



Weed Management Using Goats: Effects on Water Infiltration Rate

Sandy Tartowski and Darren James; USDA-ARS; Contact Author Email: startow@nmsu.edu

Goats are used increasingly for weed control, fire fuel reduction and ecological restoration. The high stocking rates typical of these applications have been reported to decrease the rate of water infiltration in goat pastures. The hypothesis that annual goat browsing for weed control decreases infiltration rate was tested in the Rio Grande River floodplain near Socorro, New Mexico (mean annual rainfall 200.9 ± 60.82 mm). Soils were coarse-loamy, mixed (calcareous), thermic Typic Torrfluvents with sandy loam surface texture. One plot (0.17-1.6 ha) from each of six pairs of plots was browsed at the end of the summer growing seasons. The 400-630 Boer/Spanish meat goats browsed the plots for 1-3 days at a mean stocking rate of 3.2 ± 2.4 goat h m⁻². Vegetation cover was measured using line point-intercept transects. Water infiltration rate was measured using a standardized saturated single-ring infiltration method. After four years of annual goat browsing and regrowth of vegetation, the rate of water infiltration was faster ($P=0.036$) in browsed areas (mean 1024 mm hr⁻¹) than in unbrowsed areas (mean 896 mm hr⁻¹). The increased cover of grasses and forbs, plus decreased cover of shrubs, increased mean infiltration rate in the browsed plots. Infiltration rate increased in unvegetated areas, probably due to disruption of the soil crust. The effects of goats on infiltration rate are probably influenced by climate, soil and vegetation characteristics, as well as season and stocking rate. The possible effects of goats on infiltration should be considered when designing weed management programs.

2009. 62nd Society for Range Management Annual Meeting. Paper No. 75-7.