Turfgrass research review

By Dr. James B. Beard

Effect of Sawdust on the Germination and Seedling Growth of Several Turfgrasses.

D. V. Waddington, W. C. Lincoln Jr., and J. Troll* *Agronomy Journal* 59(2):137-139. 1967 (from the Department of Plant and Soil Science, University of Massachusetts, Amherst, Massachusetts 01003.

The effects of sawdust from 12 species of trees; pitch pine, white pine, white ash, red oak, Norway spruce, white oak, American elm, white birch, eastern hemlock, American basswood, sugar maple and red maple, on the germination and seedling growth of Highland colonial bentgrass, Seaside creeping red fescue and Merion Kentucky bluegrass were studied.

Fresh sawdust of all 12 tree species caused a suppression of growth with the most severe phytotoxicity noted with ash and red oak. Growth suppression from fresh sawdust was the greatest with Merion, somewhat less with Pennlawn and the least with Highland and Seaside bentgrass.

The data indicated that the toxicity was caused by a water soluble component of fresh sawdust rather than a decomposition product. When the sawdust was weathered for two to seven months the adverse toxic effects diminished substantially.

Comments: Consideration is sometimes given to the possibility of using sawdust in place of peat as a source of organic matter for incorporation into soils prepared for putting greens and trees.

The use of sawdust is of particular interst when there is an adequate local supply. Sawdust does function as a source of organic matter for increasing the soil humus level, cation exchange capacity, aggregation, moisture holding capacity and aeration porosity.

The above data suggests that the use of fresh sawdust should be avoided in turfgrass seedbeds. If sawdust is used, it should be subjected to weathering for an extended period of time. Another adverse affect resulting from the use of sawdust is the nitrogen deficiency which often occurs on turfs grown on a soil-sawdust mixture, especially when the sawdust is relatively undecomposed. Nitrogen is required for decomposition of sawdust and thus competes with the turfgrasses for the nitrogen present in the soil.

For this reason, sawdust which is in an advanced stage of decomposition is preferred for use in soil amending. Keep in mind that a higher fertilization rate may have to be applied when sawdust is used as a soil amendant.

Root Growth of Bermudagrass Varieties at Three Mowing Heights in 1966.

W. R. Kneebone. 1966 Report on Turfgrass Research, University of Arizona, Report 240. pp. 15-17. (Department of Agronomy, University of Arizona, Tucson, Arizona 85721.)

Twenty-two bermudagrass varieties were evaluated at cutting heights of three-fourth and five-sixteenth inch plus one strip which was left unmowed. On the unmowed plots, the maximum heights achieved were two inches for Tifdwarf: five inches for Tifgreen; nine inches for Tifway and Santa Ana; and eleven inches for U-3 and Arizona common bermudagrass. The leaf growth rate of Tifdwarf was extremely slow. Evaluation for leaf texture and density showed Tifdwarf, Santa Ana, Tifgreen and Tifway to be acceptable while U-3 and Arizona common were inferior.

In late fall, two-inch diameter plugs were collected to a depth of twelve inches. The roots were washed free of soil, oven-dried and weighed. Tifdwarf, Tifway and Tifgreen, in that order, produced a greater quantity of roots, but the differences were not great.

Also, the five-sixteenths inch mowing height treatment resulted in superior root production compared to the three-quarter inch and unmowed treatments. The authors suggested that the greater root production was due to an increased density at the lowest cut or resulted from reduced vigor caused by thatch development at the two higher cutting heights.

Coated Urea, Thiourea, Urea-formaldehyde, Hexamine, Oxamide, Glycoluril and Oxidized Nitrogen-enriched Coal as Slowly Available Sources of Nitrogen for Orchardgrass.

J. D. Beaton, W. A. Hubbard and R. C. Speer. *Agronomy Journal*. 59(2):127-133, 1967, (from the Research Station, Research Branch, Canada Department of Agriculture, Kamloops, B. C., Canada).

The Nitrogen uptake and apparent recovery of applied nitrogen were determined for ten nitrogen carriers following a single nitrogen

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fertilization. The study was conducted over a duration of 333 days at a temperature of 72° F. and a night temperature of 67° F. Nitrogen uptake rate was the most rapid for ammonium nitrate and urea. Coated (dicyclopentadiene copolymer) urea was intermediate in nitrogen uptake rate and the ureaformaldehyde (AI-55) nitrogen carrier gave a higher rate during the later stages of the study made.

The apparent recovery of applied nitrogen from the various nitrogen carriers after 333 days was highest for the coated urea and ammonium nitrate carriers with recoveries of 75 and 74 percent respectively. The recovery of urea and ureaformaldehyde will be significantly less at 59 and 41 per cent respectively.

Comments: The test species used in this study was orchardgrass which is not a common component of turfs. However, this fact does not detract from the very interesting results reported concerning the efficiency of these nitrogen carriers. A major portion of the nitrogen not recovered when applied as urea was probably lost by volitization to the atmosphere. In the case of the ureaformaldehyde it is possible that the nitrogen had not yet become available even after 333 days.

Other papers of interest

A Review of Turfgrass Research at Michigan State University.
J. B. Beard and P. E. Rieke. pp. 1-20. 1967. (Department of Crop Science, Michigan State University, East Lansing, Mich. 48823).

Can you work with *Poa annua*.
N. F. Bartlett and J. Troll. Massachusetts Turf Bulletin. 4(3):5-9. 1967. (Department of Plant and Soil Science, University of Massachusetts, Amherst, Mass. 01003).

About the author—Dr. James Beard graduated summa cum laude from Ohio State University in 1957, received his Masters in turfgrass physiology and management in '59 and his PHD in '61. Since then he has been conducting a research and teaching program in the Crop Science Department at Michigan State University on environmental stress physiology of all types of turfgrasses.