



Strategies of Pasture Supplementation on Organic and Grazing Dairies

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The Survey

9 Sections

- 1) Farm business structure and decision makers
- 2) People working on the farm
- 3) Dairy herd and management
- 4) Feeding management
- 5) Pasture management
- 6) Land management and cropping operation
- 7) Manure and nutrient management
- 8) Economic information; and
- 9) Assessment of farm management and satisfaction.

**Feeding Strategies on Wisconsin Dairy Farms:
Economic, Production, and Environmental Outcomes**





Participation in the study is **voluntary**. All answers to questions in this survey will be kept *strictly confidential*, and the results will only be used in statistical summaries. Individual farm information will not be identified in any publication. University of Wisconsin-Madison, Social and Behavioral Sciences, IRB Protocol Number SE-2009-0401.

Consent forms need to be signed prior to the start of the interview

We welcome your comments and suggestions
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ENUMERATOR:
DATE OF SURVEY:
SURVEY STARTING TIME: SURVEY ENDING TIME:
FARMER ID#:

The Survey



- 5 hours on average
- Collected 2011 and 2012
- Monthly data for 2010
- Observations: 131 farms

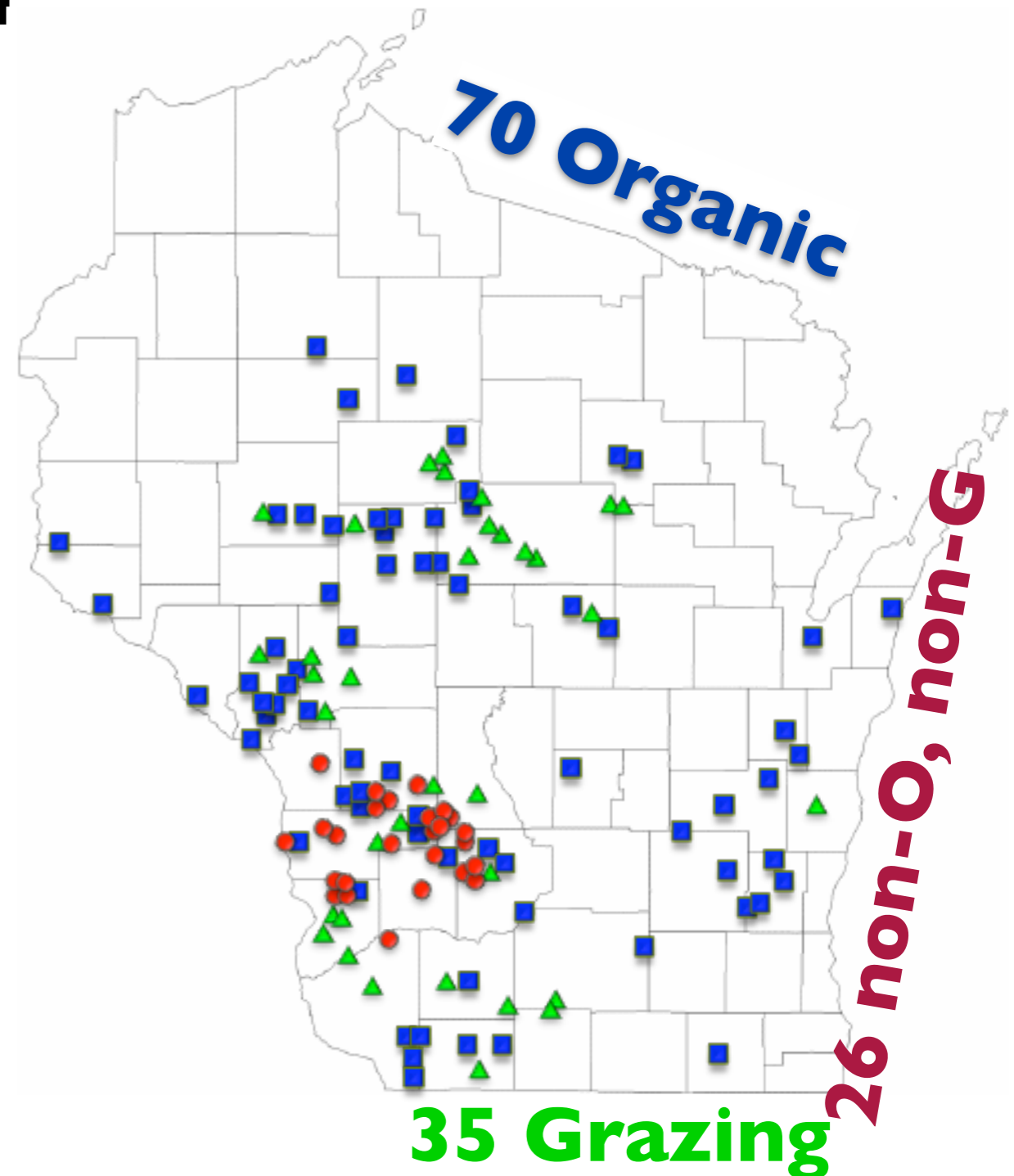
Face-to-face interviews

- PhD Student
Marion Dutreuil 

- MS Student
Claudia Hardie 

Sample

1. Random sample from list of all dairy producers in Southwest
2. Purposeful sample of grazing dairy producers
3. All certified dairy cattle organic producers



WI Organic Farm (n=70)

	Minimum	Average	Maximum	SD
Years certified organic	0.7	6.7	20	4.7
Years utilizing grazing	0	14.7	90	13.4
Total land, ha	17.6	121	766	130
Total pasture, ha	6	39.4	144	31.2
Number of cows	12	69.2	650	85.8
Number of heifers	9	59.3	600	80.5
Milk production, kg/cow per year	2,360	6,272	10,286	1,805
Milk fat content, %	3.47	3.98	5.19	0.35
Milk protein content, %	2.82	3.15	3.67	0.18
Age of first calving, months	23	26.1	36	2.72
Calving interval, months	10	13	20.3	1.25
Number of lactations before culled	2	4.51	7	1.16
Dry matter intake (DMI), kg/cow/day	11.8	19.8	28.2	3.7
Peak pasture intake, % of DMI	1	69.3	100	26.1
Grazing rotation frequency, days	0.21	1.81	14	2.61
Length of grazing season, days	122	184	244	29

WI Organic Farm (n=70)

- **Supplementation:**

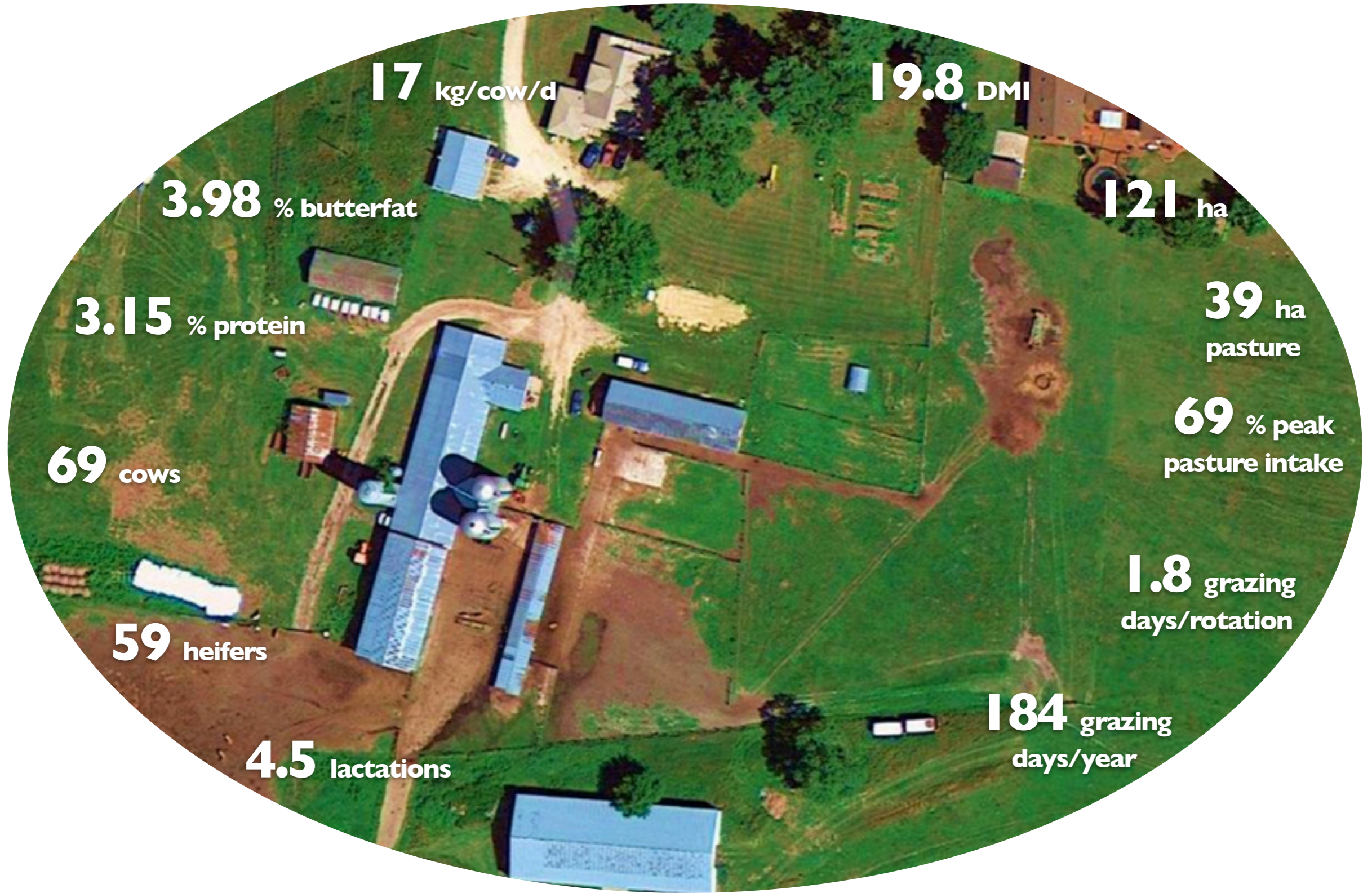
- 81.8% Grain
- 12.3% Protein
- 35.4% Corn silage

- **Pasture:**

1. Clover (red, white)
2. Orchardgrass
3. Kentucky bluegrass
4. Quackgrass
5. Timothy
6. Alfalfa
7. Smooth bromegrass
8. Reed canarygrass



An organic WI dairy farm

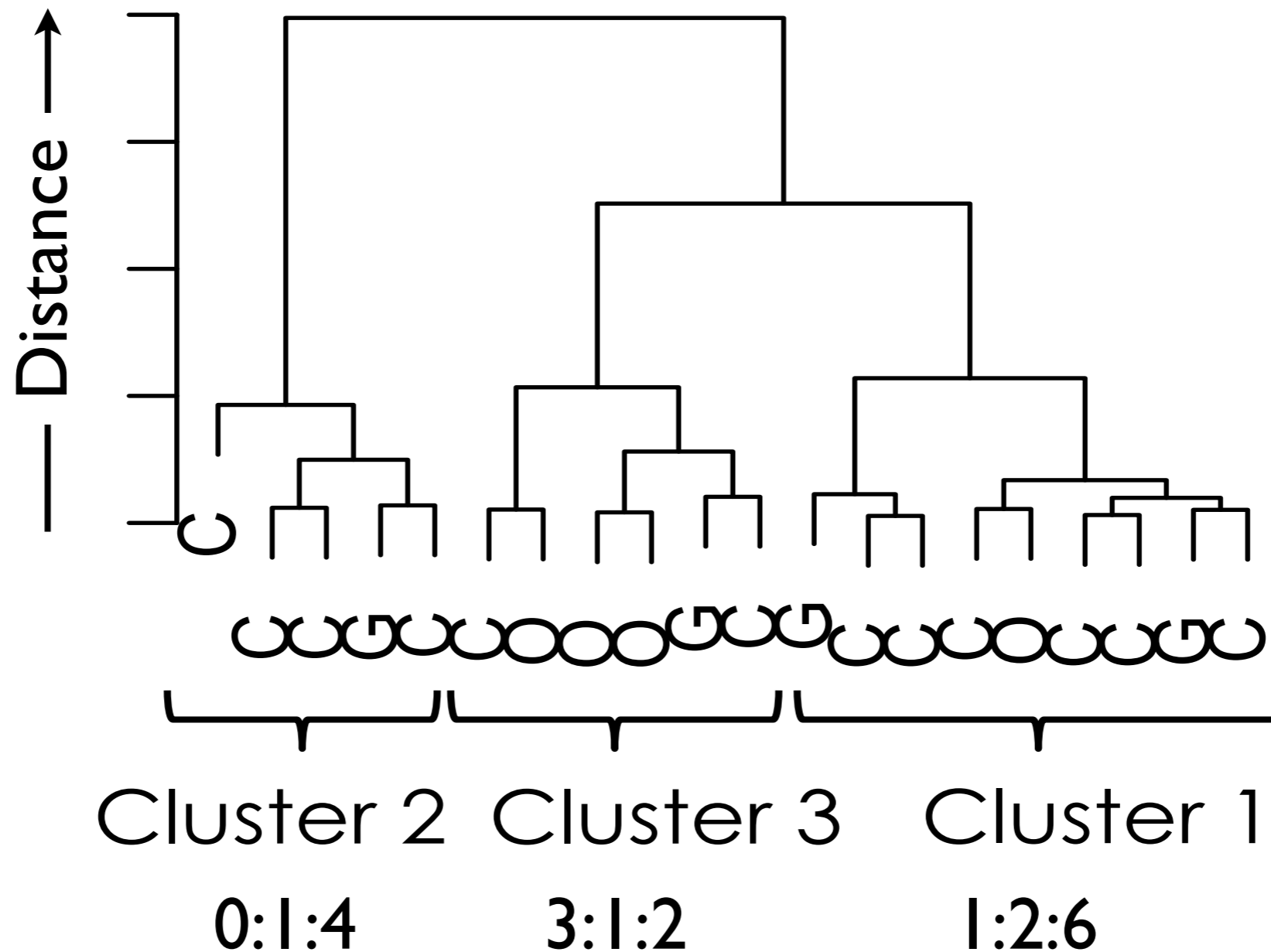


Factors Affecting Profitability

- Profitability =
Milk income - Feed costs =
Income over Feed Cost
- n = 20 (preliminary)
4 organic (O)
4 grazing (G)
12 non organic, non grazing (C)
- Cluster analysis by complete linkage



Factors Affecting Profitability



Factors Affecting Profitability

(n=20 preliminary)

	Cluster 1	Cluster 2	Cluster 3
O:G:C	0:1:4	3:1:2	1:2:6
Total ha	114	94	53.2
Number of cows	72	71	48
Milk production, kg/cow/year	7,083	10,787	4,155
Fat content (%)	3.78	3.55	4.36
Protein content (%)	2.99	3.03	3.25
SCC (x1,000 cells/ml)	287	204	317
Milk price, \$/kg	0.37	0.35	0.48
Total DMI in winter, kg/cow/day	23.6	20.4	17.7
% hay in winter	32	0.9	54
% concentrates in winter	36	46	16.2
% vitamins and minerals in winter	0.9	0.7	2.4
IOFC in winter (\$/cow/day)	5.97	8.09	5.22

Factors Affecting Profitability

(n=20 preliminary)

Cluster 2

*Productive efficient, \$8.09 IOFC
0:1:4*

- Intermediate land and herd size
- Highest milk productivity
- Highest concentrate in diet
- Poorest milk composition
- Lowest milk price

Cluster 1

*Intermediate, \$5.97 IOFC
3:1:2*

- Largest land base
- Intermediate milk productivity, composition and price,
- highest DMI
- Intermediate levels of feed ingredients

Cluster 3

*Low input, \$5.22 IOFC
1:2:6*

- Smallest land and herd size
- Lowest milk productivity
- Lowest DMI
- Best milk composition
- Best milk price

Factors Affecting Profitability

(n=20 preliminary)

- Farm system might not be a good indicator of farm profitability
- Scope and inference is restricted to the preliminary analysis
- Complete survey database are being analyzed

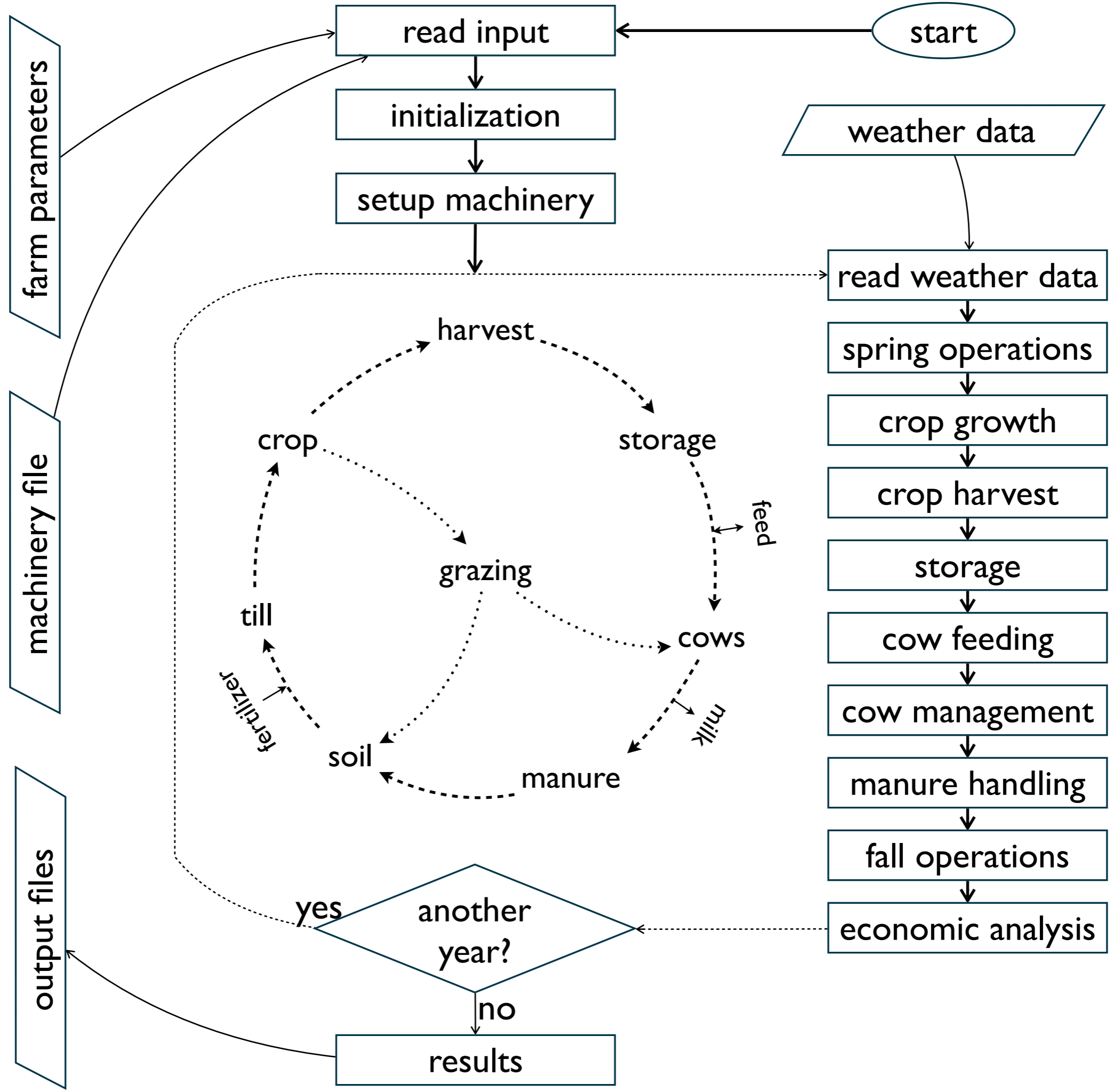


Predicted Greenhouse Gas Emissions

(n=3 selected farms)

Farm system type	Non organic or grazing		Organic		Grazing	
Density	Current	Double	Current	Double	Current	Double
Number of cows	75	150	80	160	80	160
Stocking, cow/ha	0.46	0.92	0.49	0.99	0.59	1.18
Milk, kg/cow/year	25,725	25,544	10,480	10,480	11,002	11,002
Forages, ha	162.3		132.3		135.2	
Alfalfa, ha	57.1		69.6		135.2	
Grass, ha	28.3		62.7		0	
Corn, ha	76.9		0		0	

Integrated Farm System Model

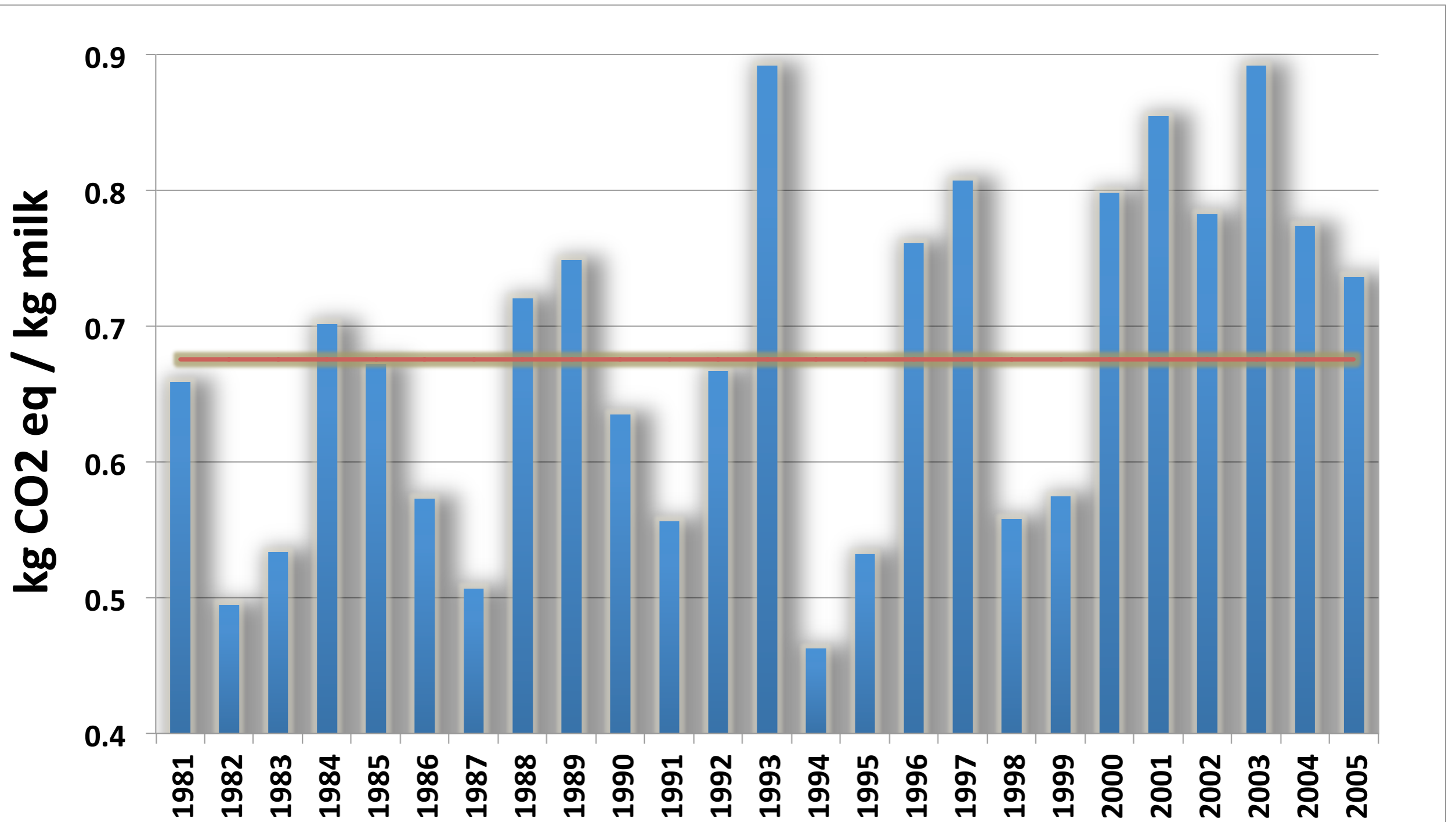


Predicted Greenhouse Gas Emissions

(n=3 selected farms)

Farm system type	Non organic or grazing		Organic		Grazing	
	Current	Double	Current	Double	Current	Double
Stocking (cows/ha)	0.46	0.92	0.49	0.99	0.59	1.18
PGHGE (kg CO₂ eq /kg milk)	0.53	0.66	0.70	0.75	0.77	0.74
(% total PGHGE)						
Housing	46.6	42.8	39.0	37.1	30.7	33.0
Manure	4.0	39.0	5.6	5.2	15.6	9.3
Feed	19.4	37.1	6.3	8.4	7.8	7.3
Grazing	4.9	30.7	34.7	31.8	13.6	15.4
CO₂	-34.4	-33.0	-31.5	-30.0	-25.0	-25.9
Fuel	4.1	3.6	2.4	2.7	2.6	2.1
Secondary sources	21.1	5.6	11.9	14.8	29.7	32.8

Predicted Greenhouse Gas Emissions



Predicted Greenhouse Gas Emissions

(n=3 selected farms)



- Effect of animal density on PGHGE depends on farm system/management
- Farm data + model predictions = powerful for devising best management practices
- Scope limited to 3 selected farms

Acknowledgment

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Thanks