

# Pack #112, Item

# Type: Backgrounder

Date: 2019

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Backgrounder on managing livestock diseases: Mycoplasmosis and coccidiosis**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Introduction**

***Why is this subject important to listeners?***

* So that farmers know how to prevent coccidiosis and **mycoplasmosis.**
* So that farmers can recognize coccidiosis and **mycoplasmosis symptoms in various livestock and identify animals affected by the diseases.**
* So that farmers know adopt effective hygienic measures to better manage livestock shelters.
* So that farmers know how coccidiosis and **mycoplasmosis are transmitted.**

***What are some key facts?***

* Coccidiosis and **mycoplasmosis** are diseases that affect poultry, cattle, sheep, and goats, but cannot be transmitted between different species of livestock.
* In poultry, avian coccidiosis is more severe in birds from 3-4 weeks old, but infects days from seven days of age onwards.
* Coccidiosis and **mycoplasmosis** spread through infected materials such as feed, water, droppings, and milk, and through pastures where the infectious agent is present.
* Farmers should raise feeding and watering troughs above ground to stop contamination from livestock droppings.
* Farmers should keep livestock sheds dry and clean since humid and unhygienic conditions favour infection with coccidiosis and **mycoplasmosis**.
* Cattle are affected by bovine coccidiosis and poultry by avian coccidiosis.
* Poultry are affected by two types of coccidiosis. One attacks the small intestines and the other the large intestines.

***What are the big challenges to managing the diseases?***

* Farmers are unable to detect diseases early, at a time when they can sometimes can be cured, sometimes with prolonged treatment, as recommended by an animal health expert.
* Infected animals don’t always show symptoms, making it difficult for farmers to know if they require treatment.
* Failure by farmers to maintain hygienic conditions in areas where animals are kept.
* Animals feeding on pastures that contain the parasites which spread coccidiosis and **mycoplasmosis.**
* **Overstocking of livestock by farmers enhances the spread of both the** coccidiosis and the **mycoplasmosis parasites.**
* **Lack of preventative vaccines for** coccidiosis and **mycoplasmosis.**

*For further information, see documents 1-17.*

**Key information about managing coccidiosis**

This disease is caused by a parasite and affects poultry, cattle, and small ruminants like sheep and goats. Only animals of the same species can transmit the disease to each other.

***Poultry***

In poultry, coccidiosis spreads directly through infected feed, water, and droppings, and indirectly through infected rodents, dust, flies, infected equipment, wild birds, contaminated footwear, and clothing. Different strains of coccidiosis affect different types of poultry.

* In poultry, one type of coccidiosis attacks the small intestines, the part of the intestines where the large intestine joins the small intestine, and the kidneys.
* Birds that have recovered from coccidiosis can pass the parasite to uninfected birds for up to six months after recovery.
* Older birds sometimes carry the coccidiosis parasite and can pass it along to other birds, even though they may have no symptoms themselves. They should be separated from uninfected flocks.
* Turkeys and chickens cannot infect each other. Thus, even if they ingest the coccidiosis parasite from chicken or turkey droppings, respectively, they will not be infected.

***Symptoms of cecal coccidiosis***

Cecal coccidiosis mostly affects chicks aged 3-12 weeks by infecting the cecal\* part of the large intestines, though older or younger birds can be infected. Cecal coccidiosis can develop quickly and kill chicks without them exhibiting the usual symptoms.

* Young chicks infected by cecal coccidiosis have bloody diarrhoea, become weak and pale, and die in large numbers.
* Infected young chicks have rough feathers and seek solace in warm places.
* Infected chicks walk unsteadily and sit quietly with eyes closed and wings drooping.
* The vents become soiled with blood.
* The cecal walls of infected birds are congested and have bloody splotches.

***Symptoms of intestinal coccidiosis***

Intestinal coccidiosis infects 6-8 month-old chickens (pullets) by inflaming the upper, middle, and lower parts of the small intestine. Though some chickens survive intestinal coccidiosis, they become weak and unproductive.

* Infected chickens develop a poor appetite and are emaciated and weak.
* Combs and wattles are pale and legs become weak.
* Lack of appetite leads to reduced body weight.
* Infected chickens walk slowly and sluggishly.
* Feathers are rough.

***How to prevent cecal and intestinal coccidiosis***

* Maintain hygiene in poultry enclosures.
* Ensure that poultry enclosures and brooders are well-drained to avoid standing water, especially water contaminated by feed or droppings.
* Ensure that poultry feeding equipment is clean.
* Reduce overcrowding in enclosures.
* Use control measures immediately after noticing symptoms in 3-10 week-old birds including paleness, weakness, and blood-stained or dark droppings
* Early diagnosis helps farmers separate uninfected and infected birds to prevent rapid spread of the disease.
* Avoid contamination of feed and water with droppings.
* Wash feeders and watering equipment with boiling water to kill coccidiosis parasites.
* Farmers should not mix new flocks with old, unexamined flocks. Farmers should supervise all movement of flocks to prevent infection.
* Farmers should ensure that chicken pens are dry, as dampness causes coccidiosis to thrive.
* Badly infected chickens should be quarantined, killed, and burned.
* Install wire mesh flooring to minimize coccidiosis infections from infected droppings.
* Dispose of litter by burning or use as compost far from chicken enclosures. This will help minimize coccidiosis infections.
* Some of the drugs used to prevent coccidiosis are Intracox, Prococ, and Sulphaepron.
* Impextraco is an international company that manufactures a series of products and drugs designed to prevent coccidiosis, including Saligran, Madimpex, Monsingran, Lerbek, Robimpex, Dufacox, and MNGrow.
* A veterinary product called Dufacox is also available as an anti-coccidiosis drug.
* Spraying the hatchery with a vaccine on the day hatching occurs helps prevent poultry coccidiosis.

***Treatment***

* Coccidiosis in chickens can be treated with Elanco’s ESB 3, a sulfonamide antibiotic that is added to chickens’ drinking water. Mix the product in water as per the label directions.
* Drugs like Pluricoccin, Intracox, and Sulphaepron can also be used to treat avian coccidiosis.

*For further information, see documents 4, 5, 8, 10, 12, 16, and 17.*

***Cattle***

Bovine coccidiosis damages the walls of the small and large intestines. Calves from 3-9 months of age are at risk from coccidiosis and show a variety of symptoms. There are no vaccines for bovine coccidiosis, but cattle can build natural immunity. Coccidiosis parasites can survive for over one year in pastures or pens.

***Transmission***

* Coccidiosis parasites are excreted in dung. When ingested by calves through feed, pasture, or water, they cause infections.

***Symptoms***

* Non-immune calves infected with coccidiosis have diarrhoea, dysentery, become dehydrated, lose appetite, resulting in shrivelling, and have bloodied and watery dung.
* Calves lose appetite and weight and may eventually die.

***Prevention***

* Ensure that drinking water and feed is not contaminated by droppings.
* Keep pens dry, including dry bedding.
* Raise watering troughs above the ground.
* Minimize grazing on grass along the edges of streams or ponds.
* Quarantine cattle infected by coccidiosis from the herd and treat.
* Avoid overgrazing pastures. The roots of plants on overgrazed pastures are more likely to harbour coccidiosis parasites.
* Graze cattle in well-drained pastures.
* Anti-protozoal, non-antibiotic veterinary drugs such as Decoquinate, Diclazuril, and Toltrazuril can be administered to cattle if an outbreak of bovine coccidiosis is anticipated, or when there is a history of outbreaks on the farm.

***Treatment***

* Sulfonamides have been used to treat bovine coccidiosis but have limited efficacy at eradicating the disease. However, they are effective at suppressing secondary infections.
* Amprolium is a non-antibiotic anti-protozoal that can also be used to treat bovine coccidiosis.

*For further information, see documents 4, 7, and 9.*

***Sheep and goats***

Small ruminants like sheep and goats can be infected by intestinal coccidiosis. The disease mostly affects 4-6 month-old kids and lambs. It destroys their intestinal cells, resulting in poor nutrient absorption, which results in anaemia\*.

***Transmission***

* Rearing large numbers of sheep and goats in a small area increases the spread of coccidiosis in small ruminants.
* Weaning, harsh weather, diet changes, and travelling can contribute to the prevalence of goat and sheep coccidiosis.
* Coccidiosis parasites can be passed to kids and lambs through faeces.
* Coccidiosis can also be transmitted through dirty bedding and poor hygiene in sheds and through contaminated feed and water.

***Symptoms***

* Kids and lambs infected by coccidiosis have watery and bloody diarrhoea.
* Sheep and goats infected by coccidiosis appear ruffled or dishevelled.
* Both kids and mature animals become weak and gain weight poorly.

***Prevention***

* Raise kids and lambs in dry and hygienic conditions to minimize infection.
* Provide proper nutrition for kids and lambs.
* Disinfect sheep and goat sheds with boiling water under pressure and gaseous ammonia if possible.
* Raise kids and lambs of different age groups separately.
* Raise feed and water troughs high enough to prevent fecal contamination.
* Rotate pastures to minimize coccidiosis infection.
* Prevent fecal contamination on kids’ and lambs’ coats.

***Treatment***

* Start treating the whole herd of lambs and kids immediately after detecting symptoms of coccidiosis.
* Farmers can treat coccidiosis in sheep and goats with the antiobiotic Monensin, the anti-bacterial agent Lasalocid, and the anti-protozoal drug Decoquinate.

*For further information, see documents 4, 7, 11, and 15.*

**Key information about managing mycoplasmosis**

**Mycoplasmosis is a bacterial respiratory disease that affects both poultry and cattle. In poultry, it’s called avian mycoplasmosis, and in cattle it’s bovine mycoplasmosis.**

***Poultry***

**In poultry, mycoplasmosis is transmitted through contact with infected animals, and through oral secretions and secretions from the eyes, respiratory tract, and the cloaca\*. It can also be transmitted by wind. Birds can also be infected if in close contact or from adjacent sheds. They can also be infected through contact with broken, infected eggs.**

***Symptoms***

* Birds infected by **mycoplasmosis cough, sneeze, have nasal discharges, and have abnormal breathing and difficulty in breathing.**
* **Infected birds become lame, grow poorly, and their hock joint area swells.**
* The inner eyelids of infected birds’ eyes ooze a frothy discharge.
* The nasal area swells.
* Birds infected with **mycoplasmosis are pale and have reduced egg production.**
* The face and comb become pale and the feathers become ruffled.
* Birds infected with **mycoplasmosis have green diarrhoea.**

***Prevention***

* Farmers should start new turkey and chicken flocks with chicks and eggs free from **mycoplasmosis and not exposed to other flocks.**
* Farmers should regularly monitor their flock for signs and symptoms of **mycoplasmosis.**
* **Poultry sheds should be regularly washed and disinfected and hygiene maintained.**
* Poultry feeders should be regularly cleaned to stop **mycoplasmosis infections.**
* **Poultry can be vaccinated against mycoplasmosis, with both live vaccines and bacterins (killed vaccines), though efficacy is not assured.**
* **Slaughtering infected birds prevents transmission of avian mycoplasmosis to the rest of the flock.**
* **Infected birds may leave discharges on feeders. If uninfected birds stick their heads in such feeders, they can be infected.**

***Treatment***

* **Antibiotics can treat poultry that show symptoms of mycoplasmosis, though this may not eliminate the disease from the flock.**
* **The antibiotics Aivlosin and Elanco’s Tylan Soluble have proved to be effective at treating mycoplasmosis.**

*For further information, see documents 1 and 6.*

***Cattle***

Bovine **mycoplasmosis is a bacterial disease that causes several disorders in cattle and is very difficult to treat. It causes bovine respiratory disease and ear infections in calves, while it causes arthritis, mastitis, pneumonia, and less commonly abortion and eye infections in older cattle. Calves can be infected when they are two weeks old.**

***Transmission***

* Bovine **mycoplasmosis can be spread through airborne transmission.**
* **In calves, it can be transmitted by ingesting milk or colostrum from infected cows.**
* **Cows in close and repeated contact can spread the disease among themselves.**
* Bovine **mycoplasmosis can be transmitted by milkers’ hands and milking utensils. It can also be transmitted through infected milk and through secretions from the eyes, nose, vagina, and rectum.**

***Symptoms***

* Cows infected with bovine **mycoplasmosis have reduced milk production, though they may appear healthy.**
* The milk of cows infected with **mycoplasmosis is contaminated with protein-rich bodily fluids.**
* Both calves and adult cattle infected with **mycoplasmosis suffer from arthritis, characterized by lameness and swollen joints in the lower limbs.**
* Young calves’ heads tilt, and their ears droop, become infected, and ooze yellow pus.
* Young calves suffer from respiratory problems and ear infections.
* **In calves and adult cows, mycoplasmosis can cause respiratory diseases like pneumonia, which are characterized by coughs and fever.**
* **In older animals, mycoplasmosis sometimes causes mastitis, eye infections, and abortion.**
* **Mycoplasmosis inflames the udder, joints, and lungs in calves and the respiratory and genital tracts in both young and adult cattle.**
* **Infected calves have runny eyes.**

***Prevention***

* **Separate infected cows from healthy cows and restrict movement of cows to prevent mixing of infected and uninfected cows.**
* **Milk infected cows with separate equipment.**
* **Feed infected calves with milk from healthy cows to prevent mycoplasmosis transmission.**
* **Animal experts recommend culling of infected cows, especially those that contract mastitis through mycoplasmosis since the strain of mastitis that’s associated with mycoplasmosis is incurable.**
* **Start treatment immediately after detecting** bovine **mycoplasmosis in calves. Calves that are treated early respond fairly well to treatment, but should be treated over the course of 10 to 14 days.**
* **There are vaccines against** bovine **mycoplasmosis. Herds with a history of infections should be vaccinated before symptoms are visible.**
* **Vaccines such as** Pulmo-Guard, MpB, Mycomune, Mycoplasma Bovis bacterin, and Myco-Bac have sometimes been effective against mycoplasmosis.

*For further information, see documents 2, 3, 13, and 14.*

**Definitions**

*Anaemia*: A condition where the number of red blood cells or their oxygen-carrying capacity is insufficient. In its severe form, anaemia results in dizziness, weakness, and drowsiness.

*Cecal*: Related to the cecum, a pouch where the large intestines start.

*Cloaca*: A body part in a chicken where the digestive, reproductive, and urinary tracts converge.

**Where can I find other resources on this topic?**

*Reference documents*

1. The Centre for Food Security & Public Health-Iowa State University, 2018. *Avian Mycoplasmosis (Mycoplasma gallisepticum).* [http://www.cfsph.iastate.edu/Factsheets/pdfs/avian\_mycoplasmosis\_mycoplasma\_gallisepticum.pdf](http://www.cfsph.iastate.edu/Factsheets/pdfs/avian_mycoplasmosis_mycoplasma_gallisepticum.pdf%20)  (510 KB)
2. Pfützner, H., and Sachse, K., 1996. *Mycoplasma bovis* as an agent of mastitis, pneumonia, arthritis and genital disorders in cattle. *Scientific and Technical Review of the Office International des Epizooties*, 1996, 15 (4), 1477-1494. <https://www.oie.int/doc/ged/D9106.PDF> (1.16 MB).
3. DairyNZ, undated. Mycoplasma bovis - what to look out for. <https://www.dairynz.co.nz/media/5788128/mycoplasma-bovis-what-to-look-out-for-a3-poster.pdf> (631 KB).
4. Vorster, J.H., and Mapham, P.H., undated, *Coccidiosis.* <http://www.cpdsolutions.co.za/Publications/article_uploads/COCCIDIOSIS.pdf> (180 KB).
5. Pitesky, M., undated. *Coccidiosis in Chickens.* <https://ucanr.edu/sites/poultry/files/201392.pdf> (54.3 KB).
6. Bronson Animal Disease Diagnostic Laboratory, 2013. *Mycoplasma gallisepticum and Mycoplasma synoviae in domestic poultry.* <https://www.freshfromflorida.com/content/download/77376/2221714/Mycoplasma-Brochure.pdf> (2.74 MB).
7. Animal Health Ireland, 2015. Bovine Coccidiosis - The Facts. Parasite Control Leaflet Series, Vol 1, Ver 1, October 2015. [https://www.slaneyfarmers.com/documents/Bovine\_Coccidiosis\_the\_facts\_(002).pdf](https://www.slaneyfarmers.com/documents/Bovine_Coccidiosis_the_facts_%28002%29.pdf) (805 KB)
8. Graham, R., and Brandly, C.A., 1938. *Coccidiosis of Poultry*. University of Illinois, College of Agricultural Experiment Station and Extension Service in Agriculture and Home Economics, Circular 485. <https://www.ideals.illinois.edu/bitstream/handle/2142/33299/1093041.pdf?sequence=2> (2.11 MB).
9. Kennedy, M.J., 2007. *Coccidiosis in Cattle.* <https://open.alberta.ca/dataset/f3d661cd-cde2-456a-9872-2073e2796cf8/resource/92083fd8-04cb-4622-9a26-cef1841bbcfe/download/2007-663-16.pdf> (147 KB)
10. Ontario Ministry of Food and Rural Affairs, undated. *Managing Coccidiosis in my Poultry Flock.* <https://atrium.lib.uoguelph.ca/xmlui/bitstream/handle/10214/11932/ManagingCoccidiosisInMyPoultryFlock.pdf?sequence=3&isAllowed=y> (3.16 MB).
11. Khodakaram*‐*Tafti, A., and Hashemnia, M., 2017. *An overview of intestinal coccidiosis in sheep and goats.* <https://www.revmedvet.com/2017/RMV168_9_20.pdf> (2.49 MB).
12. de Gussem, M., 2007. *Coccidiosis in poultry: review on diagnosis, control, prevention and interaction with overall gut health.* 16th European Symposium on Poultry Nutrition, Strasbourg, France, 26-30 August 2007. <https://www.cabi.org/isc/fulltextpdf/2009/20093257328.pdf> (201 KB).
13. Carty, Catherine, 2017. Mycoplasma Bovis. *Veterinary Ireland Journal*, Volume 7, Number 6, pp. 308-311. <http://www.veterinaryirelandjournal.com/images/pdf/large/la_jun_2017.pdf> (570 KB).
14. Wisconsin Veterinary Diagnostic Laboratory, University of Wisconsin-Madison, 2016. *Mycoplasma species.* <https://www.wvdl.wisc.edu/wp-content/uploads/2016/07/Mycoplasma-species-15-08-05.pdf>(97.3 KB).
15. University of Guelph, 2012. Control of Coccidiosis in Lambs and Kids. In *Handbook for the Control of Internal Parasites of Sheep and Goats*, pp 55-58*.* <https://www.uoguelph.ca/~pmenzies/PDF/Handbook/Handbook_Coccidia_2012.pdf> (246 KB).
16. Novartis Animal Health, undated. *Esb3.* <http://avipharm.co.za/wp-content/uploads/2011/04/ESB3.pdf> (159 KB).
17. Hafez, H.M., 2008. Poultry coccidiosis: prevention and control approaches. *Archiv fur Geflugelkunde*, 72 (1). S. 2–7, 2008*.* <https://www.european-poultry-science.com/artikel.dll/m07-63mk_NTU4NjM1.PDF> (256 KB)

## Acknowledgements

Contributed by: James Karuga, Agricultural journalist, Kenya

Reviewed by: Sylviah Achieng,

*This resource is supported by Elanco Animal Health*