



**Fifth Grade Curriculum:
Wheat Farming and Climate Change in the
Inland Pacific Northwest**



Wheat Agriculture: From Past to Present

Week 2 – Day 1

Lesson Overview

The purpose of this lesson is to begin shifting students away from thinking about plants in isolation and toward thinking about plants in an agricultural context. Students will develop knowledge by exploring the history of agriculture and highlighting major events and innovations that have shaped wheat farming in the inland Pacific Northwest.

Lesson Vocabulary

Homestead Act, settlers/settlement, harvest, header, export, combine, plow, harrow, threshers, weeder, drill, rotary, grain elevator, and furrow

Standards and Learning Targets for Lesson

Learning Targets

- I can create a timeline of the major innovations and events in inland Pacific Northwest wheat farming.

Next Generation Science Standards

- 5-ESS3-1.C – Earth and Human Activity
 - Obtain and combine information about the ways individual communities use science ideas to protect the Earth’s resources and environment.
 - Human Impacts on Earth Systems

Idaho Science Standards

- 5.S.5.1.1 – Personal and Social Perspectives
 - Identify issues for environmental studies.

Common Core ELA Standards

- RI.5.5 – Reading Informational Text
 - Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.

Materials

- “Timeline Text and Photos” (Make one copy of the timeline for student cards and one copy to use as a key. For the student cards, cut and separate the descriptions from the photos with dates.)
- Graphic organizer “Weighing the Evidence”

Lesson Duration

Approximately 2 hours



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Lesson Description

Engage (10 minutes)

- Students gather into groups of four or five.
- Give each student a photograph (or more depending on class size) and conduct the 4Ws protocol (who, what, where, and when).
 - In this protocol, students will analyze the photo and using evidence from the photograph, determine who is in it, what they are doing/using or what is happening, where the photo was taken, and when the photo was taken.
- Following the 4Ws protocol, ask each student to share her/his thinking with their group.

Expand (30 minutes)

- Pass out photo descriptions to each group (be sure to give the correct four or five descriptions to each group, but keep them random within each group).
- Ask students to collaborate as they use textual and photographic evidence to match each description with its corresponding photo. Note: if there are more students than photos, have several students work with partners.
- Have students fill out the “Weighing the Evidence” graphic organizer.

Explain (10 to 30 minutes)

- Now the entire class will collaborate to create a timeline of photographs and descriptions.
- Unpack the learning target: *I can create a timeline of the major innovations and events in inland Pacific Northwest wheat farming.* Write the learning target on the board or on chart paper. Discuss the meaning of key words. Discuss the purpose of the lesson in terms of what students will be able to do by the end of the lesson.
- Your primary role is to facilitate the process and ensure that student thinking is driving the discussion AND that in the end photographs are in the correct sequence. You should print an extra copy of the timeline as a reference to help facilitate this process.
- Have the students work as a whole class to post the correct sequence of historical photos on the wall or on the floor (or wherever works).
- You can choose whether to keep dates attached to the photos or to separate them, as the former option will allow students to focus on the skill of organizing chronologically based on dates, and the latter option will make this activity more challenging and time-consuming, with the focus on technological developments over time.

Elaborate (30 to 60 minutes)

- After the class has accurately sequenced all the photos, ask each student to read aloud the text to the original photo they were assigned. This way the entire timeline will be read in sequence for the entire class.
- This section of the lesson is also meant to provide an opportunity for students to discuss important historical events shaping agriculture in the inland Pacific Northwest.



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Evaluate (5 to 10 minutes)

- As an exit ticket, have students write one paragraph (three to five sentences) about the importance of their originally assigned photo(s) in the history of wheat farming in the inland Pacific Northwest.
- Display the timeline on the wall for future reference.

Photo Sources

Steamboat:

<https://oregonhistoryproject.org/articles/historical-records/steamboats-on-the-columbia-river-at-cascade-locks/#.V7jxWj4rK8o>

Farming:

<http://www.threevillagehistoricalsociety.org>

Settlers in Shelter:

<http://rushcanvas.pbworks.com/w/page/62732245/Settlement%20of%20the%20West>

Ritzville:

https://www.sos.wa.gov/legacy/cities_detail.aspx?i=39

Wheat Production Shifting:

https://commons.wikimedia.org/wiki/File:PSM_V77_D523_Annual_average_usa_wheat_production_1890-1908.jpg

Dust Storm:

<https://charmstrongbooks.com/2016/04/14/black-sunday-the-storm-that-gave-the-dust-bowl-its-name/>

Rural Electricity:

<http://americanhistory.si.edu/blog/rural-electrification>

Gas Powered Trucks:

<https://www.kshs.org/exhibits/wheat/harvestales/southcent/stumps1.gif>

Modern Combine:

http://www.bluebird-electric.net/oceanography/ocean_pictures/Combine_Harvester_Tractor_Grain_Collector_Ocean_Barges.jpg

No Till:

https://dl.sciencesocieties.org/publications/aj/articles/100/Supplement_3/S-166

Wheat Exports:

<http://idahowheatcommission.blogspot.com/>

Fertilizer:

<http://www.newtoncrouch.com/images/history/sprayer-and-newton-sr-small.png>



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Weighing the Evidence

Year	Important phrase or sentence from text	Why is this piece of evidence important in the history of wheat farming?


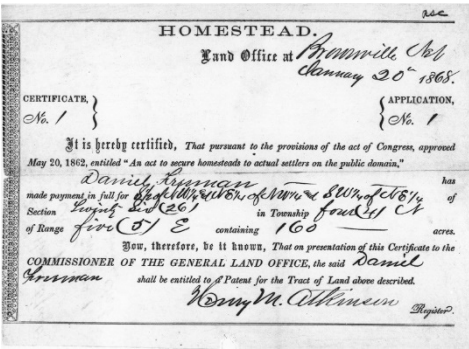




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Timeline Text and Photos




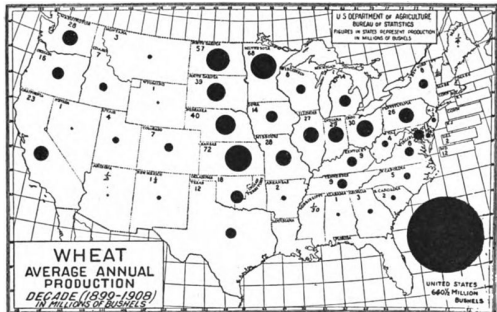
One copy for student cards, one copy for teacher key. Available for download at reacchpna.org

Date	Photograph	Year/Event
1602		Wheat was grown for the first time in what is now the United States on an island off the coast of Massachusetts.
1862		The Homestead Act promised 160 acres of government land to each family or person over 21 who successfully claimed it. To claim land they had to file a claim, pay a \$15 fee, and then live on and farm the property for a certain number of years.
1870		Pioneers realized that they could make money in the West by growing wheat for sale. The first wheat farmers arrived by wagon and began to clear bunchgrass and sagebrush from the land so they could plant crops.
1878		A small group of immigrants settled in Ritzville, Washington after all the best land for wheat cultivation had already been claimed. Although they lost their first wheat crop to ground squirrels, their second crop was very successful. Their success convinced other settlers that wheat production was possible in drier climates where land was still available.



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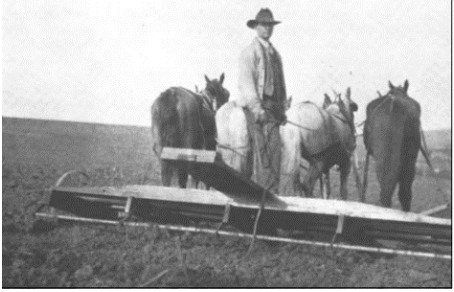





1880		Settlers lived in wagons, tents, or shelters made in the sides of hills. The first shelter they built was usually a barn for their horses. They began farming, planting wheat each spring.
1882		Using boats to transport wheat along the Columbia River helped create a boom in farming and wheat exports.
1884		The railroad was completed and took the place of wagon trains. Trains were able to carry not only people, but household goods, farm machinery, and livestock.
1890		The inland Pacific Northwest replaced California as the most important wheat-producing area in the far West.



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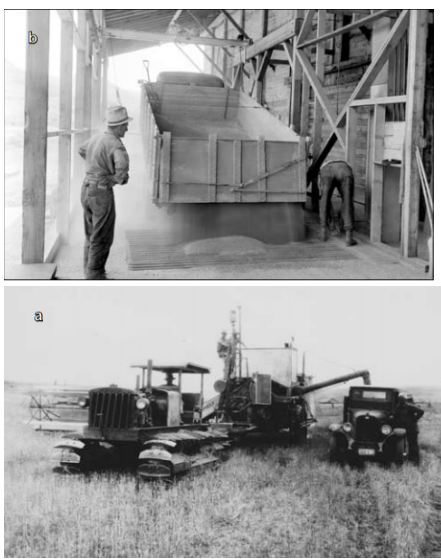

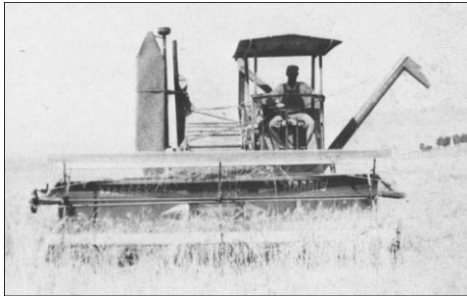



1898		Combines were introduced making it much quicker and easier to harvest wheat. Early combines were pulled by horses.
Early 1900s		New and up-to-date farming equipment such as plows, harrows, stationary threshers, steam engines, rod weeders, drills, wagons, and combines were being brought to the inland Pacific Northwest.
1906		Major dust storms occurred lasting up to three days at a time. Each storm caused up to six inches of soil loss.
1907		The rotary rod weeder was invented in Cheney, Washington and became an essential tool for controlling weeds.
1920s		Farmers began to transport wheat in trucks, which was much more efficient than relying on livestock. A truck could make six trips, carrying 25 sacks of wheat on each trip, in the same amount of time that a wagon pulled by a team of mules could make one trip with 70 sacks of wheat.



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<p>Mid-1930s</p>		<p>Farmers no longer had to put wheat in sacks because they could haul it to storage elevators in trucks. Handling grain in this way made farming easier.</p>
<p>Late 1940s</p>		<p>Electricity was made available in rural areas, which made farm life easier.</p>
<p>1950s</p>		<p>Self-propelled combines replaced older machinery that had to be pulled by livestock. The new machines meant that only two or three people were needed to harvest a wheat crop.</p>
<p>1950s</p>		<p>Nitrogen fertilizer became available and affordable to farmers in the West. Using fertilizer helped increase wheat yield (the amount of wheat grown) by putting more nutrients in the soil.</p>



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<p>1960s</p>		<p>Farms increased in average size from 1,250 to 1,600 acres. Most farms were still managed by a single family with a few additional people hired during harvest.</p> <p>The deep-furrow split-packer drill was also invented. The drill let farmers plant winter wheat seeds in the late summer seven inches deep so the seeds could reach the water they needed to sprout.</p>
<p>1980s</p>		<p>The “no-till” farming technique was developed. This technique leaves the stubble of wheat plants behind in the ground when the grain is harvested. The stubble reduces erosion and improves soil health and fertility.</p>
<p>Today</p>		<p>Farms have become larger, ranging in size from 1,500 to more than 15,000 acres. The farm equipment used is among the largest in the world.</p>
<p>Today</p>		<p>Wheat is carried by barge down the Snake and Columbia rivers to Portland, Oregon where it is loaded on ships for export to countries around the world.</p>