Demarcation of Small Plots with Spring-Loaded Wires

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Highlight

Wires have some advantages over frames for delineating plot boundaries.

For repeated measurements of herbage on ungrazed study areas, boundaries of small, contiguous plots can conveniently be marked with wires held tight by springs. In a trial on Louisiana range this method proved superior to delineating plots with frames.

Each study area, 15.5 × 9.3 ft, was divided into 15 contiguous plots by spring-loaded, 18-gage, galvanized wires spaced 3.1 ft apart on both axes (Fig. 1). Springs were the kind commonly used on baby swings and doorstop chains: compression type, 6 × ⅞ inches, galvanized steel, with S-hook attached.

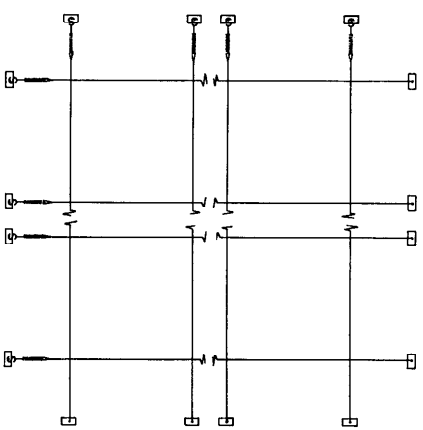

FIG. 1. Contiguous 3.1- × 3.1-ft plots demarked by tension wires.

FIG. 2. Spring installed and adjusted to about 25-lb tension.

Ends of wires were anchored by 2- × 4-inch wooden stakes 1 ft long, driven to within ¾ inch of ground surface. To minimize interference with harvesting, stakes were put 2 ft outside the plots. A 20 d nail driven into the top of each stake provided a fastening point for the wire. One end of each wire was secured to the nail in a stake on one side of the study area. The other end was passed through the loop of a spring held by an S-hook to a nail in the stake on the opposite side of the area. The wire was tightened until the spring compressed to about half its length (Fig. 2). Securely wrapping the wire completed the installation. Tension on the wire was about 25 lb but could be increased to 45 or 50 lb by fully compressing the spring.

The six installations tested have proven highly satisfactory. Since old plant material was removed and plots were established before growth began, little herbage crossed under the wires. This, and the small diameter of the wire, made it easy to separate vegetation and to judge which plants grew on each plot. Consequently, time spent preparing to clip was far less than with frames. Loss of delineation during harvest was no problem, as it is when a frame is inadvertently moved, for tension automatically realigned the wires.

The technique is relatively costly where plots per location are few. A single plot, for example, requires four springs and eight stakes. For contiguous plots, material cost per unit diminishes as the number increases; blocks having an equal number of plots on each axis are most efficient. Expense can probably be reduced by substituting expansion springs for the compression type. Though subject to damage by overextension, these should work satisfactorily if installed with reasonable care.

Maximum length of wire for effectiveness depends largely on relief of the sample area. Surfaces of study sites were almost flat; hence, elevation and tension held wires clear of the ground. In trials with wires of various lengths, 25 to 30 lb of tension and ¾-inch elevation proved adequate up to 30 ft. With tension increased to maximum, 55-ft wire sagged ½ inch. Since soil surface varied more than ¼ inch, greater elevation or tension was needed to clear wires exceeding 50 ft.

Although the technique has been employed mainly on protected sites, one set of plots was grazed briefly by cattle without damage to wire installations. Thus, application on grazed range may prove feasible, provided wires are uniformly near the ground—probably less than 1 inch.