Ag@School TEACHER GUIDE
Volume 25, Issue 1 2025/2026

Welcome to Ag@School!

Celebrating 25 Years

Class sets of this magazine, aimed primarily at the 4th grade level, are FREE to subscribing Washington teachers. Instructions for subscribing are on page 4. Back issues are available at www.waic.net.

This is the first of three issues for 2025-2026. Delivery of the next two issues will be in January and April.

Produced by Washington Ag in the Classroom, Ag@School is designed to help teachers meet student educational goals as well as develop agricultural literacy.

This issue is designed to help students understand:

- The economic importance and diversity of Washington agriculture
- The importance of agriculture to their lives
- Washington geography and climate and how these influence agriculture
- The benefits of dams and how locks enable river transportation

Reproducible activities in the teacher guide expand on concepts covered in the magazine.

Why Agricultural Literacy?

Agriculture is society's lifeline and an integral part of our heritage. Unfortunately as our country moved from agrarian to urban, people lost contact with the main industry necessary for survival—food production. America's largest industry has dropped from public discourse except for the occasional media splash. Yet we all eat, and it is important that we have an understanding of where our food is produced and who we depend upon to deliver it to our tables.

Less than 2% of the US population is involved in agriculture production (farming) yet 24 million American jobs are dependent upon it. Agriculture is more than working the land and tending the animals. This huge industry—production, processing, transportation, and marketing—generates billions of dollars each year. Agriculture is vital to national security, a stable economy, and the US trade balance.

Why Agriculture?

Teaching about agriculture is an ideal way for students to make real-life connections to science, math, and social studies concepts. Agriculture is relevant because students encounter it daily. Who doesn't enjoy talking about food? Nearly everything we eat, wear, use, even some fuel that powers cars and buses, comes from plants and animals grown on farms. Agriculture provides perfect real-world connections to STEM and makes learning relevant to students.

Helping students understand the farm-to-table connection is important in our consumer-driven society. Teaching students to be agriculturally literate connects their learning to everyday life.

Browse the Matrix!

Visit our website at http://www.waic.net and browse the National Ag in the Classroom link to the Curriculum Matrix

The Agricultural Literacy Curriculum Matrix is an online, searchable, and standards-based curriculum map for K-12 teachers. The Matrix contextualizes national education standards in science, social studies, and nutrition education with relevant instructional resources linked to Common Core Standards.

Search our instructional, classroom ready resources now!

Vocabulary – There are words and concepts throughout the magazine (some are bolded) that can be used in variety of ways to enhance learning and expansion of concepts.

agriculture, consumers, producers, decomposers, leaves, chlorophyll, photosynthesis, flowers, fruit, seeds, stems, roots, weather, climate, latitude, precipitation, rain shadow, community supported agriculture (CDA), irrigation, Pacific Rim, lock, dam, renewable energy, livestock.

Standards Alignment

This publication is aligned with 4th grade standards for Washington students

Essential Academic Learning Requirement – EARLS for Social Studies –

EALR 2: Economics 2.1.1, 2.2.1, 2.2.2, 2.4.1, EALR 3: Geography 3.1.2

EALR 5: Social Studies skills 5.1.1

Common Core State Standards (CCSS)

Reading –

Questioning, Inference, and Interpretation - RI.4.1, Themes and Central Ideas –RI.4.2

Connections - - RI.4.3 , Academic Vocabulary – RI.4.4, Point of View/Purpose – RI.4.6

Cover and Page 2

In the U.S. we do indeed have the least expensive food. We spend just 11% of our disposable income on food. In comparison other countries spend much more: Mexico 26%, Philippines 38%, Ukraine 43% and Nigeria 59% (source USDA-ERS, printed in Food & Farm Facts published by the American Farm Bureau Foundation)

Discussion starters:

1. The circles represent top commodities in WA. Which of these crops or products around the edge of the cover have you seen growing? What crops and animals are raised where you live?

Agriculture is responsible for the food we eat. Food comes from farms; it doesn't just magically appear in grocery stores or restaurants. Farmers and ranchers depend on a wide variety of ag-related careers. Have students brainstorm jobs that are needed to bring food to their tables. Have them research related ag careers like agronomist, entomologist, mechanic, irrigation manager, satellite guidance technician, or food photographer.

Think, Discuss and/or Writing Prompts

If we had no farmers, how would your life be different? Would your parents have the same jobs as today? Would you have different chores? If we didn't have semi-trucks would your diet be the same? Would the foods you eat change with the seasons?
Compare and contrast the states top 10 commodities and states economy within the last 25 years? How has agriculture changed in 25 years?

Page 3 – Climate

Discussion starters:

1. Why are different crops and animals raised in different regions of Washington? (They all have unique requirements for climate, rainfall, terrain, and soil to thrive)
2. What is meant by a "rain shadow"? (as clouds rise they lose moisture causing a dry region east of the Cascades) How does it affect the types of crops grown east of the Cascades? (With irrigation, anything can be grown, without irrigation farmers are limited to grain, grass seed, legumes, and some oil seed crops) Using the precipitation map, have students find rain shadow areas caused by the Olympic Mountains. YouTube has some great videos on the rain shadow that could be viewed with students.
3. Track the fruit growing areas in Washington. They follow the banks of major rivers and lakes and the Columbia Basin Irrigation Project. There is enough water in these areas to make "micro-climates" that are warmer in the winter and cooler in the summer.

Grants and Scholarship Opportunities for Teachers!

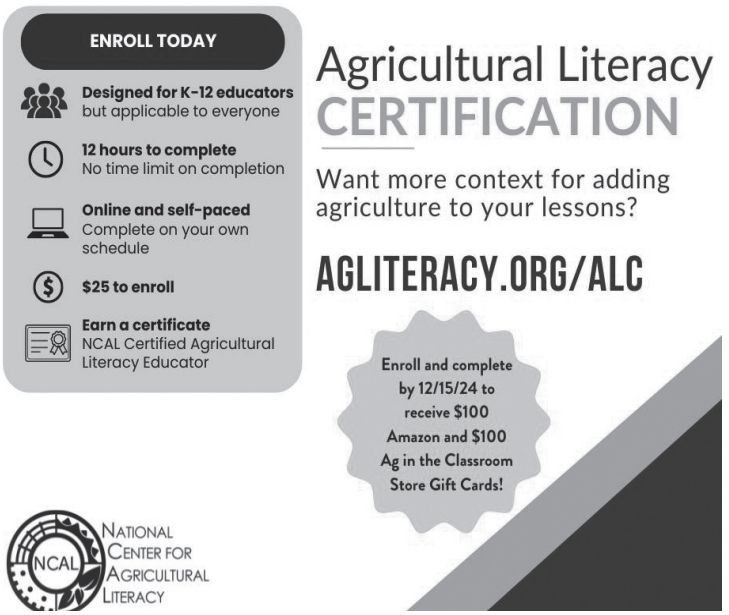
Thanks to the generosity of CHS Foundation and CoBank, funding is available to provide 40 classrooms with funding for ag literacy projects. These $500 grants are available to pre-kindergarten-12th grade teachers who have classroom projects that use agricultural concepts to teach reading, writing, math, science, social studies and more. Eligible projects include classroom and schoolyard gardens, embryology projects, aquaculture projects and agricultural literacy reading programs to name a few. Projects need to be completed by June 1 the following year to allow for submission of a final report by June 30. Only state-certified classroom teachers employed by a school district or private school teachers are eligible to apply.
The CHS Foundation/CoBank Classroom Grant application deadline is November 15, 2026
https://agclassroom.org/grants-and-scholarships/classroom-grants/

Page 4/5 - Grown in Washington

On our webite – www.waic.net under resources, then links to WA Ag information, is an excellent powerpoint on celebrating Washington agriculture that highlights regions, provides history and much more! Check it out! (produced by Robyn Meenach)

Discussion starters:

1. What geographical features make WA such a diversified agricultural state? (Next to the Pacific Ocean; deep-water ports in Puget Sound; Columbia River for navigation, irrigation and power generation; Cascades split the state; volcanoes have provided the rich ash component of our soils; elevation goes from sea level to the top of Mt. Ranier)
2. Discuss individual growing regions and what factors make each an ideal place to grow specific crops or products (have students refer to the boxes on pages 4-5)
3. Why is a location on the Pacific Rim so important? (Closer to trading partners, especially around the Pacific Ocean)



Become an Agricultural Literacy Certified Educator for $25!

The National Center for Agricultural Literacy has created the Agricultural Literacy Certification (ALC) course for educators to gain context for incorporating agriculture into their teaching. The course provides insight into the complexities of the U.S. agricultural system. From plant science to global trade to food safety in home kitchens, this comprehensive course will have educators add agricultural examples to any subject they teach.

Enroll today: *https://www.agliteracy.org/alc/*

Page 6 – Gateway to the Pacific

Remind students that **technology involves changing the natural world to meet human needs or wants.** Our rivers are excellent examples of this. With our system of dams and locks, we provide water for irrigation, electricity production, recreation, cities and industry. We have flood control, transportation, and still provide for the needs of salmon. Discuss how engineers found solutions to many problems to better serve our citizens and our economy. This in turn has improved the quality and quantity of crops we can raise. Ballard Locks videos can be found on Youtube.

Background:

1. Rock Island dam was the first large dam on the Columbia (1933). Bonneville Dam was second, built in 1938 for electricity generation. Grand Coulee was authorized as one of the many projects to put men back to work after the depression and was built to supply irrigation water for the Columbia Basin Project, using the sale of electricity generated by the dam to pay for the construction of the dam and the irrigation delivery system. In 1948 the Snake and Columbia Rivers crested simultaneously and created a 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 two rivers.
2. Deep water ports are those capable of handling a fully laden Panamax ship. That is a ship that is the maximum size that can still fit through the Panama Canal (965' X 106' X 41'). It is important that we dredge the Columbia River Channel to keep the necessary depth clear for these huge ships to reach the largest Columbia ports. The third lane of the Panama canal has been modernized to take New Panamax ships (1200' X 161' X 50'). Not all ports will accommodate these larger ships.
3. Discuss the different ways people use and depend upon the Columbia and Snake Rivers (recreation, irrigation, water supply, power generation, flood control, wildlife habitat, transportation and commerce. Can the students think of more?)

Think & Discuss:

Have students name three renewable energy sources. (hydro-electric power, wind power, and solar power). Why is hydroelectric energy the most reliable?

Hydroelectric power is the most reliable because water behind the dams can be released through the generators at any time to supply electricity. If the sun is not shining or the wind is not blowing, solar and wind energy do not produce electricity. In fact, hydroelectric power is called upon to deliver electricity when these other power sources wane.Hydro-electric power is possible on the Snake-Columbia System because of the drop in altitude between the source of these rivers and the ocean. A large river like the Mississippi is unable to use hydro-electric generators because it is relatively flat along its' length.

Fossil fuels, such as coal, oil, and natural gas are sources of energy derived from plants and animals that lived long ago. They are carbon based and release carbon dioxide into the atmosphere when burned. Our clean, renewable hydropower keeps the Northwest's carbon footprint at half that of the rest of the nation. Removal of the Snake River dams would add 5.4 million tons of carbon dioxide into the atmosphere each year. Replacing the energy capacity lost by Snake River dam removal would take at least three nuclear power plants or six coal-fired or fourteen natural gas-fired plants.

It would also take an additional 120,000 rail cars or more than 700,000 semi-trucks annually to move the cargo that now travels by barge on the Snake-Columbia river system. That traffic would stress already overtaxed bridges and highways.

Sensible solutions have been found and implemented to benefit fish and protect the value of the Columbia-Snake River System to Northwest families and businesses. Additional hydropower generation would seem to be logical.

More info at:
www.nwriverpartners.org/

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Ag Library corner – for more accurate agriculture books visit www.agfoundation.org and on our website www.waic.net books and resources will appear within the lesson plans when you utilize the curriculum matrix.

Complete Issue Writing Prompts

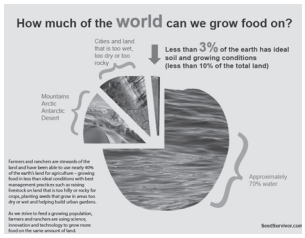
1. Tell why weather and climate are important to farmers. For instance, which fruits can we raise in Washington, and which ones will not survive here?
2. What is your favorite food grown in Washington? Describe how it looks, smells, and tastes. What color and texture does it have?
3. Some people believe that the lock and dam system on the Snake and Columbia Rivers should be removed. Do you agree or disagree? Write to persuade a friend of your opinion. Give reasons to support your position.

Check out the teacher center on the National website – curriculum matrix, information on National Conference, Course Topics, themes for learning, virtual farm tours, elearning, state ag facts, grants, scholarships and much more!

https://agclassroom.org/teacher/

Resources

7-12 grade teachers – check this out!



Journey 2050 takes students on a virtual simulation that explores world food sustainability. Using an inquiry based approach the program encourages students to make decisions and adjust them as they see their impact on society, the environment and the economy at a local and global scale. The students experience the lives of three farm families in Kenya, India, and Canada.

As the student interacts with each family they learn the role of best management practices in feeding the world, reducing environmental impacts and in improving social performance through greater access to education, medical care and community infrastructure. Our Journey to feeding the world has started.

http://www.journey2050.com

washington grown

Food is what Washington Grown is all about! From the field to the plate and everything in between, Washington Grown will highlight the fantastic food scene and industry that makes Washington state a great place to enjoy hundreds of locally grown items. Washington Grown will tell the story of what Washington's 300 crops provide to our meals, culture, economy, and world.

So whether you prefer the urban lifestyle, live in one of Washington's many rural communities, or call home somewhere in between, Washington's farming community impacts your life. Everyone from anywhere in our state can agree that safe, affordable, and nutritious food is what we want for ourselves and those we care about. So spend some time and discover all that Washington Grown has to offer. You will be able to find everything from personal stories about the foods you care about, information about where you can experience the great taste of Washington, to insightful facts about the impact and the role of agriculture within our state.

Publication and Credits

Ag@School is a publication of Washington Agriculture in the Classroom, a non-profit entity created in 1981 to encourage and help teachers increase agricultural literacy in their students. Both public and private groups including the WA Dept. of Agriculture, WSU, commodity commissions, farm organizations, agri-businesses and individuals, support this mission. Teachers may reproduce any pages for use.

Graphic design is by Mike Hendricks, Hendricks Design. Edited by Kristen Hinton-Vanvalkenburg, Robyn Meenach and Cheryl DeHaan.

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To subscribe, log onto **www.waic.net**. and click the subscribe button at the top of the page!

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Subscriptions are not automatically renewed. In the spring and fall issue teachers will be reminded to log onto waic.net and renew their subscription with a few easy clicks and completion of a short survey!
Thank you in advance for your feedback.

Washington State Department of Agriculture

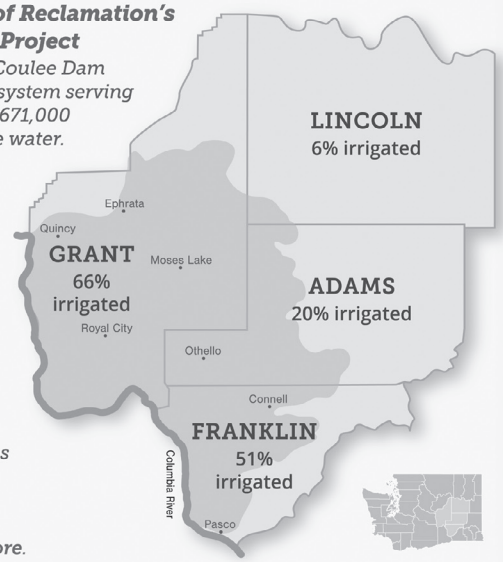
Agriculture in the Columbia Basin

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.*

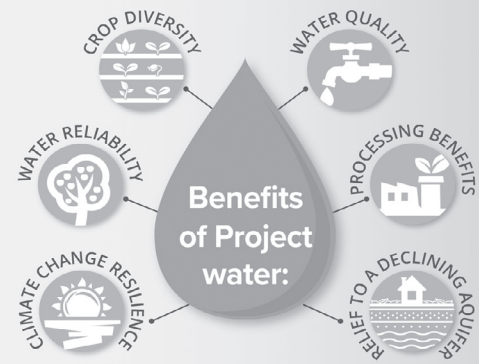
Beyond reliable irrigation, the project provides and manages water for:

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

Visit cbdl.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‡

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.

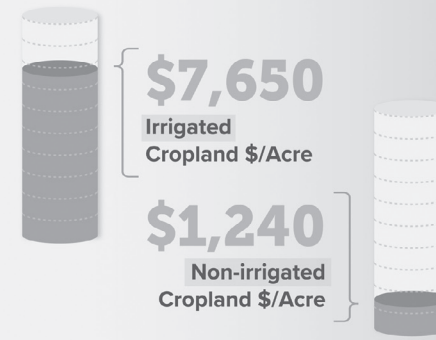
Lincoln County:
#2 in WA
Top 10 U.S. county
for wheat production.

Farms employ more than 13,000

That is 1 in 5 jobs.

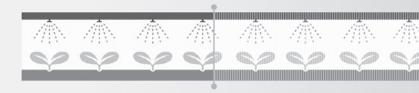
‡The value of agriculture within Adams Grant, Franklin and Lincoln counties.
Sources: *NASS 2017 data **USDA NASS, WSDA

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†

1	2	3	4	5
APPLES	**POTATOES**	**WHEAT**	**HAY**	**ONIONS**
$839.1 million	$664.6 million	$313.3 million	$225.9 million	$163.6 million

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

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

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

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

AGR PUB 101-885 (N/2/21) Do you need this publication in an alternate format? Please call the WSDA Receptionist at 360-902-1976 or TTY 800-833-6388.

Where Do Your Food Dollars Go?

- Access a website for a local grocery store.
- Write a shopping list for at least eight items from your grocery ad.
- You must purchase at least one fresh fruit, one vegetable, and some meat. The other items are your choice.

Shopping list	Price per unit	How many?	Your cost
(fruit)_____	_____	_____	_____
(vegetable)_____	_____	_____	_____
(meat)_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Add up your purchases to get the total spent at the store: $_____

List your favorite Washington grown foods from each of the categories.





FRUITS	VEGETABLES	GRAINS	MILK	PROTEIN
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Make Wise Choices…Be Healthy




- ✓ Make half your plate fruits and vegetables
- ✓ Make at least half your grains whole grains
- ✓ Know how big a "serving" is
- ✓ Avoid oversized portions
- ✓ Drink water instead of sugary drinks
- ✓ Avoid "empty calories" (excess fat & sugar with few nutrients)
- ✓ Get at least 60 minutes of physical activity each day
- ✓ Read nutritional info on label

Get more ideas, find activities, or download the app at www.choosemyplate.gov