

14 FAQs About Johne's Disease in Goats

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Question 1- Is there any treatment?

Answer

Once clinical signs appear, it is a death sentence as no treatment works. Treating livestock with Johne's disease has been tried with expensive human TB drugs but without success. Once an animal has been confirmed by faecal culture (after a positive blood test), the most humane thing to do is to destroy it and have a post-mortem conducted.

Question 2 – How long can the Johne's disease bacteria last in the environment?

Answer

The Johne's disease bacteria, *Mycobacterium avium* subspecies *paratuberculosis*(Map), can last for up to a year in dam mud, 150 days or more in the biofilms on water troughs and many months on pastures. Grazing pastures with horses for over a year can produce clean pastures as can cropping for a year. Ideally wait 2 summers before restocking with ruminants. Research done in tropical and subtropical Queensland has shown that Map can last for 16 months in dry soil.¹

Question 3 – Is it true that if I join the Australian Market Assurance Program (MAP) scheme I won't be able to get in new goat blood lines, as so few herds of my breed are in the MAP?

Answer

No – you have lots of options for adding new blood lines. Artificial insemination is an option for the safe introduction of new genetics.

The Market Assurance Program allows for some leeway, especially as bucks are fertile at such a young age. The manual allows for 5% of the goat herd to be introduced per year from a herd, 1 level lower in the MAP scheme or even an unassessed herd, under certain conditions with your accredited veterinarian's permission. This allows for a buck to be introduced each year.

Also you can "introduce any number of young animals (those under 18 months of age) for a limited period if you have the prior written approval of your Approved Veterinarian and the animals are from:

- MAP assessed herds (including those of a lower MAP status)
- herds in a Protected Zone declared for goats that are not suspected of being infected, or
- herds that are Check Tested.

These animals must leave the land:

- before kidding
- before reaching 18 months of age..... Whichever occurs first. "

As buck kids are capable of mating does from 6 months, then this is a very useful rule.

The manual also allows for “Short-Term Introduction for Hand-mating”, so a buck can be introduced and kept in separate pen and allowed to be used for hand-mating. The quarantine pen must be cleaned to the same standard of the pens in show venues.

Also with your supervising veterinarian’s permission, you can take one of your does for service to a buck not in the MAP scheme. This would only be for hand-mating with the doe not allowed to graze or to stay for longer than mating requires.

Therefore there are many different ways to introduce new blood lines into your MAP accredited goat stud even if there are few goat herds of your breed in the MAP scheme. Your supervising veterinarian needs to be convinced of the low risk of these introductions of new genetics, but I would allow it if the herd in question had a history of annual Johne’s disease testing combined with good biosecurity.

Question 4 – Services for my buck are an important source of income for me – will joining the Australian Market Assurance Program (MAP) mean I will lose this money?

Answer

Tell your supervising veterinarian that does will be coming for service. This allows the veterinarian to seek out a suitable area to be mentioned in your plan for hand-matings. Driveways or concrete areas can often be designated as a hand-mating areas for visiting does as they are easily swept and cleaned. All manure needs to be collected and disposed of via the household rubbish service. The requirement in the manual is that the visiting does do not enter any area that your own goats graze so no manure from these untested does get anywhere near your goats’ pastures. This is basic biosecurity whether you are in the MAP or not, as it also keeps out drench resistant worms etc.

Question 5 – I buy calves to raise on my goats’ milk and this helps pay for the goats feed– will joining Australian Market Assurance Program (MAP) mean I can no longer do this? There are no MAP cattle herds nearby.

Answer

Tell your supervising veterinarian that you want to do this. This allows the veterinarian to include this in your property risk assessment and plan. The manual allows for the introduction of cattle from non MAP cattle herds under certain conditions until the cattle reach 24 months of age or before they calve. There are no longer any MAP cattle herds since mid 2016, but cattle should ideally come from herds with a J-BAS score of 8 or a dairy score of 8. Goats under 12 months must not graze the areas grazed by these cattle until 3 months after they have gone. Most veterinarians will allow calves to be reared as long as they are removed before 12 months as they should not shed Johne’s disease bacteria while calves, even if they are incubating it.

Question 6 – Is there a vaccine?

Answer

Australia has a Johne's vaccine for sheep and goats (“Gudair”® from Zoetis) but it only delays clinical disease and shedding. In Australia, it is registered as “an aid in the control of Johne's disease in goats”. It does not prevent or eradicate Johne’s disease. It is economic for large commercial herds as the vaccine cost is outweighed by delay in lost production. There is also a vaccine for cattle called Silirum®, again by Zoetis (www.zoetis.com.au) but this should not be used on goats. In some states, vaccination has not been allowed except with permission of the Chief Veterinary Officer, as these

states want to identify cases of Johne's disease early to either quarantine these herds or for surveillance purposes.

These are killed vaccines and cannot introduce the disease to your property. Kids and lambs should be vaccinated when between 4-16 weeks of age, because Johne's disease is generally contracted by young kids. Adult goats can also be vaccinated.

The vaccine must be used as directed and can cause lumps at the site. The vaccine has serious consequences if accidentally injected into a person's finger or thumb. There is a guarded vaccine gun that can be used with this vaccine for extra safety for humans.

If in a highly contaminated district with many herds with Johne's disease or down-stream from a large commercial dairy cow farm, then vaccination may be a good idea to reduce Johne's disease risks. See also the question about the pros and cons of vaccinating that follows.

Question 7 - If one goat has Johne's disease, will the rest of my herd get it?

Answer

Once a goat has clinical Johne's disease, its gut becomes a Johne's disease bacteria factory, contaminating the farm. Because the incubation period is so long you generally only get 1 case at a time. Often goats are culled in the early stages due to poor production or die from other reasons as they become weaker. If you have had one clinical case of Johne's disease in your herd, you should move the goats to clean paddocks and reduce manure contamination by having well designed feeders etc. If you only have a small number of goats consider feed-lotting and handfeeding via fence-line feeders. You could lease your paddocks out to horse owners.

More goats will most likely develop positive blood tests and later on, clinical signs. Frequent blood tests (with confirmatory faecal cultures) will allow you to remove goats incubating Johne's disease before they start shedding large numbers of bacteria. However because the blood test becomes positive about the same time as bacteria start to be passed in the faeces, frequent testing will be needed to achieve eradication.

Johne's disease can be eradicated but takes years (estimated 10 years) and dedication. Norway eradicated Johne's disease, as well as CAE and Caseous Lymphadenitis, from all their commercial dairy goat herds by snatch birthing kids and raising them in isolation away from the adult goats in the original herd.

The first step is to raise all your kids as per the National Kid Rearing Plan, which is available on the Australian Animal Health website or specifically here - <http://www.animalhealthaustralia.com.au/what-we-do/endemic-disease/goat-health/goat-national-kid-rearing-plan/>

Question 8 – If I buy an alpaca to protect my goats from wild dogs, can it introduce Johne's disease?

Answer

Yes it can. Also alpacas and llamas don't always scour or waste away like cattle; in one study only 5 out of 8 did so. They can also suddenly drop dead, so cases of Johne's disease in these animals can easily be missed and put down to other diseases or accidents. If buying an alpaca, always get one from an Australian Market Assurance Program (MAP) herd or from a herd that is in the Q Alpaca program (where all dead alpacas are post-mortemed by a vet and their ileo-caecal lymph nodes tested for Johne's disease). To find an alpaca breeder in MAP then search here using alpaca in the

drop down species menu-

https://edis.animalhealthaustralia.com.au/public.php?page=mapsearch&aha_program=3

Question 9 – I like to show my goats. How can I protect my goats from picking up Johne’s disease?

Answer

Show societies should have their showground facilities audited to ensure the biosecurity requirements of the Australian Market Assurance Program (MAP) are met. The forms and certificate are available here: <http://www.farmbiosecurity.com.au/toolkit/declarations-and-statements/>

Ask your show society for a copy of their signed certificate. If they don’t have one and you are in MAP, then you need your supervising veterinarian’s permission to attend. Even if not in MAP you should take these precautions:

- Never let your goats drink from communal water troughs
- Take your own buckets and feed
- Never let your goats eat from the ground or eat any grass at the show venue
- Keep 2 metres away from all goats or other ruminants that are not at the same level of biosecurity as your own herd
- Trim your goats hooves a few days before showing, so no dirt or manure can be trapped between the hoof wall and sole. Ensure your goats do not walk through any manure and if they do, hose their feet before reloading into your vehicle or trailer.
- Wash you own footwear before leaving the showgrounds and on returning home. Remove all dirt (even from the thread in the soles) then spray with a disinfectant and leave it on to dry. Don’t wash the disinfectant off.
- If uncertain of the cleanliness of the show facilities take a strong plastic ground sheet and clean bedding for the goats to lie on.
- With the deregulation of Johne’s disease for cattle and the removal of cattle MAP scheme, cattle are high risk and should be kept away from all goats.

Question 10 – I am very worried about getting Johne’s disease in my goat herd. What extra steps can I take to protect my goats?

Answer

Secure fencing and never introducing any ruminants from untested herds are the most important preventative measures. Also minimize all manure contamination by having well designed feeders that do not allow goats’ feet or droppings to contaminate feed is another important precaution. Adding bleach to water troughs has been suggested as preventative at a rate of 60ml bleach to 360 litres of water. Some US veterinarians has suggested that adding monensin to the diet of heifers offers some protection, but this has not been tried in goats and this feed additive is only registered in Australia for the prevention of coccidiosis in goats whose milk is not used for human consumption. Vaccination is an obvious preventative measure, if this is allowed in your state.

Question 11 - Can I eat the meat or drink the milk of my goats, if my goat herd has had a case of Johne’s disease?

Answer

This is a very debatable question with many scientists investigating links between Johne’s disease and the following human diseases:

- Crohn's disease
- Type 1 diabetes
- Sarcoidosis
- Blau syndrome.

These disease in people could be due to infection with Johne's disease bacteria or an allergic reaction to them. You can read more here and make up your own mind – <http://www.johnes.org/zoonotic/index.html>. Alternatively look at the website of the Human Paratuberculosis Organisation (<https://humanpara.org/>), who held a 2 day conference on the human health aspects of the infections of people with the Johne's disease bacteria. Paratuberculosis is another name for Johne's disease.

Meat is generally considered safe as long as not contaminated with faeces by workers hands, knives or from the skin. Milk is considered safe if pasteurised (but needs a higher than normal temperature i.e. 72 degree C or 161 degree F for 1 minute). Research with commercial pasteurisers found that not all bacteria were killed at normal settings and it was a gradual decline with additional time needed but 72 degrees C for 25 seconds achieved the death of all Map.ⁱⁱ However, if these human diseases are caused by an allergic reaction to the bacteria, then pasteurization won't help. It is possible that the Johne's disease bacteria only act as a trigger for people with a genetic predisposition to these diseases.

However, even if links to human disease is not proven, consumer perceptions may mean a smaller market for goat products with Johne's disease bacteria (dead or alive). Hormone Growth Promotants in Australian cattle cause no human disease or issues (treated steers have lower hormone levels than meat from pregnant cows or wheat germ oil), yet in some overseas markets and supermarkets, meat cannot be sold unless it is guaranteed free from these hormone implants.

Question 11 – I am very worried about getting a false positive if I get my herd blood tested for Johne's disease. How likely is this to happen and if it does will my goat get destroyed by the government?

Answer

In tropical areas faecal culture is preferred as some soil mycobacteria can interfere with the blood test, but in most areas of Australia, blood tests are used, i.e. an ELISA. This test has been shown to have very tiny number false positives. There is also an AGID blood test. Also any positive blood test is always confirmed by faecal culture before any action e.g. quarantine in any Australian states that still requires or for most states, entry onto the database of properties with Johne's disease for export purposes. Research was done with 1000 goat blood samples from Western Australian (which was free from Johne's disease at the time). These showed that 99.8% of tests were negative. In addition 83% of clinical and subclinical confirmed cases of Johne's disease were positive on the ELISA. The ELISA test's only problem is the same as all currently available tests – none will pick up carriers in the earliest incubation stages. This research is publicly available in this report <https://rirdc.infoservices.com.au/items/98-135>

Note blood samples must be done as per the manual i.e. not within 4 weeks either side of kidding or within 4 weeks of vaccination. Sick animals should be allowed to recover before testing.

Note destruction was never enforced by the government, only quarantine and only in some areas. Since mid 2016, all state governments, except Western Australia, no longer regulate Johne's disease in Australia, leaving this to industry. Some people do opt for destruction if Johne's disease has only

just been introduced into their herd to prevent shedding of bacteria onto the farm and to prevent future cases, but this is never a government requirement. If the goat is to be destroyed, then a post-mortem should be done to confirm Johne's disease and to estimate how long the goat has been shedding bacteria in its faeces. However as Johne's disease has no treatment, destruction will eventually be needed to prevent the goat suffering when clinical signs become severe.

Question 12 – Do goats that test positive on blood tests always have Johne's disease

Answer

No, because there can be false positives . In my Australian state a positive blood test is regarded as false if 2 faecal cultures taken 3-5 months apart both come back negative. Alternatively the goat can be destroyed and samples taken of the gut and gut lymph nodes and if negative, herd is considered as not infected with Johne's disease.

Question 13 – Do goats that tests negative for Johne's disease free of this disease?

Answer

Not necessarily. A blood test is just the situation at one point in time. JD is an infectious disease and can be brought in by soil and manure. It has been shown that only half a gram of manure from a shedding cow can infect a calf with JD. Also there is no commercial test that picks up JD in its early stage although some new research looks promising.

Question 14 - What are the pros and cons of using the "Gudair"® Johne's disease vaccine in goats?

Answer

Pros are:

- Delays clinical signs.
- Delays shedding and hence reduces environmental contamination with the Johne's disease bacteria.
- Economic return in commercial dairies that cull does at an earlier age than the age pet goats are expected to live.

Cons are:

- Large reactions are common & can extend to local lymph node and require trimming of meat carcasses.
- WH&S risk if accidentally get a needle stick injury (but can use a special shielded vaccination gun).
- Can no longer use the ELISA blood tests, only faecal samples to diagnose Johne's disease carriers.
- In some states, goats must be tagged with a special tag; even tattooed dairy goats with an exemption from NLIS tags.
- In some states, a special exemption from the Chief Veterinary Officer may be needed for goats or other livestock to be vaccinated.
- Doesn't prevent disease or shedding bacteria. It only delays the onset of both.
- Costs especially as the smallest pack size is 100ml and can only be kept for 30 days. The cost as at June 2017 was around \$400.

Grant, I. R., H. J. Ball and M. T. Rowe (1999). "Effect of higher pasteurisation temperatures and longer holding times at 72 °C on the inactivation of *Mycobacterium paratuberculosis* in milk." Letters in Applied Microbiology **28** (6): 461-465.

Hedley, R., J. Picard and O. Hayakijkosol (2017). Environmental survival of Mptb in northern Australia Australian Veterinary Association Annual Conference, Melbourne Australian Veterinary Association.

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ⁱⁱ Grant, I. R., H. J. Ball and M. T. Rowe (1999). "Effect of higher pasteurisation temperatures and longer holding times at 72 °C on the inactivation of *Mycobacterium paratuberculosis* in milk." Letters in Applied Microbiology **28** (6): 461-465.