Peer-to-Peer-

(Continued from Page 26)

Here at Tanners Brook, we continue to use the standard 3-way product combination of PCNB, Chlorothalinil, and Iprodione. Over the years we have used the off patent products without any noticable decrease in control. The rates this past winter were 4oz Iprodione, 4 oz Chlorothalinil and 6 oz PCNB. It was interesting to note that On our 18th fairway where we sprayed out left over material and rinsate that we had control of snow mold that was very acceptable.

- Kevin Clunis CGCS
Tanners Brook Golf Course
Forest Lake

At New Richmond, we sprayed 6oz. of PCNB, 4oz. of Iprodione, 6oz. of Clorothalonil on greens, tees and approaches. There was little or no breakthrough. The only problem we had was under the green we covered with the Green Jacket.

Our fairways were sprayed with just PCNB at 8oz. There were some fairways that had some break-through of grays and pinks. Our guess is less than 5% but many of those areas were on higher areas with good drainage.

- Tom Johnson
New Richmond Golf Club
New Richmond, WI

Being on a tight budget last year at **Eastwood Golf Course** we used 12 oz/pcnb and 5 oz teremec per thousand. Where we treated we have no snow mold at all.Untreated areas did not fair so well.

- Jeff Minske
Eastwood Golf Course
Rochester

When I received the Peer-to-Peer e-mail today I was excited to have the opportunity to respond with my input for the first time. My name is Josh Kravik and I am the Assistant Superintendent at **Viking Meadows Golf Club** in Cedar, Minnesota. Last fall I made a single spray application of Instrata and Transfilm to the greens and tee boxes. Our greens and tee boxes are very nearly snow mold free this spring! Our fairways, not being treated, have lots of snow mold. To the right are some pictures that I took while traveling the course.

- Josh Kravik
Assistant Superintendent
Viking Meadows Golf Club

PHOTOS FROM VIKING MEADOWS

Snow mold in the bluegrass 10th fairway. The slope shown faces south.

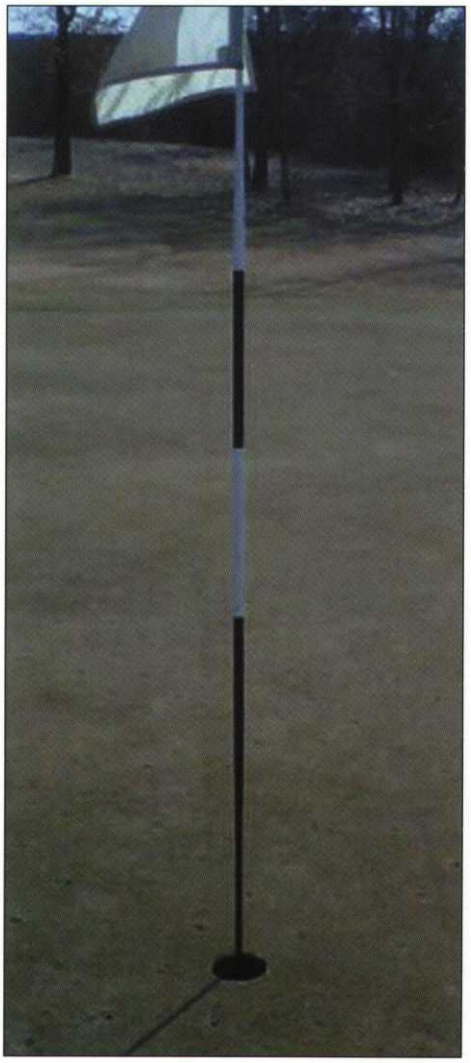
12th fairway taken from beside the green.

Snow mold near valve cover in the low-lying 15th fairway.

Clear cut difference between sprayed and unsprayed approach of 2nd hole on the executive course.

At Black Bear Golf and Tennis in Minong, WI I used Tartan at 2 oz and Daconil at 5 oz. Greens and tees came out beautifully and opened on March 15! Lots of snow mold on untreated bluegrass fairways.

Below, typical fairway snow mold at Black Bear Golf and Tennis Club.



The greens and tees came through beautifully at Black Bear Golf and Tennis Club.

Spray Tips

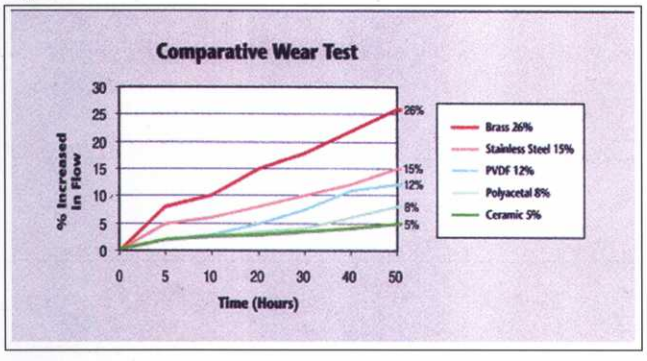
By KEN ROST
Frost Services

Ken Rost

I'm often asked the question, "How long will spray tips last before they should be changed?" The hair stands up on my neck and I choke back an automatic response of, "How should I know?" Instead I answer, "There is an easy way to find out for yourself!" and then we go through the steps below to help them find the answer. The fact is, if you haven't been calibrating and measuring the wear pattern of the spray tips on your sprayer at regular intervals, chances are you've been wasting valuable dollars on over-application of chemicals. There are so many variables that it makes it impossible to create a general rule of thumb that covers all applications. Turf applications use a variety of tank mixtures that vary in abrasive properties and the frequency of application is an obvious factor. Another factor is the material that the spray tip is made of. A common misperception is that stainless steel spray tips wear longer than tips made of engineered plastics. Polyacetal plastics are what most recent technology spray tips are made of. They wear better than stainless steel and they are a good bargain when compared to ceramic materials which have the longest life wear expectancy. *(Figure A)* The only way to know if a spray tip should be replaced is to measure it!

A common misperception is that stainless steel spray tips wear longer than tips made of engineered plastics.

Figure A



Here are the simple steps:

What you need: Stop watch, Calibration cup, spray tip rate chart and a calculator.

1) Know the ISO color code for the spray tip

Example: light blue

2) Know the flow rate at 40 psi from the rate chart *(Figure B)*

Example: 1.0 gal/min.

All spray tips are color coded to an ISO orifice standard that is universal. The standard is based on operating at 40 psi.

3) Set your sprayer boom pressure to 40 psi with the boom valve on. Make sure that the indicated pressure is as close to the spray tip as possible. The indicated pressure at the pump will likely be higher than the actual spray tip pressure at the boom due to potential restrictions between the pump and the spray boom.

4) Collect the spray for one minute with the calibration cup.

If the spray tip flow rate is too much for the collection cup, collect the spray for 30 seconds.

5) Divide the number of ounces collected by 128 to get gallons per minute.

Example: 140 ounces collected for 1 minute is: 140oz/128oz/gal = 1.09 gal/min.

If you collected for 30 seconds, multiply your result by 2.

Example: 70 ounces collected for 30 seconds is 70oz/128oz/ gal = .545gal x 2 = 1.09 gal/min.

6) Compare your result to the flow rate of the spray tip from when it was new (original).

Example: (Collected - original)/original i.e. (1.09 - 1.0)/ 1.0 = .09

This is the percent wear of your spray tips. That translates to your applying 9% more chemical to your turf than what you intended to apply.

7) Test every tip on the boom

Figure B

ISO Color	gpm@ 40 psi
	0.4
	0.5
	0.6
	0.8
	1.0
	1.5

The time to test each tip on a turf sprayer is minimal and the variation of flows may surprise you.

Now the question is, what amount of lost chemical dollars will warrant a change to new spray tips? Even if you applied chemical for one or two days at 9% over the intended application rate, the loss in dollars of chemical could have paid for a new set!

Keep these tools handy and make it a regular exercise to monitor the wear progression of your spray tips. That way, when someone asks you, "At what percent wear do you replace your spray tips?" you will know how to answer with confidence and more importantly, you'll know that you are not over-applying chemicals and wasting money.

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GET TO KNOW 'EM

David Oberle
Owner
Excel Turf & Ornamental

Family and Interests: Married to my wife Dawn for 16 years. Dawn and I have 3 kids, Thomas 12, Elizabeth (Bitsy) 10, and Caroline 8. When not working, we love chasing our kids in sports and school. All three play hockey, baseball/ softball, soccer and ski. We all live for weekends at the cabin in the summer.

Favorite piece of equipment and why: Any piece of equipment that opens up the surface of a green. Sand pro spiker, aeration device, verticutter, groomer, hand spiker etc. It is critical to open the surface of greens to decrease the build up of bicarbonates and allow air and oxygen to penetrate the subsurface.

Why did I get into the industry? Growing up at the golf course was just a way of life, starting with caddying at the age of 9 and never looking back. I have also always loved to grow plant material. The love of the outdoors and no interest in going to a cubical for work helped guide my career path. Having a great mentor in Jerry Murphy at Somerset also helped.

Golf Industry Commentary: Like most all industries globally, the golf industry will be challenged moving forward. It is our responsibility to be good Stewards of our business by thinking globally and acting locally. Rest assured, golf has been around a long time and will endure for many generations to come. Remember to smile and encourage a kid at your course and introduce another one to the game.

Erin McManus
Superintendent
Medina Golf and Country Club

I currently have four dogs and love to pheasant hunt. I foster a dog from Scattergun Lodge in Pierre, SD and guide there part time in the fall. I enjoy watching the dogs work and I am amazed at the natural abilities they have in tracking and retrieving game.

One life lesson you've learned due to golf/work in golf: The life lesson from working on a golf course is that the sun comes up everyday whether you acknowledge it or not. Being on the course in the dark and watching the sun come up is one thing that does amaze me each day. It reminds me that today is a new day and we can start over each and every day.

Favorite piece of equipment and why: My favorite piece of equipment is a computer controlled irrigation system. I used to do night watering during high school with my dad. We would go in to work and move quick couplers all night and then have to mow greens and change cups. The amount of control and options that the computer has given us for our irrigation is priceless plus I get a little more sleep.

Why did you get into the industry? I got into the industry because of my dad. He was a superintendent at a small public 9-hole course in Wisconsin and I grew up working on the course. Being outside each and every day and not exactly knowing what the next day could bring is intriguing in this industry. The weather, good or bad, dictates what we are doing on a daily basis and that is the challenge.

Nikk Dickerson
Assistant Superintendent
Owatonna Country Club

Family, pets: My wife Molly is a Speech Pathologist in Faribault, MN, and we currently are taking care of her sister's dog Linus while she is deployed in Iraq. And yes, he does love geese.

The funniest thing you have seen on a golf course: This would be a toss up between two things that I've witnessed. I've seen someone try to mow a green with the tires still on the walk behind mower and not realize why they were not picking up any grass. And the other would be when I was playing golf in Florida I hit over a ridge on a fairway where I could not see my ball and then walked to my ball only to realize that there was an alligator within 10 feet of my ball and could only think how different the golf world is from the north to the south.

One life lesson you have learned due to golf/work in golf: Work does not always mean a 9-5 job.

Favorite piece of equipment and why: Eclipse Greens Mower, I think that greens mowers have come a long way even in the few years that I've been in the industry and I don't think you can beat mowing greens in the morning. There is nothing more relaxing.

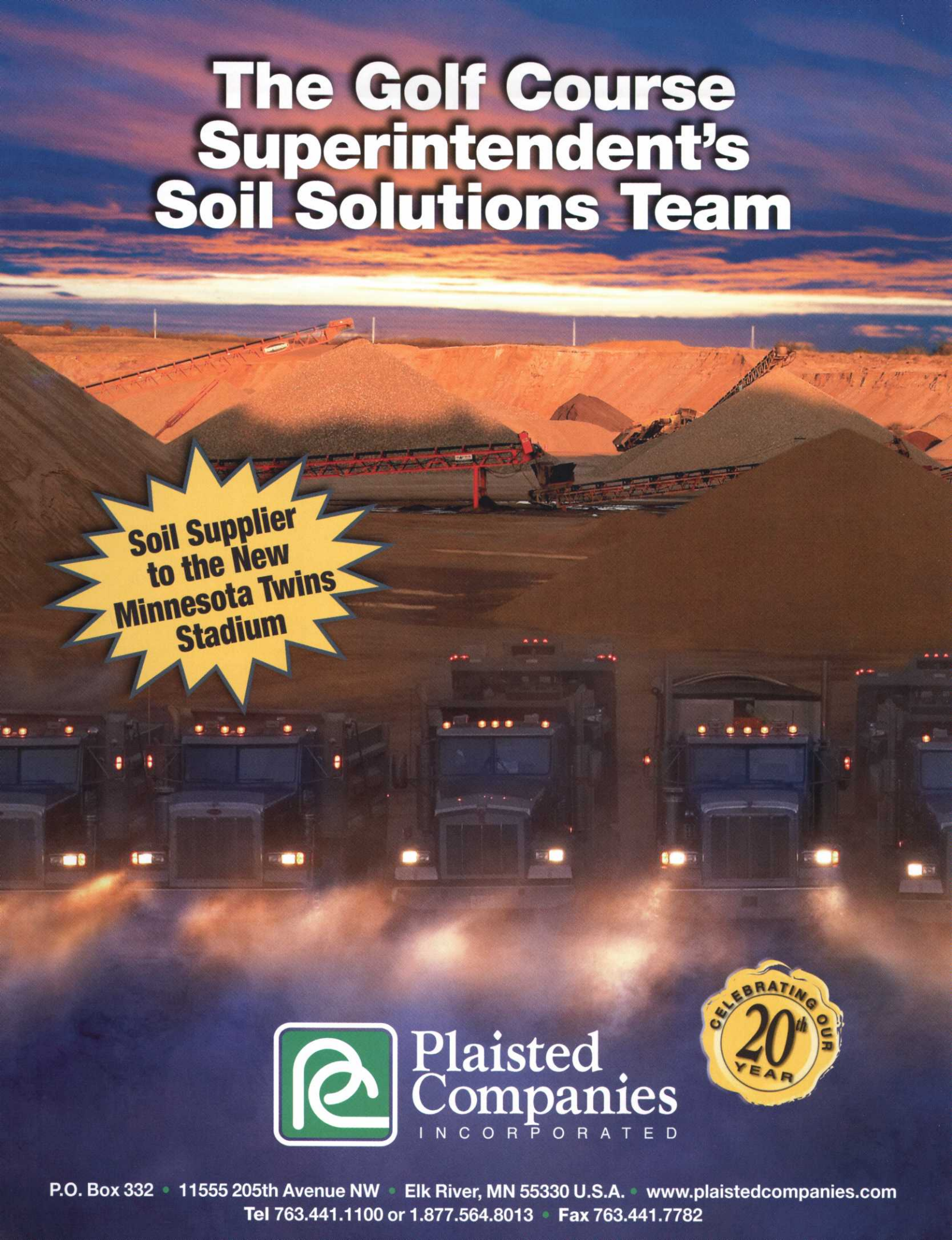
Roger Stewart, CGCS
Director of Golf Course Maintenance
TPC Twin Cities

Hobbies/interest: Hunting, fishing and golf. I'd like to own a Harley some day.

Life lesson you've learned due to golf/ work: Don't take anything for granted.

One piece of advice for your peers: I have been blessed in my career with so many wonderful employees. I am fortunate to count many of them as friends after more than thirty years. There is no magic formula for managing people. Simply treat them with dignity, respect and, when needed, empathy. Be consistent and honest with them. Most of them will return the treatment many times over. Those that don't are worth spending a lot of energy on.

Why did you get into the industry? When I was in high school I worked at The Elks Country Club in St. Anne, IL for John Krutilla and I loved the job. When I graduated from high school I went to Doane College in Crete, Nebraska where my dad went) and worked summers for John. At the end of my sophomore year at Doane, I figured I better decide what I was going to do. I really didn't know what to do, but I knew I liked that summer job, so I decided to transfer to the University of Nebraska and enroll in the Agronomy program and see if I could parlay that into a degree and then get a job on a golf course. John Krutilla's father was a well known Golf Professional in the area and he helped get me a job at Bob O' Link Golf Club as an intern working for Bob Williams. Little did I know at the time the magnitude of that opportunity. The rest is history.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The Savory Supe

By Scottie Hines, CGCS
Windsong Farm Golf Club

This is a classic Saint Patrick's Day recipe made by my mother-in-law, Jo-Jo Leighton. I will not bore you with the directions for mashed potatoes but the rest of it is outlined below. This recipe will serve 4-6 people depending on the serving size.

The Filling:
1 tbsp olive oil
2 lb ground beef (or venison/lamb)
2 medium onions, copped
1 medium to large bag frozen peas and carrots
1 tbsp tomato puree
1 tbsp fresh chopped parsley
1 tbsp fresh chopped thyme
1/2 tsp ground cinnamon
1 tbsp all purpose flour
1 cup favorite red wine
1 1/2 cups beef broth
Salt and pepper

Jo-Jo's Shepherds Pie

The Crust:
2 lb Yukon Gold Potatoes
2 tbsp butter
Salt and pepper
1 cup chopped scallions
1 cup grated Irish cheddar cheese

Make the mashed potatoes per your recipe.

Pre-heat oven to 400 degrees.

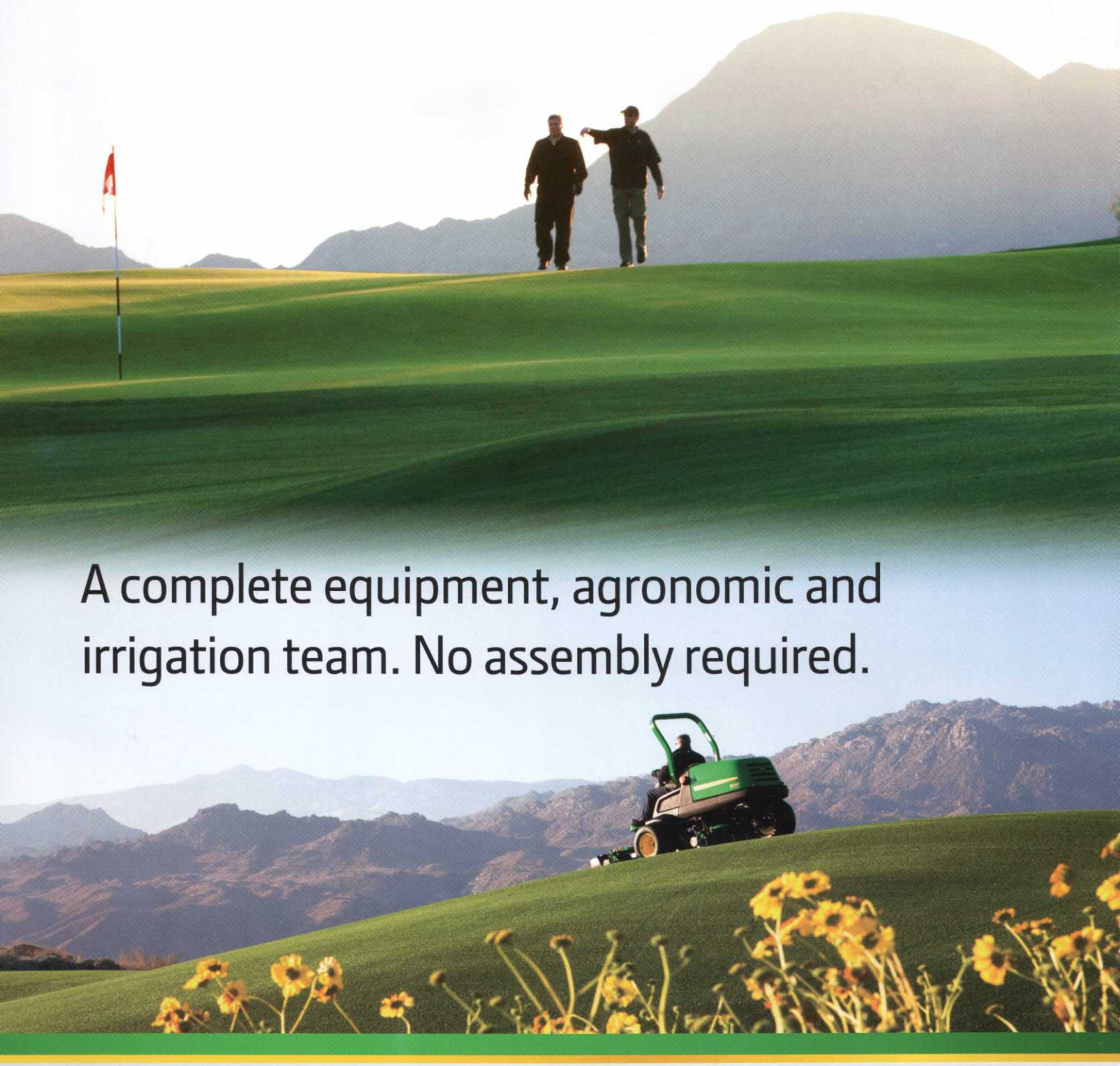
Filling:
Heat olive oil and brown the ground beef. Add onions and cook for 5 minutes. Add the peas and carrots and cook for an additional 5 minutes. Add tomato puree, thyme, parsley And cinnamon. Stir and saute' for 2 minutes.

Stir in the flour to reduce thickening of the liquids. Add the wine, pour a glass for yourself and the beef broth. Salt and pepper to taste. Bring the mixture to a boil. Lower heat and let simmer for 30 minutes.

Spoon the meat mixture into a 9x13 casserole dish. Carefully add the mashed potatoes as a layer over the meat. Sprinkle with the scallions and Irish cheddar cheese over the potatoes. Bake at 400 degrees for approximately 25 minutes until the potatoes are a golden brown. You may need to broil the pan to get the potatoes golden brown. Serve hot and enjoy!

- Scottie Hines, CGCS

Note: A great twist to this is to make the pies in miniature form as individual servings using small tart or Creme Brule dishes.



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Fuel Efficiency-

(Continued from Page 7)

Table 1

Machine Type	Avg Total Time	Avg Work Time	Avg Trans Time	Avg Total Dist	Avg Work Dist	Avg Trans Dist
Walk Greensmower	1:53:28	1:28:03	0:25:25	6.5	4.3	2.2
Large Reel (Fwy)	3:56:47	3:30:22	0:26:25	16.6	14.3	2.3
Large Reel (Short Rough)	2:24:32	1:41:42	0:42:50	9.0	6.2	2.7
Large Rotary	4:42:46	4:21:11	0:21:35	20.6	18.4	2.2
Trim Mower	3:18:28	2:41:06	0:37:22	10.7	8.0	2.6
Riding Greensmower (Greens)	2:14:29	1:29:12	0:45:17	7.1	4.1	3.0
Riding Greensmower (Tees,Aprons)	2:51:27	2:04:52	0:46:35	9.9	6.1	3.8
Utility Vehicles	1:36:57			9.8		

Since the primary task of mowing equipment is to cut grass, the performance metric selected was units per acre. Figure 2 and 3 show average performance for each machine type. Not surprisingly, smaller machines, while more fuel efficient, are less time efficient. This is best demonstrated by a look at mowing greens.

Figure 2

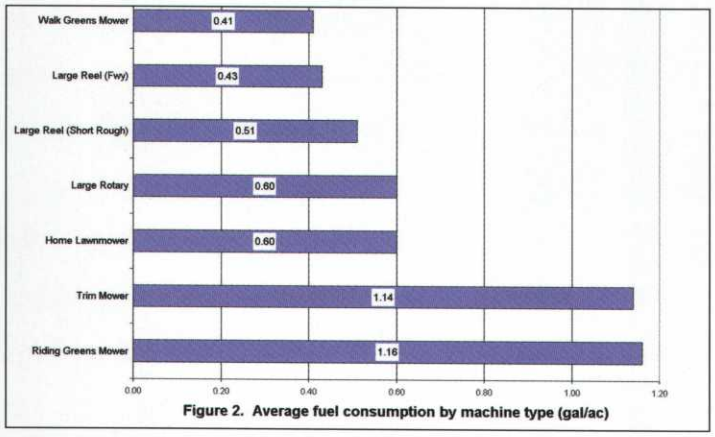

Figure 2. Average fuel consumption by machine type (gal/ac)

Figure 3

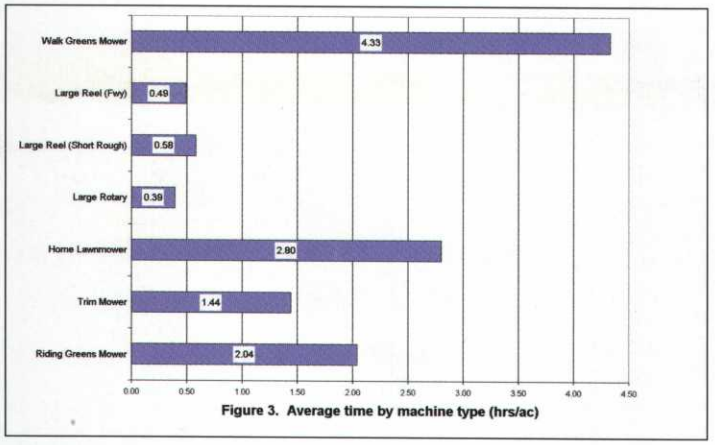

Figure 3. Average time by machine type (hrs/ac)

Figure 4 compares a walk greens mower to a triplex riding greens mower for mowing 2 fi acres of greens. The riding mower uses nearly 3 times as much fuel as the walk mower but takes less than half the time. If you calculate the cost of mowing 2 fi acres assuming the cost of fuel at $2.85/gal and labor at $10.00/hr, the total cost of mowing with a walk mower is $110.85 or $44.34/ac. Mowing the same area with a riding mower would cost $59.27 or $23.71/ac. Since walk mowers are generally towed between greens a small amount of fuel (0.20gal - 0.25gal) should be added to the walk mower calculation. This increases the cost per acre to $44.62 - still nearly twice as much as a riding mower.

When mowing fairways, both direction and speed make a measurable difference. Today's mowers are more fuel efficient at higher mowing speeds and obviously mowing faster results in time savings. Using the same fuel and labor cost as mowing greens results in a cost of $6.61/ac at 3.5mph and $4.08/ac at 5.8mph. (The average fairway mow speeds at the two courses studied were 3.5mph and 5.8mph).

Figure 4

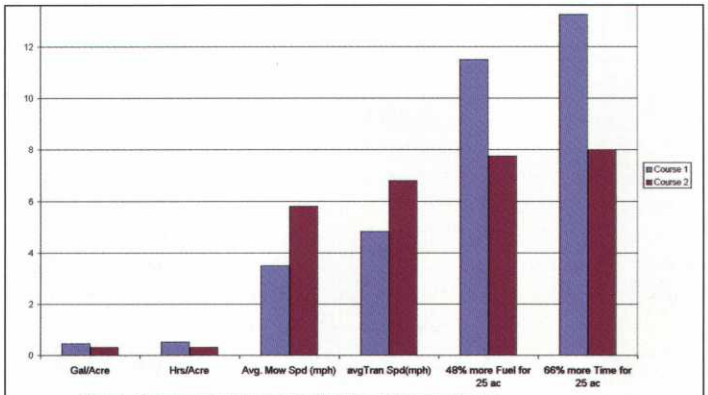

Figure 4. Comparison of walk mower vs. riding mower on 2.5 acres of greens. Walk mower transport speed is higher due to being towed between holes by a utility vehicle.

Figure 5

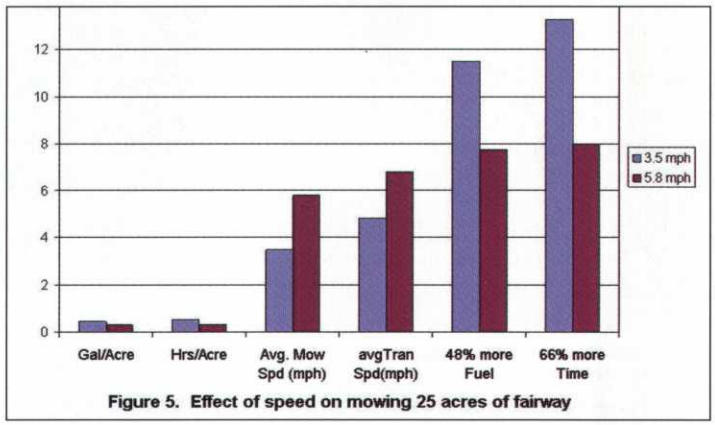

Figure 5. Effect of speed on mowing 25 acres of fairway

While not as significant as speed, direction does make a difference. Data captured at one course for fairway mowing "zamboni style" (0 degrees) and cross-cutting at an angle of about 45 degrees showed a cost per acre difference of 16%. This is primarily due to the increased distance traveled and the number of turns required to cross-cut. On a single fairway the distance traveled was 2.4 miles "zamboni style" and 2.9 miles for cross-cutting - a difference of fi mile, nearly 20% more! The cost of fuel and labor per acre is $5.73 and $6.78 for zamboni and cross-cutting respectively. These results are very similar to those of a previous study Toro performed comparing the efficiency related to mowing direction.

Figure 6. 'Zamboni-Style mowing $5.73/acre

Figure 6

(Continued on Page 30)

Fuel Efficiency-

(Continued from Page 29)

The process of aerifying greens was tracked at one of the courses. Because of a limited number of tracking devices it was not possible to track all of the equipment used in the process. Movements of ten pieces of equipment were recorded including two different aerators, a variety of utility vehicles and a skid steer used to haul sand for top-dressing. The total distance traveled by those ten vehicles was 106 miles.

One of the courses participating in the study had fuel records by machine for each month for the previous four years. These records were used to validate study results. Estimated fuel usage based on maintained acres and average fuel efficiency compared reasonably well with their actual usage records. The pie chart below showing fuel use for a single mowing cycle (mowing every area a single time) shows that the larger turf areas use the vast majority of fuel for any single cycle.

Due to more frequent mowing of greens, tees and aprons the chart changes significantly for the yearly fuel budget. One of the surprises of this study was that on a yearly basis, mowing greens can consume nearly as much fuel as mowing fairways even though on average, the area of greens is 1/10 the area of fairways. Figures 9 and 10 assume greens are cut with a riding mower.

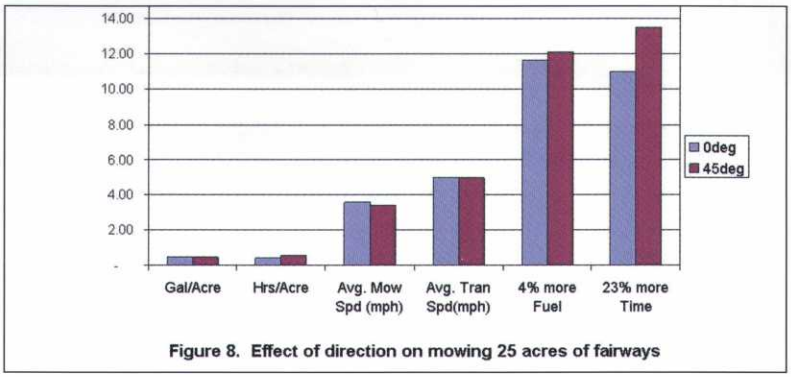

Figure 8

Figure 8. Effect of direction on mowing 25 acres of fairways

Figure 7. Cross cut mowing. $6.78/acre

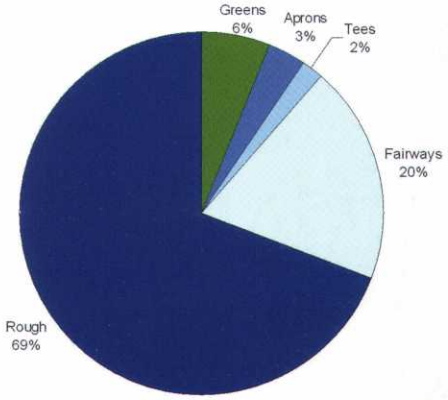

Figure 9. Single cycle fuel consumption by area

Many factors - equipment, mow speed, direction, and size of the course - will affect fuel use and total mowing time on any particular course.

Until recently, fuel efficiency has not been a primary factor in design of turf maintenance equipment. Driven by rising fuel prices and stricter emission standards, future machines will likely utilize technology to maximize fuel efficiency. Other projects are underway at Toro to quantify how much power is used by specific machine systems. This data will be used to design machines that use power more effectively than the machines available today.

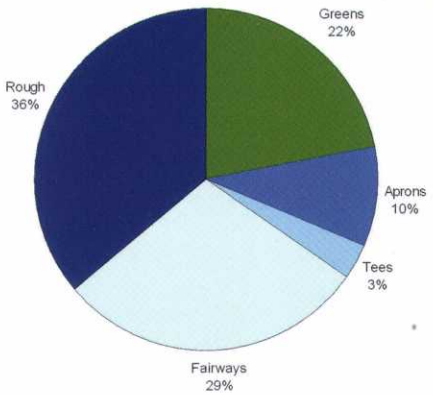

Figure 10. Yearly fuel consumption by area