

## ABSTRACT

Standard practice within the dairy industry is to separate calves from the dam immediately after birth and raise calves in individual pens during the milk-feeding period with little or no contact with conspecifics. I reviewed empirical work (Chapter 2) on the social development of calves, the effects of social isolation and the practices associated with group housing of dairy calves. From this review I identified literature gaps that were explored in the following chapters.

In Chapter 3, I explored how pairing age affects performance and feeding behaviour development in dairy calves. Early pairing (3 d of age) increased solid feed intake and weight gains in comparison to late-pairing (42d of age) and individual housing.

In Chapter 4, I investigated how individual housing of calves affects food neophobia. The results suggested that calves raised in a complex social environment are less reluctant to ingest new feed types.

Chapter 5 investigated whether being grouped with experienced dairy cows would affect the development of grazing behaviours in heifers first introduced to pasture. The results indicated that grouping heifers with pasture-experienced cows improves grazing behaviour in the first hours following introduction to pasture.

Chapter 6 assessed whether weaned calves would sort a total mixed ration (TMR) and if sorting was affected by the availability of a separate grain source. I found that calves can sort a total mixed ration and that the provision of a separate source of concentrate reduces sorting.

I conclude that calves raised in more complex social environments early in life experience benefits related to feeding behaviour development, performance, ability to cope with novelty, and that experienced companions can be used to mitigate stress associated with novelty.

## BIOGRAPHICAL NOTES

Academic Studies: B. Sc. (Agronomist Eng.), Federal University of Santa Catarina, 2009  
M.Sc., Federal University of Santa Catarina, 2012

## GRADUATE STUDIES

Courses:	Instructors
AGSC 504 Research Methodology In Agricultural Sciences	Dr. D. M. Weary

## AWARDS

HAYNES Graduate Scholarship for the Advancement of Animal Welfare

C W Roberts Jr. Memorial Scholarship

## SELECTED PUBLICATIONS

- Costa, J. H. C., R. R. Daros, M. A. G. von Keyserlingk, and D. M. Weary. 2014. Complex social housing reduces food neophobia in dairy calves. *J. Dairy Sci.* 97: 7804-7810.
- Costa, J. H. C., R. K. Meagher, M. A. G. von Keyserlingk, and D. M. Weary. 2015. Early pair housing increases solid feed intake and weight gains in dairy calves. *J. Dairy Sci.* 98:6381-6386.
- Costa, J. H. C., W. G. Costa, D. M. Weary, L. C. P. Machado Filho, and M. A. G. von Keyserlingk. 2015. Confined heifers benefit from having an older experienced cow present when learning how to graze. Accepted. *J. Dairy Sci.*

## SELECTED PRESENTATIONS

- Costa, J. H. C. 2014. Effects of pair housing on feeding behaviour and weight gain in dairy calves. 2014 JAM (Joint Annual Meeting) - ADSA, ASAS and CSAS.
- Costa, J. H. C. 2014. Food neophobia declines with social housing in dairy calves. 48th Congress of the International Society for Applied Ethology (ISAE).
- Costa, J. H. C. 2013. Time spent eating solid feed predicts intake in milk fed dairy calves. 47th Congress of the International Society for Applied Ethology (ISAE).

## SUPERVISORY COMMITTEE

Prof. Daniel M. Weary  
Prof. Marina A. G. von Keyserlingk  
Prof. Jennifer Black



a place of mind

THE UNIVERSITY OF BRITISH COLUMBIA

## Graduate and Postdoctoral Studies

### PROGRAMME

The Final Oral Examination  
For the Degree of

DOCTOR OF PHILOSOPHY  
(Animal Science)

### JOAO HENRIQUE CARDOSO COSTA

B. Sc. (Agronomist Eng.), Federal University of Santa Catarina, 2009  
M.Sc., Federal University of Santa Catarina, 2012

Thursday, September 24, 2015, 9:00 am  
Room 350, MacMillian Building  
*Latecomers will not be admitted*

**“Food Neophobia, Feeding and Sorting Behaviour in Dairy Calves”**

### EXAMINING COMMITTEE

Chair:

Dr. Judith Myers (Zoology)

Supervisory Committee:

Dr. Daniel Weary, Research Supervisor (Applied Animal Biology)

Dr. Marina von Keyserlingk (Applied Animal Biology)

University Examiners:

Dr. Patricia Schulte (Zoology)

Dr. Kimberly Cheng (Applied Animal Biology)

External Examiner:

Dr. Eddie Bokkers

Department of Animal Production Systems

Wageningen University

Wageningen, Netherlands