



Abstract

The use of clover as a nitrogen source for corn production may allow producers to reduce commercial nitrogen rates. To evaluate the effect of clover cover crop and nitrogen rates on corn production, an experiment was conducted at the Ohio State University Research Farm in Wood County, Ohio. The entries were replicated four times in a randomized complete block design. All systems in this comparison were no-till. Medium red clover was frost seeded in wheat on April 18, 2008. After wheat harvest, clover was allowed to grow until 10-29-08 when Roundup and Clarity herbicides were applied to kill the clover. Corn was planted at the same time in all plots as no-till on 5-12-09. Sidedress nitrogen was applied on 6-16-09 at V6 growth stage. All plots harvested the center two rows. Red clover biomass analysis from late fall 2008 showed 120 lb/acre of available nitrogen. Chlorophyll content of corn on 8-8-09 ranged from 24.1 SPADD meter reading for no clover and no nitrogen to 53.1 with clover and 160 lb/acre nitrogen applied. In all comparisons, clover increased chlorophyll content of corn leaves. Soil nitrate nitrogen tested on 8-8-09 ranged from 2.7 ppm for no clover and no nitrogen to 22.7 ppm with clover and 160 lb/acre nitrogen applied. In all comparisons, corn yields were significantly increased when clover was included. An economic analysis showed that when clover was used, corn yield increased 9.9 bu/acre with a net return of \$13.65 above costs of clover.

Clover Underseeded in Wheat

A typical method to establish red clover is applying early spring nitrogen fertilizer to wheat with clover seed included. Frost heaving and rain incorporates seed into soil. **Clover grows underneath** wheat.



SPADD meter reading 8-8-09





Clov

Red Clover Nitrogen Contribution For Corn

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Nutrient Content Red Clover



Red Clover Topgrowth in Fall 1.5 ton /ac

N = 120 lb/ac P = 8 lb/ac K = 77 lb/ac

Chlorophyll Content

Clover	O Nitrogen	24.1
ver	O Nitrogen	26.7
Clover	80 lb. N	47.9
ver	80 lb. N	50.1
Clover	160 lb. N	50.6
ver	160 lb. N	53.1

Nitrogen in Soil



Soil Nitrate ppm 8-8-09

No Clover	O Nitrogen	2.7
Clover	O Nitrogen	5.2
No Clover	80 lb. N	4.7
Clover	80 lb. N	4.5
No Clover	160 lb. N	13.5
Clover	160 lb. N	22.7



Corn Yield

2009 NW Ag Research Station

Red Clover, N Rate, No-till

Cover Cro	p Sidedress N	Rate Cor
No clover	0	39
Clover	0	47
No clover	80	93
Clover	80	103
No clover	160	129
Clover	160	135
LSD (0.10) 6.3	

Economics

Cost of Clover Analysis:

At 80 lb/ac sidedress nitrogen clover cover crop increased corn yield by 9.9 bu/ac.

Value of Corn = 9.9 bu/ac x \$3.50 /bu = \$34.65Cost of clover = $12 \ln x \ 1.75 \ln = \ 21.00$

Net return on clover

For more information contact

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= \$ 13.65