

Diurnal grazing pattern: Its understanding and strategic management

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Summary. Within a day, grazing decisions such as when to begin, which frequency and how to distribute grazing events determine ruminants' diurnal grazing pattern. Ruminants can have between three to five daily grazing events. The major grazing events occur in the early morning and late afternoon/early evening; the later grazing event is the longest and most significant in terms of herbage intake. This review first attempts to answer why does this happen? and then to examine evidence for managing this pattern to improve animal production. Due to photosynthesis and transpiration during the day, herbage accumulates DM, sugars and essential fatty acids, which dilute fibre and protein contents and facilitate herbage particle breakdown during ingestion. Diurnal fluctuations in light intensity stimulate circadian release of neuropeptides and hormones, providing the cue to start grazing and modulating ingestive-digestive behaviours that interact with the diurnal fluctuation in herbage feeding value. Grazing decisions depend on grazing environments, the current state of the animal, and on past and anticipated states of the animal. The dusk grazing event seems to be an adaptive feeding strategy to maximize daily energy acquisition, providing a steady release of nutrients, and maintaining satiety over night. Hunger deceives ruminants and makes them graze at dawn, when herbage presents the lowest feeding value. Hunger, however, can be used to concentrate and intensify grazing events. Strategic management of these interactions emerges as the tool to alter the frequency, intensity and temporal distribution of diurnal grazing events, and thereby to increase and modulate nutrient supply to and productivity of, grazing ruminants.