Investigations of strip cropping on some of the residual soils of southeastern Ohio indicate that variations in the effectiveness of this erosion control practice are due in part to differences in physical properties of the soil as well as to cultural practices. Variations in structure on different soil types and under different degrees of erosion on the same soil type were readily observed in the field. Although the effect of structure upon erosion has been thoroughly reviewed by Baver (1, 2, 3), Lutz (9), Yoder (10), and many others, the soils of southeastern Ohio derived from sandstone, shale and limestone possess a type of structure which has not been previously investigated.

Sheet erosion of these soils exposes a compact subsoil, very blocky in structure, which disintegrates into prismatic aggregates or fragments. Most of the cultivated soils in this area contain varying amounts of these prismatic aggregates in their surface. Studies have been made during the past season of the physical properties of the various types of soil aggregates present in the residual soils of this area to determine the relationship between the type of structure and the erosion process.

**Procedure**

From April to October, large clod samples of the surface three to four inches of soil were collected from permanently located sites in cultivated strips, meadows and pastures on Muskingum silt loam of sandstone and shale origin, Westmoreland silt loam of sandstone, shale and limestone origin, and Belmont silty clay loam derived from heavy shale, limestone, and sandstone. These permanent sample sites on adjacent cultivated and meadow strips were located in the center third of the strip between the upper and lower edges. In order to check the value of the permanent site sample, a few random samples were collected from other parts of the field twice during the period of investigation. The results for one of these sample sites, presented in Table 1, show that the degree of uniformity of samples can be expected. Similar uniformity was obtained on all other sample sites.

Mechanical analyses on the samples were made by the Bouyoucos hydrometer method (6). Aggregate and aggregate stability analyses were made by a modification of the Bouyoucos method. Details of this modification are in the process of publication (8). Briefly, the method consists of determining the aggregate distribution curve on undispersed soils with the Bouyoucos hydrometer and on subsequent aliquots, determining the amount of energy required to obtain complete dispersion of the aggregates.

**Results**

**Changes in Texture**

Although Diseker and Yoder (7) indicate that a Cecil clay eroded layer by layer in the aggregate state, the data in Table 1 indicate that Muskingum silt loam, with crumb structure and only slight previous erosion appears to erode as a textural separate. At least, the crumb structure is sufficiently unstable to be dispersed either into textural separates or into aggregates of silt and clay so small that they will stay in suspension in the runoff with resultant sorting and increase in the sand content of both the colluvium and the original surface soil. The sand content of the surface three inches of soil in the parent strip has increased by more than 40 per cent during the season, whereas the sand content of the colluvium from this strip, as shown in

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1 Contribution from the Divisions of Operations and Research, Bureau of Soil Conservation, U. S. Dept. of Agriculture, in cooperation with the Ohio Agricultural Experiment Station, Wooster, Ohio.