

probably be used on sand greens. Although greens represent a small area of the golf course, use care to prevent loss of phosphorus by leaching when greens are adjacent to ponds, lakes or streams.

OTHER STUDIES

A cultivation study on Ram I Kentucky bluegrass at the Hancock Turfgrass Research Center was established in 1987 and will continue through 1989. Treatments include solid and hollow tine aerifying with large, medium and small equipment. No significant data have been taken on these plots as yet. Emphasis will be placed on effects of treatments on the thatch which exists on this turf. Off campus studies established in 1988 include a phosphorus and potassium response study on a very low nutrient testing soil at a condominium site near Detroit.

A series of different mixes of Kentucky bluegrass, perennial ryegrass and tall fescue were established on an unirrigated athletic field near Traverse City. The objective is to determine the establishment rate, adaptability to the environment and tolerance of moisture stress on this sandy soil. Of particular interest is how the tall fescue will survive in that environment.

WEATHER SUMMARY

One need not look at the weather statistics for 1988 to know it was a very unusual year for turf but a review of the numbers may be helpful in explaining why so much turf loss occurred. From mid-April through mid-July about one inch of rainfall occurred. Average rainfall during that period is over six inches. Temperatures were also well above normal with 37 days of high temperatures over 90°F compared to an average of 11 per year. During the severe drought period we also experienced mostly sunny days (80% of possible in May through July), strong winds and low relative humidities. Evapotranspiration figures were much higher than normal with many days over .3 inch per day in May, June and early July, figures which would be considered more typical of desert areas. The longest days of the year occur during this time, contributing further to high evapotranspiration rates.

On irrigated sites turf managers had difficulty applying enough water to meet turf needs during the drought. When rainfall resumed and relative humidities rose to normal summer levels (just under .2 inch per day). Disease pressure became a significant problem on many turfs. Ironically, with higher than normal rainfall in August and September and the highest rainfall levels on record in October, we finished the year above normal in rainfall.

Unirrigated turfs turned dormant early in the summer. When rainfall came in July, crabgrass germinated and grew rapidly, responding to the high temperatures and without competition from desired grasses. Many turfs recovered reasonably well in August and September while others had suffered significant turf loss, necessitating overseeding or reestablishment practices. Unfortunately, many turfs were not improved in the fall, leaving a major need for overseeding or reestablishment in the spring of 1989.

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