



New Jersey Golf Course Report

MAY 1977

President's Message

Anything that I could say or write at this time . . . could not capture the tenor of "our" fiftieth year better than has Dick Malpass. Please re-publish his message. Perhaps those members of our association who, for one reason or another, do not receive this fine magazine . . . might appreciate the great treatment he has applied to this timely subject . . .

Because They Cared

Fifty years ago a small group of men gathered together to form an association with a goal to advance the science and art of greenkeeping; to cement the greenkeepers of the United States and Canada into a closer relationship, to collect and disseminate practical knowledge of the problems of greenkeeping with a view towards more efficient and economical maintenance of golf courses; and to provide direct financial benefits to greenkeepers who were disabled and to the families of greenkeepers who die. Why? Because they cared.

They cared that there were few educational opportunities in the art of greenkeeping. There was little or no written information available regarding the art.

They cared that many now routine turf management practices were essentially "trial and error" situations and that there was little exchange of information even between fellow superintendents.

They cared that the art was still carried on mostly by men working by hand or horse labor.

They cared that they were in one of the lowest paid of professions and have continued to care that workers on many, many golf facilities are among the lowest paid employees of any profession.

They cared that a man might spend a lifetime in the profession yet upon his being injured or his death his family was often left destitute.

And because they cared, golf course superintendents now have a 4,000-member organization dedicated to providing an array of services to its members.

Because they cared we now have a multitude of colleges and universities offering a great variety of horticultural and turf management programs.

Because they cared we now have new types of turfgrasses, an arsenal of disease control methods, a great variety of fertilizers and numerous machines specifically designed to maintain fine turf.

Because they cared we now have research programs designed to solve turfgrass disease problems, to recommend improved construction methods and better cultural practices and to provide even better turfgrasses.

Because they cared superintendents are beginning to be compensated as befits their capabilities and responsibilities, and insurance and retirement programs have been developed to help provide for their financial security. In addition, many golf course employees are now being recognized for the specialists they are in the operation of highly specialized and expensive turf maintenance equipment. Their wages are beginning to reflect this recognition.

As we begin the next half century of our existence and the continued growth of our great association let us not forget — they cared.

Paul Boizelle
President, N.J.G.C.S.A.

EDITORIAL

Awareness Is Needed

Let's face it! Golf is big business and major golf tournaments mean big money and are here to stay. The epitome of publicity for a golf course is a major golf tournament, yet the unsung hero, the Superintendent, receives little or none of this publicity. It goes without saying that more awareness is needed so that this man can receive his fair share of the credit.

No one appreciates more the planning and time that goes into such an event than the Golf Course

Superintendent. He spends countless hours preparing the golf course each week and when a major tournament comes along he is naturally called upon to produce something special, which he usually does.

Since the inception of golf on television, competition in the field has become great. Major tournaments are held each week and the Pros vie for the spoils. Fine turf, which was only dreamed of a decade and a half ago, has become a reality. Competition in the fine turf field has also become enormous. Everyone who plays golf at a club wants his course to be the best and rightly so. For these and many other reasons there has become a demand for professional Golf Course Superintendents. No longer does the club want a grass cutter, so to speak. A Superintendent in this day and age must not only be able to produce fine turf, be an ecologist, and handle thousands of dollars wisely; but also must be able to communicate with his membership. This in itself is no easy task. The thinking Superintendent must please everyone (or try to) and this takes know how. He must not only be a good business man, but also an excellent salesman each and every day.

An old issue of the Wall Street Journal had a very enlightening article about Superintendents, here is just a small quote from it: "Golf Course Superintendents are expected to raise laboratory quality grass under battlefield conditions". Sometimes our business can be compared to that of a baseball manager; "you have ten good years and you're a hero — one bad one and you're a bum".

We hope that as golf becomes bigger and better, new technology will bring new understanding and the golfing public will become more aware of what the maintenance and upkeep of a golf course entails.

The Superintendent is a man who loves his work and is dedicated to it. He looks forward to new challenges that constantly face him throughout each year and is a person who well appreciates the trials and tribulations that finally lead to success.

Jack Martin, Superintendent
Shackamaxon Golf & Country Club

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YOU AND NJDEP

In order to clarify our problems and questions on Pesticide License, John Brueck, of the New Jersey Department of Environmental Protection, Kenneth Kubick, representing Commercial interest, and myself, representing Turf, had a meeting on Oct. 21, 1976. Information has been passed around by so many people and everyone is thoroughly confused. So let me try to straighten a few things out, if possible.

1. All Golf Course Superintendents are classified as Commerical Applicators. It is immaterial that you might be a Public, Private, or Municipal operation. Whether you own, rent, lease, or just work there you are still commercial and that is it. There is no way around it.

2. All Commercial Applicators must pay a \$20.00 fee, for your Oct. 1, 1976 to Oct. 1, 1977, license now. If you paid \$5.00 for a Private License, you are in the wrong category, if you are a Golf Course Superintendent. Sod Growers are considered Private, and can operate as a Private Applicator. Everyone must pay these fees except for Government Employees, such as County and Municipal employees.

3. A Golf Course Superintendent can not use ANY Pesticide on a golf course without the Commercial License. He can use General Use Pesticides on his own property at home, such as a garden, without a license, but not on the golf course.

4. Records: All Commercial Applicators must keep records on ALL Pesticides used for a minimum period of two (2) years. These records must include:

1. Dates and Place of Application.
2. The Name of the Pesticide.
3. EPA Product Registration Number.
4. Amounts of Pesticide Used.
5. Rate or Dosage Used.
6. Method or Type of Application.
7. Pests being Controlled.

All applicators, Commercial or Private, should have these records on file since June, 1975.

5. What category test will a Superintendent have to take? This will vary with each golf course, or place of employment. At the present time we are dealing with two (2) major categories. 1. (3a) Ornamental, 2. (3b) Turf. Some will have to take category 5 which is Aquatic Pest Control, and others will be

required to take number 6, which is Right-of-Way Pest Control, and still others will take 8b, Mosquito Control. At the present time only 3a and 3b will be available until further notice.

6. All Dealers in chemicals have to register and all salesmen have to register with DEP. There is no fee at the present time, but possibly in the future. Dealers records on Restricted and Specially Restricted Pesticides must be kept on file for a minimum of two (2) years and must include on each sale:

1. Name and Address of Purchaser.
2. EPA Number.
3. Quantity Sold.
4. Date of Sale.
5. Purchasers DEP Number.

7. The testing for categories is being given by the NJDEP only at the present time. The tests are Open Book Exams, with a time limit of 1½ Hrs. each. There is no fee for tests at the present time. Books and lectures or Seminars on Pesticides are not required by the DEP. It is highly recommended that these classes be attended and the manual studied prior to taking the test. The CORE Manual is \$3.00, and the Category Manual is \$6.00, each. They can be purchased from your County Agent. Also insurance was stated as being required. This is not true. Again it is recommended that you be protected by your Business or Club Insurance. Check on this and make sure you are protected from accidents.

8. Recertification is done every five (5) years. This is about the most simple part of the whole Regulation. During this 5 year period you must attend and satisfactorily complete three (3) approved training classes on Pesticides and also have a satisfactory history of performance during this 5 year period.

9. A few notes to remember:

1. Present registration has been extended to Nov. 30, 1976.
2. Commercial Applicator fee is \$20.00, and must be paid now.
3. CORE test must be completed prior to category testing.
4. Category test must be completed by Oct. 1, 1977.
5. Records must be kept.
6. A Dealer is not allowed to sell a Pesticide to a Commercial Applicator with the purchasers DEP Number.

I hope we have solved a few problems you are having, if not contact your County Agent, New Jersey Department of Environmental Protection, or contact me and I'll find the answer someplace.

DENNIS L. WAGNER
Legislative Chairman
GCSANJ

Clippings

Those who journeyed down to Atlanta for the U.S.G.A.'s conference this January, witnessed Ed Casey, retired Golf Course Superintendent, Baltusrol Golf Club, being honored with the Green Section Award. Sid Dorfman, sports writer, for the "Star Ledger", wrote an article in the Sunday, Jan. 19, 1977, paper detailing Ed's award. Even Joe Flaherty managed to garner a one liner as one of Ed's students. Mr. Dorfman's article certainly did justice to Mr. Casey's great career and our profession in general.

Jimmie Fleming, writer of the "People and Things", column for the "Home News", New Brunswick, New Jersey, wrote a small piece congratulating the staff of Tamarack Golf Club. From manager to starter, but there was no mention of the Superintendent, Tom Sandle. Being a bit miffed, our Executive Director, Dr. Henry W. Indyk, wrote Mr. Fleming reminding him of his oversight. The following is Mr. Fleming's response in the Sunday, July 25, 1976, "People and Things" column.

EARNs TRIBUTE: Dr. Henry W. Indyk, specialist in turfgrass management in the Soils and Crops Department at Cook College, calls attention to the "unsung hero" on any well-kept golf course.

Indyk's comments trace back to a laudatory item in this column recently to the personnel of the Tamarack golf course operated by Middlesex County in East Brunswick.

Individuals representing two statewide groups had occasion to praise the club and its staff for the excellent accommodations provided and we're sure did not mean to slight anyone involved.

However, no mention was made of the one person most responsible for a delightful day — the man who saw to it that the course was put in perfect shape.

At Tamarack, that man is Tom Sandle, the superintendent of the golf course. On other golf courses, his name is different, but Indyk points out, his many responsibilities are similar.

"He must be extremely dedicated, conscientious, and many things to many people. When conditions on the course do not measure up to par, he becomes the punching bag whether or not he is responsible. When conditions are superb, he will receive a rare word of appreciation from the golfer having a good day, but never a word of commendation from the press.

"The man I am paying tribute to for a job well done is a professional with a high degree of expertise in the many technical ramifications of turfgrass culture and management."

It is praise well deserved by the "Tom Sandles" wherever they may serve, and we might add, long overdue.

Thank you, Dr. Indyk.

Compatibility of Chemicals

Often in the past, mixing of turfgrass chemicals has been dismissed because its value in time saving was not considered as important as the risks involved.

This should not happen without considering all the advantages. Tank mixing chemicals to achieve broad spectrum control or, in some cases, synergistic action is one of the real opportunities for the golf course or other turfgrass superintendent to test his knowhow.

Since very few chemical firms will stipulate which competitive chemicals are compatible with their products, the superintendent and applied-research person must learn by experience and experimentation what products can be tank mixed.

There are a few rules and guidelines that a superintendent can follow which will make him sufficiently knowledgeable to tank mix his chemicals without the fear of encountering phytotoxicity.

Chemistry Guidelines

The chemical nature of the pesticides is important but not necessarily the determining factor. Some of the general warnings on chemistry applicable to mixtures are:

- Do not mix alkaline and acidic materials. Violent reactions occur when concentrated forms of these types are mixed, but the reaction can be insignificant if they are mixed in diluted form in the spray tank.

- Great chance of failure or problems exist when mixing chemicals that are strongly acid or alkaline, such as ammonium sulfate, ferrous sulfate, nitrate, sulfur, lime and chlordane.

- Soluble fertilizers may have a salting-out effect on herbicides.

- Do not mix wettable powder pesticides with emulsifiable formulations or a soluble fertilizer. A very good rule to follow is never pre-mix the concentrated chemicals. Add them singly to the tank at high dilutions.

Chemically, all pesticides can be divided into three classes: nonionics (no charges), cationics (positive charges), anionics (negative charges). It is a basic simple fact that all positive charges attract all negative charges, and that if a compound has no charges it has no attractions. The only affinities that the nonions have are their abilities to mingle with solvents of similar nature and not mingle with solvents of dissimilar nature.

Water is the superintendent's primary solvent. With respect to water, nonions are further subclassified into hydrophylic (water loving) and hydrophobic (water hating). The former are water soluble, and the latter are water insoluble.

When cations and anions get together they form salts. As a rule, big, heavy salts are not water soluble, but

smaller ones are. Thus, the salt index comes into play, and is of vital concern to the superintendent, as well as the cation exchange index of the soil.

Rules as Safeguards

All of this technical information is becoming familiar to more and more superintendents. Yet, I would have been remiss by omitting it. But now that it has been reviewed, the superintendent will be delighted to learn that pursuing this knowledge, although basic, is not a road block to prediction of chemical compatibility in use. While the chemistry is important and ominous, the physical nature of the pesticides is a good starting guide in contemplating mixtures.

If mixing of chemicals causes a chemical reaction, fouling of the tank mix is likely to occur. I can cite a hypothetical case. If insecticide preparations are supplied as oil-soluble concentrates, to which have been added emulsifiers in the sulfonate and phosphate classes to render them emulsifiable in water, they could be precipitated by cations in the tank. This would destroy the emulsion, resulting in oily layers of insecticide in the tank. Of course, this could cause disaster, but it should not happen with a trial tank mix. To guard against such an occurrence, we formulate our first rule:

RULE 1 — Never tank mix emulsifiable insecticide concentrates.

While insecticides may not be incompatible in the mixture, they usually require watering in to get adequate control and to avoid phytotoxicity. This procedure can be incompatible with other chemicals that might be included.

I am not an insecticide chemist and do not wish to make recommendations. Consequently, I have taken a cautious approach to the allowable parameters of tank mixing insecticides with other chemicals. A number of superintendents do tank mix them for a light surface treatment for control of surface-feeding insects as compared with grub-proofing treatments.

Use of fertilizers, fungicides, and herbicides is more familiar to me, and there are extremely helpful guidelines one can follow to overcome many compatibility problems. These three classes of chemicals fall into two simple categories, solubles and insolubles. Three more rules can be formulated which the superintendent must observe.

RULE 2 — Mixing the insolubles (largest category). Most insolubles can be tank mixed without incurring phytotoxicity provided the products are sprayed at recommended rates of each of the individual products.

This permits the tank mixing of a great variety of chemicals. Most

important of all, it allows the superintendent to spray three, four, or more chemicals at the same time. Exploring the possibilities should disclose many advantages. Take disease control for example. The superintendent who sensed that his greens were succumbing to a disease which he could not identify properly could put Daconil, Dyrene, Thiram, 3336, 1991, Captan, Maneb, etc., in a single spray. Of course, this is a ridiculous and preposterous example of the latitude, but to the superintendent who lost his greens and his job for want of the proper fungicide, this knowledge would be welcome.

The point here is that *broad spectrum disease control is a must on the greens. Only on occasional treatments can the superintendent rely on a single chemical to control a single target disease.* Growers, pathologists at various agricultural colleges, manufacturers and I are attempting to obtain better control by mixing chemicals.

More recently, with the advent of systemic fungicides, the broad spectrum mixture has assumed brighter and newer horizons by combining the longer residual control attainable with the addition of a systemic along with the action of contact fungicides.

Prior to the systemics, it was an accepted fact that contact fungicides did their job on the grass plant and were dissipated within two to three days. While the contact fungicide is sprayed on the grass blade at about 1000 p.p.m., it doesn't take more than two to three days for the fungicide to be diluted below the effective level of 5 p.p.m. with present-day irrigation and mowing.

This is not the case with systemics. Sufficient hydrolysis and activity takes place in the soil to knock down the fungus population not only in the soil but also within the grass blade by diffusion through the plant. This increases the time of protection during extended periods of rain or long weekends.

When mixing soluble chemicals (including fungicides) apply Rule 3:

RULE 3 — Mix only one soluble chemical with any number of insolubles. If two soluble chemicals are tank mixed with or without insolubles the rate of each soluble should be cut in half to avoid phytotoxicity.

The soluble fungicides are not numerous: PMAS, Caloclor, Cadminate, Caddy, and Actidione, and superintendents are familiar with them and have had experience in their application. Coincidentally, three large manufacturers have packaged mixtures of solubles with insolubles.

Since fungicides differ in the stage of attack, and the fungus and fungicides differ in longevity, I have maintained that the ideal tank mix of fungicides is a

three-way combination of soluble contact-insoluble contact-insoluble systemic mixture. And for years, I have even recommended mixing two soluble contacts each at half rate to get a broader spectrum than the single soluble at full rate.

All of the insolubles can be tank mixed by applying Rules 2 and 3 in an attempt to get a broader spectrum of control. They can also be tank mixed with one of the solubles or one of the soluble-insoluble combinations. If the solubles and the soluble-insoluble combinations are tank mixed, the dosage should be cut in proportion to the number of chemicals added.

It should be emphasized that the dosages of two solubles should be cut in half if tank mixed. If three solubles are tank mixed, the dosages should be cut to one-third the recommended rate of each soluble component.

Superintendents know that fertilizers are usually combinations of organic (insoluble) and inorganic (soluble) components, and because of the soluble fractions the fertilizers must be watered in to prevent burning. It is not an uncommon practice to add soluble fertilizers to the spray tank in small quantities to attain an immediate greening effect on specific occasions. A more common practice is to add chelated iron for the same reason. But there have been many instances of burning because the superintendent has had a heavy hand in applying these products.

The phenomenon known as salt index comes into play in determining how much of the soluble fertilizer components can be added to the spray tank without incurring phytotoxicity. The author has formulated another simple rule which acts as a guideline to proper use without incurring the risk of burning the desirable grass:

RULE 4 — Soluble fertilizers and trace elements can be added individually or mixed provided that amount will not exceed one ounce per gallon tank spray mix.

This represents a dilution of 1:128. I have used 2 ounces per gallon, and have not experienced any burning at the higher rate, but prefer the lower rate. The components that fall into this category are solubles such as urea, ammonium nitrate, ammonium sulfate, and muriate of potash, ammonium phosphate, ferrous sulfate, chelated iron, epsom salts, etc.

Herbicides also are both soluble and insoluble. The soluble herbicides are postemergent in nature whereas the insolubles are primarily pre-emergent in activity. The problem of phytotoxicity is an important factor when dealing with soluble post-emergent herbicides. As a general rule, the phytotoxicity index

(safety factor) is narrow for all postemergent chemicals. Yet, they have been used rather extensively and effectively, by following the rates of application closely.

The tank mixing of two or three soluble postemergent herbicides is becoming more and more prevalent. This practice is useful because the superintendent has found a synergistic effect with combinations; but in doing so he must again apply Rule 2 which states that whenever solubles are added to the spray tank the dosage rate should be cut proportionately, depending upon the number of solubles. A prime example is the successful combination of MC,2,4-D and Dicamba. While the recommended rate of MCP is 1 to 1½ lbs., the rate of 2,4-D is 1 lb. and the rate of Dicamba is a one-quarter to one-third lb per acre, a successful combination of the three is commonly one-half lb. MCP, plus one-quarter lb. 2,4-D, plus one-eighth lb. Dicamba. The superintendent can mix these or purchase them in approximately that ratio.

There are some MCP plus 2,4-D combinations that call for the respective rate of 1 lb. and one-half lb. per acre. Some growers mix one-half lb. 2,4-D and one-fourth lb. Dicamba per acre. Another example of the synergistic effect of two postemergent chemicals is the combination of DSMA and 2,4-D.

In Texas where 2,4-D is not used prevalently because of its injury to cotton, DSMA is recommended for the control of dallisgrass at the rate of 12 to 16 lbs. per acre on bermudagrass while in the neighboring state of Louisiana equally good control has been achieved by the use of 6 lbs. DSMA plus one-half lb. of 2,4-D.

This practice has been going on for over 10 years and coincidentally, it conforms with Rule 3 which dictates that if two solubles are used together it is a wise practice to cut the dosage of each in half.

Finally, there are two classes of chemicals which are infrequently used by turfgrass superintendents, and by their very nature cannot or should not be tank mixed. They are nematocides, such as Dasanit and Nemagon, and general weed and grass killers such as Phytar, Paraquat, and Roundup.

One parting word of caution regarding tank mixing. When the superintendent embarks on the use of a new formula, he would be wise to do two things: Observe small volumes of tank mix for any signs of physical or chemical change, and repeat several trials on small areas where a bad result causes no problem. Note the results to determine what benefits the added chemical offers.

Tank mixing is challenging and very rewarding when the superintendent masters it.

Paul Sartoretto
Head Research Chemist and
Vice President, W.A. Cleary Corp.