

# 2023-2024 Wheat Facts

PRESENTED BY THE



WASHINGTON  
GRAIN  
COMMISSION



## WHEAT IS THE WORLD'S NUMBER ONE CROP

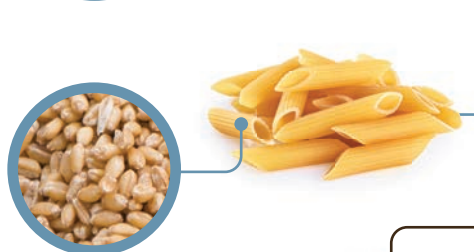
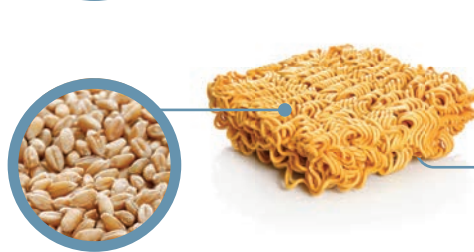
- More land is planted to wheat in the world than any other crop.
- Wheat is a staple food for more than **35 percent** of the human population.
- Wheat provides **20 percent** of the world's nutritional needs.
- In 2022, the U.S. exported **771 million bushels** of wheat to nearly **50 countries**.
- 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, 2021



## 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 2023 TOP FIVE FARM PRODUCTS

1	Apples	\$2.068 billion
2	Milk	\$1.678 billion
3	<b>Wheat</b>	<b>\$1.71 billion</b>
4	Cattle	\$1.019 billion
5	Potatoes	\$942.7 million

Source: WSDA

### 2023 TOP TEN WHEAT PRODUCING STATES

		Production (million bushels)	Avg Yield/Acre (bushels)
1	North Dakota	307.8	47.1
2	Kansas	201.3	35
3	Montana	186.7	37.2
4	<b>Washington</b>	<b>113.1</b>	<b>50.5</b>
5	Idaho	89.1	86.1
6	Minnesota	78.1	62
7	Texas	77.7	37
8	Colorado	74.6	41
9	Oklahoma	68.6	28
10	Illinois	67.9	87

Source: USDA, National Agricultural Statistics Service, Small Grains 2023 Summary

### 2023 PNW ALL WHEAT PRODUCTION

<b>Washington</b>	113.1 million bushels
<b>Idaho</b>	89.1 million bushels
<b>Oregon</b>	40.6 million bushels
<b>Total</b>	242.8 million bushels

Source: USDA, National Agricultural Statistics Service, Small Grains 2023 Summary

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 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.



## 2023-24 TOP TEN WHEAT PRODUCING COUNTRIES\*

1	China	137 mmt
2	European Union	134.3 mmt
3	India	110.6 mmt
4	Russia	90 mmt
5	<b>U.S.</b>	<b>49.31 mmt</b>
6	Canada	31 mmt
7	Australia	24.5 mmt
8	Ukraine	22.5 mmt
9	Argentina	15 mmt
10	United Kingdom	14.3 mmt

\*Projected

mmt = million metric tons

Source: USDA, World Agricultural Supply and Demand Estimates 11/09/2023

## ONE WHEAT BUSHEL



Weights  
60 pounds



Makes 53 boxes  
of cereal



Bakes into  
200 sponge  
cakes



Earned U.S. farmers  
an average price of  
\$7.20 in 2023-24



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 2023-24 is **\$8.6 million**.
- In the **past five years**, the WGC has spent over **\$20 million** on wheat research, marketing, and education.
- Wheat **research** is a top priority. See [www.wagrains.org](http://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

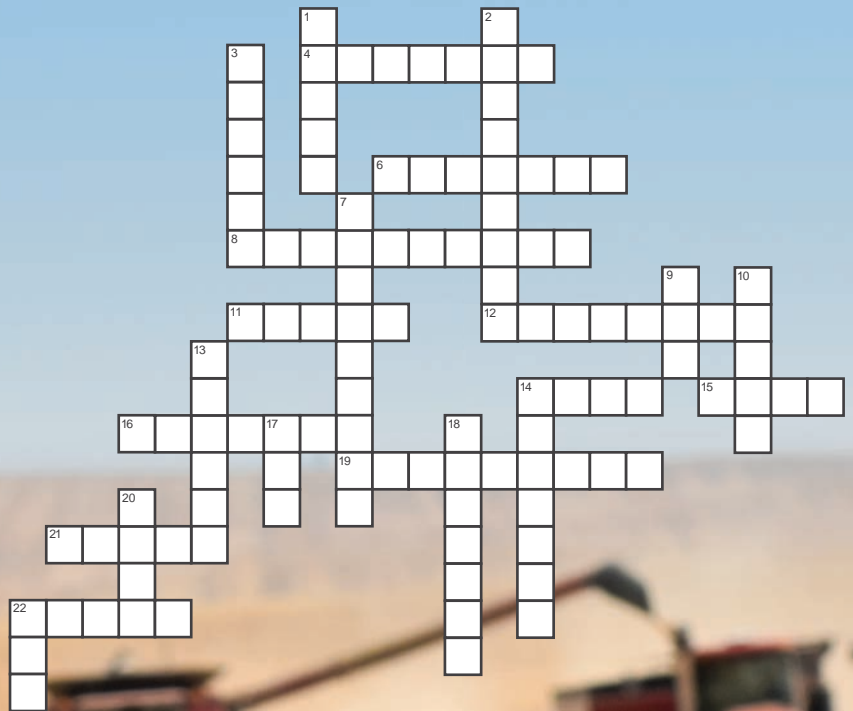
The oldest direct evidence of bread found to date was **flatbread** baked by hunter-gatherers more than **14,000 years ago**.

- 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



### DOWN

- 1 Borlaug won the Nobel \_\_\_\_\_ Prize.
- 2 Can transport 2.4 million bushels of wheat.
- 3 Summer \_\_\_\_\_ is when fields are left unplanted to gather moisture and nutrients.
- 7 Five days of wheat fun for fourth and fifth graders!
- 9 USDA's agricultural research division. (abbr.)
- 10 Comes in at No. 3 on Washington's list of top farm products.
- 13 Wheat protein that helps dough hold together and rise.
- 14 \_\_\_\_\_ shippers are farmers who have only one transportation alternative.
- 17 The process from breeding to commercial production of a wheat variety takes about \_\_\_\_\_ years.
- 18 Father of the Green Revolution.
- 20 Wheat class used in cookies and cakes.
- 22 Number of wheat classes.

### ACROSS

- 4 Earliest known wheat (14 chromosomes).
- 6 When wheat plants fall down before harvest, it is called \_\_\_\_\_.
- 8 This U.S. state ranks fourth in wheat production.
- 11 Third-largest market for U.S. white wheat.
- 12 Top WGC priority.
- 14 Super soft wheat variety.
- 15 Wheat class used in bread.
- 16 \_\_\_\_\_ train loading facilities process 110 cars at a time.
- 19 Part of a wheat kernel used in refined flour.
- 21 A wheat plant wears a \_\_\_\_\_ just above its roots.
- 22 Number of pounds in an average bushel of wheat.



## 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 on the west coast.

**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.

**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.

### 2022-23 US WHITE WHEAT TOP MARKETS

1	Philippines	949 tmt
2	China	870 tmt
3	Japan	640 tmt
4	S. Korea	599 tmt
5	Indonesia	335 tmt
6	Thailand	289 tmt
7	Yemen	207 tmt
8	Chile	174 tmt
9	Vietnam	103 tmt
10	Taiwan	98 tmt

tmt = thousand metric tons

Source: U.S. Wheat Associates

(Commercial Sales Report Nov. 30, 2023)

### 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**

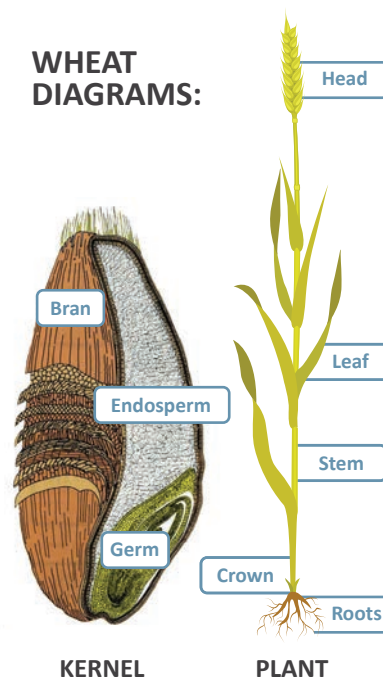
490,000 bushel capacity



**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