

WASHINGTON WHEAT FACTS 2018-2019

Presented by the  WASHINGTON GRAIN COMMISSION



WHEAT is the World's NUMBER ONE crop

2018/19 TOP TEN WHEAT PRODUCING COUNTRIES*

1	EU	137.5 mmt
2	China	128.0 mmt
3	India	99.7 mmt
4	Russia	70.0 mmt
5	US	51.3 mmt
6	Canada	31.5 mmt
7	Ukraine	25.5 mmt
8	Pakistan	26.3 mmt
9	Argentina	19.5 mmt
10	Australia	18.5 mmt

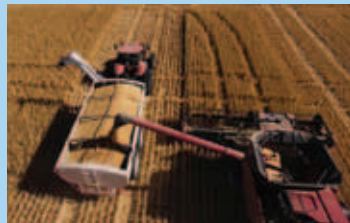
*Projected

mmt=million metric tons

- 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 more than 19 percent of the world's nutritional needs.
- In 2017, the US exported 901 million bushels of wheat to nearly 60 countries.
- Washington, Oregon and Idaho together are called the Pacific Northwest (PNW).
- The PNW produces enough wheat each year to fill a grain train stretching from Seattle to Mexico!

WHEAT GROWS JOBS

- Washington wheat farmers support 8,168 jobs in the state, including their own.
- Over 2,170 of those jobs are directly related to the transportation industry.
- The state benefits from 5,998 jobs in businesses and industries directly supporting Washington wheat farmers.
- At least \$0.82 of every \$1.00 generated by Washington wheat goes to businesses that support farmers.
- Washington's wheat farmers and their employees contribute to the state's economy by spending \$0.40 of every \$1.00 earned for off-farm purchases.
- This results in a total of \$1.22 in economic activity, beyond farmers' own sales.



2018 PNW ALL WHEAT PRODUCTION

Washington	153.2 million bushels
Idaho	104.4 million bushels
Oregon	51.6 million bushels
Total	309.2 million bushels



Head
Leaf
Stem
Crown
Roots

Washington HEAT COMPETES

WASHINGTON 2017 TOP FIVE FARM PRODUCTS



One bushel:

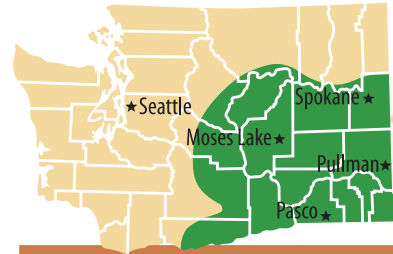


- Weighs 60 pounds
- Yields around 42 pounds of white flour
- Yields around 60 pounds of whole wheat flour
- Fills 53 boxes of cereal
- Rolls into 420 three-ounce cinnamon buns
- Presses into 72 pounds of flour tortillas
- Bakes into 200 sponge cakes
- Earned US farmers an average price of \$4.72 in 2017/18



2018 TOP TEN WHEAT PRODUCING STATES

		Production (million bushels)	Avg Yield Acre (bushels)
1	North Dakota	363.5	47.6
2	Kansas	277.4	38.0
3	Montana	197.6	38.3
4	Washington	153.2	70.8
5	Idaho	104.4	91.9
6	Minnesota	92.9	59.0
7	South Dakota	72.3	44.4
8	Colorado	70.5	36.1
9	Oklahoma	70.0	28.0
10	Texas	56.0	32.0



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

HEAT has HISTORY



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.

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**.
- Research scientists believe Emmer crossed with a weed called **Jointed Goatgrass** to produce modern wheat.



EMMER

JOINTED
GOATGRASS

EINKORN

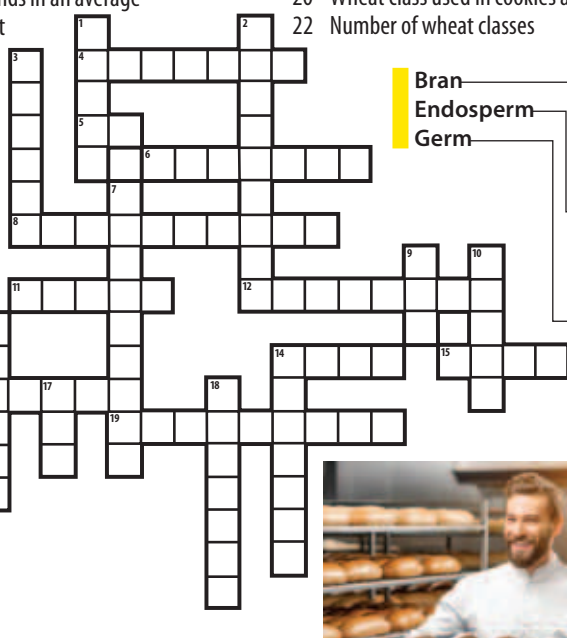
WHEAT WORDS



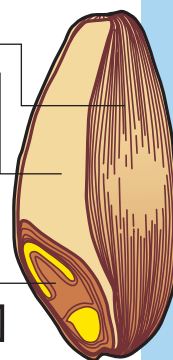
- 4 Earliest known wheat (14 chromosomes)
- 5 Top world wheat-producing region
- 6 When wheat plants fall down before harvest, it is called _____
- 8 This US state ranks fourth in wheat production
- 11 There are six classes of this
- 12 Top WGC priority
- 14 Super soft wheat variety!
- 15 Wheat class 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



- 1 Number of PNW ports
- 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
- 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 _____ farmers 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



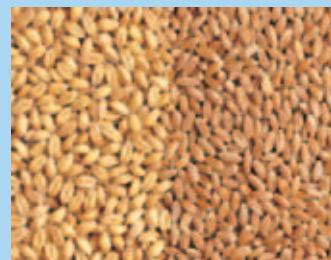
Bran
Endosperm
Germ



WHEAT has CLASS

Wheat is divided into **six classes** based on kernel color, hardness, and planting season.

SOFT WHITE



HARD RED

Western White is a customized blend of 10 percent or more very soft club wheat with common soft white wheat varieties.

Gluten is a protein in wheat that gives dough elasticity.

Gluten, protein, and falling numbers are important industry measures of US wheat quality.

Each class of wheat has specific end-use qualities:

Soft white wheat (winter, spring and club)—Cakes, cookies, crackers, flatbreads, cereals, pastries, pancakes

Hard red wheat (winter and spring)—Breads, hard rolls, bagels, pan bread, flat bread, pizza crust

Soft red winter wheat—Cookies, crackers, pretzels, pastries, flat breads

Durum—Pasta

Hard white is a new class used for Asian noodles, steambreads, and blended flours.

WHEAT takes TESTS

Varieties with excellent baking properties produce larger diameter, superior cookies.



Flour with low protein, low ash, and weak gluten makes good quality sponge cake.



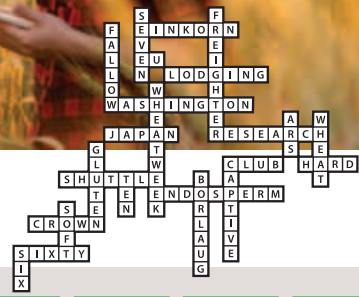
- ★ Washington State University has a **Variety Testing Program** and the USDA has its **Western Wheat Quality Lab** to help wheat breeders meet market challenges.
- ★ The **Agricultural Research Service (ARS)** is the USDA's research division.
- ★ It can take more than **ten years** for a wheat variety to go from breeding to production in order to prove it can perform for US and world markets.
- ★ Most wheat classes love Washington's cool nights and warm days, diverse geographic climates and varied precipitation—from **8 inches to 25 inches** annually.
- ★ A majority of 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.



Washington HEAT farmers grow KNOWLEDGE


- ▶ The **Washington Grain Commission (WGC)** represents farmers who promote research, marketing 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 2018/19 is **\$6.3 million**.
- ▶ In the past **five years**, the WGC has spent more than **\$25 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 that teaches Washington's 4th- and 5th-graders all about wheat.


WHEAT WEEK



HEAT MOVES




 Tidewater and Shaver are the two barging companies serving the river system.

 Together they float an average of **60 percent** of Washington's wheat to export locations.



In 2017/18 the US exported **50 percent** of its wheat to nearly **60 countries**.

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



- ▶ Shuttle train facilities load **110 grain cars in 15 hours or less**—some can load an entire train shuttle in as fast as 8 hours. That's about four minutes per car!
- ▶ Washington has **four** grain shuttle train loading facilities, with another scheduled for construction in 2019.
- ▶ **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.

2017/18 US WHITE WHEAT TOP MARKETS


1 Philippines	1174 mmt	6 Yemen	263 mmt
2 Japan	829 mmt	7 Thailand	236 mmt
3 S Korea	806 mmt	8 Taiwan	144 mmt
4 Indonesia	599 mmt	9 Chile	132 mmt
5 China	307 mmt	10 Guatemala	132 mmt

60%
37%
3%


GRAIN TRAILER
910 bushel capacity
—155 mpg per ton*



CONTAINER
750 bushel capacity


RIVER BARGE
122,500 bushel capacity
—576 mpg per ton*


RAIL HOPPER CAR
3,500 bushel capacity
—413 mpg per ton*


100-CAR TRAIN
350,000 bushel capacity


FOUR-BARGE TOW
490,000 bushel capacity


BULK FREIGHTER
2,400,000 bushel capacity

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