Feeding Behavior and Cow Welfare

By: Maegan Weatherly and Jeffrey Bewley, Ph.D.

In July 2014, scientists and industry representatives from all over the world met in Kansas City, Missouri for the American Dairy Science Association annual meeting. Researchers presented studies on many topics of importance in dairy science including nutrition, reproduction, welfare, behavior, and many more. One topic of interest during this meeting was the symposium on feeding behavior in dairy animals and how understanding the cow’s motivation behind feeding can help us as researchers, industry representatives, and producers improve the welfare of our animals.

Physiology, Psychology, and Welfare

Satiety, or the feeling of no longer being hungry, is controlled primarily through hormonal and physiological signals to the part of the brain dealing with homeostatic control. Dr. Allen from Michigan State University claimed that the physiological state of an animal is the primary determinant of feed intake. These physiological states include the age of the animal, pregnancy status, stage of lactation, and obesity. Feeding behaviors, specifically meal size and frequency along with the fuels available from these meals, are controlled by the physiological state(s) of the animal. The supply of fuels from ingested feeds sends signals to the brain, which in turn, affects feeding behavior. These controls are a very complex cycle involving many hormones and neural signals (Allen and Piantoni, 2014).

Take home message: It is important to feed animals according to their physiological state (age, stage of lactation, pregnancy status) because this state affects the way the body metabolizes feed. The nutritional needs of different groups of animals may not be met if they are all fed the same ration. For example, fresh cows and late lactation cows may need different diets from other cows in the milking herd.

Understanding the physiological and psychological motivations behind feeding behavior is important in detecting illness in dairy cows. Dr. von Keyserlingk and researchers from the University of British Columbia have explored the connection between feeding behaviors, such as meal length and number, feed intake, and feeding rate and the incidence of metritis. These scientists have found links between altered feeding behavior and time leading up to parturition for cows that develop metritis even before clinical signs become evident. The cow may not be feeling well prior to actually developing the disease, which manifests in feeding behavior changes (von Keyserlingk and Weary, 2014).

Take home message: It is important to observe and understand the feeding patterns of dairy cows because changes in normal feeding behaviors may alert us that a cow is at risk of becoming ill.

Feeding Behavior and Calves

Not only are scientists attempting to better understand the feeding behavior of mature cows, but the feeding behavior of calves is also a topic of interest. Dr. DeVries from the University of Guelph claimed that understanding the feeding behavior of calves and how to manipulate those behaviors could have potential long-term implications on that calf’s growth and welfare. According to Dr. DeVries, if calves are provided continuous, ad libitum access to milk, they may have a much higher growth potential and ultimately more natural feeding patterns of solid feed later in life as compared to traditional calf feeding systems. Dr. DeVries also mentioned that housing calves in pairs might promote higher intake and growth.

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compared to calves housed individually due to the social affinity of cattle. However, this system could encourage negative feeding behaviors due to competition so more research is needed in this area (DeVries, 2014).

Dr. Villalba from Utah State University suggested that intake may be psychologically controlled by food reward and hedonics – a term that refers to how pleasurable a particular feed is to an animal. The hedonic value of a feed is partially motivated by any previous experiences the animal has had with that feed. He suggested that the nutritional value of a feed, such as adequacy of nutrients or a toxicity/nutrient deficiency, will increase or decrease the animal’s preference for that feed. This preference behavior is then passed on from mother to offspring and across peer groups, allowing young animals that are faced with novel situations to know which feeds to consume or avoid. From a management standpoint, Dr. Villalba proposed that by strategically influencing an animal to consume targeted feeds at a young age and allowing the animal to interact with its peer groups, we can influence their diet to be more nutritious, enhancing animal health, well-being, and ultimately, productivity (Villalba, 2014).

**Take home message:** Young animals can be conditioned to choose more nutritious feeds later in life by presenting them with specific feeds at a young age and allowing them to interact with their peer groups. It is important to not forget the nutritional management of the young stock on the farm because this could have long-term impacts on feeding behavior in the future.

The motivations behind feeding behaviors of dairy cows and calves are not fully understood. This area of research is a complex and multi-faceted topic of interest to scientists who are hoping to understand more about what drives animals to make the feeding decisions that they make. A better understanding in this area may allow us to develop or alter feeding management strategies that will result in animals that are healthier and more productive throughout their lifetime.