

2012 Protocol for Biodiversity Study  
 LTER at Kellogg Biological Station, Michigan State University

Treat B2 was chisel plowed on April 27, 2012, so we did not plant now today

System	Treatment	----- Plot Numbers -----				----- Crop Rotation -----
		Rep 1	Rep 2	Rep 3	Rep 4	
A	B1	106	201	303	401	Fall Fallow
A	B2	102	206	316	402	Spring Fallow
B	B3	111	203	306	403	Corn <sup>covers A &amp; C</sup> - Soybeans <sup>cover B</sup> - Wheat <sup>covers A &amp; C</sup>
B	B4	104	220	307	404	Soybeans <sup>cover B</sup> - Wheat <sup>covers A &amp; C</sup> - Corn <sup>covers* A &amp; C</sup>
B	B5	114	217	312	405	Wheat <sup>covers A &amp; C</sup> - Corn <sup>covers A &amp; C</sup> - Soybeans <sup>cover B</sup>
C	B6	107	207	317	406	Corn <sup>cover A</sup> - Soybeans - Wheat <sup>cover A</sup>
C	B7	105	219	305	407	Soybeans - Wheat <sup>cover A</sup> - Corn <sup>cover A</sup>
C	B8	118	214	310	408	Wheat <sup>cover A</sup> - Corn <sup>cover A</sup> - Soybeans
D	B9	119	205	314	409	Corn - Soybeans - Wheat
D	B10	117	209	320	410	Soybeans - Wheat - Corn
D	B11	110	216	309	411	Wheat - Corn - Soybeans
E	B12	109	202	313	412	Corn - Soybeans
E	B13	113	212	319	413	Soybeans - Corn
E	B14	115	204	304	414	Wheat - Soybeans
F	B15	112	213	301	415	Corn <sup>cover A</sup> - Corn <sup>cover A</sup> - Corn <sup>cover A</sup>
F	B16	101	210	308	416	Soybeans <sup>cover C</sup> - Soybeans <sup>cover C</sup> - Soybeans <sup>cover C</sup>
F	B17	116	211	302	417	Wheat <sup>cover A</sup> - Wheat <sup>cover A</sup> - Wheat <sup>cover A</sup>
G	B18	108	208	311	418	Corn - Corn - Corn
G	B19	103	218	315	419	Soybeans - Soybeans - Soybeans
G	B20	120	215	318	420	Wheat - Wheat - Wheat
H	B21	100	200	300	421	Continuous Fallow

\*Cover A: Red Clover  
 Cover B: Crimson Clover  
 Cover C: Cereal Rye

System	----- Descriptions -----
A	Fallow system: No crop is planted. Plots are tilled once a year.
B	One annual crop with two cover crops. Three year crop rotation.
C	One annual crop with one cover crop. Three year crop rotation.
D	One annual crop with no cover crop. Three year crop rotation.
E	One annual crop with no cover crop. Two year crop rotation.
F	One annual crop with one cover crop. Monoculture cropping system (no crop rotation).
G	One annual crop with no cover crop. Monoculture cropping system (no crop rotation).
H	Continuous fallow system: No cover, no crop growth. Plots are tilled as needed (2 - 6 times) a year to prevent plant growth from becoming established.

Research Objective: Incorporating biological diversity into weed management. Determine the impact of crop rotation and cover crops on weed communities in row crops.

Notes: **All plots will be managed like the LTER main site treatment 4 plots.**

No herbicides and no synthetic nitrogen will be used on any treatment.

This study was established in 2000. In 2000 and 2001 some treatments received fertilizer and herbicides.

Beginning in 2002 all treatments and plots have been treated like the LTER main site treatment 4, no herbicides and no synthetic fertilizer.

Plot size = 30' x 90' (9 meters x 27meters).

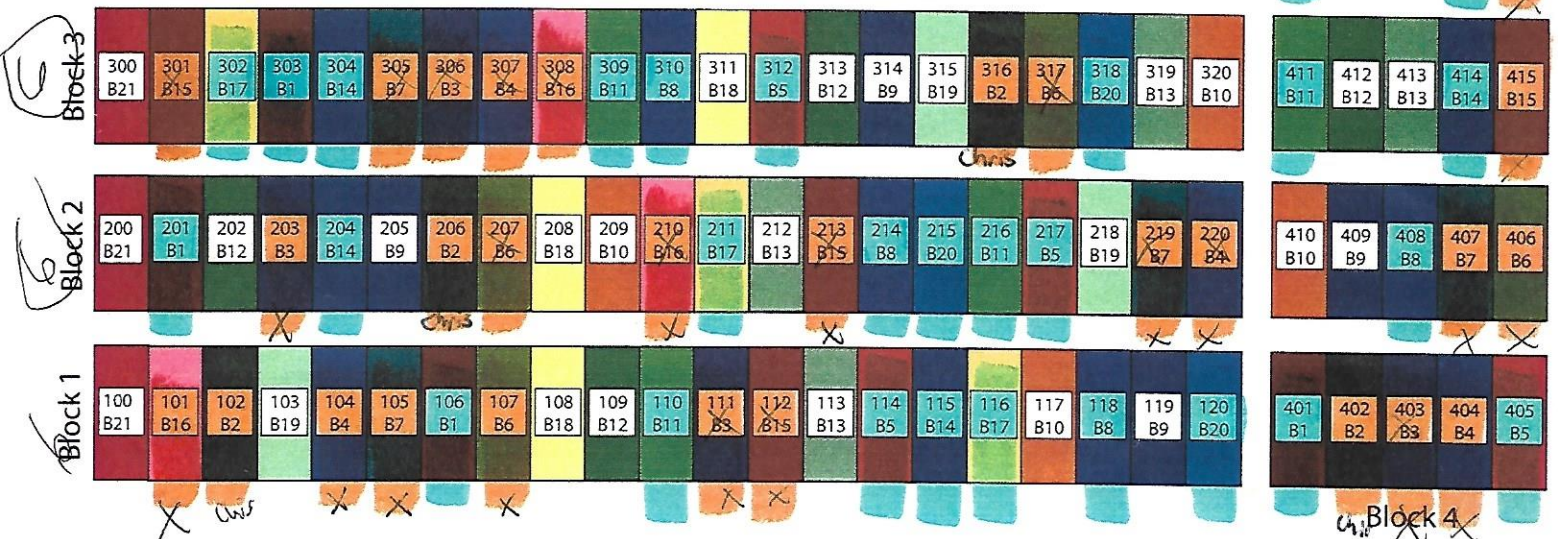
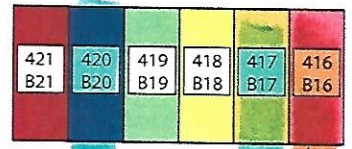
This is a working protocol used for planning purposes. Due to potential changes in chemicals, fertilizer, varieties planted, planting dates etc... please refer to the agronomic field log for actual field operations that take place during 2012.



- Plots with cover crops (red clover and/or rye) mow and chisel plow,  
 - plots (treatment) B2 plots (102, 206, 316, and 402) were chisel plowed on April 27, 2012. So they were not  
 - wheat or fall fallow plots - DO NOT mow or chisel plow. flail mowed or chisel plowed today.

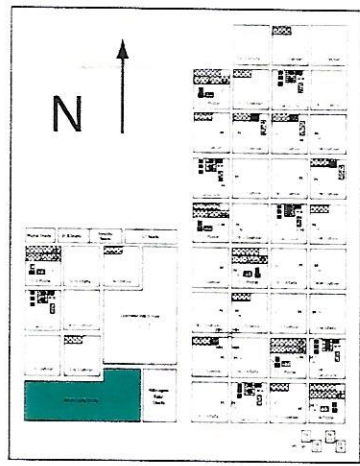
### KBS LTER Biodiversity Study

May 15, 2012  
 Justin Mezo flail mowed with 7420B + JD115 mower



Treatment	Description	System
B1	F <sub>fall</sub>	A
B2	F <sub>spring</sub>	A
B3	C <sub>cov2</sub> - S - W <sub>cov2</sub>	B
B4	S - W <sub>cov2</sub> - C <sub>cov2</sub>	B
B5	W <sub>cov2</sub> - C <sub>cov2</sub> - S	B
B6	C <sub>cov1</sub> - S - W <sub>cov1</sub>	C
B7	S - W <sub>cov1</sub> - C <sub>cov1</sub>	C
B8	W <sub>cov1</sub> - C <sub>cov1</sub> - S	C
B9	C - S - W	D
B10	S - W - C	D
B11	W - C - S	D
B12	C - S	E
B13	S - C	E
B14	W - S	E
B15	C <sub>cov1</sub>	F
B16	S <sub>cov1</sub>	F
B17	W <sub>cov1</sub>	F
B18	C	G
B19	S	G
B20	W	G
B21	T	H

Location within main LTER site



Description Key

- F = Fallow
- S = Soybean
- C = Corn
- W = Wheat (red)
- T = Tilled and cultivated
- cov1 = 1-species cover (legume)
- cov2 = 2-species cover (legume + small grain)

System Key	Trt	Total Species	Species/year
A	B1-2	10	5-7
B	B3-5	5	1-3
C	B6-8	4	1-2
D	B9-11	3	1
E	B12-14	2	1
F	B15-17	2	2
G	B18-20	1	1
H	B21	0	0

All treatments established May 2003  
 Each plot is 30' X 90' (9.1m x 27.4m)