

# The effect of backgrounding systems on helminth load and serum haptoglobin profile of weaned Angus calves

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## Introduction

The backgrounding (BKG) segment in beef cattle production systems is characterized by a huge variation in diet type which could affect average daily gain, finishing performance and carcass traits. Internal parasitism of feedlot cattle has been reported to reduce performance and impair immune function through deprivation of host nutrient, allergic reactions and blood loss. Serum haptoglobin may be used as a marker of stress response in beef calves. This study examined the helminth burden and serum haptoglobin profile of weaned beef calves backgrounded using different feedstuff. We hypothesized that helminth load and serum haptoglobin profiles would differ in calves assigned to different backgrounding systems.

## Materials and methods

Apparently healthy Angus calves ( $n = 36$ ) with mean body weight of  $229 \pm 18.6$  kg were randomly assigned to 1 of 3 backgrounding systems for 55 days: 1) calves fed ration in a dry lot: DRYLOT (DL); 2) calves fed perennial pasture vegetation within rotational paddocks: PASTURE (PP) and 3) calves fed cover crop within a strip plot: CROP (CC). All calves were treated with Safeguard® containing Fenbendazole on day 0 (initiation of backgrounding). Fecal samples were collected at the beginning (d0), middle (d28) and end of the backgrounding (d55) and were analyzed individually using the Mini-FLOTAC technique with a detection limit of 5 eggs per gram (EPG) of feces. Also, blood samples were collected, serum harvested and used for measurement of haptoglobin concentrations. Data was analyzed using GraphPad 9.00.

## Results

Average FEC EPG count (mean  $\pm$  SD) at the beginning, middle and end of backgrounding was  $7.833 \pm 2.71$ ,  $3.00 \pm 3.08$  and  $0.167 \pm 0.39$  EPG, respectively. Calves assigned to PP had a greater ( $P < 0.05$ ) haptoglobin concentrations during ( $12.42 \pm 5.143$  mg/dl) and at the end ( $22 \pm 26.73$  mg/dl) of backgrounding compared with CC (during:  $10.08 \pm 1.165$  mg/dl and end:  $9.833 \pm 4.108$  mg/dl) and DL (during:  $9.08 \pm 1.93$  mg/dl and end:  $12.75 \pm 15.9$  mg/dl). However, PP calves had a smaller ( $P < 0.05$ ) fecal egg counts during ( $1.083 \pm 1.98$  EPG) backgrounding compared with CC ( $5.333 \pm 0.62$  EPG). Regardless of backgrounding system, fecal egg counts were greater ( $P < 0.05$ ) at the beginning compared with during and at the end of backgrounding.

## Significance

We concluded that backgrounding systems influenced fecal egg counts and haptoglobin concentrations in weaned Angus calves. Further study to evaluate the effects of helminth load and related stress during backgrounding on growth and finishing performance of beef calves is warranted.

