Seeing The Unseen

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AT LAST YEAR'S conference, Northeastern agronomist Gary Watschke presented the use of aerial photography to aid in the communication of plans and programs to superiors and staff. In Florida, over the past year, quite a number of superintendents have taken advantage of a new twist with their aerial photographs. They changed from regular black and white or color film to infra-red. Aerial infra-red photography (or remote sensing) was used during the Korean War, and since then, millions of acres have been photographed. Nevertheless, this technology has rarely been used on golf courses.

Jon Seid, of LaBelle, Florida, has been involved with the technology from its beginning and has worked with universities and state and federal agencies as a private business, photographing agricultural crops to locate and diagnose plant disease and insect infestations. Cary Lewis, director of golf course operations for the Vintage and Fiddlesticks Country Clubs, in Fort Myers, Florida, overheard a group of citrus growers discussing photographs of citrus canker plaguing the area. After discussing this work with the growers, Cary decided to use this technique on his courses, and he was impressed with the results. Cary and Seid were able to define problem areas and then graphically explain them to the membership. Not only was it easy to justify chemical and fertilizer expenditures, but drainage and irrigation problems also became very evident.

The reason why this technique makes these situations so visible is that infrared film picks up the invisible rays reflected by the chlorophyll molecules during photosynthesis. Therefore, when anything affects the turf, there is a reaction by the chlorophyll, and the reflectance changes. Every factor — diseases, nematodes, insects, environmental stress — produces very distinct identifiable patterns. From the first, subsurface lateral water flow patterns were very evident. This allowed for greatly improved efficiency in drainage work. Because of this one factor, almost every course that has been photographed has been able to justify the cost of the service.

While a great deal of work still has to be done as far as keying-in on the numerous pests that attack golf courses, there is a tremendous potential to reduce chemical cost by treating only infested areas rather than having to make blanket applications. With each additional golf course that is photographed, more insight is gained into the use of this new tool, which has already been extremely beneficial to superintendents throughout Florida.

Shaded areas through the fairways indicate poor drainage.