

Celebrate Ag in Washington
Power point presentation comments
July/2023
Robyn Meenach
Washington Ag in the Classroom

1. Celebrate Ag in Washington
2. In 2021, the farmgate value of Washington's agricultural production was \$10.2 billion. (down from the record high of \$10.7 billion in 2015). We rank 16th in total cash receipts among the states.
3. The food and agricultural industry is not only a critical sector of Washington's economy, but everyone is part of agriculture because everyone eats! Many consumers will say their food comes from "the store". There is a disconnect in knowing that milk comes from cows, meat from animals, and all food from farms. We need a specialized labor force to bring food from the fields to your table. These 160,000 jobs are in production agriculture, food processing and manufacturing, and ag and forestry support industries. You need farmers so that you can pursue other careers—you don't have to worry about growing food, fishing, or hunting for your daily meals. Without a good understanding of how agriculture provides food for you and people around the world, it is difficult, if not impossible, to make informed decisions.
4. Washington is second only to California in the variety of crops grown.
5. Deep water ports and a location on the Pacific Rim are important to marketing our production. This is important not only for Washington State, but for many other states from the Dakotas west. \$22 billion in food and agriculture products were exported through Washington ports in 2021 with \$7.7 billion being of Washington origin and \$14.3 billion from other states. On a per capita basis, Washington is the nation's most trade dependent state.
6. These five commodities have led Washington's agricultural production for decades. The top five account for nearly 56% of the 2021 value for all commodities. The order changes year to year because it depends on acres grown (or number of animals raised), production per acre (or per animal), and price per unit sold. Weather is a big factor in production, and prices for many commodities are set globally, not locally.

7. In 2021 Washington led the nation by producing 73.2% of hops, 62.3% spearmint oil, 68.6% of apples, 61.9% of sweet cherries, 42.2% of pears, 26.9% of blueberries. Although we rank second in the production of raspberries, we produce 90% of red raspberries for processing. We also rank second in the production of all grapes, but lead the nation in growing concord grapes.
8. Split by the Cascades; actually 7 physiographic regions
9. Physiographic regions of Washington: 1. Olympic Mountains 2. Willapa Hills 3. Puget Sound Lowlands 4. Cascade Mountains 5. Okanogan Highlands 6. Columbia Basin (including the Palouse region) 7. Blue Mountains
10. **Area 1** Olympic Mountains Region. Washington is the only state in the “lower 48” with a rain forest.
11. Rainfall map. Note the area of the Olympic Peninsula receiving more than 180 inches of precipitation annually. This is a rain forest. In contrast, note the areas of the peninsula that receive only 10 to 30 inches of precipitation. This includes the agricultural area around Sequim.
12. The Olympic Peninsula is noted for its forest products (referred to as Western Greens) like Salal pictured here. It grows naturally in the forests near Bremerton and is gathered and shipped to florists all around the country to use as filler in flower arrangements.
13. In this state, forest products like Salal, mushrooms, conifer cones and boughs are considered agricultural products, whereas logs cut for timber are not. Much of the Olympic Peninsula is heavily forested, but most is federal and state-owned land.
14. The annual lavender festival in Sequim is a great showcase for a unique segment of Washington Agriculture. The fields are gorgeous, and it is amazing how many food, cosmetic, decorative, and fragrant products can be made from lavender. These are small farms that have entered the agri-tourism market along with the production of flowers. This area also has nurseries and other small niche farms.
15. **Area 2** Willapa Hills in SW Washington
16. Washington is one of five states in the nation raising cranberries. This is “wet” harvest. The fields or “bogs” are flooded with water and this machine beats the water over the vines, causing the berries to detach and float to the surface. The berries are then “rounded up” using floats to “herd” them to a collection area. Most of these berries are for processing. Whole cranberries in bags are usually harvested “dry” with a machine that the operator walks behind like a large lawn mower. Obviously, bogs are not flooded for dry harvest.

17. Aquaculture is a tasty part of Washington Agriculture. We raise several varieties of shellfish in the tidal flats and waters of the protected bays and Puget Sound (oysters, butter clams, razor clams, geoducks, and mussels). We also have trout farms and are the world's largest producer of "eyed" eggs (trout eggs that are shipped to more than 60 countries to be hatched and grown into marketable sized fish). Washington State is the largest producer of hatchery-reared and farmed shellfish in the U.S, with more than 300 farms accounting for 25% of the total domestic production by weight and an annual farmgate value exceeding \$108 million.

18. Christmas trees grow quickly in this climate and are considered another forest product, thus part of agriculture. Most trees are planted and cared for in a plantation setting as opposed to being harvested from the forest.

19. Washington produces more than 90% of the nation's raspberries for processing (from Whatcom to Clark counties). We also produce blueberries, strawberries, blackberries, and a few other specialty berries. Can you think of any other fruit that has the seeds on the outside of the flesh (besides strawberries)? Blueberries, cranberries, and strawberries are native to the US.

20. Area 3 Puget Sound lowlands

21. In spite of the pressure of population and the resultant development, the Puget Sound lowlands continue to be an important part of Washington Agriculture producing unique and useful products. This plain has very fertile soil that has been washed from the surrounding mountains over eons.

22. The Puget Sound also has deep harbors: Seattle, Tacoma, Olympia. This picture shows containers being loaded directly onto ocean going ships to travel around the world. Although most grain is marketed in bulk (not put into these containers), but loaded into special ships—mostly at Portland and Vancouver, all other products are "containerized". Semi trucks can hook onto these containers, or they can be loaded onto rail flat cars for distribution around the nation.

23. Being located on the Pacific Rim gives us a trade advantage. Washington exports about 30% of our state's agriculture commodities but specifically up to 90% of wheat, 70% of potatoes as French fries, 30% of apples, and 25% of cherries. We are moving goods from other states as well as our own. Close to 2/3 of ag exports from Washington ports go to Asia.

24. The Skagit Valley is noted for the tulips and daffodils grown there. Attending the tulip festival in April is always a delight.

25. The Puget Sound has long been noted for dairy herds. Original settlers from Holland found the region to be very much like their native land and established dairies here. In recent years dairy herds have been moving East of the Cascades (especially Yakima and Grant counties). There are several reasons: development pressure from increasing population in Western counties, the cost of bringing cattle feed over the Cascades, the wetter climate and smaller farm size that both make manure disposal more problematic in the Puget Sound, and the “economy of scale” that reduces the overhead costs of production for larger farms.

26. Washington is a large producer of many vegetable seeds. Because the Puget Sound region is isolated from large commercial vegetable production areas, it is possible to produce seed without concern about cross-pollination or the spread of plant diseases.

27. Farmers’ markets are becoming more and more popular, especially in large population areas. We grow a huge variety of fruits and vegetables in Washington. Consumers benefit from the freshest, most flavorful products, and farmers can get retail rather than wholesale prices. These markets and roadside produce stands are increasingly becoming the only contact urban dwellers have with agriculture. Most Americans are now at least three generations removed from farms. It’s fun to see the variety of produce offered and to meet real farmers.

28. Area 4 Cascade Mountains

29. Note that most of the Cascade Mountains region is owned by the government. While most of the West is publicly owned, Washington does have more private land ownership than surrounding states. The rather stark contrast between Western states and the rest of the nation can be explained by the time in history (early 1900s) when the public sought to preserve land. By this time the rest of the nation was already settled. Also much of Western land is more rugged, drier, and less suitable for crop production. Management of public lands can put great burdens on the adjacent private lands.

30. Cascade Mountain region

31. The volcanoes of the Cascades have helped create the fertile soil of our state by layers and layers of ash deposits. The most recent activity was in 1980 when Mt. St. Helens erupted. The area around Ritzville received about 6 inches of ash. Washington was the first state to recognize a soil that formed in volcanic ash (Andisols) as a state soil. Volcanic ash is one common feature of many of the more than 1600 identified soils in Washington state.

32. Apples and other fruit are grown in the foothills of the Cascades.
33. The heavily forested mountains are a source of timber.
34. Cattle are produced throughout the state, but the wide-open areas on the east side of the state are suited for larger operations.
35. Timothy (grass) hay is grown around Ellensburg for export as well as local use.
36. **Area 5** Okanogan Highlands
37. Okanogan Highlands Region
38. Apples are still King in Washington.
39. This is the Methow valley in North Central Washington. Note the terraced apple orchards along the river.
40. Notice that the majority of apples in Washington are grown along rivers. Of course water is needed for irrigation, but the existence of micro-climates is probably more of an explanation.
41. Micro climates allow us to grow peaches, pears, plums, apricots, etc. These fruits are less tolerant to cold temperatures and benefit from the advantage a micro-climate provides.
42. Fruit in Okanogan Highlands
43. Cattle are able to graze land that is too steep, or too rocky, to grow crops. They can convert grass into high quality protein (meat) in human diets.
44. Horses are raised throughout the state for work and pleasure.
45. **Area 6** Columbia Basin
46. **Irrigation** is the key word to remember when describing the agriculture in most of this region. Rich soils, diverse climates and large-scale irrigation make Washington one of the most productive growing regions in the world.
47. The Columbia basin is an immense lava plateau. From 6-17 million years ago a long series of enormous eruptions from several centers in SE Washington and Oregon built the Columbia plateau, which is one of the world's most spectacular volcanic provinces. There is an estimated 42,000 cubic miles of basalt deposited in this area. No basalt eruptions remotely comparable in volume have happened anywhere in the world. (average depth of 3000-3500 feet)

48. This slide depicts the creation of the famous channeled scablands of Eastern Washington. Cataclysmic events occurred of a magnitude beyond anything documented in geologic record. Between 12 and 18,000 years ago (relatively recently in geologic history), we were experiencing an ice age. As the ice sheet advanced, one of the fingers blocked the Clark Fork River with an ice dam ½ mile high creating Lake Missoula—a gigantic lake 2000 feet deep and holding 500 cubic miles of water—roughly the size of Lake Erie and Lake Ontario combined. Ice does not make a permanent dam and when this one burst it released a flood of water 10 times the combined flow of all the rivers in the world! It probably only took 48 hours for 500 cubic miles of water to drain. About 200 feet of topsoil was stripped away under the rushing flood waters—right down to the basalt underlayment we just mentioned. Deep channels—or coulees—were gouged in the basalt. The force of the water as it was slowed at Wallula Gap reversed the flow of the Snake River with a wall of water several hundred feet deep to Lewiston 100 miles upstream. Water flooded into the Willamette Valley and deposited boulders as large as 200 tons—up to 30 feet in diameter—riding in imbedded in icebergs. Water was still 400 feet deep when it passed Portland and gouged an ice age canyon in the ocean floor where it dumped into the Pacific. Any eddies created huge gravel deposits in all the basins and valleys. The biggest is Moses Coulee—3 miles long and 30 stories high. The flood scenario happened repeatedly over a period of 5-6000 years, estimating 40 times. This accounts for the thin soils of the channeled scablands as well as the gravelly soil of much of the Col. basin.

49. Dry Falls was created by the Great Floods. It is 3 ½ miles wide by 400 feet high—and dwarfs Niagara Falls. Water was 300 feet deep and traveling at 65 mph when it shot over these falls, so the water probably barely dipped. It's amazing to look at these aerial photos. The Great Floods abrading the basalt plateaus gave us the topography of the Columbia Basin region.

50. Notice that much of the Central Columbia basin receives less than 10 inches of rainfall. This is a desert. What grows in this rainfall area?

51. Sage and rabbit brush is the natural vegetation in this low rainfall area. Yet this is some of the most productive land in our nation. How is that possible?

52. Irrigation

53. Bureau of Reclamation (BOR) is responsible for the Columbia Basin Irrigation Project.

54. For comparison, look at the Colorado system.

55. Washington has abundant water

56. Rock Island dam was the first large dam on the Columbia. The second dam, Bonneville, was built for electricity generation. Grand Coulee was authorized as one of the many projects to put men back to work and was built to supply irrigation water for the Columbia Basin Project. The sale of electricity would pay for construction of the dam and the irrigation delivery system. Grand Coulee is the name of the largest channel carved by the Great Floods, 1000 feet deep, 2-3 miles wide, and 50 miles long. With World War II looming, five aluminum mills were built in the Columbia basin and also the massive Kaiser shipyards in Portland. By the time Bonneville's power came on line in 1938, its entire output was committed to the war effort, as was that of Grand Coulee in 1941. After the war, Grand Coulee took up its original purpose of irrigation, with the sale of power as a means to pay for the project. **What happened in 1948?** The Snake and Columbia Rivers crested simultaneously and created a huge flood that wiped out a section of Portland. River-use planners turned their attention to flood control (as well as navigation and power generation) as the remaining dams were completed on the Columbia and then the Snake Rivers. It would take an additional 700,000 semi-trucks or 120,000 rail cars to move the cargo that now travels by barge on the Snake-Columbia river system.
57. The green circles seen in this aerial photo are "center pivot irrigation circles". (The larger circles are approximately 150 acres each--an acre is approximately the size of a football field) This irrigation technology has allowed the desert to bloom!
58. Potato harvest. Although Idaho leads the nation in total production of potatoes because of the number of acres planted in that state, Washington leads the nation in the total pounds of potatoes produced per acre.
59. Alfalfa hay is called the "hidden crop", probably because humans do not consume it, animals do. High quality alfalfa hay is used by dairies to boost milk production. Hay has consistently ranked between sixth and eighth in terms of farmgate value of Washington's crops.
60. We produce sweet corn for human consumption, field or grain corn for animal consumption and the production of byproducts like corn syrup and cornstarch, and also corn that is chopped for silage.
61. Washington leads the nation in the production of concord grapes (used for juice and jelly). We also grow Niagra grapes and varietal grapes for wine.
62. Cherries continue to replace some apple acreage and we now produce about 62% of the nation's supply.

- 63.** This is mint. We harvest the leaves and steam distill them to get peppermint and spearmint oils. The plants can also be swathed and harvested with a combine for leaves for mint tea.
- 64.** Besides crops in the Columbia Basin, we should also mention the movement of dairy farms to the region. Because of pressure from both increased population and environmental realities of dealing with manure in a heavy rainfall area, dairies are moving from the West side to the basin. It is drier and has more open fields making manure handling easier. It is also closer to where cattle feed is grown and has less population. As a result we are seeing mega-sized dairies. 2000 cows is normal. This is a photo of an 80 stall rotary milking parlor. Cows line up and voluntarily enter the milking stall for an 8 minute ride while being milked. Workers attach milking machines as cows step onto the platform, and sensors will automatically release the machine from the cow's udder when milk flow runs down. Computer chips in the cow's ear tag allow individual milk production to be recorded.
- 65.** This is a topographical map of Washington and illustrates the location and special nature of the Palouse—a part of the Columbia Basin growing region.
- 66.** Palouse Hills Extremely productive soil, without irrigation, and only about 17 inches of annual precipitation.
- 67.** Steptoe Butte located about 45 miles south of Spokane in the heart of the Palouse is a billion years old, protruding above the basalt lava plateau (formed 6-17 million years ago). It actually marks the original continental coastline. Washington was created by islands “docking” with the main continent. The butte is such an ideal example of bedrock sticking above lava fields that scientists now refer to such hills as “steptoes”. Steptoe Butte was named for Colonel E.J. Steptoe who used the butte as a reconnaissance point. His infamous defeat at the Battle of Pine Creek occurred in May 1858 when his troops were ambushed and routed.
- 68.** Notice the rolling hills. This area is not irrigated.
- 69.** Wheat and barley are the main crops.
- 70.** Legumes are also grown in this region, most for export around the world.

71. Canola is a relative newcomer, but is gaining importance because of our interest in bio-fuels and edible cooking oil. This is a rapeseed. “Canola” was originally created in Canada (**Canadian Oil, Low Acid**) for human consumption. We use it for cooking oil. The meal left over after oil extraction is used for animal feed. You may recognize it as the small round black seeds in bird seed mixes. The oil that is extracted from the seed can also be processed into bio-diesel.

72. Area 7 Blue Mountain Region

73. This is the foothills of the Blue Mountains in Walla Walla county.
Lewiston/Clarkston is the most inland seaport on the Snake River system.

74. Blue Mountain foothills.

75. Wheat is an important crop in the region.

76. Walla Walla sweet onions are a high water content, low sulfur onion. They are harvested around the 4th of July and are marketed in the summer months.

77. Asparagus has been important to the region, however this is one crop that has suffered as a result of trade preference agreements. It is a very labor-intensive crop which puts our US producers at a decided trade disadvantage. Notice the declining acreage over the last 30 years. Washington asparagus acreage has declined from 16,000 acres in 2003 to only 4,000 acres in 2020. Michigan, California, and Washington grow nearly all the US asparagus. The Andean Trade Preference agreement was designed to switch South American producers from producing drugs to producing vegetable crops. Peru has had duty free access to our asparagus market since 1991. In 2003 Green Giant and Del Monte started relocating several processing plants from the US to Peru.

78. Washington wine is becoming world renowned.

79. Washington has more than 1000 wineries, over 400 growers producing 70+ grape varieties. The warm days and cool nights are perfect for grapes (as well as other crops like apples and barley). Walla Walla is the same latitude (46th parallel) as famous wine growing regions of France. As of 2022 there are twenty American Viticultural Areas (AVAs): Yakima Valley 1983, Walla Walla Valley and Columbia Valley 1984, Puget Sound 1995, Red Mountain 2001, Columbia Gorge 2004, Horse Heaven Hills 2005, Wahluke Slope and Rattlesnake Hills 2006, Snipes Mountain and Lake Chelan 2009, Naches Heights 2011, Ancient Lakes of the Columbia Valley in 2012, Lewis and Clark Valley in 2016, Royal Slope and Candy Mountain in 2020, The Burn of Columbia Valley and White Bluffs in 2021, and Rocky Reach in 2022. 179,600 tons of wine grapes were harvested in 2021, down from the record 272,000 tons (in 2016) due to drought conditions.

80. Economic sustainability is a challenge. Input costs of fuel, fertilizer, machinery, and transportation are increasing. Washington has the highest minimum wage in the nation. Variable immigration policies and the legal status of migrant workers have put labor availability in question for labor-intensive crops. Increased regulations and Washington water law are also challenges. Farmers are price takers---and prices are more often set globally, not locally.

81. What does the word “sustainable” mean to you? It is a buzzword used in organic farming circles that has been pressed upon conventional farming. A precise definition of sustainable production integrates environmental health, economic profitability, practices that are based on sound and scientific research as well as common sense, and a respect for neighbors and employees. It meets the needs of the present without compromising the ability of future generations to do the same. Most farmers believe their stewardship of the land and other resources are prime examples of sustainability. The component of economic profitability cannot be overlooked, because if farmers cannot make a profit, they will go out of business. Then the land will be turned to another use and the American public will have to depend on other countries for food.

82. Washington is Unique—summary 1

83. Washington is Unique—summary 2

84. Washington is Unique—summary 3

85. Ag the economic powerhouse

86. **Be Proud! Celebrate Ag in Washington! Thank a farmer!**

Ag Stats from 2021 production. Stats for 2022 production will be released in October 2023. www.nass.usda.gov/wa