Assessing Liquid Starter Fertilizer Rates on Corn in High Fertility Situations

Oxford SCIA Major Grant Report

Purpose:

To assess response of various rates of starter fertilizer in high fertility soils. Where livestock manure is applied on a regular basis, soil fertility levels are usually in the high, very high, or even excessive range – where the recommendation comes back with "no additional fertilizer is required". Many farmers planting corn consider starter fertilizer as "cheap insurance". This trial will try to assess if this practice is warranted.

Methods:

Eight plots were established on land with regular manure applications ahead of corn using different starter fertilizer rates. Sites were located throughout Oxford and surrounding counties**.** A minimum of two replications of each treatment was requested at each site, with most sites replicating treatments three times. Treatments included no starter, ½ normal rate, normal rate, and twice normal rate applications.

Results:

Results from 6 sites were obtained, with two lost to high moistures (taken for silage). Outcomes were extremely variable, with a range in yield impact from -4.8 bu/ac to +10.2 bu/ac. The normal drop in harvest moisture that is generally associated with starter fertilizer trials did not occur in the liquid trials, but was present in the dry starter trials. Overall average yields did increase with starter fertilizer, although yield gains were small. Yield differences between low and high rates of liquid starter fertilizer were variable as well, with a slight yield gain to higher rates on average.

Table 1: Results from Liquid Starter Fertilizer Applications

Starter Rate	Yield (bu/ac)			Moisture (%)		
	Zero	Half	Full	Zero	Half	Full
Perth 1		169.7	174.2		27.6	27.5
Perth 2		175.4	184.5		26.9	26.0
Waterloo 1	151.6	157.2	158.4	30.1	30.0	30.0
Waterloo 2	151.6	157.5	161.8	30.1	30.0	29.4
Tavistock 1	174.2	169.4	168.7	30.7	31.2	31.1
Tavistock 2	174.2	177.9	169.9	30.7	30.7	30.6
Middlesex	165.6		173.2	27.6		26.5
Avg 4 plots	162.9	165.5	164.7	30.4	30.5	30.3
Avg 5 plots	163.4		166.4	29.8		29.5
Avg 6 plots		167.9	169.6		29.4	29.1

Table 2: Dry Starter

Location	Yield (bu/ac)		Benefit over No Starter (bu/ac)	Moisture (%)		Difference in Harvest Moisture (%)
	Without	With		Without	With	
Foldens	220.9	228.2	7.3	26.73	25.7	-1.03
Embro	154	158	4	26.1	25.8	-0.3

Summary:

Yield and moisture responses to starter fertilizer in this trial were highly variable. There was a small yield gain to starter fertilizer applications, with slightly increased response at higher rates. No impact was seen on moisture content. Dry starter fertilizer treatments increased yield and decreased harvest moisture more consistently than liquid fertilizer in this trial.

Next Steps:

None.

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Project Contacts:

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Location of Project Final Report:

OMAFRA Crop Advances
OSCIA Website http://www.ontariosoilcrop.org/en/memberpagesprivate/grants.htm
Oxford SCIA Website http://oxfordscia.wordpress.com/