GROWERTALKS

Columns

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The Day the Water Expert Solved Two Mysteries Without Getting Out of the Truck

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It's important to test your water and we're lucky to have great water. The river that serves as our water source is pretty clean, has a pH of roughly 6.5 and has such a low level of soluble bicarbonates that the lab once wondered if we were pulling their leg.

The first mystery was pansy pH. Because of the very low buffering capacity of our water, we can push pH wherever we need to with our liquid feed. Our initial feed pushes pH up and our top growth fert pushes it down. We've battled high pH on fall pansies a few years in a row, which is creepy because high pH increases the chance of Thielaviopsis.

The first season we saw high pH, I thought it was a miscommunication with the irrigation crew that resulted in too many weeks of the fertilizer that pushes pH up. We reviewed the program and made it through the short season without disease. The following year, we reviewed the program before the start of the fall pansy season and kept a sharp eye on pour-throughs. The first pour-through was two weeks into production and the pH was already way too high, so we switched to a high rate of the acidifying fertilizer and watched the pH creep down very slowly.

It didn't make sense. We knew we were applying the right amount of fertilizer because we routinely checked the level of soluble salts during fertigation events. We also didn't see this on our acid-loving spring crops. Something had to be buffering the pH, which (I thought) meant it had to be the soil. We asked the soil vendor to decrease the amount of lime they added.

At that same time of year, we struggled with some disease on other crops—bacteria on hypericum and Phytophthora on a few things. Customers didn't see it because we didn't turn that product on, but the shrink was unacceptable. We'd been unhappy with our chlorine system for a few years, recently switched to tablets and dialed it in to be sure we were injecting the right amount of chlorine at all flow rates. It couldn't be the chlorine.

It was time to call in some help, so we called our state water disease expert, Dr. Chuan Hong, who solved both problems from the comfort of the passenger seat while looking over our irrigation pond. It was algae.

We test our water at the source, but then we pump it to a holding pond that also catches some run off from adjacent production areas. Water from that pond is chlorinated and pumped all over the nursery.

The sun, heat and captured fertilizer pushed the algae in that holding pond, which drastically changed the pH throughout the day. First thing in the morning, the pH of the water in the main irrigation pond was 7.4—surprisingly high by itself—but by the end of that hot, sunny day it was 9.4! Something was indeed buffering the pH of our pansies, but it wasn't the soil, it was the water. We didn't catch it because we only checked the EC of the fertigation water, not the pH. And it was only a problem in late summer because cool spring temps don't encourage algal buildup.

That "ah, ha!" moment was eclipsed by what we learned about pH and chlorine. Chlorine is progressively less effective at higher pH. Even though we had a great new system that was painstakingly calibrated to consistently inject the target ppm of chlorine at all flow rates, we weren't getting the control we expected. That helped explain why we struggle with some diseases in late summer even though we scout thoroughly and have a strong IPM team.

The fixes are, thankfully, straightforward. We used an algaecide to clean up the main irrigation pond and the pH dropped immediately. We're also installing an acid injection system in the main pump house this winter to ensure our pH stays in the target range even if it changes in our water source. Check your water. **GT**

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