

Efficacy study of Hoof-fit Gel for treating Foot rot disease in sheep

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Contents

	Page
1. Introduction	3
2. Foot-rot	3
2.1 Diagnosis	3
2.2 Transmission	3
3. Trial set-up and claw scores	3
3.1 Treatment and results: farm 1	4
3.2 Treatment and results: farm 2	5
3.3 Treatment and results: farm 3	5
3.4 Treatment and results: farm 4	6
3.5 Treatment and results: farm 5	7
4. Conclusions	7

1. Introduction

Intracare has carried out a study in cooperation with the University STOAS Dronten into the effect of the use of the claw care product, Intra Hoof-fit Gel. This study was carried out at five Dutch sheep farms. The results and conclusions of the study are given in this report.

2. Foot rot

Ovine foot rot was first reported in 1869. It is an infectious, contagious disease of sheep that causes severe lameness and economic loss from decreased flock production. In a survey, approximately 21 percent of the sheep producers considered foot rot to be a serious health problem in their flocks. With current understanding of the disease, and aided by Hoof fit gel control and elimination of the disease should be the goal of all sheep producers.

Ovine foot rot is caused by an interaction of two anaerobic (without oxygen), Gram (-) bacteria, *Bacteroides nodosus* (formerly *Fusiformis nodosus*) and *Fusobacterium necrophorum* (formerly *Sphaerophorus necrophorus*). *Fusobacterium necrophorum* is a normal inhabitant of the ruminant digestive tract and in wet weather may interact with another bacteria, *Corynebacterium pyogenes*, to produce foot scald, an infection of the skin between the toes. This infection sets up the foot for invasion by *Bacteroides nodosus*, which, working in conjunction with the *Fusobacterium*, produces the condition referred to as foot rot. Since *Bacteroides* can only live in the hoof of an infected animal or in the soil for no more than 10-14 days, it is possible, through careful management procedures, to keep from introducing foot rot into a flock and to successfully control and/or eliminate the disease if the flock is infected.

2.1 Diagnosis

Lameness is usually the major sign of an infected animal, although sheep with an early infection may not exhibit lameness. The area between the toes first becomes moist and reddened. Then the infection invades the sole of the hoof, undermining and causing separation of the horny tissues. The infection causes a characteristic foul odour and may infect one or more feet at the same time. Not all lame sheep have foot rot. Before undertaking an eradication, treatment, or control program, it is best to consult a

veterinarian for a positive diagnosis and advice. Other diseases that may be confused with foot rot are foot abscesses, foot scald, laminitis or founder, corns, traumatic injuries, and foreign bodies lodged between the toes.

2.2 Transmission

The bacteria that causes foot rot, *Bacteriodes nodosus*, is spread from infected sheep to the ground, manure, bedding, etc., where it is then picked up by noninfected sheep. Foot rot is introduced by purchase of an infected animal or by simply using facilities or trucks that have been contaminated by infected sheep. Spread occurs best when temperatures are from 40-70 degrees F and the environment is wet. Since the organism doesn't survive long in the environment (< 2 wks), carriers in the flock will continue to re-infect the flock unless the animal is either culled or the organism is eliminated by proper treatment.

3. Trial setup and claw scores

At the commencement of the trial, the hind claws of all the sheep's participating in the trial were trimmed and checked for the presence of the Foot rot disease, and Hoof-fit Gel was applied. If a claw showed none of the symptoms of Foot rot disease, it was given the score, 0. If Foot rot disease was ascertainable, the claw in question was given the score A, B, C or D, depending on the severity of the infection. An explanation of how the claws were scored is given below. The claws of the sheep's were examined and assessed at various times after the commencement of the trial. Animals that still showed symptoms of Foot rot disease were again treated with Hoof-fit Gel.

Scorecard

Score O: *no Foot rot disease*

Score A: *slight Foot rot disease*

Early stage. Small sore, no swelling or redness. Animal barely feels the sore. The sore is dry.

Score B: *moderate Foot rot disease*

Larger sore, deeper than score A. Sensitive to the touch. There is a red swelling around the sore. There is a ridge around the sore. The sore is dry.

Score C: *bad Foot rot disease*

Large, deep, bulging sore with a thick ridge around it. Painful to the touch. The sore is often inflamed and very red. The hoof smells. The sore is usually dry.

Score D: *severe Foot rot disease*

Large, deep, bulging, inflamed, oozing sore. Very painful. The sore often bleeds slightly when cleaned. There is a swelling around the sore. The sore has a granular surface.

3.1 Treatment and results: farm 1**Details of farm**

70 sheep's, + 35 in the trial

Claw treatment

Day 0, assessment I

The hind claws of all the sheep's were trimmed and treated with Hoof-fit Gel.

Day 7, assessment II

During the assessment on day 7 any sheep's that still showed symptoms of Foot rot disease were treated for the 2nd time with Hoof-fit Gel.

Results of claw scores**Percentage distribution of claw scores on days 0, 7 and 21**

	score 0	score A	score B	score C	score D
day 0	9.4	9.4	40.6	37.5	3.1
day 7	18.8	34.4	43.8	3.1	0
day 21	38.9	11.1	33.3	16.7	0

Conclusions

Day 7: the Foot rot disease was decreasing rapidly, the sores were less painful and becoming necrotic.

Day 21: the sores were becoming steadily smaller and the necrotic edges had sloughed off. The typical smell of Foot rot disease could hardly be ascertained any more.

3.2 Treatment and results: farm 2

Details of the farm

+ 50 sheep's

Claw treatment

Day 0, assessment I

The hind claws of all the sheep's were trimmed and treated with Hoof-fit Gel.

Day 5, assessment II

During the assessment on day 5 any sheep's that still showed symptoms of Foot rot disease were treated for the 2nd time with Hoof-fit Gel.

Results of claw scores

Percentage distribution of claw scores on days 0, 5, 8

	score 0	score A	score B	score C	score D
day 0	0	11.5	26.9	53.9	7.7
day 5	19.2	38.5	26.9	15.4	0
day 8	23.1	50	19.2	7.7	0

Conclusions

Day 5: The sores were shrinking and the necrotic edges were sloughing off. The sores were dry and less sensitive.

Day 8: The sores were becoming smaller and shallower. The claws were no longer sensitive and the sheep's were walking better.

3.3 Treatment and results: farm 3

Details of the farm

120 sheep's

Claw treatment

Day 0, assessment I

The hind claws of all the sheep's were trimmed and treated with Hoof-fit Gel.

Day 4, assessment II

During the assessment on day 4 any sheep's that showed symptoms of Foot rot disease were again treated with Hoof-fit Gel.

Day 8, assessment III

During the assessment on day 8 any sheep's that still showed symptoms of Foot rot disease were again treated with Hoof-fit Gel.

Results of claw scores

Percentage distribution of claw scores on days 0, 4, 8 and 12

	score 0	score A	score B	score C	score D
day 0	14	28	6	8	44
day 4	38	10	34	16	2
day 8	38.9	11.1	38.9	11.1	0
day 12	42.9	35.7	21.4	0	0

Conclusions

Day 4: the Foot rot disease was decreasing. The edges of sores were becoming necrotic and turning black. The claws were less painful.

Day 8: Necrotic edges were falling off. The affected claws in most of the sheep's were no longer painful. Only a very few sheep's still had spots which were sensitive.

Day 12: Most of the infection had disappeared and the sheep's no longer reacted much if the spots in question were touched.

3.4 Treatment and results: farm 4

Details of the farm

70 sheep's

Claw treatment

Day 0, assessment I

The hind claws of all the sheep's were trimmed and treated with Hoof-fit Gel.

Day 5, assessment II

During the assessment on day 5 any sheep's that still showed symptoms of Foot rot disease were again treated with Hoof-fit Gel.

Day 11, assessment III

During the assessment on day 11 any sheep's that still showed symptoms of Foot rot disease were again treated with Hoof-fit Gel.

Results of claw scores

Percentage distribution of claw scores on days 0, 5, 11 and 21

	Score 0	score A	score B	score C	score D
day 0	8.3	25.0	25.0	25.0	16.7
day 5	50	8.3	25.0	16.7	0.0
day 11	37.5	37.5	12.5	12.5	0
day 21	50	16.7	33.3	0	0

Conclusions

Day 5: the sores were healing very rapidly. The edges were becoming necrotic and the sores were dry and less sensitive.

Day 11: the necrotic edges of the sores were sloughing off. The sores were no longer sensitive to the touch.

Day 21: the infection had almost disappeared, except for a few persistent cases.

3.5 Treatment and results: farm 5

Details of the farm 5

100 sheep

Claw treatment

Day 0, assessment I

The hind claws of all the sheep's were trimmed and treated with Hoof-fit Gel.

Day 10, assessment II

During the assessment on day 10 any sheep's that still showed symptoms of Foot rot disease were treated for the 2nd time with Hoof-fit Gel.

Day 14, assessment III

During the assessment on day 14 any sheep's that still showed symptoms of Foot rot disease were treated for the 3rd time with Hoof-fit Gel.

Results of claw scores

Percentage distribution of claw scores on days 0, 10, and 14

	score 0	score A	score B	score C	score D
day 0	3.9	11.5	28.9	48.1	7.7
day 10	11.5	32.7	46.2	9.6	0.0
day 14	20	56.7	23.3	0	0

Conclusions

Day 10: the sores were decreasing slowly. The sores were less red and the swelling around the sores was shrinking. The sores were less painful to the touch. Sores which were taped up improved more quickly than those which were not taped up. The sores were dry, smelled less and were becoming necrotic.

Day 14: the number of sores was still decreasing. The edges were becoming necrotic and the pain was almost completely gone. The sheep's were walking more easily.

Day 28: necrotic edges were sloughing off. The sores were shrinking.

4. Conclusions

After trimming and a treatment with Hoof-fit Gel the incidence of Foot rot disease decreased very rapidly at all the farms participating in the trial. This decrease was usually already visible within a couple of days. It is advisable to treat sheep's with severe symptoms of Foot rot disease twice with Hoof-fit Gel.