

SELECTIVE DRY COW THERAPY: YES, WE CAN!

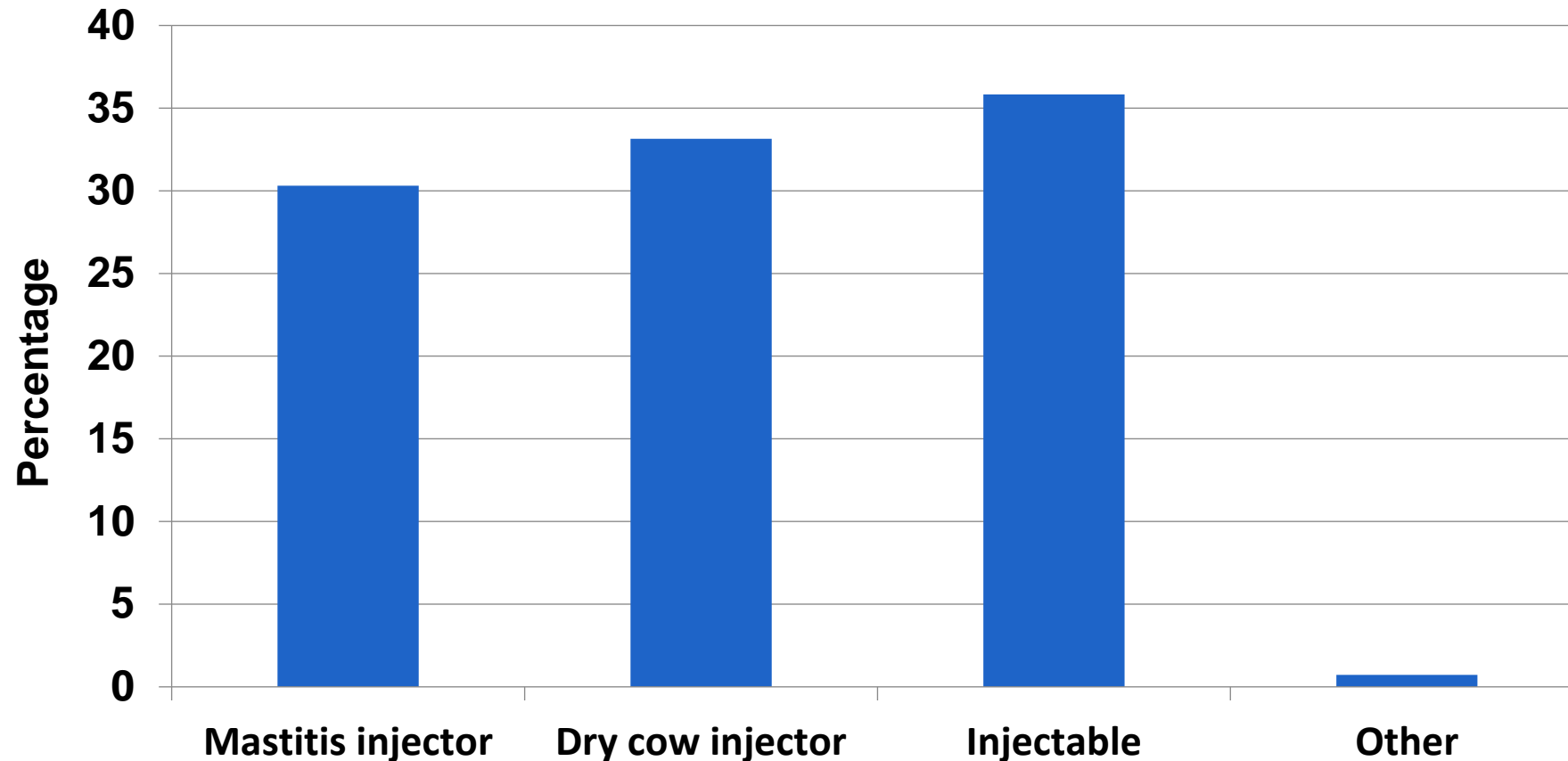
23 April 2024 - Prof. dr. Sofie Piepers

WHAT IS SELECTIVE DRY COW THERAPY?

- Cows/quarters WITH an intramammary infection at the end of lactation are dried-off WITH long-acting antimicrobials.
- Cows/quarters WITHOUT an intramammary infection at the end of lactation are dried-off WITHOUT long-acting antimicrobials.

WHY APPLYING SELECTIVE DRY COW THERAPY?

- One reason: lowering the use of antibiotics on dairy farms.



HOW TO APPLY SELECTIVE DRY COW THERAPY?

- Based on bacteriological culturing or other methods to identify the presence of mastitis-causing pathogens.
- Based on the individual somatic cell count of each cow.

HOW TO SELECT COWS BASED ON CELL COUNT?

- Which threshold to use?
 - 50,000 cells/ml?
 - 100,000 cells/ml?
 - 150,000 cells/ml?
 - ...

HOW TO SELECT COWS BASED ON CELL COUNT?

- Which threshold to use?
 - The **higher** the threshold:
 - The **higher** the reduction in the use of antibiotics.
 - The **lower** the risk of falsely drying-off a non-infected cow with antibiotics.
 - The **higher** the risk of falsely drying-off an infected cow without antibiotics.
 - The **lower** the threshold:
 - The **lower** the reduction in the use of antibiotics.
 - The **higher** the risk of falsely drying-off a non-infected cow with antibiotics.
 - The **lower** the risk of falsely drying-off an infected cow without antibiotics.

WHICH THRESHOLD TO USE?

United Kingdom & Belgium

- SCC < 200,000 cells/ml at last 3 test-days
- No clinical mastitis between the 3rd last test and dry-off

The Netherlands

- Parity = 1: SCC < 150,000 cells/ml at last test-day
- Parity \geq 2: SCC < 50,000 cells/ml at last test-day



United states

- SCC < 200,000 cells/ml at all tests.
- < 2 cases of clinical mastitis during whole lactation

New-Zealand

- Parity = 1: SCC < 120,000 cells/ml at all test-days
- Parity \geq 2: SCC < 150,000 cells/ml at all test-days
- No clinical mastitis during whole lactation

IN PRACTICE – FARM 1

- Number of lactating cows: 215 lactating cows on average
- Herd milk somatic cell count: 203.000 cells/ml on average

WITH OR WITHOUT ANTIBIOTICS?

Cow 1466

- › 4th lactation
- › No clinical mastitis in lactation
- › Milk production at dry-off: 17,7 kg/day
- › **What will you do with this cow?**

Cell count in previous lactation:

	May	June	August	Sept
Cow 1466	155	1393	276	1532

What has been done by farmer:

- › Dried-off with long-acting antibiotics + internal teat sealant.

Cell count after calving (2023-11-13)

	May	June	August	Sept	Dec	Jan	Feb
Cow 1466	155	1393	276	1532	12	62	174

WITH OR WITHOUT ANTIBIOTICS?

Cow 1730

- › 2nd lactation
- › No clinical mastitis in lactation
- › Milk production at dry-off: 12,5 kg/day
- › **What will you do with this cow?**

Cell count in previous lactation:

	May	June	August	Sept
Cow 1730	38	33	79	121

What has been done by farmer:

- › Dried-off with long-acting antibiotics + internal teat sealant.

Cell count after calving (2023-12-03)

	May	June	August	Sept	Jan	Feb	March
Cow 1730	38	33	79	121	1150	562	224

WITH OR WITHOUT ANTIBIOTICS?

Cow 1906

- › 1st lactation
- › No clinical mastitis in lactation
- › Milk production at dry-off: 15,2 kg/day
- › **What will you do with this cow?**

Cell count in previous lactation:

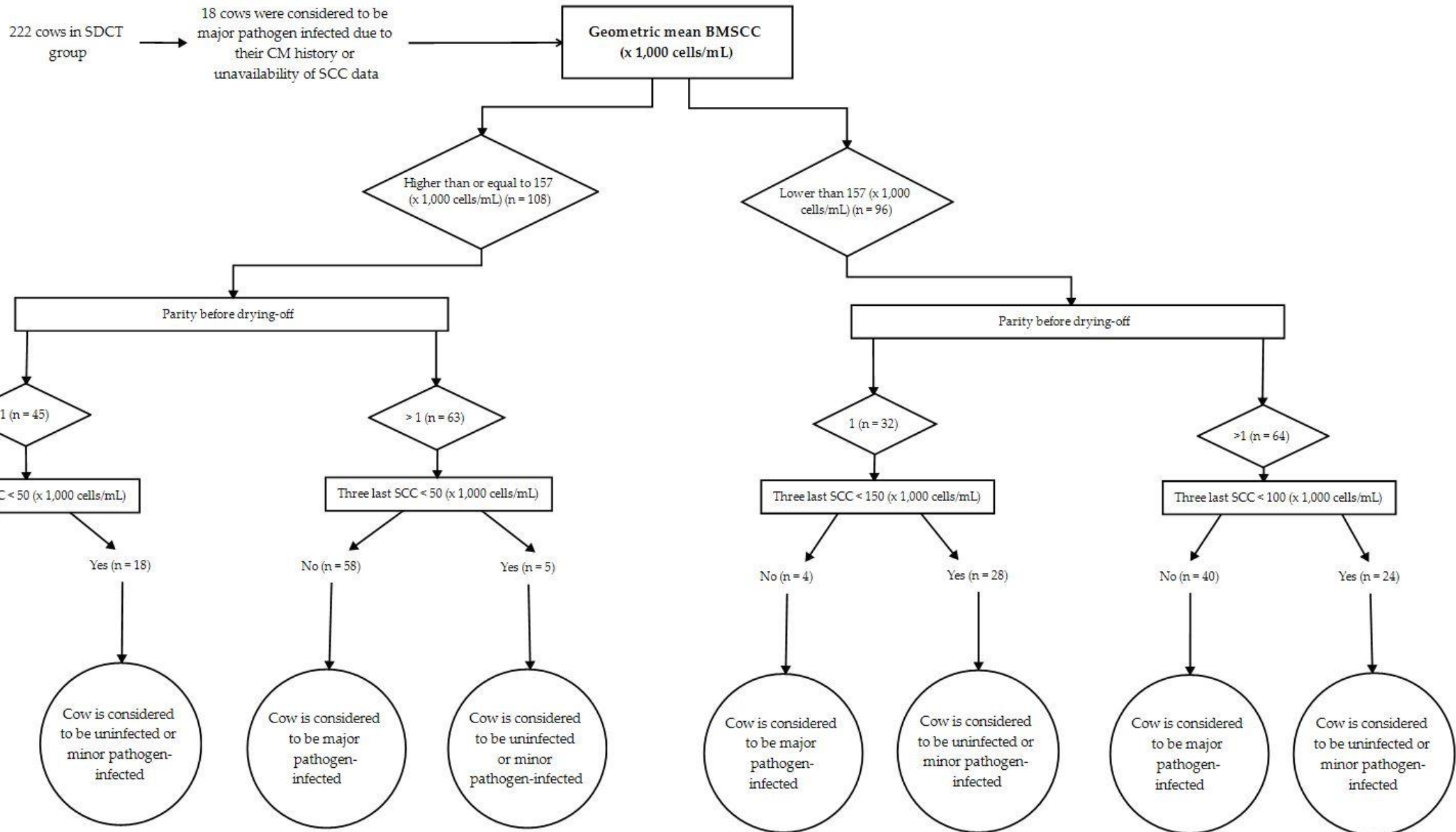
	May	June	August	Sept
Cow 1906	19	19	15	34

What has been done by farmer:

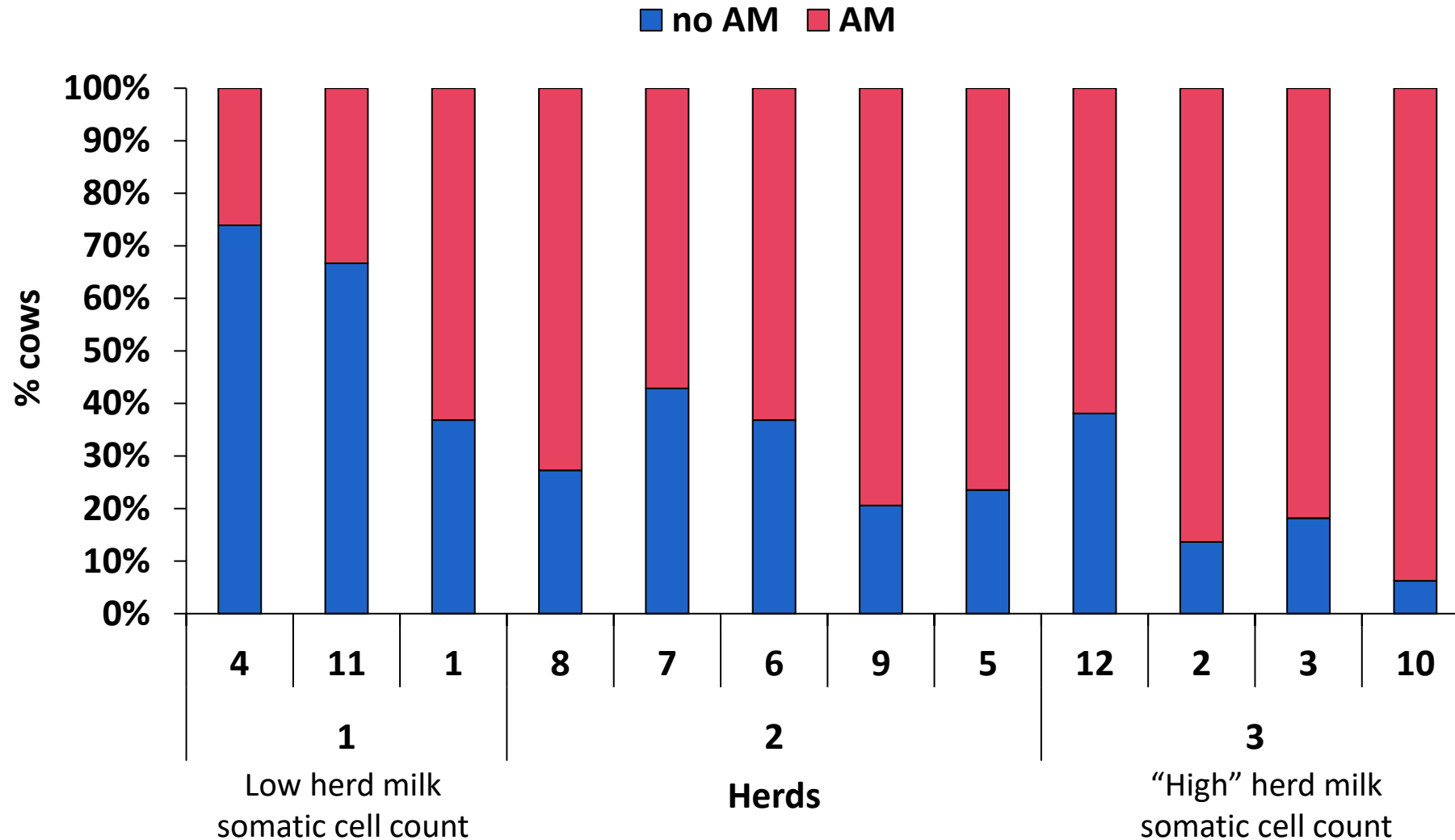
- › Dried-off without long-acting antibiotics.
- › Only internal teat sealant was applied.

Cell count after calving (2023-11-30)

	May	June	August	Sept	Dec	Jan	Feb
Cow 1906	19	19	15	34	33	30	10



WHAT TO EXPECT?



IN PRACTICE – FARM 2

- Number of lactating cows: 195 lactating cows on average
- Herd milk somatic cell count: 204.000 cells/ml on average
- Average percentage of clinical mastitis: 2% per month

WITH OR WITHOUT ANTIBIOTICS?

Cow 93

- › 3rd lactation
- › No clinical mastitis in lactation
- › Milk production at dry-off: 18,3 kg/day
- › **What will you do with this cow?**

Cell count in previous lactation:

	Feb	March	May	June
Cow 93	20	14	31	193

What has been done by farmer:

- › Dried-off without long-acting antibiotics.
- › Only internal teat sealant was applied.

Cell count after calving (2023-09-12)

	Feb	March	May	June	Oct	Nov	Dec
Cow 93	20	14	31	193	9	14	18

WITH OR WITHOUT ANTIBIOTICS?

Cow 177

- › 5th lactation
- › Clinical mastitis at 35 days in lactation
- › Milk production at dry-off: 12,7 kg/day
- › **What will you do with this cow?**

Cell count in previous lactation:

	Feb	March	May	June
Cow 177	107	125	17	245

What has been done by farmer:

- › Dried-off with long-acting antibiotics and internal teat sealant.

Cell count after calving (2023-09-20)

	Feb	March	May	June	Oct	Nov	Dec
Cow 177	107	125	17	245	203	344	181

SELECTION AT HERD LEVEL TOGETHER WITH HERD VETERINARIAN

Are the following conditions met?

1. Bulk milk SCC < 250.000 cells/ml in at least 4 of the last 6 months
2. No *Streptococcus agalactiae*.
3. No specific risk periods or risk factors for udder health

× No

The farm is at high risk for udder health issues. The udder health should first be improved before switching to selective dry cow therapy.

✓ Yes

Risks at herd level are low. Farm can switch to selective dry cow therapy.

SELECTION AT COW LEVEL TOGETHER WITH HERD VETERINARIAN

Are the following conditions met?

1. Cow somatic cell count is lower than 200.000 cells/ml at the last 3 milk recordings (max. 4 weeks before dry-off).
2. No clinical mastitis in the same period.

× No

Dry-off all cows with combination of long-acting antibiotics and internal teat sealant

This cow needs to be dried-off with long-acting antibiotics and internal teat sealant.

✓ Yes

This cow only needs an internal teat sealant.



WHAT CAN WE EXPECT?

- Dairy farms with a cell count below 250,000 cells/ml.
- Threshold somatic cell count: 200,000 cells/ml at last 3 test-days before dry-off.
- **90% of the cows** that will not receive antibiotics are truly not infected.
- **Only 30%** of the cows that will receive antibiotics are truly infected.

(NEGATIVE) CONSEQUENCES?

- Can we switch to selective dry cow therapy without negative consequences?

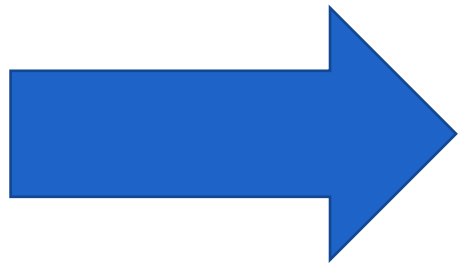
Yes, but ...

WHAT IS THE EFFECT OF LONG-ACTING ANTIBIOTICS?

- Cure of existing infections that are present at dry-off.
- Cure of new infections that develop during dry period.

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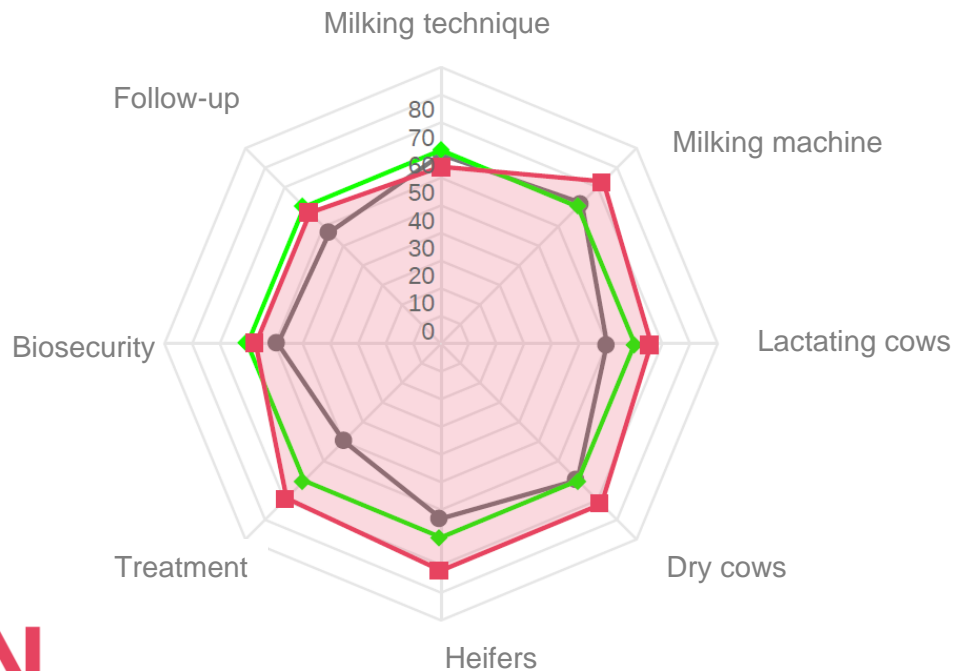
Increase in new infection rate over dry period.

PRECAUTIONS AND PREREQUISITES

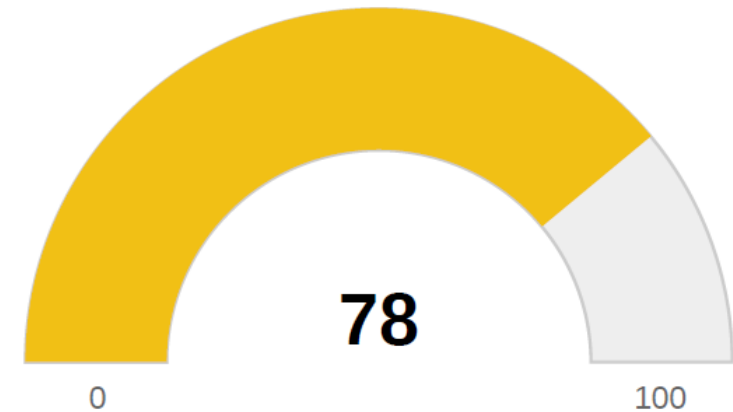
- No known Staphylococcus aureus or Streptococcus agalactiae mastitis problems at the herd-level.
- If selective dry cow therapy is mandatory even on farms with a poor udder health today: put the somatic cell count threshold e.g. at 50,000 cells/ml instead of 200,000 cells/ml.

PRECAUTIONS AND PREREQUISITES

- Reduce the risk of new intramammary infections over dry period by improving dry cow management.



Dry cow: score new infections (%)



- Hygiene housing
- Teat disinfection
- Teat sealer
- Milk production < 15 kg
- Vaccination



PRECAUTIONS AND PREREQUISITES

- **CORRECTLY** apply an internal teat sealant to protect against new infections.



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Total reduction AB: 85%

Evaluation of the use of dry cow antibiotics in low somatic cell count cows

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Item	CM, OR ² (95% CI)	QSCC200 (d 14), OR (95% CI)
QSCC200 (DRY)	1.3 (0.96; 1.8)	1.5 (1.2; 1.8)
Culture positive for major mastitis pathogen (DRY)	1.8 (0.89; 3.7)	1.6 (0.95; 2.6)
Untreated	2.0 (1.5; 2.5)	2.0 (1.7; 2.3)

¹Model adjusted for multiple cows per herd and multiple quarters per cow.

²OR = odds ratio.

PRECAUTIONS AND PREREQUISITES



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Economic optimization of selective dry cow treatment

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For all evaluated BTSCC levels, SDCT was economically more beneficial than BDCT with greater economic profits in herds with lower incidence of CM and lower BTSCC. In all types of herds, the use of dry cow antimicrobials can be reduced without economic consequences. In herds with low incidence of CM the use of no dry cow antimicrobials at all is cheaper than BDCT. The economic impact of improvement of the udder health situation, both the incidence of CM and BTSCC, however, is bigger than the effect of the DCT approach. Economics is not an argument against reduction of the use of dry cow antimicrobials by applying SDCT.

CONCLUSIONS

- Selective dry cow therapy is the new way of drying-off cows.
- Selective dry cow therapy will reduce the use of antibiotics on a dairy farm.
- Selective dry cow therapy can be applied without negative consequences for the future cow's performances but

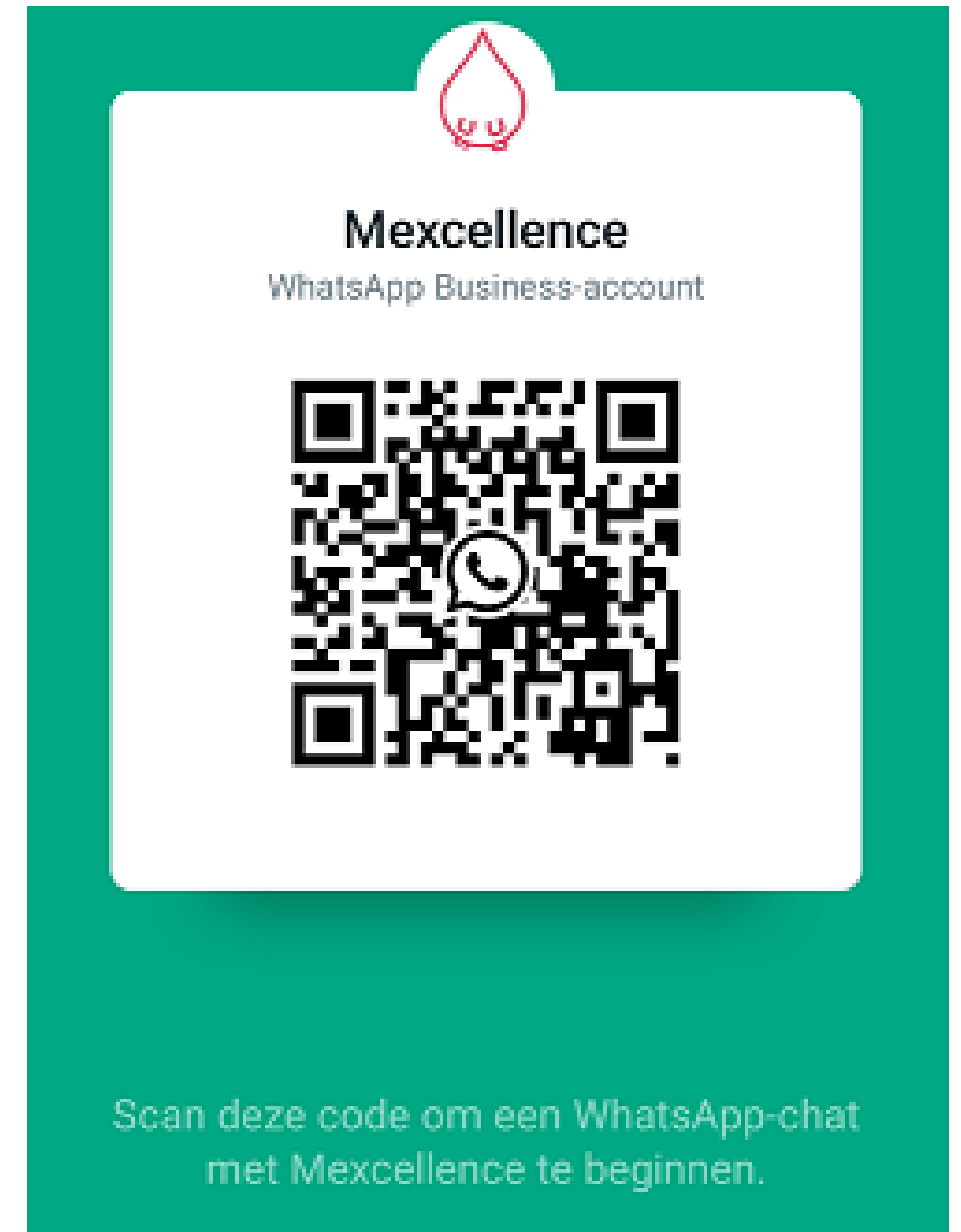
CONCLUSIONS


- Selective dry cow therapy can be applied without negative consequences for the future cow's performances but
 - Improve udder health at the herd-level.
 - Improve dry cow management.
 - Use of internal (or external) teat sealant.

THANK YOU FOR YOUR ATTENTION! QUESTIONS?

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