Spring Wheat Variety Trials
2020 Results

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University of Maine Cooperative Extension collaborated with Cornell University and the Maine Grain Alliance (MGA) to conduct two separate spring wheat variety trials in 2020.

Farmer-Selected Spring Wheat Project – This trial compared spring wheat lines that were developed from crosses of heritage and modern varieties done by University of Vermont. In 2014, organic farmers in Maine, New York, and Vermont planted the "populations" that resulted from those crosses and selected the best individual plants in terms of early-season vigor and overall performance on their farms. The seed from those selections was increased in winter nurseries, and planted and selected again by the farmers the next season. In this way, the farmers developed individual lines with improved weed competitive ability that are adapted to their farms' growing conditions. Eight of the lines were identified as top performers in subsequent regional evaluations, including two from a central Maine farm (marked "G-" in Figure 1). In 2020, these top-performing lines were grown in coordinated trials in Illinois, Maine, New York, Vermont, and Wisconsin. The lines will be evaluated for weed competitiveness, FHB tolerance, grain yield, grain quality, and baking characteristics, with the goal of releasing one or more regionally adapted varieties for organic farmers. Only Maine results are presented here.

Maine Grain Alliance Seed Restoration Project – MGA collects and evaluates rare and heritage small grain varieties, and increases the seed of varieties well-suited to Maine to make it available to farmers. The hard red spring wheat varieties in this trial were given to MGA by plant breeder Dr. Anders Borgen of Agrologica in Denmark. Amy is a Swedish variety released in 1971 with excellent baking quality. The others were bred by Dr. Borgen. DF 12-16 is a line from a cross between Swedish variety Dacke and Swiss variety Fiorina and has yellowish flour, likely from elevated content of lutein (like durum and einkorn). ND 2-16 is a line from a cross between Dacke and Swiss variety Nadro. D1150 17-16, a purple wheat, is a line from a cross between Dacke and a genebank accession. For more information about MGA's Seed Restoration Project, see https://kneadingconference.com/heritage-seed-restoration/

METHODS

The trials were conducted at Buck Farms in Mapleton, Maine on a Caribou gravely loam soil. The previous crop was sunflower. Fertility consisted of a pre-plant application of 19-0-19 at 340 lbs/acre. Wheat was planted on May 20 at a target density of 1.7 million live seeds/acre. This density translated to 105-125 lbs/acre of seed depending on the seed weight of the different varieties. The plots were treated with 2-4D (1 pt/acre) on June 12 to control weeds and Prosaro (6.5 oz/acre) on July 16 to control Fusarium head blight. Grain was harvested on August 20 with a plot combine.

RESULTS

The 2020 season was significantly warmer and dryer than usual (Table 1). Drought conditions started in June, continued through the remainder of the season, and severely impacted yields. For instance, Glenn, a popular spring wheat variety in our region, yielded less than half of what it yielded in prior trials in Orono and Presque Isle. Under this year's conditions, a number of the farmer-selected wheat lines and the MGA project varieties performed significantly better than Glenn (Figure 1).

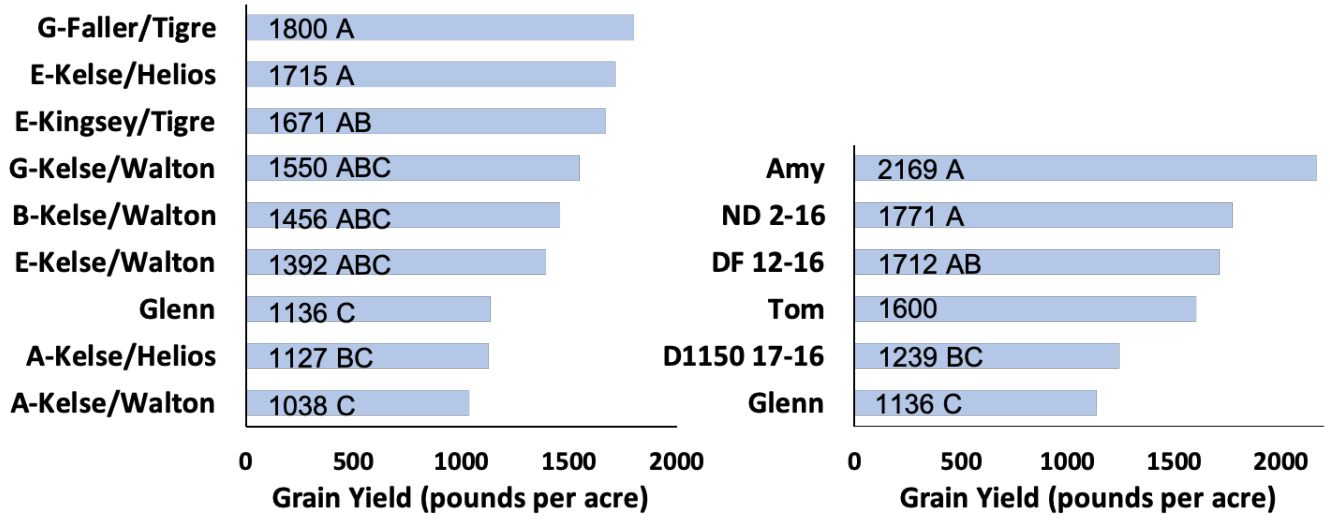
For additional variety trial reports and other grain growing information, visit the University of Maine Cooperative Extension Grains and Oilseeds website at extension.umaine.edu/grains-oilseeds.

Table 1. Monthly total rainfall and average temperature in Caribou† and Buck Farms in 2020.

	Total Rainfall (inches)			Temperature (F)	
Month	Buck Farm	Caribou	Caribou 30-yr avg.	Caribou	Caribou 30-yr avg.
April	-	2.8	2.7	37	39
May	2.8	2.4	3.3	51	51
June	0.5	0.9	3.5	64	61
July	2.0	3.0	4.1	70	66
August	1.8	2.2	3.8	66	64
Total		11.3	16.7		

† The weather station in Caribou is approximately 20 miles from the Mapleton site. 30-year norms are from 1981 to 2010.

Figure 1. Grain yield of hard red spring wheat lines and varieties from the Farmer-Selected Spring Wheat Project (left) and the Maine Grain Alliance Seed Restoration Project (right) evaluated at Buck Farms in Mapleton, Maine. Varieties Glenn and Tom are commercially available varieties that were included for comparison. All varieties, except Tom, were planted in three replicate plots to allow for statistical analysis. Within each graph, yield values that have one or more letters in common are not statistically different (at 95% confidence level).



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