ALTERNATIVES TO DISEASE MANAGEMENT USING BIO-ORGANIC FERTILIZERS

Mark R. Jackson
Indianwood Golf and Country Club
Lake Orion, MI

INTRODUCTION

The current methods of controlling fungi that plague our golf courses serve their purpose, but are more tools and better methods needed? Or are other approaches even possible? What about safety? These questions and a few more were the basis for starting an "organic" fertilizer program at Indianwood Golf and Country Club.

Data and information was collected by salaried personnel employed by Indianwood Golf and Country Club. Only advice and suggestions came from outside sources. No funding existed. Indianwood simply wanted to improve its practices if possible, as every club in the world would like to improve from previous years.

Although research provides us with a great deal of data and testing, more is needed. Every golf course manager must choose wise chemical programs based upon these studies. However, studies on organic products are limited and often not tested against chemicals that Golf Course Superintendents need for safe decisions to be based on. Thus Indianwood set out to "study" these organic's on a much larger scale. Greens, tees and fairways received treatments. Pure Bentgrass stands and 80-90% POA ANNUA stands received treatments.

PROCESS

In 1990 four Greens were chosen. Each green had a history of trouble. Patch diseases were a constant concern. Often it was difficult to spray these greens when needed because of heavy play.

A program was needed to control the patch diseases (i.e. summer patch) yet, not hold up "play". Golfer safety and maintenance practices had to be considered also.

Only two of the original four Greens treated in 1990 received treatments throughout the year. The results on those two greens were undeniable. (Treated at 40 lbs. of product per thousand square foot per year using Lawn Restore 6-1-3.) Application rate of 5 lbs. of product per thousand square foot was never

exceeded; except our mid-April application was applied at 10 lbs. per thousand square foot. With the confidence and experience gained in 1990, the decision to go all out in 1991 was made.

Three truck loads were bought for 1992 with the product being applied from Tee to Greens. Both golf courses were treated. The Old Course at Indianwood Golf and Country Club being mostly POA ANNUA and the New Course planted in Bentgrass. Fifty-seven total acres received the organic program. Great results were expected yet, problems became a reality. All tees and greens came through 1991 in great shape. Dollar spot control was limited using the organic program. Additional sprays were required, although reduced. The number of total spray applications was decreased from a normal 10-12 per year to 6-7 times in 1991.

To save labor costs, fairways were treated at 10 lbs. of product per thousand square foot per application. Total for the year was to be 40 lbs product per thousand square foot per year. The result was **DEATH.** Death to the turfgrass rooting structure! Too much at once was the only explanation. All applications stopped for 7-8 weeks until rooting returned. Constant syringing saved most of the turf, some fairways had up to 20% turf loss. After many questions and heart aches, an oxygen imbalance was determined to be the major cause of turf loss. Air must be in a sufficient quantity in the soil for rooting to continue. Application rates exceeding 5 lbs per thousand square foot (i.e. 10 lbs and above) oxygen is consumed at an accelerated rate to support the living microbes in the organic fertilizer, thus starving the turf of needed oxygen for root development. Applications were resumed in mid-September without further consequences. The occurrence of turf loss quickened when applications were applied less than four weeks apart.

In every case disease occurrence returned after twenty-four days following the cancellation of all treatments. Normal chemical controls were needed until organic applications resumed in September. Dollar spot required control throughout the application period. Brown patch was almost non-existent. Summer patch (main targeted disease) was controlled.

We also gained knowledge of cost effectiveness from our trials in 1991 to begin 1992. Patch diseases did not occur on our sand based greens and fairways enough to warrant the cost.

The conclusions learned from 1991 was the starting point for our 1992 programs.

Heavy soils only received applications in 1992. Each application was not to exceed 5 lbs. product per thousand square feet and a target of 15-20 lbs. total material per thousand square feet per year was the goal. Careful monitoring was to tell us when we had to spray, if at all. To achieve the total lbs. of N desired additional N was to be supplied. Using a slow release N sources that would "feed" the existing desirable microbes applied through the organic fertilizers.

Considering the low disease pressure 1992 brought to us some results were impossible to obtain. However, one lesson stands out like a beacon of light. Wherever product was not applied, disease occurrence was significantly greater. Although only one outbreak of summer patch occurred, these results did show that summer patch can be controlled (to an acceptable level) without chemicals. Dollar spot, brown patch, and Anthracnose still required chemical controls.

All diseases mentioned above were slow in forming and reduced in severity. Good news for the golf course manager. Another weapon added to the turf manager's arsenal to fight turf diseases. This affords Time For Reaction for disease control. I.P.M. and curative methods of disease control can be used without fear of missing the "window" for proper control. Dollar spot continued to be the least affected by the bio-organic fertilizers.

CONCLUSIONS

The old acronym - more is not always better, proved to be very true. The "bio-organic's" are another tool, not a cure-all. If chemical applications are restricted on a golf course or undesirable, "organic" may be used to manage turf diseases. Light applications (3-5 lbs. material per thousand square feet) every 4-6 weeks apart work best. Additional N through slow release sources reduces cost. Chemical applications will still be required, but in reduced numbers. Cost efficiency will depend upon the

uniqueness of an individual course. Indianwood's costs equaled conventional control methods when applied on high disease areas.

Further work in 1993 will be directed toward better controls on application timing. Better N sources need more research as well. Products under trial in above mentioned report as follows: H.H.I. (Bio–Grounds Keeper); Lawn Restore; Sustane.

SUMMARY OF BENEFITS AND CONSIDERATIONS

- Wind must be considered during applying.
- Cost must be considered during applying.
- Odor is minimal.
- Great Public Relations.
- Safe.
- Limited use on Greens – Takes 1–2 days to break down.
- Thatch is reduced with H.H.I. product.
- Most effective on patch diseases.
- Air/water ratio must be kept in balance.
- Window for control opportunity is increased.
- Apply in small amounts approximately 4 weeks apart 20 lbs. material per one thousand square feet per year – maximum.
- Feed organic's with slow N sources.
- Organic's are a "Tool".
- Some additional chemical controls are still required.