

MSU Soil Fertility Research Program

LUKE- Developing Sulfur Management Strategies to Improve Nitrogen Use Efficiency in Michigan Corn Production

Trial ID: CEL07-13 Location: CAMPUS Trial Year: 2013
 Protocol ID: CEL07-13 Investigator: Kurt Steinke
 Project ID: SULFUR Study Director: Luke Thurgood
 Sponsor Contact:

Crop Code						ZEAMX			
Crop Name						Corn			
Crop Variety						DKC 48-12RIB			
Description						15% moist			
Rating Date						Oct-22-2013			
Rating Type						Yield			
Rating Unit						Bu/ac			
Crop Stage Scale						15%moist			
ARM Action Codes						TY1			
Number of Decimals						1			
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Unit	Growth Stage	Appl Code	79
TABLE OF R MEANS									
Replicate 1									187.0
Replicate 2									168.7
Replicate 3									159.2
Replicate 4									165.7
TABLE OF A (SULFUR RATE) MEANS									
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI	A	163.3 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI	A	177.8 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
3	GYPSUM	16	GR	40 lb ai/a	250 lb/a		PPI	A	169.4 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
3	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
TABLE OF B (PRODUCT) MEANS									
1	UREA 46-0-0	46	GR	0 lb ai/a	0 lb/a		PPI	A	65.2 e
1	Super U	46	GR	0 lb ai/a	0 lb/a		SD V4	B	
2	UREA 46-0-0	46	GR	20 lb ai/a	43.5 lb/a		PPI	A	123.3 d
2	Super U	46	GR	30 lb ai/a	65 lb/a		SD V4	B	
3	UREA 46-0-0	46	GR	40 lb ai/a	87 lb/a		PPI	A	182.0 c
3	Super U	46	GR	60 lb ai/a	130 lb/a		SD V4	B	
4	UREA 46-0-0	46	GR	60 lb ai/a	130 lb/a		PPI	A	205.5 b
4	Super U	46	GR	90 lb ai/a	196 lb/a		SD V4	B	
5	UREA 46-0-0	46	GR	80 lb ai/a	174 lb/a		PPI	A	217.1 ab
5	Super U	46	GR	120 lb ai/a	260 lb/a		SD V4	B	
6	UREA 46-0-0	46	GR	100 lb ai/a	217 lb/a		PPI	A	227.7 a
6	Super U	46	GR	150 lb ai/a	326 lb/a		SD V4	B	
TABLE OF A (SULFUR RATE) B (PRODUCT) MEANS									
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI	A	50.6 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
1	UREA 46-0-0	46	GR	0 lb ai/a	0 lb/a		PPI	A	
1	Super U	46	GR	0 lb ai/a	0 lb/a		SD V4	B	
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI	A	90.4 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
1	UREA 46-0-0	46	GR	0 lb ai/a	0 lb/a		PPI	A	
1	Super U	46	GR	0 lb ai/a	0 lb/a		SD V4	B	
3	GYPSUM	16	GR	40 lb ai/a	250 lb/a		PPI	A	54.6 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
3	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
1	UREA 46-0-0	46	GR	0 lb ai/a	0 lb/a		PPI	A	
1	Super U	46	GR	0 lb ai/a	0 lb/a		SD V4	B	
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI	A	107.7 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL	C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL	C	
2	UREA 46-0-0	46	GR	20 lb ai/a	43.5 lb/a		PPI	A	
2	Super U	46	GR	30 lb ai/a	65 lb/a		SD V4	B	

Means followed by same letter do not significantly differ (P=.05, LSD)

MSU Soil Fertility Research Program

LUKE- Developing Sulfur Management Strategies to Improve Nitrogen Use Efficiency in Michigan Corn Production

Trial ID: CEL07-13 Location: CAMPUS Trial Year: 2013
 Protocol ID: CEL07-13 Investigator: Kurt Steinke
 Project ID: SULFUR Study Director: Luke Thurgood
 Sponsor Contact:

LUKE- Developing Sulfur Management Strategies to Improve Nitrogen Use Efficiency in Michigan Corn Production								
Trial ID: CEL07-13 Location: CAMPUS Trial Year: 2013 Protocol ID: CEL07-13 Investigator: Kurt Steinke Project ID: SULFUR Study Director: Luke Thurgood Sponsor Contact:								
Crop Code Crop Name Crop Variety Description Rating Date Rating Type Rating Unit Crop Stage Scale ARM Action Codes Number of Decimals							ZEAMX Corn DKC 48-12RIB 15% moist Oct-22-2013 Yield Bu/ac 15%moist TY1 1	
Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Other Rate	Other Rate Unit	Growth Stage Appl Code	79
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI A	116.0 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
2	UREA 46-0-0	46	GR	20 lb ai/a	43.5 lb/a		PPI A	
2	Super U	46	GR	30 lb ai/a	65 lb/a		SD V4 B	
3	GYPSUM	16	GR	40 lb ai/a	250 lb/a		PPI A	146.1 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
3	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
2	UREA 46-0-0	46	GR	20 lb ai/a	43.5 lb/a		PPI A	
2	Super U	46	GR	30 lb ai/a	65 lb/a		SD V4 B	
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI A	188.6 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
3	UREA 46-0-0	46	GR	40 lb ai/a	87 lb/a		PPI A	
3	Super U	46	GR	60 lb ai/a	130 lb/a		SD V4 B	
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI A	185.9 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
3	UREA 46-0-0	46	GR	40 lb ai/a	87 lb/a		PPI A	
3	Super U	46	GR	60 lb ai/a	130 lb/a		SD V4 B	
3	GYPSUM	16	GR	40 lb ai/a	250 lb/a		PPI A	171.6 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
3	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
3	UREA 46-0-0	46	GR	40 lb ai/a	87 lb/a		PPI A	
3	Super U	46	GR	60 lb ai/a	130 lb/a		SD V4 B	
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI A	206.0 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
4	UREA 46-0-0	46	GR	60 lb ai/a	130 lb/a		PPI A	
4	Super U	46	GR	90 lb ai/a	196 lb/a		SD V4 B	
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI A	204.0 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
4	UREA 46-0-0	46	GR	60 lb ai/a	130 lb/a		PPI A	
4	Super U	46	GR	90 lb ai/a	196 lb/a		SD V4 B	
3	GYPSUM	16	GR	40 lb ai/a	250 lb/a		PPI A	206.3 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
3	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
4	UREA 46-0-0	46	GR	60 lb ai/a	130 lb/a		PPI A	
4	Super U	46	GR	90 lb ai/a	196 lb/a		SD V4 B	
1	GYPSUM	16	GR	0 lb ai/a	0 lb/a		PPI A	210.1 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
1	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
5	UREA 46-0-0	46	GR	80 lb ai/a	174 lb/a		PPI A	
5	Super U	46	GR	120 lb ai/a	260 lb/a		SD V4 B	
2	GYPSUM	16	GR	20 lb ai/a	125 lb/a		PPI A	230.6 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4 lb/a		2X2PL C	
2	K2O-POTASH	62	GR	50 lb ai/a	81 lb/a		2X2PL C	
5	UREA 46-0-0	46	GR	80 lb ai/a	174 lb/a		PPI A	
5	Super U	46	GR	120 lb ai/a	260 lb/a		SD V4 B	

MSU Soil Fertility Research Program

LUKE- Developing Sulfur Management Strategies to Improve Nitrogen Use Efficiency in Michigan Corn Production

Trial ID: CEL07-13 Location: CAMPUS Trial Year: 2013
 Protocol ID: CEL07-13 Investigator: Kurt Steinke
 Project ID: SULFUR Study Director: Luke Thurgood
 Sponsor Contact:

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Other Rate	Other Rate	Other Unit	Growth Stage	Appl Code	
										ZEAMX Corn DKC 48-12RIB 15% moist Oct-22-2013 Yield Bu/ac 15%moist TY1 1
										79
3	GYPSUM	16	GR	40 lb ai/a	250	lb/a		PPI	A	210.8 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4	lb/a		2X2PL	C	
3	K20-POTASH	62	GR	50 lb ai/a	81	lb/a		2X2PL	C	
5	UREA 46-0-0	46	GR	80 lb ai/a	174	lb/a		PPI	A	
5	Super U	46	GR	120 lb ai/a	260	lb/a		SD V4	B	
1	GYPSUM	16	GR	0 lb ai/a	0	lb/a		PPI	A	216.5 a
1	P2O5-PHOS	45	GR	20 lb ai/a	44.4	lb/a		2X2PL	C	
1	K20-POTASH	62	GR	50 lb ai/a	81	lb/a		2X2PL	C	
6	UREA 46-0-0	46	GR	100 lb ai/a	217	lb/a		PPI	A	
6	Super U	46	GR	150 lb ai/a	326	lb/a		SD V4	B	
2	GYPSUM	16	GR	20 lb ai/a	125	lb/a		PPI	A	239.6 a
2	P2O5-PHOS	45	GR	20 lb ai/a	44.4	lb/a		2X2PL	C	
2	K20-POTASH	62	GR	50 lb ai/a	81	lb/a		2X2PL	C	
6	UREA 46-0-0	46	GR	100 lb ai/a	217	lb/a		PPI	A	
6	Super U	46	GR	150 lb ai/a	326	lb/a		SD V4	B	
3	GYPSUM	16	GR	40 lb ai/a	250	lb/a		PPI	A	227.0 a
3	P2O5-PHOS	45	GR	20 lb ai/a	44.4	lb/a		2X2PL	C	
3	K20-POTASH	62	GR	50 lb ai/a	81	lb/a		2X2PL	C	
6	UREA 46-0-0	46	GR	100 lb ai/a	217	lb/a		PPI	A	
6	Super U	46	GR	150 lb ai/a	326	lb/a		SD V4	B	

MSU Soil Fertility Research Program

LUKE- Developing Sulfur Management Strategies to Improve Nitrogen Use Efficiency in Michigan Corn Production

Trial ID: CEL07-13 Location: CAMPUS Trial Year: 2013
 Protocol ID: CEL07-13 Investigator: Kurt Steinke
 Project ID: SULFUR Study Director: Luke Thurgood
 Sponsor Contact:

COMPLETE SPLIT-PLOT AOV For ZEAMX Corn DKC 48-12RIB 15% moist Oct-22-2013 Yield Bu/ac 15%moist TY1 1 (Data Column 79)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)	LSD (.05)
Total	71	284732.425359				
R	3	7649.523052	2549.841017	5.975	0.0016	13.9
A	2	2536.919697	1268.459849	1.173	0.3714	23.2
ERROR A	6	6485.967027	1080.994505	2.533	0.0337	24.1
B	5	241459.263497	48291.852699	113.164	0.0001	17.0
AB	10	7397.338168	739.733817	1.733	0.1024	29.5
ERROR B	45	19203.413918	426.742532			

Crop Code

ZEAMX, BCOR, Zea mays, = US

Rating Type

Yield = yield

Rating Unit

Bu/ac = bushels per acre

ARM Action Codes

TY1 = 3.889286*[C78]*(100-[C76])/85