Beware low pH — destructive to pipes and turf

Continued from page 13

ide from the water solution. If the pH of the irrigation water is maintained at a very low value for an extended period of time, the buffering process in the water or soil may be destroyed completely.

The problem was so severe that the first pump station was dissolved by the excess hydrogen ions and the tin ion dissolved in the irrigation water.

Increasing the pH value alone is not adequate to solve the problem. Basic compounds such as lime (calcium hydroxide) could be added to raise the pH, but there is no buffer created. This would mean that with only a slight excess of the lime the pH would raise to approximately 11.0.

If a buffer were created the pH could be easily controlled to and maintained at a safe pH. The buffering allows the pH to be raised and maintained at the desired pH value.

As the carbonate is metered into the irrigation lake, the pH is quickly raised to 7.4. Bicarbonate ion is formed in the irrigation water as the solid carbonate is reacted with the acidic irrigation water.

A system was built to allow insoluble calcium or magnesium carbonates to react with the excess hydrogen ion in the water to form the soluble calcium bicarbonate and raise the pH of the irrigation water to 6.0 within a minute of mixing and to a pH of 7.0 within 30 minutes.

The irrigation water now will contain much less free hydrogen ion, about 10,000 times less free hydrogen ion than before the reaction with the calcium carbonate.

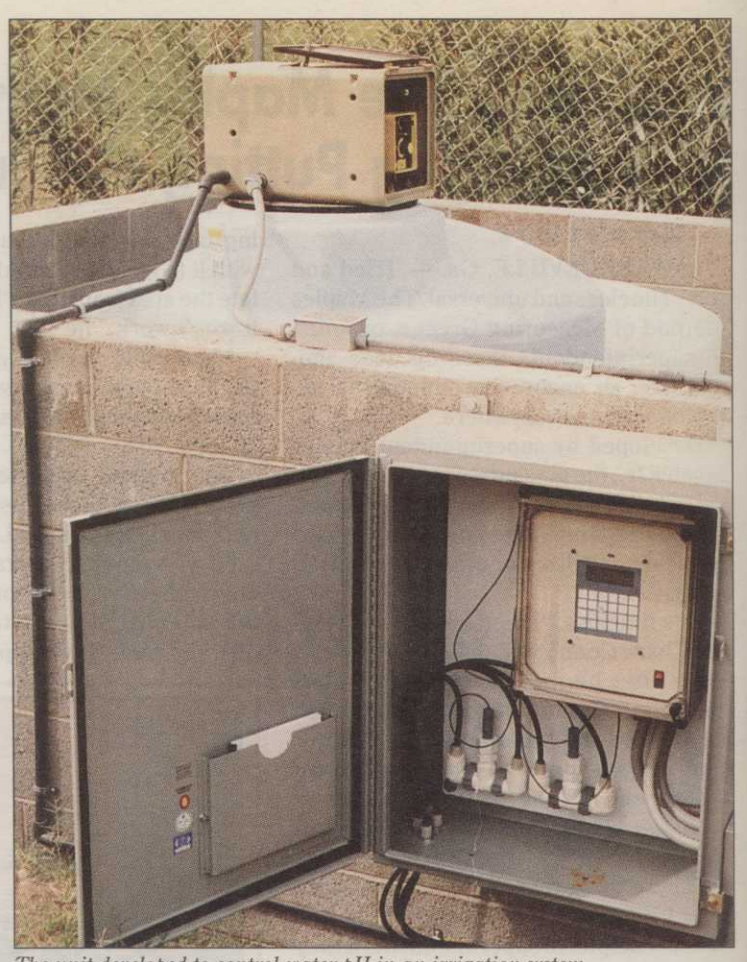
The concentration of the tin ion in solution is decreased by reaction with the bicarbonate that is formed in solution. An insoluble soil tin (II) carbonate is formed and can be dropped out of solution.

The bicarbonate ion concentration, HCO_2, has been increased from essentially zero PPM to a point where the concentration where the bicarbonate ion (HCO_3-) can reach with the problem tin (II) ion in the irrigation water.

Raising of the pH to near 7.0 in combination with a decrease of the tin concentration will greatly decrease the corrosive effects. In layman's terms: Raising pH of the irrigation water by one pH unit (one pH units is 1/10 the concentration of hydrogen ion) the rate of corrosion will be approximately 10 times slower, and if the concentration of the tin were decreased to 1/10 of the original concentration, the rate of corrosion should be slower by a factor of 10.

If the pH is raised from 3.0 to at least 6.0, three pH units, the hydrogen in concentration is decreased by a factor 1/1000. As the carbonate dissolves, the bicarbonate buffer can also be re-established in the water solution. The tin ion or other metal ions such as copper, etc. in solution should decreased by at least 1/1000 as the ions react and drop out of solution as insoluble carbonates. The overall corrosion rate of iron parts of the irrigation system should be at least 10,000 times slower. This change can provide longer irrigation equipment life.

The plant material irrigated with this water buffered to near 7.0 can, over time, help to re-establish the soil buffer near 7.0.



The unit developed to control water pH in an irrigation system.

The plant material is under much less stress because of not having to work against the pH gradient, and the trace minerals are more in balance.

Beneficial soil organisms are more able to attain a desirable balance in a soil if the pH were maintained near 7.0 than in acidic soil conditions.

'They bought me a nice fishing rod and reel and we had all kinds of parties and all. But I never got the line wet.'
— Richie Valentine not retired

Un-retired Valentine: Open for business in consulting and sales

By MARK LESLIE

BRYN MAWR, Pa. — Merion Golf Club kept his rapt attention as superintendent for 42 years. Now the "retired" Richie Valentine has set his sights on advising other people on agronomic problems at their golf courses.

Under the name Valentine Golf Associates Inc., Richie is offering his expertise as a consultant, while sons Tom and John run Valentine & Sons, a golf course service and supply business.

When he retired from Merion in 1989 at the age of 62, "they bought me a nice fishing rod and reel and we had all kinds of parties," Valentine said. "But I never got the line wet."

Instead, he made his time available as a turfgrass consultant. Requests for his services grew and grew until he had to "level off," he said, adding that he is trying to remain in the Pennsylvania area, near his family.

"A superintendent works nearly seven days a week. At least he worries about it [his course] seven days a week," Valentine said. "I had offers [to work], but I had to level off."

Reducing the consulting work, Valentine decided with Tom — a communications and marketing expert — to enter the service and supply arena. John has since joined them.

"We rep for eight companies," Valentine said. "I try to pick companies I think are unique.

Turfgrass producers revise guide to sodding

ROLLING MEADOWS, Ill. — A newly revised and expanded edition of *Guideline Specifications to Turfgrass Sodding* is now available from Turfgrass Producers International.The 20-page booklet offers the turfgrass sod industry's most up-to-date recommendations for the sod itself as well as specifications for topsoil preparation and materials, pre-installation fertilization, installation techniques and post-installation maintenance.

The newest edition divides a turfgrass sodding project into six distinct areas. This will enable a firm to adopt specifications necessary for any or all of a project's segments, in a comprehensive, business-like and manageable way. The guidelines also contain an expanded section to help specifiers understand, determine and detail the type or quality of turfgrass sod necessary for a particular site.

Individual, complimentary copies may be obtained from TPI, 1855-A Hicks Road. Rolling Meadows, Ill. 60008.