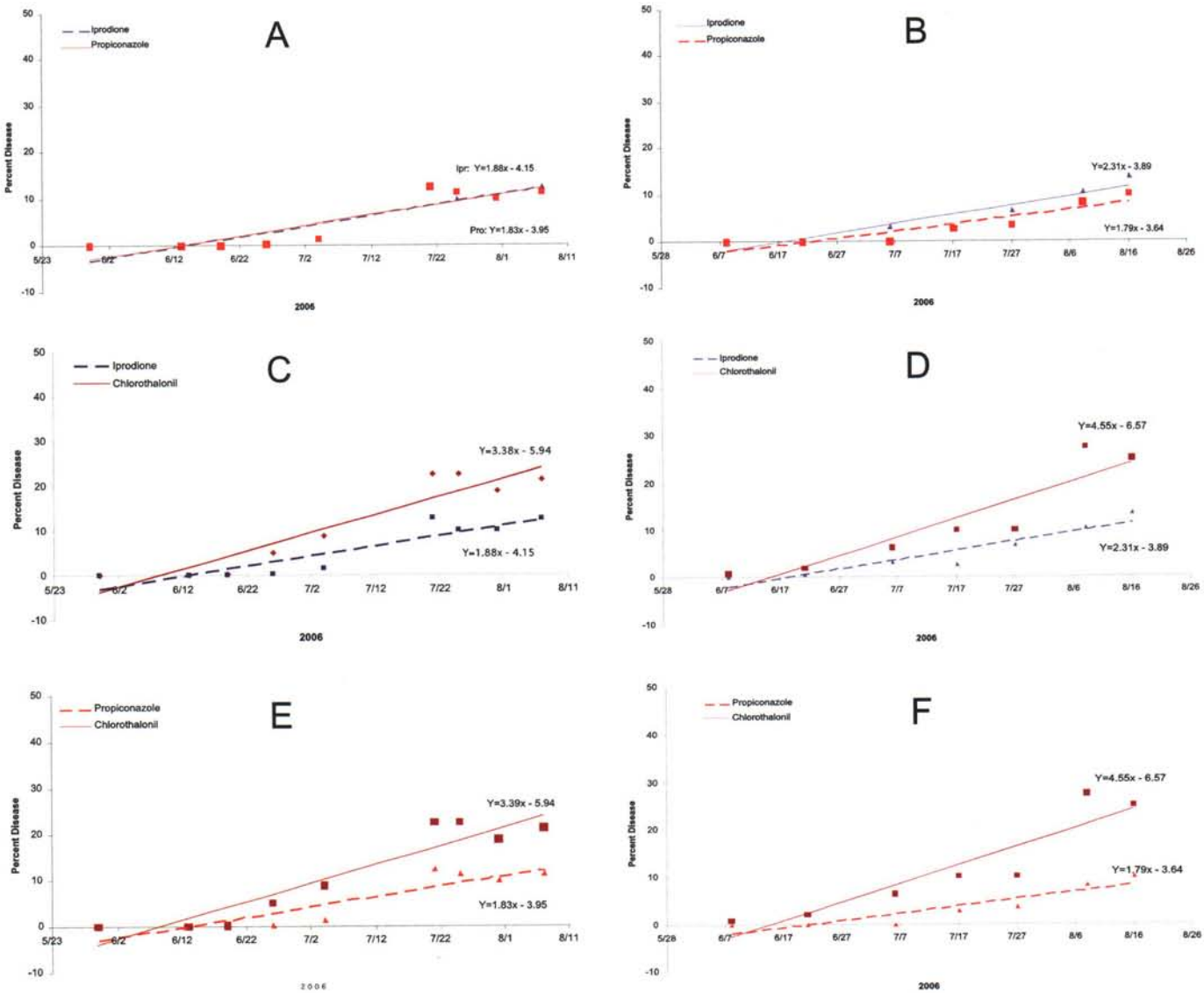
applied in the equivalent of 2 gallons of water per 1000 ft^2.

Propiconazole, iprodione, chlorothalonil, boscalid, and tank mixes of propiconazole with iprodione and propiconazole with chlorothalonil were all applied once on 3 May 2006 at an approximate growing degree day 50 (GDD 50) rating of 140 (Table 1). Growing degree days for each day were calculated by averaging the high and low temperature for each day and subtracting the mean from 50. Official high and low temperatures were measured by the National Weather Service at Milwaukee's Mitchell International Airport approximately 20 miles south of Milwaukee CC (www.nws.noaa.gov). Propiconazole was applied as Banner MAXX® at the label rate of 2 fl oz per 1000 ft^2. Iprodione was applied as Chipco 26GT® at the label rate of 4 fl oz per 1000 ft^2. Chlorothalonil was applied as Daconil Ultrex® at the label rate of 5 oz per 1000 ft^2. Boscalid was applied as Emerald® at the label rate of 0.18 oz per 1000 ft^2. The tank mix of propiconazole and iprodione was applied at the label rate of 2 and 4 fl oz per 1000 ft^2, respectively. The tank mix of propiconazole and chlorothalonil was applied at the label rate of 2 fl oz and 5 oz per 1000 ft^2, respectively. Untreated plots were used as negative controls to determine the ini-

Fig. 1a. Linear regressions of dollar spot development on creeping bentgrass fairway turf treated with different types of fungicides several weeks before annual symptom development in Milwaukee, WI. A. iprodione vs propiconazole 2006; B. iprodione vs propiconazole 2007; C. iprodione vs chlorothalonil 2006; D. iprodione vs chlorothalonil 2007; E. propiconazole vs chlorothalonil 2006; F. propiconazole vs chlorothalonil 2007.



tial appearance of dollar spot and provide information on the degree of dollar spot symptoms during the growing season. The entire experiment was repeated in 2007 and the same treatments were applied once on 2 May 2007 at an approximate GDD of 140. A conventional dollar spot program of propiconazole at 1 fl oz per 1000 ft^2 tank mixed with chlorothalonil at 2.5 oz per 1000 ft^2 was included as a positive control in 2007 and applied first on 31 May when symptoms were first observed and reapplied every 21 d until 2 Aug.

Disease severity (0-100%) was visually estimated for each treatment by the golf course superintendent and his staff at weekly intervals until early August when all fungicides no longer provided adequate control (>10% diseased turfgrass). Regression analysis and comparison of regression lines for each treatment was performed using Statistix (Statistix 8.0, 2003, Analytical Software, Tallahassee, FL). Analyses compared the regression line slopes of each treatment to determine differences in disease development as a function of time. Elevation differences between regression lines were compared to determine differences in the amount of disease control between fungicides and/or untreated turf. Significant differences among years were present, thus data from 2006 and 2007 were analyzed separately. All 32 data points (eight rating dates and four replications) in 2006 and 28 data points (seven rating dates and 4 replications) in 2007 were used to calculate the regression for each treatment. Each treatment's mean disease severity rating was calculated and used to create regression graphs.

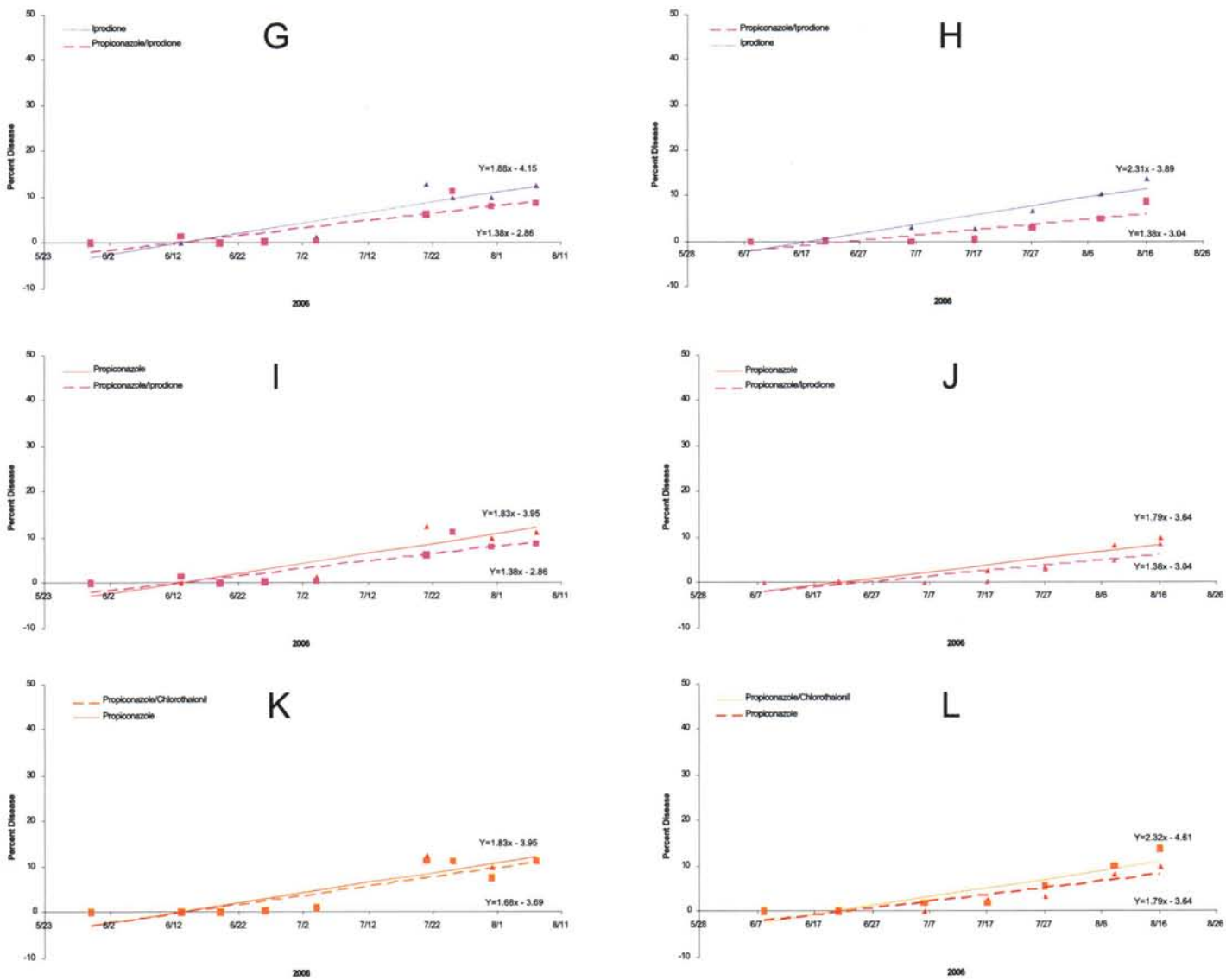


Fig. 1b. G. iprodione vs propiconazole/iprodione 2006; H. iprodione vs propiconazole/iprodione 2007; I. propiconazole vs propiconazole/iprodione 2006; J. propiconazole vs propiconazole/iprodione 2007; K. propiconazole vs propiconazole/chlorothalonil 2006; L. propiconazole vs propiconazole/chlorothalonil 2007. Fungicides were applied at label rates on 3 May 2006 and 2 May 2007 at 140 growing degree days.

RESULTS AND DISCUSION

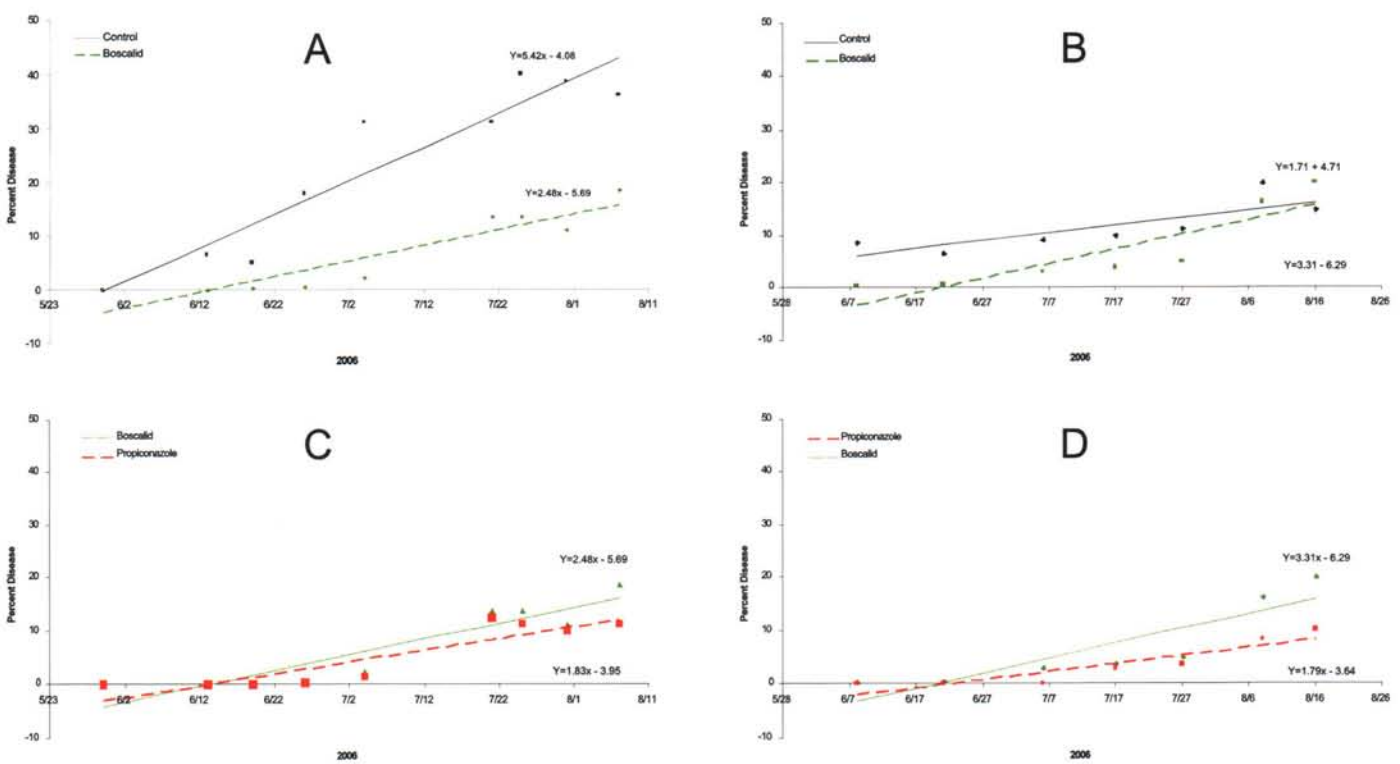
Dollar spot severity in the untreated controls (UTC) plots reached 40% by August 2006 but only 20% by August 2007, likely due to drier conditions in 2007. Dollar spot severity also progressed faster in 2006 than 2007. The amount of disease in the treated plots was fairly consistent across years, with maximum severity usually affecting approximately 10% of the turf area.

With the exception of chlorothalonil in 2007, all treatments significantly reduced disease severity compared with the UTC in both 2006 and 2007. While the UTC began to exhibit dollar spot symptoms in early June, chlorothalonil delayed symptom development until early July in 2006 and mid-June in 2007. Iprodione and propiconazole delayed symptom development in both years until early July. Iprodione and propiconazole applied together and propiconazole and chlorothalonil applied together also delayed symptom development until early July in both years. The delay of dollar spot symptom development led to reduced levels of percent dollar spot compared to the UTC throughout the season in all treatments except for chlorothalonil in 2007.

Though the level of dollar spot control in August with all treatments was unacceptable, the reduction in the treatment plots compared to the UTC was a full three months after the initial application. While labels for both propiconazole and iprodione state the maximum length of control from these products is 28 days, preventative applications prior to disease onset kept disease severity at or below 5% for at least five weeks. The nature of *S. homoeocarpa's* infection process through mycelial contact with surrounding tissue results in a linear increase in disease progression (Walsh *et al.*, 1999). Consequently we would expect that a reduction of initial *S. homoeocarpa* inoculum resulting from early season fungicide applications would decrease the rate of disease progression as well as the overall amount of disease development when compared to untreated areas.

Using a penetrant fungicide was more effective at delaying dollar spot symptoms than a contact fungicide in both 2006 and 2007 (Fig. 1). Chlorothalonil was less effective than both iprodione and propiconazole at limiting dollar spot symptom development, which was expected due to the persistence in the plant of both these penetrant fungicides. There was no significant difference in dollar spot control between iprodione and propiconazole in 2006. Propiconazole and iprodione applied as a combination was more effective at delaying dollar spot development compared to iprodione in 2007 but not 2006 and in neither year compared to propiconazole. No differences were observed between treatments of propi-

Fig. 2. Linear regressions comparing boscalid and propiconazole, both acropetal systemic fungicides, on the rate of dollar spot severity in creeping bentgrass fairway turf in Milwaukee, WI. A. control vs boscalid 2006; B. control vs boscalid 2007; C. propiconazole vs boscalid 2006; D. propiconazole vs boscalid 2007. Fungicides were applied at label rates on 3 May 2006 and 2 May 2007 at 140 growing degree days.



conazole and the propiconazole/chlorothalonil combination (Fig. 1a & 1b).

Boscalid has been recommended for use in early season dollar spot applications in previous studies (Settle *et al.*, 2007). Boscalid significantly delayed the onset of dollar spot symptoms compared with the untreated control in both 2006 and 2007 (Fig. 2). Boscalid and propiconazole were equally effective at controlling dollar spot in 2006, but propiconazole was more effective at controlling dollar spot than boscalid in 2007 (Fig. 2). Boscalid, a relatively new active ingredient for the turfgrass market, has shown ability to control dollar spot populations with documented resistance to demethylation inhibitor fungicides such as propiconazole (Burpee *et al.*, 2006). Boscalid is considered to have a single-site mode of action, though, making the development of resistance by *S. homoeocarpa* in the face of repeated applications likely according to the Fungicide Resistance Action Committee website (www.frac.info). If propiconazole-resistant *S. homoeocarpa* has been documented or is suspected at a particular site, boscalid may provide more effective control of dollar spot for at least a period of time.

The conventional 21-day dollar spot fungicide program treatment initiated in 2007 provided nearly complete control of dollar spot throughout the entire growing season. The conventional program provided significant reductions in overall dollar spot symptom development when compared to the untreated control as well as the early season iprodione, propiconazole, and chlorothalonil treatments. Early season applications of iprodione, propiconazole, and chlorothalonil maintained similar levels of dollar spot suppression to that of the 21 d conventional program until 7 July for iprodione and chlorothalonil and 17 July for propiconazole.

An informal survey of eight Wisconsin golf course superintendents in 2007 revealed that most facilities can tolerate up to 5% dollar spot severity on their fairways before initiating a chemical control program (Koch, *unpublished data*). Using 5% disease severity as a threshold, the early-season use of systemic fungicides on golf course fairways can delay the initiation of a conventional dollar spot control program until mid-July. In our research a conventional fungicide program was defined as applications of propiconazole and chlorothalonil every 21 days, though in reality a traditional program can include a number of different fungicides applied at rates ranging from 14 to 28 days. Most Wisconsin golf course superintendents begin their dollar spot control programs in early June and an early season treatment could be expected to eliminate one or two annual fungicide applications without a significant reduction in turfgrass quality. A reduction of one

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propiconazole and chlorothalonil combination applied at half rates to 34 acres of fairway would save one local superintendent $6,700, money that can be shifted to areas of course maintenance lacking attention (Koch, *personal communication*).

CONCLUSION

Our study showed significant delays in dollar spot symptom development compared to the untreated controls with all early season fungicide treatments. Penetrant fungicides like iprodione and propiconazole delayed symptom onset more than the contact fungicide chlorothalonil. Fungicide combinations were no more effective at controlling dollar spot than single active ingredients. Our research has shown that early season applications of fungicides targeting dollar spot well before symptom onset can effectively delay the onset of symptoms for several weeks and potentially eliminate one or two annual fungicide applications. Future research will be conducted by the University of Wisconsin to explore the optimal timing of an early-season fungicide application by refining existing growing degree day models, the amount of any fungicide reductions over a wider geographic range, and the possible cost savings obtained by using an early-season dollar spot control program.

ACKNOWLEDGEMENTS

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LITERATURE CITED

Burpee, L. L., Stephens, S. L., Martinez-Espinoza, A. D. 2006. Control of dollar spot caused by an isolate of *Sclerotinia homoeocarpa* exhibiting dual fungicide resistance, 2005. F&N Tests. 61:T025.

Kaminski, J. E., Putman, A. I., 2007. Early season dollar spot suppression with a single application of various fungicides, 2006. Plant Disease Management Reports 1: T016.

McDonald, S. J., Dernoeden, P. H. 2006. Preventive dollar spot control in creeping bentgrass as influenced by spray volume and a spring application of fungicides, 2005. F&N Tests. 61: T017.

Settle, D., Kane, R., Miller, G. L. 2007. Fungicide application strategies for dollar spot control on a creeping bentgrass fairway, 2006. Plant Disease Management Reports 1: T009.

Walsh, B., Ikeda, S. S., and Boland, G. J. 1999. Biology and management of dollar spot (*Sclerotinia homoeocarpa*); an important disease of turfgrass. HortScience 34: 13-21.

Discount Golf

By David Brandenburg, *Golf Course Manager, Rolling Meadows Golf Course*

Editor's note: The Business of Golf is a new feature that we hope will occur on a regular basis. For a long time, golf has been driven by the enjoyment of the game for owners, members and daily fee players. As golf evolves and becomes driven by revenue and profits, we as course managers need to expand our horizons and our interest in the overall facility bottom line. I invite any WGCSA members or readers of The Grass Roots to contribute articles to The Business of Golf feature.

Empty fairways are common in today's golf market.

I am blessed and cursed to wear two hats at our facility as I am the superintendent and the general manager. Neither hat is getting easier to wear as daily fee golf becomes more competitive and profits are tough to find. With budget cuts and rising prices we are forced to do more with less as we try to offer great conditions on a daily basis to attract players to our courses.

I do not claim to be an expert in tee time yield management or the golf economy but I see first hand some key problems to the world of daily fee golf.

Time may be the biggest factor the golf industry faces today. An 18-hole round of golf without travel takes 4 to 5 hours to play and in today's rush rush world that kind of time is hard to find. For men, the days of leaving the kids and wife at home while we go play 18 holes on Saturday and Sunday are gone. We willingly spend more time at home doing family activities and chores.

The golf industry is not the only industry seeing cuts to budgets and staff. Every sector of industry and business needs to maximize profits so many golfers are also finding themselves spending more time at work. More time at work plus more time with the family equals little time for golf.

This time factor and the fact you can play 18 holes on an X-Box or Wii in your living room in less than an hour has reduced golf rounds every year since 2000. Most troubling is a statistic from the National Golf Foundation that shows the number of players who play 25 times or more a year fell by 1/3 between 2000 and 2005 (6.9 million to 4.6 million).

Many struggling operators were pleased in 2006 when more golf courses closed than opened. Unfortunately, there is still an abundance of places for golfers to play and there will be for some time. When you couple an overabundance of available tee times with less rounds being played, golf course owners and manager are in panic mode. I believe we are seeing the results of that panic and the domino effect it has on the overall golf economy.

Golf Discounting! Golf discounting is a lot like a national politician being asked if they will run for Vice President. No one says they want the job, but no one ever turns it down. Golf operators talk constantly about the evils of discounting and how it is ruining the industry, but most, if not all of them are doing it.

It is a great time to be a daily fee golfer, as discounts are found in the paper, magazines, call in radio shows and websites. The problem for the industry is golfers are being trained to only play when golf is on sale. Often the first question our golf shop staff receives when they answer the phone is, "what deals do you have"! At some golf courses spring discounts end in late June and I have seen fall discounts that start in August which should be the peak season. Discounts of 50% off are not hard to find even in June and July.

There is no way a course will increase rounds by 50% to make up for the loss in revenue. All courses have slow times and busy times, if you offer a discount during your slow time you are just shifting your peak time golfers to play at a different time.

Golf operators are focusing too much on golf rounds rather than looking at golf revenue. For the past few years overall rounds played have decreased and for the next few years we can expect rounds to continue to decrease because of overbuilding, the time factor and the economy. Green fee discounting compounds

the problem because the industry is selling fewer rounds at a lower price. If a lower price would bring more rounds to the industry that would be an easy solution, but time and time again we see it does not.

For an example let's look at Bogeyville, a nice community with two similar golf courses called Course A and Club B. Overall golf rounds have been declining in Bogeyville as well as profit. Course A decides to reduce fees from $25 to $20 to attract more play. It sounds like a good idea but in reality that 20% discount means the club will need to increase rounds by 20% to break even. Course A sees an immediate increase in play of 17% as customers from Club B come over to play at a discount. Course A just lost another 3% of revenue because of the discount they offered not to mention the increased wear and tear on the golf course only attracted 17% more play, not enough to match the discount. However, short-term Course A is satisfied because they have more players and the bar is full of happy customers.

Club B sees their rounds reducing and their players heading over to Course A. With their backs against the wall Club B gets nervous and lowers their fees to match Course A. Within a few weeks things level out and Course A and Club B have their customers back. Now customers at Course A and Club B are saving $5 per round so they are overjoyed. Everyone wins right? No. Only the golfers win, and even that is short-term. Both clubs are losing 20% of their revenue while rounds have stayed the same because there are only so many golfers living in Bogeyville.

Why do the golfers only win short-term? They are getting a deal and saving money at all the courses right? What can be wrong with that? When a club sells less rounds or memberships at a lower price it reduces revenue. Less revenue leads to budget cuts, staff reductions and an overall reduction in course quality. The reduction in course quality leads to customer complaints and dissatisfaction. In reality the customer cannot have his cake and eat it too.

This short-term thinking is killing the long-term health of our industry. Golf is considered a non-elastic commodity. Because of the time factor, most players do not play more because it is on sale. They may change where they play because golf is on sale, but the majority of golfers play because they like the game and they have the time. Price drops do not give golfers more time, and most golfers do not consume more golf because it is on sale.

Not only have many courses dropped prices but they are using third party tee time marketers to bring new customers by selling selected tee times at discounts of up to 50%. The deal is sold to clubs as a way to get new customers in at a few select tee times so they keep coming back. In this relationship the golfer wins by saving up to 50% on golf fees, the third party tee time provider wins and makes a living selling someone else's product. However the golf clubs are double losers because they receive little to no revenue from these "free" tee times. And you know what? There is no proof the customers come back at full price.

There is no such thing as free tee times. If a golfer can play your course for 50% off at 2:07 on Tuesday why would they ever pay full price at 2:00 or even noon? Why would they ever pay full price again? The discount seekers will just go to the next course until your fees are on sale again and the cycle continues.

Right now many daily fee courses are hanging on and planning for better times, while hoping their neighboring course folds before they do. That is not a sign of a healthy industry.

What is the solution to this growing problem, and is it too late for the golf industry to stand up and say "this is what golf costs"? No one knows the answer to that question. Times are tough, people are busy and in result there is going to be fewer rounds played for the near term. Operators need to decide what type of course they want to operate and stick with it. Resorts and destination courses are run different than local courses. High end conditioned clubs are operated differently than low end.

Regardless of your course type and customer base, operators need to set prices based on the customer you hope to attract. If you want high end customers, offer a high end product and charge a high end price. If you want a low end customer offer a low end product and charge a low price. Most of us are in the middle, trying to offer an above average course on an ever decreasing budget and it seems like we are just treading water hoping not to sink.

Collusion among owners and operators is never going to happen, and is illegal. However a general agreement to hold prices at a fair level to allow the operator to pay the bills will keep clubs profitable and open for golf. In that scenario, everyone wins! Pricing should reflect the clubs overall strategy in customer attraction and retention. Offer a price that matches your level of course and the customers that are looking for that product will choose you for their golfing needs.

Yogi Berra

By David Brandenburg, *Golf Course Manager, Rolling Meadows Golf Course*

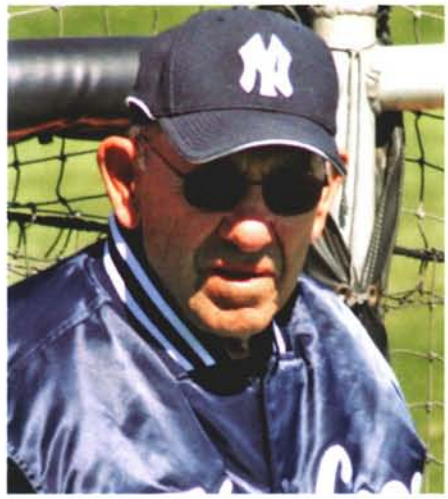
The recent closing of Yankee Stadium and the baseball playoff season reminded me of the great players baseball has seen over the years. It is easy to know the great ones contributions to the game and their life after baseball but often we forget or don't find the time to look up what got them there. Who are these guys and how were they made?

As we get older we look back at the decisions we made in our youth, the challenges and success we had and how that molded us into the people we are today. I have picked to highlight the life of Lawrence Peter "Yogi" Berra after seeing him run onto Yankee Stadium for the last time this week.

Often Berra is remembered for his Yog-isms or funny commercials. But this Hall of Fame Catcher has lived a full life. Born in a primarily Italian neighborhood called 'The Hill" in St. Louis to immigrant parents Yogi grew up playing all kinds of sports with the neighborhood kids.

Baseball quickly became Yogi's favorite sport and one he enjoyed with neighbor Joe Garagiola who he attended South Side Catholic School with. That block now called "Hall of Fame Place" was also home to the late baseball broadcaster Jack Buck.

In 1942 Berra and Garagiola tried out for the St. Louis Cardinals and after Garagiola was signed to a $500 contract Yogi turned town the $250 offer from General Manager Branch Rickey. Some reports say Rickey did it on purpose with the knowledge he would be leaving St. Louis for the Brooklyn Dodgers and that he wanted to sign Yogi to his new



team. He never had the chance.

Soon the New York Yankees had offered the $500 and Yogi signed with them to start a long relationship with the fans of New York. Yogi was assigned to the Norfolk Tars of the Class B Piedmont League. While at Piedmont, Yogi had perhaps his most productive game ever as he was credited with driving in 23 runs that day.

As with many stars of that time, baseball would have to wait as World War II was in full swing. Yogi was now 18 and enlisted to served his country as a Navy Gunners Mate. Yogi was part of the D-Day invasion of Normandy on a rocket ship that was capsized off Omaha Beach before serving in Italy, North Africa and stateside.

After the war, Yogi returned to baseball and played with the New London, CT club. It is said it was there that Mel Ott, the Giants Manager saw him play and attempted to offer the Yankees $50,000 for Yogi's contract. Yankee GM Larry MacPhail had no idea who Yogi was, but figured that if Mel Ott wanted him that badly, he had to be worth keeping, and he was.

In 1946 Yogi was apprenticed to the Newark Bears of the International League before beginning his career with the Yankees later that year. He joined the team as a platoon catcher with Aaron Robinson, Charlie Silvera and Gus Niarhos.

Immediately and throughout his career Yogi was known as a wild swinger and a tough out. He could get hits from balls at this feet or at his eyebrows. Paul Richards who competed against Berra as a catcher said "He is the toughest man in baseball in the last three innings." Berra proved this best in 1950 when he only struck out 12 times in 597 at bats.

Yogi was also known a talking catcher mainly to try and disturb the concentration of the batter. Stats are great but don't tell the entire story of Berra's heart and abilities. As a fielder, Berra was truly outstanding. Quick, mobile, and a great handler of pitchers, Berra led all American League (AL) catchers eight times in games caught, six times in double plays (a major league record), eight times in putouts, three times in assists, and once in fielding percentage.

Berra left the game with the American Leage records for catcher putouts (8,723) and chances accepted (9,520). He was also one of only four catchers to ever field 1.000 for a season, playing 88 errorless games in 1958. Later in his career, he showed his range as he excelled as a defensive outfielder in Yankee Stadium's difficult left field. In June 1962, at the age of 37, Berra showed his superb physical endurance by catching an entire 22-inning, seven-hour game against the Tigers.