## **NESARE Sustainable Dairy Cropping Systems**

F	ORAGE ROT	ATION									
	MANURE	JFMA	MJJAS	омоџ	FMAMJ	JA	SOND	L F M A	L L M	AS	(
	MANAGEMENT										
	COMPARISON	Alfalfa+	Corn	Winter					Corn		(
		Grass	Silage	Wheat	Under	rseed	Red Clo	ver	Silage		
	Broadcast		Broadcast			or			Broadca	ast	
	Manure		Manure				Hairy ve	tch	Manure		
							•				_
		Alfalfa+	Corn	Winter					Corn		
		Grass	Silage	Wheat	Under	rseed	Red Clo	ver	Silage		
	Inject		Inject			or			Inject		
	Manure		Manure				Hairy ve	tch	Manure		
					-			¥ 1	1 Start No	- in	A
		$\sim$			1					2 A	A STAND
. 8			-		The second				Mine and		The state
			and the second second								ALL ALL
THE PARTY							TAL				
											2 × 2
											A A A A A A A A A A A A A A A A A A A
and the second		Al . La Ba		and the second se							
	6 Start						AL C				and the



### **CORN-SOY GRAIN CONVENTIONAL ROTATION**

MANURE	1 F MA MJ J A S O N D	I F MA MI I A S O N D	1 F MA M	
COMPARISON	Corn Grain	Soybean	Co	m Gra
Broadcast	Broadcast		Bec	adcast
Manure	Manune		Ma	nure
	Corn Grain	Soybean	Co	m Gra
Inject	Inject		Inj	ect
Manure	Manure		Ma	nune

suppress weeds in establishment year.



## Model Dairy Farm

### Herd Dynamics:

- 65 lactating cows
- 10 dry cows
- 64 young stock

(birth to 24 months)



### Goals:

- Forage and Feed Sustainability
- Maximize Forage Use
- Minimize Purchased Feed



## Linking with dairy cropping systems:

- Use yield and forage / grain quality data from our cropping systems to develop base rations.

- Calculate forage and feed inventory for all animal groups in a given year.

- Use the 2001 NRC model and the CPM model to predict animal performance.

# Fate of Gaseous Nitrogen Following Different Manure Applications



Disk

Aeration

Surface





• Shallow disk and aeration manure application strategies can provide nutrient management benefits of incorporation into soil without the soil erosion caused by tillage.

 Shallow disk injection reduces ammonia emissions by about 95%, but some of this benefit is offset by greater emission of the greenhouse gas, nitrous oxide.



**Insect & Slug Management:** promote natural enemies. learn about slug ecology and management.

Simple shingle traps predicted damage to a spring forage seeding in 2010

![](_page_2_Picture_2.jpeg)

![](_page_2_Figure_3.jpeg)

**2010:** Slugs in new spring forage seedings

# Diversity in time and space should help interrupt insect pest life cycles and

# • Slugs are a challenging pest in no-till systems - we are using this experiment to

![](_page_2_Figure_8.jpeg)

species of ground beetle show promise as slug predators in laboratory trials