

EFFECT OF DISTILLER'S GRAIN IN STEAM FLAKED CORN BASED DIETS ON THE FECAL MICROBIOTA OF BEEF CATTLE

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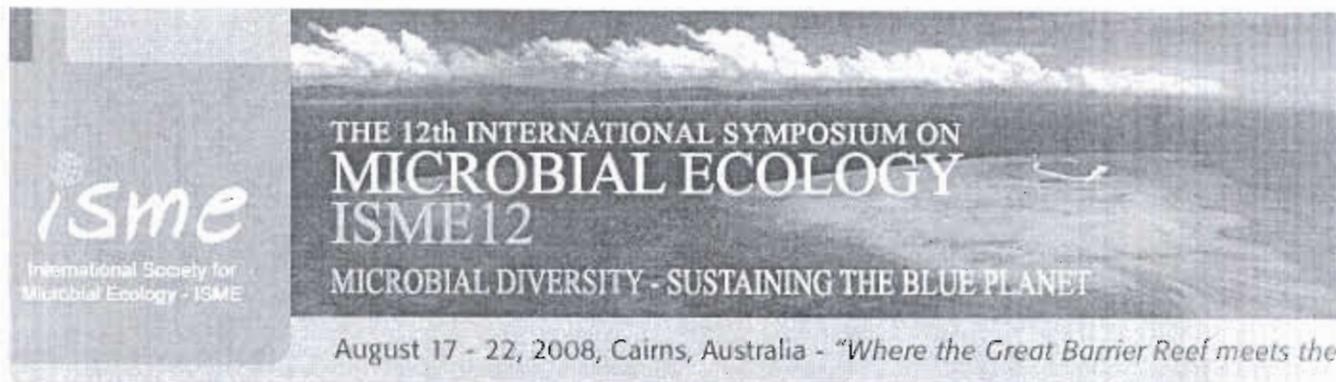
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Background and aims: The high demand for ethanol in the U.S. has generated large stocks of wet distiller's grains (DG) derived as a byproduct from the manufacture of ethanol from corn and sorghum grains. Energy dense DG are attractive for use as a feed supplement for beef cattle production. However little is known about the potential influence of dietary DG on fecal microbial community structure and the shedding of fecal pathogens.

Methods: Fecal samples were collected from two beef cattle feeding trials employing five dietary treatments: 1) steam flaked corn (SFC) based diet, 2) SFC plus corn DG at 10% and 3-5) SFC plus sorghum DG at 5, 10 and 15% levels. Fecal community structure and *E. coli* O157:H7 shedding was evaluated using DGGE-PCR, T-RFLP and quantitative real-time PCR assays.

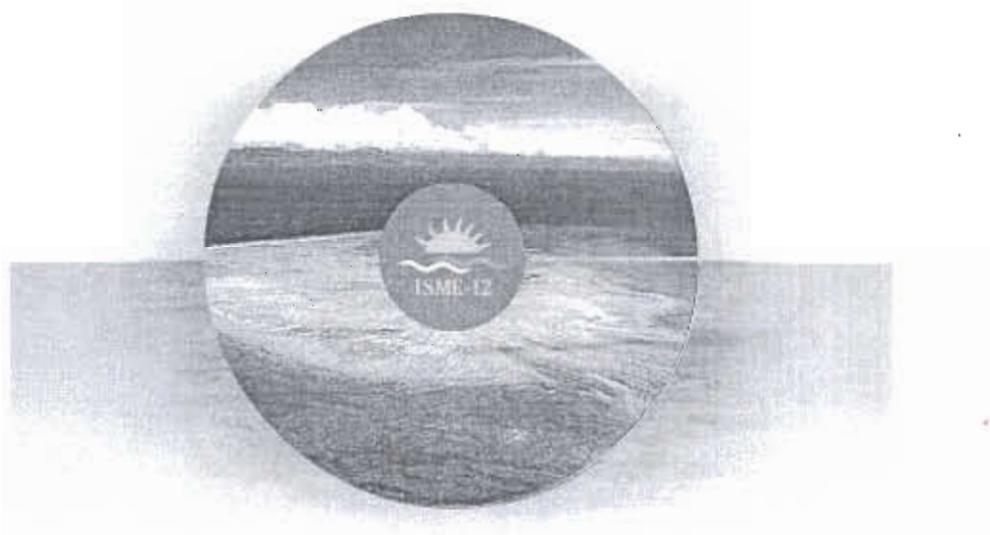
Results: Corn and sorghum DG based diets resulted in significant shifts of the fecal microbial community structure when compared to traditional SFC diet. This effect was revealed in ordination plots of community structure based on principal components analysis of DGGE-PCR assays and supported by group separation scores using dietary treatments as group factors. Fecal microbial populations varied across all diets with an overall similarity range of 39 to 83 %. Sorghum DG diets resulted in increased fecal shedding of O157 (2 to 30 fold) relative to SFC whereas corn DG had a neutral effect on O157 shedding.

Conclusions: DG diets evaluated in these studies appear to have a complex effect on fecal microbiota and the fecal shedding of O157.



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