

# Ag@School

Volume 23 Issue 1 2023/2024

Published by Washington Agriculture in the Classroom

## FOOD – NEEDED FOR LIFE

### Brought to you by...AGRICULTURE

Food comes from farms. Farmers and ranchers grow crops and animals to feed you and many others around the world. In the USA we enjoy the safest, most abundant, least expensive food supply in the world. Washington state is second only to California in the diversity of agricultural commodities produced.



### Washington's Top Five

Draw a line from the hint to the food group on My Washington Plate where it belongs.

**WOW** – Each of Washington's top five are represented in a food group!!

**Hints:**

- Roundish, crispy fruit, red, green or yellow
- Beverage produced by cows
- Grain most often consumed by humans
- Vegetable that grows underground; mashed-baked-fried-chipped
- Animals that produce steaks and burgers

A	E	X	J	A	E	A	S
P	L	N	D	N	O	E	U
P	T	C	L	I	O	W	B
L	T	O	K	T	T	X	I
E	A	R	A	P	A	T	S
S	C	T	D	P	E	S	D
Y	O	A	F	O	H	G	Y
P	K	L	I	M	W	I	U



Today's Children... Tomorrow's Leaders

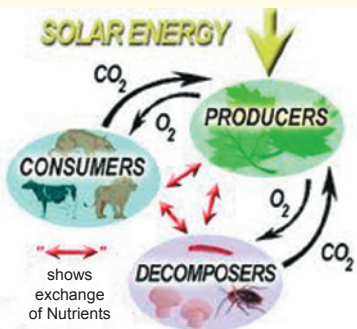
**ag•ri•cul•ture** (ag´rĭ´kul´chĕr), n. growing plants and animals for food and other uses



# AGRICULTURE IS EVERYWHERE

Agriculture starts with the growing and harvesting of food, fibers, forests, and flowers. Agriculture is important to each of us because we all eat food. Not only do farms and ranches produce the food we eat, but also the cotton t-shirts and jeans we wear, leather shoes, and important ingredients for the fuel for our cars, soap, glue, many medicines, tires, books, and thousands of other things we use in our daily lives. Much of agriculture is growing and harvesting plants. We cannot live without plants. As you can see in the food web below, plants provide all the food we eat—either directly as crops, or indirectly as food for animals. They also make the oxygen we breathe, clean carbon dioxide from the air, cool our surroundings, and prevent soil from eroding. People in agriculture grow all sorts of plants, raise animals, and manage forests--- all things humans use for food, clothing, shelter, even fuel.

## IT'S ALL RELATED



## Food Web

### Think & Discuss

If we had no farmers, how would your life be different?

# Washington farmers produce over 330 different commodities

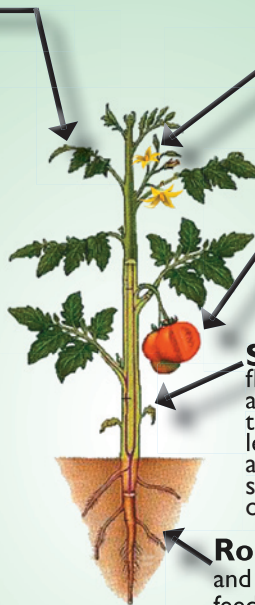


WASHINGTON STATE DEPARTMENT OF AGRICULTURE | 1111 WASHINGTON ST SE, OLYMPIA, WA 98504-2560 | AGR.WA.GOV

## Life On Earth Depends On Plants

- ★ Our food comes from plants, or from animals that eat plants
- ★ Plants produce oxygen that we need to breathe in... and also use carbon dioxide that we breathe out
- ★ Plants cool our atmosphere, catch and hold water, and keep the soil from blowing away

**Leaves** make food for the plant and help the plant breathe. Leaves of green plants contain **chlorophyll** (KLOR'-uh-fill). This green material gives leaves their color and enables them to make their own food. The top and bottom of each leaf are covered with tiny holes. Air comes into the leaf through these holes. Using light for energy, in a process called **photosynthesis**, chlorophyll combines carbon dioxide from the air, and water to make sugars and starches and to release oxygen back into the air. These sugars and starches are stored in the leaves and stems of the plant. The plant uses them for food and people and animals eat the plants to use the same sugar and starches for food.



**Flowers** attract bees and insects to pollinate the plant and make seeds so there will be more plants.

**Fruit** is the plant ovary containing the seeds.

**Seeds** are embryo plants surrounded by a supply of stored food to start the baby plant on its way.

**Stems** hold up the leaves and flowers. They also carry water and minerals from the roots to the leaves and food away from the leaves. Woody, stiff stems of trees are called trunks. Soft, bendable stems are called stalks (asparagus or celery).

**Roots** grow down into the earth and soak up water and minerals to feed the plant. They also anchor the plant in place so it will not fall down or blow away. They vary in size and depth by plant type.

## Parts of the Plant We Eat

Complete the chart below with more examples

	roots	stems	leaves	flowers	fruit	seeds
1	Carrots	Celery	Lettuce	Broccoli	Peaches	Pumpkin
2		*Potatoes	*Onions			
3						
4						
5						

\* Potatoes may be a surprise. Potatoes are tubers (short, fleshy underground stems).

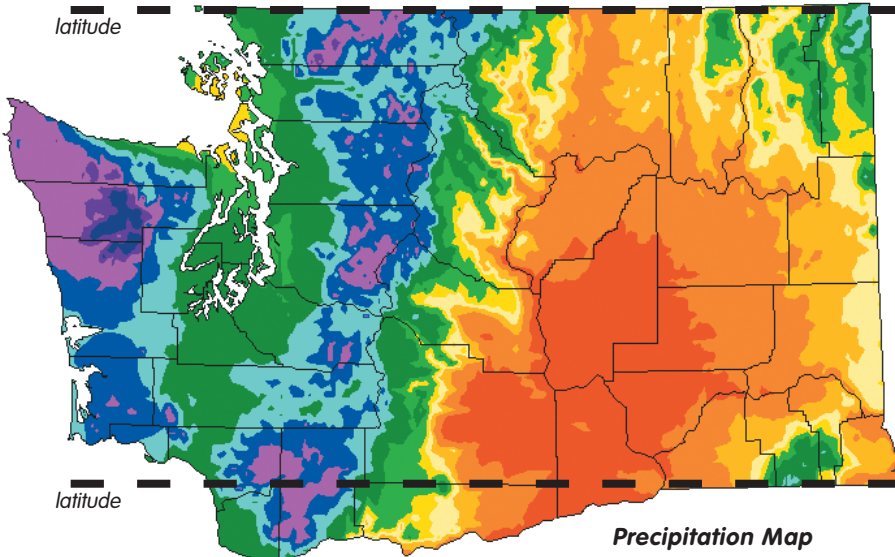
\* Onions grow underground, but are actually adapted leaves.

# AG DEPENDS ON CLIMATE

Climate depends mainly on **latitude**. Latitude governs the angle of the sun's rays, length of day, and even prevailing winds. Washington lies between 45° North and 49° North. That puts it in the temperate climate zones (between 30° and 60° latitude). Our basic zones are Maritime and Steppe. Maritime is generally along coasts and has large amounts of rainfall and moderate temperatures. The Steppe Zone is located inland with an average rainfall of 10 - 20 inches. It has hot summers and cold winters. Within the Steppe Zone, Washington has two other zones: Desert, which has less than 10

inches of rainfall, and the Highlands. The Highlands Zone is found in any mountainous area and temperature and precipitation vary with elevation, not latitude. **Our different climate areas are a main reason our state produces such a wide variety of crops.** Use the **precipitation** map to help answer the questions.

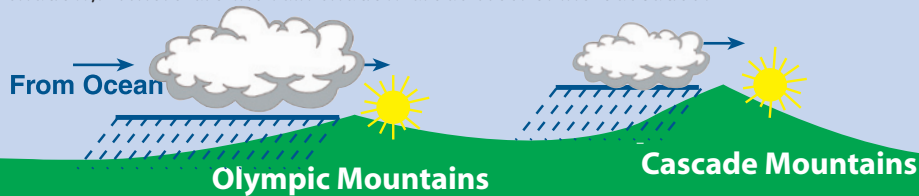
1. Outline Washington's wettest area. It is really a rain forest!
2. Which side of the Cascade Mountains gets the most rain? West or East?
3. Where is the Maritime Zone? Where is the Steppe Zone?
4. Most of the wheat is grown in Eastern Washington. Does that crop need a lot of rain?
5. Draw a circle around the desert. Why is this area our most productive agricultural region in the state? Hint: take a peek at page 4
6. Does this precipitation map give clues about where the Highland Zones are located?



Legend (inches of rain per year)			
Less than 10	25 to 30	80 to 100	
10 to 15	30 to 40	100 to 140	
15 to 20	40 to 60	140 to 180	
20 to 25	60 to 80	more than 180	

## The Rain Shadow

Some parts of Washington receive over 100 inches of rain each year. As moist air from the ocean blows east it must rise over our mountain ranges. The air cools as it rises. Cold air cannot hold as much moisture so the clouds must release their moisture in the form of precipitation (rain, sleet, snow, or hail). This results in an area that receives less precipitation on the other side of the mountains (the rain shadow). Where are the rain shadow areas West of the Cascades?



## Livestock: An Important Part of Agriculture

Cattle, sheep and goats play a very important role in converting solar energy to human food. They eat things people don't eat and turn them into nutritious high-protein foods.

- Livestock graze on land that is not useful for growing crops, including forest land.
- Livestock are great recyclers. They eat waste from food processing that would otherwise be thrown away. They can turn sugar beet pulp, corncobs, culled potatoes, cottonseed and even apple cores into meat, milk and fertilizer!
- Grazing improves grass by promoting new growth to the plants, controlling brush, and fertilizing with animal manure.



# Grown In Wa

## PUGET SOUND LOWLANDS

Most of our urban population is concentrated in this region. There is rich soil in these lowlands that stretch from the Puget Sound to the base of the Cascades. This area is perfect for that fabulous milk maker, the dairy cow, as well as for raspberries, vegetable seed, produce, tulips, nursery products, and shellfish.



*The climate, physical features, and geography change as you cross Washington, dividing our state into distinct regions.*

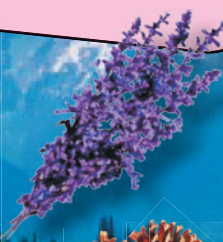
*How many regions are there?*

*How many counties does our state have?*

*We also have deep-water ports. Place the ports of Seattle, Tacoma, Vancouver, Longview, Grays Harbor, and Port Angeles on the map below.*

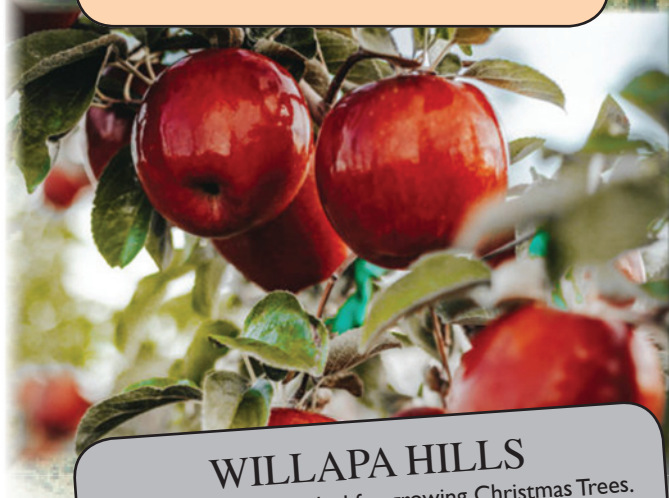
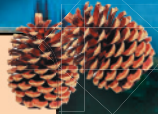
## OLYMPIC PENINSULA

The Olympic Mountains provide timber and recreation. Forest products like an evergreen shrub named salal, are collected and shipped nationwide to florists. Lavender is a favorite floral crop from this region.



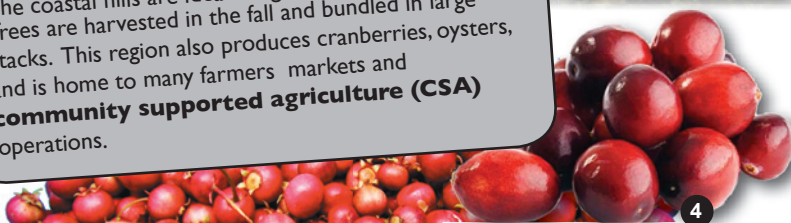
## CASCADE MOUNTAINS

The Cascades have spectacular peaks and lots of timber and recreation areas. The lower elevations provide grazing areas for cattle as well as land that grows timothy hay and apples.



## WILLAPA HILLS

The coastal hills are ideal for growing Christmas Trees. Trees are harvested in the fall and bundled in large stacks. This region also produces cranberries, oysters, and is home to many farmers markets and **community supported agriculture (CSA)** operations.



## COLUMBIA BASIN

The dry region east of the Cascades is a huge lava plateau with rich soils. The heart of the basin receives less than 10 inches of precipitation yet this region is our most productive agricultural region. The reason is **irrigation**. The Columbia River and its tributaries provide water for a region that has ideal conditions for alfalfa, potatoes, corn, mint, grapes, apples, cherries, and many other crops.

# Washington

Change as distinct

ts  
ys



## OKANOGAN HIGHLANDS

The Okanogan Highlands are rugged foothills between the Cascades on the west, and the Rocky Mountains to the east. Here beef cattle graze among another valuable renewable resource, trees. Trees provide paper, pencils, furniture, and houses. This region also grows a variety of fruit trees.



## BLUE MOUNTAINS

The Snake River skirts around the Blue Mountain Range in the southeast corner of our state before it feeds into the Columbia River. Cattle graze among sagebrush and timber. Wheat, barley, asparagus, onions, green peas, and grapes are grown here. This region also boasts the most inland seaport serving the **Pacific Rim** at Lewiston-Clarkston.

## ~ Hooray! Washington is #1~

Washington leads the nation in the production of several crops (2021 crop data). Identify the counties or regions that are named below.

- ① **Hops** – 73.2% – Hops are used to flavor beer. The Yakima valley produces three-fourths of the state's hops. The dry climate along with lots of irrigation water from the Yakima River create ideal conditions for this crop. [www.usahops.org](http://www.usahops.org)
- ② **Mint Oil** – 62.3% **spearmint oil** – Grant and Adams Counties lead the state in production of mint. Every pound of oil will flavor 30,000 sticks of gum or 1000 tubes of toothpaste.
- ③ **Apples** – 68.6% – Apples are the crop that consumers most often link with Washington State. Five areas all share ideal growing conditions -- weather, soil, and water. These areas can be seen at [www.bestapples.com/growers/regions/index.shtml](http://www.bestapples.com/growers/regions/index.shtml) (Okanogan, Lake Chelan, Wenatchee Valley, Columbia Basin, and Yakima Valley)
- ④ **Sweet Cherries** – 61.9% – Cherries are one of the fastest maturing fruits. In just 60 days blossoms mature into sweet and tasty fruit. They are picked, packed, and shipped to markets in the U.S. and more than 42 countries around the world. Leading cherry counties are Yakima, Grant, Chelan, Benton, and Okanogan. [www.nwcherries.com](http://www.nwcherries.com)
- ⑤ **Pears** – 42.2% – The pear has been grown by man for more than four thousand years. Washington pears are picked by hand and are prized for their flavor and long storage life. Yakima County has the most acres of pears, followed by Chelan, Okanogan, Grant, and Douglas Counties. [www.usapears.com](http://www.usapears.com)
- ⑥ **Blueberries** – 26.9% – Washington blueberry acreage has increased steadily in the last 10 years. We now grow 6 times more than 10 years ago. About 70% of the crop that is processed is picked by machine. The 30% fresh crop is picked by hand.
- ⑦ **Clams** – 56.6% – Washington leads the country in production of clams. Farmers use the tidal flats as their fields of production.

### AND Washington Agriculture is:

#### Number 2

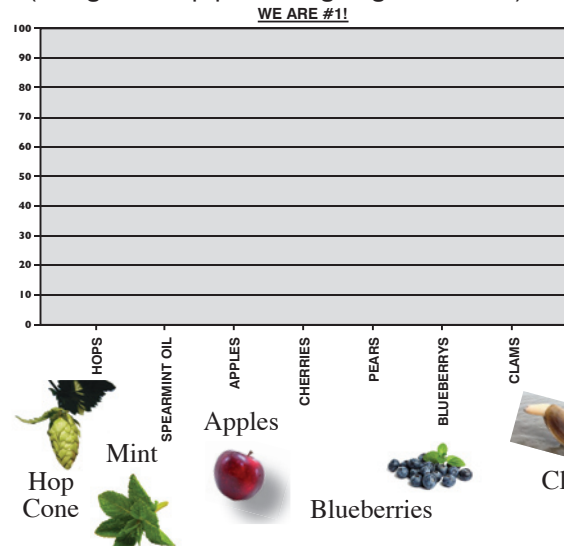
**U.S. Producer of:**  
APRICOTS  
ASPARAGUS  
GRAPES  
POTATOES  
ALL RASPBERRIES

#### Number 3

**U.S. Producer of:**  
BARLEY  
DRIED PEAS  
LENTILS  
DRY ONIONS  
PEPPERMINT OIL

## Make Your Own Bar Graph:

(using the crop percentages given above)



### Did you know?

Washington's 35,200+ farms power a diverse agricultural economy! The state's food processing industry generates 20.1 billion dollars and the agriculture production generates approximately 10.2 billion and provides 164,000 jobs in Washington! 95% of Washington farms are family owned.



# Agriculture in the Columbia Basin

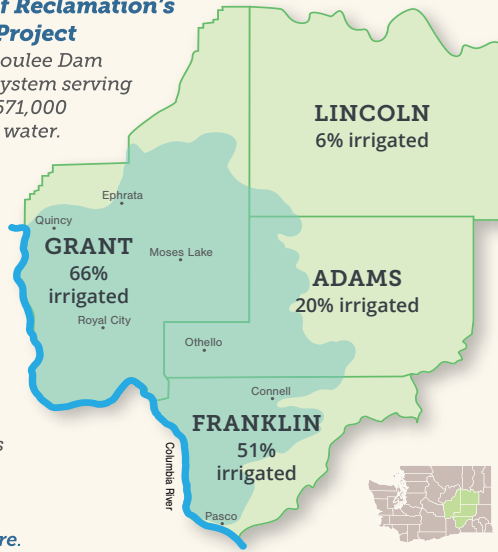
## The U.S. Bureau of Reclamation's Columbia Basin Project

includes the Grand Coulee Dam and a vast irrigation system serving the region. Roughly 671,000 acres receive surface water. Additional acres use groundwater.

Beyond reliable irrigation, the project provides and manages water for:

- Municipalities
- Industries
- Flood and streamflow
- Endangered species
- Recreation
- Power production

Visit [cbd.org](http://cbd.org) for more.



## THE VALUE OF WATER

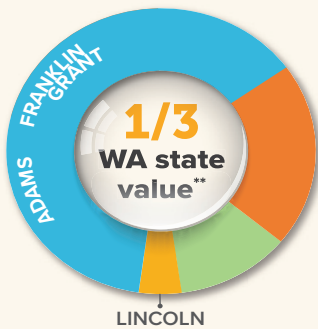


Groundwater is threatened by a declining aquifer, a problem for agriculture and rural communities. Efforts to replace groundwater are underway.

## THE VALUE OF AGRICULTURE<sup>†</sup>

Over **\$3 billion** in production value.

Nearly **3 million** acres in production.



**3,500+** farms

**Grant County:**  
#2 in WA  
#10 nationally\*  
by value of ag production.

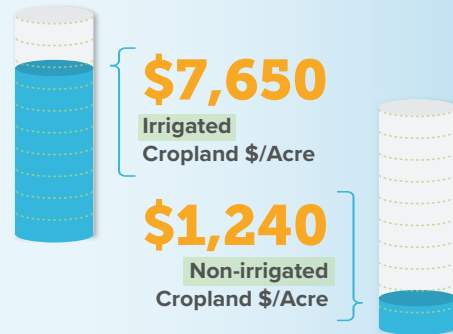
**Lincoln County:**  
#2 in WA  
Top 10 U.S. county  
for wheat production.

Farms employ more than **13,000**

That is **1 in 5 jobs.**

<sup>†</sup>The value of agriculture within Adams Grant, Franklin and Lincoln counties. Sources: \*NASS 2017 data \*\*USDA NASS, WSDA

## Comparative Land Values:



WA state irrigated cropland **2x the value** of US cropland value

This project serves **47%** of all irrigated cropland in the state.

## TOP 5 COMMODITIES in the Columbia Basin<sup>†</sup>



**1 APPLES**  
\$839.1 million

Apples are the **#1 crop** in Washington State. **#1 state** in the nation.

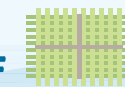


**2 POTATOES**  
\$664.6 million

Nearly **2/3** of Washington's potatoes are grown in this region and **20%** of all US potatoes.



**3 WHEAT**  
\$313.3 million



**4 HAY**  
\$225.9 million

Wheat is the **#1 crop by acres** - over **1/3** of Washington's wheat is grown in this region.



**5 ONIONS**  
\$163.6 million

# Potatoes



Washington farmers produce more potatoes per acre than any other region in the nation. Idaho still produces more potatoes than Washington because they have more acres planted. Not only do we have rich volcanic soil and abundant irrigation water, Washington has a great climate for potatoes. Because of our latitude, we enjoy long daylight hours in the summer. Long, sunny summer days give better production. The more sunlight a potato plant absorbs, the more potatoes it produces. We have a longer growing season than other potato producing areas (150 to 190 frost free days in the Columbia Basin). Our temperatures are ideal (warmer in the early spring when the potatoes are planted to encourage faster sprouting; not too hot in May and early June when the plant sets the potatoes; and warm days but cool nights during July and August when the potatoes enlarge). Farmers are able to provide the exact water and nutrients that the potato plant needs through electronically controlled irrigation systems. Washington farmers average 61,500# per acre compared to a national average of 41,400# per acre.



Potato harvesters are complicated machines that must dig the potatoes out of the ground, separate potatoes from other plant material, dirt, and rocks. Harvesters must do all this while being gentle enough to prevent bruising.

## Do You Have Pulses In Your Diet?

Do you like to eat hummus or split pea soup? You're eating pulses and possibly ones grown here in Washington! They are easy to add to your diet and provide a source of protein and fiber.



Dried beans, chickpeas (garbanzo beans), lentils and peas are the most commonly known and consumed pulses. Pulses are part of the legume family, but the term "pulse" refers only to the dried seed.

A "legume" is a plant whose seed is enclosed in a pod and which adds nitrogen to the soil by nitrogen-fixing bacteria located in root nodules. This benefits the soil, reduces the need for chemical fertilizers, and works well for crop rotations. Well known legumes include the pulses named above, alfalfa, clover, fresh peas, soy and peanuts.

Pulses can be easily added to provide more nutrients to a meal. They come in a variety of shapes, sizes and colors and can be consumed in many forms including whole or split, or ground into flours.

Pulses are raised in dryland areas of Washington like the Palouse as well as in the irrigated areas of the Columbia Basin.



# Pumpkins

Pumpkins are more than a just a pretty or scary face. They are healthy to eat, have a rich history, and are also used as decorations. Pumpkins are a member of the gourd family, which includes cucumber, honeydew melons, cantaloupe, watermelons, and zucchini. They have been grown in North America for thousands of years and are grown on every continent except Antarctica.

Pumpkins are grown and processed into canned pumpkin and canned pie mixes. Pumpkins can also be grown for decorative reasons. They can range in size from less than one pound to more than 1,000 pounds (The current Guinness world record is 2,009 pounds). A common use for them is to carve them into Jack-O-Lanterns, but did you know that the tradition originated in Ireland with the carving of turnips?



Before corn was a staple food source for the Native Americans they used pumpkins to help them through the winters. They discovered many ways to use the pumpkin in their diets. They would boil, roast, or fry the inner meat. The blossoms were added to soups and the seeds made a tasty snack.

Eating pumpkins can provide your body with Vitamins A, C, K, and E. It is also a good source of other minerals such as magnesium, potassium, and iron. The bright orange color of the pumpkin tells you that it is full of beta-carotene. Beta-carotene is converted to vitamin A in the body, which helps bones, cell development, and also helps promote healthy eyesight.

There are many ways to get pumpkins in your diet or in your home. You can visit a farmer's market, look for them at your local grocery store, or visit a pumpkin patch in your area. Take a look at [pickyourown.org](http://pickyourown.org) for you-pick farms near you.

### Pumpkin Life Cycle



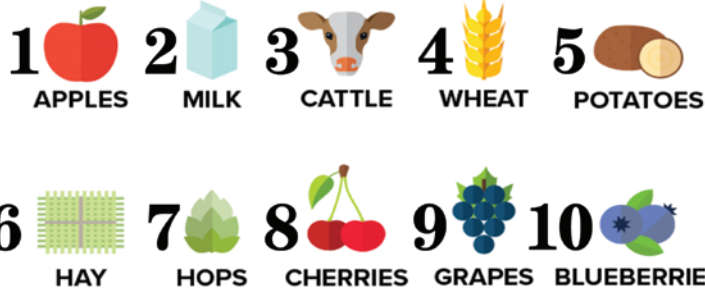
seeds sprout vines flower green orange



## Agritourism

Agritourism is growing in popularity across the US. The term agritourism means any activity that attracts visitors to a farm or ranch. The types of activities on the farm may include picking fruits and vegetables, riding horses, tasting honey, learning about cheese making, or shopping at the farm stand. Agritourism provides farmers the opportunity to share and educate visitors about their way of life, and to earn extra money.

## Top 10 Commodities in Washington



Apples are not only Washington's top crop, they represent

**21%**

of the total value of ag production in the state.

## Career Corner

### Helping farmers and ranchers grow

Did you know some farmers and ranchers only get paid once a year when they sell their crops or take their animals to market? AgWest Farm Credit helps farmers and ranchers borrow the money needed to support their operations throughout the year. Relationship Managers lead the teams that provide loans to farmers to buy seed, fertilizer, equipment and land, and loans to ranchers who purchase land and feed for their animals.

Relationship Managers don't just hand out money, though. They visit their customers in the field to see how things are going and talk about their businesses. Every farm and ranch is different, so they spend a lot of time learning about how each operation works. Relationship Managers also help customers create business plans to understand how much money will be spent and how much money will be earned. They help customers understand the amounts they should borrow and explain the different types of loans that are available.

If you want to be a Relationship Manager, you must want to help farmers and ranchers have successful businesses so they can continue to feed the world. Next, you need to be able to listen



carefully, do math and want to continue to learn about new things so you can answer your customers' questions. Most Relationship Managers earn a college degree in a field such as business, accounting, finance or agriculture.

## Company Highlight

### What is the Farm Credit System?

More than 100 years ago, the U.S. Congress established the Farm Credit System to ensure farmers and ranchers would always be able to borrow the money they need to grow food and raise farm animals. Congress saw how important it was to ensure the United States could feed its own citizens. Today, there are more than 601,500 customers\* in the U.S. who have Farm Credit loans.

AgWest Farm Credit is a member of the Farm Credit System and provides loans and other financial services to help the people who feed and clothe the world.



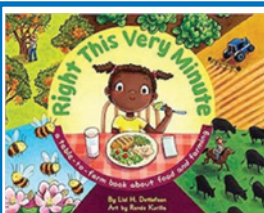
The customers who get loans from AgWest are farmers, ranchers, fisheries owners and foresters who live in seven western states, including Washington.

AgWest is a financial cooperative, which means it's owned by its customers, who can vote on important business decisions. Customers also vote to elect the board of directors, which is the group of people who lead the company. Unlike many banks, which are guided by profits, AgWest is guided by its purpose to champion agriculture by helping customers, employees and rural communities be successful.

<https://farmcredit.com/about>

## Ag Library Corner

Visit the Washington Ag in the Classroom web site at: <http://www.waic.net/>



### Right This Very Minute:

A table-to-farm book about food and farming

What's that you say? You're hungry? Right this very minute? Then you need a farmer. You have

the stories of so many right here on your table! Award winners Lisl H. Detlefsen and Renee Kurilla's delicious celebration of food and farming is sure to inspire readers of all ages to learn more about where their food comes from – right this very minute!

Visit: [www.myamericanfarm.org](http://www.myamericanfarm.org)

to play on-line games and explore fun family activities.



It's all about agriculture.

NATIONAL  
FARM to  
SCHOOL  
MONTH



October is "National Farm to School Month"! On October 4, schools across Washington State will be participating in Taste Washington Day! Check it out at: [agr.wa.gov/farmentoschool](http://agr.wa.gov/farmentoschool)