

## MEASUREMENT OF AVERMECTIN-RESISTANCE IN TRICHOSTRONGYLE NEMATODES FROM A SOUTH DAKOTA SHEEP HERD

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### ABSTRACT

*Haemonchus contortus* is the most damaging species of trichostrongyles in sheep, though other species are also commonly present. Anthelmintic treatments are frequently used by producers in attempts to limit these losses. Because of the common use of the benzimidazole and avermectin anthelmintics, drug resistance is becoming a problem, particularly with *H. contortus* in sheep. Though suspected based upon clinical indications, anthelmintic resistance has not been evaluated in South Dakota sheep. The purpose of this project was to measure resistance to doramectin in a sheep herd from eastern South Dakota known to be infected with *H. contortus*. Because this study documented doramectin-resistance in this flock, the doramectin-resistant worms were also evaluated for their sensitivity to albendazole. Prior to doramectin treatment, trichostrongyle loads (based upon fecal egg output) and weight-gain from 27 naturally-infected lambs (i.e. kept on pasture for three months) were compared to those of 24 lambs not exposed to trichostrongyles (i.e. kept under feedlot conditions). Fecal egg output was measured with the Wisconsin Sugar Floatation technique. Average daily gain (ADG) in the feedlot lambs was 0.70 lb/day, with an average fecal egg count (FEC) of 11 eggs per gram (EPG). In contrast, ADG for the pastured lambs was 0.56 lb/day and the FEC was 4,228 EPG. Fifteen days following doramectin (0.053cc/kg Dectomax<sup>®</sup>) treatment, FEC in the pastured lambs decreased to 1,349 EPG, representing a 68.5% decrease. Anthelmintic resistance is defined by reductions of less than 90%, indicating that the worms in this flock exhibited significant resistance to the avermectins. After doramectin-treatment, the group was treated with albendazole (0.111cc/kg Valbazen<sup>®</sup>) at twice the recommended dosage. This treatment decreased the FEC by 88%, suggesting lower levels of resistance to this class of compounds.