



# GRAINS of TRUTH

## White Wheat

### Definitions

There are two types of white wheat – “hard” white and “soft” white. Soft White (SW) is grown in the Pacific Northwest, California, Idaho, Montana and Michigan.

Hard White (HW) is grown in California, Colorado, Idaho, Kansas, Montana, Nebraska, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

The difference between the two is the kind of starch granules found in the wheat. Hard starch granules are larger and jagged shaped so that they fit tightly together making the kernel strong and hard to crack or break. Soft starch granules are small and round and break apart easily. Hard and soft white wheat make different kinds of baked goods and SW usually has lower protein content than HW.

### History

HW is relatively new on the agricultural scene. In the late 1960s, researchers at Kansas State University (KSU) discovered that Kansas had a favorable growing environment for white wheat when compared with other countries around the world. Except for color and the flavor of whole wheat products, the differences between HW and Hard Red Winter (HRW) were found to be negligible with the only exception that early white wheat releases were susceptible to pre-harvest sprouting. It took breeding programs several years to overcome sprouting problems.

Since 1985, KSU breeding programs have worked steadily to develop HW varieties containing all the necessary traits with the required characteristics.

HW was added as a U.S. market class in 1990.

### Agronomics

White wheat is planted like red wheat, grows like red wheat, yields like red wheat and has the same intrinsic quality factors as red wheat, but the difference between red and white wheat is the color of the seed coat.

Because of dedicated efforts from public and private wheat breeders, new HW varieties promise strong disease resistance and sprout tolerance with higher yield and improved agronomic packages. Many of these new varieties, which have excellent end-use functionalities, have yields as good as or better than Hard Red Wheat (HRW) varieties.

### Availability

Whole-kernel white wheat, whole white wheat flour, bran, bulgur and other products are available. These products may be found in supermarkets, bulk bin commodity stores, health food stores, elevators, mills and via the internet. In the store it may be found in the baking section or the specialty food aisle.

There has been a strong demand for white wheat from major bakers since 2005, when the Dietary Guidelines for Americans first recommended half of all grain servings should be whole grains. The 2010 Dietary Guidelines make a similar recommendation, “make at least ½ your grains whole grains.”

### Use of White Wheat

HW can be used for the same products as HRW. Bakers like it because HW wheats are excellent for use in the bread-making industry. Because it has a naturally sweet flavor, bakers can use fewer sweeteners. International customers utilize it for at least two reasons: 1) higher extraction of white wheat flour while maintaining its bright white color; 2) its color stability for products such as Asian wet noodles. HW wheats are an excellent ingredient for all yeast breads, artisan breads, Asian noodles, tortillas, pizza crusts, breadsticks, flatbreads, quick breads and more.

SW is used mainly for bakery products other than bread. Examples include pastries, cakes, and cookies. It is also used for cereals, flat breads and crackers. Both white wheat classes make quality 100% whole wheat products.

### Demand

The goal is to produce what the domestic and export markets want. Users of white whole wheat flour include: large-scale bakers, artisan, “mom-and-pop” bakeries and home bakers.

Domestic bakeries continue to develop new white wheat-based products to meet growing demand. People who don't like whole wheat products (from traditional red wheat) usually accept whole white wheat because of its milder flavor, thus higher percentages of whole grain in blended products and/or more frequent servings are often consumed.

For more information on all things wheat foods, visit us at [wheatfoods.org](http://wheatfoods.org)



## Demand (con't)

The export demand is strong, but wheat farmers must produce more bushels, provide a consistent quality that meets end-user needs, and at an internationally competitive price.

Domestic and international millers receive greater yield of flour per bushel milled. (HW yields 1 to 3 percent more flour than red wheat and produces lighter colored products.) Therefore, more of the wheat kernel can be milled

## Nutritional Value

White wheat and red wheat are nutritionally equivalent. The levels of protein and other nutrients in all wheat's vary because of genetic varieties and growing conditions. The differences between red wheat and white wheat are no greater than those between various red wheats today. White wheat contains the same healthy levels of whole grain fiber that red wheat does, but does not have as strong a flavor or as dark a color. White wheat is actually golden in color, tastes sweeter, and has a milder flavor than its hard red wheat cousins.

## Wheat Berry Preparation

Rinse whole-wheat kernels before cooking, but do not wash before grinding or milling.

- Presoaking wheat kernels overnight, in the water it is to be cooked in, will cut cooking time in half. Proportions should be 3 cups hot water to every 1 cup of kernels.
- Cook kernels 20 minutes if presoaked; 45 minutes if not. One cup of kernels yields 2 ½ cups cooked kernels.
- A slow cooker or crock-pot works well to cook whole-wheat kernels. Set on low and cook overnight (about 8 hours), stirring once during the first hour of cooking. Use 2 cups of wheat per 4 cups of water.
- To save time and energy, cook a large amount and freeze the kernels in small portions. After cooking, drain the cooked kernels well and place ½ to 1-cup portions in freezer containers. Thaw kernels by running hot tap water over them in a colander.
- Once prepared, wheat berries can be eaten in many ways. As hot cereal with low fat milk, or added to ground meat/poultry as an extender or as a way to add fiber.

## Whole Wheat Muffins

- ½ cup margarine or butter
- ½ cup granulated sugar
- ½ cup light brown sugar
- 1 teaspoon baking soda
- 1 egg
- ¼ teaspoon vanilla
- 1 cup milk (1% or fat-free)
- 2 cups white whole wheat flour



Preheat oven to 400°F. Have ingredients at room temperature. Line a muffin tin using paper baking cups or use cooking spray to lightly coat the bottom of the muffin tin. With electric mixer, cream margarine, granulated sugar, brown sugar and baking soda together; scraping bowl with spatula.

In a small bowl, using a fork beat together egg and vanilla; add to creamed mixture. Beat until light and fluffy. Add milk to the creamed mixture. Gradually add whole wheat flour and lightly stir the ingredients together so dry ingredients are barely moistened. Over mixing will make the muffins tough and form tunnels.

Fill muffin tins 2/3 full and bake 15 to 17 minutes or until lightly brown and toothpick comes out clean when inserted. Remove from muffin tin and cool on wire rack. Makes 12 muffins.

Nutrition: One muffin provides approximately: 231 calories; 5 g protein; 34 g carbohydrates; 9 g fat (1 g saturated); 19 mg cholesterol; 3 g fiber; 14 mcg folate; 1 mg iron; 120 mg sodium.

Source: Kansas Wheat Commission and Farmer Direct Foods.

To learn more about white wheat, please visit these websites:  
[www.kswheat.com](http://www.kswheat.com); [www.uswheat.org](http://www.uswheat.org)  
[www.k-state.edu](http://www.k-state.edu); [www.farmerdirectfoods.com](http://www.farmerdirectfoods.com)