Cosmetic Standards on Golf Courses

By Tom Cook

When we apply the word cosmetic to golf course maintenance standards, the implication is that we are doing things to the course that make it more attractive but don't necessarily improve playability. I guess obvious cosmetic touches might involve planting annual flowers around tees, mowing fairways in stripes, or contour mowing fairways to create the illusion of curves and to define landing areas. Another cosmetic touch might involve reshaping bunkers or changing sand from gray to white or tan.

Cosmetic standards change much like fashions. Currently flowers and elaborate landscape plantings are in vogue. Depending on the year a given club may mandate a wall to wall green policy; that is, there will be no brown grass anywhere on the golf course, even in out of play areas. The same club might later switch and irrigate only tees, greens, and landing areas to create contrast between rough areas and groomed areas. With the increasing popularity of wildflowers some golf courses are converting out-of-play grassy areas into wildflower meadows. Some simply quit maintaining these areas and allow nature to take over.

Apart from its utilitarian value, water is a popular cosmetic touch at many golf courses. From simple ponds to elaborate artificial waterfalls and fountains, water features can have a profound impact on the appearance and character of the course. It's not fair to say water features on golf courses are purely cosmetic because many are strategically placed to create challenging golf shots or are part of the irrigation supply system.

Cosmetic standards vary a great deal, depending on the type of club. High status country clubs often have large cosmetic flower beds and extensive landscape plantings around the clubhouse and out on the golf course. Augusta National is a stunning sight during the Master's tournament when all of the azaleas are in bloom. In the Pacific Northwest many of our finest country clubs have a park-like or private garden atmosphere complete with rustic shelters, flowering vines, seasonal color, and bearing fruit trees.

> *"High cosmetic standards could cause managers to use more pesticides …."*

It would be foolish to conclude that all wealthy private clubs fit the image I've just described. Some of the truly great private clubs in America are as rough, rugged, and spartan as you can possibly imagine. Resort golf courses run the gamut from elaborate ornamental embellishments to sites carefully situated in surrounding undisturbed vegetation with no significant cosmetic touches. Municipal and privately owned daily fee courses tend to have few cosmetic touches although there are many notable exceptions.

How Do Cosmetic Standards for Turf Quality Affect Pesticide Use?

Do these cosmetic touches have an influence on pesticide use on golf courses? In my opinion this question can't really be answered in general terms. Obviously high cosmetic standards could cause managers to use more pesticides than if standards were lower, but it's highly site dependent. For example, a club with extensive plantings of disease or insect susceptible shrubs or trees (i.e., large plantings of scab susceptible apple trees) or many poorly designed ponds might be forced to make frequent sprays to achieve maximum ornamental value.

Before I attempt to answer this question I need to review the anatomy of golf courses just in case there is someone reading this who knows nothing about golf. A typical golf course is made of nine or eighteen holes or other multiples of nine holes. Each hole is composed of several distinct areas. Tees are where play starts on each hole. Tees range in size from eight foot by eight foot rubber mats to several thousand square feet. Each hole will have from one to five distinct tees so players of varying abilities can play the hole at different lengths. An average eighteen hole golf course has about two acres devoted to tees. Fairways are relatively large short cut areas where tee shots are supposed to land on par four and five holes. An average eighteen hole golf course will have from 20 to 40 acres of fairways. Greens are the targets for all shots. Greens are cut very short so the golf balls will roll smoothly when golfers putt. While green sizes vary, the average eighteen hole golf course will have about two acres of putting turf. The other major area on a golf course is the rough. Rough is all the area not taken up by tees, greens, fairways and water features. On a 120 acre golf course there will generally be 80-90 acres of rough.

Maintenance intensity is inversely proportional to the size of the area. Greens and tees are maintained more intensively than fairways, which receive more care than roughs. It's difficult to discuss cosmetic standards for turf care because there are no absolute standards to judge against. The best I can do is to explain what the general goals of maintenance are for each area on a golf course. From there I will try to describe the extremes for which people might shoot and how that might influence use of pesticides.

Pesticide Use in Rough Areas

Rough areas are normally maintained at a low level of intensity. Turf may be mowed weekly in outer areas and one to two times per week where rough adjoins fairways. Fertilization is minimal, often being limited to overthrow from fairway fertilizer applications. The only pesticides used on roughs in the Pacific Northwest are mixtures of herbicides that selectively kill broadleaf plants. My estimate is that less than 20 percent of rough areas are treated annually at most northwest golf courses. As a rule, tolerance

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for weeds in rough areas is high. In other parts of the U.S. where weed, disease, and insect pressures are much higher, roughs may be treated with pre-emergent crabgrass herbicides, insecticides for grub control, and possibly (though rarely), with fungicides for disease control. The extremes range from no treatments with any pesticides to annual sprays for weed control plus other pesticides when need arises. Private clubs with high standards for appearance and high end resort golf courses are most likely to treat rough areas cosmetically. Public golf courses are least likely to treat roughs cosmetically.

Pesticide Use in Fairways

Fairways are maintained with the goal of producing tight, dense, erect growing turf that will support golf balls. Typical mowing heights on fairways range from 3/4 to 3/8 of an inch. Short turf is desirable to facilitate proper shot making. The principle cultural practices used to achieve top quality turf include frequent mowing, periodic fertilization, and regular irrigation during dry periods.

On mature golf courses in the Pacific Northwest broadleaf weed control is done on a target basis. I estimate that about 20 percent of the fairway acreage is sprayed annually. Golf courses that have been well maintained have relatively few weed problems on fairways because of competition from turf. Insect problems are not consistent in the Northwest and it is unusual for insecticides to be applied here. When problems do occur they are generally treated on a target basis. Except at private clubs with very high quality standards fungicides are rarely applied to fairways of Northwest golf courses.

The picture is quite different in other areas of the U.S. where pest pressure is high. What would be considered cosmetic in Portland, Oregon might be necessary in Baltimore, Miami, Kansas City, or Chicago just to keep the turf alive through the playing season. In general, areas with hot humid summers and/or long growing seasons and significant summer rainfall face a real struggle to keep turf free from warm season weedy annual grasses, summer insect damage, and warm weather diseases. The combination of severe summers and cold winters creates a "transition zone" which is perhaps the most challenging area in North America to grow healthy turf.

Pesticide applications on golf course fairways range from none to annual pre-emergent herbicide applications, annual insecticide sprays, and repeated fungicide treatments during the growing season. The primary factor determining pesticide use intensity is climate, not cosmetic standards. Severe climates will require more pesticide treatments than mild climates in nearly every case.

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Pesticide Use on Tees

Tees fall somewhere between fairways and greens in maintenance intensity. The primary goal in maintaining tees is to produce a smooth relatively flat surface for golfers to hit from. Turf is normally mowed short and often, fertilized as needed, and overseeded and topdressed to replace divots and maintain smoothness. Pesticide use on tees is similar to fairways ranging from none to seasonal treatments as needed. In more severe climates tees might be treated the same as putting greens.

Pesticide Use on Putting Greens

Putting greens generally receive the highest level of maintenance. Putting requires smooth firm surfaces which are achieved generally by daily mowing, seasonal coring, light frequent topdressing, regular fertilization, consistent frequent irrigation, and insect and disease control as needed to maintain near perfect turf. Because mowing heights range as low as one tenth of an inch, turf on greens exists right on the edge of life and death. Add in the difficulties of severe climates and it's easy to see the need for use of fungicides and to a lesser extent insecticides.

Actual pesticide use on greens varies drastically from region to region. In Portland, Oregon, four to twelve fungicide applications may be needed depending on the year. In more severe climates twice that many applications may be needed. Insecticides are rarely applied more than one time per year in the Pacific Northwest. Insecticide use in other parts of the country will generally be higher but is quite variable. Since putting turf needs to be nearly perfect to be functional the concept of cosmetic standards probably doesn't apply here.

What about herbicide use on greens? Again it depends greatly upon where the golf course is and what kind

of grass is being grown.

For example, in the Pacific Northwest greens are normally planted with creeping bentgrass, *Agrostis palustris*. Over a period of five to twenty years annual bluegrass, *Poa annua* invades and normally dominates the turf. People in this region generally accept annual bluegrass as the climax grass and no attempt is made to control it because it grows well most of the year, produces an excellent putting surface, and has no more pest problems than bentgrass.

In other northern areas annual bluegrass also invades bentgrass but is prone to many pest problems and periodically dies out in summer and/or winter. Many view it as a weed in these areas and herbicides may be applied annually to control it.

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The picture gets more complicated in the south where bermudagrass, *Cynodon sp.* is the logical choice for putting greens. Because bermudagrass goes dormant in winter and winter is a popular time for golf, greens are often overseeded with perennial ryegrass, *Lolium perenne,* to provide temporary putting turf until bermudagrass comes back to life in late spring. This process is cumbersome, time consuming, and produces less than perfect putting surfaces.

One way around the problem is to plant creeping bentgrass on greens for a year around surface. The problem here is that now we're growing bentgrass out of its zone of adaptation under very difficult summer conditions. Insect and disease problems can be severe resulting in the potential need for more fungicides and insecticides. Current research is aimed at producing better bermudagrasses and more stress tolerant bentgrasses. In the meantime there is no best approach for maintaining putting greens in southern regions.

The Influence of Geography

Of all the factors that affect pesticide use on golf courses the most important is geographic location. Mild climate areas generally have fewer disease and insect problems than climates featuring extended periods of heat and humidity. The relatively low stress environments of Northern Europe and the Pacific Northwest of the U.S. and Canada have lower pest pressures than southern Europe, Southeast Asia, and the southern parts of North America. In-between areas often have the greatest stresses of all because they have extreme weather conditions in winter and summer.

Grass species adaptation is an important factor affecting pesticide use. Attempting to grow cool season grasses in warm season areas will ultimately require more disease and insect control efforts than growing grasses where they are best adapted.

Golfer's Expectations

Finally, golfer expectations affect pesticide use to some degree. In particular golfer demands for faster, shorter putting surfaces and shorter fairways means grass is cultured in a more stressful environment. Smaller plants with less well developed root and shoot systems tend to be less tolerant of wear, heat, cold, drought, or excess moisture. This, in my opinion, predisposes grass to more disease problems than it would get if mowed taller. These somewhat unrealistic expectations of golfers are at least partially the result of tournament golf as portrayed weekly on television. Golfers tend to forget that the golf courses hosting tournaments have been carefully groomed for many months so they will be nearly perfect during the week of the tournament. Many golfers seem to come away with the impression that every golf course should look just like these tournament courses all year long. Faced with this pressure and the resulting increase in maintenance intensity, golf course superintendents are forced to rely more on pesticides to keep grass healthy than they would otherwise.

Conclusions

I'm not sure I can draw all of this together but I will try to leave you with some thoughts to ponder.

• Cosmetic standards have less impact on pesticide use than geographic location, turfgrass adaptation, or golfer expectations.

• In the U.S., the Pacific Northwest and the arid west have the lowest pest pressure while the southern half of the nation probably has the highest. The north central region and New England fall somewhere between these extremes.

• Areas most likely to receive frequent pesticide applications such as greens and tees make up only about 5 percent of the total acreage of the golf course.

• Generalizations about pesticide use on golf courses can't be made. Even within a small geographic area pesticide use may vary dramatically between private courses, public and municipal courses, and resorts. Concerns about pesticide use can only be addressed on a case by case basis.

There are many excellent texts for technical information on golf course maintenance and pest management. Below are several that I use regularly. If you want to have a better understanding of golf courses and golf course maintenance practices these sources are a good place to start. ■

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