

ASSESSING THE EFFECT OF CATTLE GRAZING ALONE AND WITH GOATS ON BOTANICAL COMPOSITION OF PASTURES ESTABLISHED ON RECLAIMED COAL MINED LANDS¹

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Abstract: Reclaimed mined-lands have been successfully used for forage production in the Appalachian region. An experiment was initiated in spring 2006 at the Powell River Project near Wise, VA to determine the effects of mixed grazing goats with cattle on forage biomass, vegetation utilization and a shift in botanical composition. The three treatments were an un-grazed control, cattle grazing only, and mixed grazing goats with cattle. Treatments were arranged in a randomized complete block design with 3 replications of each grazing treatments and 2 of the untreated control. The treatment with only cattle had three crossbred steers while the mixed grazing treatment utilized three crossbred steers and 15 young intact male goats. Forage biomass yield (DM) was determined in spring, summer and fall by clipping 8-0.25m² square quadrants per grazing treatment and 4-0.25m² in the control treatment to a 2.5 cm height. Autumn olive (*Elaeagnus umbellata* Thunb.) measurements included branch length, shrub height, and shrub survival. To evaluate shrub branch length and height, eight shrubs were randomly identified and tagged with a letter in each treatment replication while four shrubs were used in the control treatment. Total forage biomass yield was greater for the control and cattle alone treatments. The grass component of the grazed pastures increased, weed content declined while the legume content was maintained at a low level. In our experiment, autumn olive was severely impacted by goat browsing. Shrub survival was lower in mixed grazing (61%) by the end of the experiment compared to over 90% for the control and cattle grazing treatments. Mixed grazing goats with cattle is a viable practice on reclaimed coal-mined lands. Mixed grazing resulted in greater utilization of pasture resources mainly due to the different grazing habits of goats and cattle offering opportunities for complementary pasture use.

Additional Key Words: Invasive species, browse control, autumn olive, mix-grazing

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