

ASSESSMENT OF THE FERMENTATIVE PROFILE OF TROPICAL GRASS SILAGES ON BRAZILIAN BEEF FARMS

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Introduction

In parallel with rearing and finishing intensification, the use of tropical grass silage is increasing in Brazilian beef cattle industry. However, the technicians are claiming that most of the tropical grass silages have low nutritional and fermentative quality. In the meantime, detailed characterization of fermentation profile in tropical grass silages on commercial operations has been not reported, while it could demonstrate opportunities for improving silage quality and direct new research. Therefore, the objective of this study was to evaluate the fermentation profile of tropical grass silage in Brazilian beef farms.

Materials and methods

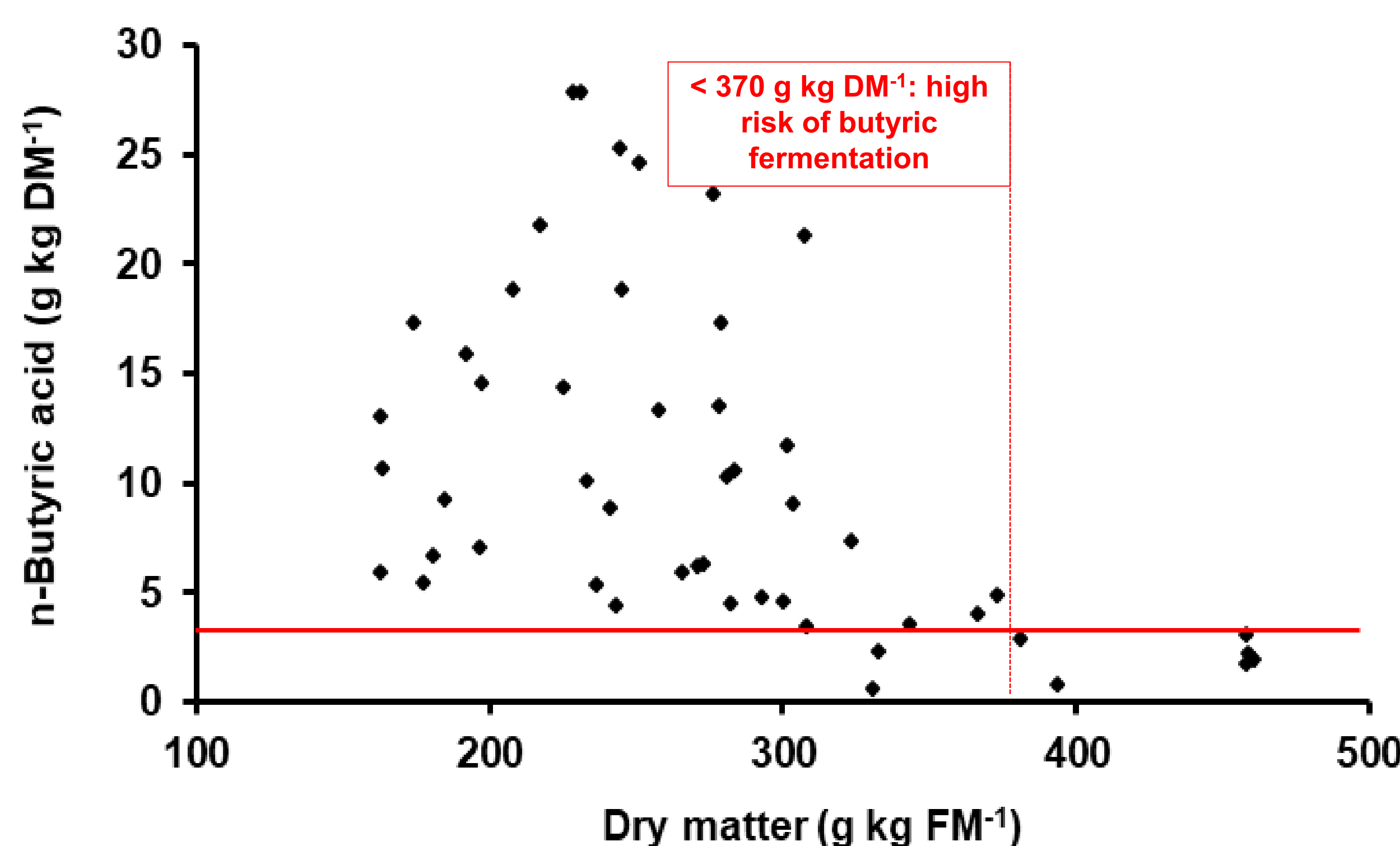
- Tropical grass silage samples were collected from 51 beef cattle farms located in MT, MS, SP, and PR States.
- Silage samples were analyzed for DM, pH, NH₃-N, lactic acid (HPLC) and volatile fatty acids (GC).
- Samples were clustered based on n-butyric acid concentration (i.e., ≤ 3 g kg⁻¹ DM = negative; > 3 g kg⁻¹ DM = positive).
- Regression analyses between butyric acid and other variables were performed using the REG procedure of SAS.

Results and discussion

Table 1. Fermentation profile of tropical grass silage on Brazilian beef farms

Item	Negative ¹	Positive ²	SEM ³	P-value
n	7 (14%)	44 (86%)		
DM, g kg ⁻¹ FM	410	267	16.1	<0.01
pH	5.06	4.91	0.166	0.57
NH ₃ -N, g kg ⁻¹ N	89.4	332	51.7	<0.01
Lactic acid, g kg ⁻¹ DM	15.3	9.03	3.22	0.21
Acetic acid, g kg ⁻¹ DM	12.1	21.3	2.32	0.01
n-Butyric acid, g kg ⁻¹ DM	1.79	12.1	1.92	<0.01
Propionic acid, g kg ⁻¹ DM	0.98	2.47	0.402	0.02

¹ n-butyric acid ≤ 3 g kg⁻¹ DM; ² n-butyric acid > 3 g kg⁻¹ DM. ³ SEM: Standard error of the mean.



Conclusion

Silages with more than 370 g DM kg⁻¹ FM were free of butyric acid. However, this survey showed that 86% of grass silage sampled had an inadequate fermentation profile. These results suggest the need for development, transfer and application of techniques that contribute to improving the quality of tropical grass silages, especially when the aim is to optimize the inclusion of this forage in diets for growing animals or breeding cows.