

Rebuilding the Grain Chain Stories from the Coastal Pacific No

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Oregon State University barley breeder, Dr. Pat Hayes, stands in a field of barley with farmer Wilbur Bishop of Coupeville, Washington. The barley growing in the field is from a variety called 'Alba,' developed by Hayes to be well adapted to conditions in the Coastal Pacific Northwest.

Photo credit: Elizabeth Dyck



Northwest

Imagine it—biting into a pretzel made with wheat grown in your own community and following that with a sip of cool beer made from barley grown and malted nearby.

Unless you are talented enough to perform all of the steps involved in production, processing, baking, malting, and brewing, the search for this experience could turn into a long quest.



Though the “localvore” movement is alive and well in many parts of the U.S., it has focused primarily on fresh produce, meat, eggs, and dairy and has overlooked the grains that are an important staple in human diets. One reason for this is the massive amount of consolidation through the supply chain in global grain markets. In fact, five major companies now control 80 percent of the global grain trade (Pugh & McLaughlin, 2007). The consolidation in processing is such that even in a major wheat growing state, like Kansas, it can be difficult to source local flour (Henning, 2011).

The alternative to the current dominant industrial system is that of decentralized independent production, processing, and distribution networks. The creation of such networks has the potential to generate income for processors, improve farm profitability, reconnect communities with their agricultural heritage, and recapture the idea of grain as a healthy “food from somewhere” rather than as an interchangeable commodity. Costs of staple grains would reflect the true cost of production, not the volatile swings characteristic of grain prices decided in Minneapolis, Kansas City, or Chicago.

Is this vision of localizing grain growing and production just a utopian dream? Not according to the food system pioneers working on independent yet parallel fronts in places like Vancouver Island, British Columbia; Mount Vernon, Washington; Athens, Ohio; and Asheville, North Carolina (Hanus, 2010; Hergesheimer & Wittman, 2011; Appalachian Staple Food Cooperative; Wolfe 2011). None of these places are commonly associated with

modern-day grain production, yet each has a legacy of small-scale grain growing now being rediscovered, one field at a time.

The coastal Pacific Northwest is one of several U.S. regions working to reclaim their grain heritage. Its initial success suggests that this local movement could serve as a useful case study for others considering similar efforts. Communities in the coastal Pacific Northwest from Northern California through British Columbia (areas west of the Cascade Mountains) are interested in reviving the infrastructure necessary for drying, storing, and processing small grains in order to meet growing consumer demand.

In the Skagit Valley in Northwest Washington, wheat and barley are typically grown in rotation with higher value crops for their rotational benefits, but the harvested grain is sold for minimal return on the commodity market. Meanwhile, end users such as bakers, millers, maltsters, brewers, and livestock producers are sourcing small grains and grain legumes from as far away as Saskatchewan. The potential exists for a locally integrated small grain system in this region, creating shorter supply chains with the ability to preserve information about who produced the grain and where it was grown.

Infrastructure

The infrastructure required to support the processing of grains in the coastal Pacific Northwest existed in the past, but has been lost over time due to the consolidation of agricultural production and processing. The proximity of agricultural land to urban populations



Loaves of bread baked in Dr. Andrew Ross' food science laboratory at Oregon State University using hard red winter wheat grown in western Oregon.
Photo credit: Karen Hills

in this region poses a paradox of opportunities and challenges as the region attempts to balance farmland preservation, urban development, and the sustainable management of natural resources.

Residents of the coastal Pacific Northwest care about their food supply, support local agriculture, and are interested in how to replace the infrastructure needed to maintain a local grain system. Farmers have a need for grains as a rotation crop to break disease cycles and improve soil quality. There are a variety of possibilities for end uses for local grain, with those commanding a higher price, such as flour, being the most attractive to farmers. However, it is critical that there are also outlets for grain that does not meet the strict quality standards for flour. For this reason, a robust local grain system must also include brewing, distilling, and feed for livestock.

These end uses require some common infrastructure. Agricultural production equipment such as grain drills for planting and combines for harvest, are already prevalent in areas where wheat is grown for commodity markets. Facilities for cleaning and storing seed to keep grain dry and pest-free will also be required.

Grain processing equipment varies by grain type and its intended use. Producing wheat for human consumption provides the greatest possible return to farmers. There are several steps involved in the processing of grain. Food uses of barley, oats, and spelt require seed hulls be removed with dehulling equipment. Wheat is free threshing, meaning the hull detaches during harvest. A hammer, stone, or roller mill is needed to process grain into flour. Each of these types of mills can provide whole grain flour. However, producing the white flour used most commonly by commercial bakers requires more sophisticated roller mills that sift out the bran and further reduce particle size.

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It's Not Just Wheat

Though wheat is the most commonly consumed grain in American diets (USDA, 2003), there are other grains worthy of consideration in local grain systems. Malt is the highest value use for a barley crop. Malted barley is sprouted in a controlled way, which causes a spike in enzyme activity needed for the fermentation process. While most microbreweries use malt produced on a huge scale for national markets, there has been increasing interest from microbreweries in sourcing locally grown and malted barley. When barley or wheat doesn't meet the quality standards necessary for malt or flour, respectively, due to weather conditions or other factors that can decrease crop quality, these grains can be used in distilleries.

Washington has seen a rise in micro-distilleries due to a passage of a 2008 law creating a craft-distilleries license (Allison, 2009). The law requires that 51 percent of ingredients used by craft distilleries be sourced from in state. In areas like western Washington with animal integrated agriculture, cereal grain can be used to meet local demand for an energy ingredient in livestock feed. Processing for this use generally involves cracking the grain by using a hammer mill for easier digestibility.

Once the processing infrastructure and marketing networks exist for wheat and barley, expanding the infrastructure for other types of grains like rye, oats, triticale, niche heritage grains, and dry beans would be relatively simple. Variety and crop choice will vary depending on regional environments, but the ambitious farmer can find many locally adapted varieties if sourced outside of the standard routes. Breeding for wheat and barley varieties adapted to the coastal Pacific Northwest is occurring at Washington State University Mt. Vernon and at Oregon State University, which will give coastal grain growers better-adapted varieties.

Supporters of this relocalized grain system are not proposing that every county, or every region be completely self sufficient in grain. However, with some strategic investments in infrastructure in consultation with end users, a significant portion of grain purchased for use in baked goods, beer, distilled beverages, and livestock feed could be sourced locally, keeping dollars in the local economy.

Stories from the Coastal Northwest

This work is going on in many areas of the coastal Pacific Northwest. In Eugene, Oregon, Tom Hunton recently opened Camas Country Mills in response to a demand for local flour and grain (Dietz, 2011). In the same region, the Southern Willamette Valley Bean and Grain project, a collaboration of growers and community organizations, began formally meeting in 2008 building on previous work to increase local production for local consumption. Further north, in Corvallis, Oregon, Dr. Pat Hayes and Dr. Andrew Ross of Oregon State University are working to boost the consumption of locally grown barley. Hayes has been involved with a new mini-malting designed by students to test small batches of malting barley (Foyston, 2010). Ross has been working hard on developing ways to incorporate healthy doses of barley into delicious baked goods, such as breads and pretzels.

Continue north from the Willamette Valley past Seattle to Mt. Vernon, Washington, where researchers are looking into production strategies for growing organic bread wheat in Western Washington. Preliminary data shows that in the climate of Western Washington it is possible to achieve the protein levels in wheat required by craft bakers (Hills, in preparation).

George DePasquale (2010), the owner and head baker at a large Seattle bakery said about the bread he made from flour grown in Mt. Vernon: “It had the best flavor I've tasted in my 33 years of baking.”

Preparations are underway for the first Kneading Conference West, a meeting of artisan bakers, millers, farmers, and grain enthusiasts to be held September 15-17, 2011. Across the border in Canada there are new ideas being tested for marketing grains. The Urban Grains CSA began supplying grains to the Vancouver, British Columbia, market in 2008 (www.urbangrains.ca) using the same Community Supported Agriculture model now commonly used by diversified vegetable producers. A Victoria, British Columbia, brewery has created a beer with all ingredients grown within 24 miles (Kloster, 2010). Intrepid agronomists in Alaska have even developed a locally adapted hullless barley variety, Sunshine, featured in the November 2009 issue of Rural Connections (Tarnai, 2009).

Moving Beyond a Niche Market

One objection often raised about purchasing local grain is the potential high cost. This is a valid concern when the flour from the western part of Washington is commonly sold in 1-2 lb. bags for \$4-6. However, if production and processing were increased even moderately, the economy of scale would drive the cost down substantially. And many local bakers are interested. A survey of 70 commercial bakers in Western Washington found those interested in sourcing flour locally represent 3.5 million lbs. of flour annually (Hills et al., 2011). The three issues most frequently cited as concerns by commercial bakers were cost, availability, and suppliers. Each of these concerns could be addressed by a moderate increase in the scale of production and processing.

We're at the point where it is cheaper for bakers in Kansas to import wheat from Montana to bake a loaf of bread, not by chance, but through a coordinated effort to build infrastructure for an agricultural system based on exports and industrial scale processing. Regional efforts to

restore infrastructure for local grain systems on a scale matching local markets could provide opportunities for economic development, improved access to healthy whole grains, and preservation of the working agricultural landscape. Farmers, entrepreneurs, and researchers are working hard to make locally-produced pretzels and beer a reality. ●

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RECOMMENDED READING

Plant Breeding
plantbreeding.wsu.edu

Barley World
barleyworld.org

Kneading Conference West
kneadingconferencewest.com

