STATEMENT OF JOSEPH GLAUBER
CHIEF ECONOMIST, U.S. DEPARTMENT OF AGRICULTURE
BEFORE THE HOUSE NATURAL RESOURCES COMMITTEE AND
THE HOUSE AGRICULTURE COMMITTEE

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Chairman Hastings and Chairman Lucas, Ranking Members Markey and Peterson, and members of the Committees, thank you for the opportunity to testify on the effects of the Endangered Species Act (ESA) consultation process for pesticides on agriculture. I will focus my remarks on how this process affects agricultural stakeholders, including America's farmers, ranchers, forest owners, and registrants of crop protection tools, and on some of the tools and capabilities USDA brings to improve the science behind pesticide registration and consultation, stakeholder outreach, and to assist farmers and ranchers.

The U.S. Department of Agriculture's (USDA) interest in the biological opinions and resulting label changes from the ESA and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) consultation process is multi-fold. FIFRA sets out a number of responsibilities for the Secretary of Agriculture under the law in areas that include research and monitoring, identification of pests, and review of cancellation actions. USDA agencies, such as the Forest Service, which manages 193 million acres of National Forests and Grassland under sustainability and multiple use principles, use pesticides at times to deal with invasive species, noxious weeds, and to manage utility rights of way. In addition, USDA conducts pest control programs to suppress or eradicate pests or diseases on public and private lands to safeguard plant and animal health. USDA consults with the National Marine Fisheries Service (NMFS) or the United States Fish and Wildlife Services (FWS) to ensure our federal actions are properly protective of endangered species and their habitats. Examples include consultation on large-scale control programs such as grasshopper suppression (Animal and Plant Health Inspection Service) in the western states and insecticide treatment of seed orchards (Forest Service).

USDA's Office of Pest Management Policy (OPMP) provides USDA input to the Environmental Protection Agency (EPA) actions on pesticides and risk mitigation plans, including information for EPA on agricultural use of pesticides during registration review; coordinates the collection of information for EPA on pest management strategies employed by growers, including the growers' need for certain pesticide products during registration review; and provides reviews and estimated effects on agriculture of various EPA policies and pesticide registration notices (drift reduction notice, worker protection standards, fumigant buffers). OPMP coordinates the development and implementation of integrated pest management strategies and other economically and environmentally sound pest management tools and practices.

Private land use and agricultural production often involves use of pesticides. Thus, USDA has a vital interest in sound regulation of pesticide use that ensures USDA can fulfill its mission of ensuring an abundant, affordable, and safe food supply and a healthy farm and rural economy while ensuring protection of the environment and threatened and endangered species.

Agricultural Use of Pesticides

The introduction of pesticides and fertilizers, along with the development of improved seed varieties, has contributed to much of the productivity gains that we have witnessed in US agriculture over the past 60 years. Pesticides have enabled crop producers to manage insects, diseases, and weeds and to prevent crop yield or quality losses while reducing labor and tillage costs for pest control (Fernandez-Cornejo et al. 2009).

While agricultural pesticide expenditures have grown dramatically over the past 60 years, applications as measured by pounds of active ingredient have fallen. The Economic Research Service forecasts that farm pesticide expenditures will top $11.9 billion in 2011, a record high in nominal terms and the third highest level adjusting for inflation (figure 1). However, only 480 million pounds of pesticide active ingredients were used in 2007 in agricultural production in the United States (Fernandez-Cornejo and Jans 2009) down from 579 million pounds of active ingredients used in 1997 (table 1).

The growth in the use of herbicides like glyphosate has occurred in conjunction with adoption of no-till practices and bio-tech crops with herbicide resistant traits (Fernandez-Cornejo and Caswell 2006). No-till agriculture reduces energy use, sequesters carbon helping to control greenhouse gas emissions, and helps control erosion, with the technique using herbicides rather mechanical means to deal with weeds.

Pesticide use varies widely by location and by crop. Herbicide use by producers of spring-planted row crop like corn, soybeans, cotton and spring wheats is quite high—typically over 95 percent of the area is treated (table 2). Insecticides are widely used by cotton producers and many fruit and vegetable producers. Fruits and vegetable producers also tend to be large users of both insecticides and fungicides.

The 2007 Census of Agriculture data reports that over 900 thousand out of 2.2 million total farm operations used pesticides in 2007 (table 3). Almost 77 percent of these farms reported using chemicals to control weeds, grass or brush on more than 226 million acres in 2007. About 40 percent of farms reporting pesticide use applied insecticides on more than 90 million acres. About 10 percent of farms using pesticides were controlling diseases in crops and orchards on more than 12 million acres.

USDA also values mosquito control chemicals as these insecticides are important for the protection of livestock as well as the rural population. USDA Veterinary Services must have such insecticides available for quarantine use in the event of a large scale outbreak, such as Rift Valley Fever. The Agricultural Research Service carries out extensive research in collaboration with DOD and the IR-4 Program and the OPMP has assisted the American Mosquito Control Association (American Mosquito Control) on the reregistration and registration review of mosquito control chemicals.

Lastly, pesticide use is important for international trade. The mere presence of a quarantine pest in an agricultural commodity can disrupt exports and international trade. The international community has long recognized the potential deleterious effects resulting from certain pests, diseases and weeds by prohibiting the importation of quarantine pests. The United

States is able to export many agricultural products because pesticides are used to eradicate pests like medflies. Systems approaches in conjunction with chemical pest control are used by the United States and its trading partners. For example, exports of apples to Taiwan rely upon a systems approach that includes use of chemical controls for codling moths.

Economic Consequences Resulting from Biological Opinions

As a result of the 2002 order in *Washington Toxics Coalition v. EPA*, EPA initiated consultation on its authorization of 37 pesticide active ingredients and the effects on listed Pacific salmonids under NMFS' jurisdiction and associated designated critical habitats in the states of California, Idaho, Oregon, and Washington. Consequently, under these Biological Opinions (BiOps), the affected area encompasses some freshwater, estuarine, marsh, swamps, nearshore, and offshore marine surface waters of California, Oregon, and Washington. The action area also includes some freshwater surface waters in Idaho.

The NMFS BiOps for listed salmonids identify reasonable and prudent measures that if followed, afford farmers protection from the penalties associated with the prohibition on incidentally taking a listed species under the ESA. EPA would then enact these measures through pesticide labels and informing the public through Endangered Species Protection Program Bulletins. Three BiOps have been issued and a fourth is due to be issued by June 30, 2011 covering 18 of the 37 pesticides requiring consultation (on salmonids) as a result of the Washington Toxics case. A fourth BiOp covering 6 pesticides has been released. Pesticide product label changes recommended by the EPA in response one or more of the BiOps include the following elements, which potentially could have impacts on farmers:

- Ground and Aerial Application No-Use (or Pesticide Free) Buffers
- Maximum wind speed 10 mph for pesticide spraying
- Prohibit application within 48 hours of a predicted storm event likely to produce runoff or when soil is at field capacity
- Requirement to report all fish kills occurring within four days after application

In addition to the anticipated pesticide label changes, the EPA must monitor water quality in off-channel habitats for seven consecutive days, three times per year in numerous locations according to a monitoring plan to be specified by NMFS.

These no-application zones adjacent to aquatic features (channels, agricultural ditches, and streams, and any channels temporally connected to surface waters) vary in size depending on the pesticide but range from 25 to 1000 feet for the first six pesticides assessed. There are many variables that potentially could factor into any analysis of the impacts resulting from these buffers, including the crop under cultivation, the cost and efficacy of any alternative products available to control the target pest, impacts due to the expected market for the crop (domestic or export), increased application costs associated with irregular application patterns which avoid the buffer, substitute crops that could be grown using other pesticides, and substitute uses for the land, such as enrollment in a conservation program.

Total agricultural production in the affected counties in California, Idaho, Oregon and Washington totaled $32.5 billion in 2007 (table 4). Significantly, over 90 percent of the crop value produced in Oregon and Washington was in counties affected by the actions. Individual

crop production figures for each state are given in tables 5-8.In 2003, the Office of the Chief Economist prepared an analysis of the potential impact to agriculture of the proposed no-spray buffers requested as injunctive relief in the *Washington Toxics Coalition v EPA* case (U.S. Department of Agriculture 2003). In the analysis prepared for the *Washington Toxics* case, we analyzed the effects of no-spray buffers affecting 54 pesticide active ingredients. These active ingredients were subject to an injunction order imposing 20 yard no-spray buffers for ground spraying around salmon bearing waters and 100 yard no-spray buffers for aerial application. Many of these active ingredients are critical to production of the high value fruit, berry, vegetable, and tree nut crops produced in Oregon and Washington.

The analysis assumed that land in buffers would be retired and thus would provide no return. This assumption is consistent with how others have examined the effects of no-spray buffers (e.g., National Oceanic and Atmospheric Administration (NOAA) 2005). The parcels affected by the buffers are generally small and irregularly shaped and may not warrant cultivation (eg., see figure 2). Livestock may not be a viable enterprise in the buffer areas in such a small scale and due to environmental concerns about animal impacts on water bodies. Some producers may be able to reduce losses by enrolling the buffer lands in the Conservation Reserve Program. Loss of export markets due to the presence of quarantine pests from untreated areas, such as codling moth, was also not examined.

The analysis predicted losses in gross revenue ranging between $37 to $583 million, depending upon whether the no-spray buffers were applied to perennial as well as intermittent water bodies and whether the pesticide application were usually accomplished using aerial or ground spraying. Within the Columbia River watershed, it was estimated that 85 percent of the economic impacts were concentrated in Washington and these are primarily in the orchard and vineyard crops. In Oregon, estimated losses were about the same between row crops and orchards. Some geographic regions would be disproportionately affected. The analysis concluded that regions specializing in apples, pears, stone fruits and vineyard would experience greater losses. Orchard crops would experience the greatest revenue losses and small grains the least. The analysis estimated sector-wide impacts and thus did not address impacts on individual farmers. Some individual growers would be disproportionately affected from the no-spray buffers, especially where their property is adjacent to meandering streams or ditches that transect the field.

The injunction imposed by the Court imposed 20 yard no-spray buffers for ground application and 100 yard buffers for aerial application until such time that consultation between the EPA and NMFS on a particular active ingredient had concluded. Excepted from this no-spray buffer order were USDA pesticide applications where the USDA agency had previously consulted with either NMFS or FWS and was issued a BiOp for that use.

Under the NMFS BiOps for salmonids, buffer strips would be potentially extended to up to 1,000 feet for some active ingredients and some affected areas. Depending on the final determination, the impact could thus potentially be larger than estimated under the *Washington Toxics* injunction order (Washington State Department of Agriculture 2010).

Mitigation Efforts

The Food, Conservation and Energy Act of 2008 (Public Law 110-246) offers several programs which may provide financial assistance to producers to help mitigate some potential losses. The Conservation Reserve Program (CRP) uses contracts with agricultural producers and landowners to retire highly erodible and environmentally sensitive cropland and pasture from production for 10-15 years. Enrolled land is planted with grasses, trees, and other cover, thereby reducing erosion and water pollution and providing other environmental benefits.

Under CRP, farmers and ranchers plant grasses and trees in crop fields and along streams or rivers. The plantings reduce soil and nutrients from washing into waterways, reduce soil erosion that may otherwise contribute to poor air and water quality, and provide valuable habitat for wildlife. Plant cover established on the acreage accepted into the CRP will reduce nutrient and sediment runoff in rivers and streams.

In addition, the states of Oregon and Washington have established Conservation Reserve Enhancement Programs (CREP), which provide additional incentives to producers to enroll targeted land to restore and improve salmon and steelhead habitat on private land. Practices addressing water quality issues include: forested riparian buffers; riparian hedgerows, grass filter strips, and wetland enhancement. Land enrolled in 10-15 year CREP contracts is removed from production and grazing. In return, landowners receive annual rental, incentive, maintenance, and cost share payments for establishing one of the CREP practices.

Table 9 shows the cumulative acres enrolled in the CRP (and CREP) targeting filter strips and riparian buffers. In the four state region, over 50 thousand CRP acres were in filter strips while almost 80 thousand acres were in riparian buffers. Enrollment has been limited due to the fact that CRP (and CREP) rental rates are low relative to opportunity costs for irrigated land. (For example, average rental rates for irrigated farmland in Yakima County, Washington in 2009 were reported by NASS as $148 per acre as compared to an average CRP rental rate of $43 per acre and an average CREP rental rate of $108 per acre as reported by the Farm Service Agency.) However, this could change as pesticide restrictions potentially limit cropping alternatives.

One of the objectives of the Environmental Quality Incentives Program (EQIP) is to promote agricultural production and environmental quality as compatible national goals and to optimize environmental benefits by assisting producers in complying with local, State, Tribal and Federal regulatory requirements. Through the EQIP program, producers could receive financial and technical assistance for the design and implementation of the buffer areas or filter strips. In some cases, producers may receive up to 75% of the cost of installing these vegetated areas. Socially disadvantaged producers could receive up to 90%. While not an annual payment, producers may be able to graze or hay these acres allowing for some income to be obtained.

Producers could also take advantage of the Conservation Stewardship Program (CSP). CSP is a voluntary conservation program that encourages producers to address resource concerns in a comprehensive manner by undertaking additional conservation activities and improving, maintaining and managing existing conservation activities. Existing activities, such as buffers, grassed waterways, conservation tillage and contoured farming already installed or in use, decrease soil erosion, improve soil quality and water quality, increase plant and animal diversity, and improve air quality. Additional activities, such as extending existing buffers, implementing

an Integrated Pest Management system, or adding a cover crop enhance the benefits already flowing from the existing activities. CSP participants receive payments tied to estimated benefits associated with the existing and additional conservation activities. Generally, payment per legal entity cannot exceed $40,000 yearly ($200,000 over five years). For a joint venture or general partnership, payment cannot exceed $80,000 yearly ($400,000 over five years). Federally recognized Indian tribes and Alaskan Native corporations are exempt from payment and contract limits.

Summary

During the past 60 years, U.S. farmers have achieved increases in productivity, due, in part, to pesticides. Farmers will face increasing challenges due to FIFRA label changes resulting from the ESA consultations and subsequent BiOps.

Historically, USDA agencies have worked closely with NMFS and FWS on ESA consultations for individual agency actions, some of which involve pesticide application, outside the context of the consultations on the registration of pesticides. The USDA's OPMP is responsible for working with the EPA Office of Pesticide Programs (OPP) on pesticide issues and regularly responds to requests for information on agricultural pesticide use and potential pest or disease impacts on agricultural production. In recent years, OPMP has engaged in an ongoing dialogue with OPP regarding data needed to support their ESA consultation packages for pesticide registrations.

That completes my statement. I would be happy to answer any questions.

References

Fernandez-Cornejo, J. and Caswell, M. *The First Decade of Genetically Engineered Crops in the United States.* U.S. Department of Agriculture, Economic Research Service, Economic Information Bulletin 11, April 2006.

Fernandez-Cornejo, Jorge and Sharon Jans. *Pest Management in US Agriculture*. US Department of Agriculture, Economic Research Service. Agricultural Handbook No. AH717, October 1999.

Fernandez-Cornejo, Jorge, Richard F. Nehring, Elizabeth Newcomb Sinha, Arthur Grube and Alexandre Vialou. "Assessing Recent Trends in Pesticide Use in US Agriculture." Paper presented at the 2009 Annual Meeting of the Agricultural and Applied Economics Association, July 26-28, 2009, Milwaukee, Wisconsin.

National Oceanic and Atmospheric Administration. *Final Economic Analysis of Critical Habitat Designation for Seven West Coast Salmon and Steelhead ESUs.* August 2005.

U.S. Department of Agriculture. Office of the Chief Economist. "Economic Impact of Spray Buffers on Agriculture in the Pacific Northwest." Mimeo. August 13, 2003.

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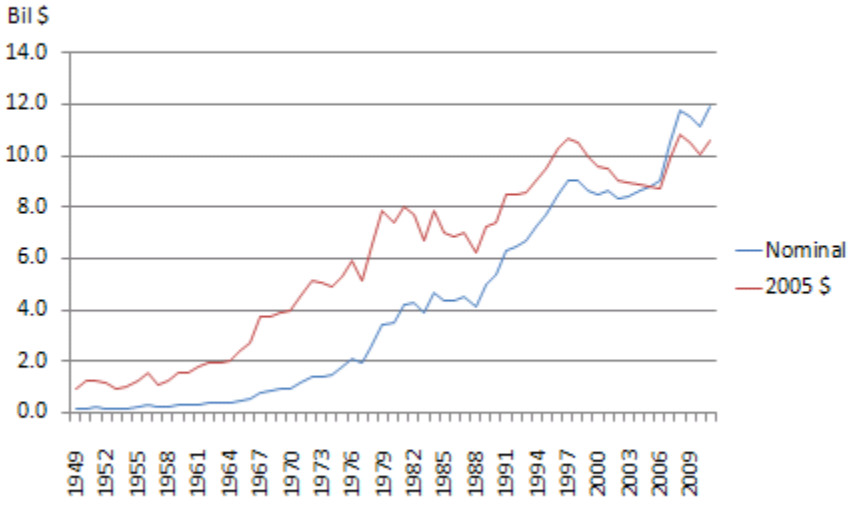
Figure 1
U.S. Farm Expenditures for Pesticides, 1949-2011



Source: USDA, Economic Research Service, 2011 values reflect forecasts

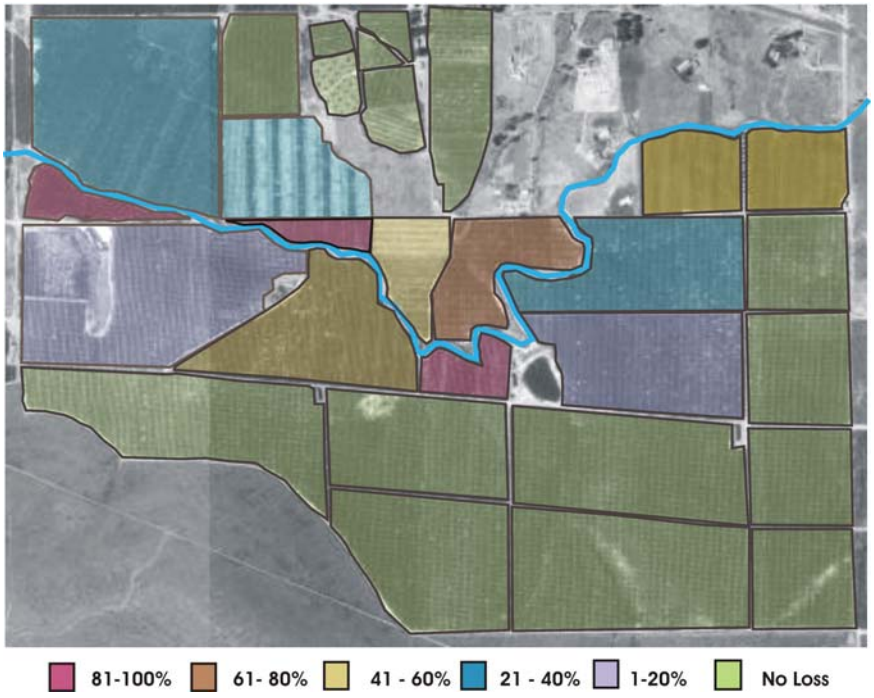


Figure 1. Estimated percentage losses of Individual Orchards near Elephant Mountain, WA due to 100 yard buffers (USDA, Office of the Chief Economist 2003)

Table 1--Quantity of pesticides applied, total and to selected crops, selected years

Type of pesticide and commodity	1964	1971	1982	1991	1997	2004
	Million pounds active ingredient					
Total	215.0	364.4	572.4	477.5	579.3	494.5
Herbicides	48.2	175.7	430.3	335.2	362.6	311.0
Insecticides	123.3	127.7	82.7	52.8	60.2	40.7
Fungicides	22.2	29.3	25.2	29.4	48.5	29.8
Other	21.4	31.7	34.2	60.1	108.0	112.9
Corn	41.2	127.0	273.7	233.2	227.3	174.6
Cotton	95.3	111.9	49.5	50.3	68.4	56.7
Wheat	10.1	13.6	23.5	13.8	25.5	22.3
Soybeans	9.2	42.2	147.4	70.4	83.5	87.8
Potatoes	6.1	15.5	24.6	35.6	59.4	62.1
Other vegetables	20.8	20.7	21.7	40.3	73.3	65.1
Citrus fruit	8.1	14.1	16.5	13.7	15.0	7.2
Apples	19.9	12.7	10.0	9.1	10.6	8.5
Other deciduous fruit	4.4	6.6	5.5	11.1	16.4	10.3

Source: Economic Research Service, Agriculture Resource and Environmental Indicators, available at: http://www.ers.usda.gov/publications/arei/eib16/Chapter4/4.3/

Table 2--Pesticide Use in Row Crops, Vegetables and Fruits

	Proportion of Area Treated		
	Herbicide	**Insecticide**	**Fungicide**
Row Crops			
Corn[1]	97	20	--
Cotton[1]	97	84	5
Soybean[1]	97	22	12
Winter wheat[2]	60	6	7
Spring wheat[2]	97	5	36
Spring wheat, durum[2]	100	4	23
Fruits and vegetables			
Apple[3]	44	87	85
Oranges[3]	71	83	62
Peaches[3]	52	81	85
Grapes[3]	49	50	71
Tomato, fresh[4]	41	82	81
Lettuce, head[4]	63	98	87

[1] Agricultural Chemical Usage – 2005 Quick Stats (NASS, 2011)
[2]Agricultural Chemical Usage – 2009 Wheat Survey (NASS, 2010)
[3]Agricultural Chemical Usage – 2009 Fruit Survey (NASS, 2010)
[4]Agricultural Chemical Usage - 2006 Vegetables Survey (NASS, 2007)

Table 3--Agricultural chemical use by farm

Chemical used to control:	Farms	Acres
Insects	354,357	90,947,822
Weeds, grass or brush	703,884	226,295,783
Nematodes	34,992	7,560,158
Diseases in crops or orchards	97,333	11,693,212
Growth, thin fruit, ripen or defoliate	44,638	12,125,799
Total	918,604	na

Source: NASS *2007 Census of Agriculture*

Table 4—Total value of crops in affected counties in California, Oregon and Washington, 2007

State	Affected counties	Non-affected counties	Total
	Million dollars		
California	$13,572	$9,234	$22,807
Idaho	$216	$2,108	$2,325
Oregon	$2,689	$236	$2,926
Washington	$4,228	$253	$4,481
Total	$20,706	$11,832	$32,538

Source: NASS, Census of Agriculture, 2007

Table 5—California: Leading commodities for cash receipts, 2009

Rank	Commodity	Value of receipts	Percent of total receipts
		$1,000	
	All commodities	34,840,647	100.0
	Livestock and products	7,814,006	22.4
	Crops	27,026,641	77.6
1	Dairy products	4,537,171	13.0
2	Greenhouse/nursery	3,792,295	10.9
3	Grapes	3,267,848	9.4
4	Almonds	2,293,500	6.6
5	Lettuce	1,725,799	5.0
6	Strawberries	1,725,232	5.0
7	Cattle and calves	1,676,373	4.8
8	Tomatoes	1,509,647	4.3
9	Rice	928,173	2.7
10	Hay	864,163	2.5
11	Walnuts	738,530	2.1
12	Broccoli	698,376	2.0
13	Oranges	655,820	1.9
14	Pistachios	592,850	1.7
15	Carrots	499,766	1.4
16	Lemons	364,248	1.0
17	Celery	349,918	1.0
18	Peaches	326,331	0.9
19	Chicken eggs	319,771	0.9
20	Cotton	303,823	0.9
21	Raspberries	297,315	0.9
22	Cauliflower	255,766	0.7
23	Plums and prunes	251,923	0.7
24	Wheat	230,752	0.7

Table 6—Idaho: Leading commodities by receipts, 2009

Rank	Commodity	Value of receipts	Percent of total receipts
		$1,000	
	All commodities	5,160,698	100.0
	Livestock and products	2,511,137	48.7
	Crops	2,649,561	51.3
1	Dairy products	1,430,514	27.7
2	Cattle and calves	961,618	18.6
3	Potatoes	784,980	15.2
4	Wheat	491,949	9.5
5	Hay	420,393	8.1
6	Sugar beets	234,822	4.6
7	Barley	231,529	4.5
8	Dry beans	53,530	1.0
9	Corn	48,754	0.9
10	Greenhouse/nursery	48,681	0.9
11	Onions	39,301	0.8
12	Mint	34,535	0.7
13	Hops	29,359	0.6
14	Lentils	16,900	0.3
15	Sheep and lambs	16,517	0.3
16	Dry peas	15,668	0.3
17	Apples	12,015	0.2
18	Hogs	10,656	0.2
19	Peaches	7,280	0.1
20	Honey	6,870	0.1
21	Cherries	2,975	0.1
22	Oats	2,928	0.1

Table 7—Oregon: Leading commodities for cash receipts, 2009

Rank	Commodity	Value of receipts	Percent of total receipts
		$1,000	
	All commodities	3,893,448	100.0
	Livestock and products	898,272	23.1
	Crops	2,995,176	76.9
1	Greenhouse/nursery	972,124	25.0
2	Cattle and calves	405,691	10.4
3	Dairy products	305,099	7.8
4	Hay	282,903	7.3
5	Wheat	259,676	6.7
6	Potatoes	149,296	3.8
7	Fescue	123,616	3.2
8	Ryegrass	122,850	3.2
9	Pears	107,346	2.8
10	Onions	103,982	2.7
11	Cherries	83,670	2.1
12	Hazelnuts (filberts)	79,430	2.0
13	Grapes	76,782	2.0
14	Chicken eggs	47,204	1.2
15	Hops	43,185	1.1
16	Mint	43,001	1.1
17	Blueberries	37,920	1.0
18	Corn, sweet	37,573	1.0
19	Blackberry group	32,944	0.8
20	Apples	26,488	0.7
21	Beans, snap	24,307	0.6
22	Corn	23,254	0.6
23	Bluegrass, kentucky	19,900	0.5
24	Sugar beets	16,590	0.4

Table 8—Washington: Leading commodities by receipts, 2009

Rank	Commodity	Value of receipts	Percent of total receipts
		$1,000	
	All commodities	6,592,649	100.0
	Livestock and products	1,640,135	24.9
	Crops	4,952,514	75.1
1	Apples	1,178,971	17.9
2	Dairy products	681,912	10.3
3	Potatoes	634,191	9.6
4	Cattle and calves	600,834	9.1
5	Wheat	588,840	8.9
6	Greenhouse/nursery	343,218	5.2
7	Hay	295,404	4.5
8	Hops	263,831	4.0
9	Cherries	223,785	3.4
10	Grapes	210,084	3.2
11	Corn, sweet	173,447	2.6
12	Pears	163,338	2.5
13	Chicken eggs	106,499	1.6
14	Onions	103,169	1.6
15	Corn	77,899	1.2
16	Mint	71,012	1.1
17	Raspberries	57,154	0.9
18	Dry peas	37,393	0.6
19	Bluegrass, kentucky	32,500	0.5
20	Dry beans	32,160	0.5
21	Blueberries	30,525	0.5
22	Alfalfa	28,000	0.4

Table 9—Selected Conservation Practices Installed on CRP, 2011 (acres)

State	Filter Strips	Riparian Buffers
California	0	12,487
Idaho	1,137	6,927
Oregon	2,423	36,233
Washington	47,507	23,399
4 state total	51,067	79,046
US total	1,013,963	880,263

Source: USDA, Farm Service Agency, March 2011