PSX-B-11 Classification Performance of Multinomial Logistic Regression for Identifying Resistance, Resilience, and Susceptibility to Gastrointestinal Nematode Infections in Sheep. Luara Freitas¹, Rodrigo Savegnago², Anderson A. Carvalho Alves³, Ricardo Costa³, Guilherme J. J. M. Rosa³, Claudia Paz⁴,
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Abstract: The objective was to investigate the feasibility of using easy-to-measure phenotypic traits to predict resistant, resilient and susceptible sheep to gastrointestinal nematodes via multinomial logistic regression (MLR). The database comprised 3,654 records on 1,250 Santa Ines sheep from six farms. The animals were classified into three responses to infection classes (resistant, resilient and susceptible) according to fecal egg count and packed cell volume. The MLR was used to predict such classes using the information of age, month of record, sex, Famacha degree, weight and body condition score as predictors, and a leave-one-farm-out cross-validation technique was used to assess prediction quality across farms. The MLR was able to predict with satisfactory performance the resistant and susceptible animals in two of the farms, with resistant precision equal to 79 and 77%, and susceptible recall equal to 68 and 83%, respectively. In addition, at least one of the classes was well predicted in four farms, with susceptible recall equal to 71 and 89% in two of these farms, and resistant precision equal to 86 and 100% in the other two farms. The model was not able to satisfactorily classify resilient class. The proposed approach could help attenuate the negative impacts related to infections caused by gastrointestinal nematodes, contributing to design deworming strategies that take into account the risk of an animal being contaminated, consequently reducing the costs with anthelmintic administration and laboratory analyses based on blood or fecal samples. The results suggest that the use of easily measurable traits may provide useful information for supporting management decisions on the farm level that could potentially contribute to reducing parasitic contamination and production costs. In addition, the animals identified as resistant can also be incorporated as selection candidates into breeding programs for genetic improvement of flocks. Supported by the São Paulo Research Foundation (FAPESP) grants #2020/03575-8, #2018/01540-2 and #2016/14522-7, SP, Brazil.

Keywords: gastrointestinal nematodes, resistance prediction, sheep

PSX-B-13 Effect of Nutragen Supplementation on Incidence of Bovine Respiratory Disease, Weight Gain and Culling Rate in Feedlot Receiving Cattle. Gustavo Sueldo¹, Brooke Humphrey², Elbio Bressan³, Timothy Buisker⁴, Agro Sin Frontera SA, ²Phibro Animal Health, ³Smart Data Science Solutions

Abstract: Bovine Respiratory Disease (BRD) is a major health issue in feedlot cattle negatively impacting growth performance and profitability. NutraGen (NG, Phibro Animal Health) is an immunomodulatory feed additive with demonstrated benefits in supporting the immune system in cattle during periods of stress. The aim of this study was to determine the effect of feeding NG on incidence of BRD during the receiving phase and the carryover performance during the full days on feed in a mixed population of feedlot cattle. Over 4 weeks, 5,125 head of mixed breeds and sex cattle from 4 regions in Argentina were weighed at arrival and assigned to treatment, CON (no NG, n=2,391) or NG (9 g/100 kg BW, n=2,734). Cattle were fed the treatments during the 30-d pre-conditioning phase only, and health and performance measurements recorded. Multivariate linear regression analysis was used to estimate the main effect of treatment. Cattle within treatment were further stratified by travel distance. After controlling for breed, sex, arrival body weight (BW), and pen size, NG cattle were 2.3% less likely to contract BRD (P< 0.01), 2.1% less likely to be discarded (P< 0.01), and gained 7.3 kg more BW than CON. NG had a greater impact on cattle that traveled longer distances. NG fed cattle traveling 630-880 km to the feedlot were 7.2% less likely to contract BRD (P< 0.01), 7.5% less likely to be discarded (P< 0.01) and gained 8.5 kg more BW compared with CON. NG fed cattle traveling over 880 km (n=1219) were 8.8% less likely to contract BRD (P=0.02), 8.7% less likely to be discarded (P< 0.01) and gained 17.5 kg more BW (P< 0.01) than CON cattle. These data support the use of NG supplementation during the pre-conditioning feedlot period to improve health and performance, especially for cattle transported over long distances.

Keywords: bovine respiratory disease, NutraGen, weight gain