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The Danes have it!

The Danes might be among the happiest on earth!
A friend writing from Denmark recently said they have free healthcare, more than eight months maternity leave, generous vacation time, plenty of bicycle roads and bakeries that bake a large selection of whole grain rye breads.
They also have a national whole grain campaign embracing the milling and baking industries, encouraging people to eat 75 grams whole grains each day.
We can seriously learn from this advice: 75 grams whole grains per day is a clear message. Backing it is the need to declare grams of whole grains in the entire loaf or package of pasta, breakfast cereal etc., as well as the grams of whole grains in a serving. To this end I have added some lines to the Bread Nutrition Facts Calculator, so that bakers can add these numbers to their own bread labels and information sheets. Basically 75 grams of whole grains can be achieved with just 3 servings of truly whole grain products per day! Examples: An artisan loaf based on 500 grams of 100% whole grain flour might provide 20 thick slices; that's 25 grams of whole grain per thick slice (or 2 thinner slices for a sandwich). One handful of 100% whole grain pasta spirals weighs 25 grams and is less than the amount normally eaten as a serving. If you are eating Supermarket brands labelled with the whole grain stamp: a 100% stamp announces 16 grams whole grain per serving and the variations on the whole grain stamp announce 8 grams whole grains per serving.

Here's the background to this story: Since 2008 at the beginning of their campaign, per capita whole grain consumption in Denmark has risen from 36 grams per day to 63 grams per day. Here in the USA despite government recommendations, whole grain consumption has remained static at only 20 grams per day. To my mind, the free healthcare system in Denmark must have been the prime motivating force for such a strongly backed public-private campaign; without it, treating chronic Western diseases would be disastrously costly to their healthcare system.
Apart from reducing healthcare costs, the incentives needed for change are to capitalize, subsidize and support localized grain (growing, cleaning, storage and whole grain milling) and hence the provision of locally freshly milled whole grain flours, as needed by local bakers. Grain rather than flour is the form in which to securely store our most basic food staple. We do not need all our grains to be locally grown, but we do need to store our total supply locally. Localized grain will provide environmental improvement; I'll let you think how this can be. Let's engage the *California Department of Food and Agriculture* and everyone in *Healthcare, Schools, Restaurants, Food Service* and more, to take this beyond the few local farmers and bakers who have carried the message alone for far too long.
Let's *Whole Grain California!* Or *Whole Grain Wherever You Are!*

Landrace wheat has more to offer

Landrace wheat has much more to offer than grain yield. First it offers centuries of experience growing in a particular climate in the Old World, and is likely to be

disease-free when transferred to a similar environment in the New World. It also comes with a pre-determined cuisine and original use as a whole grain in its country of origin. Environmentally the landrace wheat plants are generally large and have correspondingly large roots, so providing great carbon sequestration in a single season, together with benefits to soil microorganisms, and soil stabilization. Those extensive roots also help filter out excesses of potential pollutants, such as nitrates. If we use landrace wheat as a rotation instead of a cover crop, there is the possibility of grazing and so feeding animals or mowing for green chop before the plants become too tall, and before they come to fruition. A final crop of grain can be taken after all of this, and the possibility of overly tall plants resulting from a fall planting can be avoided.

The plants are large so that their planting rate needs to be substantially less than for modern conventional wheat, which is grown primarily for its grain.

We need to look after the sources and seed identity for landrace varieties. Recently, it was very disappointing to see a plot of *Maparcha* landrace wheat, grown as a demonstration and experimental plot so evidently contaminated with almost 50% of a bronze headed variety. If we take on the task of growing these landrace varieties we must be diligent in preserving their identity or all is for naught. Mixing accidents can happen, so when the risk is there then it is better to focus on one special grain variety per farm. Thorough cleaning out of equipment between harvesting and processing varieties is of paramount importance. It is not good practice to sell mixtures, and certainly it is fraudulent to sell an outright mix as a single variety. Let the baker or chef choose to make the mixture, while clearly knowing the character of each component.

What is wheat habit?

With few exceptions it seems that each wheat variety grows either with a *Spring habit*, or with a *Winter habit*. These *habits*, or sets of characteristics, determine how the plant will behave in the field, under the prevailing conditions of weather and planting time. After some very telling experiences while growing wheat and rye on the coast I think I have understood the distinction between a Spring and Winter habit wheat (or rye), see below, but stand to be corrected. For example, it was very disconcerting to witness a sprawling prostrate Winter habit plant; the prognosis seemed very dire until we realized that later it grew robustly upright and produced a good crop. I've also planted Winter habit wheat in April and discovered that it never could come to fruition in the season, but instead just sprawled.

Spring Habit Wheat (and Rye)

Initial growth is as an upright plant. Seed can be planted whenever it is expected that the plant can grow continuously without interruption by a cold spell. That is, in the Spring in most climates and in the Fall, Winter or the Spring in the California / Mediterranean climate which consists basically of only three seasons with a snowy winter omitted.

Winter Habit Wheat (and Rye)

Initial growth is as a prostrate plant. Seed needs to be planted in conditions where they can experience a period of slow growth or dormancy during the cold or cool of winter. Usually this means the seed needs to be planted in the fall, so that some growth to a sturdy plant occurs before the cool or cold conditions cause a slowdown or dormancy. In practice it appears that this slow down period cannot be achieved if

seed is planted later than mid-February in milder climates such as the California / Mediterranean climate, or later in spring in cold climates. *As a rule, does the Winter habit plant need to be above ground before the Equinox in order to come to fruition, as would be the case when planted by mid-February?*

Here in California we rarely plant Winter habit wheat, or rye, but if we do then it seems that it must be planted by mid-February, otherwise the plants do not come to fruition within the season. However, if we are planting a Spring habit wheat, which is the most usual situation in California, the planting can be done even as late as May, and the crop will come to fruition very well, but much later in the season.

Reference links
Bread Nutrition Facts Calculator: www.wholegrainconnection.org

Whole grains intake recommendations, background:
https://www.aaccnet.org/publications/cfw/2018/may-jun/Pages/CFW-63-3-0103.aspx