with Control (45.1 vs 64.0%; $P = 0.056$); however, there was no effect of CM treatment on metritis incidence at 4 (11.8 vs 18.0%; $P = 0.46$), 10 (60.8 vs 72.0%; $P = 0.23$), or 14 DIM (62.8 vs 72.0%; $P = 0.32$). There was also no effect of CM treatment on the prevalence of endometritis at 21 (54.9 vs 60.0%; $P = 0.61$) or 28 (56.3 vs 55.3%; $P = 0.52$) DIM.

There was no effect of treatment or interaction between treatment and time on mean rectal temperature, BHBA concentrations, or milk yield; however, there was an interaction between treatment and time on NEFA concentrations in which NEFA concentrations were lower for CM compared with Controls at 10 DIM (464.2 vs 639.5 μmol/L; $P = 0.03$).

## Significance

Treatment with CM resulted in decreased incidence of metritis at 7 DIM and decreased concentrations of NEFA at 10 DIM; therefore, treatment with CM has the potential to improve uterine health and energy status in dairy cows. Nonetheless, treatment dose or treatment regimen still needs improvement, as differences in metritis incidence could not be maintained beyond 7 DIM.



# Using Y chromosome fragment testing to identify potentially sub-fertile beef heifers

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## Introduction

Selecting and developing fertile replacement heifers is essential for reproductive efficiency in beef herds. Fertile heifers that reach puberty and conceive early and calve early in their first calving season are generally more productive and have increased longevity compared to heifers that calve late in their first calving season. Costs of developing heifers through their first breeding season are substantial due to nutritional requirements for growth and maintenance. Recent literature has suggested new genetic technologies that may allow producers to select replacements based on genetic soundness. Genetic testing identified the presence of Y chromosome fragments in pools of infertile cows (McDaneld, Kuehn et al, 2012). Tests such as this could provide cow-calf producers with a convenient and economical tool to select replacement heifers before development costs are incurred. This study investigated the presence of Y chromosome fragments in 3 heifer development programs in Georgia. The goal of this study was to determine the presence of the Y chromosome anomaly in this population of replacement heifers.

## Materials and Methods

Heifers were weighed and reproductive tract score and pelvis area was determined prior to estrus synchronization. Heifers were synchronized with a 14 day progesterone CIDR-prostoglandin (PG) protocol and timed AI (TAI) at 66 hours after PGF administration. Bulls were placed with the heifers 7 days after TAI for 58 days. Heifers were pregnancy checked with ultrasound 35 days after bulls were removed. Blood samples were taken from heifers in 3 development programs in Tifton (n = 196), Calhoun (n = 164), and Forsyth (n = 96), Georgia. Blood was collected from the jugular vein in the neck using 6 ml EDTA vacu-tubes. The blood was then put on ice and shipped to Clay Center, Nebraska where it was analyzed for the Y chromosome anomaly. Regions of the Y chromosome identified as being present in infertile females were tested by QRT-PCR. Six SNP (Y_SNP_1 – Y_SNP_6) identified by a Bovine HD bead chip assay were evaluated in the populations of cattle. Primers for PCR (Y_SNP_1 –Y_SNP_6) were designed with Primer3 from flanking sequence provided by Illumina (McDaneld, Kuehn et al, 2012). A set of sex determination primers designed to sex embryos (BOV_Y) were also evaluated along with a control set of primers from the (GAPDH) gene to assess DNA quality and quantity (McDaneld, Kuehn et al, 2012).

## Results

Overall pregnancy rate was 82.2%. Of the 456 animals tested for the Y chromosome fragment anomaly, 1 (0.2%) heifer, which was previously identified as a freemartin, tested positive.

## Significance

We concluded that in this group of heifers, testing for Y associated genetic material did not aid in identifying potentially subfertile heifers.