SENECTOPATHOLOGICALLY SPEAKING

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July and August will probably bring us hot temperatures, high relative humidities and an opportunity for fungal diseases to do some damage to amenity turfgrasses. Hopefully, it will not bring us a repeat of last year's record heat and turf loss.

The months of July and August 1995 were the busiest months for the TDDL. That is when we received approximately 50% of our samples, and many of those were high temperature related damage. In fact, high temperatures were blamed for about 15% to 20% of the total cases that came into the TDDL.

Several high temperature related problems diagnosed last year include the controversial *Poa annua* anthracnose problem. Anthracnose has been studied for a long time, yet there are many unknowns that need to be revealed before we can successfully manage it. The fungus *Colletotrichum graminicola* is the causal agent of anthracnose, but there are conflicting theories as to how and to what extent it causes damage to turfgrasses.

There are two currently accepted theories that seem to divide turf pathologists. Just to be a gadfly, I have developed a third for your scrutiny. The three theories are as follows:

1. Anthracnose is a disease and fungicides can prevent damage.
2. Anthracnose is a senectopathic disorder and fungicides won't prevent damage.
3. Both theories are correct.

The first theory comes from the outstanding research of Dr. Joe Vargas at Michigan State University. He has conducted research on *Poa annua* long before it was accepted as a non-weed turfgrass. Dr. Vargas has demonstrated that annual bluegrass doe not die from high temperatures in cool season grass growing areas, but from anthracnose (or another disease, summer patch) In his book *Management of Turfgrass Diseases* (second edition), Dr. Vargas writes, "Before 1975, the dying of *Poa annua* in summer was attributed to direct high temperature kill or the natural dying of a winter annual." He goes on to cite studies that have demonstrated fungicide preventative efficacy against anthracnose of *P. annua.* In his book, his research and his scientific presentations, Vargas has made a good case for his theory. Anthracnose can be a disease and fungicides can prevent damage.

The second theory comes from the pioneer turfgrass pathologist Dr. Houston B. Couch of Virginia Polytechnic Institute and State University. Dr. Couch considers anthracnose to be a senectopathic disorder. In the "Turfological Bible" *(Diseases of Turfgrass,* third edition), Couch devotes chapter seven to senectopathic disorders.

He defines senectopathic disorders as "biotically incited diseases that can only develop after plant tissue is in advanced senescence." Furthermore, he states, "Pathogenicity test using isolates of *Collectotrichum graminicola* recovered from...(many states including isolates from Dr. Gayle Worf's collection) have shown that infection of annual bluegrass leaves will not occur unless the leaves have been predisposed by exposure to air temperatures in the 86 degree to 95 degree F. range."

In other words, you have to cook the *P. annua* plants before *C. graminicola* will infect. In Dr. Couch's opinion, heat stress is primarily responsible for the summer demise of *P. annua* and that there is "little or no benefit to be gained from the application of fungicides for the expressed purpose of controlling anthracnose."

That's me with the best that ever was, is and ever shall be—Dr. Houston Couch.

The King, Dr. Joe Vargas, Jr. — Viva Las Vargas!

The third theory considers both theories to be true. Anthracnose is a disease on **perennial** *P. annua* and a senectopathic disorder on **annual** *P. annua.* Furthermore, just as there are different levels of senecticity (pathogenicity) within *C. graminicola,* there are also different levels of senectibility (susceptibility) within the *P. annua* population.

There are many questions that remain about the relationship between the fungus and the host. However, I like this third theory best because it means both my turf pathology heroes are right and I don't have to choose one over the other! Mind you, this diplomatic proposal is just a theory and I have no research or data to support my hypothesis. Not only is this theory diplomatic but it also opens the door for creativity.

Just think of all the cool words that can be used:

SENECTERATURE - The temperature at which *P. annua* begins senescence.

SENECTIBILITY - The quality of being able to senesce.

SENECTICIAN - A person specializing in senescence.

SENECTICIDE - A fungicide used to prevent senescence in *P. annua* and infection and colonization of *C. graminicola.*

SENECTICITY - The relative ability of a fungus to infect senescent tissue.

SENECTIFRIED - The condition of a cooked *P. annua* plant.

SENECTIVAR - A genetically engineered *P. annua* cultivar that has been manufactured to withstand high temperature and avoid senescence.

SENECTOCLATURE - Terminology of senescence.

SENECTOPATHOLOGY - The study of the relationship between leaf senescence and plant pathology.

There probably is something that we all are missing in trying to understand the anthracnose problem. Whatever the truth may be, it probably centers around temperature. Temperature influences nearly every function of fungi that cause diseases of amenity turfgrasses. Every fungus has an optimum temperature at which it grows and also a temperature at which it does not grow. The ability to cause disease is dependent on temperature.

Likewise, the ability of turfgrasses to resist or avoid disease is also dependent on temperature. Temperature plays a vital role in all plant diseases and the anthracnose problem is no exception. Remember the disease triangle with its tripartite nature: the host/the pathogen/the environment. Until the truth about anthracnose is uncovered, there will be controversy over the two theories (plus one).

Only time will tell which is the best theory.