

Comparison of Mulch Materials for Turf Establishment (Summary)

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Cellulose fiber and fungus-innoculated bran were compared to standard hay mulch in a scientifically designed random-block test. A site composed of long, steep, coarse sand, fill slopes was used to impose the most severe conditions encountered in highway turf establishment on these materials.

Under the conditions of this test, and during extremely unfavorable weather conditions for turf establishment, it was found that adequate available soil moisture for germination and seedling survival of the temporary and fast-germinating species was dependent on the amount of exterior shade cast on the seeded areas by trees or by the slope itself during the afternoons. Apparently exterior shade affected a significant reduction of evaporation, permitting the retention of critical moisture by the soil which was already under conditions of moisture stress. Type and amount of mulch material had no significant effect on germination or seedling survival, especially during the first 40 days after seeding.

The early poor germinating conditions delayed the germination of the slower germinating species such as creeping red fescue and Kentucky bluegrass. These species subsequently developed at a later period on the unshaded areas. Such areas were almost completely devoid of ryegrass and tall fescue. Seed recaptured from areas still devoid of growth the first week of December were tested for germination under standard seed testing conditions. The seed of creeping red fescue and of Kentucky bluegrass were found viable, whereas seed of ryegrass and tall fescue were found dead. It is reasonable to expect that, if the mulching materials continue to hold these areas which are still devoid of growth until early spring, a fine cover of creeping red fescue and Kentucky bluegrass will develop. The severe effects of microclimate on exposed, sandy slopes on seedling survival were dramatically demonstrated in this test.

It might be inferred from the very severe conditions of this test and from previous tests of these materials that during normal seeding seasons, and on fill soils with a higher percentage of silts, clays, and organic matter, any of the cellulose or bran treatments would have been effective as turf establishment mulch.

In this test all of the cellulose and bran treatments were equal to hay as effective mulch materials--all provided adequate erosion control. Combinations of cellulose fiber and fungus-treated bran appeared superior to all other plots for resistance to cracking, blowing off, peeling off, and deterioration on areas that were devoid of growth 90 days after application. In most cases, this length of time is more than adequate for the initial establishment of a new seeding. It would appear that further investigation of combinations of these materials is warranted on the range of seeding environments encountered in turf establishment.

A certain percentage of longer fibers in the cellulose material might be beneficial to obtain a more interlocking mulch on sandy sites; the present form seems to be quite acceptable on soils with a higher percentage of fine material.

The use of cellulose fiber or the treated bran in place of hay or straw as mulch material eliminates the probability of introducing weeds and weed grasses which are often found in hay or straw. In a private communication, R. E. Blaser of the Virginia Polytechnic Institute of Blacksburg, Virginia, reported cleaner stands of the seeded species in areas mulched with cellulose fiber as compared to plots mulched with hay or straw. He also reported on extensive cellulose fiber mulching tests at the 41st Annual Meeting of the Highway Research Board.

A very successful method of establishing lawns and golf greens with Bermuda grass sprigs mulched with cellulose fibers at the rate of 3,000 lb per acre of the mulch material has been developed by Raymond L. Self of the Ornamental Horticultural Field Station of Auburn University at Mobile, Ala. (private communication). He believes that this method should be tried on Bent grass sprigging of golf greens in the North.

*A summary of a paper by Messrs. Button and Pothurst. The authors have given permission for the paper to be published in full by the "Journal of Soil and Water Conservation."

Observations on the test plots in April 1962 showed less growth in the bran plots. A second test with bran compared to hay applied in Franklyn, Conn., in October 1961 also indicated that for some reason germination under the bran was not equal to germination obtained under hay. It would appear that the bran or perhaps the fungus inoculant in the bran had a detrimental effect on the grass seed.