by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

Evaluation of various types of mulches

Mulches for grass establishment on fill slopes. *A.E. Eubeck, N.P. Swanson, L.N. Mielke and A.R. Dedrick. 1970. Agronomy Journal. 62(6):810-812. (from the Department of Horticulture and Forestry, University of Nebraska, Lincoln, Neb. 68503).*

The objective of this study was to evaluate the effectiveness of 17 different mulching methods in establishing an adequate grass cover. The experiments were conducted on steep 2:1 fill slopes in eastern Nebraska that had a silty clay, loam soil texture. Following preparation of a firm uniform seedbed, the fertilizer was lightly incorporated into the surface of the soil at a rate based on the soil test results. The area was seeded to smooth bromegrass that was raked lightly into the surface of the seedbed.

Eleven mulch treatments were established September 6, 1966; eight more mulches were included in a study established August 30, 1967. The mulch treatments were asphalt, bark dust and asphalt, corncobs and asphalt, prairie hay and asphalt, fiberglass and asphalt, wood chips and asphalt, wood shavings and asphalt, excelsior and asphalt, excelsior, excelsior mat, excelsior and wood cellulose, wood cellulose, compost, jute net, NC 1556L polymer and an unmulched check treatment. The plot size was approximately 9 by 18 feet. The treatments were replicated twice in a randomized block design.

The mulch treatments were evaluated in terms of their effects on soil temperature, soil moisture content and grass cover achieved during the critical period of seed germination and seedling establishment. Soil temperatures were measured at the 0.5 inch depth at 6 a.m. and 2 a.m. Soil moisture determinations were made on two-inch diameter by 0.5 inch deep soil cores taken at two random locations within thirds of each plot. Grass cover evaluations were determined by density counts using random samples within quarters of each plot followed by dry weight determinations of the total vegetative cover present.

Excelsior and excelsior mat had the greatest moderating effect on soil temperatures which averaged five to nine degrees F lower than the unmulched plots on clear days. A second group of mulches which provided significant, although somewhat less temperature modification, included jute net, prairie hay and asphalt, corncobs and asphalt, wood chips and asphalt and wood shavings and asphalt. Soil temperatures under these mulches averaged three to five degrees F lower than unmulched treatments. The other mulch treatments did not produce temperature moderating effects significantly different from the unmulched check treatment.

Mulches which contributed to a substantially higher soil water content included excelsior mat, excelsior, asphalt, prairie hay and asphalt, bark dust and asphalt, and wood shavings and asphalt. A number of other mulches contributed to improved soil moisture although at a significantly lower level than the other treatments listed.

An assessment of the grass cover in terms of shoot density and total dry weight production showed the excelsior to be superior. Other mulches that produced fairly good vegetative covers included excelsior, jute net, prairie hay and asphalt, wood chips and asphalt and fiberglass and asphalt.

Comments: The practice of mulching ensures rapid uniform turfgrass seed germination and establishment. It is a particularly valuable practice where there is a high erosion probability or in areas that cannot be

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irrigated. A mulch should serve two functions: (a) control erosion and (b) provide a favorable microenvironment for seed germination and seedling growth.

The erosion control not only stabilizes soil from the erosive action of wind and water, but also prevents the displacement of seed and fertilizer. Mulching also minimizes surface crusting problems. This improves water infiltration into the soil and reduces water loss through surface runoff.

The favorable microenvironment provided by a mulch should include (a) a moderation in temperature extremes, (b) improved, higher soil moisture levels resulting from a reduction in the evaporation rate and (c) reduce wind movement across the soil surface that can increase the moisture loss.

Straw and prairie hay have been effective mulching materials for many years. The study reported in this review, plus several others, indicate that some of the newer synthetic mulches, such as excelsior mat, excelsior and wood chips plus asphalt, provide adequate soil erosion control as well as a favorable microenvironment for successful establishment of a vegetative cover. The wood cellulose mulches have failed to provide an adequate microenvironment for seedling development where periodic moisture stresses are experienced. The fiberglass and asphalt mulch combination has not been effective in successful establishment of vegetative cover and is prone to severe shock erosion.

Fusarium patch experiments with new fungicides. *C.J. Gould. 1970. Proceedings of the 24th Annual Northwest Turfgrass Conference p. 89. (from the Western Washington Research and Extension Center, Washington State University, Puyallup, Wash.).*

This study involves a continuing evaluation of new fungicides for the control of *Fusarium* patch (*Fusarium nivale* Fr.). The experiments were conducted on two different experimental turf sites in the Puyallup, Wash., area. Fungicides under evaluation included benomyl, Bromosan, Fore, thiabendazole, Calo-Clor, PMA and a wettable sulfur.

Fore (Dithane M-45) applied at eight ounces per 1,000 square feet has been one of the better fungicides for *Fusarium* patch control under western Washington conditions. Benomyl (methyl 1-butylcarbamoyl) -2-bensimidazole-carbamate) has been the best of the new fungicides for the control of *Fusarium* patch in the recent tests. Comparisons of the one and two ounce per 1,000 square feet application rates at two, three and four week intervals indicate that the best control was achieved with the two ounce rate of benomyl applied every two to three weeks in 10 gallons of water per 1,000 square feet. Bromosan (a mixture of PMA, thiram and tribromo salicylanilide) is another new fungicide that shows promise when applied at four ounces per 1,000 square feet.

Comments: Fusarium patch, sometimes called pink snow mold, should not be confused with *Fusarium* blight.

It appears from the report that there are several promising new fungicides for the control of *Fusarium* patch. This development is quite timely because of potential legislation that may restrict the use of the heavy metal fungicides that have been used so successfully on turfs for many years. □