

Perennial Grain Work in Ohio

Background

Perennial grain cropping systems have the potential in the coming decades to dramatically improve soil health and water quality on our farms. By maintaining constant cover and minimizing the need for soil disturbance, these systems can help reduce erosion, retain nutrients, reduce the need for weed control and foster active and resilient soil food webs.



Emerging perennial grains do not yield the same amount of grain as modern annual grain crops. However, the profitability of these systems can be significantly increased, if we harvest both forage and grain. As a dual-use crop, perennial grains can help integrate livestock with crops and further drive these systems toward agricultural sustainability.



Kernza seed head and grain

Kernza

Kernza is the trade name for a perennial grain crop being bred from lines of intermediate wheatgrass -- a widely adapted, high-yielding, high-quality, cool-season forage grass. Kernza is a sod-forming grass, very weed competitive and produces a dense rooting system that captures nutrients and feeds microbes belowground. This grass produces nutritious seed that has food quality characteristics suitable for incorporating into many food

products (breads, pancakes, pastries, etc.). The Land Institute in Salina, KS has been breeding Kernza for more than a decade.

The differences in rooting structure between annual and perennial grains are not immediately apparent aboveground, but can lead to profoundly different belowground processes and outcomes. The activity and density of perennial roots provides the carbon that increases organic matter and fuels soil food webs. The depth of roots can greatly increase nutrient/water capture and reuse.

Rooting structures of annual winter wheat (left) and perennial Kernza (right)



Current Research

The OSU Soil Fertility lab initiated a multi-state pilot study in 2014 to evaluate the potential for Kernza to be used as a dual-use crop. Timing and frequency of haying are being manipulated to assess effects on Kernza grain yield and forage quality. Currently this study is in its third year and eleven sites across the US and Canada are involved.

We are now seeking funding to continue this work, which would include on-farm trials with interested growers. We foresee a growing demand for Kernza products and hope to work with growers, millers, bakers, brewers and other end users in Ohio to develop this market and optimize management guidelines. We believe this crop could play an important role in growers with need for forage and grain.

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Or visit our website at:

<https://soilfertility.osu.edu/our-research/perennial-grains>