

2022-2023 Wheat Facts

PRESENTED BY THE



WHEAT IS THE WORLD'S NUMBER ONE CROP

- More land is planted to wheat in the world than any other crop.
- Wheat is a staple food for more than **35 percent** of the human population.
- Wheat provides **20 percent** of the world's nutritional needs.
- In 2021, the U.S. exported **992 million bushels** of wheat to nearly **50 countries**.
- Washington, Oregon and Idaho together are called the **Pacific Northwest** (PNW).
- The PNW produces enough wheat each year to fill the **Seahawks' Stadium**!



WHEAT GROWS JOBS

- Washington wheat farmers support **9,466 jobs** in the state, including their own.
- The state benefits from **6,276 jobs** in businesses and industries directly supporting Washington wheat farmers.
- An additional **3,190 jobs** are supported from personal purchases of both farmers and their employees.
- At least **\$0.58 of every \$1.00** generated by Washington wheat exports goes to businesses that support farmers.
- Washington's wheat farmers and their employees contribute to the state's economy by spending **\$0.69 of every \$1.00** earned from wheat exports for off-farm purchases.
- This results in a total of **\$2.27 in economic activity**, for every dollar of sales from wheat.

Source: WSU IMPACT Center, 2020



WHEAT HAS CLASS

Wheat is divided into **six classes** based on kernel color, hardness, and planting season. Each class of wheat has specific end-use qualities:

Soft white

winter, spring, and club
Cakes, cookies, cereals, pastries, pancakes



Soft red winter

Cookies, crackers, pastries, pretzels, flatbreads

Hard red winter & hard red spring

Breads, hard rolls, bagels, croissants, pizza crusts



Hard white

winter and spring
Asian noodles, steamed breads, and blended flours



Durum

Pasta, couscous



Western White

is a customized blend of 10 percent or more of very soft club wheat with common soft white wheat varieties, ideal for cakes, pastries, and other confectionery products.



WASHINGTON WHEAT COMPETES

WASHINGTON'S 2021 TOP FIVE FARM PRODUCTS

1	Apples	\$2.185 billion
2	Milk	\$1.209 billion
3	Cattle	\$801.5 million
4	Wheat	\$756.8 million
5	Potatoes	\$712.4 million

Source: WSDA

2022 TOP TEN WHEAT PRODUCING STATES

		Production (million bushels)	Avg Yield/Acre (bushels)
1	North Dakota	299.9	48.9
2	Kansas	244.2	37.0
3	Washington	144.0	63.4
4	Montana	139.3	28.3
5	Idaho	93.5	86.8
6	Minnesota	73.8	61.0
7	South Dakota	71.6	50.0
8	Oklahoma	68.6	28.0
9	Oregon	48.9	68.0
10	Illinois	44.2	79.0

Source: USDA, National Agricultural
Statistics Service

2022 PNW ALL WHEAT PRODUCTION

Washington	144.0 million bushels
Idaho	93.5 million bushels
Oregon	49.0 million bushels
Total	286.5 million bushels

Source: USDA, National Agricultural
Statistics Service

Most Washington
wheat is grown
in the eastern
part of the state.



- Most wheat classes love Washington's cool nights and warm days, diverse geographic climates, and varied precipitation—from **8 inches to 25 inches** annually.
- Most wheat farms in Washington are **dryland** farms, which depend entirely on precipitation and often utilize **summer fallow**, where fields are left unplanted to gather moisture and nutrients.
- **Lodging** occurs when heavy wheat crops fall over from too much rain, wind, or root disease.
- Eastern Washington's highly fertile soils are ideal for growing wheat but can erode easily. To prevent soil erosion, farmers use **best management practices** such as no-till or direct seeding, field stripcropping, and terrace farming.

Gluten is a protein in wheat that gives dough elasticity. Gluten strength, protein content, and and falling numbers are important industry measures of U.S. wheat quality. Flour with low protein, low ash, and weak gluten makes good quality cakes, cookies, and pastries.



WHEAT TAKES TESTS

- Washington State University has a **Variety Testing Program**, and the **United States Department of Agriculture** (USDA) has its **Western Wheat Quality Lab** to help wheat breeders meet market challenges.
- The **Agricultural Research Service** (ARS) is the USDA's research division.

It can take more than **ten years** for a wheat variety to go from breeding to production, to prove its performance and quality for U.S. and world markets.



2022/23 TOP TEN WHEAT PRODUCING COUNTRIES*

1	China	138 mmt
2	European Union	134 mmt
3	India	103 mmt
4	Russia	91.0 mmt
5	U.S.	44.9 mmt
6	Australia	36.6 mmt
7	Canada	33.8 mmt
8	Pakistan	26.4 mmt
9	Ukraine	20.5 mmt
10	Turkey	17.3 mmt

mmt=million metric tons

Source: USDA, World Agricultural Supply
and Demand Estimates

*Projected

ONE WHEAT BUSHEL



Weights
60 pounds



Makes 53 boxes
of cereal



Bakes into
200 sponge
cakes



Earned U.S. farmers
an average price of
\$9.20 in 2022/23



Rolls into 420
three-ounce
cinnamon buns



Presses into
72 pounds of
flour tortillas



Yields around
60 pounds of
whole wheat flour



Yields around
42 pounds of
white flour



WASHINGTON WHEAT FARMERS GROW KNOWLEDGE

- The **Washington Grain Commission** (WGC) represents farmers who promote research, market development and education in Washington state, the nation and throughout the world.
- The WGC was formed in **1958 by farmers who voted to tax themselves** on each bushel of grain sold.
- The WGC budget for 2022/23 is **\$7.8 million**.
- In the **past five years**, the WGC has spent over **\$26 million** on wheat research, marketing, and education.
- Wheat **research** is the WGC's top priority. See www.wagrains.org for more information.
- The WGC is proud to sponsor **Wheat Week**—a fun, hands-on program conducted through the Franklin Conservation District that teaches Washington's 4th- and 5th-graders all about wheat.

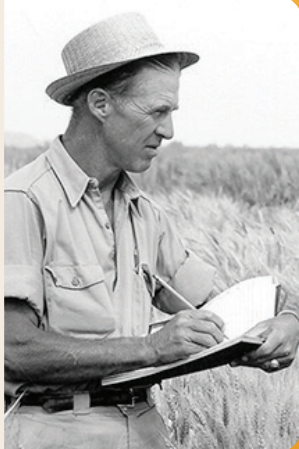


WHEAT HAS HISTORY

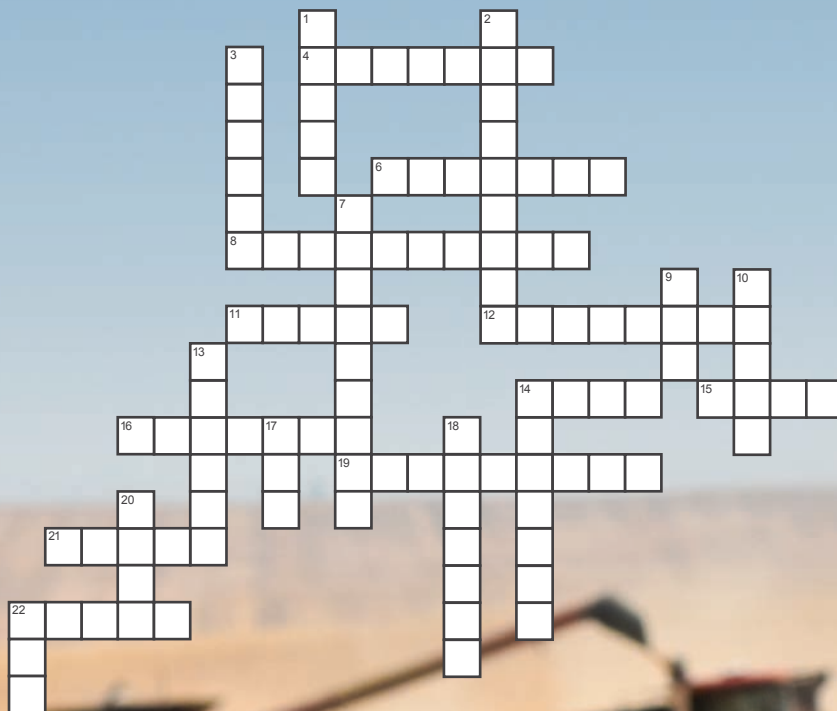
The oldest direct evidence of bread found to date was **flatbread** baked by hunter-gatherers more than **14,000 years ago**.

- Wheat is a type of **grass**.
- **Einkorn** and **Emmer** are the earliest cultivated forms of wheat.
- Einkorn has **14 chromosomes**, and Emmer has **28 chromosomes**.

Agricultural scientist and humanitarian **Norman Borlaug** won the **1970 Nobel Peace Prize** for his contributions to the **Green Revolution**. His work helped foster world peace by increasing the food supply and prevented billions of human deaths from starvation.



CROSSWORD PUZZLE



ACROSS

- Earliest known wheat (14 chromosomes).
- When wheat plants fall down before harvest, it is called _____.
- This U.S. state ranks third in wheat production.
- Second-largest market for U.S. white wheat.
- Top WGC priority.
- Super soft wheat variety.
- Wheat class used in bread.
- _____ train loading facilities process 110 cars at a time.
- Part of a wheat kernel used in refined flour.
- A wheat plant wears a _____ just above its roots.
- Number of pounds in an average bushel of wheat.

DOWN

- Borlaug won the Nobel _____ Prize.
- Can transport 2.4 million bushels of wheat.
- Summer _____ is when fields are left unplanted to gather moisture and nutrients.
- Five days of wheat fun for fourth and fifth graders!
- USDA's agricultural research division. (abbr.)
- Comes in at No. 4 on Washington's list of top farm products.
- Wheat protein that helps dough hold together and rise.
- _____ shippers are farmers who have only one transportation alternative.
- The process from breeding to commercial production of a wheat variety takes about _____ years.
- Father of the Green Revolution.
- Wheat class used in cookies and cakes.
- Number of wheat classes.



WHEAT MOVES

The Columbia/Snake River system running through Washington, Idaho and Oregon is the cleanest and most efficient way to transport wheat to the world.

Wheat from 11 states export through our rivers, which adds up to about **60 percent** of all U.S. wheat exports shipping through the Columbia/Snake River system.

The Port of Lewiston, Idaho, is 465 miles upriver from the Pacific Ocean, which makes it the most inland port in the nation.

Tidewater and **Shaver** are the primary barging companies serving the Columbia/Snake River system. Together they float an average of **60 percent** of Washington's wheat to port elevator locations.



Cargo ships called **bulk freighters**, and container ships transport wheat to hungry customers in Asia, Latin America, and the Middle East.

Washington has **five grain shuttle train loading facilities**. Shuttle train facilities load **110 grain cars in 15 hours or less**—some can load an entire shuttle train in as fast as 8 hours. That's about four minutes per car! **BNSF** and **Union Pacific** are Class I railroads that serve Washington's shuttle train loading complexes. **Captive shippers** are wheat farmers in areas of the country where there is only one transportation alternative.

2021/22 US WHITE WHEAT TOP MARKETS

1	Philippines	1,057 tmt
2	Japan	620 tmt
3	S. Korea	558 tmt
4	China	296 tmt
5	Nigeria	248 tmt
6	Thailand	210 tmt
7	Taiwan	109 tmt
8	Guatemala	72 tmt
9	Vietnam	63 tmt
10	El Salvador	34 tmt

tmt=thousand metric tons
Source: U.S. Wheat Associates

TRANSPORTATION MODES:

How the wheat grown in Washington gets to market.

60%

Grain trailer > River barge > Four-barge tow

37%

Grain trailer > Rail hopper > 100-car train

3%

Grain trailer > Container



Container

750 bushel capacity



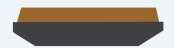
Grain Trailer

910 bushel capacity
155 mpg per ton*



Rail Hopper Car

3,500 bushel capacity
413 mpg per ton*



River Barge

122,500 bushel capacity
576 mpg per ton*



100-Car Train

350,000 bushel capacity



Four-Barge Tow

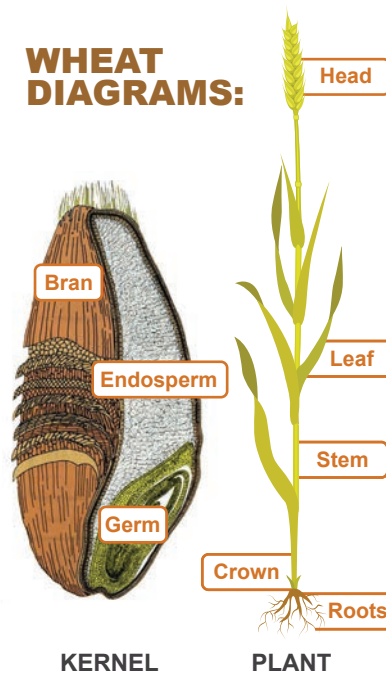
490,000 bushel capacity



Bulk Freighter

2,400,000 bushel capacity

WHEAT DIAGRAMS:



*Amounts are miles per gallon carrying one ton of cargo.
Source: Texas Transportation Institute, Texas A&M University, for the U.S. Maritime Administration

CROSSWORD ANSWERS Across: 4 Einkorn, 6 Lodging, 8 Washington, 11 Japan, 12 Research, 14 Club, 15 Hard, 16 Shuttle, 19 Endosperm, 21 Crown, 22 Sixty. Down: 1 Peace, 2 Freighter, 3 Fallow, 7 Wheat Week, 9 ARS, 10 Wheat, 13 Gluten, 14 Captive, 17 Ten, 18 Borlaug, 20 Soft, 22 Six.