USING DHI DATA TO DEVELOP EXTENSION DAIRY PROGRAMS IN NORTHERN NEW YORK

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INTRODUCTION

- New York state is home to 610,000 lactating dairy cattle (USDA, 2012) and produced over 12.7 Billion pounds of milk in 2010 (NY State Ag & Markets, 2011).
- Northern New York **(NNY),** (i.e. Lewis, Jefferson, St. Lawrence, Franklin, Clinton and Essex Counties; Figure 1) is home to approximately 120,400 lactating dairy cattle or 19.7% of the state's population of dairy cattle (USDA, 2012). In 2010 NNY produced 19.3% of the total milk produced in New York state.

- For dairy producers worldwide, somatic cell count **(SCC)** is not only a measure of herd udder health performance, it is also a determinant of the market-ability of their milk (Dufour et al., 2011).
- Average daily milk production, protein, fat and SCC can all be evaluated to determine the productivity of an individual herd, region or state. This data can then be utilized to determine what management programs are needed in a region.

OBJECTIVES

- Evaluate 2012 milk production and milk quality on Northern New York dairy farms.
- Identify opportunities to develop extension dairy programs in the region.

MATERIALS and METHODS

- Data were provided by Dairy Records Management Systems (Raleigh, NC) for all NY state herds (n = 1620 herds, 295,786 cows) on DHI test.
- Data were analyzed using SAS 9.2 (SAS Institute Inc., Cary, NC).
- PROC MEANS of SAS was utilized to determine the variable means used for descriptive statistics.
  - Statewide and Northern New York (n = 252 herds)
- PROC MIXED was used to determine the effect of herd size (< 100 cows, 100 to 499 or > 499 cows), breed (Holstein, Jersey and other) and management scheme (conventional or organic) on production and milk quality parameters.

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RESULTS – Milk Production

- Production means for test day average milk production, fat and protein were similar on statewide and regional basis.

Table 1. Overall means for milk, fat and protein for New York State and Northern New York dairy herds in 2012

Variable	n	Mean	SD	Minimum	Maximum
New York State					
Milk[1] (kg)	1620	29.30	6.01	10.02	47.53
Milk[2] (kg)	1620	25.55	5.54	8.03	44.81
Fat (%)	1612	3.83	0.32	2.20	5.60
Protein (%)	1612	3.12	0.16	1.80	4.20
Northern New York					
Milk[1] (kg)	252	28.90	5.70	10.66	47.54
Milk[2] (kg)	252	25.18	5.34	8.03	42.05
Fat (%)	251	3.84	0.34	3.00	5.00
Protein (%)	251	3.13	0.16	2.80	3.80

[1] Test day average milk production for milking herd

[2] Test day average milk production for all cows in herd

- Days in milk were similar across breed, management scheme and herdsize.
- There was an effect of breed on test day average milk production, fat and protein.
- There was a management effect on protein.
- There was a herdsize effect on test day average milk production and fat.

Table 2. Influence of breed, management scheme and herdsize on milk production and components on Northern New York dairy herds.

	Breed			Organic		Herd size[1]		
	Holstein (n=223)	Jersey (n=8)	Other (n=21)	Yes (n=43)	No (n=209)	Small (n=107)	Medium (n=67)	Large (n=15)
Variable								
DIM	184.91	171.63	168.86	177.40	184.34	183.74	182.78	178.27
Milk[2] (kg)	29.68[a]	19.67[c]	24.04[b]	27.93	29.09	27.15[c]	31.49[b]	37.08[a]
Milk[3] (kg)	25.91[a]	15.97[c]	20.85[b]	24.30	25.36	23.52[c]	27.67[b]	32.82[a]
Fat (%)	3.79[b]	4.58[a]	4.11[b]	3.91	3.83	3.89[a]	3.78[b]	3.71[b]
Protein (%)	3.10[c]	3.55[a]	3.30[b]	3.20[a]	3.11[b]	3.13	3.12	3.12

[1] Herdsize: Small < 100 cows, medium 100 to 499 cows, large > 499 cows

[2] Test day average milk production for milking herd

[3] Test day average milk production for all cows in herd

RESULTS – Milk Quality

Table 3. Overall means for linear score, somatic cell count and a break down of the percentage of cows per herd that fall in each linear score category on Northern New York dairy herds.

Variable	n	Mean	SD	Minimum	Maximum
Linear score	245	2.71	1.45	1.00	4.60
Somatic cell count	245	249.38	103.73	64.00	706.00
Linear Score[1]					
≤ 3	248	69.40	10.96	27.00	92.00
4	248	12.40	4.16	4.00	27.00
5	248	8.00	3.31	2.00	24.00
6	247	5.00	2.42	1.00	17.00
≥ 7	244	5.20	2.82	1.00	19.00

[1] Percentage of cows per herd within each linear score

Table 4. Influence of breed, management scheme and herdsize on somatic cell count and linear score on Northern New York dairy herds.

	Breed			Organic		Herdsize[1]		
	Holstein (n=223)	Jersey (n=8)	Other (n=21)	Yes (n=43)	no (n=209)	Small (n=107)	Medium (n=67)	Large (n=15)
Herd Means								
Linear score	2.70	3.09	2.73	2.77	2.70	2.83[a]	2.52[b]	2.02[b]
SCC	249.93	262.00	238.35	253.33	248.62	265.79	222.18	184.14
Linear Score[2]								
≤ 3	69.88	62.25	68.76	68.39	69.77	67.25[b]	73.42[ab]	77.93[a]
4	12.24	16.75	13.29	13.12	12.35	13.25	11.17	9.67
5	7.84	10.50	9.00	8.44	7.94	8.75[a]	6.71[b]	5.60[c]
6	5.07	5.88	4.65	5.20	5.04	5.52[a]	4.16[b]	3.54[b]
≥ 7	5.28	5.00	5.15	5.32	5.25	5.64[a]	4.71[ab]	3.53[b]

[1] Herdsize: Small = < 99 cows, medium = 100 to 499 cows, large = > 499 cows

[2] Percentage of cows per herd within each linear score

CONCLUSIONS

- Herdsize is the only variable that had an impact on linear score. Large farms had a greater percentage of cows with a linear score ≤ 5.
- There was a herdsize effect on average daily milk/cow (small = 24.0, medium = 27.1 and large = 33.1 kg/cow/day).
- This data suggests that NNY dairy extension programs should be developed to improve milk quality and production on dairies with less than 100 lactating dairy cows.