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12 The Efficacy of a Natural Fungus (*Duddingtonia Flagrans*) in Controlling Gastrointestinal Nematodes in Lactating Meat

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Abstract: Small ruminant production in the US is significantly impacted by infections with gastrointestinal nematodes (GIN), especially the blood sucking GIN, *Haemonchus contortus*. Unfortunately, the indiscriminate use of available drug classes has led to multi-drug resistant GIN that pose significant challenges to parasite control on many farms. The objective of this study was to evaluate the effectiveness of a natural fungus, *Duddingtonia flagrans* (Bioworma, International Animal Health) in reducing GIN loads in lactating meat does. Thirty eight late gestating Spanish and Myotonic does were dewormed (day 0) approximately 2 weeks before to kidding with a combination of levamisole (Prohibit; 12 mg/kg BW) and moxidectin (Cydectin; 0.4 mg/kg BW) before the start of feeding Bioworma according to the manufacturer's recommendations. At this time, does were also allocated into two treatment groups (n = 19/group), split into 3 replications per treatment and placed on six pasture paddocks (n = 6/7 per paddock). Does were then fed either a corn and soybean meal supplement at 1.5% of their BW with (BIO) or without (CON) Bioworma daily until weaning and hay was offered throughout the study. Bioworma was added to the ration based on the manufacturer's recommended dose of 0.066 g/kg BW and on the BW of the heaviest doe. To evaluate the effect of Bioworma treatment, BW, body condition score (BCS), and FAMACHA scores were recorded every 2 weeks for 98 days. Blood and fecal samples were also collected for determination of packed cell volume (PCV) and fecal egg counts (FEC). Pooled (d 28) or pooled treatment group feces (d 42, 56, 70, 84 and 98) were also collected and cultured to determine GIN genera. If blood PCV decreased to below 19%, does were dewormed and removed from the study (n = 2 BIO; n = 2 CON). Data were analyzed using repeated measures in a mixed model, and FEC were log transformed before analysis. Following deworming (d 0), FEC were reduced by 97% by d4. There was a mixed population of GIN throughout the study (averaging 70.3%, 7.7%, and 2.0% for *H. contortus*, *Trichostrongylus* spp., and *Oesophagostomum* spp., respectively). Bioworma supplementation had no impact on BW, BCS, FAMACHA

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scores, nor PCV averaging 38.8 ± 0.5 kg, 2.3 ± 0.03 , 2.2 ± 0.02 , and $29.3 \pm 0.3\%$, respectively. There was also no effect of treatment on FEC (averaging $1,067 \pm 254$ and $1,107 \pm 144$ and 987 ± 282 and 847 ± 163 eggs per gram for BIO and CON does on days 0 and 98, respectively. Bioworma supplementation in a highly susceptible group of lactating does, had no influence on GIN indicators. Additional research is needed to confirm the efficacy of *Duddingtonia flagrans* in controlling GIN and how best to incorporate in current on-farm parasite control strategies.

Keywords: Duddingtonia flagrans, goats, parasites