by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

Threat of a new St. Augustine-grass virus

St. Augustine Decline Virus (SADV)—a virus disease of St. Augustinegrass. *N.L. McCoy, R.W. Toler and J. Amador. 1969. Plant Disease Reporter. 53(12). (from the Department of Plant Sciences, Texas A & M University, College Station, Tex. 77843).*

This paper describes a new virus disease of St. Augustinegrass which is called St. Augustine Decline Virus or SADV. Symptoms of the disease were first observed in Lower Rio Grande Valley of Texas in 1966. Within three years the disease had been reported in 12 counties mostly in the southeastern region of Texas.

The initial symptoms of SADV appear as a chlorotic mottling of the leaf blades. Continued development of the disease causes (a) the entire leaf to become severely chlorotic, (b) the stolen internodes to shorten and (c) the infected plant to eventually die. Death of individual plants and thinning of the turf generally do not occur until three or four years after the initial symptoms appear. The disease can be easily confused with an iron or zinc nutritional deficiency. However, SADV causes a mosaic pattern which appears as a stippling effect while the deficiency symptoms appear as continuous stripes which are parallel to the leaf blade. Injury to St. Augustinegrass by SADV occurs more rapidly and severely when the plant is under stress caused by low fertility, improper cultural practices, drought, nematodes or insects. SADV has caused complete kill of a St. Augustinegrass turf under certain conditions.

The causal organism of this disease is a mechanically transmissible virus. Cell sap from infected leaves which is mechanically applied by an abrasive action to healthy, noninfected St. Augustinegrass leaves resulted in the development of SADV symptoms in approximately 21 days. Attempts to demonstrate that SADV can be transmitted in the soil have failed. The authors suggest that the SADV which is attacking St. Augustinegrass is a new virus or a mutated strain of an existing virus.

In addition to St. Augustinegrass, SADV inoculation studies show that proso millet, pearl millet and German foxtail millet can also serve as hosts. Innoculation studies with SADV have failed to produce symptoms or recoverable viruses from bermudagrass and centipedegrass.

Comments: SADV is characterized by rod-shaped virus particles which enter the plant cells and disrupt vital metabolic processes. As a result, injury develops relatively slowly over a period of up to four years. However, it can result in complete loss of turf. No control has been found for SADV once it appears. To date, it has only been observed on St. Augustinegrass. Whether this potentially serious disease will occur on other important turfgrass species remains to be seen. Since a chemical control is now lacking, the Texas researchers are emphasizing the development of SADV-resistant St. Augustinegrass varieties.

Sugarcane mosaic virus is the only other virus disease which has been reported to occur naturally on St. Augustinegrass. However, the recently identified St. Augustinegrass Decline Virus is the first turfgrass disease caused by a virus which could develop into a major disease problem.

Typhula **blight; its cause, epi-**

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demiology and control. *N. Jackson and J.M. Fenstermacher. 1969. Journal of the Sports Turf Research Institute. No. 45. pp. 67-73. (from the Department of Plant Pathology-Entomology, University of Rhode Island, Kingston, R.I. 02881).*

This paper is composed of two phases involving (a) a review of the disease symptoms and epidemiology of the causal organism and (b) a report on Rhode Island studies concerning the relative effectiveness of recently developed fungicides in controlling the disease.

Typhula blight is sometimes called gray snow mold. Symptoms of the disease typically appear as circular, water-soaked grayish-white patches of three to six inches in diameter. These may enlarge and coalesce causing damage of extensive areas. A grayish, aerial mycelium is frequently observed on the leaves when the fungus is active. Another typical symptom found during the spring are small, reddish brown sclerotia which are embedded in the leaves and crowns of infected plants. These sclerotia are commonly used to distinguish *Typhula* blight from *Fusarium* patch or pink snow mold.

The fungus causing *Typhula* blight is most active at temperatures slightly above freezing and under wet humid conditions. Such conditions commonly occur (a) under a snow cover, particularly if the soil is not frozen or (b) during periods of snow thaw. *Typhula* blight is a facultative parasite which most commonly causes damage to turfs that have been weakened by severe winter conditions. The fungus survives the warm summer period in the form of desiccated sclerotia in dead turfgrass tissues.

Use of a preventive fungicide is the preferred method for controlling *Typhula* blight in climates where it reoccurrs. The fungicide should be applied prior to the first permanent snow fall.

The relative effectiveness of several new fungicides in controlling *Typhula* blight is reported in this paper. Trial 1 was conducted on a mature mixed bentgrass turf. The fungicides were applied between November 27 and December 3, 1968, in three replications on 4 by 18.7-foot plots. The 10 fungicides included in the study were Benlate, Cadminate, Calogran, Daconil 2787, Demosan, Difolatan, Phenmad, Plantvax, Sodium borate and TBZ 01111W. All were evaluated at two rates of application except Phenmad. In Trial 2, Cadminate, Demosan and Plantvax were evaluated on 10 by 5 foot plots of velvet bentgrass using two applications. The materials were applied on November 27, 1968, as sprays using 10 gallons of water per 1,000 square feet. Trial 3 was conducted on duplicate 10 by 10 foot plots on two Seaside bentgrass greens. Cadminate, Caloclor, Daconil 2787 and Demosan were applied on November 22, 1969, as sprays using 10 gallons of water per 1,000 square feet.

Results of the three tests are summarized as follows: Cadmium compounds (Cadminate), mercurous and mercuric chloride mixtures (Caloclor and Calogran) and phenyl mercury acetate (Phenmad) proved effective in controlling *Typhula* blight under Rhode Island conditions. Demosan, a recently

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developed fungicide, gave good *Typhula* blight control. Daconil 2787, Difolatan and Plantvax gave partial, but an unacceptable degree of control, Benlate, sodium borate and TBZ 01111W were quite ineffective in controlling *Typhula* blight.

In comparisons between rates of fungicide application, good control was achieved with (a) Demosan at 8 to 10 ounces per 1,000 square feet, (b) Cadminate at two ounces per 1,000 square feet and (c) Calogran at 8 to 12 pounds of granular material per 1,000 square feet. *Comments*: This study confirms previous investigations regarding the effectiveness of Cadminate, Caloclor and Calogran in controlling *Typhula* blight. However, it is quite likely that legislation will be passed within the next two to four years which will prevent the use of mercury and cadmium containing fungicides. Such action would eliminate the only fungicides with proven effectiveness in controlling severe infections of *Typhula* blight. Fortunately, a recently developed fungicide, Demosan (1, 4-dichloro-2, 5-dimethoxy benzene), has proven very effective in controlling *Typhula* blight and does not contain cadmium or mercury.

Studies conducted by Drs. J.M. Vargas and J.B. Beard of Michigan State University in northern Michigan have also shown Demosan to give effective control of *Typhula* blight on Penncross creeping bentgrass. *Typhula* blight damage is generally more severe under Michigan conditions than under Rhode Island conditions. As a result, *Typhula* blight control with Phenmad has not been as satisfactory as reported in the Rhode Island studies. Also, higher rates of Caloclor (4 to 6 ounces) are necessary to give adequate control under northern Michigan climatic conditions. □

Other papers of interest:

1. **Effects of de-icing chemicals on grassy plants.** *E. Roberts and D. Chittenden 1969. Twenty-Eighth Short Course on Roadside Development, The Ohio Department of Highways. pp. 88-94. (from the Department of Ornamental Horticulture, University of Florida, Gainesville, Fla. and Pennsylvania Department of Highways, Harrisburg, respectively.)*

2. **Carbohydrate accumulation of coastal bermudagrass and Kentucky bluegrass in relation to temperature regimes.** *C.M. McKell, V.A. Youngner, F.J. Nudge, and N.J. Chatterton. 1969. Crop Science. 9(5):534-537. (Department of Agronomy, University of California, Riverside, Calif. 92502.)*

3. **Evaluation of tall fescue, *Festuca arundincea* Schreb, for turf in the transition zone of the United States.** *F.V. Juska, A.A. Hanson and A.W. Hovine. 1969. Agronomy Journal, 61 (4): 625-628. (from the Crops Research Division, Agricultural Research Service-USDA, Beltsville, Md. 20705).*

4. **Bluegrass response to close cutting.** *J. A. Long. 1969. Midwest Regional Turf Conference Proceedings, pp. 82-85. (from O. M. Scott and Sons Co., Marysville, Ohio 43040).*