PRELIMINARY RESULTS WITH MULCHES APPLIED TO ERODED WASTELAND SOWN TO LESPEDEZA

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THE utilization of steeply sloping, severely eroded, and gullied "clay-gall" land, abandoned for crop land purposes and regarded as practically worthless for agriculture, is a problem of importance in the hilly sections of the Southeast. This paper reports the results of mulching tests on land of this character.

Organic matter in the form of crop residue material retained on the soil surface for mulching purposes is generally known to be capable of increasing the amount of water entering the soil, as reported by Viemeyer (7). Mulch action is usually credited with interception and dispersal of raindrops and the prevention of pore-clogging and surface compaction or crusting of surface soil.

Bennett (1) reports that surface compaction did not occur under straw mulch. Duley (2) and Duley and Russel (3) have found very markedly increased soil moisture associated with straw mulching, due to increased infiltration and reduced evaporation, and have developed a new duck-foot cultivator for mulch-retaining subsurface tillage for Nebraska conditions.

Peele reports that when green lespedeza hay and green crimson clover hay were applied as a surface mulch to 7% sloping Cecil sandy loam plots at the rate of 4 tons per acre (oven-dry basis), both run-off and erosion were reduced to low values, much lower than when the same hays were incorporated with the soil. Also, crimson clover mulch caused a much larger increase in soil aggregation than when crimson clover hay was incorporated in the soil. In either case, the numbers of fungi and bacteria were increased, and the beneficial effects upon soil aggregation were ascribed to favorable moisture and temperature effects acting as stimuli to microbial activity.

Peele and Moser (5) report lower run-off and erosion losses from Kobe lespedeza plots during late fall and winter months than from cotton plots. The beneficial effects of the lespedeza were attributed largely to the mulch action of the lespedeza residues.

Pieters (6) advises that Lespedeza sericea should be mulched after seeding on eroded knolls, gullies, and other places where good seedbed preparation is not possible. Franklin (4) names five benefits of mulching, viz., moisture conservation, seed retention, soil protection, soil improvement, and seedling protection.

Experience at the Southern Piedmont Experiment Station has been that crops generally produce higher yields when mulch is applied or when a mulch is grown in place in good self-mulching or stubble-mulching practices, as in the small grain-lespedeza repeating sequences.

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3 Figures in parenthesis refer to "Literature Cited", p. 694.
4 Personal communication.