

Preference of goats for cool-season annual clovers in the southern United States

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Introduction In the southern U.S.A., annual clovers provide high-quality winter and spring grazing for beef cattle and sheep. New Zealand data on white clover (*Trifolium repens* L.) suggests that goats do not prefer this plant as much as sheep (Clark *et al.*, 1982) but little data are available on willingness of goats to consume different clover types in the USA.

Materials and methods Two cafeteria-style grazing experiments were completed in Fort Valley, GA., USA. For both experiments, 10 replicates of 6 clover cultivars (Experiment 1: Dixie, AU Robin and AU Sunrise crimson clover, Yuchi arrowleaf, Segrest ball and R18 rose clover; Experiment 2: 'BYMV' and Yuchi arrowleaf, Yuchi arrowleaf coated with Apron fungicide, Dixie and AU Sunrise crimson clovers, plus Americus hairy vetch) were planted into 3.05 m x 3.05 m plots on 10 November, 1999 and 11 November, 2000, respectively. After establishment, each block of 6 plots was individually fenced and grazed for two 48-h periods in spring of 2000 and 2001 using 32 Spanish does (3-4 yr old, 4/block) and 40 yearling Spanish-Boer male kids (5/block), respectively. Before each period, does or kids were allowed to graze 2 blocks of plots as a single group to familiarize them with the forages. After the initial grazing, plots were mowed and then allowed to regrow. In Experiment 1, a 0.76 m x 3.05 m strip of forage was cut out of each plot pre- and post-grazing, weighed fresh and subsampled for determination of total forage DM consumed from each plot. For Experiment 2, all plots were visually evaluated to determine extent of pasture use after 4 h, 24 h, and 48 h of grazing. Two observers assigned each plot an ocular preference score (Shewmaker *et al.*, 1997) from 1 to 10 (1=no grazing; 2=<2%; 3=2-5%; 4=5-10%, 5=10-25%; 6=25-40%; 7=40-60%; 8=60-75%; 9=75-90%; 10=completely grazed). Preference data for Experiment 1 (DM consumed) were analyzed as a randomized block design, and for Experiment 2 (ocular preference score after 4, 24, and 48 h of grazing) as a randomized block design with repeated measures analysis.

Results There was no effect of cutting date on DM consumed for the different clover cultivars, so data from the two grazing periods in Experiment 1 were pooled. Total DM consumed by the goats averaged 372, 368, 322, 218, 145, and 100 g for Au Robin crimson, Dixie crimson, AU Sunrise crimson, arrowleaf, rose, and ball clovers, respectively. Consumption of Dixie and AU Robin crimson clover was significantly higher than for ball ($P < 0.05$) or rose ($P < 0.07$) clover. In the initial grazing period in Experiment 2, yearling kids also preferred ($P < 0.05$) the crimson clover cultivars over arrowleaf clovers and hairy vetch, with rose clover least preferred. Differences were most pronounced after 24 h of grazing. With no crimson clover available during the second grazing period, the kids preferred Yuchi arrowleaf clover without fungicide coating significantly ($P < 0.05$) more than the other forages, with rose clover preferred significantly least ($P < 0.05$). The coefficient of variation (CV) for the ocular preference scoring technique used in Experiment 2 averaged 34%, while the CV for cutting before and after grazing to establish preference (Experiment 1) was 49%.

Conclusions Crimson clover was preferred by goats over other clover types and may be suitable as high-quality winter-spring pasture for goat production in the south-eastern USA. Although less preferred than crimson clover, arrowleaf clover has a longer grazing season in this region and may also have potential for goat grazing. Further research is needed with these species to determine performance of goats grazing annual clover as a component of the diet. There was higher repeatability and time savings for the ocular scoring technique compared with cutting before and after grazing and the ocular preference scoring technique appears to be an effective means of establishing grazing preference of goats.

References

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