

A California whole grain initiative

To encourage an **increased supply of basic whole grain foods**, enough for everyone, and made genuinely with all the grain ingredients in the whole grain form *and without added refined carbohydrates*.

Why we need a whole grain initiative

Our most basic staple wheat, is presented almost exclusively as refined flour, lacking bran and germ. The same refined flour milling system is used everywhere in the developed world. This is so, even though bran and germ from grains are essential to human health. Compounds in the bran and germ are well known to prevent metabolic diseases such as obesity, diabetes and cardiovascular disease, which are by now pandemic.

Commodity whole wheat flour is produced by recombining bran and germ with refined flour, in an outdated and inefficient multistep process. When produced in this system, whole wheat flour is generally unattractive, is therefore in low demand and is in very short supply compared with the recommended consumption needs for basic whole grain foods. [Read more. 1.](#)

Implementing our California whole grain initiative

- By **growing wheat and other grains sustainably** in regenerative rotation farming systems. [Read more. 2.](#)
- By encouraging the **localized installation of single pass stone and impact milling systems** for fresh whole grain flour production. [Read more. 3.](#)
- By **educating all, regarding the good taste and health benefits of basic whole grain foods**, made genuinely with all the grain and grain flour ingredients in the whole grain form. [Read more. 4.](#)

1. Something's really wrong with our flour and grain supply!

Something's really wrong with the commodity wheat flour supply! The refined flour contains only the endosperm of wheat and totally lacks the germ and bran. It is high time that bakers rebelled against the millers who continue to supply them with this deficient flour for their basic bread. I say this because basic commodity wheat flour contains only wheat endosperm. Refined wheat flour lacks the vital nutrients that make it useful as basic human food. The germ and bran that contain these vital nutrients are instead fed to animals, which are

destined for meat and dairy foods. *The same applies to polished rice and degermed corn; both are refined grains lacking the vital nutrient-rich bran and germ.*

In the 1940s there was a mandate to enrich refined endosperm flour with at least some of the missing nutrients, but currently there is no such mandate in the USA. Millers are free to sell their refined flour *as it is* to bakers, with nothing added. Most bakers have never experienced any other possibility than this refined flour; most people have never experienced the flavor of freshly milled whole wheat flour and the health-giving attributes of genuinely whole wheat bread; they do not know what they are missing!

How else is this refined flour so grim? Well, the production method dating from 1880, involves taking the wheat grain and wetting it to make the bran soft, and then sending the wet grain through multiple steps to remove the bran, cut off the germ, grind the endosperm to a powder and fractionate even the endosperm flour into low and high protein flour. The result is unduly wet and highly refined flour. It stores easily because it contains just starch and gluten protein, and very little of the vital nutrients that would encourage insect damage or mold growth. The multi-step process is inefficient in energy use and provides us with refined flour that is grossly deficient in essential nutrients.

When the refined flour method is used for whole wheat flour production it is the antithesis of good sense, because yet more steps are required to stabilize the wet bran and germ and to finally recombine bran and germ with endosperm flour. The whole wheat flour that results from this excess of processing does not have a fresh flavor, and rarely pleases bakers or their customers. Demand is therefore low, and this low demand is the prevailing excuse for the limited supply of commodity whole grain flour. Only approximately 6% of the total commodity flour production in the USA is whole grain. The deficit of whole wheat flour production flies in the face of the great need to offer pleasing whole grain foods enough for everyone.

Yet another realization is that this system for producing flour is the normal system everywhere in the developed world. If ever there was a monopoly this surely is one; a monopoly by the producers of the mills, by the millers who use these mills, by the refined flour bakers, and by a commodity agricultural system for producing wheat exactly suited to this refined flour milling style.

The status quo for refined flour milling and baking is in a very deep rut. The operational millers provide training among themselves, to ensure its perpetuation. Refined flour bakers have a backlog of 140 years of recipes designed for refined flour leavened with a system of purified yeast with refined sugar. Producers of the purified yeast and the refined sugar depend for their existence on bakers using refined flour.

This commodity milling and baking system is so complete in its worldwide penetration that attempting to change it, is as ant to an elephant. Only if there is a desire from within the commodity system is there any hope that the commodity system will produce the much-needed *genuine* whole wheat products. Even so, there are deep cracks in the system. Primarily, grower costs

are increasing faster than the price paid for their wheat grain. As a result, growers are leaving the commodity wheat system to grow grain for animal feed, or to completely change to growing other crops.

By now, we have a pandemic of Covid-19 disease made worse by the underlying pandemic of metabolic disease. This underlying metabolic disease pandemic of obesity, diabetes and heart disease is absolutely preventable. The most significant contribution to the cure is to provide enough basic whole grain foods for everyone. **This connection between metabolic health and eating our basic grain foods whole is an absolutely proven fact.** Eating grain foods whole, as well as plenty of vegetables, fruit, nuts and legumes, olive oil and similar fats, and some fish and poultry is known to provide protection from metabolic disease. This diet is known as the *Healthy Mediterranean Diet*.

Refined grains, refined sugar and hydrogenated fats are not part of our human diet; they are all modern industrial inventions and are absent from historical ethnic diets worldwide.

We cannot wait any longer, for the commodity refined grain system to be changed. Hence our initiative to encourage an increase in the supply of *genuine* whole grain basic foods from wheat, rice, corn and other basic grains.

2. Growing wheat sustainably in regenerative farming systems.

The decision to provide basic wheat foods in the whole grain form, re-defines the entire system from planting and ultimately to milling and baking.

Whole grain wheat must be produced without the risk of contamination from toxic agricultural chemicals; especially, because the bran skin of the grain and the oily germ would easily absorb any toxic chemicals. Ideally wheat should be grown in conditions that generate enough grain protein to qualify as basic grain food. In turn this means that wheat is best grown in soil that is sustainably fertilized and regenerated, and kept pest free by attention to the beneficial effects of crop rotation. The same principles apply to rice, corn and grains destined for human whole grain food.

Before the advent of refined flour milling, a wide range of wheat varieties and types, each suited to their region were available to the miller and baker. Most varieties have been abandoned in favor of red wheat of a particular hardness. This has led to a huge industry for wheat breeders and proprietary seed production replacing the tremendous diversity of wheat being grown previous to 1880.

The appreciation of grains as a necessary rotation crop to maintain soil health, means that grain crops would be produced on most farms. However, in order to produce grains as cash crops rather than cover crops to be ploughed under, there is need for a supporting localized grain processing and handling infrastructure. Localized smaller scale grain infrastructure in California is

lacking. Currently, the grain infrastructure is large scale and centralized in the few regions where grain is grown on a correspondingly large scale.

In California farmers and local whole grain millers need the support of a local grain handling and storage infrastructure to supply both local and imported wheat in a clean and dry form. After all, highly populated California must import most of the grain needed for milling, even if preference is given to locally produced grain.

3. Local stone & impact mills for whole grain flour production

Absolutely, we need a replacement for the current commodity whole grain flour production system, which is centralized and outdated refined flour mills. The most obvious solution would be for the alternative installation locally, of many smaller stone and impact mills, specializing in whole grain flour production.

For modern bakers, a fine whole grain flour is needed. In any mill it is easy to make fine endosperm flour, but the bran and germ tend to produce relatively large flakes. Ultimately, a pleasing flour contains bran and germ flakes somewhat larger than all the fine endosperm particles, but small enough that they are not easily visible in the flour.

Outside the commodity system, fine whole grain flour is produced in single pass systems using hammer mills, stone mills and air-swept impact mills. Hammer milling of flour is perhaps the most commonly used. Very much less whole grain flour is produced using modern stone mills or air swept impact mills. It appears that the sum of commodity whole grain flour and that produced outside the commodity system is still under 10% of the total flour produced. This is not nearly enough to supply even 50% of everybody's basic whole grain requirements.

Several disadvantages arise in the use of the hammer mill to produce fine whole wheat flour. Because the particle size of the flour is governed by an exit screen, even the bran and germ are produced as finely as the endosperm. In practice it is better to have very fine endosperm and not quite so fine bran and germ flakes. The fine screens are easily damaged and need frequent replacement. The greatest disadvantage is the risk that the flour will become excessively heated in the milling chamber. The bran and germ would be the most susceptible to over-heating and production of unwanted flavor changes.

Pleasing whole grain flours are produced in stone mills run by millers who are skilled in the mechanics and maintenance of modern stone mills. However, the space occupied by each of the largest stone milling units is significantly greater than for hammer or impact mills. Also, the output even from the largest stone mill units is generally quite low in comparison with the hammer and air swept impact mills at perhaps 1,000 pounds per hour. Purposely slow stone milling produces the highest quality whole wheat flour.

Promising modern alternatives to stone and hammer milling grains for flour, can be found by considering the high-speed impact mills. Modern impact mills are designed for pulverizing a multitude of materials from rocks to plastics, and even explosives. The milling chamber of these mills can be flushed with cooling or drying air or inert gas according to the substance being milled. The internal surface can be made inert and very hard. When used for producing whole grain flour, such mills are air swept and keep the flour cool. A further advantage is that a very fine granulation, especially for the endosperm, is easily possible. The endosperm can be milled very fine, while the bran and germ are less fine, but still fine enough to please the baker. This is ideal. Generally, air-swept impact mill units for whole grain flour production, are of a size to produce at least 1,500 pounds per hour and often 3,000 pounds or more per hour.

4. Educating all, regarding the good taste and health benefits of basic whole grain foods

We are in a very strange situation when we feel the need to ask, “just what is a whole grain food?” For 140 years we have been presented with refined grains as our primary basic food: refined wheat flour, polished rice and degermed corn. Even now basic grain foods are being prepared mostly with refined grains and possibly half the grain ingredients as whole grains. However, in order to maximize the health benefits possible from whole grains, we need to be eating basic whole grain foods that contain *all* the grain ingredients in the whole grain form, and also indeed without any refined carbohydrate ingredient. Such foods are truly basic and can be called 100% whole grain foods or *genuine* whole grain foods. This about whole grain flour for our basic bread, pasta, tortillas, crackers, chapatis.....

This year 2020, has been made extraordinary by the Covid-19 pandemic, by the devastating fires in California and by the politics of a general election year. But beneath all of this there have been two notable proclamations that can assist the cause for drastically increasing the supply of basic genuine whole grain foods for everyone. The first is an update on the USDA recommendations for a healthy diet, that supports the need for basic whole grains beyond any doubt: <https://www.dietaryguidelines.gov/2020-advisory-committee-report>

The second proclamation was a call to action to control hypertension by the US Surgeon General. This may not at first glance seem relevant to whole grain foods, but the best way to control hypertension without drugs is to eat a healthy Mediterranean diet. In turn, a healthy Mediterranean diet is based on grain foods presented in the whole grain form, as well as plenty of fruit, vegetables, legumes, nuts and olive oil.

Hypertension, or high blood pressure is a symptom of the metabolic disorders resulting from a diet based on refined grains, refined sugar and hydrogenated fats and few whole plant foods. At least the dangers of hydrogenated fat in the diet has been faced by bakers, and the trend is to replace these hydrogenated fats with natural fats and oils.

Currently, eating grain foods whole for most people is impossible to achieve, simply because the supply is not there. We certainly need to educate people as to the healthfulness of genuine whole grain basic foods, but before this effort can be meaningful, we need to increase the supply so that enough basic whole grain foods are available for everyone.

It is high time to recognize the enormous healthcare costs for those who suffer from metabolic syndrome disease, and the loss to society of their productivity. The one food system responsible for these losses is the commodity refined grain system. The possibility for vastly improved health for all, can come absolutely from building a localized whole grain system.