

Project: Breeding and Genetics of the Small Grain Cereals

Researcher: [Mark Sorrells](#)

Need:

Continually improving small grain varieties is important for the sustainability of New York State agriculture. Developing, cultivating, and introducing superior varieties of small grains that show improved yield, nutritional value, disease resistance, and other traits that increase crop value contributes to the economic and nutritional wellbeing of rural communities. Stakeholders in New York and the northeastern United States depend on novel and improved grains that are safe, efficient, and stable in this region.

Approach:

For more than a century, the Cornell Small Grains Project has been developing and improving superior crop varieties. In addition to Cornell's own varieties, Mark Sorrells and his team also evaluate public and private varieties from other programs. Funding from his Hatch project (NYC-149430) enabled his team to devise and evaluate novel breeding methods, including marker-assisted breeding and genomic selection, which effectively manipulate genetic variability for desired traits. Further, they began to elucidate important genetic characteristics that control agronomic crop properties, specifically pre-harvest sprouting, fusarium head blight (FHB), and nutritional quality in grains.

Results and Impact:

Small grains researchers continued evaluations of yield, disease and lodging resistance, and quality traits for public and private varieties, including winter and spring wheat, winter and spring barley, spring oats, triticale, and rye. They also released three new varieties into production: Medina soft white winter wheat, which exhibits excellent resistance to FHB, pre-harvest sprouting, and soil-borne viruses, and Ostego and Erie soft red winter wheat. During the project, NYS passed a Farm Brewery Bill providing tax incentives to brewers who use locally sourced ingredients. In response to the growing interest in craft malting and brewing, Cornell researchers initiated a malting barley breeding program and began testing varieties from around the world. The small grains program continues to be critically important and relevant for New York growers as well as for the next generation of plant breeders, who all benefit from a modern breeding program that integrates conventional and modern molecular technologies.

Related Information: [Small Grains](#)