CROPS differ with respect to their influence on the physical properties of the soil. Certain crops appear to leave the soil upon their removal in a mellow or friable condition, while others apparently exert little effect and still others cause the soil to become "hard." Most of this knowledge is based on purely qualitative observations in the field, though quantitative measures in the form of plow draft tests, ease of penetration tests, and, more recently, aggregate analyses, have been used. Until recent years no methods were available by which the degree of aggregation of soils could be satisfactorily measured. Several methods have now been proposed which offer promise of yielding very valuable results. Among these may be mentioned the elutriation method proposed by Bayer and Rhoades (3), the wet sieve method described by Yoder (11), the sedimentation tube method of Cole and Edlefsen (6), and methods involving the use of the hydrometer reported by Bouyoucos (5) and Gerdel (8).

On purely theoretical grounds the writers believe that the sedimentation tube method of Cole and Edlefsen should be the most desirable type of procedure in aggregate analysis because in this method mechanical abrasion is reduced to a practical minimum. The objections based on particle density, particle shape, and particle size raised by Yoder against the elutriation method, however, apply to the Cole and Edlefsen procedure as well. These objections, the writers believe, are more than offset by the reduction in mechanical abrasion of the sedimentation tube method as compared to the wet sieve procedure.

The Cole and Edlefsen soil tube was used in the work reported here. The procedure recommended by them was found to be satisfactory and with strict adherence to its details reproducible results could be obtained. Appreciable variations in time of slaking the soil, method of mixing the sample, or draining the tube always resulted in measurable variations in the data.

FIELD STUDIES

Samples taken from field plats supporting various crops were studied and a few samples from an experiment involving periods of fallow of various lengths were utilized. A majority of the samples were.