

Streptococcus canis mastitis outbreak on 2 Dutch dairy farms

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The mastitis outbreaks were two isolated clonal outbreaks. Within each herd it caused a high incidence of persistent mastitis. Adequate identification is important for an efficient plan of action.

Introduction

- *Streptococcus canis* (Sc):
 - Gram-positive β -hemolytic Lancefield Group G *Streptococcus*.
 - Commensal on mucosa and skin of dogs and cats; primary source by direct transmission on the udder.
 - Infected cows serve also as a source.
 - Can cause a persistent intramammary infection, with high SCC in dairy cows.
- In 2016 two outbreak herds within a 25 km radius and within 2 months.
- The aim of this study: to determine if the outbreaks were clonal and therefore caused by the same Sc isolate.

Materials and methods

- Herds:
 - Farm one: 200 and farm two: 100 Holstein-Friesian lactating cows.
 - On both farms: 20% of the cows with high SCC and 6% new mastitis infections.
 - Most cases of mastitis in multiparous cows.
- Milk samples collected from quarters with elevated SCC from chronic high SCC cows: two times or more ≥ 500.000 cells/mL on DHI.
- Oral and perianal swabs taken from cats on the farm (no dogs present).

- All samples cultured on blood agar.
- Colonies identified as *Streptococci* by colony morphology and hemolytic activity.

- Macroscopically different colonies identified using mass spectrometry (MALDI-TOF, Bruker Daltonics, Bremen, Germany).



Table 1. Overview of collected milk samples of cows with chronic high SCC and oral and perianal swabs from the farm's cats identified as Sc.

Farm	Chronic high SCC cows	Milk samples collected from quarters of chronic high SCC cows.	Milk samples identified as Sc	Sampled cats (oral and perianal)	Sampled swabs identified as Sc
1	9	21	12	2	3
2	10	24	17	1	0

- All Sc-isolates (28 milksamples, 3 cats and also 3 Sc reference isolates of 2 mink and 1 dog, not related to the herds), classified using Pulsed-Field Gel Electrophoreses (PFGE).

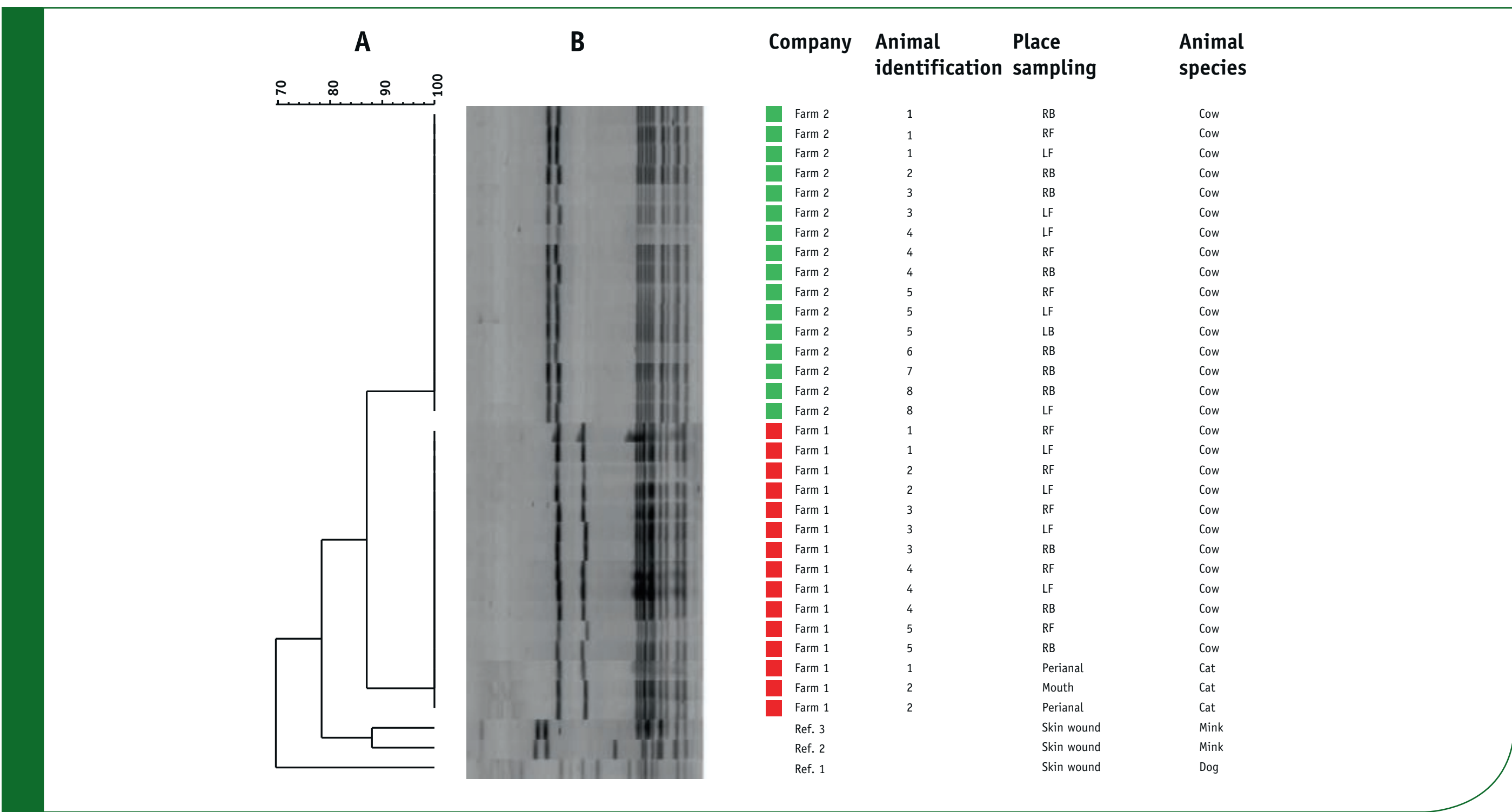


Figure 1. PFGE SmaI macrorestriction profile analysis of Sc-isolates involved in mastitis outbreaks on two farms. (A) the dendrogram shows the PFGE profiles of 31 Sc-isolates from this study and three Sc-isolates of unrelated outbreaks of the past and isolated from other species (dog (n = 1) and mink (n = 2)). Corresponding percentage is displayed on the scale above the dendrogram. (B) PFGE profiles of Sc-isolates from this study and of the reference animals.

Results and conclusions

- All Sc-isolates within farm 1 and 2 (both from cows and cats) had the same PFGE profile and appeared to be completely related to each other.
- Comparison of the PFGE patterns of the two farms showed 87% homology, indicating that the outbreaks are two isolated clonal outbreaks.
- The Sc isolates of the dog and the two mink, taken as reference, had less than 80% agreement, which is not related to the isolates of both farms.
- Although Sc is assumed to be a rare mastitis pathogen in dairy cattle, it can cause a high incidence of persistent mastitis within a herd.

Recommendations

Diagnosis of Sc can be missed by classical bacteriological identification in practice, which could lead to an underestimation of the importance of the pathogen or a less efficient plan of action. Therefore, identification with MALDI-TOF (Bruker Daltonics, Bremen, Germany) is advised in case of mastitis caused by a Group G *Streptococcus* bacteria. Outbreaks were controlled through antibiotic treatment. Chronically infected cows were culled and mastitis preventive measures were optimized. The cats were taken away from the barns.

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