

# Association of differential somatic cell count and somatic cell score with quarter-level milk yield and milk components

Mariana Fonseca<sup>1,2</sup>, Daryna Kurban<sup>1,2</sup>, Jean-Philippe Roy<sup>2,3</sup>, Débora Santschi<sup>2,4</sup>, Elouise Molgat<sup>4</sup>, and Simon Dufour<sup>1,2\*</sup>

<sup>1</sup>Department of Pathology and Microbiology, Faculty of Veterinary Medicine, Université de Montréal, Saint-Hyacinthe, QC, Canada

<sup>2</sup>Regroupement FRQNT Op+lait, Saint-Hyacinthe, QC, Canada

<sup>3</sup>Department of Clinical Sciences, Faculty of Veterinary Medicine, Université de Montréal, Saint-Hyacinthe, QC, Canada

<sup>4</sup>Lactanet, Sainte-Anne-de-Bellevue, QC, Canada

## Introduction

- Mastitis is the most common disease affecting dairy cattle and is associated with milk loss.
- Somatic cell count (SCC) has been widely used as an indicator of udder inflammation.
- More recently, differential somatic cell count (DSCC) has become available as an auxiliary tool for milk quality control.
- Most studies on DSCC have used composite milk samples.

## Objectives

Our main objective was to investigate the association of **somatic cell score (SCS)** and **DSCC** and their interaction (when applicable) on milk yield and milk components at quarter-level.

## Material and Methods



50mL



SCC, DSCC, lactose, protein, and fat (quarter level)

### Linear mixed models

**Outcomes:** Milk yield (kg/quarter-day), energy corrected milk (ECM), lactose (%), protein (%), and fat (%)

**Exposures:** SCS and DSCC

## Results

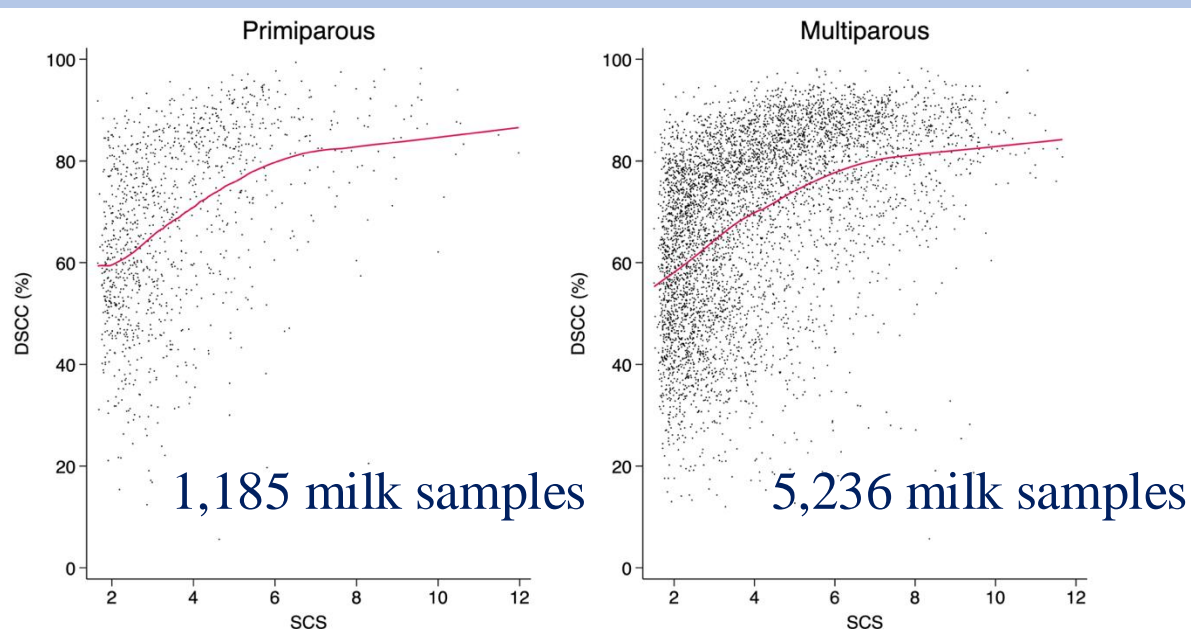
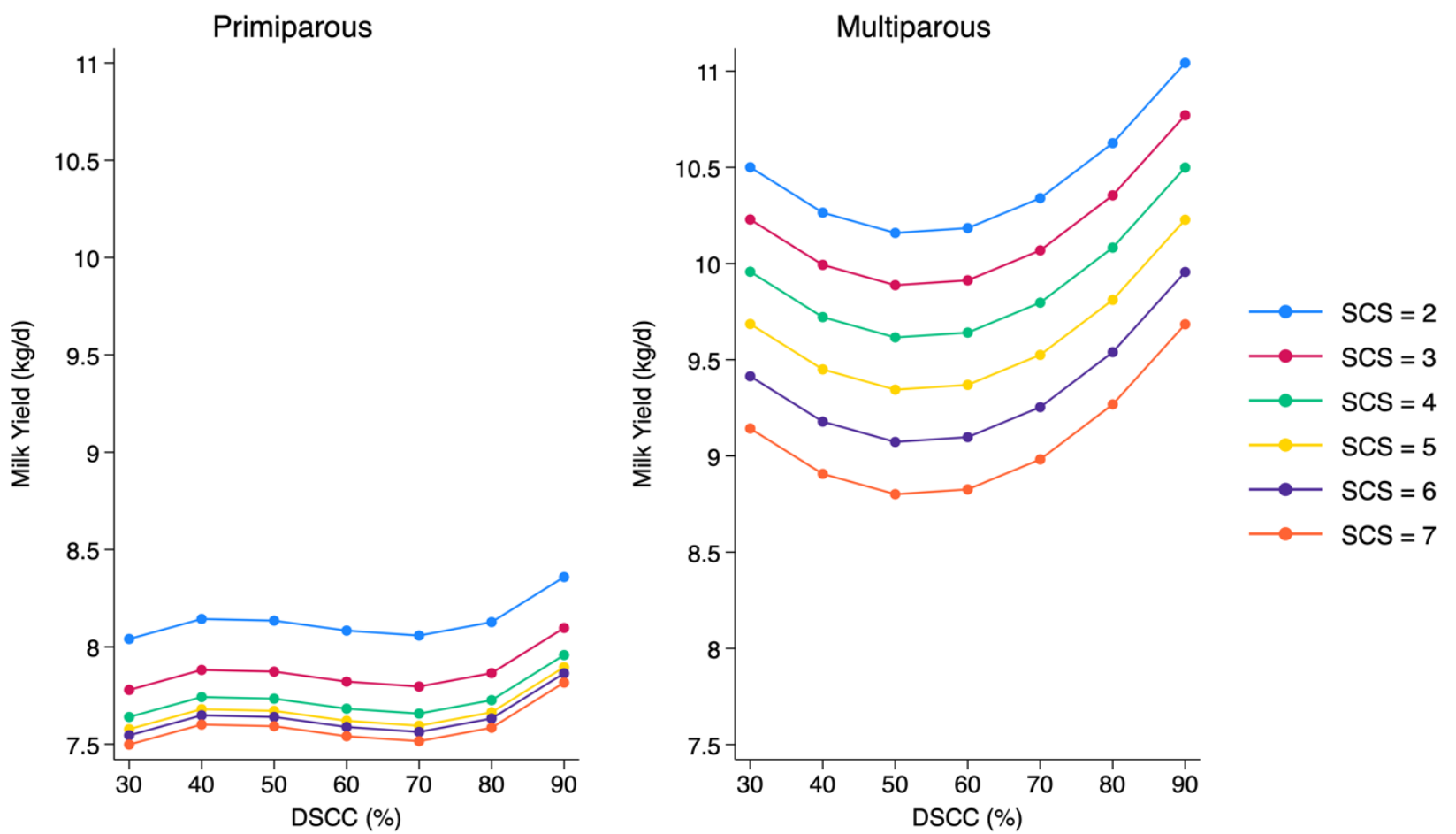
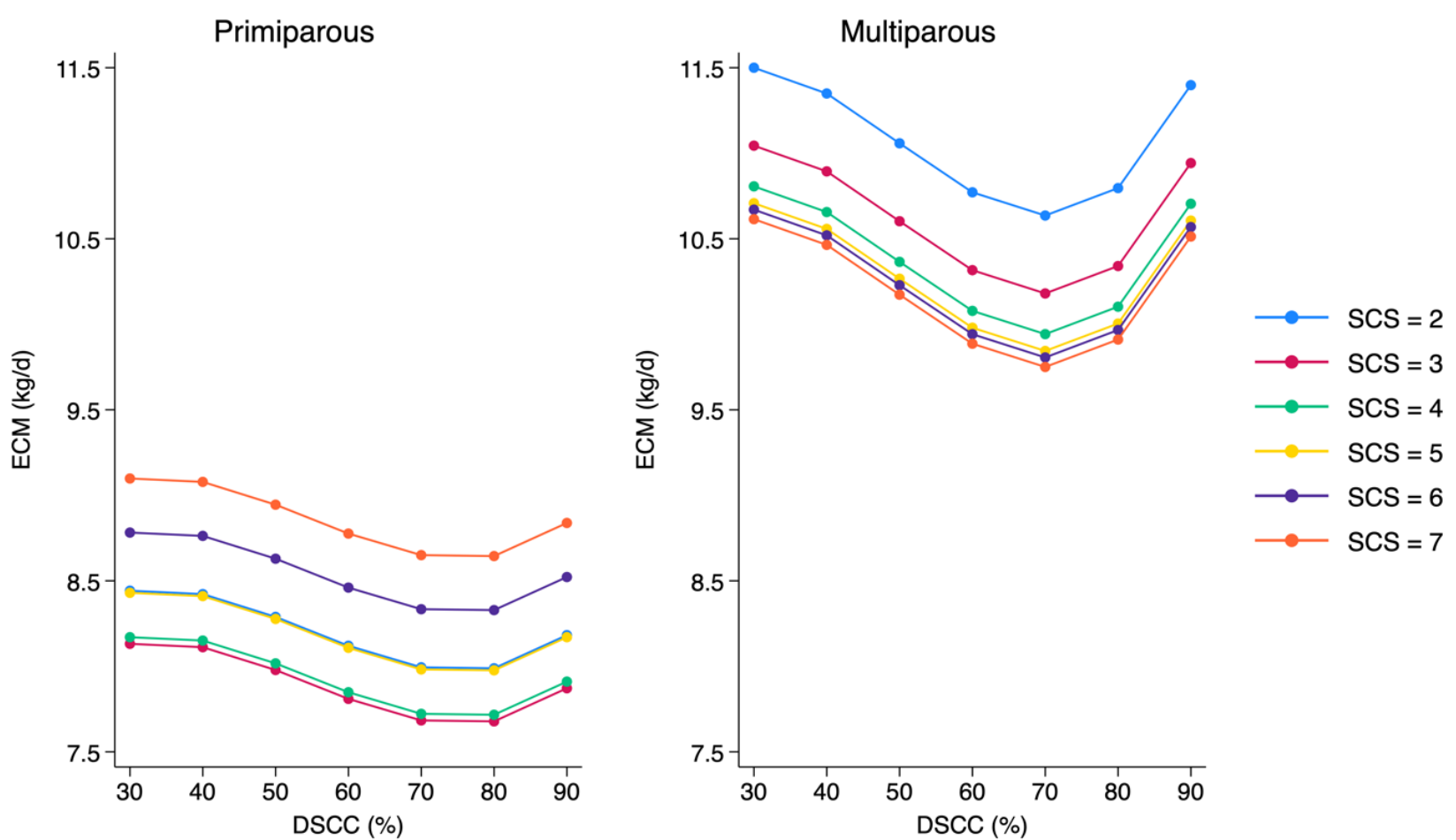


Figure 1. Quarter DSCC versus SCS.

# Linear mixed models

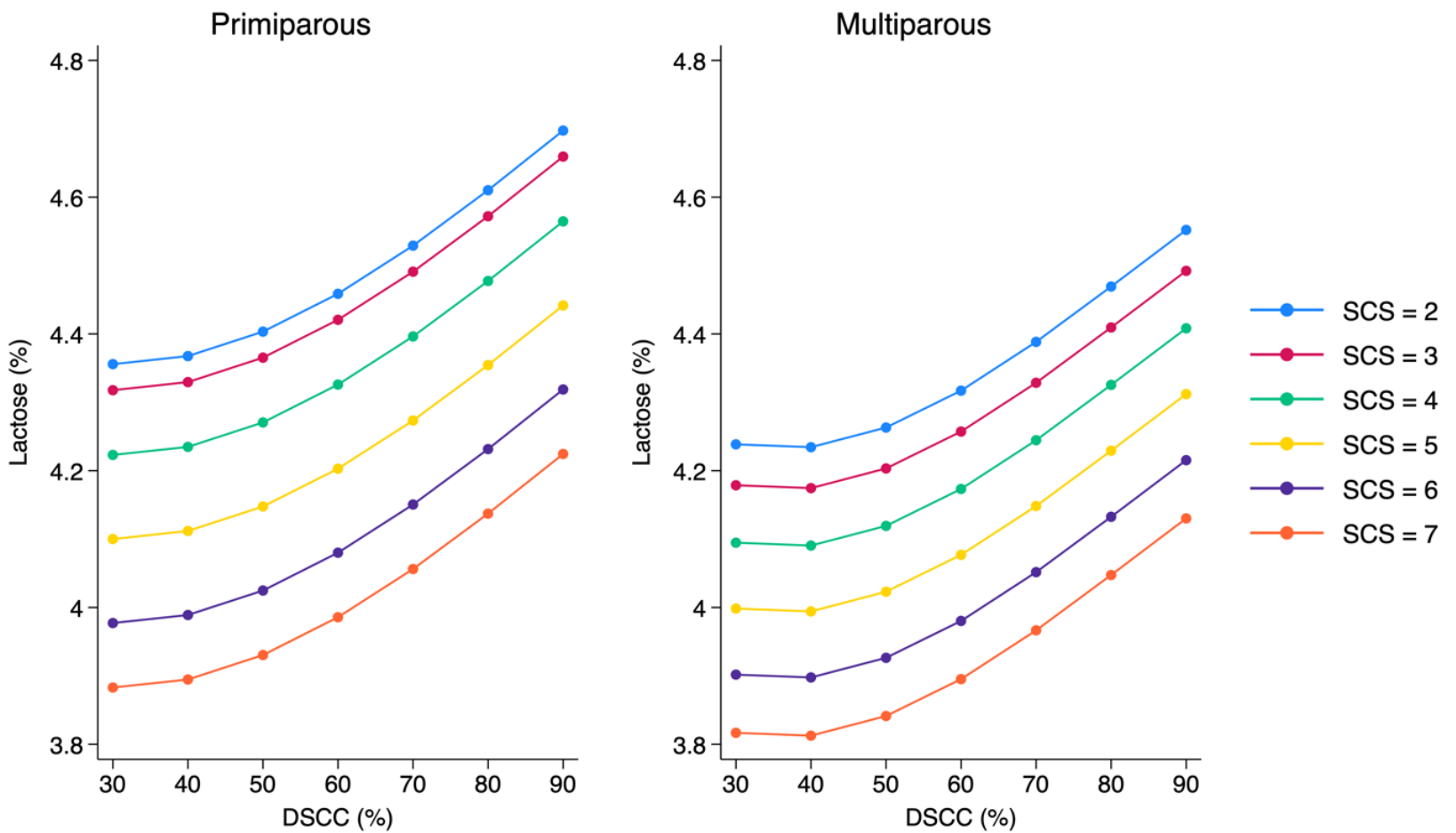


**Figure 2.** Estimated milk production (kg/d) as a function of SCS and DSCC.

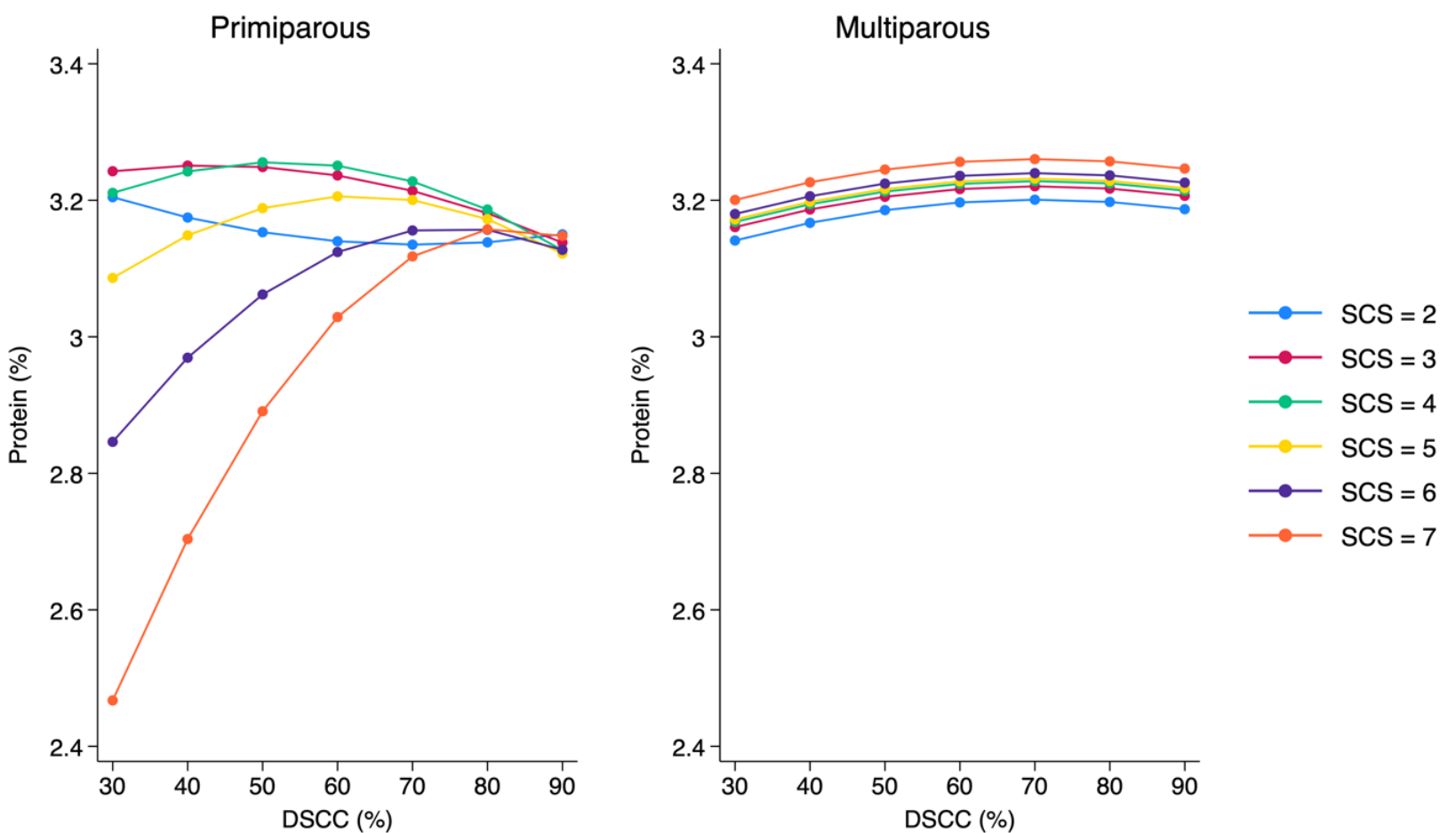


**Figure 3.** Estimated ECM as a function of SCS and DSCC.

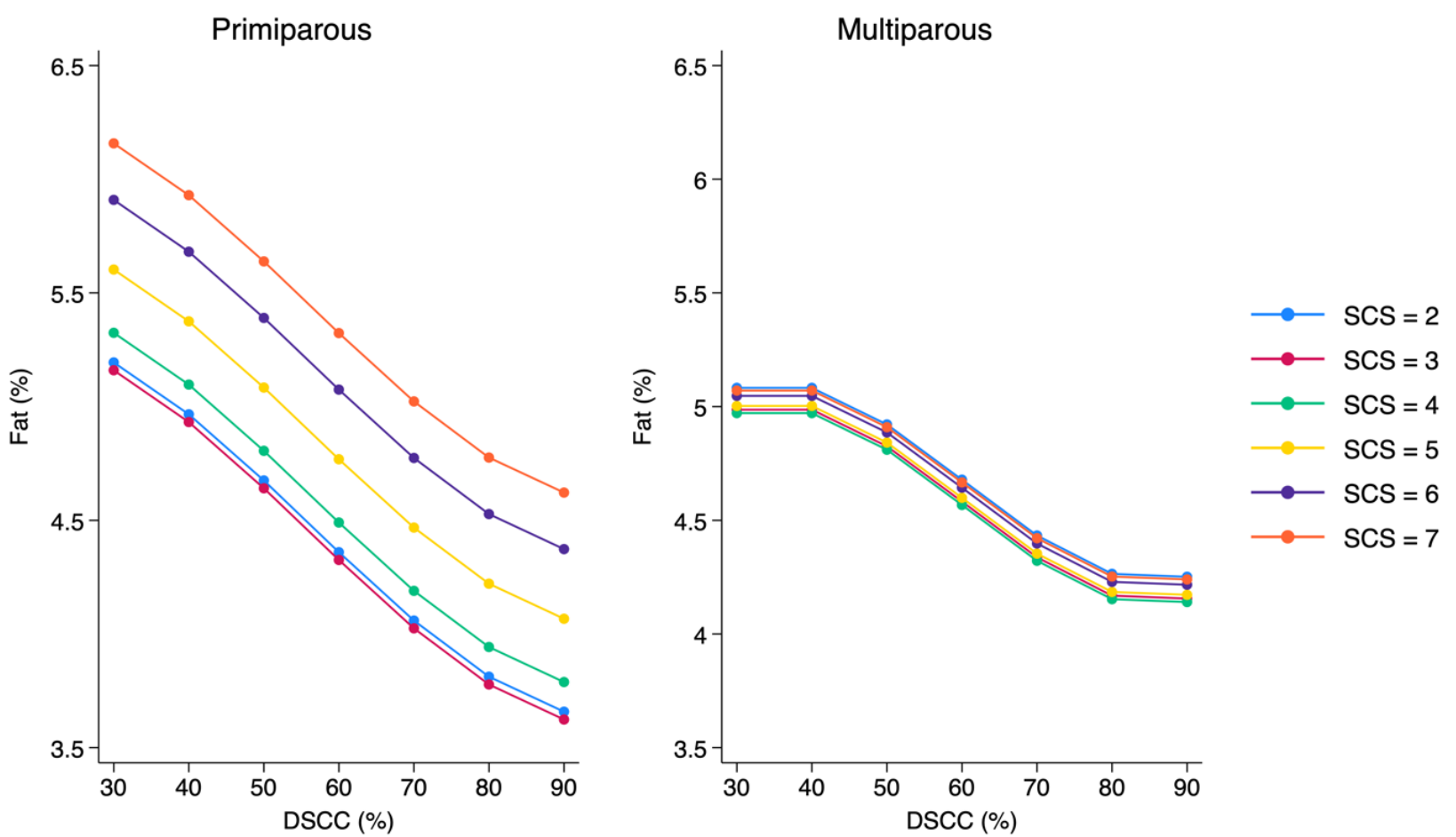
# Linear mixed models



**Figure 4.** Estimated lactose content (%) as a function of SCS and DSCC.



**Figure 5.** Estimated protein content (%) as a function of SCS and DSCC.



**Figure 6.** Estimated fat content (%) as a function of SCS and DSCC.

## Conclusions

- High SCS in combination with lower proportions of DSCC was associated with the highest milk loss for primiparous and multiparous cows.
- There was no difference in the fat content (%) in multiparous cows regardless of the SCS. Multiparous and primiparous cows with higher proportions of DSCC tended to have lower fat content (%).
- Lower protein content (%) was observed in primiparous cows with high SCS and low DSCC. The protein content (%) was similar for multiparous cows regardless of the SCS or DSCC.
- Elevated SCS, in combination with lower proportions of DSCC, was associated with the lowest lactose content (%) for primiparous and multiparous cows.

## Acknowledgements

### Supervisor

Dr. Simon Dufour

### Co-supervisor

Dr. Jean-Philippe Roy

### Collaborators

Dr. Daryna Kurban

Dr. Débora Santschi

Dr. Elouise Molgat

