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Meta-analysis on the effects of supplementing distiller's grains to beef cows during early lactation on reproductive efficiency and pre-weaning progeny growth

Three independent studies using Angus-cross beef cows ($n = 284$) at Purdue University assessed the effects of feeding dried distiller's grains with solubles (DDGS) as a primary dietary energy source during various phases of production on performance, reproduction, and progeny development. The purpose of this meta-analysis was to determine the effects of DDGS supplementation during early lactation on reproductive performance and progeny growth. In all studies, cows were stratified and allotted by BW and BCS to 1 of 2 isocaloric dietary treatments initiated either at 192 d of pregnancy or during calving. Diets were: 1) corn silage and haylage, or stockpiled forage (CON); or 2) low quality forage with DDGS (DG) supplementation. DG supplementation concluded at either timed-AI or at ultrasonography pregnancy diagnosis approximately 30 d after timed-AI. All cows were synchronized for estrus using the 5 d CO-Synch + CIDR protocol. BW and BCS were assessed throughout the supplementation periods. Categorical and continuous data were analyzed with the GLIMMIX and MIXED procedures of SAS, respectively. Meta-analysis demonstrated that days postpartum, BW, and BCS at estrous synchronization, as well as the proportion of male offspring born did not differ ($P \geq 0.53$) between treatments. However, the meta-analysis revealed that timed-AI pregnancy rates were greater (64.1 vs. 50.0%; $P = 0.02$), and overall breeding season pregnancy rates tended to be greater (91.5 vs. 84.9%; $P = 0.10$) in DG than CON treatments. Although DG progeny were heavier than CON at birth (36.2 ± 0.5 vs. 34.4 ± 0.5 kg; $P = 0.01$), DG progeny had greater pre-weaning ADG (0.99 ± 0.01 vs. 0.95 ± 0.01 kg; $P = 0.009$), weaning weights (236 ± 3.1 vs. $228 \pm$

3.0 kg; $P = 0.04$), and 205 d adjusted weaning weights (230 ± 2.5 vs. 222 ± 2.4 kg; $P = 0.009$) than CON progeny. In conclusion, using a meta-analysis to combine three independent studies demonstrated that utilization of DDGS as a primary dietary energy source during early lactation appears to result in improved fertility and accelerated progeny growth.

DDGS, developmental programming, fertility