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CHALLENGES AND PERSPECTIVES

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Theme 4 | Genetics, genomics, animal breeding and reproduction

Multivariate clustering analysis of evaluation to determine resistance to worms in Santa Ines sheep

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Infection by gastrointestinal nematodes is a disease causing great losses in sheep, due to impairing weight gain, reducing performance and even leading the animal to death. As an alternative to reduce these losses one has the selection of genetically resistant animals. Thereby, it was aimed evaluate the multivariate clustering analysis, to determine the parasitism resistance characteristic in Santa Ines sheep, using the faecal egg counts (FEC), hematocrit, the score of body condition score (BCS) and the score Famacha. The data were collected every 30 days from August 2012 to July 2015, of the Santa Ines sheep herd belonging to Embrapa Middle North. For the control of gastrointestinal nematode indices in the experimental period, closantel was used at the dose of 10 mg kg^{-1}, being the herd wormed when the FEC reached the average of 800. The classification of resistance was performed by cluster analysis using the nonhierarchical K-means method, Where it was stipulated the formation of three groups. After the grouping was performed analysis of variance and mean test, to verify the existence of differences between the groups studied. In each collection sheep were classified according to age and physiological stage into five categories. Crossbred in gestation (up to four months of gestation), crossbred in peripartum (last month of gestation and lactation period) crossbred dried (females after weaning and not pregnant), Young calves (up to one year old) and adult males The group that presented lower FEC, higher hematocrit, higher BCS and lower Famacha was classified as a group of resistant (50.7% of the herd). The group that presented results contrary to those found in the first group was classified as a sensitive group (13.4% of the herd). The third group was classified as intermediate, since it was verified in this group, responses similar to those observed in the sheep of the first and second groups, In characteristics associated with gastrointestinal nematode infection. Among the categories, pups with less than one year and matrices in peripartum presented the highest averages of FEC, showing to be the most sensitive categories. In the sensitive group the mean FEC was 3,525 in the peripartum crossbred group and 4,091 in the group of young offspring, in the resistant group the values presented were 1,279 and 933, respectively for the groups, showing that the resistant animals manifest the characteristic of resistance even in the physiological state of greater susceptibility. The multivariate cluster analysis using the FEC, hematocrit, BCS and Famacha allowed the classification of Santa Ines sheep in resistant, sensitive and intermediates for the infection of these animals by gastrointestinal helminths.

Keywords: Famacha, FEC, *Haemonchus contortus*, intermediate resistance, K-means