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Wisconsin Turfmen Hear How Hardiness, Potash Content Affect Wintering Grasses

Metabolic changes determine a plant's ability to withstand temperature extremes and are the key to grass and plant wintering abilities, University of Wisconsin Agronomist, Dr. Dale Smith, told delegates at the recent Wisconsin Turfgrass Conference.

Nearly 200 persons attended the conference, conducted at Wisconsin Center for Adult Education, Madison, Wis. Also included in the two-day schedule was a presentation on soil potassium needs by Robert E. Wagner, Eastern Director, American Potash Institute, and a comparison of turfgrass qualities by Dr. Robert W. Schery, Director of The Lawn Institute, Marysville, Ohio.

Hardiness Ability Vital

With the effects of harsh winter weather on grass being a prime consideration in Wisconsin, Dr. Smith's explanation of the plant's natural changes in preparation for cold became the focal point of interest at the conference. But as the agronomist pointed out, winter kill and injury are problems not only in northern areas, but wherever temperatures drop below freezing for prolonged periods.

"Ability of plants to harden through metabolic changes which occur in protoplasm of the cells during autumn is a vital factor in the plant's ability to withstand winter weather," he explained.

Development of frost hardiness is influenced by many factors. Day length and temperature appear to be major climatic requirements; hardiness develops most rapidly under shortening days and decreasing temperature, Smith told the conference.

"Warm temperatures accompanied by abundant soil moisture, both conditions that favor growth, will retard development of hardiness even if days are short," he pointed out. "Day length probably triggers hardening in plants, and temperature

determines the level of hardiness."

Cover Saves Northern Turf

Explaining that fluctuating temperatures in moderate climates can cause even more plant damage than cold north-state winters, Smith said that snow and soil give natural protection. "Leaving stubble to catch and hold snow is an important management practice in the North," he noted.

"Winter injury is primarily the result of 3 factors: low temperature, smothering, and desiccation," Smith said. Injury most frequently results from exposure to temperatures below freezing, which cause ice crystals to form in plant tissues. The plant's ability to tolerate this ice in its tissue is known as frost hardiness. Loss of frost hardiness can occur as the result of unseasonal warm periods, which cause the plant to use up carbohydrate reserves.

Ice Smothers Plants

Although snow cover protects vegetation, icy, nonporous cover can smother a plant to death, Smith acknowledged. Another type of plant injury comes from excessive loss of water by plant tissue or desiccation. This occurs commonly with plants that keep their leaves over winter. Moisture is lost from leaf surfaces and roots are unable to replace the moisture when the soil is frozen.

Late Cut Affects Hardiness

Dr. Smith warned turf managers that grass should never be cut during its hardening period in the autumn. Legumes, he said, are affected even more than grasses. His comments at the conference indicate that attempts to increase frost resistance by chemical spraying as yet have not been successful. The Wisconsin agronomist agreed with API speaker, Robert E. Wagner, that soil fertility is important to grass wintering ability. He noted that both nitro-

gen and potassium seem to have direct influence on hardness.

K-N Help Grass Survive Cold

"Winter survival of grasses appears to be favored by a high potassium ratio in the soil, which increases soluble carbohydrate reserves in the grass roots," Wagner explained. He added that potassium is also important in reducing high temperature injury to grasses.

In an extensive discussion on turf species comparisons at the conference, Lawn Institute speaker Dr. Schery narrowed the field of suitable grass species for Wisconsin to Kentucky bluegrasses, fine fescues, and the bentgrasses.

"A very satisfactory, all-purpose blend for Wisconsin might combine two or three bluegrasses with a modicum of fine fescues, depending on the amount of shade and soil quality," Schery advises. He stressed that Merion Kentucky bluegrass is still considered the best bluegrass commercially available for well-maintained lawns.

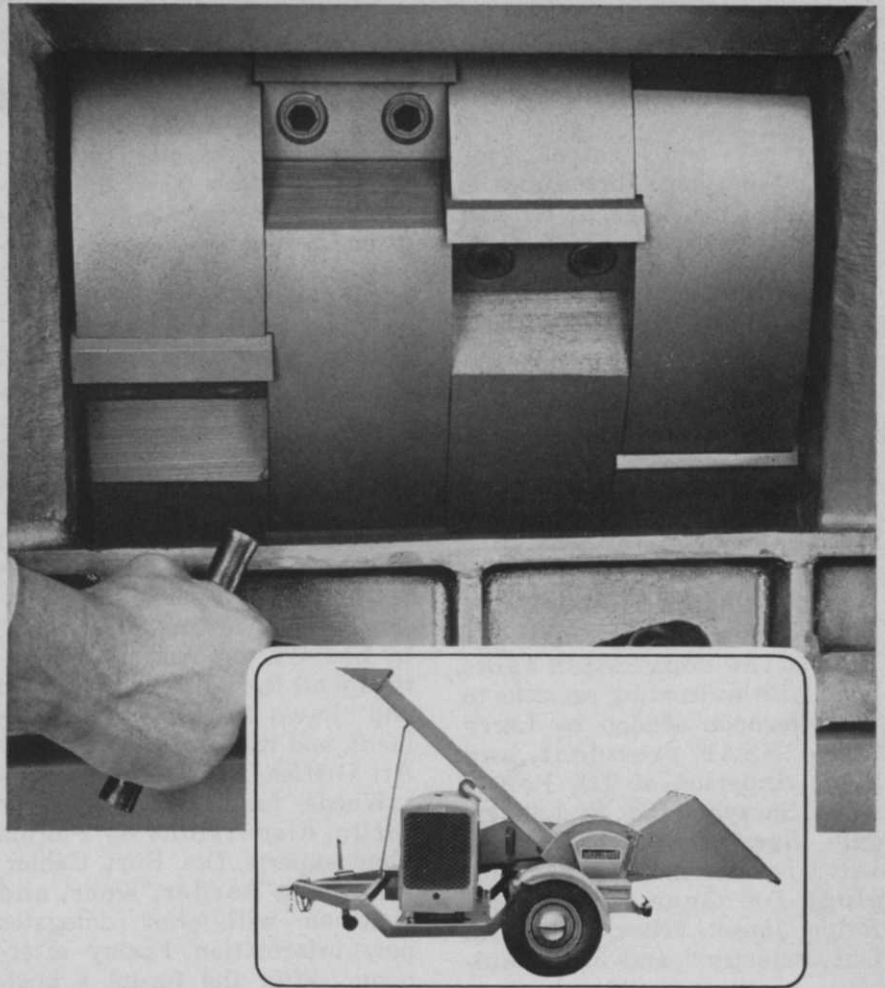
Schery concluded his section of the program by reminding turfmen that seed selection must be made in consideration of local environmental variations which can call for seed mixtures for optimum results.

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