



A SPECIAL KIND OF WHEAT

Words: GAIL NICKEL-KAILING

Photos: KAMUT INTERNATIONAL,
DEANE BROWNFIELD and VILICUS FARMS

FROM SEA TO SHINING SEA

The United States' "National Hymn," *America the Beautiful*, opens with the image of endless skies over fields of ripe golden grain that reach to purple mountains on the horizon.

That idyllic scene represents thousands of years of human development beginning with the gathering and consumption of grass seeds in the Fertile Crescent about 17,000 years ago.

Poet Katharine Lee Bates would probably be appalled to realize that she was eulogizing one of the worst examples of monocropping in existence – second only to the carpeting of Iowa with corn.

Modern wheat production has been one of the major contributors to decades of soil and water erosion and water contamination in the American heartland. And a contributor to one of the greatest environmental disasters of the Twentieth Century: the Dust Bowl of the 1930s.

In *Romeo and Juliet*, Juliet says, "That which we call a rose by any other word would smell as sweet." With apologies to William Shakespeare, we say that may apply to a rose, but we need to be careful what we call one of the world's most important grains – wheat. Especially when we refer to an ancient wheat called KAMUT® Khorasan wheat...

*"O beautiful for spacious skies,
For amber waves of grain,
For purple mountain majesties
Above the fruited plain!
America! America!
God shed his
grace on thee
And crown thy good
with brotherhood
From sea to shining sea!"*

An industry analyst, consultant, and nationally recognized speaker on a wide range of subjects, **Gail Nickel-Kailing** brings enthusiasm and a unique blend of experiences to her projects. And as a journalist who has contributed to publications in the US, Canada, India, and Brazil, she's covered a number of "beats," particularly the "good food" system, sustainability, distribution, and commercial printing. Gail is also co-publisher of the online magazine [GoodFood World](#), now in its fourth year of publication by Nickel Resources.

THE WHEAT FAMILY TREE

Yes, “cereal grains” — domesticated grasses — are covering the earth. Wheat is second only to rice as the largest source of vegetable protein for human consumption, and maize (corn) is a close third. Nearly half of the calories of the world’s protein intake comes from cereal grains. Mainly rice, wheat, corn, and barley.

The “family tree” of the genus *Triticum* (wheat) is divided genetically into three groups:

1. Wild and cultivated einkorn (Diploids whose genes contain 14 chromosomes): considered to be the “parent” wheat and grown by man as early as 10,000 to 12,000 years ago.
2. Wild and cultivated emmer and durum wheat (Haploids – the 28 chromosome group). Durum, the world’s second most widely cultivated wheat, is primarily used to make pasta.
3. Spelt and all bread wheat (Hexaploids – the 42 chromosome group). Spelt is a hulled wheat – the hulls are tightly clasped around the grain and must be removed for consumption – and common wheat is “free threshing,” that is, the hulls fall off at maturity. All hexaploid grains are domesticated; none have been found growing in the wild.

The first domesticated food crops — the so-called “Neolithic founder crops” — include einkorn and emmer (two of the earliest domesticated wheats), barley, lentils, peas and chickpeas, and flax. Samples of early bread wheat containing enough gluten for yeasted bread date from 1350 BC in Greek Macedonia.





THE BIG NAMING QUESTION: IS IT KHORASAN OR KAMUT®?

The answer to the question: “Is it Khorasan or Kamut?” is simple: It depends... Let’s start at the beginning.

Khorasan is an ancient Persian province, today described as a historic region stretching across parts of Iran, Turkmenistan, and Afghanistan. It is also the common name of a wheat species related to Durum, *Triticum turanicum*, suggested to have originated from the region.

Kamut — an ancient Egyptian word for

wheat or grain — is the brand name for marketing a specific kind of Khorasan wheat (*Triticum turanicum*, var QK-77), trademarked by [Kamut International](#), the organization created to market the grain.

So, while all Kamut is Khorasan, not all Khorasan is Kamut.

The story of Kamut is charmingly romantic: a US airman stationed in Portugal was given 32 giant wheat kernels from a fellow airman who said it had come from a tomb in Egypt.

But the real hard work started in 1977, when a small jar of seed landed in the hands of Mack Quinn, a grain farmer from Fort Benton, Montana.

Mack planted the grain in his garden and over several years it increased to around 90 pounds; in 1986, he planted 1.5 acres with that 90 pounds.

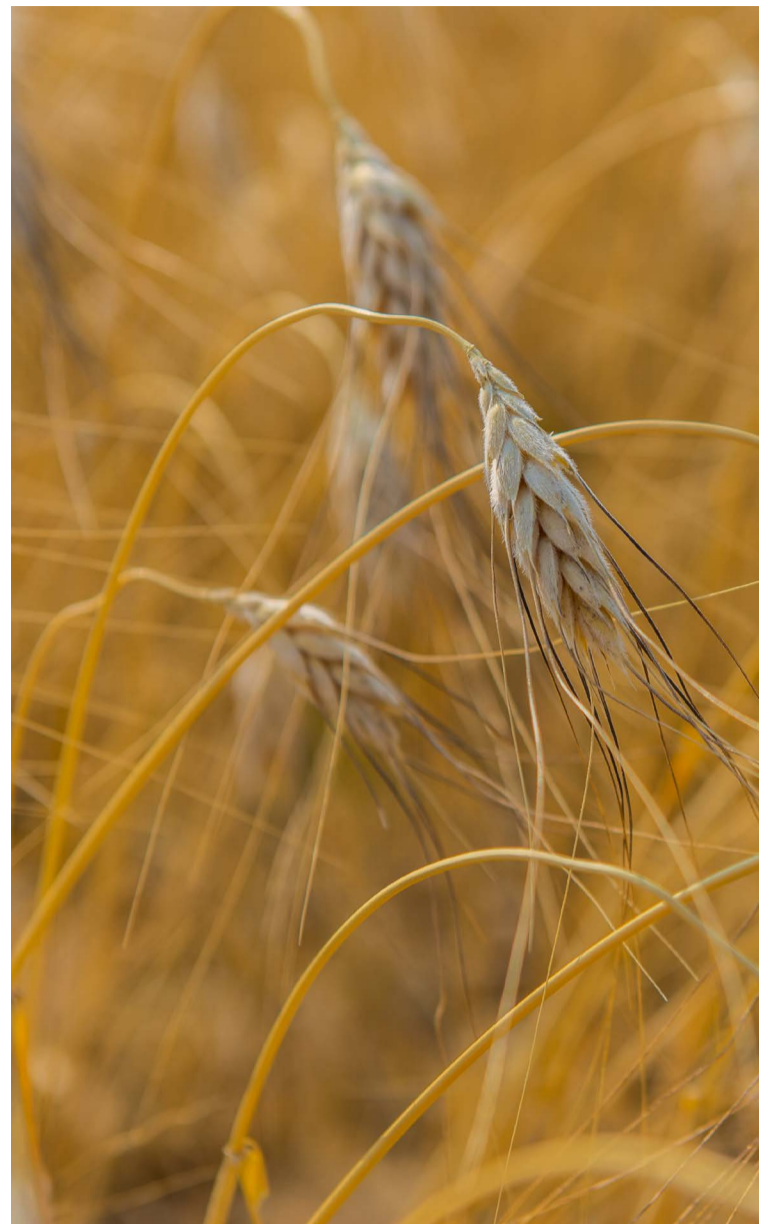
In 1988, the first product carrying the Kamut brand name — a type of pasta — was introduced. The first bread made with Kamut brand Khorasan wheat was produced in 1989. Kamut International registered the Kamut trademark in 1990.

Today, under the management of Mack’s son Bob (pictured above) – who holds a Masters degree in plant pathology and a Doctorate in plant biochemistry – and Kamut International, more than 45,000 acres across parts of Montana, Alberta, and Saskatchewan are planted in Kamut and the grain and products made from it are sold around the world.

What makes Kamut special? It’s not all in the name; the real secret is the variety of grain and how it is raised and handled.

Since Kamut International owns the trademark, any wheat sold under the trademark must follow the quality specifications required by Kamut International:

1. Be the ancient Khorasan variety of wheat.
2. Be grown as a certified organic grain.
3. Have a protein range of 12-18%.
4. Be 99% free of contaminating varieties of modern wheat.
5. Be 98% free of all signs of disease.
6. Contain between 400 and 1000 ppb of selenium.
7. May not be "used in products in which the name is deceptive or misleading as to the content percentage."
8. May not be mixed with modern wheat in pasta.



DEANE BROWNFIELD BAKES WITH KAMUT

Deane Brownfield is an experienced home baker and active member of the artisan baking forums at The Fresh Loaf, where he is known as Dabrownman.

Two years of experimenting with Kamut have taken him from near disaster to beautiful loaves. Baking with Kamut, because it is a durum flour that is high in protein but has a low gluten content, can require a little patience and experience.

The good news: the creamy yellow, nutty flavored flour makes a nice artisan bread. The bad news: it has better absorption properties than regular bread flour, so you'll need to adjust the amount of water you use.

Recently Deane baked two varieties of 50% Kamut bread and a 100% Kamut loaf, which he has agreed to share with us for this article.

He notes, "The crust came out that beautiful orange-tinged color that a durum grain is so famous for. The yellow crumb is another striking feature. The best part was the taste. Nothing tastes as sweet as Kamut and the sprouts made it taste like it had a bit of sweet cornbread in it."

100% WHOLE GRAIN KAMUT WITH 14% SPROUTED GRAIN



More than two years ago, Deane baked his first high-hydration 100% Kamut bread: 102% hydration! Working under primitive conditions — he ground the Kamut berries in a Krup's coffee grinder — he persevered. Back then, he wasn't using straight rice flour in the baskets and the loaves stuck badly, resulting in what Deane called "*Oh Mon Dieu Pain Rustique*."

Clearly the only direction to go was up!

Here's how Deane does it today.

Start with just 6 grams of "9-week retarded rye starter" to make the Kamut levain and plan to spend at least 2 days making this lovely loaf.

Just what's a "9-week retarded rye starter," you ask?

Deane describes his process:

"I keep my rye starter in the fridge with no maintenance for 16 weeks at a time. I build it with fresh-milled whole rye flour at 66% hydration and use a little bit of it to make the levain for my weekly bake.

Begin the 3-stage levain build by adding the 15% extraction from the whole unsprouted grains to the starter in the first stage, “to get the levain up to speed.”

FINAL DOUGH

Ingredients	Quantity	Baker's %	Baker's % (Total formula)
15% extraction Kamut			4.89%
85% extraction Kamut	326 g	100%	95.11%
100% whole sprouted Kamut	60 g	18.40%	16.30%
Water	332 g	101.84%	101.63%
Levain (all from the 3-stage build)	90 g	27.6%	
Salt	8 g	2.45%	2.17%

As you combine the flour and water for the autolyse, use both the sprouted and the 85% extraction flour. Limit the autolyse to half an hour since the sprouted grain could “spike the autolyse into enzymatic overload.”

Mix in the levain and salt, and apply 8 minutes of slap-and-folds. Adjust the final water amount to 90% hydration.

Let rest for 30 minutes and apply 3 sets of stretch-and-folds from the compass points at 30-minute intervals to finish the gluten development. This part of the process should take about 2 hours.

Let the dough rest for 10 minutes, shape it into a squat oval, and put it in a basket floured with 100% rice flour.

Slip the basket into a plastic bag, seal it, and retard in the fridge for about 18 hours.

Put two baking stones in your oven, separated by enough space for the bread to rise while baking. Allow the dough to come to room temperature while you heat your oven to 550°F / 285°C.

Deane has devised a steaming system he calls “Mega Steam,” which consists of two pans each containing a rolled up kitchen towel and a third filled with lava rocks. Fill each

half full of water. Fifteen minutes before you are ready to bake, slide the pans into the oven and let the steam build up.

Unmold the dough onto a parchment sheet, slash, and load it onto a peel. Open the door VERY carefully! As Deane says, "Make sure your face is away from the oven door as you open it to put the bread on the stone. No sense burning the skin off your face, in my book!"

Slide the dough onto the bottom stone and bake with steam for 2 minutes, then reduce the temperature to 465°F / 240°C and continue to bake with steam for 13 minutes.

Remove the steam, turn the oven down to 425°F / 220°C and bake for 10 more minutes or until the internal temperature is about 210°F /

99°C.

Some advice from the baker: Expect that the dough will spread a bit after you unmold it, however it will have some oven spring and will bloom a bit. The crust will be crispy right out of the oven, but it will soften as it cools.

The crumb is soft and moist from the sprouts and open for whole grain bread. While this makes a fine boule, if you want a tall loaf, bake it in a pan — though you will miss out on all the tasty crust that comes with a rustic loaf.



50% WHOLE GRAIN KAMUT – 2 VERSIONS



For bakers who prefer to blend whole grain Kamut with bread flour, here are two variations on a theme.

These two loaves have especially interesting “add-ins:”

1. Prunes and ground flax, sesame seeds, poppy seeds, and chia seeds - mix as you choose or substitute your own blend.
2. Risotto (made of red onion, Kamut berries, chicken stock, and a splash of Malbec wine) and grated Pecorino Romano and Parmesan cheeses - again mix as you choose or substitute your own blend.

The process to prepare these two loaves is the same as before, except for the add-ins, mixed into the dough between the second and third sets of stretch-and-folds

THREE-STAGE LEVAIN BUILD

Stage 1

Ingredients	Quantity	Baker's %
9-week retarded rye sourdough starter	8 g	57.14%
15% extraction Kamut flour	14 g	100%
Water	14 g	100%

Stage 2

Ingredients	Quantity	Baker's %
All of stage 1	36 g	
15% extraction Kamut flour	10 g	62.50%
85% extraction Kamut flour	6 g	37.50%
Water	16 g	100%

Stage 3

Ingredients	Quantity	Baker's %
All of stage 2	68 g	
89% extraction Kamut flour	28 g	100%
Water	28 g	100%

FINAL DOUGH (VERSION 1)

Ingredients	Quantity	Baker's %	Baker's % (Total formula)
15% extraction Kamut			6%
85% extraction Kamut	142 g	41.52%	44%
Bread flour	200 g	58.48%	50%
Water	262 g	76.61%	80%
Levain (all from the 3-stage build)	124 g	20.53%	
Salt	8 g	2.34%	2%
Seed mix	72 g	21.05%	18%
Prunes	68 g	19.88%	17%

FINAL DOUGH (VERSION 2)

Ingredients	Quantity	Baker's %	Baker's % (Total formula)
15% extraction Kamut			6%
85% extraction Kamut	142 g	41.52%	44%
Bread flour	200 g	58.48%	50%
Water	262 g	76.61%	80%
Levain (all from the 3-stage build)	124 g	20.53%	
Salt	8 g	2.34%	2%
Malbec and Kamut risotto	158 g	46.20%	39.50%

When you have bagged the basketed bread, retard for about 15 hours in the fridge. Let the dough warm up for about an hour before you start preheating the oven.

Bake following the instructions previously given. Deane, ever the adventurous baker, had a bit of bad luck when baking the prune and seed bread. He neglected to reduce the temperature at the 2-minute mark and baked at the maximum temperature for 15 minutes. When he discovered the error, Deane dropped the temperature to 400°F / 205°C convection to try to compensate. (Remember to check the internal temperature!)

Baker's commentary: "The temperature was way too high and the loaf didn't spring like it should, the crust was dark, and the crumb was dense. The bold bake really contributed to a great crust, but the crumb was a disappointment. The risotto bread had a beautiful crumb."

When making breads with add-ins, especially moist ones like the risotto, you'll discover how different the breads can taste. In the final analysis, however, for the seeded bread, Deane suggests either adding 5% more water or soaking the ground seeds in that amount of water to bring up the hydration and open up the crumb.



MEET THE GROWER: VILICUS FARMS



Located 8 miles north of Havre in north central Montana — nearly at the Canadian border — Vilicus Farms is an organic “dryland” farm owned and operated by Doug Crabtree and Anna Jones-Crabtree. Since 2009, the farm has expanded to 4,700 acres growing heirloom and specialty grains, pulses, oilseed, and broadleaf crops.

A new wave of farmers, most in their 20s and 30s and more than a few in their 40s, are taking up the plow again. Today’s new farmers are highly educated and many are experienced in fields that may, at first glance, seem unrelated to the business of farming.

While Doug was born on a grain farm in Ohio, it wasn’t until he and Anna turned 40 that they became beginning farmers on their own land.

Kamut — a beautiful robust grain with large heads full of huge berries and long black awns — is one of four or five grains that the Crab-

Vilicus: In ancient Rome, a vilicus was an overseer of an estate; he managed the land, buildings, and staff with an emphasis on the long-term productivity of the land. Many were freed slaves, and they were said to no longer be slaves to their previous owners, but slaves to the land with which they were entrusted.

trees grow in rotation and in combination with strip cropping and intercropping, all of which significantly increase the biodiversity in each field. The selection for grains grown every season depends on the market, on growing contracts, and the soil conditions.

While Kamut isn't particularly difficult to grow, it does have certain characteristics that require special adjustments.

For example, unlike conventional wheat, Kamut does not form "tillers" or lateral shoots from the base of the stem. Tiller production occurs before the reproductive growth and can help suppress weeds as well as develop into seed heads. By intercropping with flax, Doug and Anna reduce the competition from weeds and produce an additional cash crop at the same time.

On Vilicus Farms, the Crabtrees practice advanced land stewardship at a scale that mat-

ters. More than 20% of the farm is in non-crop conservation and wildlife habitat and the farm's cropping system takes into consideration nature's systems.

Organic production isn't just growing food without chemical inputs; it's a system that requires improving soil, water, and associated resources, while producing safe and healthy food for a growing population of informed consumers.

Doug and Anna seek to maximize income — not production — by focusing on the returns to the farmer and the land rather than gross revenue based on high yields using costly inputs.

"We envision a world where farming is a respected and indispensable avocation, organic practices are considered conventional, and agriculture is defined by a supportive network of like-minded farmer stewards," the Crabtrees say.

