

## MECHANIC WORKSHOPS

The Midwest Association again is promoting educational opportunities for Golf Course Mechanics. Working with Midwest Engine Warehouse in the past, has given us support to provide education. The Midwest Engine Warehouse has opened up their Small Engine Service School for participation by our members. The schools are designed to give hands on maintenance of small engines along with some lectures. Emphasis is put on trouble shooting and understanding the function of small engines.

Two schools are offered, one being on Briggs & Stratton engines and the other on Kohler Engines. The 1983 list of schools for Briggs & Stratton begin on January 10, February 21, March 14, March 21, April 4, April 25, May 9, June 13, July 11, September 12, October 3, and November 13. The 1983 list of schools for Kohler begin on February 14, March 7, April 18, May 23, and August 8. All schools begin at 8:00 a.m. Monday and finishes Thursday afternoon at 4:30 p.m. There is a fee of \$75.00 which includes: 4 lunches, 1 hospitality hour, all school related materials, and a Certificate to graduates.

For more information on the work shops you can call or write:  
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Len Berg

Hi Ray,

We hear of Winter Wheat, why not Winter Grass?  
"WINTER GRASS"

When I think of Winter Grass,  
Beneath the ice and snow,  
Hiding from those arctic winds,  
With no place to go.

I share their patient waiting,  
For warmer days to come.

When Winter's fury has spent itself,  
Nature's rule of thumb.

So as we're watching February,  
While it goes skipping by.

We know that soon the Springtime Sun,  
Will warm and fill the sky.

\*\*\*\*\*

Superintendently,

Kenneth R. Zanzig  
Green Garden C.C.

## PRAYER BREAKFAST TO BE HELD

All Atlanta Conference attendees are invited to share prayer and fellowship at the Golf Course Superintendents Christian Fellowship Prayer Breakfast Monday morning at 7:15 in Room 204 of the Georgia World Congress Center. The Prayer Breakfast has been held at the beginning of the Conference week for several years and is open to all faiths. Coffee, Danish and juice will be served. The guest speaker will be Ira "Doc" Eshleman, President of World Sports Ministries.

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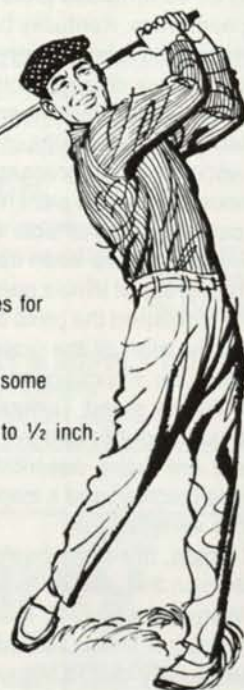
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## **ILLINOIS TURF RESEARCH EFFLUENT WATER IRRIGATION PROJECT**

### **Field Research:**

Clavey Rd. Sewage Treatment Plt. Dept. of Horticulture  
North Shore Sanitary Dist. University of Illinois  
Highland Park, Illinois Urbana-Champaign, Illinois

### **Laboratory Research:**

## **REVIEW AND UPDATE OF THE USE OF EFFLUENT WATER FOR TURFGRASS IRRIGATION**

In 1979 a research project to determine the effects of effluent water on turfgrass was initiated as a result of interest exhibited by golf course superintendents in the Chicago area. The concerns over the future availability of water for irrigating golf turf and the necessity for disposing of effluent water from sewage treatment facilities were the basis for conducting this research.

In January of 1980 a committee was established to guide the research activities. Support for the Effluent Water Irrigation Project were obtained from the following groups: the Chicago District Golf Foundation, the University of Illinois, the North Shore Sanitary District, the Chicagoland Golf Course Superintendents Association, and the Midwest Association of Golf Course Superintendents. Carl G. Hopphan, Superintendent, Aurora Country Club was chosen chairman. The committee was to remain as a permanent group during the duration of the project.

The site of the research project is the Clavey Road Sewage Treatment Plant of the North Shore Sanitary District in Highland Park, Illinois. The turfgrass plots were seeded in the fall of 1979 and during 1980 the turf became established and was ready for close observation. Soil samples were taken to establish the base levels of nutrients and heavy metals present in the plots. Water meters were installed so the amounts of potable water, secondary treated effluent, or tertiary treated effluent water applied to the plots could be monitored.

In all 45 turfgrass plots were established to either creeping bentgrass, Kentucky bluegrass or annual bluegrass. The various plots received varying levels of fungicide applications to determine disease activity of the turf to the three water sources. Also different amounts of fertilizers were used to determine any benefits of the nutrient content of the waters. In addition to turfgrasses, 5 plots were established using various ornamental plant materials common to the area; again to determine the effects of effluent water on plant growth.

The plots have been observed one to two times monthly by University of Illinois personnel. Also local superintendents have monitored the plots on a more frequent basis. Each fall since the start of the project soil samples have been taken to check for any changes in nutrient or heavy metal content. The Clavey Road Turfgrass Irrigation Research Project is open to the public and everyone is welcome to view the plots. There are signs describing the scope of the project, the groups involved and a map showing the location and purpose of the various plots.

To date, the study has provided much encouraging information on the use of effluent water for golfing turf. Dr. David L. Wehner, Assistant Professor, Turfgrass Science at the University of Illinois has concluded that no differences in turfgrass quality due to the use of either the secondary or final effluent water for irrigation have been observed over the last three years of study. Approximately 55 inches of water has been applied to the plots. Based on the results of this study, there appears to be no adverse effects related to the use of final effluent water for turfgrass irrigation. A final report on

the findings of this research project will be prepared as soon as the results from the late September 1982 soil samples are available and some further water quality testing is completed.

In addition to the effects of effluent water on turfgrass the committee has contacted the Water Pollution Control Unit for the Illinois Environmental Protection Agency for their feelings on effluent water for turfgrass irrigation. The use of effluent water for turf irrigation does not fall under any current IEPA restrictions. Since the effluent has to meet certain standards before it can be dumped into a stream, the effluent would be of high enough quality to use for other purposes. The effluent could be piped directly to the golf courses or the golf courses could pump out of the stream into which the effluent was dumped.

So we now know that turfgrass can grow well with effluent water and that the IEPA is in agreement with its use. The next question would be how do we get effluent water to the golf courses and is it economically feasible to do so? For this answer the committee and 10 local clubs contracted the Engineering firm of Greeley and Hanson to run a study. In all five alternate projects of piping effluent water to varying numbers of the 10 golf courses were studied. The studies were first conducted in 1978 and revised in 1982. At the time of the first study there was a good possibility of obtaining a 75 percent demonstration grant, although today the possibility is slim. Estimated costs were figured on the basis of using present water rates and escalated water rates over the next 20 years. The study concluded that if the golf courses used effluent water for all irrigation, all five alternate projects would be cost effective on the basis of present water rates only with a 75 percent grant. If the costs are based on escalated water rates over the next 20 years, all five alternate projects would be cost effective with or without the grant if the golf courses used effluent water for all turf irrigation. Although the above study was made from one sewage treatment plant in Lake County, Illinois, most all of us are within reasonable range of our own local sewage treatment plants to apply the same principle.

The Clavey Road Research Project which has been sponsored by the Chicago District Golf Foundation, the University of Illinois, the North Shore Sanitary District, the Chicagoland Golf Course Superintendents Association and the Midwest Association of Golf Course Superintendents has broken ground for an alternative water source for turfgrass irrigation in our area. Although most of us today have not been faced with a water crisis, let's face it, our day is coming.

A special note of thanks should be given to our local golf course superintendents who made much of this project possible. Carl G. Hopphan, Superintendent, Aurora Country Club for his fine job as chairman. James Johns, Superintendent, Northmoor Country Club and Bruce Williams, Superintendent, Bob O'Link Golf Club for their work in turf plot maintenance and frequent turf plot evaluation. Also to the other golf course superintendents who have served on the committee for their foresight and concern. To Dr. David J. Wehner and Tom Fermanian of the University of Illinois for their investigative expertise. To the organizations involved, the Chicago District Golf Foundation, the University of Illinois, the North Shore Sanitary District, the Chicagoland Golf Course Superintendents Association and the Midwest Association of Golf Course Superintendents for their financial support, research and interest in the project.

This has been a path finding effort to investigate an alternative source of water for golf course irrigation in our area. Their efforts may well preserve golfing turf for the future.

**Julius Albaugh, MAGCS Educational Comm.**

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## HOW'S YOUR ENERGY IQ?

Energy conservation is not something the government or industry can accomplish — it takes a willingness on the part of all people. Energy awareness is the first step. Test your energy awareness by answering the following questions provided through the courtesy of the **Illinois Rural Electric News**. Answers in next issue.

1. What percentage of the total gas used in cooking is used by the pilot light?  
a. 5%                      b. 30%                      c. 50%
2. How long would a 100-watt bulb burn on the energy used to manufacture one aluminum soft drink can?  
a. under 10 minutes    b. five hours    c. over 20 hours
3. How much energy stored in crude petroleum is lost in the series of processes between the oil well and a moving car?  
a. 20%                      b. 60%                      c. 90%
4. How much of the energy stored in coal which is burned in a power plant can be delivered to the customer's home as electricity?  
a. 1/3                      b. 2/3                      c. all of it
5. The total amount of electricity used by all small appliances, including radios, toasters, clocks, shavers, and so forth, is what percentage of the total amount of electricity used in our homes?  
a. 10%                      b. 30%                      c. 75%
6. The amount of energy used in the manufacturing, distribution, and operation of automobiles in this country makes up what percentage of total energy use?  
a. 16%                      b. 30%                      c. two %
7. The United States, with six percent of the world's population, consumes what percentage of the world's available energy each year?  
a. 10%                      b. 20%                      c. 30%
8. The average North American family uses how many times more energy than the average South American family?  
a. five times more                      b. about the same  
c. 100 times more
9. What percentage of commuters use a private automobile for transportation to and from work?  
a. 25%                      b. 50%                      c. 95%
10. How much energy does it take to supply processed vegetables rather than natural vegetables?  
a. same amount                      b. twice as much  
c. three times as much
11. What percentage of our petroleum is used for making synthetic fabrics, plastics, and medicines?  
a. 50%                      b. 10%                      c. one %
12. Which is a more energy efficient mode of transportation:  
walking                      riding a bicycle?
13. True or false: The energy consumed in all sectors of the

economy to put a glass of milk on the kitchen table is equivalent to that contained in a half a glass of diesel fuel.

True

False

14. How many years did it take nature to make a pound of coal?  
a. 100 years                      b. 1,000 years  
c. 1,000,000 years
  15. Over the lifetime of a refrigerator, what percentage of its total costs, including those of buying it, maintaining it, and operating it are due to energy costs?  
a. 10%                      b. 25%                      c. 60%
  16. Of the solar energy coming to the earth, on the average, what percentage is used by plants to produce food energy for animals?  
a. 50%                      b. 20%                      c. one %
  17. A returnable bottle is reused how many times?  
a. two times                      b. six times                      c. eleven times
  18. If the underdeveloped parts of the world were to consume as much energy per person as North Americans do today, the worldwide level of energy consumption would be roughly how many times its present figure?  
a. five times                      b. ten times                      c. fifteen times
  19. While beverage consumption rose 1.6 times between 1958 and 1970, beverage container consumption rose how many times during the same period?  
a. the same                      b. twice as much  
c. almost three times as much
  20. In the United States, what percentage of our energy comes from non-renewable fossil fuel reserves?  
a. 50%                      b. 75%                      c. 98%
  21. What percentage of energy do we get as visible light from an ordinary 100-watt incandescent light bulb?  
a. 90%                      b. 35%                      c. five %
  22. What percentage of energy do we get as visible light from a typical fluorescent lamp?  
a. 90%                      b. 40%                      c. 20%
  23. What percentage of total U.S. energy consumption is used in food processing?  
a. one %                      b. four %                      c. 15%
- Illinois Farm Bureau**
- 
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- F-10, 1967 Tractor without cutting units; Meyers plow and sub-frame attachment - \$6200 or best offer (tractor is in very good condition).  
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1973 Toro Greensmaster III; good condition - \$1700 or best offer.  
1970 Bantam sodmaster, 18" blade kit; good condition - \$500 or best offer.  
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### WHEN TO TURN TO FESCUE

Fine fescues make great lawngrasses for conditions that are less than ideal. They don't require rich soil, and thrive with little fertilization. No wonder they dominate grass stands on dry habitat under trees, and colonize sandy outcrops not favorable for bluegrasses and perennial ryegrasses. Fine fescues frequently provide long-lasting, economical cover for areas that receive little attention, such as roadsides.

Fescues are at their best during cooler parts of the year. They often become patchy in hot weather, especially on heavy soils of the cornbelt. "Chewings" varieties are handsome dandies, but their spreading is limited. "Spreading" and "creeping" varieties spread more like a bluegrass but are somewhat less dense. All complement bluegrass nicely, and fescues are usually offered in mixture with Kentucky bluegrass. Fescues adapt well farther north than do perennial ryegrasses.

Lawngrass breeders are busy selecting bloodlines of fine fescue these days, especially at Michigan State University. Most of the better cultivars are composites of several strains. Highlight and Koket have been introduced into this country after much acclaim in Europe, while Banner is a similar Chewings composite from 45 Rutgers University clones. Encylva and Ruby are European introductions of the spreading variety, workhorses prized for lawnseed mixtures.

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Robert G. Johnson & Joan L. Johnson with a plaque that was presented to Bob, President of Ill. Lawn Inc. as the man of the year at the North Central Turfgrass Exposition at Arlington Park Hilton Hotel.

## 54<sup>TH</sup> International Turfgrass Conference & Show

ATLANTA  
FEB. 19-25



# Reach out!

The Air Force Academy at Colorado Springs is another golf course recreational turf facility which is watered with recycled water - successfully.

The Sharp Park golf course near San Francisco operated successfully from 1932 through 1976 with effluent from the county jail. In 1976 the flow from the county jail was tied into a new sewer system. However, recent drought developments have caused the local officials to consider re-establishing their use of the effluent water for irrigation purposes. The only complaints at this golf course were those of a few players complaining about the odor at the beginning of each season, after the ponds had been sitting for most of the winter.

Another case would be at Innisbrook Golf Course near Tarpon Springs in Florida. There are 63 holes completely irrigated with effluent water on all the tees, fairways and roughs. An effluent treatment plant was built in 1975 by the Pinellas County Pollution Control Department. To dispose of the effluent the county would have been required to build an expensive wastewater disposal system which would carry the sewage effluent far out into the Gulf of Mexico to avoid potential shoreline pollution problems. Meanwhile, Innisbrook was having a problem with salt infusion into their fresh water wells. Therefore, the use of the golf course as an on-land disposal area for the county's effluent was an answer to problems of both parties, and the county contracted with Innisbrook to deliver 3,000,000 gallons per day by underground pipeline, constructed by the county, to Innisbrook, where this water is fed into five pumping stations located throughout the golf course properties.

One of the problems in using recycled water is the pollution by dilution aspect. My friends from Minnesota tell me that one of the earliest instances of pollution by dilution in their water was when the legendary Paul Bunyan's ox "Babe" who was a massive animal who consumed great quantities of food and built up a resultant mess in the barnyard. The local residents became quite upset and complained to Paul, who analyzed the situation and then reached over and with one hand took the Crow Wing River and with the other the San Croix River and channeled them through the barnyard and cleaned out the mess. The resulting stream is today known as the Mississippi River. It is said that a glass of water drawn from a tap in New Orleans, having originated in Minnesota, has passed through approximately five toilets and has been reclaimed as potable water.

The golf courses along the north branch of the Chicago River are known around the world as some of the finest golf courses in existence. These golf courses have been watered for over fifty years with water drawn out of what is in essence a drainage ditch.

Recent studies have shown that in periods of low flow these waters tend to contain more pollutants which may be detrimental to the development of fine turf grass; consequently, during these periods the golf courses have been supplementing their irrigation water from the canal with fresh water from the city water lines.

The North Shore Sanitary District is in the process of completing a new water treatment plant in Highland Park, Illinois. Mr. John P. Kottcamp, Jr., the engineer for the North Shore Sanitary District, is working with the local golf course superintendents and the University of Illinois to develop some test plots to determine the feasibility of using the effluent for turf grass irrigation, with the idea that should the tests prove positive, as anticipated, the North Shore Sanitary District will install a water main to carry the effluent water along its right-of-way to supply water to the golf courses, parks and other

recreational facilities within their jurisdiction for irrigation purposes.

I believe that it is important that you keep records. Get a water meter and keep records of your actual water usage so that in the future, should you become restricted in the use of water, you can establish your claim for your needs based on historic usage --- that you have been using "x" number of gallons of water. If you get nothing more from this conference, in the future this could be one of the most important things you could constitute at your clubs.

Probably the greatest achievement in the history of mankind has occurred in our lifetime. Man has gone out into space, walked on the moon and returned to tell about it and we have had the privilege of watching the whole thing on our television sets. One of the most stirring things to come out of the space program has been the picture of the planet Earth taken by the astronauts from space. It has made us realize that this beautiful fragile sphere on which we exist is really Spaceship Earth and its care has been entrusted to us.

Water is the primary source of life on this planet --- there is no new water, only recycled water. Our responsibility is to use it, enjoy it, and leave it better than we found it.

**Richard Nugent**  
Golf Course Architect

---

"If you have built castles in the air, your work need not be lost; that is where they should be. Now put the foundations under them."

---

Henry David Thoreau

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Reach  
out!

How does all this affect golf? We must continue to spread the word of potential golfers that golf is fun, healthful, relaxing, a game of character and can be played during one's entire lifetime. Competition among recreational activities is keen! It should be. \$200 billion a year for recreation is big business. Some 25 or more types of outdoor recreational activities are vying for these recreation-spent dollars. NGF has numerous programs designed to attract people of all ages to the Game of a Lifetime. We seek the support of every golf-oriented organization or business.

How does a recession affect golf? We have learned by past experience that rounds of golf played are likely to increase during a recession.

I recall public golf course operators saying, during past recessions, that they had planned to raise their green fees but, due to heavy play by unemployed people, the fee structure was not changed. Even in depression times, golf is a good buy. It is 3 1/2 to 4 1/2 hours of entertainment for a few dollars.

And, as NGF Executive Director Don A. Rossi recently remarked, "The good thing about golf is that it is for everybody. Mama can play; papa can play; and grandpa can play with grandson. Hard times tend to bring people together. More people stay home instead of travelling."

The same holds true during energy crises. Golfers will not travel as far, but play on nearby courses usually flourishes.

Golf facility development in the 80s will continue to be an important element in the growth of golf. Even more important - courses now being built usually are quality creations prepared to compete for the attention of both public and private golfers.

Increasing numbers are being professionally designed and constructed under specifications which have made American courses the finest in the world.

Due to spiraling land and course development costs, the NGF suggests that prior to embarking on a new golf venture, developers assure themselves through intensive feasibility studies that the planned golf course has possibilities for success.

Cost of developing a new 18-hole facility, including land and clubhouse, could easily exceed \$3 million. Annual course maintenance costs may range from \$85,000 to \$200,000 or more. They have tripled in many areas during the past two decades.

My guess is that the 80s will average from 125 to 200 course openings per year.

A record high of 16 million people are now actually playing golf in the nation. They are also playing more rounds of golf than ever before.

There are more player development programs in action throughout the century than ever before. New junior golf promotion ideas are constantly being initiated. The PGA of America is sponsoring excellent junior golf programs. The NGF has long been involved in developing junior golf play.

The PGA Tour recently committed \$200,000 for the construction of a short course and training center for youngsters between the ages of 6 and 12 at Walt Disney World at Lake Buena Vista, Florida. Says TOUR Commissioner Deane Beman, "Our real need is to expose youngsters to the game who have never swung a club or seen a tournament."

We of the Foundation feel golf is prepared for whatever the 1980s may bring. NGF has the finest staff ever. NGF is ready to provide assistance in facility development, course management and operation, player development - in fact, in almost anything that will help this great Game of a Lifetime to grow!

**Harry C. Eckhoff**  
NGF Director Information Services

An old Sanskrit proverb reads:

Look to this day  
For it is life  
The very life of life  
In its brief course lies all  
The realities and verities of existence  
The bliss of growth  
The splendor of action  
The glory of power.

For yesterday is but a dream  
And tomorrow is only a vision  
But today, well lived,  
Makes every yesterday a dream of happiness  
And every tomorrow a vision of hope.

Look well, therefore, to this day.



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A TERSAN 1991/Daconil 2787 tank mix will give you consistent performance against brown patch and dollar spot—the two most troublesome diseases on turf each summer. You'll also get strong action on leaf spot and other important diseases. It's the kind of performance superintendents depend on when a quality course can't be compromised.

\*Daconil 2787 is a registered trademark of Diamond Shamrock Corporation.

Tank mixing brings other advantages, too. With TERSAN 1991 in your tank, you get systemic action for protection from within the turf plant. Disease control is longer-lasting and is less affected by rainfall or frequent irrigation. Tank mixing fungicides with different modes of action also reduces chances of benzimidazole resistance. You help insure the long-term effectiveness of TERSAN 1991 in your disease control program.

This year, plan on using TERSAN 1991 in combination with Daconil 2787. It's the tank mix turf diseases can't match.

*With any chemical, follow labeling instructions and warnings carefully.*

