PUTTING GREEN MANAGEMENT WITHOUT CHEMICALS

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Our lives our enhanced by technology. Whether it is medical advances that directly improve our health or automatic teller machines that give us economic flexibility. At the same time technology can be misused to the detriment of society. The questions we must grapple with are when is technology problematic and when deemed a problem, how do we continue without it?

Essentially the debate over pesticide use is one where a specific technology has been called into question. The question arises from concern over real and potential harm to humans and the environment when chemical pesticides are applied. The discussion of this issue raises the ire of many sectors from environmental advocacy groups to chemical manufacturers. In the middle are the practitioners and end-users that simply want solutions to their day to day problems.

The regulatory environment has been amenable to promulgating laws that restrict the application of pesticides. States differ in degrees and intent of regulations, with the most volatile debates occurring in states transitioning from an agrarian to urbanized society.

The disconnect between people and their food supply, vis a vie agricultural production, seems to produce people intolerant of the means required to produce inexpensive food. The cornerstone of which is modern pest management. The same disconnect is being played out in the landscape horticultural industries and especially on golf courses.

Given that there is an increasing desire by many in the golf industry to reduce pesticide use, the lack of viable products and practices is surprising. Several courses in the US that are or have attempted to become pesticide-free tout sayings like Loon Lake Golf Course in Loon Lake, NY, “an old style golf course-play golf the way it used to be played”. But can we deliver the modern golf course to a demanding consumer without pesticides?

The Bethpage Project

New York State has passed some of the most restrictive pesticide regulations in the US with several counties completely banning pesticide use on public land. This legislation will effect the management on scores of publicly operated golf courses. Interestingly in almost every case, “emergency applications” will be allowed to prevent complete turf loss.

In 2000, Jennifer Grant Ph.D. Coordinator of New York State Community IPM Program at Cornell University and I proposed a study to the USGA to evaluate reduced and non-chemical management of putting greens. The proposal was accepted provided the project was conducted on a golf course. This quid pro quo presented the challenge of finding a course that would accept turf loss anticipated on non-chemically treated greens.

The confluence of events (USGA project and US Open) brought us together with Dave Catalano the Park Superintendent at Bethpage State Park. Working closely with Craig Currier the golf course superintendent and Catalano we were able to openly discuss the concerns and offer

potential solutions should turf loss occur. Ultimately we were permitted to use the putting greens on the Green Course at Bethpage, the original 18 holes of the Lenox Country Club when Robert Moses purchased the site for the New York Parks System.

"If the greens begin to struggle, Catalano curiously inquired, "are you just going to let them die"? Clearly, this was the biggest stumbling block, yet unless someone was willing to do this, there was a sense that we'll never know. Ecologically speaking it was a foregone conclusion that if you have sustained a population of plants with pesticides for 50 years and removed the pesticides the weak plants would be killed.

The project began with early discussions of the various cultural practices being imposed on the course. Also we proposed several changes and experimental treatments. The guiding principle in the first season was to develop an array of "alternative' cultural practices that would reduce stress on the plants and provide an acceptable putting surface. Our performance targets was 8-8.5 feet on the stimpmeter and at least a 6.0 turfgrass quality rating (considered acceptable by National Turfgrass Evaluation Program standards).

The alternative practices included raising the height of cut to 0.1875" and rolling for green speed, light frequent organic fertilization, frequent water injection cultivation. A more extensive review would reveal a blend of many practices used a decade or more ago with cutting edge technologies to maximize performance and minimize stress.

A key issue in managing putting greens without chemical pesticides is the ability to anticipate turf problems. Once a pest problem is noted, there are limited research proven control strategies. Therefore, some poor growing environments needed to be modified. Still there are no easy solutions to the most common turf problems that have been kept at bay with chemical technology.

Politics, Science and Golfers

The first season of the project was successful from an experimental perspective in that treatments were properly imposed and an excellent set of data were collected. Politically there were several interactions worth noting. "I hope the greens die" whispered a leading industry member, "this way it will prove we can't do it without chemicals". One week later a leader of the environmental community accused, "You'll probably let the greens die just so that you can keep using pesticides".

A legislative day was organized at the course at the end of the first season while golfers were using several temporary greens because the permanent ones were unplayable. Several legislative aides intimated they had no idea how devastating pest problems could be when pesticides were not used. We felt we were meeting some of the objectives of the project in allowing results of restrictive laws to be demonstrated.

Golfers continued to play the Green Course in 2001 at a record pace. Season ending totals exceeded 57,000 rounds. Casual conversation during the season revealed that only a few regulars noticed the different mowing heights and other treatments. This was interesting since some

greens were as much as two feet different on the stimpmeter. It was not until significant turf loss began to occur that golfers began to take notice. Several placards are placed around the clubhouse discussing the study in an effort to inform the golfers about the experimental nature of the study.

As the non-chemically treated greens have suffered the last two seasons, the Green Course Staff led by Andrew Wilson, Green Course Supervisor, have weathered the storm. It has not been easy, even in the name of science, to watch something that you have toiled over for the last several years decline so severely. This type of retrofitting exacts a human toll as well as an ecological one.

Innovations

The most overlooked aspect of the Bethpage study to date has been the 30-50% reduction of pesticide use on the IPM treated greens as compared to the regularly chemically treated greens. There has been little to any difference in turf quality and ball roll among IPM and standard chemically managed greens.

The catastrophic turf loss in 2001 spurred innovation as we installed three new velvet bentgrass greens that as of this writing have provided acceptable turf quality and ball roll without pesticides in 2002. Additionally, several products have shown promise and many experimental treatments explored on the Green Course have become a part of regular maintenance on other courses in the park.

The USGA has provided for one more year of funding but there is a chance for additional years. The golfers are clearly avoiding the Green Course if given a choice as memories of temporary surfaces linger from 2001. Also, the 2002 Open Championship consumed two fairways for corporate tents leaving the opening and closing holes as 70 yard par 3's.

The US Open provided some poignant irony. The Black Course reveled in praise and demonstrated the best that technology could provide while the Green Course was used as a parking lot. The experimental nature of non-chemical management offered a glimpse of the challenges that a drastic elimination of technology would create.

It is clear that the transition will not be a smooth one. Turf quality and championship conditions will suffer with no chemical pesticides in certain climates. In the end as with most debates a reasonable compromise will be struck that will seek the middle ground of wise and limited use. The success of a compromise will rely on ideas from architects, superintendents, golfers, activists and politicians to use technology smartly.