Mark My Words

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Trying to make intelligent decisions

At the Poa Annua board meeting, the FGCSA finally voted to approve funding for the DNA research proposal initially presented by IFAS last fall. This is a two-year, cutting-edge research project whose $66,000 price tag will be jointly split between the FGCSA and the Florida Turfgrass Association.

My use of the word "finally" in no way implied that we've been dragging our feet on the matter, as some might conclude, but rather, suggests that a lot of deep thought and analysis by many busy people went into the decision to fund this project. Members of both FGCSA and FTGA should find comfort in the deep sense of fiscal responsibility and concern for our industry demonstrated by all those involved in this project from conception to initiation.

For those of you unfamiliar with this proposal and its attendant concerns and controversy, I'll do my best to summarize:

I think we all would agree that one of the Florida golf and turf industry's greatest problems is the lack of standards and quality controls in the sod and grassing business. All of us are painfully aware that specifying "Tifdwarf" or "Tifton 419" in a grassing contract is wasted ink, and visiting a field is wasted time.

The best quality control measures currently available are word of mouth and the individual integrity of the grassing contractors and sod producers.

Golf courses often spend millions of dollars during construction or renovation only to be disappointed with the quality and/or consistency of the turfgrass installed on their property. Even if initially satisfied, decline in quality and consistency due to the appearance of off-types is inevitable as time passes.

At this point in time, speculations about the origin of off-types are offered but conclusions are impossible, and answering this question is one of the main objectives of this project. Superintendents have been fired, grassing contractors have been sued, and fingers have been pointed in every direction seeking to assign blame and accountability for a problem that is truly a failing of our entire industry.

Though the problem has been with us for many years, a totally satisfactory solution could not be achieved using the standard morphological methods of identification and chromosome counts.

As Dr. Phil Busey puts it, "A deficiency or morphology is that the number of useful traits is few, while the number of possible variants is potentially large. It is difficult for morphology to represent the adaptive genetic diversity of bermudagrass, and to distinguish closely related genotypes. Small genetic differences can produce large morphological effects."

In this project, morphology will be used as a preselection process to increase the chance of off-type detection and reduce the cost. Likewise with chromosome counts — costly DNA testing is unnecessary if you can screen out a selection based on chromosome numbers.

The intelligent and appropriate use of all these identification techniques will help build our necessary database, keep costs reasonable, allow for practical certification inspections, and give us the best chance of developing a reliable and repeatable positive identification procedure.

Notice that I said "give us the best chance" in the previous paragraph. Everyone needs to understand that there is a possibility, as there would be with any endeavor using new technology, that the project will not yield the results we are expecting.

Obviously, we think the risk worth taking, or we wouldn't be putting up $66,000. There is also the chance that everything works fine, but the conclusion reached is that off-types are caused by spontaneous mutations, in which case no practical solution for our problem is feasible, but at least we'll know that and the finger pointing can stop.

Earlier in this article I used the word "controversy," and the real controversy surrounding this project is the DNA technology. Some of the brightest minds within the field disagree on the best methods and techniques, so how can golf course superintendents makes an intelligent decision?

Making our decision a little easier is

the fact that our recently instituted certification program needs Florida data and validation, since it will be administered and conducted within the state of Florida. We will still utilize out-of-state expertise, such as Dr. David Huff of Penn State, author of most of the papers published on RAPD markers in turfgrasses, to help us achieve the desired results.

The two DNA technologies at the heart of the controversy are DNA Amplification Fingerprinting (DAF), currently utilized at the University of Tennessee, and Random Amplified Polymorphic DNA (RAPD), which is the method proposed by the University of Florida for this project.

Drs. Phil Busey, Al Dudeck, Charlie Guy, Terril Nell, and Nigel Harrison at the University of Florida, and Dr. David Huff at Penn State, feel the RAPDs technology offers the best chance of developing an efficient method of genetic fingerprinting bermudagrass cultivars.

RAPDs is cheaper and faster than other methods, doesn't use radioactive labeling, and works with easily extractable, small amounts of crude DNA. Up to 100 primers will be tested, giving a high degree of confidence in the results. The main concern with the RAPDs method, readily transferable results from one lab to another, will be addressed by replicating selected results between the two labs in Fort Lauderdale and Gainesville.

We are taking a giant step into the future for our industry. Fear of failure should be our last concern. Turfgrass certification needs the backbone this project can provide.

Kevin Downing, David Barnes, Mike Bailey, Paul Crawford, Jeff Hayden, the professors at the University of Florida, and many others, have worked long and hard to bring this project this far along, and it assumed that this two-year proposal is but the first step in a long, multi-year process. Results won't come quickly, and practical application even slower.

Of course, we could just hire a genetic engineer to develop a "bentudagrass," and forget all about these bermudagrasses and their problems, couldn't we?