Cow and management factors associated with SCC in the following lactation

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Summary

- Higher milk yield at the last milk recording prior to drying off was associated with higher somatic cell count (SCC) in the following lactation.
- This was particularly true for cows dried off with internal teat sealant alone (i.e. without dry cow antibiotics).
- Twice-a-day cleaning and disinfection of cubicles during the dry period, and use of California Mastitis Test (CMT) to detect high SCC cows were management practices associated with lower SCC in the following lactation.

Introduction

Over use of antibiotics has been linked with antimicrobial resistance. To reduce this risk, EU regulations mandate that dry cow antibiotics (intramammary infusion of antibiotics at dry-off) can be used only on cows that have an intramammary infection at dry-off. Cows that are not infected should be treated with an internal teat sealant alone. Irish research shows that the impact on SCC of treating cows with internal teat sealant alone compared to antibiotic plus internal teat sealant varied depending on the herd. Cow characteristics and farm management practices are key for the control and prevention of mastitis and may play a role in the impact of dry-off treatment on infections and SCC. Therefore, the aim of this study was to assess the associations between dry-off treatment, cow and farm management factors (milking and dry-period management) on SCC in the following lactation.

Factors associated with SCC in the following lactation

Twenty-one herds with an average bulk tank SCC <200,000 cells/mL were enrolled in this study. All herd owners had previous experience of implementing selective dry cow treatment and carried out a minimum of four milk recordings across the lactation. The allocation of antibiotic plus internal teat sealant (AB+TS) or internal teat sealant alone (ITS) to cows at dry-off was at the discretion of herd-owners. Quarter-level milk samples were collected in late lactation from all cows for bacteriological culturing. Bacteriological results were used to define cows as infected or uninfected, but were not shared with herd owners. Milk yield and SCC data were obtained from milk recording reports. All herd owners completed a survey describing milking and dry period management practices. Only cows with a milk recording between five and 60 days in milk (DIM) in the following lactation were included in the study (n=1,869).

Results

The average SCC at the last milk recording (37-64 days before dry-off) was 55,000 (± 40,000) cells/mL and 197,000 (±480,000) cells/mL for cows treated with ITS and AB+TS, respectively. Cows treated with an ITS and with higher milk yield at the last milk recording had higher SCC in the following lactation compared to those with an ITS and lower milk yield (Figure 1). Cows with an infection in late lactation and older lactation cows were associated with higher SCC in following lactation (Figure 2). Cows with a lower SCC at the last milk recording had a lower SCC in the following lactation - cows with a last milk recording SCC of 50,000 cells/mL had approximately 60,000 (±30,000) cell/mL lower SCC in the following lactation compared to cows with a last milk recording SCC of 150,000 cells/

mL. Increasing the dry period length from an average of 80 days to 120 days resulted in an increase in SCC from 140,000 (±30,000) cells/mL to 182,000 (±39,000) cells/mL in the following lactation. In terms of farm management practices, using a California Mastitis Test (CMT) to detect high SCC cows, and twice daily cleaning and disinfection of cubicles was associated with 7,000 (±47,000) cells/mL and 40,000 (±26,000) cells/mL lower SCC in the following lactation compared to no CMT use and cleaning cubicles just once a day.

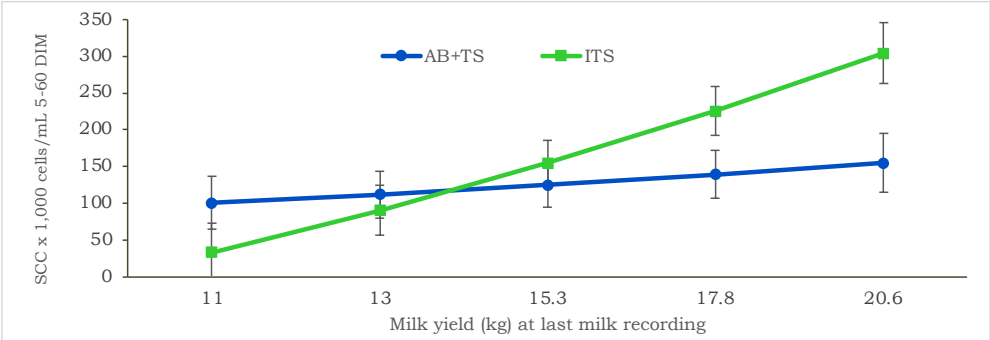

Figure 1. *Interaction between milk yield (kg) at last milk recording and dry-off treatment (antibiotic plus internal teat sealant [AB+TS], or internal teat sealant alone [ITS]) and its association with SCC in the following lactation (5-60 DIM)*

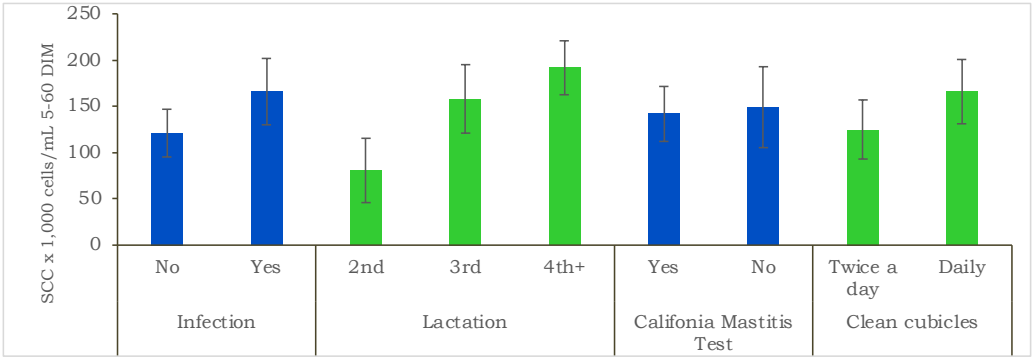

Figure 2. *Cow (infection and lactation) and farm management factors (use of CMT test to identify high SCC cows and frequency of cleaning cubicles over the dry period) associated with SCC in the following lactation*

Conclusion

Cow and farm management factors were significantly associated with SCC in herds with an average bulk tank SCC <200,000 cells/mL. Higher milk yield at last milk recording had a significant association with SCC in the following lactation, in particular when cows were treated with ITS alone. Strategies, such as reducing cows energy intake, to reduce milk yield in the lead up to dry-off may be beneficial, particularly when planning to use ITS alone. Additionally, cleaning cubicles twice per day and using CMT to identify high SCC cows contribute to lower SCC in the following lactation.