

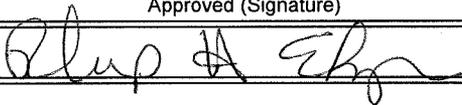
Animal

U.S. Department of Agriculture <b>Accomplishments Report AD-421</b> U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions			Date (Month, Day, Year)  03/22/2012
1. Accession  0217091	Agency Identification No.  2. CSREES 3. LA.B	5. Work Unit/Project No.  LAB93960	6. Status  Annual Report
7. Title  National Animal Genome Research Program			
12. Investigator Name(s) (Last Name and Initials)  Miller, J. E.; Cockett, N. E.			
20. Termination Date 09/30/2013		40. Period Covered (mo/da/year): 01/01/2011 TO 12/31/2011	
Outputs:  A station report was presented at the annual meeting of USDA NRSP-8, San Diego, CA. A Poster presentation at Plant and Animal Genome XVIII Conference, San Diego, CA and a Poster presentation at World Association for the Advancement of Veterinary Parasitology, Buenos Aires, Argentina. A study was conducted on the early immune response of "self-cure" in Gulf Coast Native and Suffolk sheep to Haemonchus contortus infection.			
Outcomes/Impacts:  Genetic marker association (QTL) was associated with nematode with (worm) parasite resistance by refining regions containing QTLs using interval mapping and high-density SNP array. Early immune response of Gulf Coast Native and Suffolk sheep was evaluated in response to Haemonchus contortus infection. A phenomenon called "self-cure" occurs when animals ingest a large number of infective larvae over a very short period of time which results in expulsion of the existing adult worms. This study was designed to elaborate the immune response during this expulsion and whether there is a difference in response between Native and Suffolk breeds. Fifty-six (28 Native and 28 Suffolk) age matched lambs were removed from pasture and reared in confinement under parasite-free conditions. After a 2-month acclimation period to allow worm burden to mature, the lambs were randomly allocated, based on FEC, into 4 treatment groups: 1) Native control (n=8), 2) Native challenge (N=20), 3) Suffolk control (n=8), 4) Suffolk challenge (n=20). Initial FEC results indicated expulsion occurred in both breeds at 3 days post challenge, and was significantly ( $p < 0.05$ ) greater in Native than Suffolk lambs. Peripheral blood lymphocyte level remained unchanged in Suffolk lambs and increased significantly ( $p < 0.05$ ) in Native lambs on days 3 and 7. Peripheral blood eosinophil levels increased in both breeds on days 3 and 7, but there was no difference ( $p > 0.05$ ) between breeds. There were significantly ( $p < 0.05$ ) more eosinophils in Native lamb abomasal mucosal tissue than Suffolk lambs at day 3, but at day 7, Suffolk levels had increased and there was no difference ( $p > 0.05$ ) between breeds. There were significantly ( $p < 0.05$ ) more mast cells in Native lamb abomasal mucosal tissue than Suffolk lambs at day 7. These results indicate that the local mucosal level response (eosinophils and mast cells) may play a role in the "self-cure" expulsion which occurred earlier in the Native breed.			
Publications:  Shakya, K.P., Miller, J.E., Lomax, L.G., Burnett D. D., 2011. Evaluation of immune response to artificial infections of Haemonchus contortus in Gulf Coast Native compared with Suffolk lambs. Vet. Parasitol. 181, 239-247.  Hadfield, T.S., Wu, C., Miller, J.E., Kijas, J., Cockett, N.E., 2011. The use of a high-density SNP array for identifying genetics regions controlling parasite resistance in sheep. Proc XIX Conf. Plant and Animal Genome: 232.  Hadfield, T.S., Wu, C., Miller, J.E., Kijas, J., Cockett, N.E., 2011. The use of a high-density SNP array for identifying genetics regions controlling parasite resistance in sheep. Proc. 23th International Conference World Association Advancement Veterinary Parasitology: 99.			
Participants:  J.E. Miller (PI), and N.E. Cockett, LSU AgCenter.			

Small ruminant researchers and producers

Project Modifications:

Nothing significant to report during this reporting period.

Approved (Signature)	Title	Date
		3-23-12