CROP RESIDUES FOR PROTECTING ROW-CROP LAND AGAINST RUNOFF AND EROSION

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This paper is a report on the results of experiments designed to keep row-crop land continuously protected by the use of crop residues against excessive runoff and erosion. The methods for accomplishing this have begun with the preparation of the seedbed and have continued through the planting and cultivating season, and until the next crop was planted.

PREPARATION OF THE SEEDBED

The first step in the process has been the preparation of the seedbed. Row crops in these tests have followed a sod, small grain, or another row crop. Where the row crop has followed small grain, it has usually been necessary to give one subtilage treatment in the fall to kill weeds (Fig. 1). These weeds have then served as an effective mulch to catch snow and, together with the small grain residues, have reduced runoff and erosion. In the spring, when the weeds started, another subtilage has been given to loosen the ground and cut weeds or volunteer about 3 inches below the surface. This prevented the plants from extracting water from the subsoil. If the weather was dry, the weeds usually died within a few days. If the soil was moist or rain followed soon after the subtilage, the weeds lived on even though they made little growth. During this interval of two to three weeks after the roots were severed, the weeds were not able to extract water from the subsoil until a new root system could be established.

Shortly before planting time, the land was given another subtilage about as deep as the land is ordinarily plowed. This was followed by packing with a treader, such as shown in Fig. 2. If the field had become weedy in the fall, a treader (Fig. 3) has sometimes been used in the spring ahead of the subtilage.

Where one row crop followed another, such as corn or sorghum, the first step was to go over the field with a stalk cutter, as shown in Fig. 4. This was followed by the first subtilage (Fig. 5). If the stalks were cut well with the stalk cutter, the...