

## BEEF CATTLE STOCKING RATE A KEY TO THE CONSERVATION OF THE PASTORAL SYSTEM IN BRAZILIAN BIOMES

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### Introduction

In Brazil, extensive systems are prevalent in the grazing regime in the production of beef cattle, with native and/or cultivated pastures, encompassing three distinct phases: cow-calf, rearing and fattening.

The grazing supportability is reflected by the stocking rate (number of animals/ha). It is the pressure usage that enables the balance of the gain per animal / unit area, maximizing the revenue.

In livestock systems, the construction of typologies is the effective method for carrying out studies that facilitate the understanding of the complex nature of these systems. This supports the decision-maker in the promotion of livestock development policies.

### Material and Methods

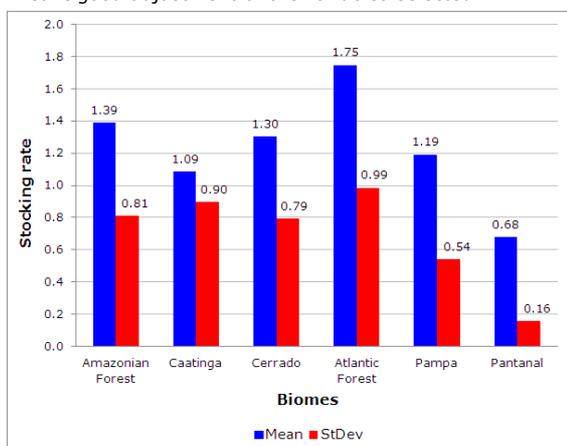
The Brazilian Agriculture and Livestock Census is a large-scale statistical operation performed periodically in order to collect, process and disseminate data about these fields. In our study, the agriculture and livestock census data were filtered to specialized farms in beef cattle. The database contains variables related to pasture, cattle population in each pasture type, and situation:

- Natural pasture (NP): natural fields and others areas of unplanted pastures;
- Degraded planted pasture (DPP): planted pastures that were degraded due to inadequate management or lack of conservation, which were found degraded or under productive;
- Planted pasture in good condition (GPP): refers to areas for vegetation species, which are not degraded due to frequent maintenance;
- Total area of pasture: corresponds to the sum of NP, DPP, GPP.

Data from 4,904 municipalities from all Brazilian states was assessed. The factorial analysis was applied as the data is highly correlated. It is a technique that helps explain the behavior of a large number of variables in relation to a small number of factors. The essential purpose of the factor analysis is to describe the variance/covariance between the different indicators by means of unobservable random linear combinations (latent variables) called factors. Based on these factors, we applied a cluster analysis to group municipalities with similar characteristics.

### Results and Discussion

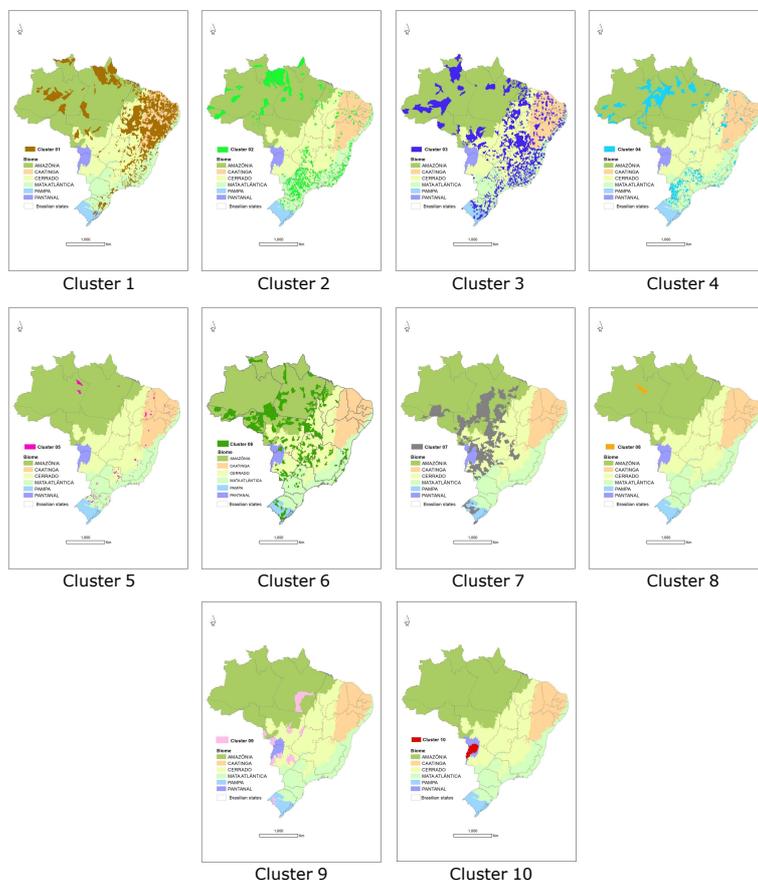
The first two factors explained 0.83 of the variance/covariance, and the estimate of the Kaiser-Mayer-Olkin (KMO) adequacy test was 0.76, which meant good adjustment of the variables selected.



**Clusters 1 to 5** represent municipalities where the relative importance (weight) of the crop production is higher than the weight of beef cattle production. The comparison regards the total value of the production and revenue obtained from sales. **Clusters 6 to 10** show municipalities with the opposite scenario, where the beef cattle are responsible for the highest percentage of the income of the farms.

Characterization of clusters according to socioeconomic indicators (in percentage)

Socioeconomic indicators	Clusters									
	I	II	III	IV	V	VI	VII	VIII	IX	X
Value of cattle herds over total production value (ratio)	31.1	30.9	32.5	32.4	22.6	62.1	64.6	74.1	85.0	99.4
Value of crops production over total production value (ratio)	62.9	50.0	60.4	54.7	50.7	33.4	30.7	15.7	12.8	0.1
Revenue from cattle herds over total revenues (ratio)	29.4	30.3	31.6	31.1	22.4	61.5	64.2	75.3	83.5	98.7
Revenues from crops production over total revenues (ratio)	61.9	47.8	58.2	53.4	50.0	31.3	29.0	14.3	11.9	0.0
Revenue from cattle herds over the total revenue from agriculture and livestock activities (ratio)	30.6	35.8	33.0	33.0	26.7	64.2	66.3	81.2	86.0	99.6
Revenue from crops production over total revenue from agriculture and livestock activities (ratio)	64.3	56.4	60.7	56.7	59.6	32.7	29.9	15.4	12.2	0.0
Income of the farmers and their families over total revenues (ratio)	7.7	4.0	5.7	4.4	2.8	6.7	4.9	15.7	5.5	1.7
Non-agricultural incomes over total revenues (ratio)	1.8	0.6	1.9	0.7	0.7	1.1	0.9	0.1	0.5	0.2
Percentage of family farms	32.1	33.9	34.9	47.9	43.2	43.8	37.2	30.8	33.6	6.3
Percentage of farms with traceable cattle herds	3.4	9.6	6.5	6.6	4.5	11.4	20.4	14.1	22.7	25.2
Ratio between investments in new pastures and total financing	26.9	7.8	27.2	14.5	1.3	27.4	25.1	0.6	41.5	21.7



### Conclusion

Livestock development policies in different Brazilian biomes should consider distinguishing features of municipalities, especially the condition of pasture areas and their destiny for primary livestock production.