

Abstract Submission Form

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Preferred presentation

Poster

Preferred session

Session 8: Global challenges in measuring methane in ruminants

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Title of your paper

Impact of environmental conditions on GreenFeed access in feedlot steers

Insert ABSTRACT text

GreenFeeds are devices used to measure methane production in cattle on a daily basis with the goal of determining the amount of methane produced by an individual and variation in production between individuals. These devices rely on cattle access on a free-choice basis to receive a food reward, but individuals are limited in the number of times they can access per day, the interval of access and the amount of feed received at each visit. Daily monitoring of the units indicates that visitation and the amount of feed consumed by animals varies from day to day. The aim of this paper was to look at the impact of environmental conditions (temperature and relative humidity) on the number of visits per day, the pattern of visitation across a day and length of visits in steers under feedlot conditions.

1535 steers of multiple breeds that were on feed at Tullimba feedlot for feed efficiency testing had access to GreenFeeds for a period of 4 to 5 weeks during their 10-week feed efficiency test, alongside ad-lib access to Vytelle SENSE™ bunks. Steers were able to visit the GreenFeed 5 times per day at an interval of 5 hours and could receive up to 8 cup drops of pelleted feed per visit. They were able to access the GreenFeed at more frequent intervals however would not receive a feed reward. Steers were in groups of up to 40 animals or up to 80 animals with a ratio of GreenFeed to animals of no more than 1:40 and preferably 1:20. Steers were on feed throughout the year with temperatures ranging from -3.9°C to 36.5°C

with average daily temperature ranging from 4.39°C to 27.75°C and relative humidity (RH) from 19.68% to 99.90%. Environmental conditions including temperature, humidity, precipitation, solar radiation, wind speed and direction were recorded at the onsite weather station at 15-minute intervals.

There was an association between average daily temperature and number of visits with visits increasing as average daily temperature increased ($R^2 = 0.34$). There was no association between number of visits and relative humidity ($R^2 = 0.02$) or precipitation ($R^2 = 0.12$). The proportion of animals in a feeding cohort visiting the GreenFeed does not change with increasing average daily temperature.

Cattle use of GreenFeeds appears to vary with environmental conditions, with average daily temperature being particularly important. Higher temperatures are associated with increased usage however it is unclear how the limitations that are set on intervals of cup drops (i.e. animals only receiving cup drops after an interval of 5 hours between visits) impacts on this.

Enter keywords

greenfeed, environmental conditions, behaviour