A POWER CLIPPER FOR MOWING EXPERIMENTAL PLOTS

HAND clipping of vegetation, especially of short grasses, is a slow and difficult procedure. A power clipper was, therefore, adapted for harvesting experimental plots used in moisture conservation studies in the eastern Wyoming—Colorado area.

The mixed vegetation of the area usually consists of about 75% blue grama (*Bouteloua gracilis*) and varying percentages of bluestem wheatgrass (*Agropyron smithii*), needle grass (*Stipa spp.*), Sandberg bluegrass (*Poa secunda*), June grass (*Koeleria cristata*), sedges, and forbs. Blue grama here seldom grows taller than 2½ inches, but in seasons of abundant or well-distributed rainfall, some of the other species may reach a height of 30 inches or more.

The clipper which was selected has a sickle and bar like those on a farm mower, but smaller and mounted in front of the tractor. It will clip all vegetation extending above the level of the sickle, no matter what the height. The bar is 42 inches long; however, a light sheet metal guard placed over it reduces width of swath to 15 inches without at all interfering with operation of the machine.

A reel mounted over this open portion presses vegetation into the cutting mechanism and then sweeps it back over the bar into a grass catcher especially built for the mower. Cross pieces of the reel are set with horsehair bristles, which touch the cutter bar in passing over it and gather even short tips of leaves and stems as they are clipped. Reel, sickle, and traction wheels are all driven by the same motor. The machine as adapted is shown in Fig. 1.

Attachment of the cutter bar and reel assembly by means of a single, flexible joint permits this assembly to remain parallel to the ground surface (to float) even if either of the traction wheels rises or falls. At the same time this method of attaching the unit enables the operator to raise the entire assembly by tilting up the forward part of the tractor.

Height of stubble left by the machine is 1 inch on even ground. While clipping at this height is adequate when dealing with taller species of grasses, such as *Stipa* and *Agropyron smithii*, it often leaves a large proportion of the forage produced by short grasses, principally *Bouteloua gracilis* and *Buchloe dactyloides*.

The harvesting of forage on the native range in connection with moisture conservation studies is solely a sensitive measure of the moisture conserved on the different plots during the year. To do this satisfactorily one must clip a major portion of the major species. The short grasses mentioned previously are the major species, while midgrasses occur in mixture in varying quantities. The short grasses vary in height from 1½ to 2½ inches, depending on the year. Therefore, for a study of this nature, adjustments on the mower to cut less than 1 inch above ground would be desirable. Studies designed to simulate grazing might not require such close clipping. Cutting height of the clipper can be somewhat reduced by adjusting tilt of the cutter bar and also by grinding down the sickle guards to reduce their thickness.

Some 300 experimental plots, each about 50 feet long, were har-