



# 1.

## Parasite species that can cause problems and production losses in the winter.

**1. Are there certain parasites that are considered winter parasites or do all parasites occur throughout the year?** Although the warmer spring, summer and autumn months are generally associated with high internal and external parasite loads, winter should not be forgotten, as certain parasites can also cause problems and production losses during this time.

**2. Are internal and external parasites more active in winter?** Although internal and external parasites are more active in the warmer months, certain parasites may increase in prevalence during the colder winter months. The rainfall region (winter or summer rainfall) must also be considered. In certain areas where the winters are not so cold, certain parasites can cause problems all year round.

Good examples of internal parasites that occur in winter and can lead to production losses include liver fluke (*Fasciola sp.*) and conical fluke (*Calicophoron microbothrium*). Certain roundworm species such as brown stomach worms in sheep and cattle (*Teladorsagia circumscincta* and *Ostertagia ostertagia*) as well as bankruptworms in sheep (*Trichostrongylus sp.*) can cause problems especially during the winter in winter rainfall regions.

External parasites whose incidence may increase during the winter months are scabies mites (*Psoroptes ovis*) that cause sheep scab, which is also a state-controlled disease, as well as biting and sucking lice (*Damalinia sp.* and *Linognathus sp.*).

Although tick numbers decrease during the winter months, it is possible that the immature larva and nymph stages, which cannot always be seen with the naked eye, may still be present on the animals.

Nose fly larvae (*Oestrus ovis*) can also overwinter / survive in sheep's nasal cavities during the winter months to eventually cause problems in the spring-summer months.

**3. Why are animals more exposed to parasites in winter?** Certain environmental factors

can determine that the incidence of certain parasites increases in winter. Because the nutritional value of natural pasture decreases during the winter months, the animals' natural immunity can decrease to some extent if the necessary nutrients are not supplemented. On the other hand, a high parasite load in winter can again hinder the utilization of valuable nutrients during this critical time.

The occurrence of internal parasites such as liver fluke (*Fasciola sp.*) in winter can be explained by looking at the life cycle of the parasite. As soon as the minimum temperatures in winter start to drop below 10°C, the freshwater snails, which serve as intermediate hosts, start to hide in the mud. The immature stages of the liver fluke parasite (cercaria) leave the snails to settle on the pastures. These cercaria then lose their protective envelope and change to the infective stage (metacercaria) for the ruminant. The result is that ruminants become infected when grazing, especially in wet areas during this time. This immature stage then begin to migrate through the stomach and intestinal wall and abdominal cavity to the liver. The adult stage is reached after about 12 weeks and settles in the bile ducts where they then aggressively suck blood and cause signs of disease. They also cause damage to the bile ducts leading to thickening (fibrosis) of the bile ducts. The mature female stages of the liver fluke, which settle in the bile ducts, produce massive numbers of eggs which are then eventually excreted through the feces. The result is that the pastures become dramatically infected with eggs. The eggs then hatch on the pastures to a larval stage (miracidium) which in turn infects the freshwater snails (intermediate host), when they become active in the spring, and thus the life cycle of the liver fluke parasite can be repeated.

The life cycle for conical fluke (*Calicophoron microbothrium*) is very similar, with the difference that the immature stages (cercaria) leave the intermediate host later in the winter and animals then become infected later in the winter. The immature stages of the conical fluke are responsible for the disease signs observed due to the severe irritation they

cause in the small intestine wall, while the mature stage settles in the rumen without causing any clinical signs.

Certain roundworm species such as the brown stomach worm and bankruptworm thrive in cold, wet conditions found in the winter rainfall regions and infection of animals with these parasites increases during the winter months in these regions. The environment created on planted pastures is also favorable for the survival of these parasites and high infestations are also usually observed.

External parasites such as lice and mites can increase by looking at the environment on the host, especially sheep, and environmental factors. When the wool is long and ambient temperature is low, the conditions are favorable for these parasites to multiply and survive and high numbers can occur on the hosts resulting in severe infestations.

**4. Is there a general life cycle for parasites or does it differ from species to species?** Each parasite has its own unique life cycle.

Certain internal parasites such as roundworms have a direct life cycle, meaning that their life cycle does not depend on an intermediate host, with the result that their numbers can increase rapidly under favorable circumstances. Other internal parasites such as liver fluke and conical fluke have an indirect life cycle, which means that intermediate hosts, such as freshwater snails, form part of the life cycle.

The duration of the parasites' life cycle also varies. Certain roundworms' life cycle can be as short as 18-21 days, while liver fluke's life cycle in the animal can last up to 12 weeks.

By considering the life cycle together with all the other environmental factors such as temperature, moisture as well as the host, the occurrence of parasites during certain times of the year can be explained.

**5. What are disease signs of internal parasites?** The disease signs observed depend on which internal parasite the animal is infected with. The common disease signs of

internal parasites are a decreased appetite, weight loss, diarrhea, anemia which is seen as pale eye mucous membranes and low protein levels which is seen as "bottle jaw". These two latter disease signs are particularly observed with high roundworm and liver fluke infestation. Acute deaths can occur especially in sheep with high liver fluke and roundworm infestation.

**6. Signs of external parasites?** The signs observed depend on the external parasite with which the animal is infected. The signs of lice and mite infestations are very similar and include animals itching and constantly scratching and biting themselves and thus, in the case of sheep, pulling out their wool. In some cases, crusting lesions may be observed on the skin and hair and wool loss may occur. This may result in severe production and economic losses.

**7. How do you know if your animals / farm is infected with winter parasites?** If it is suspected that animals are infected with winter parasites, after certain signs of disease have been observed, certain diagnostic methods can be employed with the help of the local veterinarian, to determine which parasites are present.

Fecal egg flotation and fecal egg sedimentation can be done to determine which internal parasites are present by identifying the specific eggs. Fecal egg counts can be done to determine how severe the infestation is. Fecal egg sedimentations are especially done to diagnose liver fluke and conical fluke infestation.

If animals are slaughtered or when a post-mortem examination is carried out on an animal that has died, the digestive tract (from the stomach to the large intestine) as well as the liver can be examined for the presence of internal parasites.

To determine which external parasites are present, the skin between the hair or the wool can be closely examined for external parasites such as lice (biting and sucking lice) as well as larval and nymph stages of ticks. A skin scraping can be made from lesions to diagnose mite infestations. To accurately identify these external parasites a microscope must be used. It is particularly important to accurately identify these external parasites, as the signs are very similar and appropriate treatment can only take place after the parasite has been accurately identified.

**8. How can winter parasites be prevented and controlled?** Certain management practices can be used to prevent infestation with winter parasites. For example, to prevent liver fluke and conical fluke infection, wet areas such as vleis and rivers should be avoided during the summer and autumn months to prevent contamination with the infective stages, which

leave the freshwater snails (intermediate host) during this time of year.

In some cases, and in areas where there is an increased incidence of liver fluke infestation, strategic treatment during early winter, around 2 fortnights after the minimum temperature has dropped below 10°C, can be done to treat existing liver fluke infestations. A product containing triclabendazole, which is effective against the most immature stages as well as the mature stages of liver fluke, can be used for this strategic treatment. Strategic liver fluke treatment, with a product that is effective against adult stages, can be done during early spring to get rid of the mature liver flukes that have survived through the winter, thus limiting the contamination of pastures with liver fluke eggs and disrupt the life cycle to a certain extent.

Strategic treatment to prevent and treat conical fluke can be applied in mid-late winter. This treatment can be repeated during spring. A product containing oxyclozanide or resorantel can be used.

As far as external parasites such as lice are concerned, shearing sheep and creating an unfavorable environment for them on the host may reduce the lice burden to some extent. It may then be necessary to apply an appropriate treatment to treat the lice which may include injectable products in cattle and topical products in cattle and sheep. A follow up treatment 12 days later is usually necessary to treat the immature stages that may develop after hatching of the eggs of the lice.

**9. If your animals are infected with winter parasites, how can they be treated?** It is important to determine with the help of the local veterinarian, who uses certain diagnostic methods, which specific internal and external parasites the animals are infected with.

There are several drugs on the market that contain active ingredients that are effective against certain internal and / or external parasites, as well as the different stages (immature and / or adult) of these parasites. The right treatment can therefore be used to treat these parasites accurately and effectively.

A drug such as triclabendazole can be used to treat the immature as well as the mature stages of liver fluke in the animal. A drug containing oxyclozanide or resorantel can be used to treat the immature as well as the mature stages of conical fluke.

A product containing any of the macrocyclic lactones (such as ivermectin, doramectin or abamectin) will be effective against sucking lice and mites on sheep. Biting lice can be treated with a topical or injectable product in cattle and a topical product in sheep & goats.

The importance of an accurate diagnosis or identification of the specific parasite must be emphasized again to ensure that the right treatment is applied.

The importance of understanding the life cycle of the parasites and applying the right treatment can be emphasized using sheep scab as an example. With certain drugs, it is important to apply a follow-up treatment 11-14 days later in order to effectively treat a sheep scab infestation. It must also be ensured that each animal has been treated, by marking animals, as one untreated animal can lead to further contamination.