



*Just some of the flours you'll find at the Grainstand: Emmer, einkorn, buckwheat, triticale, cornmeal, yellow pea, rye, whole Frederick, white Frederick, durum, sprouted barley, OO bread flour. Photo: Henry Blair.*

*"It all starts with the choice of grain, which is first a question of place and time."*

*– Karen Hess, A Century of Change in the American Loaf*

The Greenmarket Regional Grains Project is pioneering the new frontier in local food: grains. With our partners, we're building the marketplace for grains grown and milled in the northeast. We are educating and connecting growers, processors, bakers and chefs – sparking a rise in demand for local grains while helping ensure the crop supply and processing infrastructure are there to meet that demand.

The evidence is clear: Regional grains have arrived.

Calling all local grain lovers and home bakers (novices welcome!), join us for the [Home Bakers Meet-up](#) on Monday, February 26th! Details below.

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# Upcoming Market Dates

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[The Grainstand](#) continues its weekly presence at the Union Square Greenmarket on Wednesdays and Saturdays.

Our Beer and Spirits of NY pop-up will be back at markets starting March 17th!

## *Grainstand Pop-up Locations:*

Sunday, February 18th	Jackson Heights
Saturday, February 24th	Fort Greene Park
Saturday, March 3rd	Inwood
Sunday March 4th	79th St
Saturday, March 10th	Grand Army Plaza
Sunday, March 18th	Jackson Heights
Saturday, March 24th	Fort Greene Park

Pre-ordered bulk bags are available at the Union Square Greenmarket every Wednesday and Saturday. [Check availability and pricing here](#). To place an order or if you'd like more information, please e-mail us. Wholesale orders of \$250 or more can be delivered through [Greenmarket Co.](#), GrowNYC's wholesale distribution program.

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# Events: Conference Season In Full Swing

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## [5th Annual Yale Food Systems Symposium](#)

Yale School of Forestry and Environmental Studies

New Haven, CT

February 23rd

Greenmarket Co. & GRGP team up to present: *[Revitalizing the Northeast Grainshed:](#)*

*[Cultivating the Value Chain and Stakeholder Engagement](#)*. The symposium session will consist of a 45-minute presentation that shares the story, best practices, and challenges experienced over the past 10 years as GrowNYC and partners have worked together to revitalize the Northeast grain economy and make local grains available in NYC. Purchase tickets [here](#).

## [Taste & Toast!](#)

The Culinary Trust, NYC

February 24th

Join GRGP at *Taste & Toast! An evening of culinary experiences!* The evening will begin with cocktails, hors d'oeuvres and workshops, including one led by GRGP's June Russell and Max Bernstein of She Wolf Bakery that will tell the story of reviving wheat in the Northeast, and the subsequent development of She Wolf's now iconic sourdough miche. A casual dinner prepared by

ICE chefs, including James Beard award winner David Waltuck, will follow. Buy tickets [here](#).

## [Greenmarket Home Bakers Meet-up](#)

Project Farmhouse, NYC

February 26th, 6-9 PM

Back by popular demand! Break bread with Greenmarket Regional Grains Project and your fellow home bakers. Bakers of all experience levels are welcome to swap samples with fellow grain geeks, tell stories about overactive yeast, or share secrets on how to get a really crusty crust. Bring a loaf of your favorite home baked bread, made with locally grown grains and flours, and copies of your recipe and/or starter to trade with others. Learn tips and techniques from some of New York City's best professional bakers, including Austin Hall of [She Wolf Bakery](#), Sharon Burns-Leader of [Bread Alone Bakery](#), and Peter Endriss of [Runner & Stone](#). Buy tickets [here](#).

## [2nd Annual Philadelphia Grain and Malt Symposium](#)

University of the Sciences

McNeil Science and Technology Center

Philadelphia, PA

March 2nd & 3rd

Attend the Philadelphia Grain and Malt Symposium to learn about the local grain and malt supply chain. The symposium is open to all farmers, brewers, distillers, bakers, restaurateurs, and consumers who are interested in finding out more or making connections in the local supply chain.

## [University of Vermont's 14th Annual Grain Growers Conference](#)

Essex Resort and Spa

Essex, VT

March 22nd

Details coming soon!

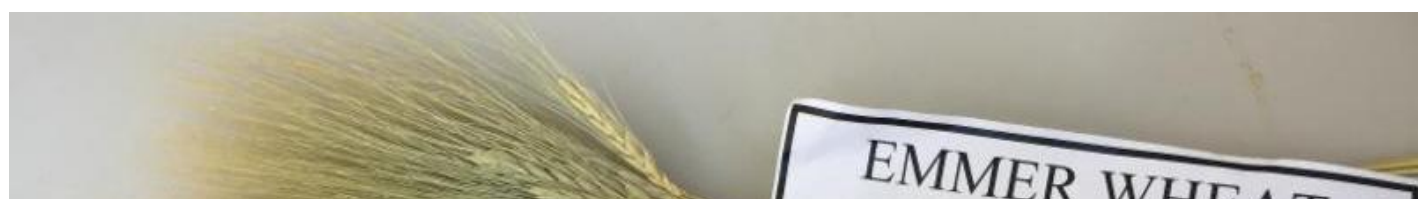
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## Featured Grain: A Brief History of Wheat

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Hard red spring, soft white winter, heritage, ancient. How can anyone possibly keep track of all the hundreds of kinds of wheat varieties out there? Even at the Grainstand, it's easy to lose track of the endless array of wheat varieties that grow well in our region, especially when they're placed among the gorgeous heirloom beans, the best oatmeal you've ever had.

So, in celebration of the Grainstand's success bringing 17 varieties of wheat to Greenmarket - many of which would not be commercially available otherwise - we're devoting this issue to unpacking this deceptively simple grain.







Wheat, *Triticum aestivum*, got its start alongside humans, *Homo sapien*, in the fertile crescent during the Neolithic Revolution, the prehistoric time period 10,000 years ago when nomads chose the sedentary life and started to farm. These early humans weren't sowing magog or even red fife. They were domesticating einkorn and emmer -- **ancient wheats** that show up in texts of all the Abrahamic religions as well as the Vedas. Ancient indeed. The *Triticum* genus spread from the Near East to China, making its way through Turkey, Greece, Italy, Spain, and up to Scandinavia, the Baltic and the U.K. Elasticity was prized even then; early farmers selected for traits with more gluten proteins, which produced more elastic doughs. Hence the genesis of *T. aestivum*, the wheat we know today, distinct from its ancient, lower gluten-yielding cousins. Later, wheat would play a major role in reshaping ecosystems during the momentous biological sea change arising from the Columbian exchange, bridging two worlds that had been evolving separately since the breakup of Pangea.

**Fast forward to 1848, the year the Chicago Board of Trade developed a system of wheat categories that we still use today.** It was the dawn of the Industrial Age, and the days of packing grains into sacks on farms and shipping them -- on an actual ship -- to consumers were numbered. The practice of tracing a grain back to a specific farm and variety - even grains from halfway across the continent - ground to a halt with the advent of railroads, the commodities exchange and farm-expanding policies like the Homestead Act. Along

came the grain elevator, and soon grain was being blended and loaded onto train cars. The categories red, white, winter, spring, hard and soft were as specific as it got, differentiating wheats by their color, growing season, and hardness.



Here's a breakdown:

### Hard v. Soft

*Hard wheat* is best for baking bread as it has a higher protein content (10-15%) and will make more gluten. Gluten is the protein found in wheat and related species. It helps dough rise and keep its shape by giving it elasticity.



Greg Russo describes the runners in an old stone grinder leaned against the front of his thriving Finger Lakes stone milling facility, Farmer Ground Flour.

*Soft wheat* is best for making cakes, pastries, flat breads, and crackers, as it has a lower protein content (5-9%).



Bread Alone's einkorn loaf – available at Greenmarket.

### Red v. White

*Red wheat* has a red pigment from tannins that give the bran (and flour) a somewhat bitter or earthy flavor. Red wheat tastes slightly sharper than white because red wheat has a higher content of phenolics and browning enzymes. Red has a more robust flavor, while white wheat is slightly milder. Red wheat is preferred for baking artisan breads.

*White wheat* does not contain tannins, but it has subtle flavor characteristics.

### Spring v. Summer

*Winter wheat* is planted in the fall and harvested in the

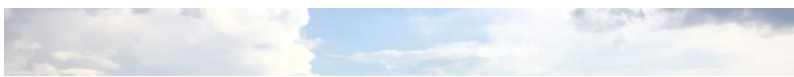
summer. Winter wheat is slightly lower in protein than spring wheat but higher in minerals.

Winter wheat is best for yeasted bread. It can be blended with soft spring wheat to make all-purpose flour.

*Spring wheat* is planted in the spring, harvested in the summer, and produces the highest protein content of any wheat. Spring wheat is ground for bread flour.

**It's Flour 101.** Protein content generally determines the type of flour and end use for a particular wheat. High protein wheat varieties are **10-14%** protein and best for baking bread. Pastry comes in at **8-9%** and cake flour ranges from **5-8%**. All purpose flours, meanwhile, almost always are soft wheat blended with a small amount of hard wheat to yield a protein level of around **10-12%**. (Both bread and pastry flours can be a single variety or a blend of different wheats.)

**Enter Norman Borlaug and the dwarfing gene.** The father of the Green Revolution, Norman Borlaug was an lowan wheat breeder who developed several high yielding and disease resistant semi-dwarf wheat varieties that greatly increased yields in developing countries plagued by famine. The yield trait was king -- selecting for taste and nutrition took a back seat.



There was a problem though: All the plump kernels hanging from the tall





*Thor Oechsner, co-owner of Farmer Ground Flour, standing in a field of Glenn wheat at his Finger Lakes farm.*

grasses weighed down the plants and caused them to "lodge," or fall over in the field. The dwarfing gene drastically shortened the grasses. The success of these breeds depended upon another controversial modern marvel, the industrially honed system of fertilization, pesticides, herbicides, and irrigation -- still the dominant form of agriculture across the globe today. Varieties of wheat developed during or after the Green Revolution are considered "modern wheats," and cultivars bred before this period, like red fife

and øland, are termed "heirloom" or "heritage." But just because something is called a modern wheat doesn't necessarily mean it's grown with industrial pesticides and fertilizers. In fact, all the wheat we showcase at the Grainstand, including modern wheats like warthog and redeemer, were successfully developed for organic systems!

**Today the Grainstand is taking part in a new golden age of wheat.** Consumers are getting reacquainted with the fundamentals of wheat and reclaiming a "wheat literacy" that has been lost for generations. Understanding protein, falling number, and variable gluten quality can be daunting for bakers dedicated to using local grains.

**But the rewards are worth it**, as seen in the incredible breads being made today. There couldn't be a better time to be a baker! Together we are participating in a renaissance of sustainable, biodiverse, small scale, and very tasty wheat, intimately engaged with the history of this little genus of grasses and what it has to say about our own species. We're so excited by the promise of these 17 varieties and can't wait to bring the next 17 to the table!



**Et Voila! A Wheat Pageant at the Grainstand**



*Test plots at Cornell University's Small Grains Breeding Program. Oland grows in the foreground. Behind it is a new windswept "naked barley," and flanking it on the right are tall red fife heritage wheat grasses. The blue hues of Danko rye stand tall in front of the distant treeline.*

## Here's what we've got...

### Bibliography

P. R. Shewry. Wheat, *Journal of Experimental Botany*. Volume 60, Issue 6, 1 April 2009. Pages 1537-1553.

Steinberg, Theodore. *Down to Earth: Nature's Role in American History*. 3rd ed., Langara College, 2017.







Warthog	hard red winter	modern
Renan	hard red winter	modern
Redeemer	hard red winter	modern
Red Fife	hard red winter/spring	heritage
Øland	hard red spring	heritage
Glenn	hard red spring	modern
Magog	hard red spring	modern
Overland	hard red spring	modern
Lancaster Red	soft red spring	modern
Medina	soft white winter	modern
Frederick	soft white winter	modern
Triticale	winter	rye/wheat hybrid
Einkorn	winter	ancient wheat
Maverick Spelt	winter	ancient wheat
Lucille Emmer	spring emmer	ancient wheat
Black Emmer	winter emmer	ancient wheat
Durum	spring	emmer relative

## Featured Innovator: Mark E. Sorrells Ph.D

Mark E. Sorrells, Professor of Plant Breeding and Genetics, Cornell University

Mark grew up among the fields and farms of rural Illinois. After receiving his Ph. D. from the University of Wisconsin in





1978, he transitioned from corn, the focus of his graduate work, to small grains, eventually joining Cornell's faculty and -- to the great benefit of Greenmarket shoppers -- partnering with GRGP to bring more and more wheat varieties to market.



Mark heads up Cornell's Small Grains Breeding and Genetics Program. The Small Grains Program works to develop new and better small grain cultivars and seeks to improve upon breeding strategies, and build a better understanding of small grain genetics. In its 111-year history, the program has developed over 40 new varieties.

Last month the Grainstand started stocking Medina, Cornell's newest variety of wheat to be released for commercial sale. GRGP asked Dr. Sorrells about what the process of developing a new variety of wheat looks like.

*Step one:* The breeder picks two cultivars that have the desired traits.

*Step two:* Cross them by spending the next 10-15 years breeding and interbreeding the individual plants. But wait -- it's not that easy. During that time breeders have to find an individual that expresses the desired traits while maintaining decent yield, disease resistance, milling and processing quality, and above all flavor! Medina is a typical example. The soft white winter wheat with high protein levels and increased disease resistance was first crossed not 5 years ago, not 10 years ago, **but 30 years ago**, in 1988.

The latest buzz in the Cornell team's research labs and fields in Ithaca, NY, is about the development of a "naked barley" - a malting barley that grows well in the northeast, is disease resistant and cold hardy, and whose hull threshes free so it can be eaten as a whole grain instead of being pearled. (Pearling is to sand away the inedible hull along with the nutrient dense outer seed coat.)



What makes Mark tick? The chance to work closely with graduate students to help them develop into excellent crop breeders is one of his favorite aspects of work, he told GRGP. Another is its interdisciplinary nature. Developing an excellent variety of wheat requires not just a breeder but a team of geneticists, plant pathologists, farmers, and other professionals. The GRGP team can relate: The mission to build an economically viable and ecologically sustainable grains market is the product of cooperation between farmers, millers, bakers,

GRGP first worked with Mark and his team at Cornell on a USDA-funded research project called Value Added Grains for Local and Regional Food Systems (2011-2016). In the project's 5 years the team brought **eight varieties of wheat** to the market that were previously unavailable. Check out our article in the [Journal of Cereal Sciences](#).

Mark gives scientific proof to what our community already knows: Small grains are a crucial rotational cover crop, especially in diversified organic farming systems. They stem erosion, keep soil healthy and allow for sustainable growth of nutrient rich foods. Since standard commodity grain doesn't fetch a high enough price to make the use of wheat as a rotational crop worth it for most farmers, Cornell and GRGP and our partners continue to develop the market and infrastructure for ancient and heritage wheats and other specialty crops. More and more we are seeing long term investment in farm sustainability achieve economic feasibility in the short term.



### Donate to the Regional Grains Project

The Greenmarket Regional Grains Project is more committed than ever to building a resilient regional food system through linking urban and rural communities.

Make donations to GrowNYC [here](#). Be sure to note "GRAINS" if you'd like your donation to fund our project. Thanks!

[Project Farmhouse](#), GrowNYC's **sustainability center and events space, is available for rent for your next party, meeting, or conference.**

This unique space, just steps from our iconic Union Square Greenmarket, features a projection wall and sound system, a Boffi Soho kitchen, hydroponic living wall, and more. You can also feel good knowing your rental fee will support public programming focused on the environment and the good food movement.

Project Farmhouse encompasses 3,500 square feet, and it can host 240 people for a cocktail party, or 100 people for a sit-down affair.

[Click here](#) to book Project Farmhouse.

The Greenmarket Regional Grains Project and the Grainstand are programs of GROWN NYC, the sustainability resource for New Yorkers: providing free tools and services anyone can use in order to improve our City and environment. More gardens, Greenmarkets, more recycling, and education for all.  
Learn more at [www.grownyc.org](http://www.grownyc.org)

