Neospora caninum: Influence on 305-day Milk Production in Eastern Canadian Herds

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Introduction

Neospora caninum, a protozoal parasite, is a common cause of abortion in dairy cattle in North America. Cows that become infected with Neospora appear to remain infected for life. Infection is acquired through vertical transmission (dam to offspring *in utero*) or horizontal transmission and leads to endemic abortion, with occasional herds reporting abortion storms or outbreaks.[2] In addition to the reproductive consequences of infection, in one study of a single large herd, seropositive primiparous animals produced 3.6 lbs less fat-corrected milk than did their seronegative primiparous herd mates.[3] The objective of this study was to examined the effect of serologic status for *Neospora* on production in a large random sample of cattle in eastern Canada.

Materials and Methods

Sera was collected from 30 cows, randomly selected from each of 30 herds on milk recording programs in Prince Edward Island, New Brunswick and Nova Scotia. Sampling was conducted in June through August 1998 as part of a study of production limiting diseases. All sera were tested for antibodies to *Neospora caninum* using an enzyme-linked immunosorbent assay (ELISA). The technique had reported sensitivity of 99% and specificity of 98.4%.[1] Milk production data (305-day production projections) as gathered electronically from a central milk recording data base. The projection from the herd test closest to the sample collection date was used in the analysis. All analyses were done with STATA using the survey linear regression and mean estimation tool, which adjusts for clustering within herd and weights observations according to sampling probability.

Results and Discussion

In total, 66/90 herds (73.3%) and 497/2594 cows (19.2%) were found to be infected. A minimum of 2 animals had to be positive for a herd to be considered infected. Production data was available on 2425 of the cows tested. The overall average projected 305-day milk production of cows on the trial was 8034.0 kg (Standard error (SE) 141.1). Table 1 shows the projected production for seropositive and seronegative cows in various age categories.

After adjusting for clustering within herd, and weighting observations according to sampling probability, there was no effect of infection with Neospora on 305 day milk production ($p > .1$)

Conclusions

These findings conflict with previous reports of substantial production losses associated with *neospora* seropositivity.[3] Herds in this study were randomly selected from the regional industry, and represented a cross section of herd size and management styles. Under these conditions *Neospora* does not appear to have an impact on 305 day production. Further evaluation of specific management and culling practices is necessary.

References

1. Bergeron N, Fecteau G, Paré J, Martineau R, Villeneuve A: Vertical and horizontal transmission of Neospora caninum in dairy herds in Quebec. Can Vet J *in press.*
2. Dubey JP, Lindsay DS: A review of *Neospora caninum* and neosporosis. Vet Parasitol 67 (1-2):1-59, 1996.
3. Thurmond MC, Hietala SK: Effect of *Neospora caninum* infection on milk production in first-lactation dairy cows. J Am Vet Med Assoc: 210(5):672-4, 1997.

Table 1. Production by lactation group.

	Projected 305 D production (Kg - adjusted and weighted)			
Lactation No.	Neospora +ve	N	Neospora -ve	N
1	7318.5 (SE 180.2)	152	7165.6 (SE 151.4)	593
2	8244.0 (SE 255.8)	107	8034.7 (SE 172.7)	455
≥3	8848.5 (SE 207.7)	203	8504.9 (SE 196.8)	915
All	8179.6 (SE 172.0)	462	7997.2 (SE 152.7)	1963