

Whole Grains Conference Dine-Around

Looking for dining ideas for Sunday or Monday?

The list below offers a selection recommended as good bets for finding whole grain options.

Eve Fremont: Just across Lake Union is one of Seattle's most sought after 'clean eating' outposts. One look at Eve's menu is all it takes to know they have succeeded in creating food 'that is good for the body and soul'. Their Hot Bowl, available for both lunch and dinner, makes a star appearance in every review. Just reading about the mix of ancient grains, seasonal vegetables and dandelion greens has our soul smiling already. Entrees \$10-\$28. 4.7 miles from hotel.

Eve Fremont

704 N. 34th St

Seattle, WA 98103

Tel: (206) 900-7186

Lunch: Mon-Fri 11:00 AM-3:00 PM

Brunch: Sat & Sun 10:00 AM-3:00 PM

Dinner: Mon-Sat 5:00 PM-10:00 PM

www.evefremont.com

Tallulah's: With their cheery and bright menu, Tallulah's offers a breezy neighborhood vibe with a global flair. Whether it be their Poke Bowl, served with brown rice, or their Pork Chop, accompanied by grilled peaches and corn succotash, there is something for everyone. Entrees \$16-\$24. 1.8 miles from hotel.

Tallulah's

550 19th Ave E

Seattle, WA 98112

Tel: (206) 860-0077

Brunch: Sat & Sun 9:00 AM-3:00 PM

Dinner: Mon-Sun at 4:00 PM

www.aneighborhoodcafe.com

Lark: Artisan and locally focused, it is no surprise that Lark features farro from local Bluebird Grain Farms in many of their innovative dishes. Their commitment to seasonal, local ingredients is obvious—visit their website to watch a video highlighting which producers Lark is using for their current seasonal menu. Entrees \$16-\$98. 1.8 miles from hotel.

Lark

952 E Seneca St

Seattle, WA 98122

Tel: (206) 323-5275

Dinner: Mon-Sun 5:00 PM-11:00 PM

www.larkseattle.com

Stoneburner: True to its name, Stoneburner—located in the Hotel Ballard—features a beautiful stone hearth oven where the local bounty of the Pacific Northwest is transformed into hearty, playful meals. Keep an eye out for Bluebird Farms' farro, which makes a regular appearance on this Mediterranean inspired menu. Entrees \$12-\$31. 5.5 miles from hotel.

Stoneburner

5214 Ballard Ave NW

Seattle, WA 98107

Tel: (206) 695-2051

Brunch: Sat & Sun 10:00 AM-3:00 PM

Dinner: Sun-Thurs 5:00 PM-10:00 PM

Fri & Sat 5:00 PM-11:00 PM

www.stoneburnerseattle.com

Poppy: Intoxicating herbs and spices infuse James-Beard-Award-winning-chef Jerry Traunfeld's globally-inspired dishes at Poppy. Their daily thali often features whole grains in a number of its 10 'harmonious dishes'. Entrees \$22-\$33. 1.7 miles from hotel.

Poppy

622 Broadway Ave E
Seattle, WA 98122
Tel: (206) 324-1108
Dinner: Sun–Thurs 5:00 PM–9:30 PM
Fri & Sat 5:00 PM–10:30 PM
www.poppyseattle.com

Altstadt: It's wonderful to see Altstadt sticking close to their roots, using rye as casually as one would hope a bierhalle and brathaus would. Amidst the sauerkraut, spaetzle and wurst, look for Tall Grass Bakery's whole grain rye bread accompanying many plates, and try the Altsalt–a barley and einkorn grain salad. Entrees \$12-\$20. 0.7 miles from hotel.

Altstadt

209 1st Ave S,
Seattle, WA 98104
Tel: (206) 602-6442
Brunch: Sat & Sun 11:00 AM–3:00 PM
Lunch/Dinner: Sun & Mon 11:00 AM–10PM
Tues–Thurs 11:00 AM–Midnight
Fri & Sat 11:00 AM–2:00 AM
www.altstadtseattle.com

Sweetgrass: This hip urban cafe creatively weaves whole grain ingredients into tantalizing offerings. Whether it's amaranth grits, coconut brown rice, or a sprouted quinoa Buddha Bowl, there are no shortage of choices to fortify you for any adventures your day may hold. Feel free to splurge on a baked good—they're whole grain, too! 0.7 miles from hotel.

Sweetgrass

1923 7th Avenue
Seattle, WA 98101
Tel: (206) 602-6656
Hours: Mon-Fri 7:00 AM–8:00 PM
Sat 8:00 AM–3:00 PM
www.sweetgrassfoodco.com

Westward Seattle: With ample space to tie up your kayak, if that's your chosen means of transportation, this award-winning restaurant takes advantage of the amazing seafood Seattle's shores have to offer. From grain salads accompanying local fish, to whole wheat pasta dishes, it seems they know how to take advantage of the robust flavor of whole grains as well. Entrees \$23-\$37. 5 miles from hotel.

Westward Seattle

2501 N Northlake Way
Seattle, WA 98103
Tel: (206) 552-8215
Brunch: Sat & Sun 10:00 AM–3:00 PM
Dinner: Mon 5:00 PM–9:00 PM
Tues & Wed 5:00 PM–9:30 PM
Thurs & Fri 5:00 PM–10:00 PM
Sat 10:00 AM–10:00 PM
Sun 10:00 AM–9:00 PM
www.westwardseattle.com

SELLING MORE WHOLE GRAIN

WHY THE WHOLE GRAIN STAMP IS ESSENTIAL



4 OUT OF 5 people **TRUST** the **WHOLE GRAIN STAMP** to **ACCURATELY** state **WHOLE GRAIN** content



UNDERSTANDING THE MARKET

TOP 3 BARRIERS to **WHOLE GRAIN** consumption



NAVIGATING THE GLUTEN FREE MARKET

1 IN 2 PEOPLE have no idea that **GLUTEN** is a **NATURAL PROTEIN** found in wheat, barley, and rye, and that it helps bread rise.



of people eat **GLUTEN**, although **24%** have "cut back"



ONLY 1 IN 5 of those who avoid gluten has a **MEDICALLY DIAGNOSED PROBLEM** with gluten.



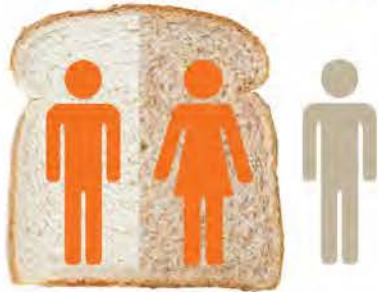
Oldways 2018 Whole Grains Consumer Insights Survey
 Based on an August 2018 national survey of 1,500 adults.
 © 2018 Oldways



WHOLE GRAIN MOMENTUM

WHOLE GRAINS ARE THE NEW NORM

2 OUT OF 3 people make at least **HALF** their grains **WHOLE**



4 OUT OF 5 of those who **NEARLY ALWAYS CHOOSE WHOLE GRAIN FOODS** have



WHICH WHOLE GRAINS TOP THE CHARTS?

WHOLE GRAIN BREAD

People eat whole grain bread **MORE OFTEN** than refined



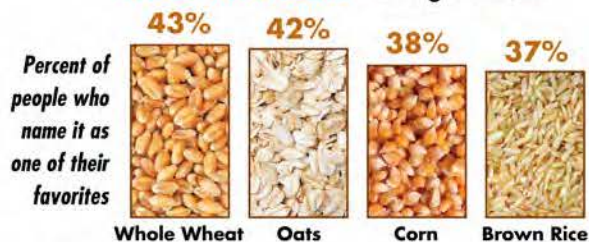
WHOLE GRAIN CEREAL

People eat whole grain cereal **MORE OFTEN** than refined



WHOLE GRAIN FAVORITES

Despite the rising popularity of "ancient grains," like quinoa, teff and farro, the **MOST POPULAR** whole grains are

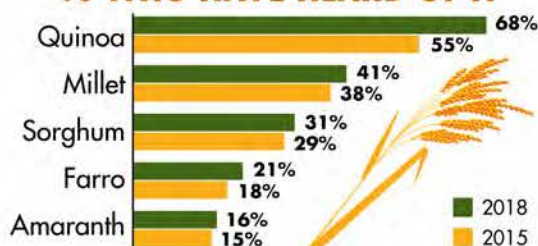


WHY ARE WHOLE GRAINS SO POPULAR?



ANCIENT GRAINS ARE ON THE RISE!

% WHO HAVE HEARD OF IT



MOST POPULAR

Most popular **ANCIENT GRAINS** among those who have tried them:



Oldways 2018 Whole Grains Consumer Insights Survey

Based on an August 2018 national survey of 1,500 adults.

© 2018 Oldways



WHOLE GRAINS: A SUSTAINABLE FOOD

WHOLE GRAINS PROVIDE MORE FOOD, LESS WASTE



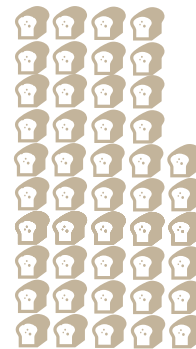
ONE BUSHEL OF WHEAT

=



60 (24 OZ) LOAVES OF WHOLE GRAIN BREAD...

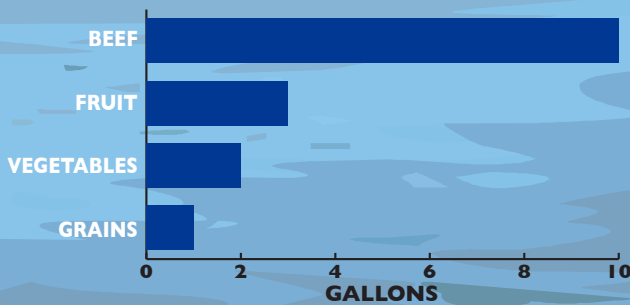
BUT ONLY



42 (24 OZ) LOAVES OF WHITE BREAD

WHOLE GRAINS SAVE WATER

WATER NEEDED TO PRODUCE ONE CALORIE OF FOOD



Many of the driest regions in the world depend on hardy grain crops when water is limited.

ANCIENT GRAINS ARE MORE TOLERANT OF EXTREME WEATHER. FOR EXAMPLE:

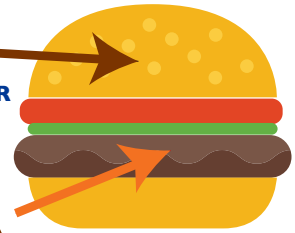
- **MILLET** has one of the lowest water requirements of any grain crop.
- **TEFF** thrives in drought and also grows well in water-logged soils.



CREATING THE BUN
6.4 GALLONS OF WATER

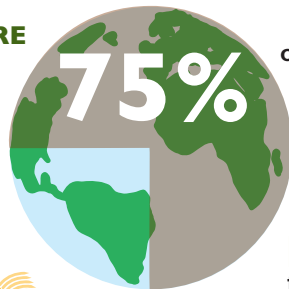


CREATING THE BURGER
197 GALLONS OF WATER



WHOLE GRAINS SUPPORT BETTER LAND USE & HEALTHY SOIL

EATING MORE GRAIN-BASED MEALS COULD FEED MORE PEOPLE WITH LESS LAND.



of global agricultural land is used for animal products which only supply **17%** of our food (in calories).



IMPROVE SOIL FERTILITY



Rotating crops with whole grains like barley, oats, rye, and triticale in the off-season can help protect against soil erosion, and also deliver nutrients back to the soil.

WHOLEGRAINCOUNCIL.ORG

FIRST THINGS FIRST: WHAT IS GLUTEN?

Humans have been eating gluten for eons. Gluten-forming proteins are found naturally in wheat (including ancient wheats like einkorn, farro, Kamut®, or spelt), barley, and rye. They're what help dough stretch and bread rise.

VERY FEW PEOPLE NEED A GLUTEN-FREE OR WHEAT-FREE DIET FOR MEDICAL REASONS

Celiac disease, which affects an estimated 1-2% of the US population, is a medically diagnosable autoimmune disease that requires strict lifetime adherence to a gluten-free diet. Another 0.2-0.4% of Americans are allergic to wheat (but not barley or rye).

WHAT ABOUT GLUTEN-SENSITIVITY?

Many patients who respond well to a gluten-free diet, but don't test positive for celiac disease, are thought to have "non-celiac gluten sensitivity." But science is casting doubts on the usefulness of gluten-free diets for people like these. Researchers analyzed data from 10 studies, in which 1,312 adults with "non-celiac gluten sensitivity" were tested for their reaction to gluten.¹ In these 10 double-blind, placebo-controlled gluten challenges (where neither the researchers nor the participants knew if they were getting a gluten-free diet or the gluten-containing control / placebo), only 16% of the patients showed gluten-specific symptoms when exposed to the gluten-containing diet, and 40% of them had similar or increased symptoms when on the gluten-free control diet. In other words, gluten is probably not the culprit in most people who think they are gluten-sensitive. Blaming gluten may keep other serious problems from being addressed.

THE DOWNSIDES OF UNPRESCRIBED GLUTEN-FREE DIETS

- In a study that followed more than 100,000 US adults without celiac disease² for more than 25 years, researchers found that eating gluten was not related to heart disease risk. In fact, the researchers cautioned that avoiding gluten may result in eating fewer whole grain foods, which may in turn increase the risk for heart disease.
- Harvard scientists³ found that people eating less gluten had a higher risk for type 2 diabetes. In fact, those in the top 20% of gluten intake were 13% less likely to get type 2 diabetes over the 30-year study period, even after adjusting for family history, exercise habits, weight, and calorie intake. Why? This may be because gluten-free foods are often made with substitutes like potato starch and tapioca that can make blood sugar spike.
- Gluten-free versions of foods have been shown to have more calories, sodium, and sugar than their regular gluten-containing counterparts, and often carry a higher price tag too.⁴ Real, whole grain foods are a better choice.
- Self treatment with a gluten-free diet messes up the blood test for celiac disease. Always speak with your doctor before making dietary changes.

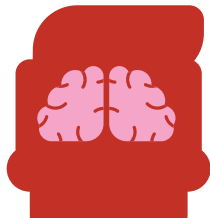
GLUTEN-FREE GRAINS

Whether you follow a gluten-free diet or not, you might be surprised to learn that most whole grains are naturally gluten-free:

- Amaranth
- Buckwheat
- Corn
- Millet
- Oats*
- Quinoa
- Rice
- Sorghum
- Teff
- Wild Rice

**Oats are naturally gluten-free, but are often cross-contaminated with gluten during growing or processing. Check the label to be sure.*

REDUCE CANCER RISK WITH WHOLE GRAINS



Fill most of your plate with...

VEGETABLES

FRUITS



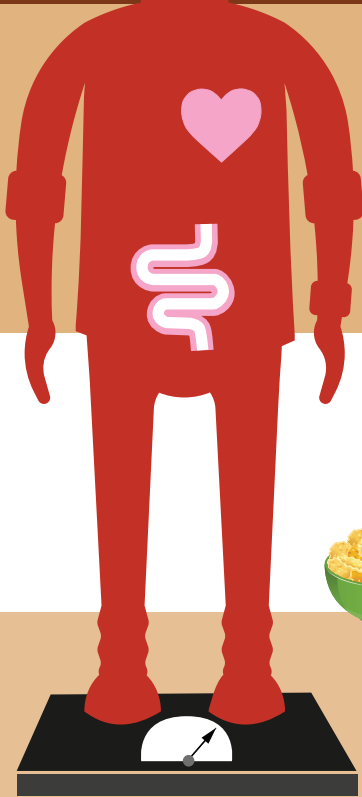
WHOLE GRAINS

to reduce cancer risk.

WHOLE GRAINS = REDUCED RISK

Whole grains provide vitamins, phytochemicals, and other **CANCER-PROTECTIVE COMPOUNDS.**

They also may lower cancer risk by **REDUCING CHRONIC INFLAMMATION**, preventing insulin resistance, and speeding up how long potential carcinogens stay in your gut.



90 grams
(about 3 servings)

of whole grain foods per day **REDUCES THE RISK OF COLORECTAL CANCER** by

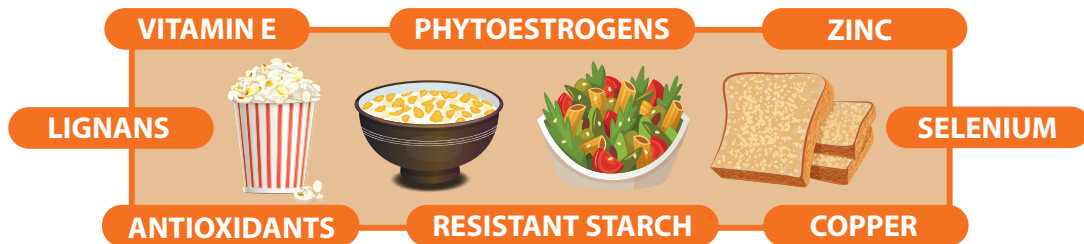
17%



Eating a mostly plant-based diet rich in vegetables, fruits, whole grains and beans can help you reach – and keep – **A HEALTHY WEIGHT**, which, in turn, decreases your cancer risk.

WHOLE GRAINS: MORE THAN JUST FIBER

There is strong evidence that foods containing fiber decrease cancer risk... but **WHOLE GRAINS** offer much more than just **FIBER**:



- Source: AICR/WCRF. Diet, Nutrition, Physical Activity and Colorectal Cancer. 2017



For more information, visit
www.aicr.org
www.wholegrainscouncil.org



HOW TO USE WHOLE GRAINS TO IMPROVE YOUR RECIPES

Elevate Your Baked Goods with Different Whole Grain Flours

All-purpose flour is a bland blank slate.

Add **MORE FLAVOR** to your baked goods by **SWAPPING** in different whole grain flours.

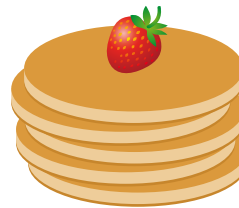
| WHOLE GRAIN FLOUR | For Hints of | ADD |
|-------------------|--------------|---|
| | cocoa | teff flour |
| | sweetness | teff flour, sorghum flour, whole cornmeal, sprouted whole wheat flour, freshly milled whole wheat flour |
| | butterscotch | oat flour |
| | caramel | brown rice flour |

“When I switched to whole grains, the greatest revelation was a world of flavor I had been stubbornly resisting for years.”

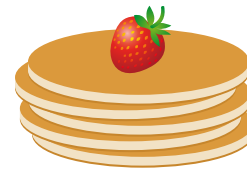
~ Alice Waters
My Pantry

Prone To Overmixing? Not A Problem with Whole Grains!

Mixing develops the elastic gluten to help baked goods rise. But in foods leavened with baking soda or baking powder, overmixing white flour makes this “elastic” so thick that air bubbles can’t expand. With whole wheat flour, bran cuts the gluten strands, allowing baked goods to expand even if overmixed.



“overmixed” pancakes made with whole wheat flour **remain fluffy**



“overmixed” pancakes made with all-purpose white flour **get chewy**

Whole Grains Allow for Delicious Kitchen Shortcuts

“... the most finicky techniques of classic baking can be entirely ignored with these flours:

- Ingredients usually do not have to be at room temperature.
- Flour need not ever be added to batters in three parts alternating with two parts of liquid.”

Alice Medrich, *Flavor Flours*



According to America’s Test Kitchen, by making fried rice with **BROWN RICE**, you can:

- **CUT THE OIL IN HALF** (since brown rice doesn’t clump together as much)
- use the pasta method of **QUICKER COOKING**
- and there’s **NO NEED TO WAIT** for the rice to chill and harden (since brown rice is drier).



Whole Grain Pasta Stands Up to Richer Sauces



PASTA SALAD TIP:
Avoid soggy pasta salad by using whole grain pasta

Just as different wines pair best with certain dishes, certain sauces and toppings go best with the nuttier, fuller taste of whole grain pasta. These toppings work especially well:

- Spicy peppers
- Aromatics: garlic, onion, leeks
- Strong or salty cheeses (Pecorino, Parmigiano-Reggiano, Feta, etc.)
- Mushrooms, especially morels, porcini or chanterelle
- Nuts
- Roasted, sweet vegetables, like winter squash, carrots, beets
- Garbanzo beans and other beans
- Assertive vegetables, like kale, cauliflower, or broccoli – accented with a little bacon or pancetta



WHOLEGRAINSCOUNCIL.ORG



Multiple Criteria for a Sprouted Whole Grain

Oldways Whole Grains Council
Sprouted Grains Working Group Phase I Summary Report
October 2017

Background: In mid-2015, the Oldways Whole Grains Council launched a project to explore standards and definitions for sprouted grains. We planned to reach out to companies already sprouting grains and gather information on all the different processes and standards already existing within these companies, to learn about common approaches that might evolve into standards.

We started this project for educational purposes. We wanted to provide solid information to three groups:

- **Millers and sprouters**, so they could be sure they were following conventional methods for safe sprouting.
- **Manufacturers**, to help them write clear specs for purchasing sprouted grains and better incorporate sprouted grains into their products.
- **Consumers**, so they could trust the meaning of “sprouted” on a package.

Over a period of two years, we worked with 47 individuals from 28 different companies, through a series of conference calls, emails and individual interviews. While we gathered a tremendous amount of useful information, the useful answers we found also led to additional questions, since the intentional sprouting of grains is a fairly new endeavor for nearly all Sprouted Grains Working Group (SGWG) participants.

The following pages sum up the information gathered to date. It must be stressed that defining standards for sprouted grains is still a work in progress. Although we’re concluding Phase I of this project with the dissemination of this summary, the Oldways Whole Grains Council expects to continue informally gathering information on some of the additional questions we discovered; we hope to provide an updated status report in the future, to support the growing category of sprouted grains.

This summary report includes:

- A. The foundation: First, establish and document viability of the grain
- B. Multiple criteria for documenting that a grain has indeed sprouted
 1. Four principle methods for documenting the presence of a sprouted grain.
 2. Notes on each of the four methods.
- C. Future possibilities and considerations for additional methods of documenting sprouted grains

First: Establish Viability, Then Use Intentional Processes

Grain kernels have, in the past, fallen into two broad categories: those destined for our food supply and those destined to be planted as seeds.

Viability—the ability of the grain to grow into a new plant—is of course essential for seeds. In our food supply, however, viability has generally been considered unimportant or even detrimental, and grains that will be ground into flour or eaten as grain side dishes are often subjected to heat treatment. While this treatment quickly brings the grains to a uniform moisture content—much to be desired for standard manufacturing and milling processes— it can also destroy the viability of the kernel. With the growing popularity of sprouted grains, a third category arises: grains destined for our food supply, but in sprouted form.



All documentation of sprouted grains should therefore begin with verification that the grain is sound and viable. One SGWG member estimates that only about 60% of grains on the market are capable of germination; many have been rendered un-viable by “aggressive” grain driers bringing down high moisture levels or by heat treatment to stabilize unsaturated lipids (common with oats). Although these grains are suitable for grinding into flour, or for other ingredient purposes, they can’t be sprouted. Older seeds, or seeds that have already seen field sprouting also cannot be intentionally sprouted in a controlled environment.

Genetics may matter too. Many varieties of grain have been bred to resist sprouting in the field, and these varieties may not be as well suited to intentional sprouting procedures as grains that have retained their natural, optimal sprouting capacity.

Possible Parameters. Some SGWG members suggested possible parameters for defining viability. One said, “Sound seeds are to be defined as certified pathogen-free seeds possessing a minimum embryo viability of ninety-five percent (95%) based on standardized official methods and preferably by the Tetrazolium (TZ) Index or equivalent bio-chemical test.” A second suggested that percents may need to vary for different grains: “A good germination rate for hard red spring wheat is 95% while good germination in buckwheat is 85%.” A third suggested germination rates of 85-90%.

Testing for viability needn’t be high-tech or expensive; the process can be as simple as putting the seeds between wet paper towels or blotting paper and soaking for a prescribed period to verify that all or virtually all of that batch is capable of sprouting.

Since buying “dead” (un-viable) seed is generally much cheaper, it’s important to prove viability. Otherwise companies could compete unfairly by buying dead seed, soaking it in water, drying it out and calling it sprouted.

Another key factor for sprouted grains is that **they must have been sprouted intentionally, through a controlled process**; grains that have accidentally field-sprouted should not be part of the food supply, as their safety cannot be documented.

Multiple Criteria for a Sprouted Whole Grain

When grains begin to germinate, they undergo numerous biochemical reactions that cause changes (many beneficial) in the nutritional composition of the grain. When these changes have taken place—**using viable, intact grain as described above and an intentional process**—the grain can be called a “sprouted grain.”

Sprouted grains are now growing in popularity for three main reasons:

- a. They are thought to enhance the established health benefits of whole grains, with increased bio-availability of some nutrients and easier digestion for some people.
- b. They offer additional flavor and texture options to manufacturers and consumers.
- c. They can (especially for baking) offer manufacturing advantages over traditional whole grains, such as better dough volume, less need for added gluten, shorter proofing time, etc.

Ideally, the nutritional changes would be measured, to stop the sprouting process at the peak of this nutritional transformation and to document the value-added proposition of sprouted grains. These changes, however, are elusive and difficult to measure, and some changes peak earlier than others, making it impossible to pinpoint optimum overall nutrition.



So, for now, proxy measurements are generally used. While it may be difficult to measure most nutritional changes directly, these changes happen at the same time as other changes that may serve as markers/proxies for the desired nutritional changes. Below are some possible ways to document the presence of a sprouted grain.

Note: With all testing methods, it's important to do both before and after testing to document the changes that accompany sprouting. Such testing should be done on a dry- matter basis (or results extrapolated to control for any moisture changes). Ideally, tests can be identified that can be done inline during production, with high consistency and low costs.

Four Ways to Document a Sprouted Grain

A grain shall be considered sprouted if it meets one or more of these criteria:

1. Visible Sprout

Sprouting activity is often demonstrated by the presence of a visible chit/rootlet or (usually later) a visible acrospire/sprout. If sprouting is visible, a grain shall be considered sprouted.

However, it is common for grains to have undergone changes consistent with sprouting/ germination without showing a visible sprout for reasons including (but not necessarily limited to):

- Many beneficial changes take place before a visible sprout is evident.
- Seeds may sprout at different rates in the same batch.
- Seeing a sprout on smaller seeds like amaranth may be difficult.
- The sprout may have grown but then fallen off during drying.

Therefore, while a visible chit or acrospire definitely confirms sprouting, the lack of a visible chit or acrospire should not *disqualify* a grain as sprouted if sprouting can be documented in other ways.

2. Alpha-Amylase Increase

One enzyme produced early in the germination process is alpha-amylase, which catalyzes the conversion of starch into sugars to nourish the growing plant embryo. Since the level of alpha-amylase in sound grain is very low compared to that in germinated grain, alpha-amylase levels in grain can be a ready marker of germination.

Two methods are widely used to indirectly estimate the amount of alpha-amylase in grains, by measuring the viscosity of the dried and ground grain in water. For both these methods, it is essential to compare values for the original grain to values for the sprouted grain, to ensure that unintentional field sprouting has not taken place.

a. Falling Number (FN) Test... for gluten grains, especially wheat

The grain's Falling Number has decreased by a specified percentage when compared to the Falling Number of the grain before sprouting.

b. Rapid Visco Analyzer (RVA) Test... for all grains, including gluten-free

While FN machines are largely "hard-wired" for wheat (but may work for barley and rye also), RVA machines allow for different parameters to be set to assess the viscosity of different grains. As with FN testing, RVA testing will measure the change between unsprouted grain and the grain after sprouting, to document that specific parameters for that grain have been met.

3. Amino Acid Increase (GABA in rice or other grains)

As grains germinate, protein changes take place as well as starch changes. When rice has sprouted, for instance, GABA (gamma amino butyric acid) levels will have increased by 300% or more. Other grains, including wheat, also see an increase in GABA with sprouting. It may also be possible to measure overall total free amino acids, which increase in many sprouted grains.



4. Phytate Breakdown and/or Phytase Increase

The enzyme phytase catalyzes a breakdown and reduction of phytate in many grains as they undergo the germination process. A specified percent reduction of phytate can indicate a sprouted grain.

Notes on Multiple Criteria for Sprouted Grains

The information below documents the specific experiences of SGWG members and expands on additional issues related to each of the criteria described above.

Overall Issues

Which criterion makes the most sense may be heavily context-dependent according to:

- Which grain is being sprouted (including which cultivar of that grain, etc.)
- What the end use of the sprouted grain will be. Different testing and standards can be important for sprouted flour for baked goods, for instance: once a visible sprout appears, some sprouted grains may no longer work well for baking bread. Other criteria may be important for functionality in extruded products or for sprouted intact grains used as inclusions in products or eaten as side dishes.

Visible Sprout

- Defining visible.** “Visible” will need to be further defined. Visible to the naked eye? With magnification? One SGWG member says “Magnification depends on the seed. Only a few are so small that you need magnification. We use our iPhones with an add-on \$20 40x magnifier.”
- What percent must be visible?** What percent of a batch needs to show visible evidence of sprouting to consider the sprouting process complete? Will this vary by grain? One person suggests a visible sprout on >80% of kernels. Another cites 60% sprouting as typical of quinoa, for instance. Another suggests that sorting seeds by size before sprouting is important, as size can determine germination time and only similarly-sized seeds will sprout at the same time.
- Can sprout be longer than seed length?** AACCI in February 2008 stated that sprout growth of sprouted grains should not exceed kernel length. (Longer sprouts would result in classification as a plant/vegetable instead of a grain, in USDA’s eyes.) SGWG members in general cautioned against a maximum length limit, as some seeds (quinoa, millet and amaranth were cited) quickly grow a very long sprout. At some point, however, a sprouted grain crosses the line from grain to new plant, and nutritional values would diminish—another topic for future documentation.

Alpha-Amylase: Falling Number (FN)

- What is the desired decrease in falling number?** Experience of SGWG member companies shows that for wheat the desired percentage change to document sprouting varies by type of wheat.
Company #1: from a low of 25% (for soft wheats with a low initial FN of 275) to a more typical 50-60% (for wheats with an initial FN of 350-500).
Company #2: 35-60% decrease depending on type of wheat.
Company #3: minimum of 50%.
- For which grains can Falling Number testing be used to document sprouting?** FN is most often used for wheat, as the [device] is basically calibrated / hard-wired for wheat. The manufacturer of a leading instrument used to measure FN (Perten), says that “anyone handling wheat, barley, rye or sorghum” will benefit from the FN system.
- How is Falling Number measured/tested?** FN instruments have long been used to measure unintentional sprout damage. The instruments are readily available, and tests can be done quickly and inexpensively in-house (as shown in this short YouTube or this longer USDA one with more explanation), so there’s a high level of familiarity with and confidence in this test.



Alpha-Amylase: Rapid Viscose Analyzer (RVA)

- a. **What is the desired change in RVA?** Only one SGWG member reports currently using RVA to document sprouting; the company has purchased an RVA machine and is currently exploring protocols and establishing ranges for different grains; they cannot yet suggest any standards or benchmarks. Others see RVA as valuable but too costly and with too many unknowns. However, because most companies trust the FN test and see RVA as the comparable approach for gluten-free grains, there is heavy interest in this option.

Amino Acid Increase / GABA

- a. **Is GABA only found in rice?** Though GABA is most associated with rice (“GABA rice” is widely sold in Asia), this amino acid is also found in other grains. Various research studies document that GABA and/or free amino acids increase not only in rice but in other grains including sorghum.
- b. **How much does GABA increase with sprouting?** One member reports a 300-400% increase in GABA as rice germinates; this increase takes place before a sprout is visible. She also reports a 500-600% increase in GABA in hard white wheat that has been sprouted. Another member reports GABA increases of up to 700-900% in wheat, though he cautions that GABA amounts—though larger than other free amino acids—are small to begin with, so large percentage increases may not indicate large absolute increases. Results even on the same batch are variable; altitude may also play a role.
- c. **How is GABA increase measured/tested?** Liquid chromatography can be used, using the Medallion ion-exchange chromatography AOEC method, for about \$260-\$350 per test. In Japan, a machine called a **GABAlyzer** is available.

Phytate Breakdown and/or Phytase Increase

- a. **How much does phytate decrease?** The amount of phytate (phytic acid) in different grains (and legumes) differs widely, and the decrease during sprouting also ranges widely according to the grain, the soaking medium, and time elapsed.

The one SGWG member currently using this approach reports a 49%-60% decrease in phytate for oats. Research shared by another member [Omary et al. (2012) *Cer Chem*, 89(1) 1-14] also suggests that phytate decrease in sprouted grains and varieties thereof may vary widely: Rice ~15%, Millet ~18%-80%, Sorghum ~35%-85%, and Corn ~72%. Also see this research on rice, corn, millet, sorghum, and wheat. Another member who had tried this approach to document sprouting said that “phytic acid is inconsistent. Sometimes you see it, sometimes you don’t. It’s really frustrating.”

- b. **What do tests cost?** One third-party lab charges just under US \$100, making the cost about \$200, since “before” and “after” tests must be performed to gauge the change.

Future Possibilities

The methods outlined above are actual approaches being used by companies already sprouting grains. A few SGWG members also mentioned other approaches that might be feasible in the future:

Enzyme Testing for Alpha Amylase. Rather than use FN or RVA instruments to measure starch viscosity changes, one member looked into direct testing of alpha amylase. This company reported, “It’s not feasible in production. You can do it in-house but it’s really involved and takes too long to get results. It’s a super, super sensitive test; you have to be unbelievably accurate or the results are really skewed.”

Other Enzyme Tests. Another member suggested that testing for a variety of enzymes (such as lipases, lipoxygenases, arabinosylinases, proteases) could be possible; this company mentioned Megazyme in Europe as a source for such testing. “Some of this is not easy chemistry; it’s unlikely that suppliers



would do the wet chemistry required to do these tests. It's not like sticking a dipstick in and then checking it; there's no rapid assay.")

Additional Specific Biomarkers. One member found that a particular antioxidant in oats “phenomenally increases” upon sprouting. There may be other components—most likely specific to each grain—that can be used as reliable measures of sprouting.

Protein Tests. One member reported that “protein solubility is a pretty easy and cheap test that can be done on the spot with a combustion analyzer, which a lot of companies already have.” Apparently, this approach is often used in the brewing industry.

Another company suggested testing for Protein Digestibility Corrected Amino Acid Score (PDCAAS) since this would document changes in the human body's ability to digest the grain.

Multi-criteria “Index of Sprouting.” Two SGWG member companies suggested using “a combination of methods that capture the starch-degrading enzymes and protein-lipid changing enzymes” with a specific suggestion for an overall Index of Sprouting that would include:

- Protein Index (PI) measuring protein hydrolyses
- Starch Index (SI) measuring starch hydrolyses
- Micronutrient Index (MNI) measuring vitamins, etc.

Under this proposed system, grains would be given a combined score of all three indices—PI x SI x MNI—and characterized at three levels, perhaps as “minimally sprouted,” “intermediate sprouted,” and “optimally sprouted.” This approach needs to be fleshed out with more information about which tests would be used for each of the three components.

Neither company is actually using this approach at this time.

A Comment on Methods vs. Markers / Protocols vs. Policies

Time, temperature, and moisture level are the three factors that contribute to intentional sprouting of grains proven to be viable. While these factors alone cannot reliably document that a sprouted grain has been produced, there was widespread agreement that sprouting cannot occur without these factors.

While almost all members of the SGWG cautioned against using moisture level alone as proof of sprouting, these three factors—time, temperature, and moisture—can potentially be used to supplement testing methods such as those above. For example, if a company relies on RVA testing to document sprouting, it may find that a certain combination of time, temperature and moisture reliably lead to the same RVA results over and over. The company could then use these methods with confidence, doing only occasional RVA testing to confirm the ongoing validity of its approach.

The Oldways Whole Grains Council would like to thank all members of the Sprouted Grains Working Group for freely and generously contributing their companies' experience to this report. Their willingness to share information for the good of all—even though many of these companies compete with one another in the marketplace—is greatly appreciated.

If you work with a company sprouting grains or making sprouted grains products, and would like to participate in future work of the Sprouted Grains Working Group, please contact Kelly Touns, Director of Nutrition for Oldways and the Oldways Whole Grains Council, at 617-896-4884 or Kelly@oldwayspt.org.

A to Z Grains in Foodservice

AMARANTH

Cook 1 cup dry grain with: 2 cups liquid (expands to 2½ cups cooked grain)

Cook Time: Bring to boil, then simmer 15-20 minutes

Best Uses: Porridge or polenta style recipes. Great thickener for stews. Can also be popped like popcorn. Tiny sized grains almost burst between your teeth. Not well suited for grain salads or pilafs.

Flavor Profile: Peppery taste, with a pleasantly sweet, grassy aroma. Pairs well with squash, corn, sesame, cinnamon, vanilla, and chocolate.

Gluten-free? Yes

History: Technically a pseudo-grain, amaranth is a staple of the Aztecs, with a long history in Mexican & Peruvian cuisine (later becoming popular in Nepal, India, and other countries). It's typically enjoyed as breakfast porridge throughout Latin America and Southeast Asia, but in Mexico, it's also served popped with honey as a sweet snack called *allegria*..

Nutrition in 1 serving (¼ cup uncooked): 180 calories, 3g fiber, 7g protein. Excellent source of magnesium, manganese & phosphorus. Good source of iron, copper, selenium, and Vitamin B6.

Recipe Ideas:

- ❖ Orange Scented Amaranth Porridge with Apricots and Pine Nuts (Maria Speck, *Simply Ancient Grains*)
- ❖ Amaranth Muesli with Toasted Seeds (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Vanilla Amaranth with Peach Compote (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Spicy Beef Chili with Amaranth and Lime (Maria Speck, *Simply Ancient Grains*)
- ❖ Amaranth Polenta with Wild Mushrooms (Lorna Sass, *Whole Grains: Every Day, Every Way*)
- ❖ Pea and Goat Cheese Amaranth Risotto (Jodi Moreno, *Grains as Mains*)
- ❖ Popped Amaranth and Sesame Candies (Ann Taylor Pittman, *Everyday Whole Grains*)

BARLEY (LOOK FOR "WHOLE GRAIN," "HULLED," OR "DEHULLED,")

Cook 1 cup dry grain with: 3 cups liquid (expands to 3½ cups cooked grain)

Cook Time: Bring to boil, then simmer 45-60 minutes (some brands recommend an overnight soak)

Best Uses: Pleasantly firm chew makes it ideal for grain salads and pilafs. Great substitute for rice, especially in curries, stir fries, and risottos. (Note that pearled barley is not whole grain.)

Flavor Profile: Rich flavor with a mild sweetness. Pairs well with mushrooms, root vegetables, warm spices, and fall flavors (like apple).

Gluten-free? No

History: One of the oldest grains cultivated in the Fertile Crescent, barley (often cooked as a porridge or baked into a crude bread) was also one of the first grains eaten in the ancient cuisines of China and Egypt, and was an important source of nutrition during Greek and Roman times.

Nutrition in 1 serving (¼ cup uncooked): 160 calories, 8g fiber (more than any other whole grain!), 6g protein. Excellent source of manganese, selenium, and thiamin. Good source of magnesium, phosphorus, copper, and niacin.

Recipe Ideas:

- ❖ Barley and Wild Rice Dressing with Fennel, Apples, and Marsala (Maria Speck, *Simply Ancient Grains*)
- ❖ BBQ Baked Barley (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ French Onion Soup with Barley (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Greek Inspired Fresh Artichokes with Barley and Tomatoes (Maria Speck, *Simply Ancient Grains*)
- ❖ Pecan and Barley Burgers with Peach Ketchup (Robin Asbell, *The Whole Grain Promise*)
- ❖ Crystalized Ginger and Barley Tea Bread (Robin Asbell, *The New Whole Grains Cookbook*)

BUCKWHEAT

Cook 1 cup dry grain with: 2 cups liquid (expands to 4 cups cooked grain)

Cook Time: Bring to boil, then simmer 20 minutes

Best Uses: To keep the grains from becoming too creamy, buckwheat is often coated with an egg (or other fat) before cooking. These pyramidal shaped grains work well in casseroles, and breakfast porridges. Buckwheat flour is quite versatile, adding richness to soba noodles, pancakes, and pastries.

Flavor Profile: Robust and earthy. Pairs well with dried fruit, dark spices, beets, walnuts, and hazelnuts. Untoasted (raw) buckwheat groats have a much milder flavor than toasted buckwheat (kasha).

Gluten-free? Yes

History: Technically a pseudo-grain (it is not even related to wheat), buckwheat has a strong history in Asian and Eastern European cuisine because it can grow in cold climates. It is the grain of choice in traditional dishes around the globe, including French crepes, Russian blini, Japanese soba noodles, and Jewish kasha. Buckwheat is also a popular cover crop, restoring the soil between seasons of farming.

Nutrition in 1 serving (¼ cup uncooked): 140 calories, 4g fiber, 5g protein. Excellent source of magnesium, copper, and manganese. Good source of phosphorus, riboflavin, and niacin.

Recipe Ideas:

- ❖ Chocolate Buckwheat Waffles with Juicy Berries (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Cheesy Buckwheat with Kale and Mushrooms (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Savory Kasha with Parsnips (Robin Asbell, *The Whole Grain Promise*)
- ❖ Beet and Buckwheat Borscht with Parsley-Yogurt Garnish (Robin Asbell, *The Whole Grain Promise*)
- ❖ Thai Buckwheat Larb (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Buckwheat Gingerbread (Alice Medrich, *Flavor Flours*)
- ❖ Buckwheat Butter Cookies (Claire Ptak, *The Violet Bakery Cookbook*)

BULGUR WHEAT

Cook 1 cup dry grain with: 2 cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 10-12 minutes (fine bulgur reconstitutes just by soaking)

Best Uses: The fluffy, chewy texture makes it ideal for grain salads, sides, and pilafs. Great for adding substance to light dishes. It also is delicious served warm as a creamy breakfast porridge.

Flavor Profile: Nutty, wheat flavor. Pairs well with parsley, tomatoes, cinnamon, and most fresh produce.

Gluten-free? No

History: Bulgur is wheat that's been pre-cooked then cracked into smaller pieces (hence, the quick cooking time). In fact, some call it "ancient fast food." Bulgur wheat has a rich history in Eastern Mediterranean cuisine, dating back to Egypt and the Ottoman Empire.

Nutrition in 1 serving (¼ cup uncooked): 120 calories, 4g fiber, 4g protein. Excellent source of manganese. Good source of magnesium, phosphorus, and niacin.

Recipe Ideas:

- ❖ Overnight Peanut Butter Bulgur with Berries (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Bulgur Pilaf with Fresh Tomatoes, Thick Yogurt, and Fried Onion Strings (Paula Wolfert, *Mediterranean Grains and Greens*)
- ❖ Zeliha Gungoren's Scallion Bulgur Pilaf with Golden Raisin Hoshaf (Paula Wolfert, *Mediterranean Grains and Greens*)
- ❖ Mexican Stuffed Poblanos (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Lamb Burgers with Bulgur and Mint (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Creamy Bulgur with Honey and Tahini (Maria Speck, *Simply Ancient Grains*)

CORN

Cook 1 cup dry whole grain cornmeal with: 4 cups liquid (expands to 2½ cups cooked grain)

Cook Time: Bring to boil, then simmer 25-35 minutes

Best Uses: Whole grain cornmeal is best suited for porridge or polenta style recipes. (Note: If it says degerminated, it's not whole grain!) Great thickener for stews. Not well suited for grain salads or pilafs. Popcorn is also considered a whole grain (although fresh corn, such as corn on the cob, is not).

Flavor Profile: Sweet taste. Pairs well with chiles, berries, stone fruit, aromatic spices, tomatoes, cumin, peppers, and beans.

Gluten-free? Yes

History: Corn is native to the Americas, and has a rich history in Aztec, Mayan, and Native American diets.

Nutrition in 1 serving (¼ cup uncooked): 110 calories, 2g fiber, 2g protein. Good source of phosphorus, magnesium, manganese, selenium, and thiamin.

Recipe Ideas:

- ❖ Cornmeal Pancakes with Warm Cherry Sauce (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Orange Polentina with Honey Mascarpone Topping (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Sweet Corn and Zucchini Quiche with Cornmeal Crust (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Whole Grain Cornbread (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Savory Grits with Slow-Cooked Collard Greens (Bryant Terry, *Afro-Vegan*)
- ❖ Rustic Fall Polenta with Fontina and Sun-Dried Tomatoes (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Almond Polenta Tart with Sherried Plum Compote (Maria Speck, *Simply Ancient Grains*)

FREEKEH GREEN WHEAT

Cook 1 cup dry grain with: 2½ cups liquid (expands to about 2½ to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 20-25 minutes (longer if not using cracked freekeh)

Best Uses: The fluffy, chewy texture makes it ideal for grain salads, sides, and pilafs. Great for adding substance to light dishes. Flavorful grain base for meat dishes and other entrees.

Flavor Profile: Signature smoky flavor. Pairs well with Middle Eastern flavors, especially cinnamon, tomatoes, lemon, and pine nuts.

Gluten-free? No.

History: Found mostly in Middle Eastern and North African cuisine, freekeh wheat traces its roots back several thousand years to ancient Egypt and surrounding areas. Legend has it that freekeh was discovered when an ancient village in the Eastern Mediterranean hurriedly picked young wheat before an attack on their city. Attackers' fires burned the young wheat, but the result was quite delicious.

Nutrition in 1 serving (¼ cup uncooked): 160 calories, 6g fiber, 7g protein. Good source of iron.

Recipe Ideas:

- ❖ Apple Cinnamon Breakfast Freekeh (Jodi Moreno, *Grains as Mains*)
- ❖ Kale and Freekeh Frittata (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Roasted Cauliflower and Freekeh Salad (Gena Hamshaw, *Food52 Vegan*)
- ❖ Freekeh with Chard and Roasted Carrots (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Middle Eastern Freekeh Salad with Sesame Yogurt Dressing (Robin Asbell, *The Whole Grain Promise*)
- ❖ Baked Chicken Freekeh Paella (Jodi Moreno, *Grains as Mains*)
- ❖ Baked Moroccan Lamb Stew with Freekeh (Jodi Moreno, *Grains as Mains*)

MILLET

Cook 1 cup dry grain with: 2½ cups liquid (expands to 4 cups fluffy, cooked grain)

Cook Time: Bring to boil, then simmer 25-35 minutes

Best Uses: Depending on how much liquid you use, millet can be prepared fluffy (for pilafs and grain salads), sticky (for croquettes and patties), or creamy (for warm porridge). Millet is also a delightful base for curries, stir fries, and pilafs. Best served warm.

Flavor Profile: Buttery. Pairs well with mushrooms, herbs, warm spices, scallions, and squash.

Gluten-free? Yes

History: Millet is one of the leading staple grains of India, and was also used in ancient Chinese noodles before wheat was domesticated. Although common in birdseed in the US, nutritious millet is also important to the cuisines of South America, Russia, the Himalayas, and Africa.

Nutrition in 1 serving (¼ cup uncooked): 190 calories, 4g fiber, 6g protein. Excellent source of manganese. Good source of magnesium, phosphorus, copper, thiamin, and niacin.

Recipe Ideas:

- ❖ Fresh Peach, Banana, and Warm Millet Smoothie (Bryant Terry, *Afro-Vegan*)
- ❖ Millet and Sweet Potato Porridge (Bryant Terry, *Afro-Vegan*)
- ❖ Orange Millet Scones (Sharon Palmer, *Plant Powered for Life*)
- ❖ Creamy Curried Carrot-Millet Soup with Mint (Robin Asbell, *The Whole Grain Promise*)
- ❖ Millet Cauliflower Mashed Potatoes (Robin Asbell, *The New Whole Grains Cookbook*)
- ❖ Millet, Squash, and Sweet Corn Pilaf with Tamari Roasted Pumpkin Seeds (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Dirty Millet (Bryant Terry, *Afro-Vegan*)
- ❖ Lemony Millet Pudding with Caramelized Grapes (Maria Speck, *Simply Ancient Grains*)

OATS

Cook 1 cup dry steel cut oats with: 4 cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 30 minutes

Best Uses: Porridge or polenta style recipes. Steel cut oats can also be substituted for rice in risotto style recipes. Not well suited for grain salads or pilafs.

Flavor Profile: Sweet toasty aroma with hints of butterscotch. Pairs well with cinnamon, dried and fresh fruit, thyme, mushrooms, walnuts, coffee, and coconut.

Gluten-free? Yes. (Check for certified gluten-free oats, as oats are frequently cross contaminated with gluten during growing and processing.)

History: Oats are the porridge of choice in Scotland, Ireland, and other northern European nations, as they grow best in cool, rainy climates. Today, most oats are steamed and flattened to produce rolled oats, quick oats, or instant oats—but all are whole grain, as the bran and germ are virtually always left intact. Oats have also been used in cosmetics for their anti-itching properties.

Nutrition in 1 serving (¼ cup uncooked): 150 calories, 4g fiber, 7g protein. Excellent source of phosphorus, manganese, and thiamin. Good source of iron, magnesium, zinc, and copper.

Recipe Ideas:

- ❖ Boil-and-Leave Steel Cut Oats (Robin Asbell, *The Whole Grain Promise*)
- ❖ Sprouted Lentil Granola with Apricots (Sharon Palmer, *Plant Powered for Life*)
- ❖ Dark Chocolate Muesli with Hazelnuts (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Sweet Potato and Oat Cakes with Blue Cheese and Sage (Maria Speck, *Simply Ancient Grains*)
- ❖ Steel Cut Oats Risotto with Asparagus (Sharon Palmer, *Plant Powered for Life*)
- ❖ Chocolate Oat Agave Cookies (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ Pistachio Golden Raisin Cookies with Cardamom (Amy Chaplin, *At Home in the Whole Food Kitchen*)

QUINOA

Cook 1 cup dry grain with: 2 cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 12-15 minutes

Best Uses: Pleasantly firm chew even when served chilled, making it ideal for both warm and cold grain salads. Popular in sides and pilafs.

Flavor Profile: Hints of grassiness. Pairs well with nearly anything, especially Latin American ingredients (corn, black beans, avocado, citrus, cilantro, peppers, & tomatoes). Be sure to rinse well before cooking, as quinoa has a bitter outer coating (saponin) that needs to be washed off.

Gluten-free? Yes

History: Technically a pseudo-grain (related to chard), quinoa was sacred to the Incas, and has been central to Bolivian and Peruvian diets for centuries. It's primarily grown high up in the Andes mountains, but some US producers are starting to grow their own also. Quinoa is one of the few plant foods that serves up a complete protein, offering all essential amino acids in a healthy balance.

Nutrition in 1 serving (¼ cup uncooked): 160 calories, 3g fiber, 6g protein. Excellent source of magnesium, phosphorus, and manganese. Good source of iron, copper, thiamin, and Vitamin B6.

Recipe Ideas:

- ❖ Quinoa, Hazelnut, and Cherry Granola (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ Herbed Black Quinoa Muffins with Sweet Potato and Caramelized Onions (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Quinoa Congee (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Mushroom, Chard, and Quinoa Enchiladas (Gena Hamshaw, *Food52 Vegan*)
- ❖ Grilled Scallops with Orange Scented Quinoa (Giada de Laurentiis, *Giada's Feel Good Food*)
- ❖ Cranberry, Orange, and Chocolate Quinoa Bars (Jodi Moreno, *Grains as Mains*)

RICE (BROWN RICE, BLACK RICE, RED RICE, ETC.)

Cook 1 cup dry brown rice with: 2½ cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 25-45 minutes (varies)

Best Uses: Great as a base in curries, stir fries, risottos, and rice pudding. In fried rice, brown rice needs less oil. Shorter-grain rices are stickier, best suited for sushi and risotto, while longer-grain rices are great for pilafs. Can also be cooked in stock until soft and starchy, then blended and subbed for heavy cream (see Creamy Broccoli Cheese Soup below). In gluten-free baking, the bran and germ in brown rice flour also help make it less gummy.

Flavor Profile: Neutral, toasty flavor with hints of caramel. Accentuates other flavors, and pairs well with nearly anything, especially eggs, milk, and chocolate.

Gluten-free? Yes

History: Rice is grown on every continent except Antarctica, and has been a staple of cultures and cuisines for millennia. Rice provides 19% of the calories available worldwide, with an especially strong history in Asian cuisine. Whole grain rice is not just brown; it can also be red, black, or other colors.

Nutrition in 1 serving (¼ cup uncooked): 110 calories, 2g fiber, 2g protein. Good source of phosphorus, magnesium, manganese, selenium, and thiamin.

Recipe Ideas:

- ❖ Black Rice Breakfast Pudding with Coconut and Banana (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Creamy Broccoli Cheese Soup (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Chicken and Vegetable Biryani (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Saffron Risotto with White-Wine Clams and Peas (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Black Sesame Rice Crackers (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Curried Corn and Coconut Rice (Bryant Terry, *Afro-Vegan*)
- ❖ Almond and Brown Rice Brownies (Alice Medrich, *Flavor Flours*)
- ❖ Brown Rice Pecan Sandies (Ann Taylor Pittman, *Everyday Whole Grains*)

RYE & TRITICALE (A WHEAT-RYE HYBRID)

Cook 1 cup dry grain with: 4 cups liquid (expands to 3 cups cooked grain)

Cook Time: After soaking overnight, bring to boil, then simmer 45-60 minutes.

Best Uses: Rye berries & triticale berries can be used interchangeably with wheat berries in most recipes, and work especially well in pilafs, casseroles, and grain salads. Rye flour adds a distinct, rich flavor to baked goods, especially in yeast breads. Rye flakes and rye grits work well in breakfast porridge or polenta style recipes.

Flavor Profile: Rich and slightly tangy. Works well in Eastern European recipes, especially with cabbage, beets, mustard, raisins, and sweet and sour flavors.

Gluten-free? No

History: Because rye can grow in colder climates where many other grains can't survive, it has a long tradition in the cuisines of Russia, Poland, Scandinavia, Argentina, Turkey, China, and Canada. Rye and wheat have long cross-bred in nature, but it wasn't until 1937 that the mash-up called triticale became a fertile crop. Triticale grows easily without commercial fertilizers and pesticides.

Nutrition in 1 serving rye (¼ cup uncooked): 140 calories, 6g fiber, 4g protein. Excellent source of manganese. Good source of magnesium, phosphorus, copper, selenium, and niacin.

Recipe Ideas:

- ❖ Sweet Potato, Coconut, Date, and Rye Muffins (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ Oven Rye Porridge (Darra Goldstein, *Fire and Ice: Classic Nordic Cooking*)
- ❖ Leek Salad with Grilled Halloumi Cheese and Rye Berries (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Flemish Beef Stew with Caramelized Onions and Rye (Maria Speck, *Simply Ancient Grains*)
- ❖ Lamb, Toasted Rye Berry, and Apricot Tagine (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Aroma Bread With Coriander and Fennel (Maria Speck, *Ancient Grains for Modern Meals*)
- ❖ Rye Chocolate Brownies (Claire Ptak, *The Violet Bakery Cookbook*)

SORGHUM

Cook 1 cup dry grain with: 4 cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 25-40 minutes

Best Uses: Pleasantly firm chew makes it ideal for grain salads and pilafs. Its pearly shape makes it a great substitute for couscous. Can also be popped, like popcorn. Sorghum flour performs beautifully in pancakes, waffles, crepes, and cookies.

Flavor Profile: Sweet taste, with hints of corn or wheat flavor. Pairs especially well with Southern ingredients, like ham, bourbon, pecans, peanuts, berries, dates, figs, banana, and warm spices.

Gluten-free? Yes

History: Sorghum (also called milo) is believed to have originated in Africa, where it remains an important cereal grain, even today. It is naturally drought tolerant, making it a smart choice for diners eating with their environmental footprint in mind. Traditionally, sorghum is used in porridges, flatbreads, and even beverages.

Nutrition in 1 serving (¼ cup uncooked): 160 calories, 3g fiber, 5g protein. Excellent source of manganese. Good source of magnesium, phosphorus, selenium, and vitamin B6.

Recipe Ideas:

- ❖ Sorghum and Eggs Ranchero (Jodi Moreno, *Grains as Mains*)
- ❖ Spring Vegetable and Sorghum Minestrone (Jodi Moreno, *Grains as Mains*)
- ❖ Grilled Raddichio and Sorghum Pilaf (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Milo Salad with Oregano, Feta Cheese, and Cucumbers (Jesse Cool, *The Oldways Table*)
- ❖ Sorghum Ice Cream with Peanut Brittle (Alice Medrich, *Flavor Flours*)
- ❖ Puffed Sorghum Salted Caramel Popcorn Balls (Jodi Moreno, *Grains as Mains*)

TEFF

Cook 1 cup dry grain with: 3 cups liquid (expands to 2½ cups cooked grain)

Cook Time: Bring to boil, then simmer 20 minutes

Best Uses: Porridge or polenta style recipes. Great thickener for stews. Not well suited for grain salads or pilafs. Teff flour adds a rich, cocoa flavor to baked goods.

Flavor Profile: Slightly sweet taste with undertones of cocoa and hazelnut. Pairs well with nuts, chocolate, seeds, pumpkin, and dark fruit.

Gluten-free? Yes

History: Teff is a tiny (less than 1mm) grain native to the Horn of Africa, where nomads could carry enough teff seed in their pocket to sow an entire field. In fact, its name may come from the Amharic word for “lost” because the seed is so tiny. Teff is most well known as the main ingredient in injera, the spongy flatbread that Ethiopians use in place of utensils.

Nutrition in 1 serving (¼ cup uncooked): 180 calories, 4g fiber, 6g protein. Excellent source of magnesium, copper, and manganese. Good source of iron, phosphorus, zinc, thiamin, and vitamin B6.

Recipe Ideas:

- ❖ Teff Porridge with Dates, Figs, and Pistachios (Sharon Palmer, *Plant Powered for Life*)
- ❖ Crispy Teff and Grit Cakes with Eggplant, Tomatoes, and Peanuts (Bryant Terry, *Afro-Vegan*)
- ❖ Cajun-Spiced Shrimp on Creamy, Cheddar Teff (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ African Sweet Potato, Teff, and Greens Stew (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Superfast Injera (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Peanut Butter and Jelly Thumbprint Cookies (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Bittersweet Teff Brownies (Alice Medrich, *Flavor Flours*)

WHOLE WHEAT FLOUR (INCLUDING KAMUT®, SPELT & EINKORN FLOUR)

Best Uses: Whole wheat flour can be substituted for up to 50% of the all-purpose flour in a recipe without making adjustments. To convert a recipe to 100% whole wheat, add an extra 2 tsp liquid per cup of flour, then let the dough rest for 20 minutes after mixing. White whole wheat flour has a milder flavor and lighter color. Whole wheat pastry flour and sprouted whole wheat flour are also good options for baking, while whole grain spelt flour is well suited for pasta and pastries.

Flavor Profile: Hearty and slightly nutty. Pairs well with nearly everything, especially honey, chicken, squash, mushrooms, cheese, and warm spices.

Gluten-free? No

History: Wheat is one of the earliest domesticated grains, and even today provides 19% of available calories. Breads (nearly always made from wheat) have been a mealtime staple for centuries, and whole wheat breads in particular were especially common before the advent of roller milling in the late 1800's. Wheat was to the Mediterranean what rice was to Asia and corn was to Latin America.

Nutrition in 1 serving (¼ cup flour): 100 calories, 3g fiber, 4g protein. Good source of magnesium, phosphorus, and thiamin.

Recipe Ideas:

- ❖ Prune, Oat, and Spelt Scones (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ Whole Wheat Jalapeno Cheddar Scones (Leanne Brown, *Good and Cheap*)
- ❖ Whole Wheat Molasses Yogurt Bread with Figs and Walnuts (Amanda Hesser, *Food52 Baking*)
- ❖ Summer Spelt Almond Cake (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ No-Knead ‘Stealth’ Bread (Robin Asbell, *The Whole Grain Promise*)
- ❖ Kamut, Vanilla, and Chocolate Chip Cookies (Claire Ptak, *The Violet Bakery Cookbook*)
- ❖ Almond Butter Brownies with Sea Salt (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Easy Wheat and Olive Oil Tart Shell (Maria Speck, *Ancient Grains for Modern Meals*)

WHEAT BERRIES & ANCIENT WHEATS: EINKORN, EMMER/FARRO, KAMUT®, & SPELT

Cook 1 cup dry grain with: 2½–4 cups liquid (expands to 3 cups cooked grain)

Cook Time: Bring to boil, then simmer 25-40 minutes (some sources recommend soaking overnight)

Best Uses: Pleasant chew even when chilled, making it ideal for both warm and cold grain salads. Popular in sides and pilafs. Farro (also called emmer) is becoming popular in risotto (“farrotto”).

Flavor Profile: Nutty and slightly sweet. Pairs well with nearly anything!

Gluten-free? No

History: These ancient strains of wheat were first domesticated along the Fertile Crescent, but were largely ignored after modern dwarf wheat became popular in the mid 20th century (with the advent of the Green Revolution). Einkorn is thought to be the most ancient of wheat varieties available today, with just two sets of chromosomes (instead of six, like modern wheat).

Nutrition in 1 serving Kamut (¼ cup uncooked): 160 calories, 5g fiber, 7g protein. Excellent source of manganese, selenium, and thiamin. Good source of magnesium, phosphorus, zinc, and copper.

Recipe Ideas:

- ❖ Crunchy Farro-Hemp Breakfast Bowl with Fresh Berries (Sharon Palmer, *Plant Powered for Life*)
- ❖ Farro with Clementines and Yogurt Dressing (Robin Asbell, *The Whole Grain Promise*)
- ❖ Chicken-Farro Salad (Andrew Weil, *True Food*)
- ❖ Roasted Acorn and Delicata Squash Salad with Wheat Berries and Bitter Greens (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Roasted Fall Vegetable and Cannellini Bean Stew with Spelt Berries and Kale (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Herbed Spelt Berry Salad with Peas and Feta (Amy Chaplin, *At Home in the Whole Food Kitchen*)
- ❖ Cinnamon-Soaked Wheat Berry Salad (Bryant Terry, *Afro-Vegan*)

WILD RICE

Cook 1 cup dry grain with: 3 cups liquid (expands to 3½ cups cooked grain)

Cook Time: Bring to boil, then simmer 45-55 minutes

Best Uses: Chewy texture makes it great in grain salads and pilafs, or for adding heartiness to green salads and light dishes. You can even pop wild rice, like popcorn. Just heat it in a little oil and shake until it pops.

Flavor Profile: Aromatic, nutty flavor. Pairs well with brown rice, caramelized onions, squash, root vegetables, and mushrooms.

Gluten-free? Yes

History: Wild rice is one of the few whole grains native to North America; it originated in the area of the upper Great Lakes (in what is now both the U.S. and Canada). It is not actually related to rice, but is instead a wild grass. Traditionally, wild rice was harvested in canoes powered only by long poles, using beater sticks to knock the ripe seeds into the bottom of the canoes.

Nutrition in 1 serving (¼ cup uncooked): 140 calories, 3g fiber, 6g protein. Excellent source of magnesium and manganese. Good source of phosphorus, zinc, copper, niacin, and folate.

Recipe Ideas:

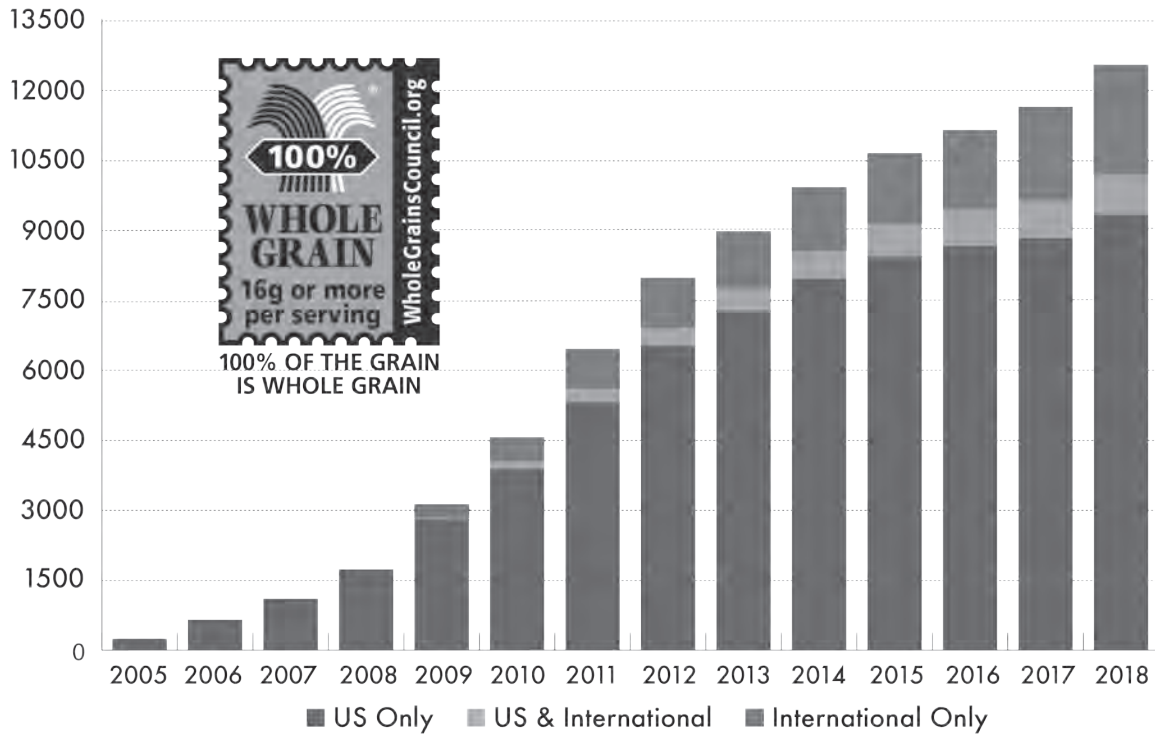
- ❖ Wild Rice and Lentil Salad (Ellen Ecker Ogden, *The Oldways Table*)
- ❖ Brown and Wild Rice with Brussels Sprouts (Giada de Laurentiis, *Giada’s Feel Good Food*)
- ❖ Chicken, Wild Rice, and Corn Chowder (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Wild Rice Stuffing with Dried Cherries and Toasted Pecans (Ann Taylor Pittman, *Everyday Whole Grains*)
- ❖ Wild Rice Haystacks (Ann Taylor Pittman, *Everyday Whole Grains*)

THE WHOLE GRAIN STAMP

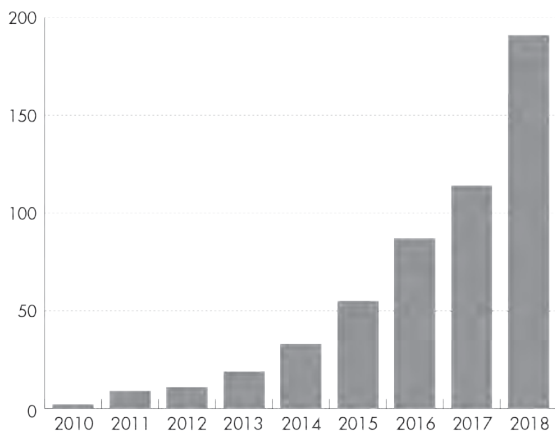
INCREASED GROWTH WORLDWIDE

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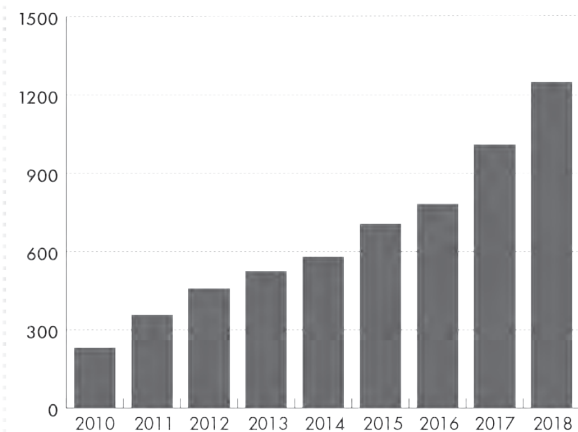
Whole Grain Stamp Growth 2010–2018



ASIAN Whole Grain Stamp Growth 2010–2018



LATIN AMERICAN Whole Grain Stamp Growth 2010–2018



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