

# Performance of feedlot Nellore cattle fed with rations containing different corn genotypes

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## Introduction

Of the world's maize production, 70% to 85% is used for animal feed and represents a high-quality energy source. The main corn genotypes are flint corn (high vitreous endosperm), semi-flint corn (medium vitreous endosperm), and semi-dent corn (low vitreous endosperm); as the vitreous in the grain increases, starch degradation decreases. The whole grain and intact matrix protein of corn are resistant to digestion by ruminants because rumen bacteria cannot adhere to them. Some studies have shown that starch degradation is better for corn with low vitreous endosperm; however, in Brazil, most of maize produced is flint corn (high vitreous endosperm). Most farmers use corn grain that is ground and incorporated into the concentrate ration for ruminant feeds without consideration of corn genotype or particle size, which influence rumen fermentation, microbial protein yield, and feed efficiency. This trial was conducted to evaluate the performance of beef feedlot cattle that received rations containing different corn genotypes.

## Materials and Methods

Twenty seven Nellore steers averaging 790 lb (360 kg) of body weight and 30 months of age were used. The trial was a complete randomized block study with three treatments: flint corn (FC), semi-flint corn (SFC), and semi-dent corn (SDC). Animals were randomly assigned to nine pens such that each pen contained three animals. The animals were fed a diet composed of 70% concentrate (88% maize) and 30% sugar cane bagasse ad libitum twice daily (at 8:00 AM and 5:00 PM) for 95 days. Animals were weighed every 30 days for calculation of average

daily gain. Feed deliveries and orts were recorded daily to determine the dry matter intake. Data were analyzed with a one-way analysis of variance. The average daily gain was calculated as the slope of the linear regression of body weight on days on feed.

## Results

No significant differences were detected among the three treatment groups for initial body weight ( $P = 0.90$ ), final body weight ( $P = 0.41$ ), average daily gain ( $P = 0.78$ ), dry matter intake ( $P = 0.61$ ), feed conversion ( $P = 0.82$ ), or gross feed efficiency ( $P = 0.76$ ). Mean  $\pm$  SD initial body weights were 788 lb  $\pm$  59 lb (358  $\pm$  27 kg), 800  $\pm$  46 lb (363  $\pm$  21 kg), and 788  $\pm$  27 lb (358  $\pm$  27 kg) and final body weights were 975  $\pm$  68 lb (443  $\pm$  31 kg), 999  $\pm$  62 lb (454  $\pm$  28 kg), and 959  $\pm$  51 lb (436  $\pm$  23 kg) for the FC, SFC, and SDC groups, respectively. Mean  $\pm$  SD average daily gains were 2.24  $\pm$  0.66 lb (1.02  $\pm$  0.3 kg), 2.09  $\pm$  0.57 lb (0.95  $\pm$  0.26 kg), and 2.27  $\pm$  0.62 lb (1.03  $\pm$  0.28 kg) and dry matter intakes were 8.5  $\pm$  0.57 kg, 8.8  $\pm$  0.48 kg, and 8.4  $\pm$  0.36 kg for FC, SFC, and SDC, respectively. Mean  $\pm$  SD feed conversion ratios were 8.59  $\pm$  1.3, 9.38  $\pm$  1.29, 8.67  $\pm$  2.13 lb/d and gross feed efficiencies were 0.118  $\pm$  0.02, 0.108  $\pm$  0.01, 0.121  $\pm$  0.03 lb/lb for FC, SFC, and SDC, respectively.

## Significance

Although the corn genotypes differed in terms of starch composition, this did not influence feedlot performance of Nellore steers. Therefore, all evaluated corn genotypes can be used in feedlot rations for Nellore cattle.