Effect of internal teat sealants at dry-off on SCC and mastitis

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Background

- Blanket dry cow therapy - used on 100% of Irish farms
- January 2022 - EU Regulation 2019/6 on preventative use of antimicrobials in groups of animals
- Selective dry cow therapy - treat only cows with infection or at higher risk of infection
- McParland et al. (2019) – teat seal elevates SCC and higher risk of intramammary infection

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Objective

Internal Teat Seal **alone**

vs

Antibiotic **plus** Internal Teat Seal

on SCC, intramammary infection and milk production

on 5 commercial farms

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Herd Selection

- 5-commercial spring calving in the Kerry Agribusiness region
- Monthly bulk tank SCC of less than 200,000 cells/ml for 2018 lactation
- Conducted regular whole-herd milk recording
- Mostly Holstein-Friesian, with some Jersey X

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Cow Selection & Treatment Assignment

- Cows within herds categorised based on milk recordings from 2018 (average 6.2 recordings)

(70% of cows)

Low SCC
< 200,000 cells/ml
and
No clinical mastitis

(30% of cows)

High SCC
> 200,000 cells/ml
or
Clinical mastitis

Teat Seal alone
TS

Antibiotic + Teat Seal
LoAB

Antibiotic + Teat Seal
HiAB

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Cow Numbers Per Farm

Herd	TS	LoAB	HiAB	Total
1	73	75	51	198
2	75	68	64	204
3	67	72	90	226
4	42	41	22	105
5	40	38	24	102
Total	297	294	251	**842**

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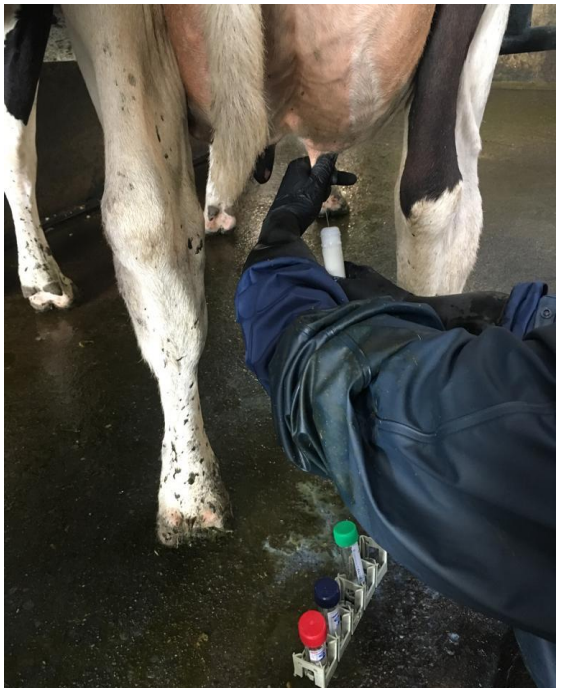
Data Collection



- Quarter samples collected at
  1. Drying-off
  2. Calving
  3. Mid-lactation
  - Analysed for bacteriology and quarter SCC

- SCC obtained from milk recording data from HerdPlus
  - Range 5-8 milk recordings per herd

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Data Analysis

- Effect treatment on SCC
  - SCC log transform to Somatic Cell Score (SCS)
  - Mixed models - accounting for treatment, parity, days in milk, month of calving, herd, proportion of HO & JE genetics
- Effect of treatment on IMI
  - Presence of bacteria present/absent
  - Logistic regression - accounted for same effects

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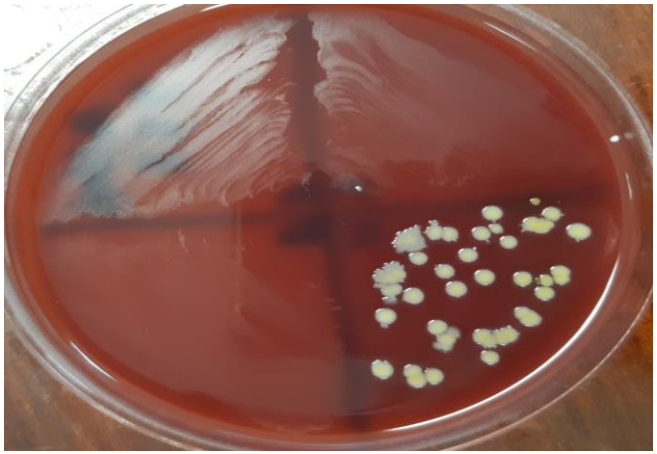
Results



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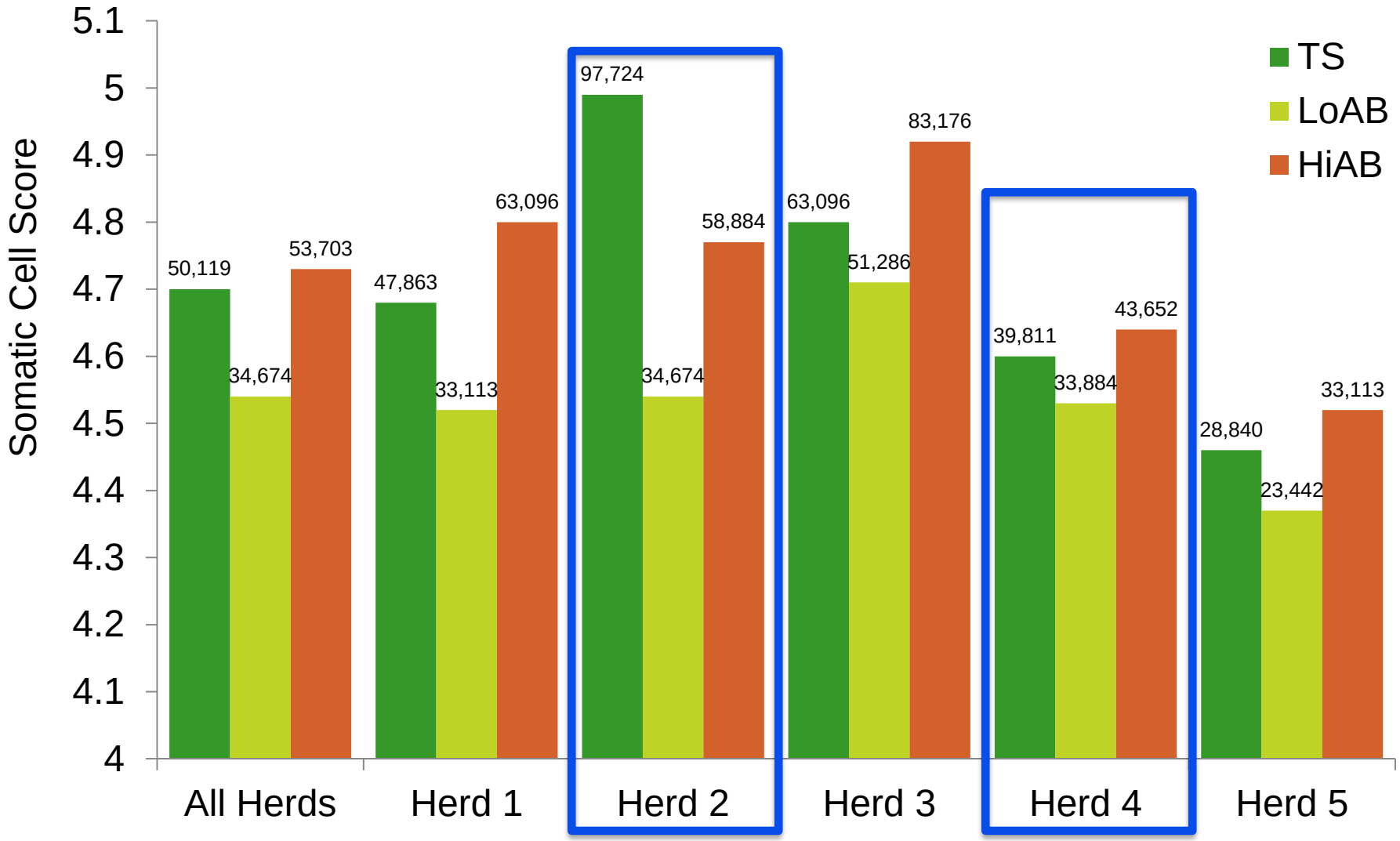
Test day Somatic Cell Score



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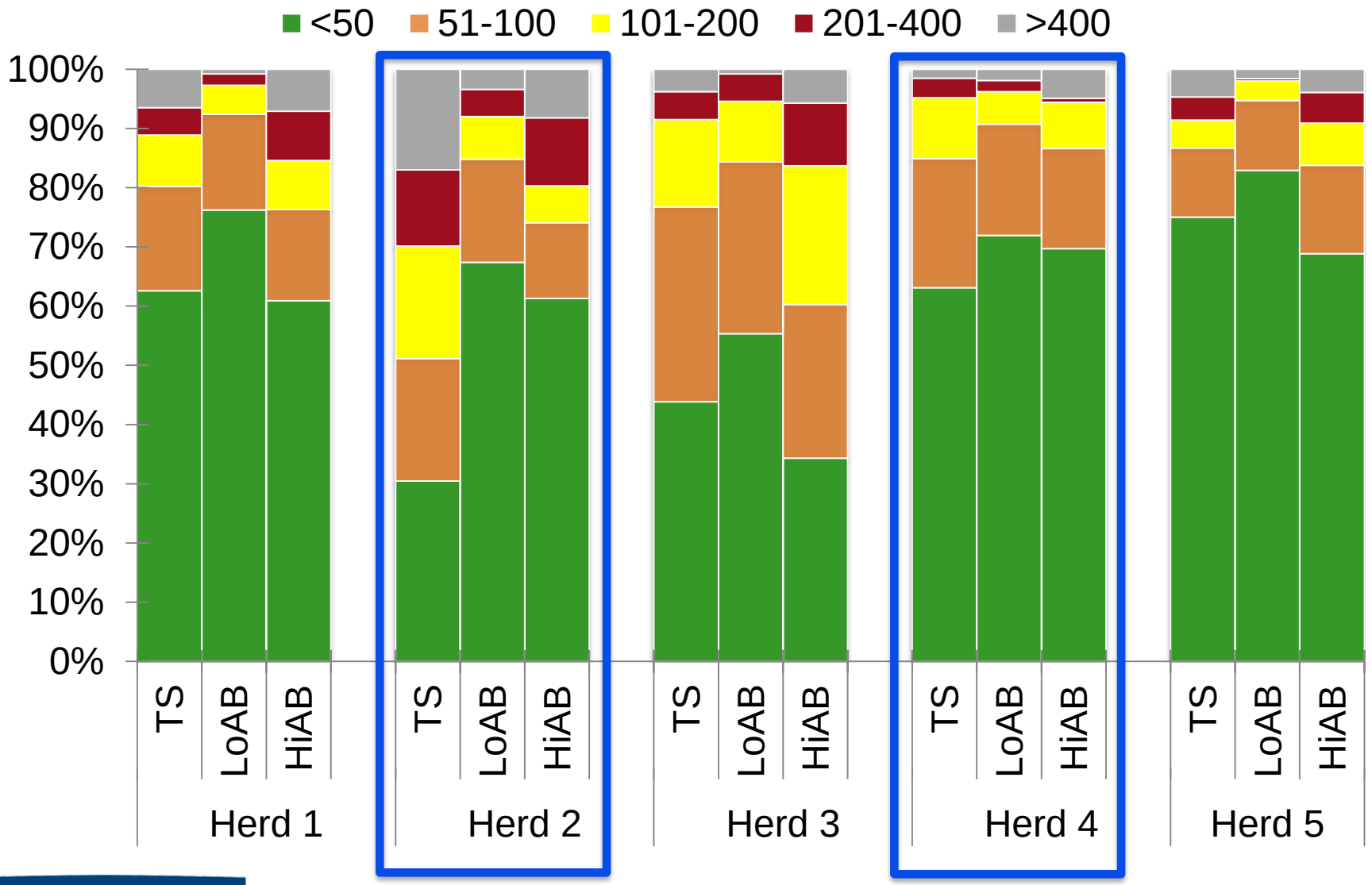
Percentage of records in SCC ranges



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Infection Status & Odds of Infection

	TS	LoAB	HiAB	
Number of quarters	966	961	918	
Infected at dry-off	68	73	171	
Infected at calving	63	14	12	4.97 > LoAB 5.40 > HiAB
Infected at mid-lactation	65	14	42	5.18 > LoAB
Cured at calving	51	71	165	14.60 > TS 12.93 > TS
Newly infected at calving	46	12	6	3.98 > LoAB 6.40 > HiAB

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Total Percentage of Cows Infected

Herd	Dry-off	Calving	Mid
1	34.4	9.6	13
2	44.4	21	25.3
3	9.2	3.4	5.9
4	25	6.9	9.5
5	19.8	2.3	5.9

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Bacteria Present - Overall

Bacteria	Overall %
Staphylococcus aureus	92.1
Streptococcus uberis	4.4
Non hemolytic *Staphylococcus aureus*	2.5
Non hemolytic *Escherichia coli*	0.6
Streptococcus dysgalactiae	0.4

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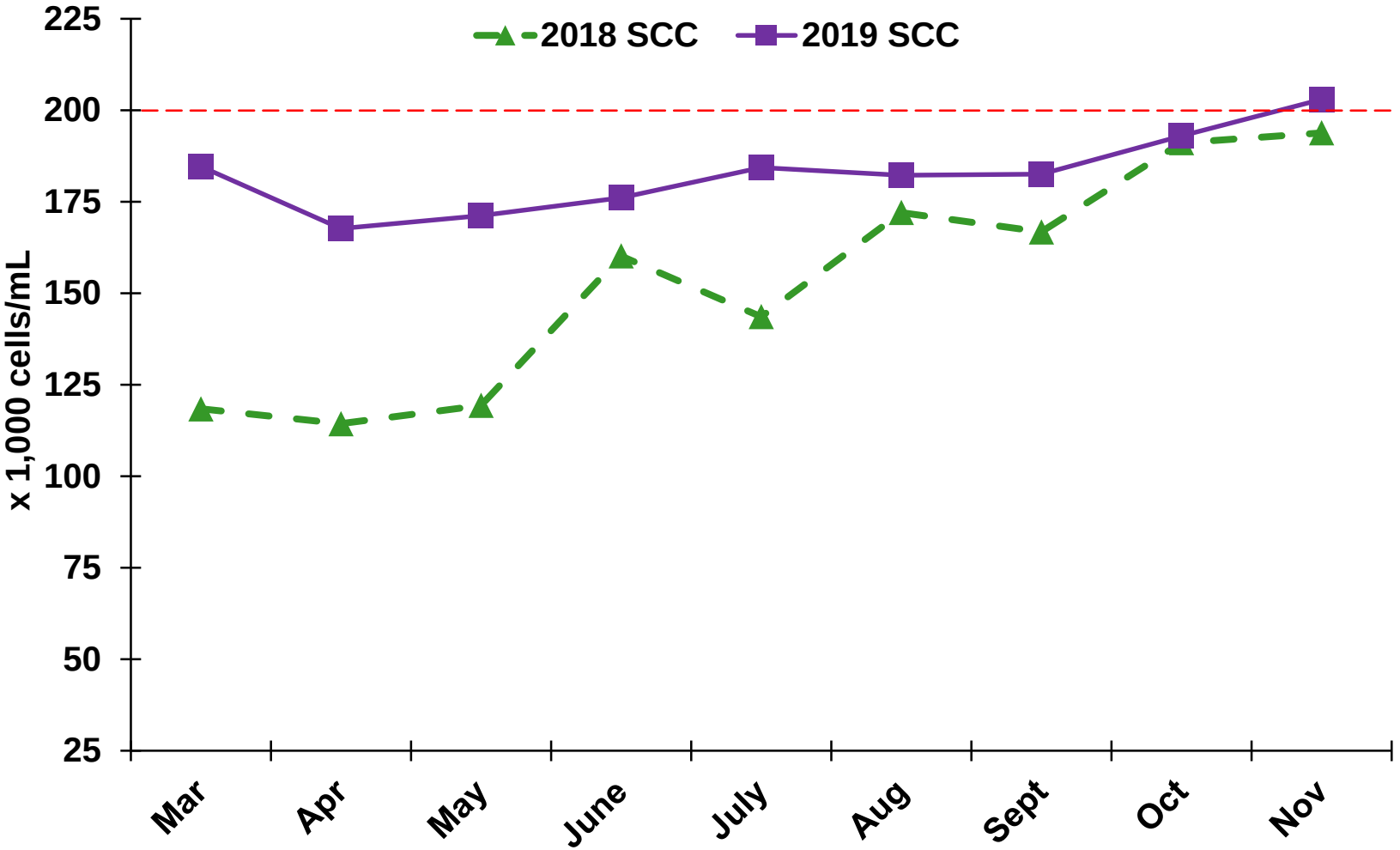
Bulk Tank SCC - Herd 2



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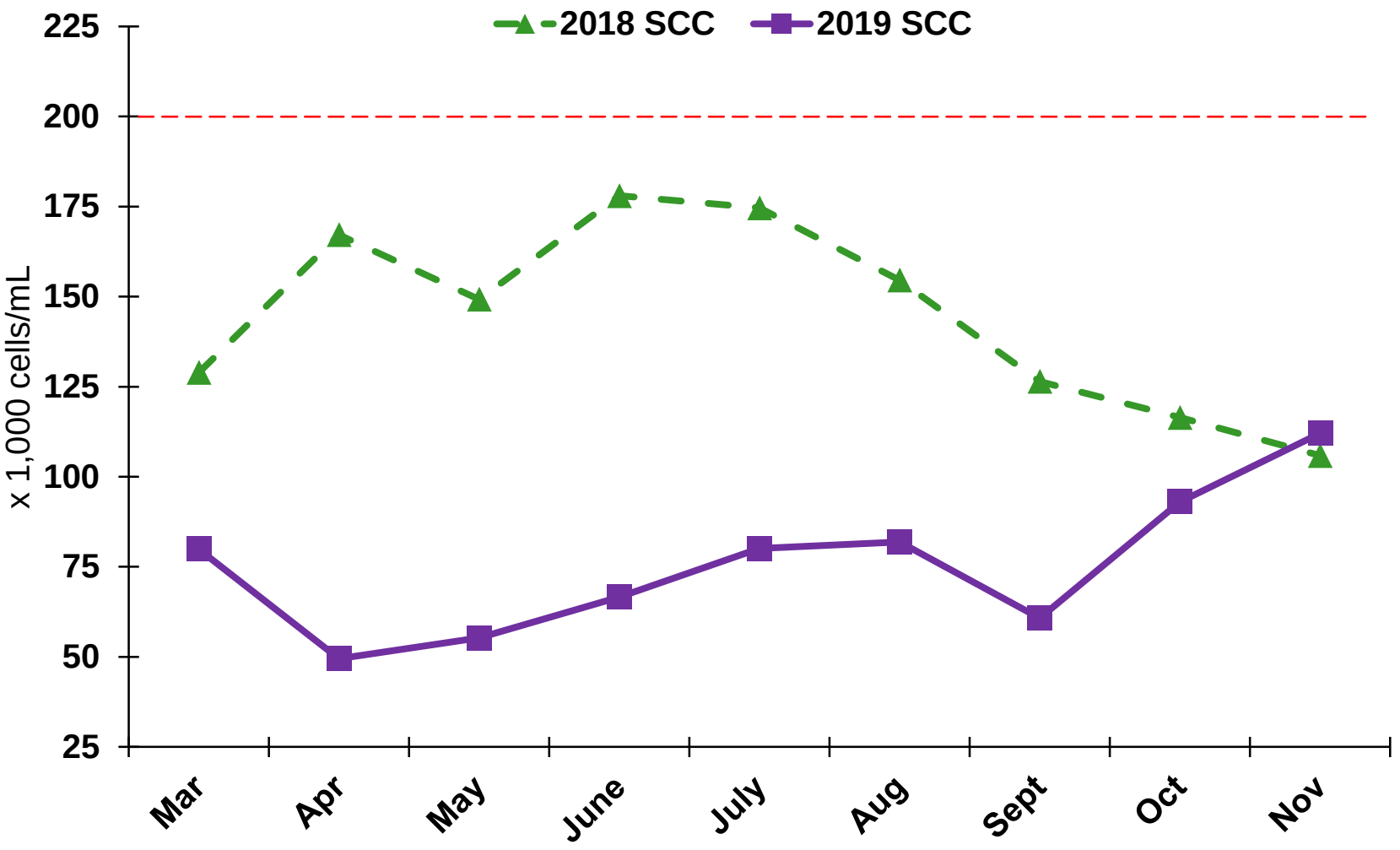
Bulk Tank SCC - Herd 4



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Summary

- Higher risk of new IMI and elevated SCC in cows using ITS vs antibiotic plus ITS
- Large between herd effect on prophylactic efficacy of ITS
- Herd selection - emphasis on herd bulk tank SCC
- Cow selection - emphasis on late lactation SCC
- S. *aureus* most common pathogen identified

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Conclusion

- Internal teat seal only not as successful in herds where a high level of S. *aureus* was present

- Herd Bulk tank SCC and level of IMI pre dry-off could be factored into the selection of herds suitable for SDCT

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Acknowledgements

Herd Owners

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Questions

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