

FEATURE I

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# See What You're Looking At

*I don't remember many childhood jokes, but one that I have always loved is about a science class that wants to research how far a frog can jump. (Yes, probably funded by the government). The class puts the frog on the floor, and shouts, "Jump frog, jump!" The frog proceeds to jump 12 feet, and they record the data; frog with four legs jumps 12 feet. To continue their research they remove one of the frog's legs, place it on the floor and shout, "Jump frog, jump!" The frog jumps about eight feet, so they record the data; frog with three legs jumps eight feet. Furthering their research, they remove one more of the frog's legs, place it on the floor, and again shout, "Jump frog, jump!" The frog jumps about three feet, and they record the data; frog with two legs jumps three feet. Continuing, they remove yet another of the frog's legs and again place it on the floor with the familiar shout, "Jump frog, jump!" The frog, now with only one leg, jumps about one foot to the side and they record the data; frog with one leg jumps one foot. In their effort to be thorough, they remove the final leg, place the legless frog on the floor, and shout yet again, "Jump frog, jump! Jump frog, jump!! Jump frog, jump!!!" The frog goes nowhere, and the data are recorded; frog with no legs can't hear.*

Ok, as silly as that sounds, I think that it does illustrate a problem with some of the research that shows up in golf. A colleague who knew I was writing this said, "Sometimes we rely too much on science."

Now, to qualify this and so I don't end up with a bunch of unwanted emails and pen pals, I am not bashing science, scientists, or research per se. In fact as an agronomist I make my living relying on soil and fertility science and much of the research that has advanced our field. No...the point, to paraphrase a quote that I believe came from Dr. Carey Reams, 'we must see what we're looking at.'

This quote has two implications when it comes to research. The first is that not everything in nature is as simple and quantifiable as research would like it to be. The second is that when we look at research findings we have to look beyond the conclusion and deeper into the method.



Both of these implications come together in the barrage of rants we have heard about the use, or the insinuated overuse, of potassium. For some reason, researchers have spent the last decade trying to get superintendents to lessen their dependence on potash. I can't imagine how much money has been spent on this, let alone the ink and paper to print the findings. Now, again, I am not a researcher. I, like most of you, am an observer. We analyze plant and soil chemistries, the visual/physical condition of the turf, and then make educated decisions for improvement. Once applications and cultural practices are initiated we observe the results, check the science, and file the results in our memory banks. This to me is research at its best.

Each spring as client visits begin, we hear the same questions, "What did you think of \_\_\_\_\_'s talk on potassium or phosphorus, or calcium?" "What did you think of \_\_\_\_\_'s

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talk on aerification and profile modification?" Answering these questions is difficult. It requires seeing past the hype and picking out the pieces that are applicable. As I continue to remind clients, if you abort proven practices based on incomplete studies and you fail, then who will lose their job, you or the presenter? Pretty simple isn't it?

OK, examples. Back several years ago a speaker came to the area and spent two hours presenting research about the overuse of potassium. At the conclusion of a two-hour rant a client showed the speaker his water report, which revealed all the sodium he was pumping on his course. The client then asked if he would need higher levels of potassium. The speaker agreed that our bent/poa greens would require more potassium to compete with that much sodium. Now, wouldn't it have been more appropriate for the speaker to have qualified his comments during the presentation? What about the superintendent who listened, went back to work, cut his potassium use, and lost his wear tolerance? Who would be hurt?

Again, sometimes we need to 'see what we're looking at' and not take everything at face value. Ten years ago I had a new client. As we reviewed his past practices he informed me he was using about 12# of actual potassium/1000sf per year. When I asked why, he simply replied, "I like the way my greens respond." After his lab reports came back, it was obvious why. He had a high sodium water source at a club with a higher than average round count. On top of that, many of his greens had minimal air movement, which resulted in wet greens where flushing the sodium was difficult. This superintendent, this researcher, had found that as he increased his use of potassium, his wear tolerance increased and the playing conditions improved. This superintendent 'observed what he was looking at' and responded to it.

In another case a client had 8-10 year old greens that were covered with algae and moss. When we met in the fall, I suggested he would probably want to gas them off and reseed at some point, since they were just so bad. That fall, after studying his chemistries, he applied 1# of P and 2# of K/m and covered for the winter. He called first thing in the spring and said his turf was amazing. Ten years later he continues to manage his phosphorus and potassium, has cut out much of his nitrogen, and we no longer discuss renewing

his turf. Through increased plant density and wear tolerance this client 'saw what he was looking at,' responded, and improved. Is the moss completely gone? No...but it is tolerable and regressing. Did P and K stop it? I doubt it. Did a better turf environment make a difference? Of course it did.

In yet another case, a client worked to improve his potassium levels throughout the year. In the fall he was playing golf with a salesman and a couple of colleagues. He called me to report that the day's conversation was all about the extreme amounts of dollar spot everyone was seeing and that he had no need to spray. Is there any research to suggest that potassium has an effect on dollar spot? None that I'm aware of, and I certainly wouldn't suggest that there is. I would however suggest that this client, just like the previous one, had improved his soil and plant nutrition, was saving on fungicide budget, and enjoying improved turf as a result.

Potassium is not the only target; humates, calcium, and phosphorus have also caught the ire of researchers. Even silicon has gotten some attention lately. A few years ago there was a study that suggested that the use of silicon did not improve wear tolerance on greens, yet client after client who uses it sees improved turf and wear response. Several clients have even seen less anthracnose after beginning to use potassium silicate. Tissue analysis reveals higher levels of potassium and silicon after the products were applied than before, which confirms that the turf is absorbing the silicon. Is this enough to help the turf compete with disease? Again, I wouldn't say, other than to say that we know that the strong survive much longer than the weak.

A further look into the trials themselves reveals that after treating the turf with silicon products, a rotating wear wheel was used to test the wear tolerance of the turf. I suggest that if the research had actually been performed on a golf course with typical golf wear, and in conjunction with a qualified super-intendent, the results would have been more applicable. Indeed, if one looked more closely at the amount of wear created by the wheel, one could apply the jumping frog findings and conclude simply that 'grass dies where there is wear,' since the untreated turf plots also wore to nothing. When we look at research processes, it is important to 'see what we're looking at.'

My opinion: superintendents need to remember that they are the experts. They are the ones in the trenches doing the





job day in and day out. Add to that the budget concerns of the last 6-8 years and research can rest assured that clubs are not applying products that don't yield a response, measured or not.

Again, I need to qualify my perspective. No, not all research is frog ridiculous, and the majority is very good. I have always applauded the work of our CDGA staff and their work with area courses and clubs so that their findings can be published with authority. The same is true of my trips through the research farm at the University of Illinois. This is hard core information that is often repeated on area courses, which makes it applicable for the superintendent. I love to walk onto courses and see Bruce Branham's velocity trials in active fairways, or Derek Settle's Fairy Ring or Dollar Spot trials on in-play greens. This is research that superintendents can hang their hats on with confidence and risk their jobs on.

I encourage superintendents to look deep into research studies and see just how the work has been performed. Often, it's important to know who paid for it and what the purpose is. I further encourage that caution be taken before making wholesale changes to programs that have proven successful. If you question silicon, use it on the front nine and not the back, and judge for yourself. (Don't just pick your worst and best greens since there may be other issues at play that skew your results.) The same is true for potassium or some of the new information regarding phosphorus. Cut back on nine holes and monitor your results. 'See what you're looking at' and then implement the best management practices that fit your course, your water and soil chemistries, your play level, and your expectations.

And finally, for those who fund research: it's high time that Golf Course Superintendents be included in the evaluation of proposals and that they and their clubs are compensated for their

involvement. I could spend all day writing about the innovative nature of these experts, the products they use and get results from, and the methods they use to continue cutting budgets without sacrificing the quality of the turf. As we know, research funds have become more and more restricted. By including the superintendent we would assure that research studies would provide 'real time' data that would solve 'real time' problems and save 'real time' budget dollars. **-OC**



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