Upper Lobby Coffee break and poster viewing - Poster session 1

Grazing Intensity and Methane Emissions by growing Heifers in the Pampa Rangeland - Southern Brazil

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Methane (CH_4) production from enteric fermentation in cattle is an important source of anthropogenic greenhouse gas emission. Current inventories for enteric CH_4 emission are mostly based on measurements made from animals in open circuit respirometers in strictly controlled environments. On the other hand, a large part of the world ruminant production, like in South America, is based on animals grazed in open rangelands. Reducing uncertainty on CH_4 emission in such systems needs field measurements under a large range of conditions to identify viable mitigation options such as improved animal productivity or dietary manipulation.

We report here the results of a two years study of enteric CH_4 emission from growing heifers grazed on native Pampa rangeland, South Brazil. The experimental area, in the state of Rio Grande do Sul, is managed under continuous variable stocking since 1986 and divided in five treatments of forage allowances (invers of grazing intensity), repeated twice. Treatments were 4, 8, 12 and 16% forage allowances (in kg DM.ha^{-1}.day^{-1}/ kg LW.ha^{-1}). A fifth treatment consisted in 8% offer during spring and 12% during the rest of the year. We estimated CH_4 emission, over the four seasons of 2012 and 2013, by using the SF6 marker technique.

CH_4 emission per animal increased with forage allowances from 100 g.day^{-1} (4% offer) to 150 g.day^{-1} (12 and 16% offer). However, when considering emission in relation to live weight gains, the pattern is inversed. The 4% offer treatment, which suffered high grazing pressure and low live weight gain, had emission of 6.2 g.day^{-1} kg^{-1} LWgain animal^{-1}. With moderate to low grazing pressure (8-12, 12 and 16% forage allowances treatments), CH_4 emissions stabilized around 2 g.day^{-1} kg^{-1} LWgain animal^{-1}.

These values of CH_4 emission per kg live weight gain we collected in the field are not different from the IPCC estimates made with the Tier 2 model, confirming the quality of these estimations for South American native Pampa. Moderate grazing intensity is an efficient management policy for native Pampa, allowing high animal production, low CH_4 emission per unit of production and maintaining high plant diversity and ecosystems services.