

## *Solving the Modern Wheat Dilemma*

A simple definition for wheat *gluten* might be that it is the stored protein in the endosperm of wheat.

*The wheat endosperm consists mainly of starch and a smaller amount of gluten protein. Note that refined wheat flour consists of wheat endosperm, without any of the accompanying germ or bran. Neither the plant nor humans can properly assimilate and use this stored starch and gluten without the accompanying B-vitamins, minerals, and other components (phytochemicals) present in the wheat germ and bran.*

Einkorn is the oldest and simplest wheat and it has been superseded in agriculture by higher yielding emmer wheat. In time the emmer was largely replaced by even higher yielding durum wheat and common wheat, and to a lesser extent by spelt. Other wheat types such as Khorasan were grown throughout history but very locally and in much smaller amounts. Until about 1900 when Mendel's laws of biological inheritance were published, and with them a method for systematically breeding plants, wheat breeding was the result of both random and deliberate crosses between varieties, and selections from the results of these crosses. In general wheat varieties were typical of their region in the Old World. These varieties are now referred to as landraces. There would often be variation within a landrace, and farmers down the centuries have selected from these landraces to produce their own crops. Practically all the different types and landraces of wheat were still being grown somewhere even into the 1900s. Only since the advent of modern refined flour milling and the coincidental publication of Mendel's laws 130 years ago, have specialist wheat breeders become the source of wheat types and varieties, instead of farmers.

Another change in wheat breeding came with the introduction of modern conventional agriculture, about 60 years ago. Since that time wheat has been bred to be shorter in stature so that it can be planted intensively, and grown under high input conditions. In this way wheat has been made to yield double or triple amounts, compared with the old-fashioned varieties.

Modern wheat breeding can be regarded as beginning with Mendel's laws. Methods for finding and producing varieties with desirable traits, such as hardness for refined flour milling, disease resistance, and shortness for high yield, have become increasingly sophisticated. Also the search for desirable traits has been extended to wild wheat, and the most ancient varieties. Bearing in mind that each trait is manifested by the production of relevant enzymes in the wheat grain, and that enzymes are proteins, we have the possibility that wheat proteins introduced into wheat during these last few years, could be new to humans. *True allergic responses are always caused by proteins that cannot be properly tolerated.* Nevertheless, a very large amount of modern wheat is consumed with apparent safety.

However, some people are becoming sick with a variety of symptoms that are being blamed on wheat gluten. Blaming wheat gluten specifically, for problems with wheat, is new. But wheat itself in fact has been causing digestive problems for some people throughout recorded history. Problems in the past were caused by the temptation to sift out the bran and germ from stone milled wheat flour. The lack of bran in daily bread leads to constipation and associated digestive problems that have been recorded since the time of Hippocrates, in Ancient Greece, and the problems with sifted wheat flour were likely known even before that time.

Modern milling since 1880 has made flour devoid of bran, and germ, universally available in the Western World and beyond. White rice, and de-germed corn came into fashion at the same time. At no time in history have the bran and germ of grains been so completely removed. Highly refined flour has been enriched with some compensating B-vitamins since the 1940s, so saving many from outright B-vitamin deficiencies. However, in the 1990s the artisan white bread movement gave rise to organic unbleached flour without even these added B-vitamins. *Is this product the basic reason for the recent increase in digestive problems associated with wheat?* Myriad diseases have now been recognized as a result of presenting basic grains in the refined form. The most obvious effects have been manifested among the obese poor who now rely heavily on refined grains as their basic food. The B-vitamin deficiency diseases were the first to be recognized. Later constipation and digestive problems due to the lack of cereal fiber in the diet were again recognized. In the late 1970s obesity, diabetes, cardiovascular diseases, colon cancer, Alzheimer's disease, were recognized as modern Western diseases caused primarily by insufficient grain fiber in the diet. Finally by now, eating wheat in the whole grain form has been recognized as one of the best ways to reduce the risk for these Western diseases.

Unfortunately the supply of pleasing whole wheat products is very small compared with the need; the big refined wheat flour industry has not taken sufficient action to fill this need. The reality that our most basic food, which is wheat flour, is so very deficient is shocking to all and is generally met with disbelief. As well as the production of appealing and healthful whole wheat foods we need the backing of a very strong educational campaign.

Modern wheat is designed for modern refined flour milling, which is a very large scale and centralized operation. For our food security we need to have wheat supplied and milled locally. We also need wheat varieties intended for whole grain milling, and we need them to be milled directly in a simple single pass process. The best milling process to date for whole wheat flours is stone milling. In this way we have the possibility of reviving the healthfulness of our basic food and revealing again the wheat fragrance and flavors of a bygone age.

Around the country there are farmers, bakers, millers and consumers who have recognized the need and have begun their own production of organic old-fashioned wheat, for local and home milling directly to whole wheat flour.

Here is a list of growers producing wheat for local markets in California. Only a few of these growers are large enough to supply wheat by mail order or to stock grocery stores. In the best cases the local wheat is organic and from landrace varieties. Even if the wheat varieties are modern or organic certification has not been sought for an organic production style, these listed suppliers have made considerable effort to begin the task of filling the wide open market for

pleasing and healthful wheat grain, which can be milled easily to whole grain flour with a home stone mill. *If you are an organic wheat grower and you would like to be on this list, or to make corrections and updates, please let Monica Spiller know by e-mail: [barmbaker@aol.com](mailto:barmbaker@aol.com), or by telephone: 650 938 2865.*

<i>Wheat Grain Grower / Supplier</i>	<i>Website</i>	<i>Location in California</i>
Reed Hamilton Grass Valley Grains	<a href="http://grassvalleygrains.com">grassvalleygrains.com</a>	Grass Valley
Doug Mosel Mendocino Grain Project	<a href="http://mendocinograin.net">mendocinograin.net</a>	Ukiah
Greg Massa Massa Organics	<a href="http://massaorganics.com">massaorganics.com</a>	Chico
Dale Coke Coke Farm	<a href="http://cokefarm.com">cokefarm.com</a>	San Juan Bautista
Paul Mueller Full Belly Farm	<a href="http://fullbellyfarm.com">fullbellyfarm.com</a>	Guinda
Sally Fox Viriditas Farm	<a href="http://foxfibre.com">foxfibre.com</a>	Guinda
Andrea Crawford Kenter Canyon Farms	<a href="http://kentercanyonfarms.com">kentercanyonfarms.com</a>	Fillmore
Lou Preston Preston Vineyards and Farm	<a href="http://prestonvineyards.com">prestonvineyards.com</a>	Healdsburg
Jared Lawson Pie Ranch	<a href="http://pieranch.org">pieranch.org</a>	Davenport
Jaclyn Moyer & Ryan Dorsey South Fork Farm	<a href="http://southforkorganic.com">southforkorganic.com</a>	Placerville
Deborah Walton Canvas Ranch	<a href="http://canvasranch.com">canvasranch.com</a>	Petaluma
Johnny Wilson Front Porch Farm	<a href="http://fpfarm.com">fpfarm.com</a>	Healdsburg
John DeRosier With the Grain	<a href="http://withthegrain.org">withthegrain.org</a>	Paso Robles
Stuart Schroeder Stone Horse	<a href="http://stonehorse.biz">stonehorse.biz</a>	Sebastopol

There are similar efforts to produce organic wheat for the local market, in other states. Some organic old-fashioned wheat grain suppliers and producers outside California, are listed below. *If you are an organic wheat grower and you would like to be on this list, or to make corrections and updates, please let Monica Spiller know by e-mail: [barmbaker@aol.com](mailto:barmbaker@aol.com), or by telephone: 650 938 2865.*

<i>Wheat Grain Grower / Supplier</i>	<i>Website</i>	<i>Location</i>
Jeff Zimmerman Hayden Flour Mills	haydenflourmills.com	Phoenix Arizona
Glenn Roberts Anson Mills	ansonmills.com	Columbia South Carolina
Thom Leonard Heartland Mill	heartlandmill.com	Marienthal Kansas
Brooke & Sam Lucy Bluebird Grain Farms	bluebirdgrainfarms.com	Winthrop Washington
Joel Steigman Small Valley Milling	smallvalleymilling.com	Halifax Pennsylvania
Bob Quinn Kamut	kamut.com	Big Sandy Montana
David Oien Timeless Food	timelessfood.com	Ulm Montana
Eli Rogosa Heritage Grain Conservancy	growseed.org	Waterville Maine
Lena Lentz Lentz Spelt Farms	lentzspelt.com	Marlin Washington
Terry Button Ramona Farms	ramonafarms.com	Sacatan Arizona
Karen Dotson BKW Farms	bkwazgrown.com	Marana Arizona
Nature's Legacy Purity Foods	natureslegacyforlife.com	Hudson Michigan

Since it will be impossible to have completely localized wheat production, and where there are gaps in the local supply, we can continue to buy organic wheat grain from local grocery and health food stores, for our own stone milling at home.

Here is a list of small stone mills for use at home: *If you are producing small stone mills for home use and you would like to be on this list, or to make corrections and updates, please let Monica Spiller know by e-mail: [barmbaker@aol.com](mailto:barmbaker@aol.com), or by telephone: 650 938 2865.*

<i>Producer or supplier</i>	<i>Website</i>	<i>Location</i>
KoMo Grain Mills	<a href="http://pleasanthillgrain.com">pleasanthillgrain.com</a>	Germany, Europe
Osttiroller Mills	<a href="http://goodmills.eu">goodmills.eu</a>	Dölsach East Tyrol, Europe
Meadows Mills	<a href="http://meadowsmills.com">meadowsmills.com</a>	North Wilksboro North Carolina

For the most healthful homemade bread, a natural sourdough leavening will bring out the best in flavor and healthfulness from fresh stone ground whole-wheat flour.

Finally I believe that we should aim for a complete infrastructure of localized organic whole wheat milling, to be instituted as soon as possible. 