RUMINAL METHANE EMISSION IN SHEEP IN SILVOPASTORAL SYSTEM

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INTRODUCTION

- Silvipastoral system combines trees with the pastoral system;

- This system changes the whole environment in which it was implemented by modifying it with the ruminal methane emission.

- Those changes depend on the species of trees and forage plants and spacing between trees, used in the system;

INTRODUCTION

- The massai grass is a tropical forage genus Panicum;

- This genus tolerates partial shade, its growth may be impaired or even cause plant death, if that is excessive shading.

- But even moderate shadings modify the physiology of forage crop.

INTRODUCTION

- The shading increases the production of chlorophyll in leaves, thus increasing the protein;

- It also decreases the fibrous material;

- Thus there is a decreased production of ruminal methane.

INTRODUCTION

- The silvopastoral system increases moisture and reduces the ambient temperature;

- This increases the animals thermal comfort;

- Hence decreasing Rumen methane production.

OBJECTIVE

- The objective of this research was to evaluate the ruminal methane emission in sheep grazing on massai grass in silvopastoral system kept flashing stocking.

MATERIAL AND METHODS

Jaboticabal

- The experiment was conducted at Universidade Estadual Paulista, UNESP in Jaboticabal, São Paulo, Brazil;
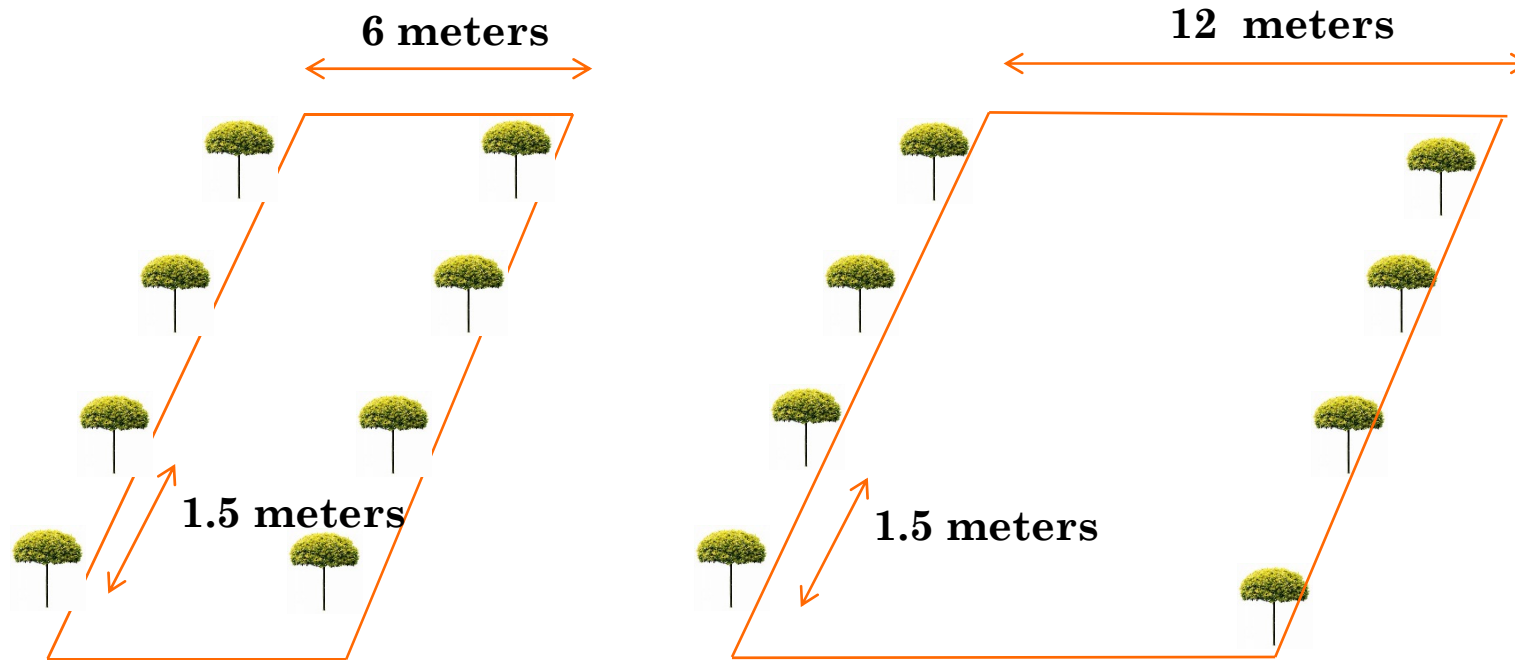
MATERIAL AND METHODS

○ The climate of Jaboticabal is described as tropical dry winter, with defined dry season between the months from April to September and concentration of rainfall in the summer months;

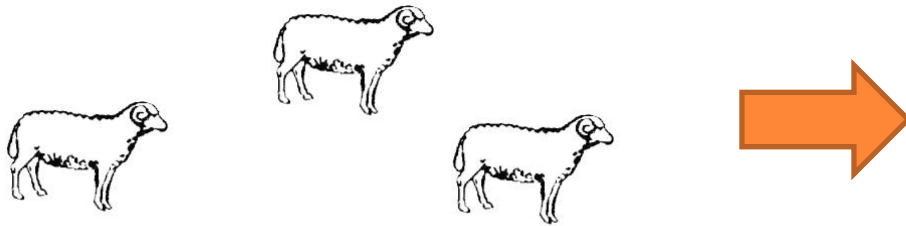○ The period of the research was in March of 2013.

MATERIAL AND METHODS

- In the experiment we used massai-grass as forrage;

- The experiment consisted of three treatments, without eucalyptus and two spacing eucalyptus;
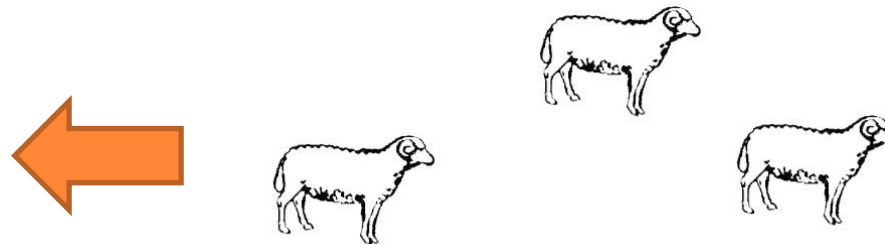
6 meters

12 meters

1.5 meters

1.5 meters

With 6 and 12 meters between rows of trees and 1.5 meters between trees.

MATERIAL AND METHODS

- Entrance of animals to the grazing pastures happened when they hit 95% light interception;

- Exit of animals from grazing pastures happened when they hit 20 cm of height.

SF6 TRACER GAS

- To evaluate methane emissions in animals the technique of the tracer gas (SF6) was used (Johnson & Johnson et al. 1995);

- We used five animals per treatment, in six days.

Changes were made for determination in small ruminants. The adaptations to the study in sheep include reducing the size of the collecting yoke of gases and adjustment of the length of the capillary tube collector, responsible for conducting the gas into the collector yoke halter.

Halter

collector cylinder
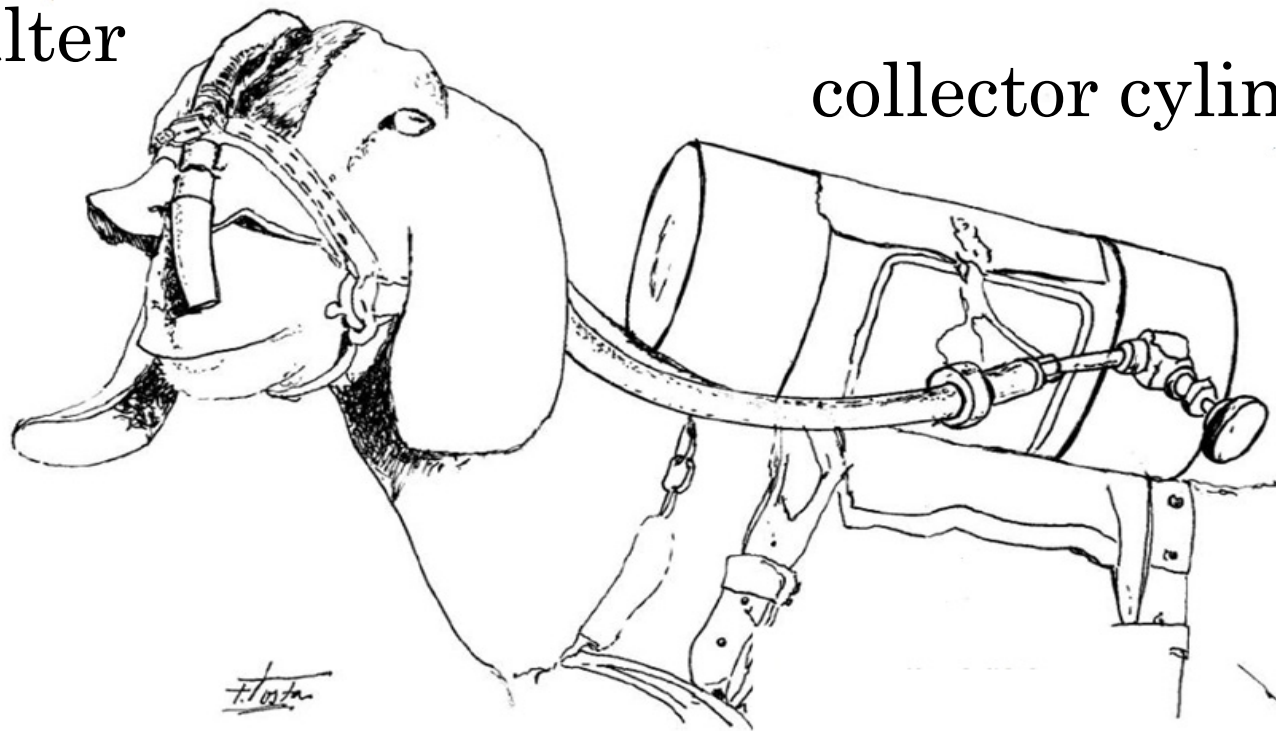
Meister (2013)

- Livestock grazing with the equipment; backpack with collector cylinder and collector hose with halter;

RESULTS AND DISCUSSION

Table 1- Average of temperature and humidity in silvopatoral system with sheep in three treatments, without eucalyptus, and two spacing eucalyptus (6.0 X1.5 meters and 12.0X1.5 meters).

Treatments	Temperature °C	Humidity %
Without Eucalyptus	33.4	52.3
6 meters	33.3	51.6
12 meters	33.8	52.3
	33.5	**52.0**

The averages of temperature and humidity are similar between treatments

TEMPERATURE AND HUMIDITY

- The trees this year did not get enough height to modify these characteristics;

- The temperatures were high, hiting values over 30 degrees Celsius, but visually the animals did not suffer thermal stresses that might compromise their natural behaviors.

Table 2 - Average of ruminal methane emission in silvopatoral system with sheep in three treatments, without eucalyptus, and two spacing eucalyptus (6.0 x 1.5 meters and 12.0 x 1.5 meters).

	Without Eucalyptus	6 meters	12 meters
Animal (g/day)	5.8	7.1	6.2
Kilogram of bodyweight (g/day/kg)	0.21	0.25	0.22

6.4

0.23

RUMINAL METHANE EMISSION

- The amount of ruminal methane per animal per kg of body weight were not changed by the three arboreal arrangements studied (p> 0.05);

- These averages of methane emissions are within the expected range for sheep, which vary widely between ages, weights and feeding.

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Thank you very much