

# Corn Management Comparison

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## Objective

To evaluate 4 corn management systems.

## Background

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Cooperator:	Ag Incubator Foundation	Fertilizer:	listed below
County:	Wood	Planting Date:	notill & Integrated = April 30 Organic = May 28, 2004
Nearest Town:	Haskins	Planting Rate:	notill & integrated = 29,000 Organic = 24,000 / acre
Drainage:	Tile, well-drained	Row Width:	30 inch
Soil type:	Hoytville, clay	Herbicides:	listed below
Tillage:	listed below	Harvest Date:	notill & integrated = October 25 Organic = November 11, 2004
Previous Crop:	wheat		
Variety:	Garst 8424		
Soil test:			

## Methods

Each system was replicated five times in a randomized complete block design. Individual plot size was .55 acre in 30-foot wide strips. The center 6 rows were harvested the length of the strip and weighed using a weigh wagon. The following 4 systems were compared.

1. No-till/strip-till system: previous crop wheat, fall 2003 strip tillage, corn planted into strip zones, no further tillage. Starter fertilizer plus liquid nitrogen sidedress total = 150-40-0 lb/ac. Herbicide applied May 5, 2004: GuardsmanMax – 2 qt/ac, Clarity-1/2 pt/ac, 2,4-D at 1 pt/ac, Crop Oil – 1 gal/100 gal.
2. Integrated system: previous crop wheat with clover underseeding, fall 2003 straw pack manure added at 18 ton/ac. Starter fertilizer plus liquid nitrogen sidedress total = 100-40-0 lb/ac. Herbicide applied May 5, 2004: GuardsmanMax – 2 qt/ac, Clarity-1/2 pt/ac, 2,4-D at 1 pt/ac, Crop Oil – 1 gal/100 gal. Tillage: fall disk chisel, disk, field cultivator
3. Organic CSW rotation system: previous crop wheat with clover underseeding, September, 2003 applied 2.5 ton/ac DayLay chicken compost analysis 4-4-3. Tillage was fall disk chisel, spring disk chisel, disk, field cultivator. Rotary hoe and cultivate for weed control. No fertilizer or pesticides applied. Certified organic 2004.
4. Organic Hirzel system: In summer 2001, 28 ton/ac compost applied then alfalfa seeded. Tillage was October 2003 disk chisel, spring disk chisel, disk, field cultivator. Rotary hoe and cultivate for weed control. No fertilizer or pesticides applied. Certified organic 2004.

## Results

<u>System</u>	<u>Yield bu/ac</u>	<u>grain moisture</u>	<u>Stalk Nitrate ppm</u>
No-till	130.2	25.6	430
Integrated	161.8	21.5	56
Organic CSW	96.3	27.8	940
Hirzel system	113.8	25.1	82
LSD (.05)	12.2		598

## Summary

In this study there were significant differences in corn yield among the four management systems. In the Integrated system, reducing liquid Nitrogen by 50 lb/ac when applying manure did not appear to harm yield. In fact this practice may have contributed to the 31 bu/ac advantage compared to no-till/strip-till. Stalk nitrate values were adequate (range of 750 – 2000 ppm) for the Organic CSW system while below adequate for the other systems. In comparing the organic systems, the two years of alfalfa prior to corn for the Hirzel system appeared to improve yield compared to corn following wheat/clover in the system #3. Net return per acre depends on the value given to the organic corn which can have a much higher selling price compared to #2 market corn.

For additional information, contact:

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