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Foreword

'Grazing' herbivores fulfil essential roles in ecology, agriculture, economies, and cultures at many levels including families, farms, and communities throughout the world. Not only do herbivores provide social (food) and economic (wealth) services, they also deliver ecological services. 'Grazing', locates 'herbivores' within a particular spatial and temporal pastoral context, the grasslands and rangelands ecosystems where they naturally graze or are grazed. The purpose of this **Special Issue of *Animal Production Science*** is to deal with both the active and passive voices of the verb graze, as that process defines food intake, nutrient supply, and the spatio-temporal dynamics of landscape use by herbivores . . . and us.

For decades, the grazing patterns of herbivores have been viewed as a simple succession of 'discrete grazing bouts' structured among periods of other activities, with those bouts as building blocks of daily forage intake. However, process is defined as a series of decisions followed by actions that produce a result, and pattern as the behaviour rather than the structure of such a process at a certain scale. The scale delimits the spatio-temporal dimension at which the process and its pattern are observed as a series of events. If we consider the meaning of dynamics as forces or properties that stimulate change within a system or process, then recent advances in understanding foraging behaviour and its nutritional ecology may allow us to have a more functional and contextual view of those bouts and to better interpret *meal dynamics*.

Two questions arise: Do decisions during grazing (1) follow a single rule of either energy maximisation or time minimisation, as previously hypothesised? Or do decisions, which include (1), also (2) evolve as a function of complex interrelationships among internal and external stimuli arising from soil-plant-herbivore interactions and feeding contexts, with a succession of short-term actions leading to longer-term strategies for what to eat and where to graze? Although they are not mutually exclusive, with the first question decisions would be more structured, while with the second question, grazing patterns would emerge as a function of context and grazing bouts that are dynamically interdependent. With these questions in mind, the reasons for publishing a Special Issue on grazing behaviour and 'The Meal Dynamics of Grazing Herbivores' are:

- to address the aforementioned questions;
- to compile experimental and observational research along with modelling efforts that depict the dynamics of grazing in time and space. We seek new data and interpretations of forage intake rate, food selection and foraging location, as well as the morpho-physiological and biochemical stimuli underlying decisions and actions, which ultimately modulate meal dynamics. But most importantly, we seek to describe what we do not know, and need to learn, about the meal dynamics of grazing herbivores;
- to reinforce the ecological implications of meal dynamics at different spatio-temporal scales and to better understand and manage the functional factors affecting meal dynamics; and
- to stimulate discussion and raise new questions that will evolve into innovative research programs that pioneer management strategies aimed at creating grazing patterns that enhance not only the nutrition, production and health of herbivores, but also the integrity of the landscapes that we and the animals in our care inhabit.

This Special Issue compiles papers of research groups from Australasia, Europe North and South America. Some of the papers published here were presented and discussed at the 'Second International Grazing Behaviour Workshop' (Porto Alegre, Brazil, 26–28 November 2013), while others were invited to provide a broader narrative. The content of the Special Issue is divided into four topics:

(1) influences of meal dynamics,
(2) temporal and spatial patterns of meals,
(3) managing behaviours: from bites to economic and social settings, and
(4) models and modelling approaches that can integrate the factors described in 1 to 3.

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