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MEETING NOTICE

Date:	May 18th, Thursday
Place:	Scarsdale Golf Club, Hartsdale, New York
Lunch:	After 12 noon
Golf:	After 12:30
Cocktails:	6-7 PM
Dinner:	7 PM
Program:	Business and Membership meeting
Host:	Everett Wood will be our host. "Woody" is a graduate of the University of Massachusetts Turf School and has been at Scarsdale for eight years. Woody and his wife Gail reside with their two children in Hartsdale. Woody has been active in the M.G.S.A.A. for many years holding the office of Secretary and is presently our President.
Directions:	From Cross Westchester Exp. (287) take exit No. 5. Turn left at end of ramp and go to first light and turn left. Go to second light and turn right on to Central Ave. Proceed on Central Ave. for 1½ miles and turn left on Hartsdale Ave. Proceed through the town of Hartsdale and turn right just after Railroad Station on to Club Way.
NOTE:	Please remember to return your postcards.

PLEASE NOTE: Luncheon, bar & dinner will be on cash basis.

Coming Events:

June 6th	Conn. G.C.S.A. at The Farms Country Club
June 22	Tentative meeting of MGCSA. **Unfortunately at this time we do not have a club for this meeting.** Anyone who is interested in hosting this meeting, please contact Harry Nichol at LY 2-6608 (o) or 268-9370 (h).
July 18	N.J.G.S.A.A. Montclair Golf Club
July 20	M.G.C.S.A. Championship, Mt. Kisco
August 10	Rutgers University Field Day
August 24	OPEN: Please contact Harry Nichol
August	Tentative Field Day MGCSA
September	Invitational, Whippoorwill Club

MGCSA News:

It certainly was a great joint meeting at Dellwood C.C. We had close to 125 in attendance. Jerry Scafa was a wonderful host. The return cards numbered over 100, so let's keep up the good work on returning your post card.

Well, we certainly haven't had an opportunity to try out the irrigation system. Al Caravella has just about had his new automatic system completed at Brae Burn. Ted Horton should have five holes automated with a Toro system at Winged Foot. Ted will also be hosting the US Women's Open in late June.

Now that warmer days are here and with all the rain the grass is really moving and it looks like we will be using all our mowing equipment for the next month. Drainage looks like the key again to being able to mow. Looking back we have hardly dried out since late July last year.

Jim Fulwider gave an excellent talk at a recent PGA seminar at Westchester – "Superintendent and Golf Professional Relationships".

We hope to have a few of the forms necessary for the New Labor Law available to our members.

We certainly had our eyes opened a little by Professor Foss at Dellwood on the 1970 Occupational Safety and Health Act.

Lucas's Corner

I would like to take this opportunity to introduce to you **David Marmelstein**, the new Superintendent of the Candlewood Valley Country Club in New Milford, Conn. For the past three years Dave was with the Honey Hill Country Club in Newport, New York and is a graduate of the University of Mass. Winter School. Dave will be residing with his wife Linda and son Aaron in New Milford.

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Bob Lippman of Andrew Wilson Company has moved to Somers, New York. Bob will be servicing the same accounts as before. Bob's new home phone number is (914) 248-5790.

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Buying a new Car? According to the National Association of Fleet Administrators, not initial price nor miles per gallon, but resale value, is the prime factor considered. "The top factor in car selection is how much the car will sell for after its period of use is over."

Other factors, in order of importance, are initial cost, serviceability and percentage of depreciation, a recent NAFA survey shows.

"Year after year, resale value heads the list," NAFA says.

Nation's Business, March 1972

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Boston's John B. Haynes Civic Auditorium will be the site of the 1972 G.C.S.A.A. National Conference and Show. The Sheraton-Boston Hotel will serve as the headquarters hotel and the Haynes Auditorium will house the exhibitions. The dates are January 7 through 12th, 1972.

Tee to Green

Editorial Staff

Garry Crothers	*Co-Editor*
Pat Lucas	*Co-Editor*
Al Tretera	*Advertising Manager*

Jobs Wanted:

Richard Hurley
109 Ocean Road, Apt. 10
Narragansett R.I. 02882

BS in Agronomy at University of Rhode Island. MS in June in Agronomy. Interested in working under an experienced Superintendent in the Metropolitan area. Resume upon request.

RESEARCH REVIEW

By Wayne C. Morgan

"Rooting of Annual Bluegrass, Perennial Bluegrass, and Creeping Bentgrass at three degress of Soil Compaction."

Annual bluegrass (Poa annua) has become a major weed problem in fine turf. Its characteristic light color, indeterminate flowering habit, and susceptibility to heat, drought, disease, and nutrient deficiences have made **Poa annua** control a principal concern in many turf programs.

Some valuable information was presented on the rooting ability of **Poa annua** compared to Kentucky perennial bluegrass and Penncross creeping bentgrass under three degrees of Soil Compaction by J. F. Wilkinson and D. T. Duff of the University of Rhode Island. It was presented in the January-February issue of the Agronomy Journal.

Poa annua is often found in areas where the more desirable permanent grasses do not persist because of soil compaction or excessive watering. Under these situations it is unable to produce a substantial root system. However, with proper temperatures, **Poa annua** often can survive with restricted root growth, resulting in an exaggeration of its susceptibility to heat, drought, and nutrient deficiencies. Consequently, **Poa annua** has gained the reputation of being an inherently shallow-rooted grass.

Root growth can be greatly influenced by the level of soil compaction. Given a great enough range in bulk density (soil compactability), a parabolic relationship exists between root growth and bulk density. Soils with low bulk densities (loose soils) are well aerated and provide little resistance to root penetration. However, root growth may be limited because of low water-holding capacity.

Soils with high bulk densities (compacted soils), on the other hand, limit root penetration by actual physical resistance and low oxygen diffusion rates (ODR). Lutz concluded that apparent bulk density alone is not the limiting factor. Pore size must also be considered. At any given bulk density, clays offer more physical resistance than sandy soils.

The ability of plants to grow in soils with a low ODR also varies greatly. Grasses have been found to be tolerant of low ODR values, while tomatoes and legumes are sensitive.

Sprague and Burton measured the root growth of **Poa annua** under loose (a soil under cultivation for many years) and compacted (a pathway untilled for several years) soils. They concluded that **Poa annua** root growth was substantial compared to that of the more permanent grasses when grown under favorable soil conditions. Root growth was significantly reduced in the compact soil. It was speculated that **Poa annua** occupies compacted areas only during cooler seasons when the oxygen requirements of roots are lowered.

Experiment

Despite the work of Sprague and Burton, many still consider **Poa annua** a shallow-rooted grass, based solely on casual observation of its growth in compacted soils. The objective of this research was to examine more fully the root growth of annual bluegrass compared to that of the more permanent turfgrasses it often invades, Kentucky bluegrass **(Poa pratensis L.)** and creeping bentgrass **(Agrostis Palustris Huds.)** under controlled levels of soil bulk density.

Results and Discussion

Under similar conditions of soil compaction, the root growth of all grasses was statistically the same at any given depth. Root growth of each grass decreased with depth at all bulk densities. There was no significant increase in root weight between 8 and 12

weeks at any one depth or bulk density. At a bulk density of 1.1 (low compaction) Perennial bluegrass produced less root growth than creeping bentgrass and annual bluegrass. Although this difference was significant 8 weeks after germination, it was not so after 12 weeks. Total root weight of all grasses was the same after 8 and 12 weeks at higher bulk densities (greater soil compaction) of 1.25 and 1.4.

P. annua is often believed a shallow-rooted grass based on observation of its growth on compacted soils. Many often consider **P. annua** invasion an indication of poor soil conditions. Several objections to its presence, i.e., susecptibility to heat, drought, disease, and nutrient deficiencies, may have risen as the result of a shallow rooted one in compacted soils. However, Youngner has demonstrated **P. annua** is more dependent upon available soil moisture than bermudagrass and Beard found **P. annua** to be less resistant to heat than Kentucky bluegrass or bentgrass.

Generalizations such as these in regard to **P. annua** may be erroneous. Gibeault lists numerous ecotypes (botanical varieties) and later collected five plants exhibiting completely different growth habits. Tolerance to environmental conditions certainly may vary between ecotypes.

The ability of **P. annua** to compete with the more permanent grasses and to survive in compacted soils is probably the result of several factors: continuous seed production and renewal of growth during cooler seasons when not under heat or drought stress has shown that perennial ecotypes do exist in addition to the many annuals; several ecotypes that poses creeping stems, increasing their ability to compete with the more permanent grasses have been found; and, **P. annua** is not an inherently shallow-rooted grass as commonly believed. Under similar soil conditions the root growth of **P. annua** was equal to that of **P. pratensis** and **A. palustris.**

No evidence was found to indicate that **P. annua** was more tolerant of compacted soils. It does produce a shallow root system in compacted soils. This is a response that might be expected under these conditions, and not an inherent feature of its ability to produce roots. Restriction of **P. annua's** roots to the soil surface is characteristic of poor soil conditions. The mere presence of **P. annua** in a turf situation is not indicative of compacted soils.

CONTROL OF ALGAE AND AQUATIC WEEDS

Classification	*Suggested Chemicals for Control**
I. *ALGAE*	
1. Plankton	Copper compounds which are
2. Filamentous	cleared by Environmental
3. Branched	Protection Agency
II. *AQUATIC WEEDS*	
1. Free floating	Diquat (should not be used in irrigation water)
2. Emersed**	
i. monocots	Dalapon (CAUTION: Will also kill turfgrass)
ii. dicots	2, 4-D
3. Submersed	Endothall systems Diquat (should not be used in irrigation water)

*The names listed are the common technical names of the active ingredients.

**Monocots (monocotyledonous plants) have parallel-veined leaves, like grasses; dicots have net-veined leaves like dandelions.

NUISANCE VEGETATION IN GOLF COURSE PONDS

By William G. Paterson
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Excessive growths of aquatic vegetation in golf course ponds are undesirable for several reasons: the esthetic beauty of the pond is ruined, pumping systems become clogged, unpleasant odors often develop, golfers are unable to locate and retrieve their lost balls, and in extreme cases, waterfowl can be driven away. Two major factors which contribute to excessive growth are: (1) high nutrient levels in the water, and (2) shallow water which becomes very warm and accelerates plant growth rates.

Aquatic vegetation growths can be broadly divided into two groups: algae and weeds.

Algae are primitive plants with no true roots, stems, leaves or flowers. **Plankton algae** are minute, free-floating plants which impart a green color to the water when present in excess. **Filamentous algae** appear as moss-like tufts on the pond bottom and also as drifting or floating scums of hair-like strands. **Branched algae** (usually chara) are erect plants attached to the bottom which resemble submersed weeds. A manual should be consulted for positive identification.

Aquatic weeds are conveniently divided into three classifications. **Free-floating weeds** usually grow on the water surface and are not attached to the soil bottom. The most common example in northern states is duckweed. **Emersed weeds** are those which grow in shallow water (or unusually moist soil) with leaves and stems extending out of the water. Familiar examples are cattail, bulrush, arrowhead, and water lily. **Submersed weeds** are almost always rooted or attached to the bottom and have most or all of their leaves below the water surface. Pondweed, coontail, water milfoil, and elodea are very common.

Two useful, inexpensive and easy-to-obtain manuals on aquatic plants are the following:

1. "Common Aquatic Weeds"
   Agriculture Handbook No. 352
   Available for $0.50 from:
   Superintendent of Documents
   U. S. Government Printing Office
   Washington, D. C. 20402
2. "Aquatic Plants of Illinois"
   Available for $1.25 from:
   Illinois State Museum Society
   Illinois State Museum
   Springfield, Illinois 62706

The accompanying table lists the most effective herbicides for control measures for each major classification of algae and aquatic weeds. For example, 3M Company manufactures Aquatic Herbicide System E (E for endothall) and Envirocap-C Controlled Release Algicide (C for copper sulfate). **It is imperative that all chemicals which are applied to a golf course pond have an appropriate government clearance printed on the label.** A golf course superintendent should also be a good ecological neighbor and be sure that all products used in his ponds have a proven wide margin of safety to fish, non-target aquatic organisms and wildlife.

Some aquatic plants like lotus are desirable because of their beauty and can be left as part of the landscape. Similarly, cattails can provide an attractive backdrop for ponds, and are useful in maintaining an ecological balance by storing nutrients. Superintendents should bear such factors in mind before they initiate their control programs.

Tee to Green

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