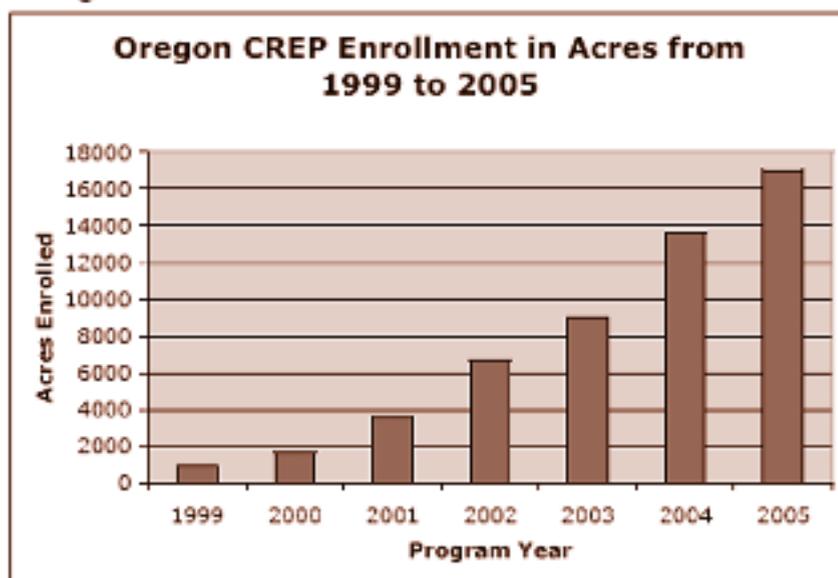
Several irrigation districts have systems that are designed to capture irrigation tailwater at the end of fields, feeding it back into the system and on to other farms. Most irrigation in Eastern Oregon is done with high-efficiency center pivot systems that use low pressure sprinklers, sophisticated soil and plant moisture sensing, remote satellite imagery, and computer-adjusted capacity to match plant needs.

Streamside vegetative management

In 1998, the State of Oregon developed an agreement with the US Department of Agriculture to expand the Conservation Reserve Enhancement Program (CREP) in Oregon. The goal of CREP is to enhance riparian areas on agricultural lands bordering streams that provide habitat for salmon, trout and other fish. As of September 30, 2005, Oregon had 626 approved CREP contracts. These contracts represent 17,024 acres and 1,404 stream bank miles, most of which are forested riparian buffers. 2006 contracts will push past 20,000 acres. Many projects include fencing the riparian areas from direct access by cattle, installing an off-stream watering facility, and installation of a pump with a fish screen to feed the watering facility. The riparian areas are planted with trees or other native habitat and woody species. Demand for the program is growing every year. The state and federal component involves cost-share funding to establish the project, rental rates for the land taken out of production, technical assistance, and monitoring.

Animal management

Oregon dairies are leading the nation in management of manure and wastewater. All dairies and other confined animal feeding operations (CAFO) in Oregon have a containment plan reviewed by the Oregon Department of Agriculture. These plans provide an outline for manure and nutrient management. All water used in the milking process for cleaning



and handling wastes must be contained in storage facilities and spread in agronomic rates over cropland throughout the summer. The storage facilities must be able to accommodate heavy rainfall periods with zero runoff. These facilities are routinely inspected to ensure proper stewardship and that there is no impact on surrounding waterways.

An increasing number of dairies are investigating anaerobic digestion of wastewater and manure to address nutrient management, odor, and its potential for energy generation or other benefits. In Oregon, three anaerobic digesters are in operation or construction phase, and a few more are under development. However, the cost of a digester is significant—between \$500,000 and \$1 million, depending on the size of digester and the number of cows at the dairy. Additional research and policy incentives appear critical to adoption of digesters on more dairy farms.



Farmer Dave Goracke (left), USDA-NRCS fish biologist Kathryn Boyer (center), and ARS agronomist Jeffrey Steiner look at native wetland plants that have been established in a seasonal drainage next to a perennial ryegrass seed field. Photo by Peggy Greb.

Rangeland stewardship

Rangeland is a complex system of ecological and spatial parameters. Rangelands are commonly defined as those lands that are unsuitable for cultivation—including forestlands—characterized by native plant communities. These lands may be associated with grazing animals (both wild and domestic), and are managed by ecological rather than agronomic methods.

(“Summary of Current Status and Health of Oregon’s Rangelands,” by Martin Vavra, OSU Agricultural Research Center in Burns, Oregon, 2001.)

Rangeland resources may include grazeable forage, wildlife habitat, water, and recreational benefits. *(Society for Range Management 1999.)*

With this definition in mind, every eco-region within Oregon contains rangelands. Non-forested rangelands make up about 40 percent of the land area of Oregon. Inclusion of areas within the forested region, and using the broad definition above, would mean that more than half of Oregon might be classified as rangeland, much of it federally owned. The Bureau of Land Management oversees 15.7 million acres in Oregon, 13.5 million acres of which is rangeland. Additional rangelands are managed by the state, the USDA Forest Service, and, of course, private ranches.

A “Summary of Current Status and Health of Oregon’s Rangelands” by Martin Vavra, Oregon State University, concludes:

- There has been a general improvement to upland ecological conditions compared to conditions during the early twentieth century.
- Lack of fire has increased the amount of sagebrush-dominated stands and encouraged juniper invasion, both beyond the historical range of variation.
- The major current risk to rangelands is the continuing invasion by exotic plant species, which have replaced native vegetation on about 2.8 million acres.
- Sufficient information exists to provide proper grazing use in most upland situations, yet improper grazing management in riparian areas is still a problem in some areas.
- Monitoring to measure success or failure of grazing programs and range rehabilitation projects is a challenge.
- Lack of consensus by disparate interests is impeding management for all beneficial uses.

However, Vavra notes progress: “There is a growing awareness that in order to be successful, restoration and management must be addressed within a landscape-scale framework. This is characterized by the formation of active watershed councils throughout the region. Under the framework of the Oregon Plan for Salmon and Watersheds, funds are available to these local groups through the Oregon Watershed Enhancement Board. A related activity, administered by the Oregon Department of Agriculture, is the development of Senate Bill 1010 basin plans with area farmers

and ranchers, for the purpose of addressing water quality issues. The Natural Resources Conservation Service is providing both technical and financial assistance to landowners through Farm Bill programs. Another ongoing effort is the West Program of the Oregon Cattlemen's Association, using the watershed concept to address ecological, economic, and social factors relative to sustainability. An interagency strategy to accelerate cooperative riparian restoration and management has been implemented by the BLM, Forest Service, and NRCS. This approach is designed to incorporate the elements proven successful in demonstration areas throughout the west, such as the Trout Creek Mountains in southeast Oregon."

Cropping systems

The grass seed production that occurs in Oregon's Willamette Valley replicates the native grass environment that originally existed.

Under the right circumstances, grass seed farmers in the valley manage their operations and help wildlife to thrive during the rainy fall and winter seasons, according to Agricultural Research Service (ARS) scientists and cooperators.

From October to May, the valley averages 37 inches of rain, which flows over the region's grass seed fields into seasonal channels. Western pond turtles, Chinook salmon, redbreast shiners, red-legged frogs, and many other aquatic creatures thrive in the vibrant channels, with nearby trees and brush supporting even more wildlife.

Case example of land management projects

Fred Wallender, a Union Soil and Water Conservation District director, and his son Tim, farm near La Grande, Oregon. The Wallenders have completed a variety of projects on their farm that benefit natural resources and their bottom line.

Installation of multiple watering troughs that are insulated to prevent freezing in cold weather provide a reliable water source for the Wallenders' cattle and calves. The troughs limit animals' access to Ladd Creek and its tributaries, letting streamside vegetation grow.

"We still graze the riparian area lightly and sometimes burn parts of it. We see a lot of new growth on the grasses and shrubs after the disturbance," Tim says. The result is a mix of willows, shrubs, and grasses that protect the streambanks from high flows, provide wildlife habitat, provide shade over the creek, which enhances water quality.

Distributed throughout the farm, the watering troughs allow rotation of winter feeding and birthing areas that result in spread of manure and nutrients evenly throughout the farm. The manure distribution is just one part of a soil building and nutrient management system that also includes soil testing and importing fiber matter from a local wood products facility.

After the animals winter in a particular area, Fred and Tim plant potatoes on that field the following spring. They follow the potatoes with a no-till planting of alfalfa. Potatoes and alfalfa are irrigated with pivot sprinklers. Fred and Tim recently upgraded to the pivots from a flood-irrigation system, which improves irrigation efficiency, conserves water, and prevents runoff to creeks. The Wallenders have worked closely with the Union Soil and Water Conservation District on several of these projects. The SWCD has helped secure grant funding from the Oregon Watershed Enhancement Board and the Environmental Quality Incentive Program for the troughs, sprinklers and other projects.

By Stephanie Page and Ken Diebel, ODA Natural Resources Division

Case example of water conservation projects

Tracey, Vickie, and Rocky Liskey farm in Klamath Falls basin in the middle of Oregon's high desert that requires irrigation on all production. Underlying the Liskeys' success are ongoing efforts to diversify and a strong commitment to natural resources stewardship.

The Liskey family has farmed and ranched on their land in the Lower Klamath Lake area since the 1930s. They produce grass and alfalfa hay on some of their fields and graze 300 cow-calf pairs. They have also diversified their operation to include nursery plants, and also lease out part of the property for fish and row crop production.

The Liskeys responded to the 2001 water crisis by implementing several water conservation and water quality improvement measures on their grazing and hay lands. Many of their fields used to have irrigation ditches running through them. The ditches were up to 40 feet wide and livestock had unlimited access to the ditches. Out of 400 acres, approximately 60 acres were lost in these ditches. There were also potential water quality concerns from the animal access.

The Liskeys worked with the Klamath Soil and Water Conservation District and UDA Natural Resources Conservation Service to fill in the ditches, fence off some of the laterals, and convert from a flood-irrigation system to a center pivot sprinklers. Pastures are cross-fenced into three paddocks and cows are rotated through with two weeks on each paddock followed by 4 weeks of rest.

"We have increased our electricity use by converting to pivot irrigation," Liskey says, "But more acreage is now usable for grazing because of the filled in ditches and the sprinkler system is much more efficient." Liskey, who serves on the Local Advisory Committee for the Lost River Agricultural Water Quality Management Area Plan and Rules, is also proud of the public and natural resource benefits of his irrigation system, having little to no run off from the pasture land.

Written by Ellen Hammond, Eric Moeggenberg, and Stephanie Page, ODA Natural Resources Division.

Soil and Water Conservation Districts (SWCD)

Oregon has 45 Soil and Water Conservation Districts (SWCDs) located throughout the state. SWCDs serve as local coordinators and provide assistance to landowners and managers interested in conservation and watershed enhancement. SWCDs help landowners identify, plan, and implement conservation measures that reduce soil erosion, protect and improve water quality, enhance wildlife habitat, and address other natural resource concerns.

Here's an example of one district's activities. Since 1988, Grant Soil and Water Conservation District (SWCD) has been improving conditions in the 389,000 acre basin. The district has completed stream bank stabilization, put in several miles of riparian protection fencing, and rebuilt diversion dams for fish passage. Grant SWCD spent the better part of \$1 million on those efforts. More recently, the district is focusing on the cleanup of invasive plants throughout the region. The Grant SWCD has used a variety of grant sources to help clear juniper and invasive weeds from several ranches in the region. The efforts, referred to as the Upper South Fork John Day River Watershed Restoration Project, have cut 3,073 acres of juniper, and sprayed 4,448 acres of noxious weeds over the past three years. This treatment will provide information on water availability and flow functions as a result of project actions.