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(Fertilization continued)

However, based on plot research done by Dr. Joe Vargas and observations in the field, it is clear that while in most years the late fall nitrogen may increase the amount of snowmold, there is much quicker recovery from any injury caused. The snowmold damage may be more superficial with the late fall nitrogen and/or the recovery is quicker. Either way the next spring the turf returns to a better quality condition sooner with late fall nitrogen.

For the Great Lakes region, we suggest applying the nitrogen after growth has ceased for all practical purposes. This does not mean there will be no need for further mowing, but regular mowing will not be needed. An additional mowing or two may be needed before growth ceases entirely. This occurs anywhere from the last week of October to the second week of November.

Potential problems with late fall nitrogen fertilization include the potential for leaching of applied nitrogen, late fall growth which would require more mowing, affecting snowmold and other winter injury, increase to thatch and other spring growth. In a study at Michigan State being conducted by Eric Miltner and Bruce Branham, which compares late fall nitrogen applications with those emphasizing spring applications, there is no significant leaching of nitrates from either treatment so far. If the nitrogen is applied while the plant is still physiologically active, most of the nitrogen should be used and will not be available for leaching over the winter. There is evidence from Ohio State that late fall nitrogen may increase susceptibility to thatch formation to some degree.

While there may be a small increase in growth during the fall or spring, most turf managers are satisfied that the benefits are far greater than the potential negative effects. There is no evidence for increased susceptibility to low temperatures or crown hydration injury which is caused by late fall nitrogen.

Benefits of late fall nitrogen include good carbohydrate levels in the turf the next spring, good early spring root growth, good fall and spring color and good turf density so there is less potential for establishment of spring weeds. Since root growth of cool season grasses begins before top growth, it is essential that a high level of carbohydrates exist in the plant to initiate that root growth.

The next spring the turf will have a good color. There will likely be a small increase in mowing needed in the spring compared to a turf which receives no nitrogen either in late fall or spring. But the growth will be very limited compared to a turf which receives an early spring fertilization. Avoiding early spring nitrogen has the advantages of reduced carbohydrate loss caused by the excessive growth, less mowing, potential reduction in several diseases and greater moisture stress tolerance during the summer. If we can provide a turf which has good density and fewer weeds, requiring less herbicide as well as greater stress tolerance, why should we not adopt the practice?

With many advantages apparent for late fall nitrogen and few disadvantages, it is clear why so many turf managers have adopted this practice. I have not talked to anyone who has tried late fall nitrogen fertilization who has not continued to utilize the practice for agronomic reasons. This is the best testimonial for late fall fertilization. Credit: Hole Notes



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Facts About Sexual Harassment

Sexual harassment is a form of sex discrimination that violates Title VII of the Civil Rights Act of 1964.

Unwelcome sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature constitutes sexual harassment when submission to or rejection of this conduct explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance or creates an intimidating, hostile or offensive work environment.

Sexual harassment can occur in a variety of circumstances, including but not limited to the following:

• The victim as well as the harasser may be a woman or a man. The victim does not have to be of the opposite sex.

• The harasser can be the victim's supervisor, an agent of the employer, a supervisor in another area, a co-worker or a non-employee.

• The victim does not have to be the person harassed, but could be anyone affected by the offensive conduct.

• Unlawful sexual harassment may occur without economic injury to or discharge of the victim.

• The harasser's conduct must be unwelcome.

It is helpful for the victim to directly inform the harasser that the conduct is unwelcome and must stop. The victim should use any employer complaint mechanism or grievance system available.

When investigating allegations of sexual harassment, EEOC looks at the whole record; the circumstances, such as the nature of the sexual advances, and the context in which the alleged incidents occurred. A determination on the allegations is made from the facts on a case-by-case basis.

Prevention is the best tool to eliminate sexual harassment in the workplace. Employers are encouraged to take steps necessary to prevent sexual harassment from occurring. They should clearly communicate to employees that sexual harassment will not be tolerated. They can do so by establishing an effective complaint or grievance process and taking immediate and appropriate action when an employee complains.

FILING A CHARGE

Charges of sexual harassment may be filed at any field office of the U.S. Equal Employment Oppportunity Commission. Field offices are located in 50 cities throughout the United States and are listed in most local telephone directories under U.S. Government. Information on all EEOCenforced laws may be obtained by calling toll-free at 800-669-EEOC. EEOC's toll-free TDD number is 800-800-3302.

If you have been discriminated against on the basis of sex, you are entitled to a remedy that will place you in the position you would have been in if the discrimination had never occurred. You may be entitled to hiring, promotion, reinstatement, back pay and other remuneration. You also may be entitled to damages to compensate you for future pecuniary losses, mental anguish and inconvenience. Punitive damages may be available, as well, if an employer acted with malice or reckless indifference. You also may be entitled to attorney's fees.

The above information is available on a fact sheet in the following formats: print, Braille, large print, audiotape and electronic file on computer disk. For further information, call the Office of Equal Employment Opportunity at (202) 663-4395. Credit: A Patch of Green, May/June 1994

Dues or Don't by Joel V. Purpur, CGCS Vice-President, MAGCS

This is the time of the year when the dues notices are sent out along with change of information requests. As in the past, the M.A.G.C.S. requires payment by December 1, allowing 90 days for payment. Although this is ample time to provide payment, the Association still have to drudge through long delinquent lists to prod the 100 or so members who have not made the deadline with their annual dues. This takes months of unnecessary work by the Executive Secretary, Directors, and volunteers which delays planning for the directory and other timely projects for our members. This is why the MAGCS is forced to stand firm on the policy to remove delinquent individuals from membership for noncompliance to this deadline.

Delinquent individuals will then have to reapply for membership by way of written application as any newly applying prospective member would. Delivery of the **Bull Sheet** is then suspended and non-member fees will have to be paid at monthly golf meetings, providing guests are allowed to golf at that particular meeting.

If an individual values their MAGCS membership privileges, 90 days is more than enough time to provide payment to maintain their membership. If your Club or organization cannot pay by the 3 month deadline, write a personal check and get reimbursed later. Our annual dues are not that high. We all seem to be able to meet the deadlines for our credit cards, mortgages, car payments or other memberships we enjoy, so be responsible, get your dues in on time and maintain your membership with the MAGCS.



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Ecological Side Effects of Pesticide and Fertilizer Use of Turfgrass

by Daniel A. Potter, Associate Professor University of Kentucky

Recent growth of the turfgrass industry has resulted in an increasing number of lawns, golf courses, and other areas being maintained with regular applications of pesticides and fertilizers. Pesticides are indispensable tools of the modern turf manager and there are many situations for which use of a pesticide will be required in order to maintain quality turf. Nevertheless, the unnecessary or excessive use of pesticides can sometimes have undesirable side effects on beneficial organisms and on important processes, such as thatch decomposition and natural regulation of pest populations. Research is underway to clarify how chemical applications affect these processes.

Numerous kinds of predators and parasites are abundant in turfgrass. In Kentucky, more than 30 species of spiders, 42 species of ground beetles (Carabidae), and 40 species of rove beetles (Staphylinidae) were represented in pitfall trap samples from urban turf sites. (Cockfield and Potter 1985). These creatures may be important in maintaining pests at nondamaging levels. For example, in one field experiment (Cockfield and Potter 1984) we placed sod webworm eggs in untreated lawns and recorded their fate over time. Interestingly, turf-inhabiting predators consumed up to 75% of the eggs within 48 hours. Natural enemies that may help to reduce turf pest populations include parasitic wasps, nematodes, spiders, ants, and beetles.

Insecticides applied for the control of pests may also affect beneficial species. For example, one surface application of insecticide was found to reduce predator populations by 60% for as long as six weeks (Cockfield and Potter 1983). In another experiment, natural predation on sod webworm eggs was greatly reduced by an insecticide application (Cockfield and Potter 1984). Although there has been little research on this subject, a few studies do suggest that pest outbreaks on treated lawns are sometimes related to interference with natural control agents (Streu and Gingrich 1972, Reinert 1978, Potter 1982). Research is underway to identify insecticides that provide good control of pests with minimum impact on beneficial organisms.

Another important role that non-target invertebrates play in turfgrass involves decomposition of thatch. Thatch is a tightly intermingled layer of living and dead roots, stolons, and organic debris that accumulates between the soil surface and green vegetation in turfgrass. Problems associated with excessive thatch buildup include restricted penetration of fertilizers and insecticides, reduced water infiltration, and shallow root growth accompanied by increased vulnerability to heat and drought stress.

Excessive thatch results from an imbalance between production and decomposition of organic matter. Soil animals (other than microorganisms) that may contribute to decomposition include earthworms, mites, springtails, millipedes, and others. The main effect of these creatures is in breaking up organic matter and helping to incorporate it into the topsoil, where it can be further broken down by bacteria and fungi. Earthworms also aerify the soil and enrich it with their excreta.

Experiments with thatch pieces buried in mesh bags showed that thatch decomposition is much more rapid with earthworms present than without them. The earthworms pull down the organic matter into the soil, and mix soil into the thatch. Destruction of earthworms by pesticides results in slower thatch breakdown. After only 3 months underground, thatch



pieces that were exposed to earthworms contained ca. 33% less organic matter and 33% more soil by weight than pieces from which earthworms were excluded (Potter, unpublished data). Turfgrass pesticides found to be particularly toxic to earthworms in our field tests include Sevin, Turcam, Mocap, and Benlate. Heavy use of ammonium nitrate fertilizer may also affect earthworms. Applications of 5 lbs. of nitrogen per 1000 sq. ft. per year for seven years resulted in a decline of soil pH (6.2 to 4.8), increased thatch accumulation, and 50% reduction in earth-

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increased thatch accumulation, and 50% reduction in earthworm populations (Potter et al. 1985). Earthworms are intolerant of acidic soils (Satchell 1967, Edwards and Lofty 1977).

A four year experiment was conducted to study the side effects of a total high-maintenance lawn care program on the turfgrass system. Although changes in predators, herbivores, and decomposers were observed, the overall impact of the program was generally less severe than might be expected given the frequency of pesticide and fertilizer use (Arnold and Potter 1987).

In summary, the intent of this presentation is not to condemn chemical use on turf, but rather to provide "food for thought" for turf managers. There are clearly many situations for which the use of pesticides is essential for the maintenance of quality turf. However, pesticide applications, like human medicines, may have some side-effects, and these must be weighed against the overall benefits that the treatment provides. The accumulated evidence suggests that turfgrass is a complex system with many buffers. Understanding these interactions will make it easier to develop new products and turf management programs that get the job done with minimum disruption of the natural processes that are important to healthy turf. In general, it takes a better turf manager to use less pesticide.

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Open Areas

Meadowlarks, bobolinks, and several kinds of sparrows favor open stretches of lawn and fields with few if any trees or shrubs. In seldom-mowed open areas, try planting a variety of native grasses. They protect the soil, and birds and mammals like the variety of foods.

Winter Protection

A windbreak of cedars, spruce, or pines with a crabapple tree tucked in on the sheltered side gives birds a warm, safe place to rest when the snow is deep. A food plot or feeder nearby helps keep the birds with you through the snowy months.



Living Fences

Hedges or rows of honeysuckle, dogwood, or autumn-olive can replace a wire fence between fields, can divide up fields, and can protect the house area. Cardinals, brown thrashers, and mockingbirds find living fences ideal.



Identification of Soil Types

The United States Department of Agriculture defines soil separates as having the following diameters in millimeters: very coarse sand 2 to 1; coarse sand 1 to 0.50; medium sand 0.50 to 0.25; fine sand 0.25 to 0.10; very fine sand 0.10 to .05; silt .05 to .002; and clay below .002 millimeter.

SAND:

Sand is loose and single grained. The individual grains can be seen or felt. Squeezed in the hand when dry, it will fall apart when pressure is released. Squeezed when moist; it still forms a cast, but will crumble.

SANDY LOAM:

A sandy loam is a soil containing mostly sand but which has enough silt and clay to make it somewhat coherent. Squeezed when dry, it will form a cast which will fall apart; but if squeezed when moist, a cast can be formed that will bear carefully handling without crumbling.

LOAM:

A loam is a soil having a mixture of the different grades of sand, silt, and clay in such proportion that the characteristics of no one predominate. Squeezed when dry, it will form a cast that will bear careful handling, while the cast formed by squeezing the moist soil can be handled quite freely without crumbling.

SILT LOAM:

A silt loam is a soil having a moderate amount of the fine grades of sand and only a small amount of clay over half of the particles being of the size called "silt". When dry, it may appear quite cloddy, but the lumps can be readily broken; and when pulverized, it feels smooth, soft, and floury. When wet, the soil readily runs together. Either dry or moist, it will form casts that can be freely handled without breaking.

CLAY LOAM:

A clay loam is fine-textured which usually breaks into clods or lumps that are hard when dry. When the moist soil is pinched between thumb and finger, it will form a thin "ribbon" which will break barely sustaining its own weight. The moist soil is elastic and will form a cast that will bear much handling. When kneaded in the hand, it does not crumble easily.

CLAY:

A clay is a fine-textured soil that usually forms very hard lumps or clods when dry and is quite elastic and usually sticky when wet. When the moist soil is pinched out between the thumb and finger, it will form a long, flexible "ribbon".

Source: Our Collaborator

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Forward Tees; The Key to Playability

by Mike Schulz - Mike Schulz Golf Designs

I've always felt that a major flaw in the design of most existing golf courses is the lack of properly located forward tees. This flaw results in golf courses that are just not as playable as they should be for a large number of golfers. How did this happen? I think it happened because, in many cases, golf course owners and golf course architects have lost sight of the purpose of golf. To me, the purpose of golf can be summarized in two statements:

Golf is a game, it is supposed to be fun. Golf is a game of accuracy, not a game of distance.

We shouldn't ever forget that golf is a game. As a game, people will only continue to play it if it is fun and enjoyable. That is why playability is so important to the success of golf.

Secondly, we should never forget that golf is a game of accuracy. I've always thought that distance is overrated as a factor in golf. We play to a 41/2 inch diameter hole. We don't count the number of strokes to cross a line, we count the number of strokes to put the ball in that little hole. We win or lose holes or matches independent of how far we hit each stroke. The scorecard never indicates how far we hit the ball. A 2 inch putt counts the same as a 265 yard drive. Except in a long drive contest we never even measure and record the lengths of our shots. Golf truly is a game of accuracy, not distance.

With those two ideas in mind, it is easy to see that we have shortchanged a large part of the golfing population. For the



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most part, we've shortchanged women golfers, but we've also shortchanged our beginners, our juniors, and many seniors. We've cheated them of the joy of playing the game of golf as it is meant to be played, by not giving them forward tees to match their capabilities.

Since golf is a game of accuracy, all golfers should have a legitimate chance to reach each green in regulation with their best strokes. All golf courses should be designed with a full range of multiple tees, so that if the golfer can not consistently reach the greens in regulation, then he or she should be able to most up to a shorter tee.

One of the things that I noticed from my very first day as a caddy, many years ago, in my hometown, was that women do not play the same game of golf as men play. Women play a game that often finds them hitting a driver and an iron to a par 3 green and a driver, two woods and an iron to a par 4 green. Par 5s are almost too painful to talk about. Many women have never reached a green in regulation on a par 4 or par 5 hole. It is really a credit to women, that they continue to play golf on golf courses on which there is no possibility that even if they hit their very best shots, that they can hit a green in regulation, and par a hole by two putting the green. Men, in their competitiveness, would never play golf if there was no chance that they could reach a green in regulation. To get an understanding of the issue, men should imagine playing golf on a 8400 yard par 72 golf course, where the par 3s average 250 yards, the par 4s average 480 yards and the par 5s average 650 yards, and you could never reach a green. It would soon be seen as a exercise in futility. Most men would never play a round of golf after their first attempt.

(Forward Tees continued)

Historically, most golf courses were designed for male golfers, and had no forward or women's tees. When women began to play golf, women's tees became a afterthought in the design. There was no architectural theory behind the location of the forward tees. They were located just a little forward of the men's tees, ... "because women don't hit the ball as far" ... They didn't consider that women only hit the ball 65-75% as far as men.

Now is a good time for golf course owners, managers and superintendents to look at their courses and see how they are set up for all their golfers. If necessary, they should institute a program to create a full range of teeing areas, with special emphasis on the forward tees.

How do you locate the forward tees properly? I think that first of all, par should be the same for every tee on the hole. I have never understood why a hole should be a par 5 for women when it is a par 4 for men, or why a course would be a par 72 for men and a par 76 for women. It only proves that the women's tees were not located correctly in the first place. Secondly, the rule of thumb that I use is that the club selection for all golfers playing the hole should be similar. For example, if the average male golfer usually uses a well played driver and a 7 iron to reach a green on a par 4, then the forward tee should be located so that most women would use a well played driver and a 7 iron to reach the green. Using average distances that men and women hit each club, in this way, can be very helpful in locating forward tees. Each hole can be analyzed for the typical average male club selection and then converted to a distance based upon the average women's yardage for the same clubs. The proper tee location can be determined based upon that distance, as well as the hole par, hazard locations, hole shape and topography. This should result in a golf course, where the total yardage from the forward tees ranges between 4800-5200 yards, with 5000 yards being a good target length. Don't be afraid that 4800 yards is too short. Experience has shown me that it will give women golfers a challenging, enjoyable and fun course, that allows them to play the game of golf the way men have always played it, with the premium where it should be; on accuracy.

There are several benefits to having properly located forward tees on a course. Women, juniors, beginners and some seniors will be able to play golf as it is meant to be played. They will find a game more within their capabilities and will be encouraged to continue to play. Seniors, who have lost only distance and not accuracy, feel or touch, will be able to once again enjoy the game as they did in their younger years. Play will speed up. Wear can be reduced from other tees. And the leading edge of the fairway cut can be moved further down the fairway, reducing the amount of fairway maintained.

Note that women who do hit a long ball, stil have the option to play from the middle or regular tees, because courses can be and should be rated from several tees for women, just like they are for men.

So take a look at your golf course. Is it really playable for all golfers? If not, look at instituting a program to locate and build a proper set of forward tees and let women, as well as beginners, juniors and seniors the chance to finally play golf. Remember: Golf is a game. It is supposed to be fun. & Golf is a game of accuracy not a game of distance.



