Yes! It was a Hard Winter

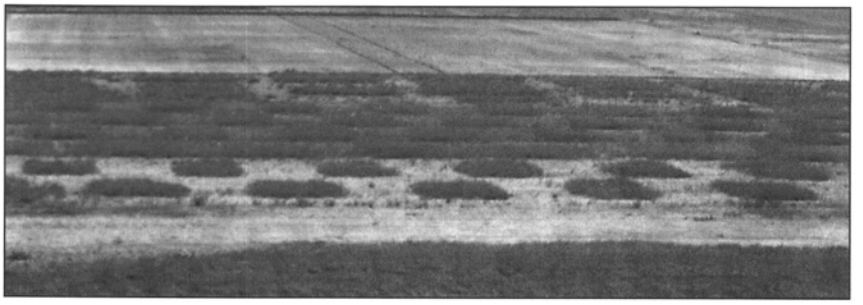

Figure 1: Loss of perennial ryegrass (top) and tall fescue (foreground) following hard winter of 1995-96.

When the snows finally receded this spring the effects of the long, cold winter became apparent to many turf managers. None were more aware of the effects than the researchers and station manager at the Guelph Turfgrass Institute. All the perennial ryegrass and tall fescue variety trials were dead as well as the three-year-old roadways through the plot area which were seeded to pure ryegrass (Figure 1). The fine fescues and bluegrass were not effected.

Snow cover was minimal and long periods of low temperatures were a feature of the winter. The uniform pattern was not related to any ice sheet damage and internal drainage of the site was ideal.

Prof. Bowley of the Crop Science Dept. considers Ontario to be on the northern fringe of the adaptation for tall fescue. Researchers at the Kemptville station have repeatedly had winter kill problems with ryegrass. It appears the weather factors during the past winter all came together to do a number on both species.

What are the implication for sports field mangers? **Beware of pure stands of either species.** A mixture with bluegrass may have resulted in partial survival which could be corrected with an overseeding program. Unfortunately mixtures of the two species with bluegrass were not available in the test plots to evaluate this effect.

KEEPING COOL

As I look out the window on this May 1st morning there are snow flakes in the air, thus it is hard to think about hot temperatures. But hopefully in a few days, or weeks at the most, we will be turning on the central air.

The turfgrass environment is one of natures greatest air conditioning systems. The cause of the cooling effect of turf is the evaporation of water from the leaf and soil surface - a process often called evapotranspiration.

The cooling effect of evaporation of water is very apparent as you walk barefoot at the beach on a hot, sunny day in August. The relief you feel as you move from the dry sand to the wet sand at the waters edge is due to the use of the radiant heat from the sun in evaporating water from the wet surface. On the wet sand as much as 80% of the radiant heat may be used for evaporating water, however, on the dry sand, the radiation from the sun is primarily going into heating the sand grains and the air at the sand surface.

While it will take one calorie of energy to raise one gram of water one degree centigrade, the evaporation of water from a surface, whether it is soil or grass surface, requires approximately 590 calories of energy for every gram of water. Thus less radiant energy remains to heat the sand and/or air.

Dr. Jim Beard made measurements at and above turf surfaces in August at Texas A. & M. University. His data clearly show the living system is a tremendous natural air conditioner, not only lowering the surface temperature, but also the air temperature and the night temperature. Systems without the cooling effect of water evaporation have more radiation used in heating the surface; sinks from which heat is lost back to the atmosphere at night keeping the night temperatures higher.

The data clearly illustrate the undesirable high temperatures associated with artificial turf. Even at night the artificial turf does not lose its higher temperature by radiation back to the atmosphere as fast as natural grass.

Note that non-living, brown turf also has a higher surface temperature than green turf, a clear illustration of the heat energy consumed in evaporating water from the living plant.

Table 1: A comparison of surface and air temperatures of turf surfaces in August.

Type of Surface	Max. Day Temperature Surface	Max. Day Temperature 3 in. above	Min. Night Temperature Surface
	°F		
Irrigated Green Turf	88	89	76
Dormant Brown Turf	126	95	79
Bare Soil	102	91	78
Artificial Turf	158	96	84