

2011 LTER Agronomic Protocol Kellogg Biological Station

Main Site Treatment 4: Zero Inputs of Commercial Fertilizer/Herbicide Management Summary Sheet

Growing Season: 2011

Rotation: Corn – Soybeans – Winter Wheat Tillage: Conventional

Tillable Acres: 13.5 Current Crop: Corn Previous Crop: Winter Wheat Yield Goal: 140 bu/A

Planting Date: June 2011 Planting Population: 28,000 seeds/A Variety: Blue River Hybrid 30B19 (Organic hybrid)

Row Spacing: 30 inches Planting Depth: 1.5 inches Insecticide Used: None

Cover Crop: Medium red clover

Harvest Date: July 2011

Tillage Operations Applied Last Year:

Chisel plowed and soil finished before planting winter wheat. Medium red clover was frost seeded in March 2010. During wheat harvest, ALL wheat stubble was chopped into the plots. Following wheat harvest in July 2010, clover was allowed to grow. Plots were flail mowed in August 2010 to help control weeds and breakup wheat stubble.

Tillage Operations and Fertilizer Applied This Year:

Tillage: Spring 2011. Flail mow clover cover crop, if necessary, to facilitate chisel plowing. Follow up with chisel plow and soil finish.

Fertilizer: **No fertilizer or pesticide applications will be applied to treatment 4.**

Cover Crop: Plant cereal rye (2.5 bu/A) after corn harvest.

Weed/Insect Control: No herbicides will be used to control weeds. No insecticides will be applied to control insects.

Rotary hoe and cultivate as needed to control weeds.

No herbicides will be used to control weeds. No insecticides will be applied to control insects

Soil Sample Analysis: Results from samples taken in the autumn of 2009.

pH:	<u>R1 5.9, R2 5.8, R3 5.7, R4 5.9, R5 5.8, R6 6.1</u>	Magnesium (Mg): ppm	<u>R1 175, R2 139, R3 134, R4 139, R5 158, R6 93</u>
Lime Index:	<u>R1 69, R2 68, R3 68, R4 68, R5 68, R6 69</u>	Calcium (Ca): ppm	<u>R1 1002, R2 794, R3 804, R4 826, R5 885, R6 514</u>
Nitrogen (N):	<u></u>	C.E.C.: (meq/100 g)	<u>R1 7.9, R2 7.7, R3 7.8, R4 7.9, R5 8.3, R6 4.6</u>
Phosphorus (P): ppm	<u>R1 22, R2 25, R3 24, R4 26, R5 18, R6 34</u>	% O.M.:	<u></u>
Potassium (K): ppm	<u>R1 94, R2 73, R3 84, R4 87, R5 76, R6 33</u>	Others:	<u></u>

Fertility – Fertilizer Recommendation:

Lime ton/A:	<u>Avg. = 2.0: R1 2.2, R2 2.2, R3 2.2, R4 2.2, R5 2.2, R6 1.1</u>	K ₂ O lb/A:	<u>Avg. = 62.5: R1 40, R2 65, R3 50, R4 50, R5 65, R6 105</u>
Nitrogen lb/A:	<u>Avg. = 110: R1 110, R2 110, R3 110, R4 110, R5 110, R6 110</u>	Other:	<u></u>
P ₂ O ₅ lb/A:	<u>Avg. = 47.5: R1 50, R2 50, R3 50, R4 50, R5 50, R6 35</u>		

Differences from Prior Rotations: This is the first time that T4 corn hybrid will not be the same variety as planted in T1, T2, and T3.

Blue River Hybrid 30B19 (Organic hybrid) in first time planted in the main site T4 plots. In 2008 we planted Pioneer 36W66 (untreated) into T4 plots.

Comments: **No nitrogen will be applied to treatment 4.**

No fertilizer or pesticide applications will be made to treatment 4.

The corn seed that was planted in all replications of treatment 4 was untreated. To keep organic certification we needed to plant untreated seed.

On the LTER protocol soil sample analysis in prior years, up to and including 2007, was reported in lbs/acre. In 2008 and upcoming years soil sample analysis will be reported in ppm on the LTER protocol

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.

June 4, 2011

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Micro-plots in Treatment 4

In 2006 a new experiment was established within the LTER main site treatment 4 plots to determine how crop yield is influenced by weed populations and nitrogen availability. Six treatments were established as split-plots within the LTER main site treatments 3 and 4: three weed control treatments (business-as-usual vs. none vs. complete) x two fertilizer levels (none vs. same rate as T1).

Micro-plot definition: A sub plot or split plot treated differently from the LTER main site plots. The size of the LTER main site plots are one hectare.

Micro-plot size and location: Micro-plots were 15 feet wide by 50 feet long, only 40 feet of each plot was harvested; we removed 5 feet from both ends of each plot before harvest. Micro-plots were located in the northwest corner of all treatment 3 and 4 main site plots.

Descriptions of the six treatments used within the micro-plots follow:

Business as usual (normal) weed control + Fertilizer (BAU + Fert): if the main plot was rotary hoed, row cultivated, or band sprayed these plots received the same field operation and fertilizer was applied at the same rate as applied to the LTER main site treatment 1 plots.

Business as usual (normal) weed control - Fertilizer (BAU - Fert): if the main plot was rotary hoed, row cultivated, or band sprayed these plots received the same field operation and no fertilizer was applied.

Weed Free (complete) weed control + Fertilizer (WF + Fert): no weeds were allowed to become established and fertilizer was applied at the same rate as applied to the LTER main site treatment 1 plots.

Weed Free (complete) weed control - Fertilizer (WF - Fert): no weeds were allowed to become established and no fertilizer was applied.

No Weed Control + Fertilizer (NWC + Fert): plots were allowed to grow without any form of weed control and fertilizer was applied at the same rate as applied to the LTER main site treatment 1 plots.

No Weed Control - Fertilizer (NWC - Fert): plots were allowed to grow without any form of weed control and no fertilizer was applied.

2011 Treatment 4 randomization of micro-plots

Rep 1	NWC + Fert ✓	BAU - Fert ✓	WF + Fert ✓	BAU + Fert ✓	WF - Fert ✓	NWC - Fert ✓	N ↑
Rep 2	WF + Fert ✓	WF - Fert ✓	NWC - Fert ✓	BAU + Fert ✓	BAU - Fert ✓	NWC + Fert ✓	
Rep 3	NWC - Fert ✓	BAU + Fert ✓	BAU - Fert ✓	WF + Fert ✓	NWC + Fert ✓	WF - Fert ✓	
Rep 4	BAU + Fert ✓	BAU - Fert ✓	WF + Fert ✓	WF - Fert ✓	NWC - Fert ✓	NWC + Fert ✓	
Rep 5	NWC - Fert ✓	BAU + Fert ✓	WF - Fert ✓	WF + Fert ✓	BAU - Fert ✓	NWC + Fert ✓	
Rep 6	WF - Fert ✓	BAU + Fert ✓	NWC + Fert ✓	WF + Fert ✓	NWC - Fert ✓	BAU - Fert ✓	

22A10

85 Day Corn

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Ave 6.4 spacing
Ave 32.5 population
Area 1200

7

~~||||~~ 11:24 - 4:48



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Certified Organic by OCIA

Kind: Hybrid Corn
Origin: Michigan
Germination: 95%
Test Date: January 2011
Pure Seed: 99.5%
Inert Matter: 0.50%
Other Crop: 0.0%
Weed Seed: 0.0%
Noxious Weed Seed: None

Brand: 22A10
Variety: 1714095
Lot: 1K22MS-3 MF
Unit Size: 80,000
Maturity: 85 days



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**Contents are 100% Organic
Corn Seed**

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