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# went home smiling.

trap rake that's called the Trap King.

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# DR. JAMES B. BEARD

## TURFGRASS RESEARCH REVIEW

### WHICH TURFGRASSES WITHSTAND WEAR AND TEAR BEST

*Turfgrass wear tolerance.* R. C. Shearman. Ph.D. Thesis. Michigan State University. 87pp. 1973. (from the Department of Crop and Soil Sciences, Michigan State University, East Lansing, Mich. 48824).

The objectives of this investigation were to (a) develop a turfgrass wear simulator for small experimental plots; (b) evaluate the relative wear tolerance of seven cool season turfgrasses under optimum growing conditions and (c) investigate the anatomical, morphological and physiological characteristics of turfgrass species that are associated with turfgrass wear tolerance.

A turfgrass wear simulator was constructed and shown to be effective in producing turfgrass wear differentials with a minimum effect on soil physical properties, especially compaction.

Seven cool season turfgrass species were established in May, 1972, on a sandy loam soil utilizing a randomized complete block design. The species utilized were Pennlawn red fescue, Cascade chewings fescue, Kentucky 31 tall fescue, Manhattan perennial ryegrass, Merion Kentucky bluegrass, Italian ryegrass and rough bluegrass. The experimental plot area was mowed twice weekly at two inches utilizing a reel mower with clippings removed. The area was irrigated as needed to prevent visual wilt.

Preliminary comparative studies were initiated in October, 1972; more extensive studies were conducted during June and July, 1973. Both sled (foot-like) and wheel (vehicular-like) types of wear injury were superimposed across the turfgrass plot area. Six hundred revolutions of the wear simulator were superimposed over the experimental area. There was no disease evident on the turfs during the period of wear tolerance evaluation.

Several methods of evaluating the comparative wear tolerance after a period of wear simulation were evaluated. It was found that the per cent verdure (quantity of living shoots) remaining after treatment was the preferred method for quantitatively evaluating wear tolerance differentials. It eliminated arbitrary evaluations that can be associated with visual rating systems and was much less time consuming than either the total cell wall percentage or chlorophyll content determinations.

The comparative wear tolerance when grown under optimum cool humid conditions were as follows for the seven cool season turfgrass species: Manhattan perennial ryegrass was the most wear tolerant, especially to vehicular wear; Kentucky 31 tall fescue and Merion Kentucky bluegrass ranked second, in the order presented; Pennlawn red fescue and Italian ryegrass were intermediate, in that order; whereas Cascade chewings fescue and rough bluegrass ranked lowest in vehicular wear tolerance. Merion Kentucky bluegrass was the most tolerant of sled wear followed closely by Manhattan perennial ryegrass and Kentucky 31 tall fescue. Cascade chewings fescue and rough bluegrass were essentially destroyed by the crushing and tearing action of the sled.

Results of the investigation concerning the physiological, morphological and anatomical characteristics associated with turfgrass wear tolerance led to the following conclusions. Total cell wall content was the best indicator of species differentials in turfgrass wear tolerance. Other factors contributing significantly to wear tolerance differentials included leaf width, leaf tensile strength, per cent sclerenchyma fiber and per cent lignified cells. Other factors, such as verdure, shoot density, load bearing capacity, leaf and stem moisture content and per cent relative turgidity of leaves, did not

account for any significant amount of variation in wear tolerance among the cool season turfgrass species evaluated here.

This investigation was supported by a grant by the USGA Green Section. The studies are being continued with emphasis on the comparative wear tolerance of bentgrass, bluegrass, fescue and ryegrass cultivars.

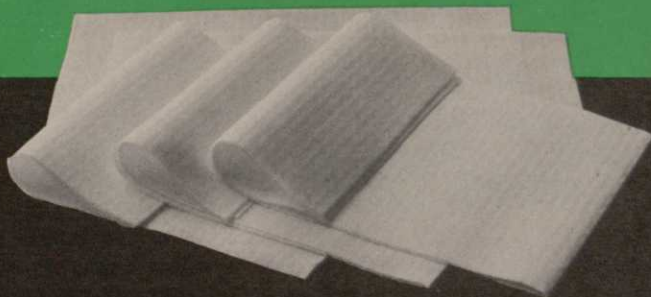
*Comments:* The first point that should be emphasized is the proper use of terminology concerning traffic effects on turfgrasses. It should be recognized that there are two primary detrimental aspects that are the direct result of intense foot and vehicular traffic. These are (a) turfgrass wear and (b) soil compaction. Turfgrass wear involves the direct pressure of concentrated traffic on turf. It results in the injurious crushing and bruising of the leaves, stems and crowns of the plants. Damage is most severe if the traffic is of a scuffing or tearing type. In contrast, soil compaction is frequently referred to as the "hidden effect" of traffic. In this case the soil particles are pressed together in a more dense mass that can cause a severe reduction in aeration, soil water infiltration and percolation and soil resiliency. The result of these physical soil effects can be a serious reduction in root growth that may effect the health, vigor and density of the turf. Unfortunately, traffic is frequently discussed in terms of wear effects when the problem superintendents really face is soil compaction. This creates difficulties. Procedures for preventing or minimizing the effects of wear are substantially different than those involved in minimizing soil compaction resulting from intense traffic. Thus, when reading articles and research reports concerning turfgrass wear, be sure that both you, as the reader, and the author, as well, are utilizing the proper terminology. This particular investigation is concerned primarily with the wear aspect of the traffic effects.

On a long term basis, the most significant contribution from this investigation is the development of rapid indicators for assessing wear tolerance in a turfgrass breeding program. This ultimately could lead to more wear tolerant turfgrass cultivars.

The more immediate results of this investigation of concern to the reader are the species wear tolerance differential results. Of particular interest is

*continued on page 88*

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# SOME OF OUR BEST FRIENDS ARE HOOKERS & PUSHERS

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—Quentin W. Burkhalter, Greensboro, North Carolina

"I think you have got a winner in these OSS FTD's. The consistency of swingweight was best of any irons I have ever purchased and that has been many sets. Tried a friend's set of OSS FTD's. The results were outstanding—straighter, longer. Also I like the way the off set lets me set up to the ball. Also like the feel of stainless in contacting the ball."

Bob Schreiber, Bellevue, Washington

"So far I am happy with the clubs as they seem to help you keep the ball in play better. Club pro suggested I try them."

W. H. Sorrells, Jacksonville, Florida

"With the OSS head I think it is easier to line up your shot and it goes where you line it up to."

Gerry Zuhlke, Royal Oak, Michigan  
"I like a club that feels hefty. These clubs look good and feel good. The grips are the best. The clubs look like they were well made. I have been hitting the ball much straighter since I bought them."

Daniel Santi, Tampa, Florida

"I saw a friend of mine that had a set and I practiced some with his irons and I could hit them farther and with better accuracy. After receiving my set of FTD offset irons my scores dropped from around 74-76 to 70-73. Of course I practiced a little more but my woods (set of old Arnold Palmer aluminum shafts) hit no farther or without any better accuracy than before. The irons made the difference (and confidence). Thank you for your concern in your products and customers."

George C. Snell III, Meter, Georgia

"Clubs hit farther and straighter than old clubs. Offset helps put hands in front of ball."

F. Owen Parks, San Saba, Texas

"I have played 36 holes with my new clubs and already my scores are coming down by as much as 10 strokes (mid to low 80's). I find that the club head really moves through the ball and I am getting more distance than before using the same numbered iron. They were the best feeling clubs of the three to four sets I tried out on the practice tee. They gave me more confidence with my shots, especially on the tee."

John L. Thornburgh, Ft. Pierce, Florida

"I enjoy using these clubs and I can hit the ball better with them than any set of clubs I have used in the past, also scoring better. I believe they are different and better than any clubs I have seen in any golf shop around here."

I. C. Schorr, Bluefield, West Virginia

"Excellent handling characteristics. I am able to hit more consistently straight shots."

John Ricciardi, Riverside, Illinois

"These are the finest clubs I have ever hit."

Dick Grosfield, Detroit, Michigan

"Like the way they set up at address."  
Bill Horne, Winchester, Massachusetts  
"This is the only club I have picked up and said, 'it's fantastic.' It's made just for me. Gentlemen, congratulations on a work of art. Truly a master design club. Tremendous balance. The look, the feel and the swing seems as though you just can't

miss a shot. Thank you."

George P. Theel, Kent, Washington

"Needed something to correct chronic slice. The offsets did the trick. The irons have added about 25 or more yards per club. Great set of clubs. P.S.: My handicap has dropped from 15 in April to 9 at present!"

John W. Harris, Burley, Idaho

"I have only been using your product for a short while and have dropped several strokes off my game. I don't know if it's the clubs but things seem a little simpler now. Thanks."

Merrill Warner, Sumter, South Carolina

"I immediately went to the practice range with the new clubs. The most striking difference from my old clubs was that I got 10 to 20 yards more distance over my old weapons of the same club number when the swing was right. For any sport I want the best equipment. I looked at just about every make of top grade irons and picked FTD because of offset heads and stainless steel."

James O. Covington, New Smyrna Beach, Florida

"Great clubs because my long iron slice seems to have disappeared."

Fred H. Lindstrom, Bradenton, Florida

"Great set of clubs. Best on the market."

Phil Losito, Auburn, New York

"I am a 12 handicapper. My first round with new clubs I scored an 82, second round an 80. Really am pleased with the set. Certain I will break below 80 before long. Tried several and found that First Flight worked the best for me. The irons are especially to my liking. They really have helped my short game."

P.S.: Since my original note above, I've had a 78-79-76 at my course."

Elmer Bertossa, Bettendorf, Iowa

"I tried a friend's offset irons and found that I could control my shots more easily with more weight in the clubhead. The clubs just feel so much better and I really like the offset blade. The way I see it, this has to be the No. 1 iron of the game of golf."

Milton E. Hild, Mercedes, Texas

"Truly one of the most beautiful and functional irons ever designed. I adapted to them almost immediately and I am getting approximately 10 to 15 yards more distance with each iron except the 2. First Flight has always made top woods. Now with the OSS, a full set was desirable. I don't think another club maker could do any better."

Vince Mahar, Huntington Beach, California

"I liked the off set heads for two reasons — one they make it easier to line your shot up; two, the off set puts a lot more action on the ball, which makes it stop faster."

Jimmie Taylor, Jr., Ft. Smith, Arkansas

"I have never played with a finer set of golf clubs than First Flight. I will never use anything but. They are simply fabulous. My game has improved tremendously. I have heard so much about them, I had to try them. Not only did I try them. I was so convinced I bought them!!!!"

Michael Mauro, Middlesex, New Jersey

Our OFFSET STAINLESS STEEL (O.S.S.) FTD irons are designed to help attack the two great demoralizers in golf; 1) not lining up the shot properly, and 2) not generating enough club-head speed.

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The offset of the leading edge of the O.S.S. iron not only makes alignment truer by allowing the shaft line to be nearer the ball at the start of the swing, but it also delays impact for a fraction of a second permitting the club face to square itself at point of impact.

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The "no-hosel" FTD (Pro Golf started the trend in 1969) simply means more weight behind the ball, and less weight in the shaft. This helps to generate more club-head speed for greater distance.

We don't intend to make four-color wild claims about our golf equipment. The swing is the most important ingredient, and we're not manufacturing swings—you are. But our O.S.S. FTD irons might make the swing he's got a better one. We leave the wild claims to our friends.



The O.S.S. FTD by First Flight (offset design, cast stainless steel).

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PROFESSIONAL  
GOLF COMPANY

Arnold Palmer First Flight  
duckster | HOTZE  
WE'RE DIFFERENT



Just before the opening of the 1974 Professional Golfers' Assn. Merchandise Show in Port St. Lucie, Fla., GOLFDOM made a random sampling of manufacturers around the country and asked them to comment about the show; how the professional might better use his time there, to predict merchandise trends for the coming year and to discuss rumors of delivery problems, which we keep hearing.

Without exception, everyone we talked to agreed that the merchandise show concept is a great asset to the golf industry and serves a definite need.

One manufacturer added a thought, though, which might have merit. He feels that the month of January is too late to hold a major show. By that time of year fashion merchandise has been committed; lines are sold out, resulting in unfilled or partially filled orders. A regional show, he feels, would be more aligned with the manufacturing cycle. A regional show in the Northeast, for example, could be held during November, a time when most club professionals have not started

South and would be able to attend. A regional show would be especially attractive to professionals who do not go South during the winter months. A mid-November show would also allow the professional to make late purchases for his Christmas program.

John Cantwell of the AMF/Ben Hogan Company strongly advocates the show concept as it now exists, because, he feels, its unique atmosphere, not unlike a large outdoor bazaar, is impossible to duplicate with an indoor coliseum-type show. He would like to see the show in a permanent location, perhaps at its former West Palm Beach site. He added, however, that AMF would support the show regardless of the location. All other manufacturers contacted also favored a permanent show location, although some were reluctant to state a site preference.

Ken Boyce of PGA-Victor is enthusiastic about the show. "We think enough of the total concept that we sponsor the match-play tournament that goes on concurrently with the merchandise show. For us the show has been a tremendous success. We have increased our participation in the past two years and will do so again in 1974. We personally write a tremendous amount of business at the show."

The apparel trend for spring and summer 1974, according to Jack Lust of DiFini Originals, Ltd., will be toward lighter weight fabrics with smaller patterns, the look of classic elegance. The tailored collar is strong in men's shirts, but the fashion collar is making somewhat of a comeback. There is a tendency away from the all-polyester look, with blends developing strongly—polyester/silk and polyester/cotton. The linen look in shirts, slacks and jackets is important for the coming year.

Lust predicts that the "Put Together Look" will be very much the new trend. The method of "coordinating" is now old hat. The "Put Together Look" depends on good blending, which will be demonstrated by DiFini in a new type of display presentation at their show booth this year. The exhibit is intended to teach the professional how to improve his display techniques for use at his club in addition to helping him buy better.

Another slack manufacturer felt that, although belt loops now dominate the pants market, most golfers still prefer the self-belt or beltless style because of its comfort and flexibility. He added that, although, there is interest in straight legs, the golfer has gotten used to the modified flair, which he will continue to prefer.

Some thoughts were expressed on how the professional should make the most of his time at the golf show.

All agreed that the single, important imperative for the professional was to, "Come to the show totally prepared." This means making up a plan before he gets there. The professional must know how much money he has to spend and in which areas he will spend it. Such a plan requires a review of past sales along with a breakdown of present inventory and those items already ordered in the fall for spring delivery. Armed with this information, the professional is ready to shop the show, making notes of the best items. Then and only then is he ready to place his orders.

The manufacturers pointed out that too many professionals come to the show with the purpose of buying, but are completely unprepared, without any plan. The results are sporadic: overbuying in some areas and underbuying in others, and almost always, an unbalanced inventory and a disappointing sales year. If the professional hasn't purchased enough of the

*continued on page 28*

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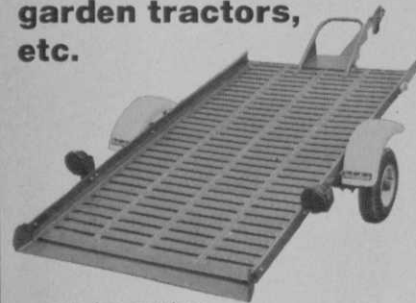
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### PGA from page 27

hot items in the spring, he can be sure they will be unavailable from the manufacturers in May, June or July.

Don Drotman of Izod offered some unique thoughts. He felt that the professional must not attempt to do all of his buying at the January show, for two basic reasons. First, by late January most good lines are either completely sold out or badly depleted. Second, the professional doesn't have time, during the three short days he has, to sit down at the show with each manufacturer and buy intelligently. Drotman suggests that the professional place his basic orders in the fall to be assured of spring delivery. Then the professional can go to the show with his remaining funds to purchase special items.

Izod will be featuring at the show what they call their "third line." Completely different from their spring line, it features summer merchandise, emphasizing lightweight fabrics. The trade name they have chosen for this third line is "Dozi." (Izod spelled backwards.) These items will be available for early summer delivery.

Izod decided to develop "Dozi" as a result of experience gained at the show. They simply were not in a position to fill spring orders taken late in January. The professional is helped if he can pick up a fresh new line for June and July, to complement the merchandise already in his shop.

Drotman feels that fabric weight is very important, especially for spring and summer. It must be light. Double-knits are still selling well in slacks and shirts. But a trend toward textured fabrics, which give a more natural look than the typical double-knit, appears strong.

He agrees that polyester blends will again be big, along with 100 per cent polyester. An advantage of polyester over cotton, Drotman points out, is that much better and more vibrant colors are possible.

Concerning deliveries, most manufacturers contacted agreed that if orders are received early most items will be delivered on time.

They point out, however, that because of shortages of some yarns, especially natural fibers, such as cotton and wool, the professional must plan earlier to be assured of delivery. In some instances, even very early orders may not be delivered. Fine count

cotton, for example, is in extremely short supply.

Most golf club manufacturers we talked with were noncommittal on the future of graphite shafts, although all admitted that they were selling well. Among the major equipment producers, Wilson has recently entered the graphite market. One comment made was that the graphite shaft has given the pro his greatest revenue potential since the introduction of the electric golf car. With all the talk about graphite, investment casting should not be overlooked. Once again, investment cast clubs are big news, with impressive gains over last year.

A golf bag manufacturer contacted pointed out that synthetic fibers will be used wherever possible, because the increases in the price of leather have virtually eliminated its use on a bag, except where leather is needed for strength. The trend here is toward the traditional, richer, more elegant appearance.

The big question with which all manufacturers are vitally concerned is the shrinking supply of raw materials. What this portends for the future, no one is willing to speculate. □

—by DICK FARLEY

Beginning on page 33, GOLFDOM has listed the merchandise that manufacturers, distributors and representatives will be exhibiting at the PGA show. The list is unofficial; the companies, not the association, have indicated to GOLFDOM that they will be present at the show.

### PRODUCT GUIDE

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