Solving Vegetation Management with Goats – An Eastern Perspective

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Much of hill-land pasture in the Appalachian region of North Carolina is infested by brushy vegetation including multiflora rose (Rosa multiflora Thunb.). Multiflora rose was imported in 1886 from Japan by the USDA for use in erosion control and as a rootstock for some varieties of ornamental roses. According to a 1977 survey by the North Carolina Department of Agriculture, multiflora rose had infested 58,514 ha of pastureland and an additional 18,480 ha of non-pastureland in 53 mountain and western counties. Since then, invasion of productive land by multiflora rose has increased, and in cases of heavy infestation, access to pasture and recreational areas has been severely restricted. Multiflora rose seeds are widely dispersed by birds, rodents and water, and may remain viable in the soil for up to 20 years. Controlling multiflora rose usually involves mechanical cutting and the use of herbicides. Nevertheless, increased restrictions for herbicide use and elevated costs of other control methods requires an effective integrated management program for years after controlling the original plants.

Field studies were initiated in an abandoned, overgrown orchard (8.4 ha) left untouched for 15 years. In study 1, brush goats were grazed alone (30 mature does/ha) or with cattle (17 mature does/ha with 2 to 3 growing steers/ha) for 4 grazing seasons on 3 replicated pastures. Grazing occurred for 45 to 60 days from May to July and for another 24 to 35 days in September and October. The grazing/browsing periods were dependent upon having at least 5 to 10 cm of available forage to graze within each paddock. At the time study 2 started, the orchard had not been grazed for two years and multiflora rose and other brush had increased. Animals were rotationally grazed on 3 replicated pastures throughout the grazing season over a 4-year period, at a stocking rate of either 1.7 steers/ha or 1.7 steers/ha + 3.4 goats/ha. Managed defoliation resulted in a substantial increase in herbaceous vegetative cover and grass species in plots grazed by livestock. Inclusion of goats practically eliminated multiflora rose bushes whereas cattle provided only modest control. Conversely, black locust (Robinia pseudoacacia) trees, brambles (Rubus spp.), poison ivy (Toxicodendron radicans) and honeysuckle (Locifera japonica) vines were practically eliminated in all grazed pastures. Integrating goats in cattle grazing systems in the Appalachian region is a useful and environmentally-friendly tool to control invading woody species and forbs, and shifting botanical composition toward desirable forage species while increasing profit per unit of land through the production of an additional saleable commodity. The inclusion of one to two goats per head of beef cattle in mountain grazing systems is now recommended to interested farmers by the NC Cooperative Extension Service.

Over 500,000 ha of forest in the Southeastern region of the country is invaded by kudzu (Pueraria montana). Kudzu, a native vine from Japan and China, was introduced by the USDA in early 1900s for erosion control. Kudzu is one of the most aggressive legume vine growing in the Southeastern United States. Herbicides have been used to control kudzu, but these chemicals are expensive and repeated applications are usually required. In addition, environmental concerns associated with the repeated use of chemicals cannot be over emphasized. A two-year field study conducted on Centennial Campus at NCSU demonstrated that repeated defoliation (avg 5 times per growing season) at a stocking rate of 100 goats/ha resulted in the elimination of kudzu after only two years. These results also indicate that goats offer an environmentally-benign and viable alternative to achieve management and elimination of this unwanted plant while providing additional income to goat producers.

Because of their opportunistic and versatile grazing/browsing behavior, the foraging habits of goats have important environmental implications in many other situations. For instance, browsing goats in hardwood forests and other timber land areas can potentially provide buffer zones around rural communities and newly-established development projects as viable protection against forest fires during periods of summer drought.