

Opportunities and Challenges with Perennial Grains in NY

Musgrave Farm Field Day, July 12th, 2018
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Compared with annual grains that are replanted each year, perennial grains are planted once and are harvested for multiple years. We are working with two perennial grain crops at Cornell including intermediate wheatgrass (“Kernza”, the trademark name for the Land Institute’s domesticated wild perennial, *Thinopyrum intermedium*), and perennial cereal rye (*Secale cereale*) which is a cross between perennial mountain rye (*Secale strictum*, formerly *Secale montanum*) and annual cereal rye (*Secale cereale*). Kernza is the first perennial grain crop to be used in a commercially available product. Perennial cereal rye originated in Germany in the 1960s, and was further developed as a variety known as ACE-1 in the 1990s at the Alberta-based Lethbridge Research and Development Centre in Canada.

Compared to annuals, perennial grain crops have several important benefits and drawbacks

Benefits

- Yearly planting unnecessary
- Deeper roots
- Helps reduce erosion
- Year-round ground cover

Drawbacks

- Lower grain yields than annual counterparts
- Potential build up of pests and pathogens
- Still under development

Our focus areas of perennial grains research:

- Optimizing crop production
- Effects on soil health and erosion
- Legume intercropping
- Grower and processor perceptions of production and use
- Disease incidence and weed competition

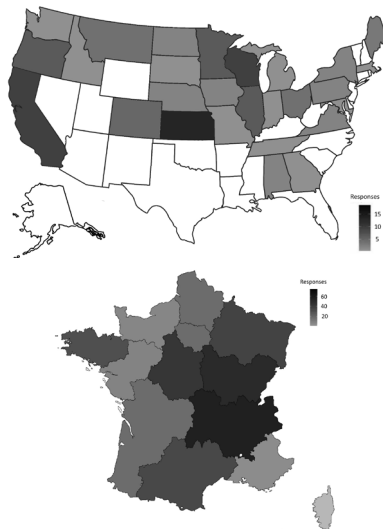


From top left clockwise: ACE1 seedling one month after planting (Sept 28 2016), ACE1 at anthesis in Newfield NY (June 8 2017), Kernza ready for harvest (Aug 11 2016), harvested ACE1 grain, bread made with 50% Kernza, Kernza regrowth after first season (Dec 21 2017).

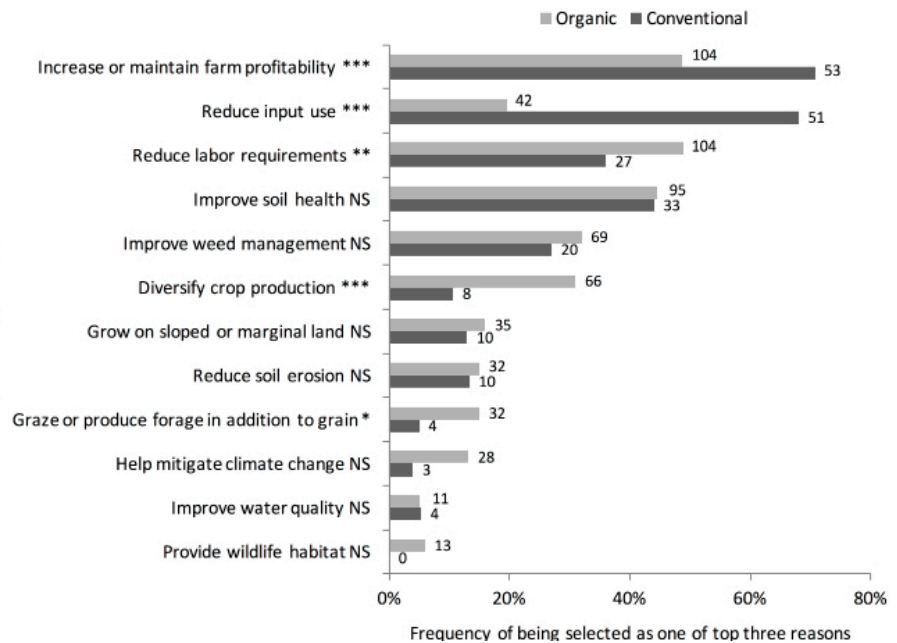


Grower Survey Results

We conducted an on-line survey of farmers and grain processors in the US and France to gauge current interest in perennial grains.



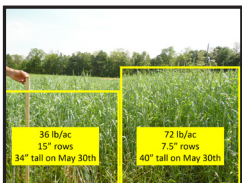
Reasons for potentially growing perennial grains



Above Left: Survey responses by state and region from 88 US and 319 French farmers. Above Right: Percentages of organic (n=216) and conventional (n=75) farmers who selected the given motivations when asked the question, "Please rank the top 3 reasons why you might be interested in growing perennial grains."

Suggestions, anyone, for a "experiment-focused" picture here, like something with flags? ;) Or keep the current below?

Eugene, did you want a formatted IPA graph here?



Perennial cereal rye grown at a 15" row spacing and half seeding rate was noticeably shorter at heading than rye grown at the standard spacing and rate.

Yields of perennial cereal rye without medium red clover were as high as 2250 kg/ha during the first growing season. Yield loss from lodging is the primary cause of the discrepancy between hand-harvested and combine yields. Seeding rate = 71 lb/ac.



Learn more on our website: <https://blogs.cornell.edu/scslab/>

Questions? Feel free to contact us for more information about this experiment or to hear about our other research. Sustainable Cropping Systems Lab, Sandra Wayman sw783@cornell.edu, Eugene Law epl49@cornell.edu, Cynthia Bartel cab83@cornell.edu. This work was supported by the Cornell University Agricultural Experiment Station (Hatch funds), the Atkinson Center, NE-SARE grant LNE16-351, and NESARE grant GNE17-156.