

Managing Manure In No-Till

Cover Crops Make
the Difference
Consider the Economics

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***I CAN'T NO-TILL BECAUSE I
NEED TO***

***TILL IN MY MANURE TO
REDUCE THE***

LOSS OF NITROGEN!

Manure Management Economics

**Costs to incorporate vs
nitrogen savings**

**Economics of using cover crops
with manure**

Manure & No-Till Nitrogen Cost Comparison — per acre

Manure N applied = 250 lbs

- Incorporation in 1 day = 125 lbs N
50%
- No incorporation = 50 lbs N
20%*
- Difference is 75 lbs N lost @ 40 cents per
lb = \$30.00

*Note: some data shows higher amounts of N

Data from Penn State Agronomy Guide

Manure & No-Till Economics

Incorporation Costs

- **Tillage incorporation to retain 50% Nitrogen**
 - Minimum two passes such as plow disk or chisel disk
 - Must be done in one day for 50% savings
- **2009 Pa Custom Rates for tillage ave \$18.00 per pass = total \$36.00**

BOTTOM LINE

At current prices it is cheaper to
lose the nitrogen

- As N costs increase this can change
But!
- When was manure incorporated?
- Rainfall is cheap incorporation
(.5")

BOTTOM LINE (2)

- Timeliness – Did we delay planting
- Labor – Time lost to incorporate manure – did it delay corn planting
- Use of additives to reduce N loss
- Lost value of no-till system if we till
(no-till must be continuous!)
- Biological benefits of surface applied manure

Nitrogen uptake by Corn

Uptake of Nitrogen by cover crops



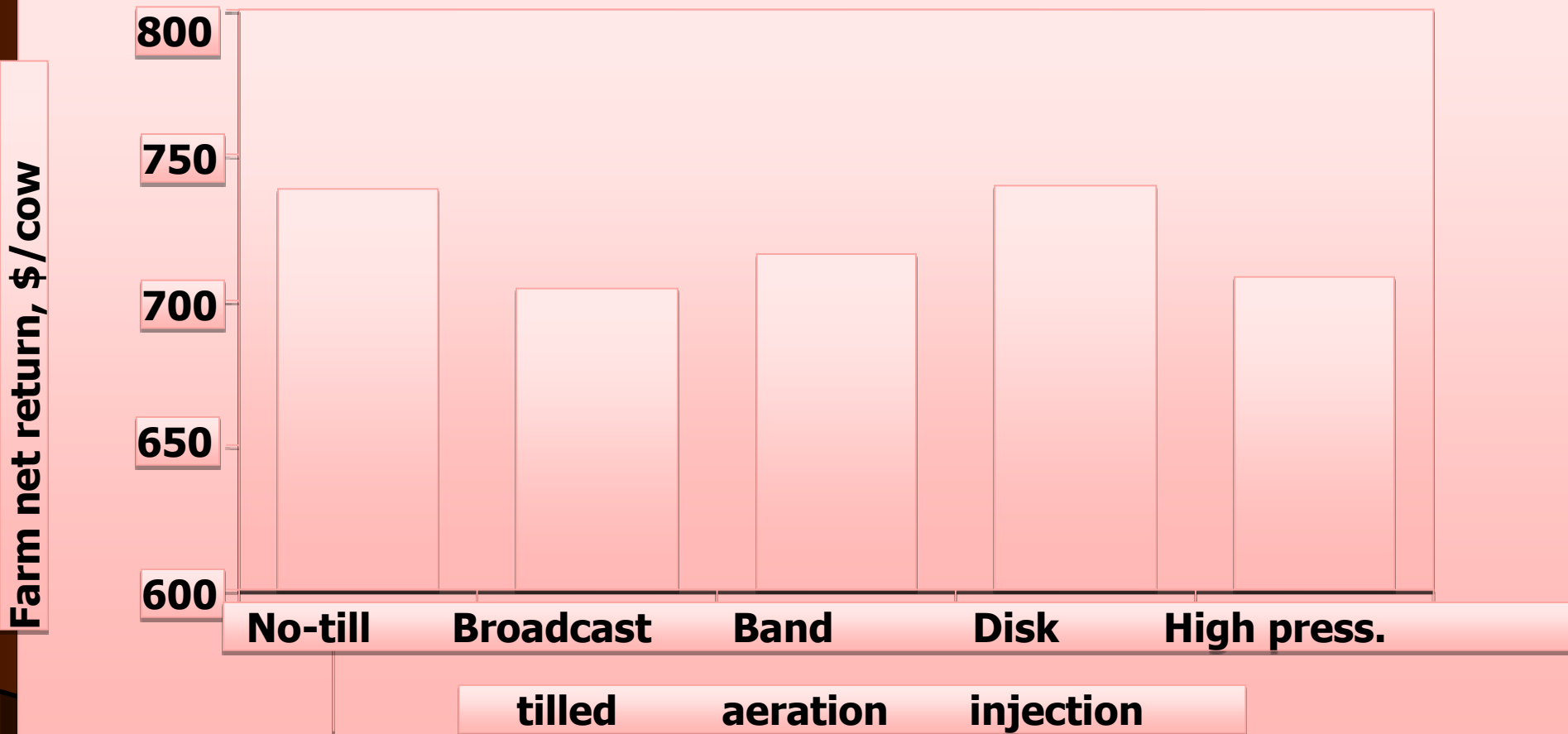
FALL APPLIED MANURE & COVER CROPS

- Efficiency without Cover Crop is 15-20% = 50 lb N
- Efficiency with Cover Crop = 40-50% = 115 lb N
- Nitrogen saved = 65 lb or \$26

Data from PSU Agronomy Guide

Economics

IFSM Model for 100 cow dairy



Soil Loss Comparison

Soil Loss Tons/Ac/Yr

Manure Spring Applied

CC = cereal rye harvested for silage

Silage corn - chisel disk

Without cover crop	12
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With cover crop - chisel disk	10
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Silage corn - no till

Without cover crop	4*
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With cover crop - no till	3
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** not a sustainable no-till system*

Manure & Cover Crops

No Till can be very successful with manure

Manure can be an asset in the transition

**Tillage to incorporate manure costs money
and takes valuable time**

Cover crops are the key

They save nitrogen

They increase soil tilth and SOM

They feed the microbes

They reduce runoff and nutrient loss

Purpose of cover crop is to manage manure nutrients

Considerations:

Time of planting

Final use of cover (harvest or kill)

When is manure applied

Holding nutrients(N) until it will be utilized by the corn crop

Consider diversity

Timing of N Application

As near to crop use as practical



SUMMARY

The key to managing manure in no-till is the use of cover crops

Infiltration and runoff are reduced

N efficiency can be increased by 50%

Soil compaction is decreased

Soil microbial activity near the soil surface is increased

Out of sight out of mind concept

Tailor this system for YOUR operation