

Comparisons of Organic Grain Cropping Systems in Kentucky, 2004-present

- *To establish a field location for continuous, multi-disciplinary research, instruction, and extension activities in support of organic grain cropping systems in Kentucky (Laura Harris),*
- *To provide the stimulus for ongoing investment in the development of organic grain cropping systems for Kentucky producers (today??), and*
- *To train undergraduate interns for professions related to organic grain cropping systems (Josiah Frey, John McMaine, Bob Caudle, Emily Bruner, Meghan Mroz-Barrett, Seth White, and Casey Crum).*

Materials and Methods, UK Study

- Three two-year rotations used—
 - Low grain intensity—corn followed by 18 months of red clover/orchard grass. (**one** grain/2 years).
 - Medium grain intensity—corn after hairy vetch cover crop, and soybean after winter rye cover crop. (**two** grains/2 years)
 - High grain intensity—corn followed by winter wheat for grain then double crop soybean. (**three** grains/2 years)
- Note that a conventional comparison is not included.
- Four replications; each element of each rotation is present in each year. Rotations repeat on the same blocks.
- All rotations are **conventionally tilled** at each crop transition.



At left, high-tech guidance system for mechanical cultivation.

At right, low-tech approach for in-row weed removal.





Medium-tech system to try to keep animals out of the organic study area.



Above, hairy vetch (left)
and winter rye blocks,
May, 2009.

At left, corn after hairy
vetch, and soybean after
winter rye, July 2009.



Above, winter wheat,
June, 2009.



At left, corn and double
crop soybean, August, 2009.

Corn yield (bushels/A) for three cropping systems across five years.

Year	Low Intensity	Medium Intensity	High Intensity
2005	85	54	81
2006	152	158	155
2007	166	157	178
2008	72	61	72
2009	198	207	217

Soybean yield (bushels/A) for two cropping systems across five years.

Year	Medium Intensity	High Intensity
2005	21	10
2006	26	23
2007	42	20
2008	21	10
2009	49	34

Wheat yield (bushels/A) for the high intensity cropping system across five years.

Year	High Intensity
2005	72
2006	114
2007	64
2008	90
2009	46

Josiah's No-till Organic Soybean Study



A visual on Josiah's soybean crop

CONVENTIONALLY TILLED

Needs **6** weeks weed-free



47 bushels/A average

NO-TILLED AFTER RYE

Needs **2** weeks weed-free



65 bushels/A average



Weeds were not the only pests we faced! In spite of our electric fencing, both ground hogs and raccoons gave us some grief.