

# JOHNE'S DISEASE IN GOATS

Johne's disease is caused the bacterium **Mycobacterium avium subspecies paratuberculosis (MAP)**. The target for MAP is the cells of the goat's gastrointestinal tract.

Infection occurs in young animals in the first few months of their life but it has a long incubation period meaning that infected animals may not show any clinical signs of disease for years after infection.

It is mainly spread by ingestion of infected faeces but also less commonly via ingestion of infected milk and colostrum and MAP may also cross the placenta. Once infectious material (faeces or milk) has been ingested, the bacteria are actively taken up by the goat's immune cells into the gut lining cells.

MAP is very hardy, it can survive in the environment for a very long time so contamination can build up in sheds over time. It cannot reproduce outside of the animal but the environment can act as a reservoir of infection.

The main clinical sign in goats is **rapid weight loss**, diarrhoea is common in cattle but less common in goats. The reason for this rapid weight loss is that MAP infects the cells that line part of the small intestine, called the ileum. It lives here for years post-infection and then starts to replicate in these cells. The immune system responds by producing granulomatous inflammation which causes the lining of the ileum to become very thick. Absorption of nutrients from the food is reduced and the goat loses weight.

Once MAP starts replicating in the gut lining, the goat will begin to shed MAP in it's muck and it will become infectious to other animals. This is a problem if the animal is in kid as the infection can be transmitted to the susceptible kid via the placenta or once the kid is born.



## Testing

Testing can detect either the MAP bacteria or the goats immune reaction to it. Neither will detect infection in the incubation period.



**Faecal PCR** – detects MAP bacteria in faeces

- Very accurate
- Can use pooled samples (up to 10 individuals)
- Results in about 7 days

**Culture** – detects MAP bacteria in faeces

- Very accurate
- Results take up to 16 weeks
- Expensive

**ELISA** – detects antibodies (the goat's immune response) to MAP in milk or blood samples

- Very accurate

### NOTE

Will only show positive once the animal has developed antibodies so will not detect goats that are incubating or early shedders. Not suitable for use in vaccinated herds

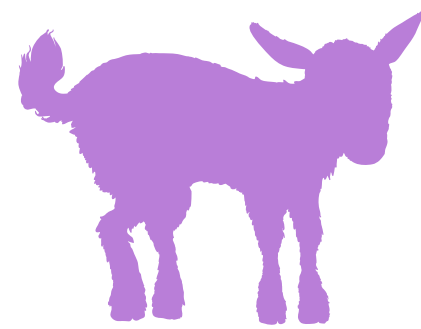
- Results in a few days
- Cheap



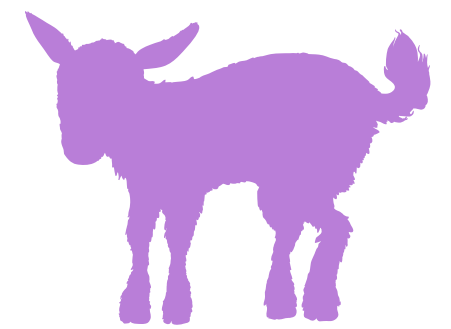
The testing method that you choose will depend on what you are trying to achieve, some tests are more suitable for screening and others for definite diagnosis. Refer to the Testing Fact Sheet for more information about which test to use.

## Prevention

As the main method of transmission is faeco-oral and the animals at the highest risk of infection are kids in the first few months of life then the most important thing you can do is make sure kids are born into a clean, minimally contaminated environment. The kidding shed is not the only area where kids can pick up Johne's, they are susceptible for the first few months of life so consider what you can do in the kid rearing shed to prevent contamination with MAP. As Johne's is also transmitted via milk and colostrum it is important to consider sources of non-infected alternatives.



## Consider



Try not to kid goats that may be infected and shedding as they will contaminate the kidding area

Snatching kids at birth

Washing newborn kids

Vaccination

Increase bedding frequency

Feeding a Johne's-free powdered colostrum

Feeding pasteurised colostrum (not 100% effective)

Have separate PPE for all kid areas

Improve hygiene in the kidding shed

Keep stocking rates low in kidding shed

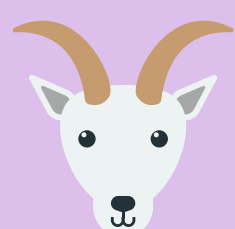
## Control Plan

Johne's disease can result in major economic losses through loss of milk production, higher culling rate, higher losses, increased demand for replacements and an increased rate of treatment needs for concurrent disease. Johne's also has negative welfare implication for infected animals.

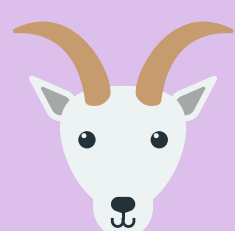
There are 3 possible statuses that a herd can hold



Non-infected



Infected



Vaccinating

It is essential that you know the status of your herd so that you can implement a control plan

1. Keep it out – for Johne's free herds
2. Manage it – for infected or vaccinating herds
3. Eradicate it – for infected herds that aspire to be Johne's free