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PLANTING GRASS APPEARS IMPRACTICAL FOR IMPROVING DETERIORATED RECREATION SITES

Abstract.—There is a real need for improving the physical condition of many recreation sires in the Southeast which are characterized by compacted and eroding soils, dead and dying vegetation, and generally poor appearance. An attempt was made on these sites to establish grass by giving the best possible treatment for growth and survival. After one summer of use, the planted grass was trampled out.

Many heavily used recreation sites in the Southeast, particularly the older ones, are characterized by soil compaction and erosion, dead and dying vegetation, and generally poor appearance. Because of the almost complete absence of grasses or other ground cover, these sites are dusty in dry weather and muddy during wet weather. A need exists to improve the condition of these sites and make them more attractive to recreationists.

A cooperative study by the Southeastern Forest Experiment Station and the National Forest Administration was started in the fall of 1966. The objective was to determine whether grass, given the best possible treatment for growth and survival, could be established on sites lacking ground vegetation. Treatments included cultivation, mulching, fertilizing, and watering. Measurement of results was planned for 3 years.

The Lake Winfield Scott Recreation Area, Chattahoochee National Forest, Georgia, and the Chilhowee Recreation Area, Cherokee National Forest, Tennessee, were selected. Tests conducted prior to the study revealed that soils on both sites were slightly acid sandy loams, fertile (except for slight phosphorus deficiencies) , and capable of growing fine stands of grass. However, the sites were characterized by eroding and compacted soils, degenerating overstory vegetation, and a general absence of ground vegetation. They had been heavily used for many years by campers and picnickers.

Thirteen representative family units at each site were chosen for treatment. On each family unit a study plot 30 feet square, divided equally into six 5- by 30-foot subplots, was located to place the unit facilities (table, grill, tent pad) in approximate plot center. Two randomly selected subplots were planted with a mixture of grasses adapted to the Southern Appalachians: creeping bentgrass *(Agrostis palustris* Huds.) , Korean lawngrass *(Zoysia japonica* Steud.) , alta fescue *(Festuca elatior* var. *arundinacea* (Schreb.) Wimm.) , and Bermuda grass (Cynodon *dactylon* (L.) Pers.) . Two other randomly selected subplots were planted with a mixture of grasses adapted to the Northeast: Durar hard fescue *(Festuca ovina* var. *duriuscula* (L.) Koch) , "creeping" red fescue *(Festuca rubra* L.) , Kentucky bluegrass *(Poa pratensis* L.) , and Colonial bent *(Agrostis tenuis* Sibth.) . These grasses were chosen for their probable hardiness under campground conditions. Remaining subplots were left unplanted to serve as controls. One plot at each site was planted with the mixtures and fenced to exclude use throughout the study.

All planting was done in late September 1966, after the heavy-use season, to minimize trampling during the initial stages of growth. Subplots were plowed with a garden tractor, then cultivated with a rototiller to break the compacted soil aggregates. Grasses were seeded (Zoysia sprigs were set) at maximum rates recommended in the *Yearbook* of *Agriculture.** Sown subplots were rolled, and mulched with straw.

At each site, 9 of the 13 study plots were fertilized at the time of planting, using the kind

[1]United States Department of Agriculture. Grass. U. S. Dep. Agr. Yearbook 1948, 892 pp., illus. 1948.

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and amount of fertilizer determined by soil tests for individual plots. Some were not fertilized so they could be compared to fertilized plots.

Watering was planned for spring and summer 1967, but was unnecessary because the growing season was adequately wet. Weather conditions were probably ideal during spring and summer for optimum growth and survival of grass.

Examination of the study plots in spring and again in early summer-at the time recreationists began using the sites-disclosed good germination and a satisfactory stand of grass on all plots (fig. 1) .

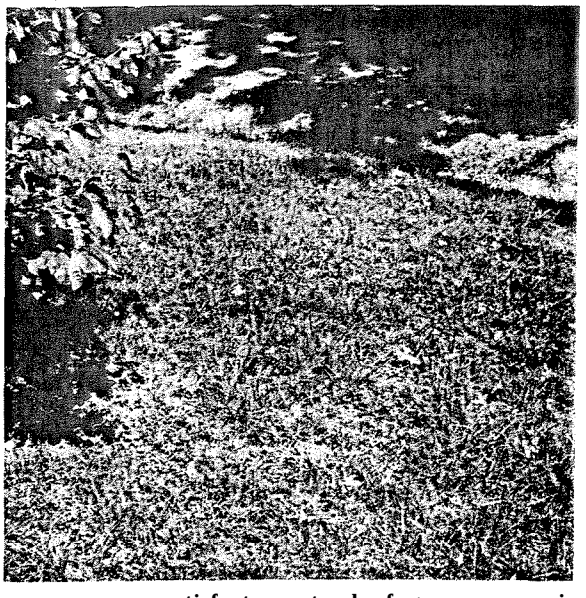

Figure 1 .-A satisfactory stand of grass was evident in the spring of 1967 before major use started.

Because the summer of 1967 was extremely wet and cool, use was lighter than usual. Using a traffic-counter sampling method,[2] total season-long use estimates were obtained for all study units. Compared to loo-percent utilization of the designed capacity (full use 24 hours daily), Lake Winfield Scott received about one-third utilization, or 350 of a possible 960 visitor-days[3] of use; and Chilhowee had approximately one-half utilization, or 546 of 1,030 visitor-days.

[2]James, George A. Instructions for using traffic counters to estimate recreation visits and use on developed sites. U.S.D.A. Forest Serv. Southeast. Forest Exp. Sta., 12 pp., illus. 1966.

[3]A visitor-day is recreation use which aggregates 12 person-hours and may entail 1 person for 12 hours, 12 persons for 1 hour, or any equivalent combination of individual or group use, either continuous or intermittent.

In late September 1967 the grass was almost absent on all study plots, regardless of species or treatment (fig. 2). Grass had been killed within the plots even at the extremes away from tables, grills, and tent pads. Except for scattered plants in a few protected locations, grass survived well (regardless of treatment) only within the fenced plots.

It appears that young, succulent grass cannot withstand the trampling associated with even moderately used recreation sites. A longer period of time without use may be needed for grass establishment. Yet, closing an area to public use to eliminate trampling for longer periods is impractical because the demand for these sites is too great.

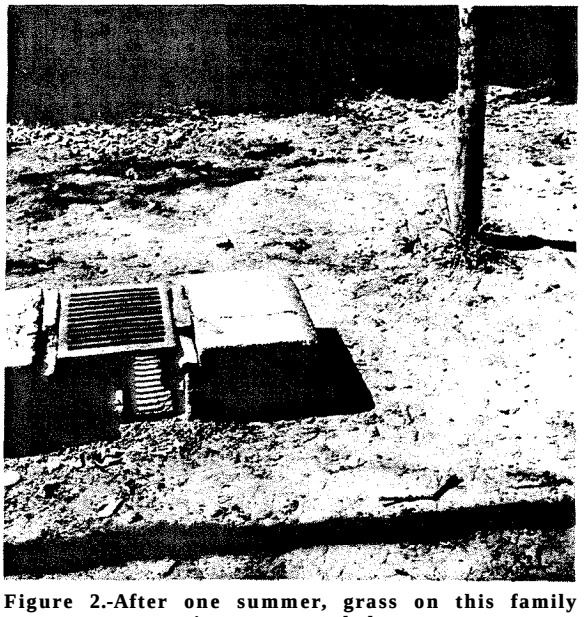

Figure 2.-After one summer, grass on this family unit was trampled out.

Some suggested alternatives to planting grass are sodding with established turf, paving, or spreading sawdust, gravel, sand, or various combinations of these and other materials. Further study is needed to determine a practical and economical means of rehabilitating recreation sites in the Southeast.

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