OTS Conference Highlights

♦ SportGrass™ by Dan Almond (featured on the front cover) ♦ Sportsfield Drainage: Learning From Mistakes (Case 1) by Dr. Bob Sheard ♦ The Use of Effluent Water for Sports Turf Irrigation by Alex Campbell ♦ Botany of a Grass Plant by Dr. Jack Alex

The Ontario Turfgrass Symposium was held in Toronto at the Regal Constellation Hotel from January 5-7 and was again a very worthwhile learning experience. Exhibit space was sold-out with a waiting list and a large vote of thanks goes to Peggy Nagle for her work in this area. Another group of excellent speakers were on hand to deliver information on a wide variety of grass and management topics of interest to the supporting associations. Thanks to Pam Charbonneau of OMAFRA for the enormous amount of work she put in to recruiting speakers. Lastly, on behalf of the Association, our thanks to Rhod Trainor and his committee for another successful symposium and a job well done. We also thank the exhibitors in attendance for their support of the Sports Turf Association, not only at the show, but throughout the year. It is much appreciated. For those of you who were unable to attend, we will be featuring highlights of some of the talks in this and future issues of the Sports Turf Manager.

Sportsfield Drainage: Learning from Mistakes (Case 1)

Dr. Bob Sheard, P.Ag., Agronomist, Guelph Turfgrass Institute

An east-central Ontario city Parks Department engaged the services of a prominent sports facility architect to design a new Category One soccer field—that is one which would have a sand-based root zone. Soil engineering studies reported that soils at the site were lacustrine clay loams overlying a flat limestone bedrock at a depth of one metre.

The architect's design called for the removal of the clay loam material down to the bedrock and backfilling the first 45 cm with pit run sand. The final 45 cm was scheduled to be a selected sand. A running track was constructed around the soccer field on the clay loam subgrade. A single drain line was planned beneath the track to prevent frost heaving and cracking of the rubberized surface (Figure 1).

The design was accepted by city authorities and the field was constructed according to plan with an in-ground irrigation system. The field was prepared for seeding, which took place in late August. In early September, the remnants of a hurricane moved across the region dumping several centimetres of rain. As the storm moved away, the field was left inundated with water. The water stood and did not drain for five days after the storm had passed. In fact, the watertable did not drop below the 30 cm level for two weeks following the rain. The establishment of the new seeding was erratic.

What Went Wrong?

The design. Sand surrounded by highly impervious clay loam is analogous to a cereal bowl of cheerios filled with milk. The bowl became full and ran over.

At the time the hurricane passed through, it can be assumed that the sand was at field capacity and the only storage space available to accommodate the rain was the air-filled porosity, which was measured to be 19.8%. Thus in a metre depth of sand, 19.8 cm of rain could be absorbed before the sand became saturated. One can also assume that the lower 30 cm of the profile was close to saturation because the underlying bedrock would not permit complete drainage of rain which may have fallen since construction started. Therefore, it is easily conceivable that the five inches of rain received in early September filled the bowl with water.

One may ask: "Would the tile line under the running track not drain the water out of the sand"? Not likely. Why? Because of the low permeability of the clay loam soil in which the drain was laid. Furthermore, even at a hydraulic conductivity of 56 cm per hour, it would take a minimum of 2.5 days for the standing water at centre field to flow to the side lines. It might also be assumed that lateral flow of water without the force of gravity may be less than 50% of the vertical flow.

Fixing the Problem

The solution to the problem was to install four drainage lines running the length of the field using a tile machine which plowed in the drains to minimize surface disturbance and prevent mixing of the pit run sand with the selected sand. Unfortunately, the already installed irrigation lines ran perpendicular to the drains which meant they all had to be cut before the drain plow went through. With a good outlet in place, the field drained as it should.

Another important reason to correct the design was that failure to drain the field would mean that every winter the sand would have filled with water to the surface because there would have been no active evapotranspiration to remove the water. All