



Figure 1.



Figure 2.

They Are Mowing Fairways with Triplex Mowers and Picking Up the Clippings, Too!

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AT FIRST it may sound ludicrous! On the other hand, it may be one of the most significant advances in fairway management since the invention of the aerifier. What everyone in the Northeast and Midwestern states is talking about these days is the mowing of bentgrass/*Poa annua* fairways with triplex mowers. Even more unlikely, some superintendents are actually catching and removing the clippings from the fairways! What was unheard of in past years became more and more commonplace during the summer of '82. Is there something to this idea after all?

Some golf courses used triplex mowers last summer and caught all clippings every time they mowed fairways. Others used these lighter-weight mowers continuously, but they removed clippings only on some holes or on certain occasions (to pick up *Poa annua* seedheads, etc.). Others used their traditional five- or seven- or nine-gang mowers on some holes and the triplex mowers on others. Members of neighboring courses saw what was going on and, more important, the results of this technique, and planned a similar program of their own for 1983. What started out as a good idea on a

modest scale on a few golf courses has now developed into a program for many others that maintain bentgrass/*Poa annua* fairways in the upper Midwest and Northeast.

IT IS DIFFICULT to say exactly where and when this idea of triplex mowing and clipping removal on fairway areas began. With the development of the triplex putting green mowers, the golf course superintendent had, for the first time, a precision piece of equipment to mow large areas of closely cut turf that was not possible with hand mowers or other multi-unit mowers.



Figure 3.

Then, as the equipment aged and normal turnover and replacement took place, many of these machines were available to maintain tees, collars, approaches and, in a few cases, small par-three fairways where traditional tractor-drawn multi-gang units simply could not operate in the confined spaces. The results were dramatic. Turf quality and reliability improved, especially in the difficult-to-maintain putting green approach areas.

Superintendents in the cool-season grass growing areas of this country have always had problems maintaining the approach areas to certain putting greens. These areas, so important to play, receive tremendous compaction and abrasion from the normal flow of traffic onto a green as well as enduring continuous turning of the fairway mowing equipment. Nothing is more disconcerting to a golfer than to see the approach to a green thin and poorly turfed with cuppy lies. It looks bad and it plays poorly.

Common sense and the availability of triplex mowers allows the golf course superintendent to alter fairway mowing patterns and maintain the approaches with less-stressful and less-compacting mowers. In addition, he also has the

option of removing clippings. The results have proven worth the extra effort! Areas treated in this manner improved the first year. They only got better the second and third years. Then, as time went by, something else became apparent. The percentage of bentgrass in these approach areas was increasing. It reached a point where the bentgrass began to predominate over *Poa annua*. It is difficult to explain why, but it actually happened. *Figure 1* illustrates this phenomenon. You can see the line between the triplex-maintained approach and the conventionally maintained and predominately *Poa annua* fairway. This is not an isolated instance. *Figure 2* illustrates a similar case. Simply by keeping the heavy mowing equipment and extra traffic off these areas, the turf is markedly better.

This scenario has been repeated over a great number of golf courses in the Northeast and Midwest during the past few years. What were once summer problem areas became vastly improved simply by controlling traffic, switching to lightweight mowing equipment and removing the clippings.

The observant and ingenious golf course superintendent realized something was happening that was good for

him (less turf loss, less *Poa annua* and more bentgrass), and the appearance and playability of these areas were dramatically improved. The next logical step was to do whole fairways. Generally, the weakest fairway was chosen. It became obvious that where triplexes with baskets were used to catch clippings, the grass, no matter what species, was healthier, much more playable, and showed an increasing percentage of bentgrass.

In the North-Central Region of the USGA Green Section, Cal Gruber, golf course superintendent at the Cold Stream Country Club, in Cincinnati, Ohio, is believed to be the first to mow all fairways with triplex mowers and pick up the clippings. Since he began this program, in 1980, the results have been outstanding. *Figure 3* shows Cold Stream Country Club's fairways during the heat of the summer stress period. Note the quality turf and excellent playing conditions on bentgrass fairways in a part of the country where summer turf stress can be extreme.

FOLLOWING THE SUCCESS of this program, plus parallel observations in other parts of the country, the majority of private golf courses in

Cincinnati that have combination bent-grass/*Poa annua* fairways are now triplex mowing all or part of their fairways. Courses such as Oakmont Country Club, in Oakmont, Pennsylvania, site of the 1983 U.S. Open Championship; Bloomfield Hills Country Club, in Birmingham, Michigan; Bob O'Link Country Club, in Highland Park, Illinois; The Country Club, in Cleveland, Ohio (*Figure 4*); and Inverness Club, in Toledo, Ohio, all are currently maintaining their golf courses in this way. Even smaller club-type courses, both nine and 18 holes, have adopted this program. It seems to work wherever it's tried.

The inevitable question of cost has a variable answer. Total fairway acres maintained, clippings removed all or part of the time, frequency of cut, clippings disposed of on site or commercially hauled away, number of

machines used, the cutting widths of the machines, are all important factors. The best information indicates that triplex mowing and clipping removal triples the cost of the physical fairway maintenance operation. This includes just about three times the labor, gasoline, manhours and equipment maintenance and repair costs. It does not include the purchase price for new equipment.

MOWING EQUIPMENT has been adapted recently that is more rugged, cuts a wider swath, and generally does a more efficient job than the original triplex putting green mowers. The ideal machine for this chore, however, is still to be developed. Some superintendents have modified current equipment. The adaptations include extra engine cooling vents, extra hydraulic oil coolers, rollers or caster wheels versus skids, engine speed or

cruise control (to reduce operator fatigue), conversion from air-cooled gasoline to water-cooled diesel.

Equipment manufacturers probably will recognize what the superintendents in the field have seen. This type of mowing works, and it is here to stay for many golf courses. The new equipment will require more efficient and reliable lightweight, three- or even five-gang hydraulically driven mowers, capable of clipping removal for those courses that want this option. There's no doubt, new mowers will be on the way.

Remember, we are talking about two different types of operations, plus the added step of clipping removal. Every golf course superintendent seems to have developed his own pattern or technique. There are no fixed standards. For example, some superintendents have their clipping trailers towed behind the machines, others park them

Figure 4.



at strategically located areas along the fairways (Figure 5), some collect them for removal in dumpster types of vehicles (Figure 6), others compost or discard the clippings in dump sites on the course. In many cases, the major part of the cost and inconvenience of this program is in clipping disposal. It is a problem, but the advantages realized by those courses that want tight bentgrass fairways with a minimum of *Poa annua* seem to be worth it.

An important part of making a fairway triplex mowing program practical is the careful contouring and reduction in total acreage of fairway turf to be maintained. The majority of courses that use triplex mowers maintain 30 acres or less of total fairway area. Obviously, if one golf course has 50 acres of fairways and another 25 acres, this program is much less practical for the course with 50 acres. Thus, some type of fairway acreage reduction may be necessary on certain golf courses if they wish to adapt this program.

References have been made to the importance of removing the clippings from bentgrass/*Poa annua* fairways where there is a wish to increase bentgrass populations at the expense of *Poa annua*. Skeptics point to putting greens where, for years, they have been

mowed by triplex and/or hand mowers with clippings removed, and still *Poa annua* encroaches, proliferates and even dominates bentgrasses. Contrast this statement to the reality shown by Figure 1 and the field experience of so many superintendents who have seen the fairway triplex effect. One then begins to appreciate the complex agronomic factors that are at work. Remember, we are talking about two distinctly different, yet related, operations. Mowing fairways with lighter-weight equipment for less stress and summer turf loss (no matter what type of grass is involved) and the second step of clipping removal seems to have an effect on the bentgrass/*Poa annua* balance.

In the case of using lighter-weight mowing equipment, one can readily understand how less stress is placed on the grass, less abrasion and less soil compaction. This reduction of stress is particularly evident in all turn areas.

Improvement in fairway quality can also be linked to improved frequency of cut, narrower cutting units that follow the contours of the fairways better, variable reel speeds and the fact that fairways can be more easily angle- or cross-cut. All in all, the mowers, by their basic engineering and function,

improve turf quality for improved fairway playability.

What is *not* so clearly understood is why bentgrasses now compete so much more favorably in the approach and fairway areas and not necessarily so vigorously on greens, just a few yards away. Dr. James Watson, Vice-President of Toro Manufacturing Company, once said, after observing triplex-mown fairways, that probably at least three Ph.D. dissertations will be involved in determining exactly what is happening and why. Certainly, no conclusive explanation of what is occurring agronomically will be attempted here. Rather, an offering of some probable or possible reasons is made:

A. Less compaction. Shallow-rooted *Poa annua* is more competitive in compacted soils than deeper-rooted bentgrass. With less compaction, the bentgrass may be more competitive.

B. Bentgrass is more aggressive at lower fertility levels. With clippings removed, bentgrass can perhaps better assert itself over *Poa annua*.

C. Greater bentgrass aggressiveness at $\frac{3}{8}$ " to $\frac{5}{8}$ " cutting heights. Bentgrasses maintained at these heights may have a competitive edge over *Poa annua*. Seldom are turfgrasses grown at their

Figure 5.





Figure 6.

best and most adaptive heights, but rather at the lower end of the spectrum. Perhaps this is why, on a putting green, the bents may not be as competitive as *Poa annua*. They both are being cut closely, stressing both and, perhaps due to annual bluegrass's shallow rooting system, it may be as aggressive, if not more aggressive, than the creeping bentgrass at the closer heights. Thus, bentgrass cut nearer $\frac{1}{2}$ " may be at its best and therefore more aggressive than *Poa annua*.

D. Lower water requirement. With lighter-weight equipment, the grass plants are put under less stress. This can mean less irrigation in general and less syringing in particular. Bentgrasses have a deeper rooting system and thus a deeper root zone from which to draw water.

E. *Poa annua* seedhead removal. Common sense would indicate that with *Poa annua* seedheads removed, there can be, with time, less seed in the soil to germinate.

F. Heat of clipping decomposition. Decomposing grass clippings generate

heat. Whether or not this heat of decomposition is a factor is open to conjecture.

G. The best weed control is a dense turf. Mowing the turf with lightweight equipment reduces stress regardless of clipping removal. Thus, with a tight sod, *Poa annua* may not have as great an opportunity to germinate.

SO FAR, the program has been reasonably easy to sell. Members generally want the best playing conditions possible within their means. By demonstrating this technique on several holes, the member can easily see the improvement on his own course. The impact is even greater when the poorest and most troublesome fairway is chosen and it improves in turf quality beyond expectations.

A field trip and visit to other courses that are or have been on this program for some time is most effective in selling the idea. In this way, influential members, like the Green Committee Chairman, club President, or Governing

Board members can see what the turf looks like, how it plays, and how much it costs. It is one thing to hear about a program of this sort and quite another to actually see it.

Perhaps the most important aspect of this program, at least for the golfer, is improved fairway playability. He is interested in a green turf that is alive, full, dense, and that properly supports the ball. This type of mowing seems to provide that kind of turf.

Surely this technique is not for every club. There are still areas for equipment improvement, and the management and logistics of it can be a headache for the golf course superintendent. It is not a panacea. All the agronomic answers are not in. There is a cost factor that must be considered, and perhaps even recontouring the fairway mowing patterns may be necessary. Nevertheless, a growing number of golf courses in the bentgrass/*Poa annua* fairway regions of this country have turned to this management technique. It has produced results. Those who have tried it have not been disappointed.