Northern NY Agricultural Development Program
2017 Project Report APPENDIX

Assessing the Risk of Subclinical (SC) Infections in Cows With Clinical Mastitis

Table 1. **Days in milk and lactation number demographics at initial sampling by reason sampled, NNY dairy herds, 2017.**

	DIM	Range	SD	Lactation	Range	SD
Reason sampled						
Clinical Mastitis	158.0	1 to 484	87.8	2.7	1 to 7	1.1
Low SCC	143.3	8 to 452	77.6	2.7	1 to 9	1.2
High SCC	157.4	9 to 457	98.2	2.7	1 to 6	1.2
Overall means	150.7	1 to 484	86.7	2.7	1 to 9	1.2

Table 2. Number and percentage of quarter samples that were positive at initial and follow up sampling by reason sampled, NNY dairy herds, 2017.

	Reason for initial sampling[1]				
	Clinical	Non-Clinical	High SCC	Low SCC	Overall
Initial culture	n = 246	n = 575	n = 391	n = 486	n = 1698
Positive	136 (55.3%)	141 (24.5%)	104 (26.6%)	56 (11.5%)	437 (25.7%)
Negative	98 (39.8%)	377 (65.6%	263 (67.3%)	398 (81.9%)	1136 (66.9%)
Contaminated	12 (4.9%)	57 (9.9%)	24 (6.1%)	32 (6.6%)	125 (7.4%)
Follow-up Culture[1]	n = 106	n = 110	n = 94	n = 47	n = 357
Positive	30 (28.3%)	41 (37.3)	54 (57.5%	14 (29.8%)	139 (38.9%)
Negative	68 (64.2%)	61 (55.4%)	31 (33.0%)	32 (68.1%)	192 (53.8%)
Contaminated	8 (7.55%)	8 (7.3%)	9 (9.5%)	1 (2.1%)	26 (7.3%)

[1]Follow up quarter samples were only taken from quarters that had a positive initial culture result. Discrepancy in numbers of initial positives and total follow up samples is due to cows leaving the herd prior to follow up sample.

Table 3. Count of pathogens present in initial quarter sampling of clinical and control cows, NNY dairy herds, 2017.

	Reason for initial sampling				
	Clinical	Non-Clinical	High SCC	Low SCC	Overall
	n = 246	n = 575	n = 391	n = 486	n = 1698
Organism					
Gram Negative Organisms[1]	74	32	12	1	119
Staphylococcus aureus	4	7	3	0	14
Staphylococcus spp.	14	63	51	49	177
Streptococcus spp.[2]	34	32	31	32	129
Other[3]	9	6	7	1	23

[1] Includes: E.Coli, Klebsiella, Psuedomonas, Pasteurella, Proteus, Serratia, Gram negative Bacillus, Enterobacter and Citrobacter
[2] Includes: Strep. Spp., Strep dys, Strep uberis, enterococcus and lactococcus
[3] Includes: Yeast, Prototheca, T. Pyogenes, C.bovis, Gran positive bacillus and C. species

Table 4. Number and percentage of quarter samples that were positive at initial and follow up sampling by reason sampled, NNY dairy herds, 2017.

	Reason for initial sampling				
	Clinical	Non-Clinical	High SCC	Low SCC	Overall
Initial culture result	n = 246	n = 575	n = 391	n = 486	n = 1698
Positive	136 (55.3%)	141 (24.5%)	104 (26.6%)	56 (11.5%)	437 (25.7%)
Follow-up culture result[1]	n = 106	n = 110	n = 94	n = 47	n = 357
Positive	30 (28.3%)	41 (37.3)	54 (57.5%	14 (29.8%)	139 (38.9%)
Negative	68 (64.2%)	61 (55.4%)	31 (33.0%)	32 (68.1%)	192 (53.8%)
Contaminated	8 (7.55%)	8 (7.3%)	9 (9.5%)	1 (2.1%)	26 (7.3%)
Persistent Infection[2]	30 (12%)	41 (7%)	54 (14%)	14 (3%)	139 (8%)

[1]Follow up quarter samples were only taken from quarters that had a positive initial culture result. Discrepancy in numbers of initial positives and total follow up samples is due to cows leaving the herd prior to follow up sample.
[2] Persistent infection defined as the overall % of quarters with an IMI identified at initial sampling AND at follow-up sampling 2-4 weeks later.

Table 5. Count of pathogens present in follow up quarter sampling of clinical and control cows, NNY dairy herds, 2017.

	Reason for initial sampling				
	Clinical	Non-Clinical	High SCC	Low SCC	Overall
	n = 106	n = 110	n = 94	n = 47	n = 357
Organism					
Gram Negative Organisms[1]	10	5	4	0	19
Staphylococcus aureus	2	4	3	0	11
Staphylococcus spp.	13	23	23	14	73
Streptococcus spp.[2]	8	9	21	0	26
Other[3]	0	0	3	0	3

[1] Includes: E.Coli, Klebsiella, Psuedomonas, Pasteurella, Proteus, Serratia, Gram negative Bacillus, Enterobacter and Citrobacter

[2] Includes: Strep. Spp., Strep dys, Strep uberis, enterococcus and lactococcus

Table 6. Diagnostic test characteristics for somatic cell count ≥200,000 to be an indicator of a positive intramammary infection, NNY dairy herds, 2017.

	Test Characteristics (%)[1]				
Somatic Cell Count	Sensitivity	Specificity	PPV	NPV	Correctly classified[2]
Initial sampling					
All samples	71.39	73.06	50.48	86.91	72.6
CM	86.03	22.45	60.62	53.66	59.4
NCQ	67.38	74	49.22	85.85	72.2
HSCC	73.08	62.36	43.43	85.42	65.4
LSCC	42.86	91.71	42.11	91.94	85.68
Follow up samples					
All samples	85.61	54.16	57.49	83.87	67.37
CM	93.33	29.41	36.84	90.9	48.98
NCQ	90.24	62.29	61.67	90.48	73.53
HSCC	64.21	64.52	80	66.67	75.29
LSCC	71.43	81.25	62.5	86.67	78.26

[1] PPV = positive predictive value; NPV = negative predictive value.
[2] Percentage of samples correctly classified as negative or positive for pathogen