GROWERTALKS

Growers Talk Business

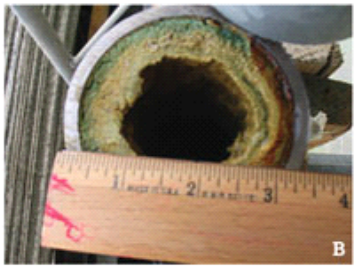
10/28/2016

Improving Water Quality and Profits

Bill Swanekamp

Have you ever had a nagging health problem that wouldn't go away? It's not life threatening, but you know it's always there and persistent—like a sore back or nagging toothache?

Well, we had a similar problem with our well water. It's actually very good water; it has a low alkalinity of 65 ppm, but it has a high level of iron and manganese. The iron left a brown residue on the sidewalks and clogged the drip irrigation for the hanging baskets and Chapin system. It also eventually clogged our 3-in. water main (pictures A and B).



It also left a brown color on any plants that were misted for a long period of time. We spent many years trying to figure out where the problem was coming from, because whenever we took a water test or sent it out, the iron level was less than 1 ppm. We eventually had a visit from Dr. Paul Fisher from the University of Florida and he suggested we contact another grower who had a similar problem. We did and they confirmed that they had the same problem and it was solved by installing a green sand filter.

Now we were excited! We'd struggled with this problem for about 25 years and finally had a concrete lead as to how to solve it. One of the things that had been confusing us over the years was that whenever we sent the well water out for testing, the iron level was less than 1 ppm. Dr. Fisher explained to us that once the well water hits the air, the free oxygen in the air causes the iron to precipitate out and that's why we got such a low reading. He suggested we take the iron test immediately after taking the water from the well. Guess what? When the test was taken immediately, the iron level was 8 ppm. This is a significant level and was the cause of all our problems.

One of our immediate goals in designing the system was that we didn't want to have to store treated water for peak demands. This required the filtration system to clean up to 400 gpm. We worked with a company that designs filtration systems for large municipalities and they assured us that this wouldn't be a problem. We also wanted a computer interface for the system or a PLC. This would allow us greater flexibility in controlling the backwash cycle times and frequency. We didn't want the system to backwash simply based on Delta P or pressure—since this could occur anytime during the day and since the backwash cycle uses almost 300 gpm, it would cripple our ability to water during the day. The PLC allows us to schedule a backwash based on both time of day and Delta P.

The filtration system needs a reactive agent to cause the iron to precipitate out. This required the injection of potassium permanganate into the water main. The amount injected would vary based on the actual flow of water into the greenhouse. Because the PLC was controlling this, we were assured the correct amount of potassium permanganate was injected at any time.

To house the new filtration system required, we built a new room to store it in. We built an 18-ft. x 60-ft. steel building and the new filter system now had a home (picture C).

The cost to build the filter room was about $30,000 and the cost of the filter system was about $170,000 for a total cost of $200,000. Now I know you're saying to yourself, "That is a lot of money!" It is, but it was costing us about $100,000 a year in labor to hand water many plants that were supposed to be watered by the drip irrigation. We also had to replace thousands of drip emitters each year due to clogging. When you look at it this way, we should realize a two-year payback on this investment.

This is where the profit side of the investment comes in. Not only are we growing better plants today, but doing so at a lower cost. That sounds like a win-win to me. **GT**

Bill Swanekamp is president of Kube-Pak Corp., Allentown, New Jersey.