2005 Hair Sheep Workshop @ Virginia State University

Grazing Performance of Hair Sheep

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Forages are unique renewable resources that utilize sunlight, water, and soil nutrients to manufacture and store protein, energy, and other nutrients. Ruminant animals have been historically used to convert plant nutrients to nutrients available for human consumption. In the southern U.S. large ruminants, particularly tropically adapted beef cattle, predominate because of the poor adaptation of sheep to heat, humidity, and parasites. However, a significant amount of forage resources in the southern U.S. are not appropriate for cattle because of small land areas available for grazing as well as the lack of facilities to manage cattle on these small acreages.

In areas where cattle predominate, there exist opportunities for additional productivity by incorporation of small ruminants into sustainable grazing systems. In the Southern Great Plains, both warm-season and cool-season forages are available for grazing ruminant animals. The primary cool-season forage for stocker production in the Southern Great Plains is wheat pasture. Wheat forage is of high quality with crude protein content varying from 21 to 38% of the dry matter.

Hair sheep are a recent addition to ruminant animals available in the United States for utilization of forages. They are tolerant of the heat, humidity, and parasites in the Southern U.S. and have the potential to fill an important niche in meat animal production.

There is considerable interest in the potential of hair sheep for lamb production in the southern U. S., however, there is limited objective information on the growth of these breeds. There is a need to evaluate the performance of hair and other tropically adapted breeds in grazing production systems in comparison with conventional wool breeds and their crosses with hair breeds.

Figure 1

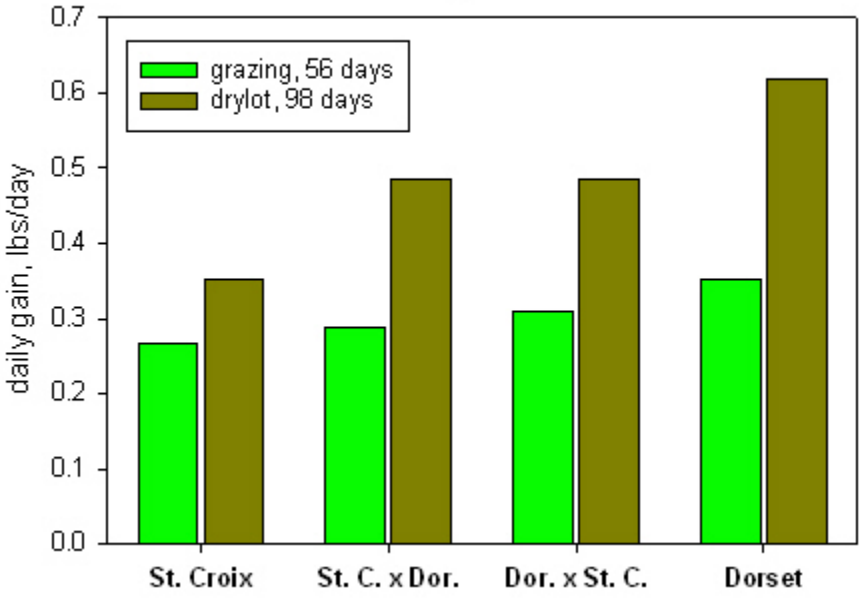
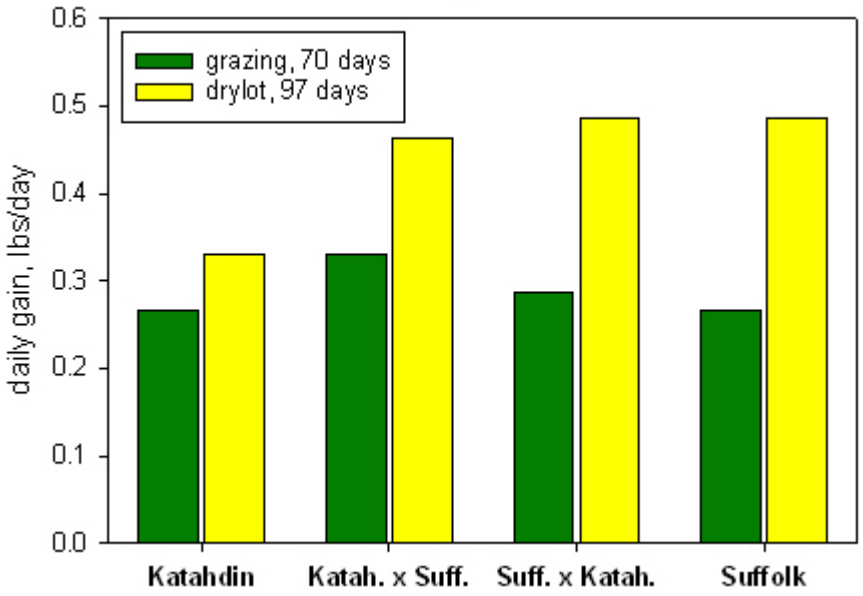


Figure 2



Consequently, this research (1) evaluated the performance of tropically-adapted breeds and their crosses with wool breeds as stockers and in drylot, and (2) determined the relationship of genetic effects observed in crossbreeding systems (hybrid vigor and breed effects) to postweaning management.

Purebred and crossbred lambs from three crossbreeding plans (140 Dorset-St. Croix, 80 Rambouillet-Gulf Coast, 78 Katahdin-Suffolk) and 100 lambs from a terminal-cross mating plan (Suffolk rams mated to Dorset, St. Croix, and reciprocal-cross ewes) were used to evaluate postweaning grazing performance of traditional meat breeds and tropically-adapted breeds of sheep. Tropically adapted breeds generally had lower postweaning performance than wool breeds in both grazing and drylot management **(Figure 1)**. Tropically adapted x wool breed lambs were generally intermediate between the parental purebreds. Exceptions occurred in the summer grazing trial with the Katahdin x Suffolk diallel where purebred Katahdins and Suffolks were comparable in gain on bermudagrass and there was an indication of hybrid vigor for drylot average daily gain and possibly grazing average daily gain **(Figure 2)**.

These exceptions may relate to expression of heat tolerance in the Katahdin and Katahdin crossbred lambs. Further, even with the low performance of St. Croix on wheat pasture in the winter and spring, the purebred St. Croix gained 75% of their contemporaries on grain diets, whereas the gains of purebred Dorsets on wheat pasture were only 57% of contemporaries on feed. This trend was not noted in the Gulf Coast in the winter, although Gulf Coast crosses performed comparable to purebred Rambouillet on wheat pasture. Thus, hair sheep and crosses not only may provide advantages in summer grazing, but may also be best suited for forage gains where costs of gain are lower. If the growth potential of hair sheep were to be improved genetically and other attributes retained, even greater advantage might be possible. Certainly, there is a need to evaluate the Gulf Coast under summer grazing conditions where their heat tolerance might be manifest.

In more general terms, sheep seemed to perform poorly on forages compared to performance on mixed diets in drylot. Results from this location of a three year trial comparing wheat pasture gain to feedlot with different breed groups of cattle showed cattle gains on wheat pasture averaged 52% of gains in the feedlot compared to an average of 64% for sheep in the experiments reported here. While the forage gains as a percentage of gains in drylot would probably be lower for sheep with higher energy density rations, it is reasonable to conclude that the relative performance of sheep on forages is at least as good as cattle. Moreover, the average weight of the cattle on wheat pasture was 688 lbs. with an average daily gain of 1.57 lbs. By comparison, the average weight of sheep on wheat pasture in these trials was 82.5 lbs. Therefore, 688 lbs. of lamb grazing forages (8.33 lambs) yielded an average daily gain of 2.58 lbs. The comparison is not definitive because of differences in the years in which the experiments were conducted,however it does raise the question of relative efficiencies of forage utilization of different ruminant genera and species.

Conclusion

These results indicate a consistent advantage in sire breed effects for wool breeds over tropically-adapted breeds in drylot management systems, emphasizing the opportunities for genetic improvement in the tropically-adapted breeds. The results also suggest that there is little expression of genetic effects in sheep managed on forages, although sire breed effects for heat adaptation in tropically-adapted breeds may compensate for the superior sire breed effects for growth in the wool breeds under summer grazing. However, it is clearly evident from these results that further work is warranted in the evaluation of efficiency of forage utilization by tropically adapted sheep breeds.