The Establishment and Comparative Wear Resistance of Various Grasses and Grass-Legume Mixtures to Vehicular Traffic

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An interest in the use of grasses and legumes in the construction of military airfields was evidenced during World War II. This interest will continue in the maintenance of these fields and in the construction and maintenance of airports and flight strips for civilian use. The comparative resistance to wear and load-bearing capacities of grass sods have received only a limited amount of attention to date. The wide range of soil and climatic conditions prevailing on airfield sites and on highway rights-of-way requires that close attention be given to the selection of the plant species to be used in the revegetation of such areas. The most desirable grasses for these purposes should have the following characteristics: (1) Adaptation to local soil and climatic conditions, (2) resistance to wear and capable of withstanding heavy use and abuse, (3) rapid recovery after intensive use, (4) resistance to drought, (5) high load-bearing capacity, and (6) low maintenance cost. Relatively few grasses now available commercially possess all of these characteristics.

Unpublished observations made on grass plots established at the Agricultural Research Center, Beltsville, Md., indicated that creeping red fescue, Chewings fescue, and Kentucky bluegrass were most desirable from the standpoint of both their resistance to wear when subjected to wheeled traffic and their ability to recover rapidly after intensive use. Orchard grass, perennial ryegrass, redtop, and the zoysias were relatively poor when compared to the fescues and Kentucky bluegrass in these respects.

Traffic tests made in 1946 on Bermuda grass shoulders adjacent to paved runways at MacDill Field, Fla. and at Maxwell Field, Ala. indicated that the deformation of the soil surface was in proportion to the load repetition; that with from 5 to 16 trips with heavy aircraft no appreciable wear was in evidence, and that the recovery of the grass after traffic with a B-17 bombing plane (26,625 pound wheel

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2Chief, Grounds Section, Headquarters, U. S. Air Force, and Professor in Farm Crops, respectively. The writers gratefully acknowledge the helpful suggestions and the assistance rendered by E. A. Finney, Engineer in Charge of Research, Michigan State Highway Department, and by G. R. Richardson, Chief Engineer, Michigan Department of Aeronautics.

3Unpublished data describing the results of traffic tests on certain grasses established in lanes between experimental plots. U. S. D. A. Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Md.

4Report of traffic tests on turf base shoulder investigational areas at MacDill Field, Fla. War Dept., Corps of Engineers, Oct. 31, 1946.