BEEF CATTLE RESEARCH UPDATE

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Fetal Losses from Using Ultrasonography or Rectal Palpation for Pregnancy Diagnosis

Since keeping open cows is expensive, a cost-effective management tool is pregnancy checking mature cows and heifers. A 2009 USDA survey found that only 18% of beef cow operations palpate mature cows or replacement heifers for pregnancy.[1] However, this survey showed that as cow herd size increased that the percentage of operations checking for pregnancy increased from 10.8% of operations with less than 50 cows to 58.3% of operations with more than 200 cows. A survey of 729 Oklahoma beef producers reported similar results.[2,3] In this survey, 44% of the producers nearly always pregnancy checked purchased heifers and cows, 31% nearly always pregnancy checked raised heifers, and 20% pregnancy checked mature cows. For larger producers (100 or more breeding females and 40% or more of household income from the beef enterprise), the percentages were 49, 54, and 34 percent, respectively; while for smaller producers (fewer than 100 breeding females and less than 40% of household income from the beef enterprise) they were 42, 22, and 13 percent, respectively.

Traditionally the standard method of assessing pregnancy in cattle is rectal palpation. However, in recent years, the use of ultrasonography for pregnancy determination has been established. Recent Colorado State University research studied reproductive losses caused by these methods of pregnancy diagnosis using 2,190 head of replacement beef heifers from four herds on a ranch in Western Nebraska.[4] These heifers were exposed to bulls for 27 days and diagnosed for pregnancy between days 42 and 74 of gestation. The objectives of this study were to compare fetal losses from pregnancy diagnosis during early gestation for 1) stage of gestation at the time of diagnosis (< 53 or ≥ 53 days), 2) method of diagnosis (ultrasonography or rectal palpation), and 3) different skill levels of the technicians (novice or experienced). In this study, pregnancy evaluations were done by 12 technicians, with 10 technicians having limited experience. The 10 novice technicians were either senior veterinary students or first-year veterinary interns in the food animal medicine program at Colorado State University that had elected to take additional training in beef cattle pregnancy diagnosis as part of their training program (classroom instruction plus some laboratory and field instruction). In contrast, the experienced technicians had extensive practical rectal and ultrasound diagnosis training with more than 30,000 palpations and 2,500 ultrasonography evaluations each.

In this study, the overall fetal loss due to pregnancy determination was 1.55%. The risk of loss was 2.74 times greater in heifers less than 53 days pregnant compared with heifers pregnant 53 days or more (3.46 vs. 1.26%, $P < 0.01$). Method of pregnancy determination also affected fetal loss with rectal palpation increasing loss by 2.08 times compared with ultrasonography (2.68 vs. 1.29%, $P = 0.051$). Heifers evaluated by inexperienced technicians had a 2.07% fetal loss, whereas heifers evaluated by experienced technicians had only a 1.06% loss ($P < 0.01$). These researchers noted that “a high level of expertise by rectal palpation can take years to develop, and this does not lend itself to inexperienced technicians building confidence, especially with early diagnosis.” The results of this study illustrate that cattle producers and veterinarians should recognize the importance of stage of pregnancy, level of technician experience, and method of diagnosis used to reduce losses attributable to pregnancy diagnosis.

Nutritional Quality of Organic Foods

The demand for organically produced food is increasing partially because consumers perceive that these organic foods are healthier than conventionally produced foods. However, information based on a systematic review of studies evaluating the nutrition quality of organic foods is lacking. For this reason, United Kingdom researchers recently systematically searched published scientific literature

for studies that compared organic and conventional foods.[5] From a total of 52,471 articles, these researchers identified 162 studies (137 crops and 25 livestock products) of which only 55 studies were of satisfactory quality to include in an analysis. In an analysis of these satisfactory-quality studies, it was reported that conventionally produced crops had a significantly higher content of nitrogen, and organically produced crops had a significantly higher content of phosphorus and higher titratable acidity. No differences were detected for eight other crop nutrient categories that were analyzed. Analysis of the more limited database on livestock products found no evidence of a difference in nutrient content between organically and conventionally produced livestock products. These researchers noted that the small number of differences in nutrient content that exist between organically and conventionally produced foods are unlikely to be of public health relevance. They concluded that there is "no evidence to support the selection of organically produced foods over conventionally produced foods to increase the intake of specific nutrients or nutritionally relevant substances."

In another review, these same United Kingdom researchers systematically searched published scientific literature for studies that reported a comparison of health outcomes that resulted from consumption of or exposure to organic foods compared with conventionally produced foods.[6] From a total of 98,727 articles, these researchers identified only 12 relevant studies. It was noted that the results of the largest study "suggested an association of reported consumption of strictly organic dairy products with a reduced risk of eczema in infants, but the majority of the studies showed no evidence of differences in nutrition-related health outcomes that result from exposure to organic or conventionally produced foods." Due to the small number of studies, no quantitative meta-analysis of these studies was conducted. In both of these reviews, the authors stressed that additional well-designed research comparing organically and conventionally produced foods is needed.

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