

Submission to the Johne’s Disease Review, with a Special Emphasis on Goat Industries

Goats are especially vulnerable to any spread of Johne’s disease as they can get either bovine Johne’s disease (most commonly) but also ovine Johne’s disease. In addition, goats do not show the severe diarrhoea that is a feature of this disease in cattle. Instead they just suffer from wasting, making Johne’s disease easily missed or put down to poor nutrition, worms or other goat diseases that cause wasting, such as CAE or CLA. A recent study of Johne’s disease in goats in Saudi Arabia found that the only consistent clinical sign was “weight loss despite apparently normal food intake” in adult goats.ⁱ The visible signs on post-mortem can also easily be missed in goats as was demonstrated in a study in a large US goat herd with a high incidence of Johne’s diseaseⁱⁱ where 120 post-mortems were conducted.

Goat farmers ability to identify Johne’s disease in their own goats has been found wanting. In a study of goat herds in Norway, PCR tests for Johne’s disease were performed on bulk goat milk samples. It was found that 3.3% of herds which had previous Johne’s disease cases had positive PCRs, but for herds with no history of Johne’s disease there was a 9.1% positive rate for PCRs.ⁱⁱⁱ This higher level in supposedly “normal” herds indicated that the diagnosis of Johne’s disease had been missed in these herds.

Johne’s disease in goats also occurs in younger animals that is the case with cattle i.e. as early as 12 months.^{iv} Often after the stress of first kidding can cause Johne’s disease but it can also cause Caprine Arthritis Encephalitis (CAE) which is also a cause of wasting in goats. One complication is that goats with Johne’s disease and therefore in poor condition, are more prone to other diseases such as pneumonia, parasitic gastro-enteritis, and digestive disorders. Thomas (1983)^v reported two years of post-mortems of 67 goats from a large UK goat herd in the first two years of Johne’s disease control, which are summarized in the table below:

Diagnosis	Number of goats affected	Percentage (%)
Johne’s disease	19	28
Johne’s + another disease	8	12
Pneumonia	8	12
Digestive disorders e.g. entero-toxaemia, acidosis, bloat	8	12
Parasitic gastro-enteritis	6	8
Gut torsion	3	4
Miscellaneous	10	16
No diagnosis	5	8

These characteristics of Johne’s disease in goats, make the goat industries more susceptible to any increase in Johne’s disease spread in the cattle industries. Also it make cattle Johne’s disease control

at risk if it does not also promote Johne's disease control in goats. Any spread into feral goat populations would be especially dangerous due to their ability to travel large distances, often despite fences.

The amount of Johne's disease in Australian goats is unknown. The only real data for goats is the number in the current Market Assurance Program- i.e. 30 as at 27/1/15. The technology exists for surveys to be done using milk from bulk milk tanks. When this was done in Switzerland on goat and sheep dairy farms *Mycobacterium avium* ssp. *paratuberculosis* (MAP) was found in 23% and 24% of farms respectively. Similar tests should also be done on goat & cow dairies in Australia to get a clearer picture of the incidence of Johne's disease.

The current Market Assurance Program for goats, the Goat Health Statement and the National Kid Rearing Plan need to be strongly supported and all parties (industry & government) need to promote awareness of these systems.

The current system for movements into protected areas & states like Qld is a balance between trade and risks and needs monitoring to determine if this balance is right e.g. currently steers do not need to come from an assessed herd to enter Qld from NSW, cattle from a 'beef only' herd in the beef protected area or movement area of NSW just needs to have an NVD and meat goat movements into Qld just need an NVD, Goat Health Statement and a score of 5 i.e. not known to be infected and no risk factors. Any cases of Johne's disease in protected zones need to be thoroughly traced back and rules tightened up if needed.

It is highly probable that consumers will eventually require products from Johne's disease free herds and goats will be affected as well as cattle. Consumer demand for better health & welfare for farm animals and fear of negative health effects are strong long term trends. This pressure will increase as countries like Norway eradicate Johne's disease from their goat herds. Australia needs to take a proactive stance and progress along the path of eradication. The road to eradication will not be easy, but is essential that steps continue to be made in the right direction.

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ⁱ Tharwat, M., F. Al-Sobayil, M. Hashad and S. Buczinski (2012). "Transabdominal ultrasonographic findings in goats with paratuberculosis." *Can Vet J* **53**(10): 1063-1070.

ⁱⁱ Gezon, H. M., H. D. Bither, H. C. Gibbs, E. J. Acker, L. A. Hanson, J. K. Thompson and R. D. Jorgenson (1988). "Identification and control of paratuberculosis in a large goat herd." *Am J Vet Res* **49**(11): 1817-1823.

ⁱⁱⁱ Djonne, B., M. R. Jensen, I. R. Grant and G. Holstad (2003). "Detection by immunomagnetic PCR of *Mycobacterium avium* subsp. *paratuberculosis* in milk from dairy goats in Norway." *Vet Microbiol* **92**(1-2): 135-143.

^{iv} Jones, P. H. (2003). "Paratuberculosis in goats " *Goat Veterinary Society Journal* **19**: 4-10.

^v Thomas, G. W. (1983). "Johne's Disease: An Investigation in a Large Goat Herd." *Goat Veterinary Society Journal* **4**(2): 29-31.