

Case Study: Impact of short term increased concentration of a hoof bath product on the prevalence of active digital dermatitis lesions



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Introduction

- Digital dermatitis (DD) is a major infectious disease of dairy cattle hooves in global dairy operations associated with increases in lameness
- Warmer and wetter conditions are conducive to higher DD incidence
- Increases in temperature are related to higher crowding and moisture in areas that provide shade
- During DD outbreaks, some producers increase dosage, frequency, or both of hoof bath treatments

Objective

- Measure the prevalence of DD 2 weeks after increasing the dosage and frequency of a hoof disinfectant (4Hooves™; DeLaval, Inc.)

Material and Methods

- 4500 cow dairy in New Mexico (USA) operated under dry lot conditions
- Farm used a 380 L hoof bath, refreshed every 300 cows (79 cow passes per 100 L).
- Producer considered it an outbreak when the prevalence of DD >10% cows and the hoof bath routine was adjusted
- 900 animals were evaluated for the prevalence of active DD lesions before and after the two week intervention period using the Britt *et al.* (1999) scoring system.
- Statistical analysis determined by one-way ANOVA

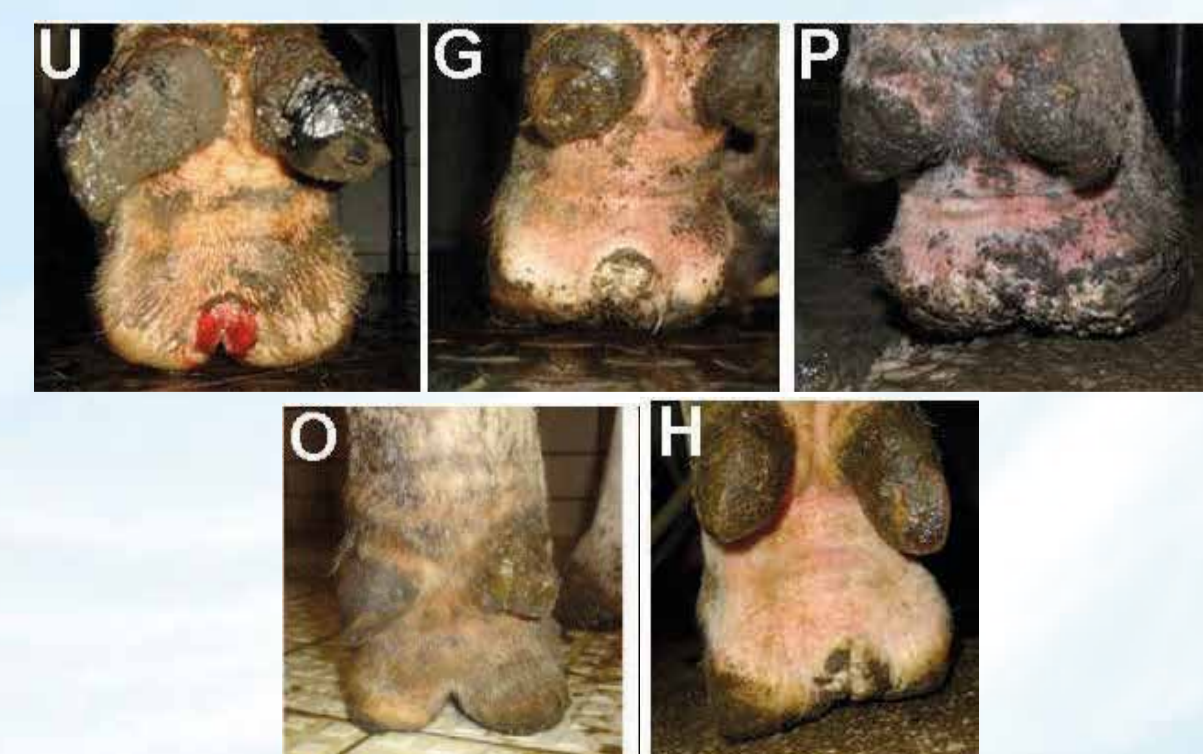
Table 1. Hoof bath routine before and after the outbreak of DD occurred

Routine	Duration	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Before	7 months	1% 4H ¹	-	1% 4H	-	1% 4H	-	-
After	2 weeks	2.5% 4H	2.5% 4H	2.5% 4H	2.5% 4H	2.5% 4H	-	-

¹4Hooves™ (DeLaval, Inc.)

Table 2. Scoring system used to evaluate DD lesion types

Stage (Britt <i>et al.</i> , 1999)	
O	No lesion
H	Hyperkeratosis
U ¹	Ulcerative, red, strawberry-like lesion
G ¹	Granulomatous, gray, terry cloth-like lesion
P ¹	Papillomatous, hair-like projections



¹ Considered an active lesions

Britt *et al.*, 1999

Results

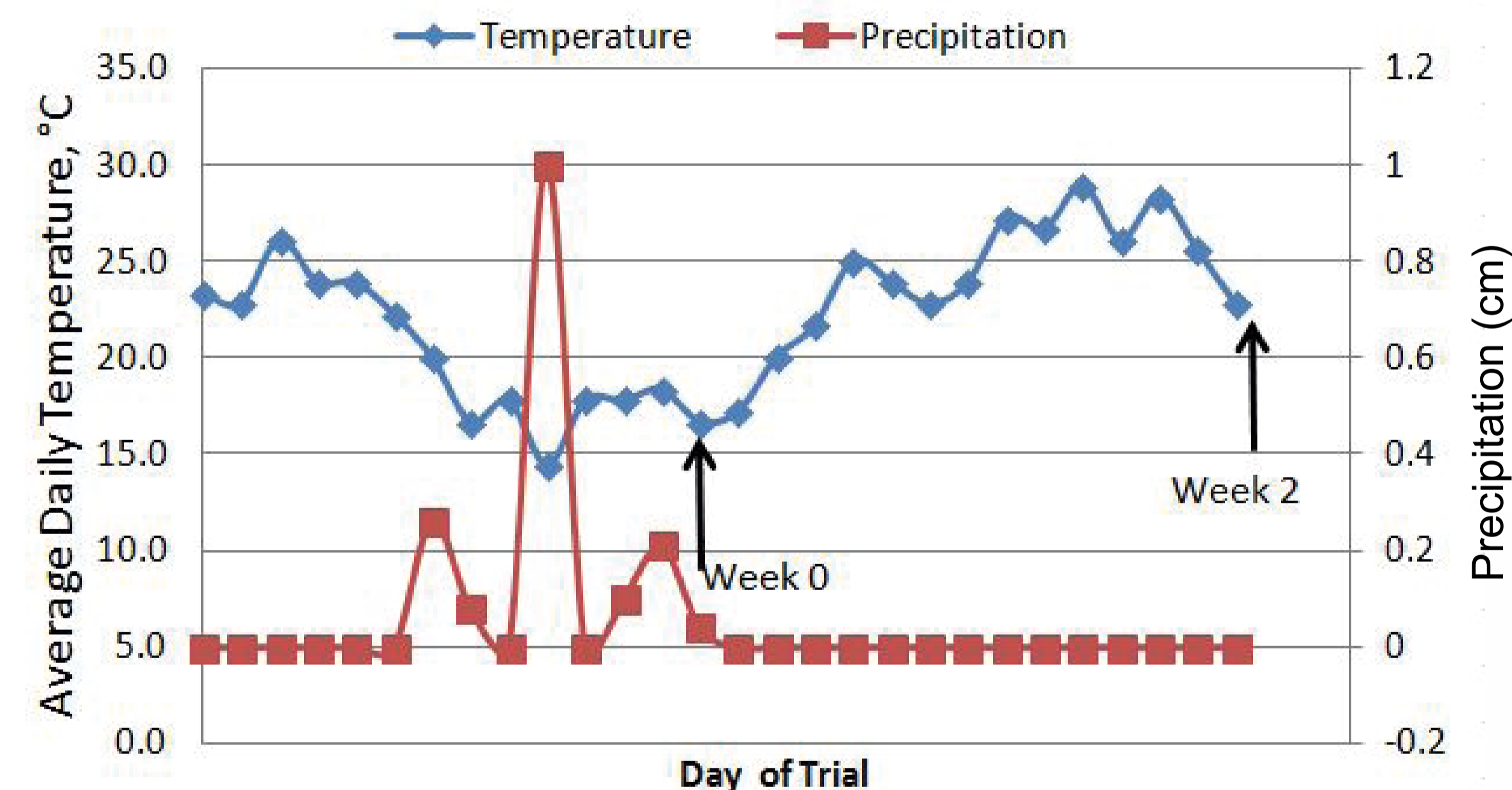
- Two weeks of 2.5% 4Hooves™ reduced active lesions by 26% ($P = 0.042$):

4Hooves™ dosage (L/100 L)	Cows with active lesions ¹	Prevalence (% active DD lesions)
1	95 / 900	10.6
2.5	70 / 900	7.8

¹ Active lesions were identified on either one or both hooves

- During the study, temperature increased from 20.1 to 24.3°C (Figure 2)

Figure 2. Average daily temperature and precipitation



Discussions and Conclusions

- In dry lot dairying, crowding and precipitation events can create potential outbreak conditions.
- Increasing frequency and dosage over the short duration may reduce this effect

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References:

Britt JS, Berry SL, Shearer JK, Hemling TC, Stevens TB, and Dreher M 1999 A uniform protocol for evaluating response to treatment of papillomatous digital dermatitis lesions. *The Bovine Practitioner* 33:149-154
 Döpfer D, Koopmans A, Meijer FA, Szakall I, Schukken YH, Klee Y, Bosma RB, Cornelisse JL, van Asten AJAM, and ter Huurne AA 1997 Histological and bacteriological evaluation of digital dermatitis in cattle, with special reference to spirochaetes and *Campylobacter faecalis*. *Veterinary Record* 140:620-3.
 Wells SJ, Garber LP, and Wagner BA 1999 Papillomatous digital dermatitis and associated risk factors in US dairy herds. *Preventive Veterinary Medicine* 38:11-24