

November 19, 2011  
Harvested corn  
in Biodiversity study.

2011 Protocol for Biodiversity Study  
LTER at Kellogg Biological Station, Michigan State University

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	Wheat <sup>covers A &amp; C</sup> - Corn <sup>covers A &amp; C</sup> - Soybeans <sup>cover B</sup>
B	B4	104	220	307	404	Corn <sup>covers A &amp; C</sup> - Soybeans <sup>cover B</sup> - Wheat <sup>covers A &amp; C</sup>
B	B5	114	217	312	405	Soybeans <sup>cover B</sup> - Wheat <sup>covers A &amp; C</sup> - Corn <sup>covers* A &amp; C</sup>
C	B6	107	207	317	406	Wheat <sup>cover A</sup> - Corn <sup>cover A</sup> - Soybeans
C	B7	105	219	305	407	Corn <sup>cover A</sup> - Soybeans - Wheat <sup>cover A</sup>
C	B8	118	214	310	408	Soybeans - Wheat <sup>cover A</sup> - Corn <sup>cover A</sup>
D	B9	119	205	314	409	Wheat - Corn - Soybeans
D	B10	117	209	320	410	Corn - Soybeans - Wheat
D	B11	110	216	309	411	Soybeans - Wheat - Corn
E	B12	109	202	313	412	Soybeans - Corn
E	B13	113	212	319	413	Corn - Soybeans
E	B14	115	204	304	414	Soybeans - Wheat
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.

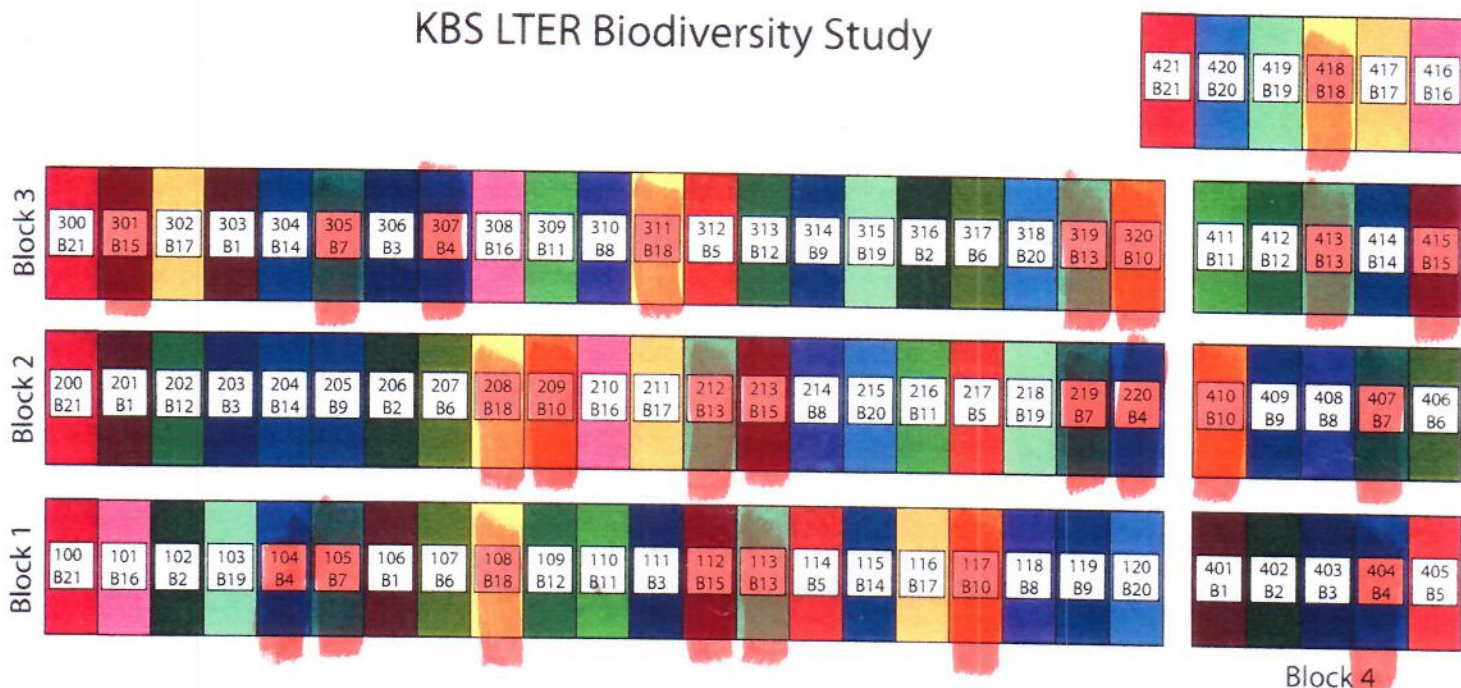
Beginning in 2002 all treatments and plots have been treated like the LTER main site treatment 4, no herbicides and no synthetic fertilizer.

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 2011.

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## KBS LTER Biodiversity Study

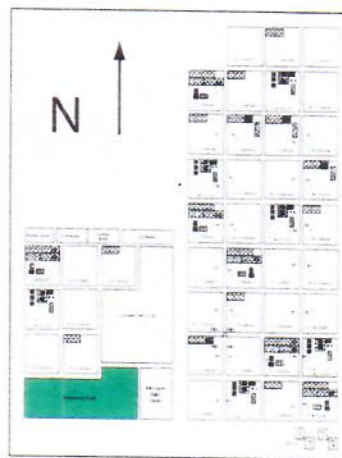


Treatment	Description	System
B1	F <sub>fall</sub>	A
B2	F <sub>spring</sub>	A
B3	C <sub>cov2</sub> - S - W <sub>cov2</sub>	B
B4	S - W <sub>cov2</sub> - C <sub>cov2</sub>	B
B5	W <sub>cov2</sub> - C <sub>cov2</sub> - S	B
B6	C <sub>cov1</sub> - S - W <sub>cov1</sub>	C
B7	S - W <sub>cov1</sub> - C <sub>cov1</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

### 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)

### Location within main LTER site



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)

Ready...  
Moisture Curves:

Corn 2011 #4

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Map File: Biobiv'11corn  
Date: 11/19/11  
Time: 9:25:58 AM

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Range Row

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1	1	Plot # 104		
		80.76	21.51	57.39
1	2	Plot # 105		
		68.92	20.47	57.77
1	3	Plot # 108		
		22.46	20.53	57.99
1	4	Plot # 112		
		40.07	23.68	56.53
1	5	Plot # 113		
		66.39	20.46	57.82
1	6	Plot # 117		
		37.47	17.37	59.40
2	1	Plot # 208		
		23.66	20.46	57.99
2	2	Plot # 209		
		59.42	18.60	58.66
2	3	Plot # 212		
		37.71	19.00	58.65
2	4	Plot # 213		
		24.42	21.61	57.44
2	5	Plot # 219		
		68.76	18.71	58.58
2	6	Plot # 220		
		69.54	17.64	59.16
3	1	Plot # 301		
		40.90	23.27	56.77
3	2	Plot # 305		
		51.14	16.12	59.99
3	3	Plot # 307		
		45.92	17.09	59.52
3	4	Plot # 311		
		27.59	19.44	58.57
3	5	Plot # 319		
		48.81	17.99	59.03
3	6	Plot # 320		
		37.35	22.05	57.14
4	1	Plot # 404		
		55.44	20.53	57.84
4	2	Plot # 407		
		64.76	19.01	58.45
4	3	Plot # 410		
		33.47	16.46	59.89
4	4	Plot # 413		
		37.95	17.93	59.07
4	5	Plot # 415		
		9.50	19.58	58.55
4	6	Plot # 418		
		29.80	21.03	57.55