Enteric methane emissions from beef cattle of different genetic groups in confinement in Brazil
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Embrapa
Southeast Livestock
Topics

Brazilian perspectives

Methane emissions
Brazilian meat perspectives

Increasing global demand
Professionalization
Increasing care for sustainability
Increasing care for food quality
MCT I - 2nd National GHG Inventory (2010):
Emission Profile (2012):
Emission Profile (2012):

Emissões brasileiras de gases de efeito estufa
Período 1990-2012
em CO$_2$eq

-76% emissions
Production vs. expansion decoupling

Figura 1: Desmatamento anual, produção de soja, e rebanho bovino em Mato Grosso (Dados do PRODES, IBGE)
Brazilian beef sector is determined to contribute to global food production sustainably and healthy.
Topics

Brazilian perspectives

Methane emissions
Objective

Measure methane of cross-bred beef cattle in confinement, using GreenFeed
## Material and Methods

### Animals:
- 45 steers,
- Brangus (5/8 Angus, 3/8 Brahman)
- Canchim (5/8 Charolais, 3/8 Zebu)
- Bosnmara (5/8 Africaner, 3/16 Hereford, 3/16 Shorthorn)

<table>
<thead>
<tr>
<th></th>
<th>Canchim</th>
<th>Bonsmara</th>
<th>Brangus</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Days confined</strong></td>
<td>95±13</td>
<td>92±13</td>
<td>94±17</td>
<td>0.9622</td>
</tr>
<tr>
<td><strong>Initial weight (kg)</strong></td>
<td>365±27</td>
<td>323±54</td>
<td>352±28</td>
<td>0.1783</td>
</tr>
<tr>
<td><strong>Final weight (kg)</strong></td>
<td>533±45</td>
<td>484±51</td>
<td>520±52</td>
<td>0.2782</td>
</tr>
</tbody>
</table>
### Before feedlot

#### Ingredients:
- Maize silage: 43.0%
- Grounded maize: 48.3%
- Soybean meal: 3.7%
- Bicarbonate: 1.0%
- Mineral premix: 1.5%
- Urea: 1.0%

### In the feedlot

#### Nutritional Value:

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry matter</td>
<td>63%</td>
</tr>
<tr>
<td>Crude protein</td>
<td>12%</td>
</tr>
<tr>
<td>TDN</td>
<td>71%</td>
</tr>
<tr>
<td>Ca:P ratio</td>
<td>1.33</td>
</tr>
</tbody>
</table>
Results

No differences in feedlot performance nor emissions
## Results

<table>
<thead>
<tr>
<th></th>
<th>Bull Breed</th>
<th></th>
<th></th>
<th></th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Canchim</td>
<td>Bonsmara</td>
<td>Brangus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH₄ (g/d)</td>
<td>162.5±26.6</td>
<td>166.3±35.6</td>
<td>169.8±34.1</td>
<td>0.9160</td>
<td></td>
</tr>
<tr>
<td>CO₂ (g/d)</td>
<td>6138±698</td>
<td>6470±444</td>
<td>6382±680</td>
<td>0.6643</td>
<td></td>
</tr>
<tr>
<td>CH₄ (kg/yr)</td>
<td>59.3±9.7</td>
<td>60.7±13.0</td>
<td>62.0±12.5</td>
<td>0.9150</td>
<td></td>
</tr>
<tr>
<td>DWG (kg/d)</td>
<td>1.803±0.331</td>
<td>1.766±0.269</td>
<td>1.802±0.328</td>
<td>0.9762</td>
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<tr>
<td>DMI kg/d</td>
<td>11.6±1.0</td>
<td>11.3±1.1</td>
<td>12.3±1.5</td>
<td>0.3116</td>
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<tr>
<td>YM (%)</td>
<td>4.4±0.7</td>
<td>4.7±1.5</td>
<td>4.3±0.6</td>
<td>0.7213</td>
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<tr>
<td>FE (kg/kg)</td>
<td>6.5±0.8</td>
<td>6.4±0.5</td>
<td>6.9±0.9</td>
<td>0.4177</td>
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</table>
Conclusion

Crossbreed can be used to produce meat efficiently
Next steps

Rumen microorg.
Meat metabolomics
CH$_4$ mitigation
Acknowledgements:

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