

Reprinted with permission from: 1987 Leafy Spurge Annual Meeting. Fargo, North Dakota. July 8-9, 1987. pp. 18-24.

Published by: Great Plains Agricultural Council: Leafy Spurge Symposium.

Electronic goat herding for leafy spurge control

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Introduction

Goats eat leafy spurge. In fact, they have a strong preference for leafy spurge. In 1981, Charles Egan, County Agent, and Wayne Pearson, Weed District Supervisor, in Columbus, Montana, discovered that goats eat a great deal of leafy spurge. They have conducted a program for the past two years where goats are used for leafy spurge control on fishing accesses in their county. This is the only use of goats for spurge control right now, and the concept is strictly a curiosity. It is not a viable solution for leafy spurge control.

There are two basic problems with goats. First, they need herders at all times, since they tend to wander. Second, there is no major market for goats at the present time. These two problems prevent goats from being used for leafy spurge control on a large scale.

The purpose of our study was to test a commercial dog containment system for goat control in an attempt to eliminate the need for a herder. The Invisible Fence Company[®] from Pennsylvania, manufactures a product which prevents dogs from leaving private property. The system consists of a transmitter and a transducer which sends a weak electronic field through 14 gauge wire which encircles the containment area. The dog wears a leather collar which contains a small plastic case containing a radio receiver. When the dog approaches the wire at a distance of ten to fifteen feet the plastic case emits a beeping tone. The animal has two seconds to back out of the electronic field or receive a shock. A system with six collars was purchased from the Invisible Fence Company and is the focus of this research project.

Training the goats

In order to train the goats, a fenced area, 100 feet by 100 feet was erected. A single strand of 14 gauge wire was placed on the fence. Collars were placed on six goats in the enclosed area. The system, which is powered by a twelve-volt battery, was turned on and within a few minutes, the goats approached the fence and received shocks. Within ap-

proximately twenty minutes, the goats huddled in the middle of the enclosed area to avoid shocking. The goats were fully trained to the system in approximately half a day. The fence was removed; however, the goats did not leave the containment area.

Experiment one

The first experiment conducted took place in adjoining pastures (Figure 1). Pasture I had approximately 60% brush cover with the remainder of the area heavily infested with leafy spurge. Pasture II was approximately 80% infested with leafy spurge. Both pastures were 100 × 45 feet and contained two collared. A permanent 50-foot transect was placed in the middle of each pasture with corresponding transects established outside of each pasture for comparison. The height of leafy spurge was measured along the transects daily for eight days.

After three days the goats began to utilize leafy spurge heavily in both pastures (Figure 2). There was more utilization of leafy spurge in pasture II, which contained little or no brush. Other data, not presented here, indicate that goats utilized a large number of plant species in addition to leafy spurge in pasture I. They had a strong preference for chokecherries, houndstongue, and wild rose.

Experiment two

The purpose of the second experiment was to measure goat containment in a natural setting. A site was located in Whitehall, Montana and was one square acre. Eleven goats, six with collars and five without, were placed in the Invisible Fence containment area. Measurements taken included the presence of the animals in or out of the experimental area six different times each day. In addition, the number of leafy spurge stems per square meter in twenty-five 1 m² areas were counted and the number of flowering stems was recorded. One square meter clips were taken every fourth day to determine the percent grass, forb, brush, and leafy spurge component of the experimental area in order to determine plant preference and total utilization by goats.

Preliminary results indicate the containment system works perfectly. No collared goats have left the experimental area in eight days of testing. The uncollared goats leave occasionally but never wander more than 50 to 100 feet from the containment area. Third, leafy spurge utilization increased dramatically after about the third day when brush species were less available. It appears that goats have a strong preference for several species of brush and leafy spurge.

Summary

The results of the two studies conducted to date indicate the Invisible Fence system works well for goat containment. The results also indicate that goats have a strong prefer-

ence for leafy spurge and with further testing on the containment system goats could represent a viable solution for leafy spurge in certain habitats.

There have been problems encountered in this research. Goats are extremely individualistic. One goat was not trainable to the collar system, and was eliminated from the collared portion of the herd so some goats cannot be trained. Out of seven goats tested, six became trained. One of the eleven goats, an uncollared goat, tends to wander off alone so some culling will be needed in a herd of leafy spurge grazers.

It appears that the dog system is not powerful enough. It is designed for backyard containment of dogs. At present, we have approximately 1000 feet of wire surrounding the containment area with a transmitting zone from the wire electric field of approximately 10 feet. We would prefer to have an electronic field of at least 20 to 25 feet to discourage the animals from enduring shocks for only 20 feet if they were to escape the system.

Presently the Invisible Fence system costs about \$600 for one collar, a transmitter, a transducer, and wire. The price could come down dramatically if a market for grazing animals is developed. We also verified that goats eat everything, not just leafy spurge. They eat a great deal of brush so if an infested area is heavily infested with brush as well as leafy spurge, there will be significant utilization. If the brush is desirable and grazing is not a goal, forget goats.

In summary, the research will terminate this summer with a number of goat barbecues throughout the Gallatin Valley of Montana to test consumer reaction in an attempt to develop a market for goat meat.

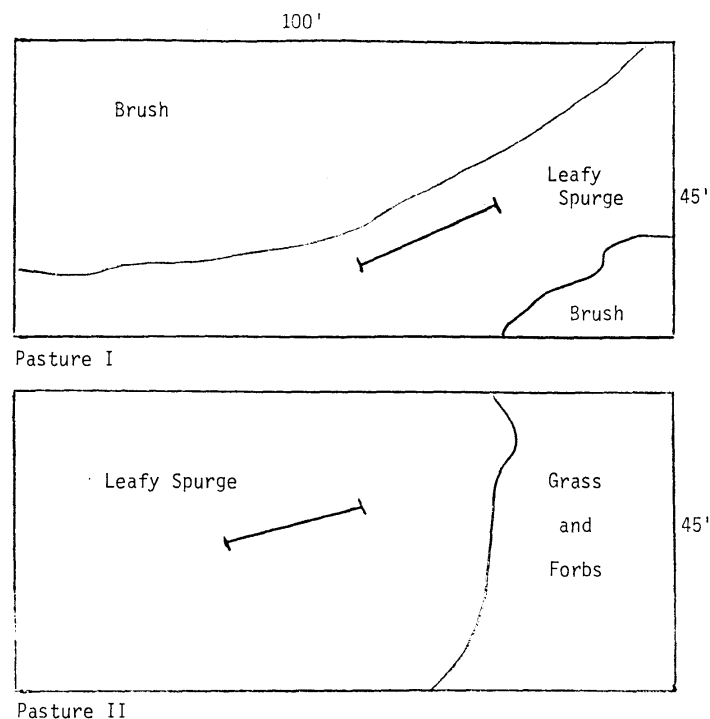


Figure 1. The vegetation cover of two pastures grazed by goats for eight days. Each pasture contained one permanent 50-foot long transect in leafy spurge.

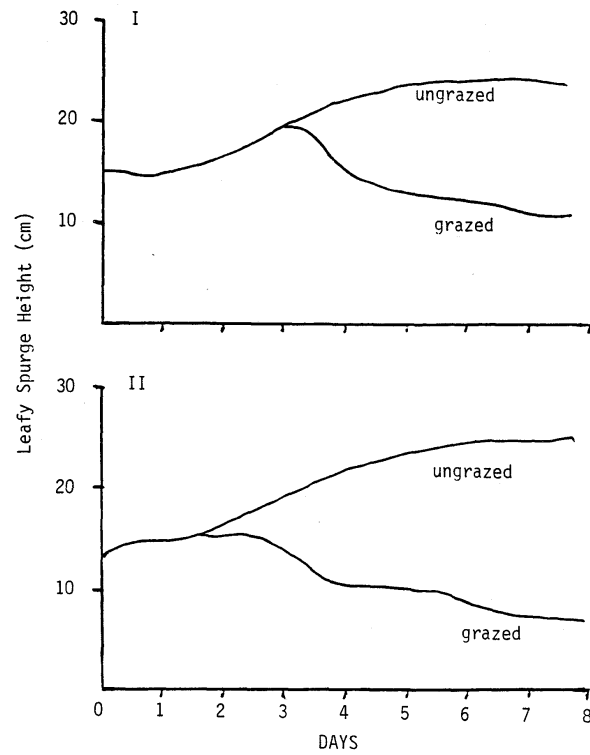


Figure 2. The reduction in leafy spurge height in eight days of grazing by goats in a pasture with 60% brush cover (I) and 5%, brush cover (II).