

Space Age Technology Benefits Turf Industry

By Sandra P. Carmouche

Imagine the savings in chemical expenditures if a pocket of mole crickets could be spotted before they overran a golf course. Suppose pythium could be found before its effects became visible. Consider the improvement in drainage that would be possible if the historical flow of water across a golf course was known.

Sound futuristic?

In fact, Jon Seid, of LaBelle, is currently working with golf course superintendents, using infra-red photography which is capable of producing the above results.

With a degree in Electrical Engineering, Seid has applied his knowledge in electronics to infra-red filming techniques. Photographing golf courses from a plane, he is able to determine conditions that affect turf at both surface and subsurface levels.

Seid's expertise lies not only in the specialized field of infra-red photography, but also in his ability to interpret the film he shoots.

In order to understand the difficulty of interpretation, it is necessary to understand the basic principles of infra-red photography.

An ordinary photography is a reflection of what the eye sees. Infra-red film is a picture of the reflection of infra-red rays, something which human vision is unable to detect.

In plants, the infra-red rays are reflected by the chlorophyll during the process of photosynthesis. As Seid explains, "Chlorophyll is the blood of the plant. When anything occurs in a plant, whether it is nematodes, a freeze, or a pathogen, the first thing affected is the chlorophyll. There will be a change in the reflectance and only experience can tell you what that change is and what's causing it.

Seid's fascination with the field was acquired during the Korean War when he was attached to Strategic Reconnaissance in the Strategic Air Command as a flight crew member.

Since the war, he has worked extensively throughout the Midwest and California with many universities and state and federal agencies as a private business, photographing as much as 50,000 acres of farmland a week and diagnosing the diseases and infestations that affect agricultural crops.

More recently, he has worked with the Institute of Food and Agricultural Services, an extension of the University of Florida, in detecting citrus canker.

Seid's interest in golf courses came about when he was approached by Cary Lewis, Director of Golf Course Operations for the Vintage and Fiddlesticks in Fort Myers.

Lewis had been in LaBelle when he overheard a group of farmers talking about the photographs Seid had been taking of their crops. He questioned the farmers and was given Seid's name, whom he contacted for more information.

After speaking with Seid, Lewis had him fly over and film the Vintage and Fiddlesticks.

The results, according to Lewis, were impressive.

"It gave me a feeling of confidence," said Lewis, with regard to problem areas on the courses that he knew existed, but were hard to define to members.

He presented the film at a greens committee meeting and added, "It's an easy way to justify your chemical and fertilizer expenditures."

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"Keeping Golf Courses Green"

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The photographs also picked up drainage problems, diseased pine trees, and bad sprinkler heads.

To date, Seid has also filmed Hole-in-the-Wall, Royal Poinciana, and Lely in Naples.

At Hole-in-the-Wall, he was able to help Buddy Carmouche, the superintendent, with drainage problems.

According to Carmouche, "I had an area where the drainage system was developed to be consistent with the slope of the land, but that wasn't working. This spot was always wet. Then John showed me that the water underground flowed in a direction opposite to the slope. So I redesigned the drainage in that area to be compatible with the underground water flow and that took care of the problem. In fact, a member told me this is the first time he's seen that area dry in 30 years.

Clint Smallridge at royal Poinciana had a different problem. "This course is inundated with Brazilian Peppers. I needed a way to monitor them for removal...to get an idea of how many there were and which areas to attack."

In addition to pinpointing the Brazilian Peppers, Seid's photographs picked up underground rock formations and

located spots where drainage was needed. "It saved me hundreds of hours," said Smallridge, who is also convinced that infra-red film is useful as a diagnostic aid in determining areas of turf that are under stress.

At Lely, Dan Hall is in the process of building two courses. "I wouldn't attempt to do this without infra-red," he says.

Because Hall contracts his services for maintenance and construction at Lely, cost-effectiveness is a top priority. Guesswork is eliminated in designing the irrigation and drainage systems since the photographs locate underground rock formations and water flow.

Hall was aware of the benefits offered by infra-red photography because he had seen it work in World War II. At that time, he was in the Marine Corps and helped to build a golf course on Paris Island. Because the golf course was being built on swampland, infra-red was used to distinguish salt water areas from fresh water areas.

Seid acknowledges that his services, "don't eliminate the superintendent from going out and doing his job. It allows him to utilize his time more effectively." He adds, "The whole success of this program is based on a cross-feed of

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The two dark spots, immediately forward and to the left of the tee at Fiddlesticks in Ft. Myers, are subsurface leaks in the irrigation line. Not detectable from the surface.



The two trees adjacent to the right of the green at Royal Poinciana in Naples, in the lower right corner, shows stress to the trees which could not be detected at the time.



Dark streaks across the fairways at Hole-in-the-Wall in Naples, indicate underground lateral water flow and the direction of flow which was unknown at the time.



Showing the identification and relative health of several species of trees at Lely in Naples.

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information. The superintendent has to take the time to sit down and talk with me about the film.”

It is also important to note here that, although Seid is able to pick out areas of turf that are under stress, he cannot at this point, determine its specific cause.

The reason for this is simple. Seid has only recently begun working with golf courses and is not wholly familiar with the pattern that diseases and infestations make.

For example, Seid states, “I can spot nematodes in tomatoes. But nematodes look different in grass than they do in tomatoes, and they look different in citrus. In fact, the patterns will change from here to Orlando because the soils are different.

He is convinced, though, and so are many of the area superintendents, that very soon he’ll be able to diagnose nematodes and mole crickets from a photograph. “Once I see what these things look like on film, then I’ll know what to look for in the future. There’s no question in my mind that I can, for instance, find a spot of pythium.”

Even more exciting is Seid’s hope of being able to prognosticate diseases and infestations. “I want to emphasize that this has not been documented,” says Seid, “but it has been my experience that over 95% of the time, where we find insects or the movement of pathogens, they were prefaced by a former stress. For that reason, we can forecast which area will be attacked.”

Since he must have a series of photographs before he can determine what changes are taking place in the turf, Seid has decided, after speaking with superintendents, that four photographing sessions per year would be the ideal.

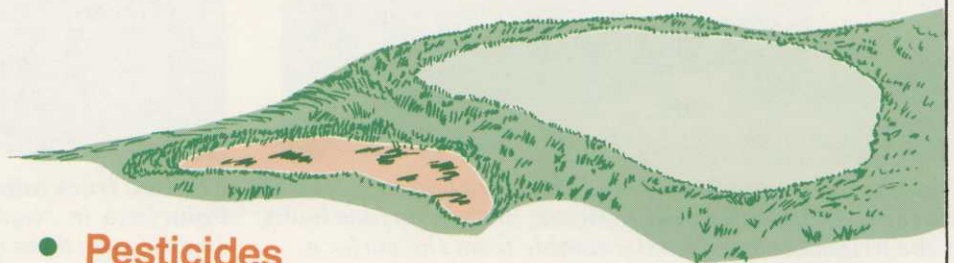
“If you know the time of year that nematodes are going to come in and I have a history to go by, then I can predict where those rascals are going to show. I’ve done it in agriculture.”

With the ever-increasing costs of chemicals and fertilizers, the financial savings for golf courses could be enormous. Less time and effort would be needed while the quality of turf would be improved.

The possibilities are limitless and, many superintendents believe, services like John Seid’s are the wave of the future. ■

*“A man is always stronger
while he is making a reputation
than after it is made.”*

— Josh Billings



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