



>300 shapes & sizes

History of Introduction and Cultivation of Durum Wheat in North America

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Durum wheat spikes



Horse/mule driven wheat combine harvester ca. 1900

Durum wheat (*Triticum durum* Desf.) was one of the first crops to be domesticated in the Levant Region of the Near East. Durum wheat is high in protein, gluten, and makes a very firm and strong dough. Its kernels are relatively large and amber colored. Flour from durum wheat is most commonly used for making 'pasta' rather than for baking. De Vita (2009) lists over 300 shapes, sizes, and types of pasta from the world over. In fact the first book to mention 'pasta' was written in the 10th century AD and published in Baghdad, Iraq (Verde and Verde Barr, 2013).

Wheat cultivation was introduced in to North America from two entry points. In 1521 durum wheat seeds were introduced to Mexico by the Spaniards. And in 1602 farmers in California planted seeds of wheat brought by explorers, traders, settlers, and soldiers. The missionaries were also instrumental in bringing seeds with them when they set up their missions in southern California. On the Eastern side, immigrants from Europe brought seeds with them and these varieties were better adapted to the more temperate conditions of the 'middle colonies'. Later, when pioneers moved wheat cultivation westward in to the prairies and the Great Plains some challenges were faced. The first introductions of durum wheat were made by a certain group of Mennonites who emigrated from southern Russia and settled in the middle Great Plains including Kansas, and hence Kansas soon became the state where most durum was harvested.

The California Gold Rush (1848-1855) resulted in rapid expansion of the urban population. Wheat was a natural crop that was adapted to the Mediterranean type climate of the state. The very fertile and flat central valley with deep stone-less clay-loam soil was ideal for wheat production. Soon California wheat was exported to Britain and the rest of Europe because of its excellent milling quality, high gluten content, and ability to absorb large quantities of water to produce a large and heavy loaf of bread. Before the advent of the railroads, wheat was exported in large quantities through the ports of Oakland and Stockton. From 1868 until 1900 well over 300 vessels, filled to the brim exclusively with wheat, departed each year from the San Francisco Bay. One of these was the *Pacific Queen*, sailing vessel that hauled California wheat to Europe.

The California "Wheat Kings"

Not even the shrewdest grain trader in New York (incl. Arthur W. Cutten) could have foreseen the tremendous increase in wheat production in California. Several American "wheat kings" established offices in San Francisco and huge fortunes were made. But after 1920s global wheat prices collapsed (several "wheat kings" went bankrupt) and it was at this time that farmers began to look at other opportunities such as orchards of Mediterranean crops in the San Joaquin Valley, rice in the Sacramento river delta, and viticulture in the Napa Valley (Rothstein, 1987). Today approx. 73% of the durum wheat consumed in the U.S. comes from North Dakota. Other durum producing states are Montana, Minnesota, South Dakota and of course California. However, only 6% of the total wheat production in the U.S. consists of durum.

The Desert Durums®

"Desert Durum" is a collection of wheat varieties that were developed by the Arizona Grain Research & Promotion Council and the California Wheat Commission. These wheats are grown in desert-like climatic zones and dry lowlands of both these states. These wheats are typically planted in November through February and harvested in May and/or June. This gives the Desert Durums an advantage since they enter the international and domestic markets 1 to 3 months ahead of the spring durums from other parts of U.S. USDA reports that planting estimates for Desert Durums in 2012 was 90,000 acres in Arizona, an increase of 13% from 2011, and 140,000 acres in California, an increase of 17%.

Durum production and the future

In the western part of the U.S., durum production is in direct competition with the richest business enterprise in human history - large tracts of arable land in the Santa Clara area where durum was produced have been gobbled up by the Silicon Valley entrepreneurs. Also, fracking pumps in North Dakota force millions of gallons of water underground at high pressure in order to force the oil and natural gas deposits to the surface. This water is extracted from an aquifer beneath North Dakota, "and we have no right to do that to future generations who'll need that water," say the natives. Then the contaminated water is brought back to the surface and disposed of in huge storage ponds, risking spills that can pollute creeks and soil for generations to come.

By an accident of geology, the Bakken oil deposits lie directly beneath the very land to which durum production has shifted due to climate change. Some writers are predicting the end of durum production in the U.S. But that is unlikely to happen overnight. If the U.S. gets serious about climate change and moves towards climate-smart agricultural practices the day can yet be saved. We also need to limit 'global warming' because even the most skillful adaptation measures bred in to crops cannot cope with a 7 degree F rise in global temperature. Hertsgaard (2012) says that the end of pasta may not come overnight due to global warming. It will come in fits and starts with one good year of harvest followed by a bad one. Shockingly high price of pasta and durum products could result. However, if we Americans want to continue enjoying domestically grown pasta and other foods that we take for granted we need more farmers to emulate the sustainable farming and water use practices.

Acknowledgements

The support of the Dept. of Plant Sciences, UC Davis, and the California Wheat Commission (CWC) is acknowledged. I thank Emer. Prof. Calvin Qualset for his useful suggestions.

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Pacific Queen grain ship ca. 1868



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