

NORTHWEST TURFGRASS TOPICS

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From The President's Corner

By Dick Malpass

For many turf managers this winter has been a difficult one. Certainly not from the standpoint of severity, but, on the contrary, because of its mildness. Almost all of the Pacific Slope has enjoyed mild, moderately wet, weather this winter. Temperatures throughout the winter have been well above the norm nearly every month. This, of course, has meant that our turfed areas have had little rest and have been subjected to quite heavy traffic. Probably an increased amount of TLC (tender loving care) will be necessary this spring to bring these areas back to normal summer condition.

All this leads into the subject that we would like to consider in this column. We have enjoyed several interesting experiences this winter, among them being the bus trip of superintendents to Northern California golf courses; speaking engagements at the Oregon Ornamental Horticulture Short Course at Oregon State University, and before the Oregon Seed League; attendance at the GCSAA convention in Washington, D. C.; attendance at a special meeting of superin-

tendents and club officials of private clubs in the Seattle-Tacoma area. Wherever we have gone there is concern regarding the obtaining of qualified personnel to work with fine turf. In some areas we have noted that wages and fringe benefits are such that employee tenure has been quite satisfactory. In others, quite the opposite is true, with low wages, no benefits, and with a high rate of turnover of employees. It is generally agreed that it takes about two years to train a man for work on a golf course or similar fine turfgrass area. Considerable time and effort go into this training and, naturally, at quite a cost. All of this is wasted unless this person stays with the employer for some period of time. People are not going to be enticed into this type of work unless compensation is commensurate with similar types of occupation elsewhere. We know, for instance, of only two men qualified to become golf course superintendents who have graduated from Oregon State University the past several years.

Harvey Junor, past president of the Northwest Turfgrass Association put this quite aptly when he stated, in the September 1966 issue of Turfgrass Topics, as follows: "The golf courses have made great strides in the advancement of fungicides, fertilizers, irrigation, and equipment and have accepted the cost that go along with them, but some don't seem to realize that the product is no better than the employee applying or operating. It is up to the superintendent to impress the Greens Committee of the value of these men and the labor problem on golf courses today. Without qualified men, the quality of golf courses will fall short of the goal desired. From the standpoint of the employee we must compete with the steady increase in wages of other industries."

There is much more to taking care of fine turfed areas than meets the eye of the casual golfer, or park visitor. Our employees are working with fertilizers which could easily

burn out the grass if not properly applied. Some chemicals commonly used are incompatible if used with, or too soon after, the use of others and serious damage could occur to turf. This we have all seen too often. Some must be handled with extreme caution and yet are necessary for control of certain grass diseases or for insect control. We are asking employees to use highly priced, specialized items of equipment which take ability to properly operate. Yet, too often, we are forced by inadequate wages or similar poor operating policies to use irresponsible youngsters, or unemployables from other industries, or similar unqualified help. Yet we are expected to have the greens in perfect putting condition, our parks and cemeteries immaculate and well groomed.

Part of the problem was pointed out at the Oregon Ornamental Horticulture Short Course by Professor O. A. Batcheller, Chairman, Department of Ornamental Horticulture, California State Polytechnic College, Kellogg-Voorhis Campus, Pomona. Included in a talk he gave was the information that, in Europe, one in 6600 students was trained in horticultural institutions; while, in the United States only one in 94,200 was so trained. Have we made the work so unattractive by misguided wage policies that we have discouraged these people from educating themselves to enter our trade? At a time when the emphasis is on recreation, when our parks and other recreational facilities are having tremendous demands made upon them by the general public are we going to continue forcing our turf managers to employ second-class help when they so desperately need specialized, experienced help?

Superintendents and other turf managers see the need. It is up to them to impress those in control of the necessary funds of the need for qualified help. It is then up to the Green Chairmen and Boards of Directors, the Supervisors, and others to see that the necessary monies are made available. We are not at all anxious to see our wage policies dictated by outside agencies. Seriously, if we don't meet the challenge, our hand is shortly going to be forced, as it has been forced both north and south of us, by outside agencies not the least sympathetic

with our particular fiscal problems.

One statement heard at the meeting of superintendents and club officials, in Seattle, bears repeating. It is this: "Don't take advantage of the crews loyalty to the club by paying them less than they could make elsewhere."

INTERNATIONAL TURFGRASS CONFERENCE AND SHOW

Visitors to the national convention of the Golf Course Superintendents Association of America, in Washington, D. C., in February, were Mr. and Mrs. Milt Bauman of Overlake Golf Club; Ken Putnam, Seattle Golf Club; Dick Mitchell, Shaughnessy Golf Club, Vancouver, B. C.; and Dick Malpass, Shadow Hills Country Club, Eugene, Oregon. They report that attendance at this meeting exceeded 3300. The convention was held at the Washington Hilton. In addition to the general educational sessions, held Monday through Friday noon, there were mower grinding demonstrations, sod producer sessions, and a large equipment show. Next year's meeting will be held in San Francisco.

Elected to presidency of the Golf Course Superintendents was Mr. Walter Boysen who is in charge of the Sequoyah Country Club course in Oakland, California.

TURFGRASS FIELD DAY

By Roy L. Goss

The annual Turfgrass Field Day will be held at the Western Washington Research and Extension Center on May 17, beginning at 10:00 A.M. Persons attending this Field Day should be at the experiment station by 10:00 A.M. where the group will assemble. After a brief discussion period, we will move to Farm #5, 6 miles east of the experiment station, where the greater portion of the Field Day will be held. Here are some of the things you will see:

1. The effects of variable rates of nitrogen, phosphorus, and potassium on turfgrass growth and development.

2. The effects of sulfur on turfgrass growth and quality.
3. Cutting heights on lawn turf.
4. Thatch accumulation on lawn turf.
5. Soil sampling and pH studies on turf soils.
6. Insect control.
7. Response of turfgrasses to MH-30 applications.
8. Discussion and demonstration on mole control.
9. Pesticide safety discussion.

It is anticipated that the Field Day will be completed by 3:00 P.M.

NORTHWEST TURFGRASS CONFERENCE AT HARRISON HOT SPRINGS B. C. - 1967

The 21st Annual Northwest Turfgrass Conference will be held at Harrison Hot Springs, British Columbia on September 19, 20 and 21, 1967. As usual, the Conference will begin at 1:15 P.M. and will continue on through Friday noon, the 22nd. It is understood by the editor that a golf tournament for all persons attending the Conference will be held between 7:00 A.M. and noon on the 19th.

The Conference program is being finalized at this time and final arrangements for the Conference will be made at a Board of Directors meeting, which will be held at the Western Washington Research and Extension Center on May 17, 1967. If you wish to write Harrison Hot Springs for reservations at this time, you may feel free to do so. If you are not familiar with the location, it is a resort hotel located east of New Westminster in Vancouver, British Columbia, and is an excellent place to hold a conference and provides other attractions, as well.

If there are any changes in the Conference schedule, notices will be sent to all members of the Association and posted for others as well.



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HISTORY OF THE NORTHWEST TURFGRASS ASSOCIATION

By Alvin G. Law

During the winter of 1947, four men from the Spokane area came to Pullman and met with Assistant Dean, E. G. Schafer, College of Agriculture, Washington State University, regarding problems that they were facing in the management of their respective golf courses in that area. These four men were Wilfred Brusseau of the Downriver Course in Spokane, John Harrison of the Hayden Lake Course at Hayden Lake, Idaho, Glen Proctor of the Manito Golf and Country Club, and Louis Schmidt of the famous Indian Canyon Golf Club. They were concerned with the problems in weed control, fertilizers, equipment maintenance, and just about everything that had to do with the growing of grass. While little direct work had been done on turfgrasses as such, a considerable amount of information was available on related subjects such as effect of fertilizers on crop plants, weed control, and on equipment care and operation.

Prof Schafer organized the questions these men had into a set of topics, got people to work up material on these topics, and organized the first turfgrass conference in May of 1948. The initial conferences dealt with such new advances (at that time) as the use of 2,4-D in weed control, the need for balanced fertilizer as a regular feeding program, the dangers of arsenic accumulation in the soils of the greens where large amounts of arsenic were used for both weed control and earthworm elimination.

By 1950, when the third turf conference was held at Pullman, the organization had grown to over 80 members and a Proceedings was published. Since that time, the papers presented at each conference have been published in the form of a Proceedings, and the Proceedings are sent to libraries throughout the country as well as to all of the members of the Pacific Northwest Turfgrass Association and to interested research people.

In 1950, initial steps were taken to organize into a formal Turfgrass Association, and the following directors were elected: E. P. Townsend, Edward Fluter, H. T. Abbott, Phil Page, Mayor S. Boyd, James O'Brien, Glen Proctor, Milton Bauman, Everett Potts, and E. G. Schafer. By 1951, Articles of Incorporation were developed, and the Association was attempting to organize as a non-profit association with Ivan W. Lee as president, Ed Fluter as vice-president, Roland Wade as secretary-treasurer, and E. G. Schafer an honorary director and honorary secretary of the organization. That fall organization was completed with permanent headquarters of the Association located at Pullman, Washington, and upon Professor Schafer's retirement from the University, A. G. Law was appointed secretary. He remained secretary of the Association until 1956, at which time J. K. Patterson was appointed secretary. He continued as secretary until his death in 1960. A. G. Law served as secretary for one year, and since 1961, Dr. Roy Goss has been secretary of the Association, and has provided leadership for the organization through these years.

Henry Land, Sr., of the Tacoma Golf and Country Club served as treasurer of the organization from 1952 until 1961. Starting in 1962, Dick Haskell of the Seattle Park Department has held this important position. These two men probably have done more than any other individuals in the organization to keep the Northwest Turfgrass Association solvent and to keep the records complete and up to date. It is difficult to properly assess the work that they have done over the years in collecting dues for the organization and in the efficiency with which they have taken care of the financial aspects of the Association.

The following list are the men who have served as president of the organization. 1948 - Glen Proctor, 1949 - Louis Schmidt, 1950-51 - Ivan Lee, 1952-53 - Ed Fluter, 1954-55 - Sam Zook, 1956-57 - Milt Bauman, 1958-59 - Don Hogan, 1960 - Glen Proctor, 1961 - Byron Reed, 1962-63 - Henry Land, 1964 - Milt Bauman, 1965 - Ken Putnam, 1966 - Harvey Junor, and 1967 - Dick Malpass. These men have come from the ranks

of golf course superintendents and equipment supply houses in the Pacific Northwest. They have given freely of their time, personal efforts, and their own money to further the objectives of the Northwest Turfgrass Association. They have appeared on programs of the annual meetings many, many times, and they have attended many planning sessions between annual meetings.

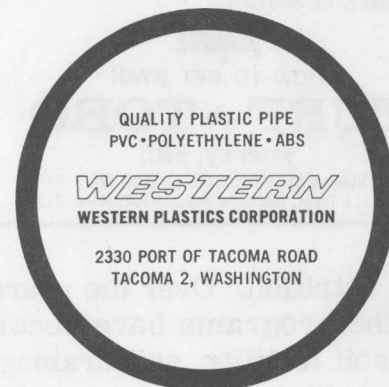
Another golf course superintendent has done an outstanding job in helping develop the Association to its present strength and that is John Harrison, superintendent at the Hayden Lake Golf Club. John has served continuously on the Board of Directors since 1948. He has not missed an annual meeting, and he has not missed many Board of Directors meetings, regardless of where they have been held. His judgment is greatly respected by all who know him, and his council is sought whenever there is a problem facing the Association. Only when considering individual handicaps for the yearly tournament is there any question of John's veracity and trustworthiness.

Outstanding scientists from all over the country have appeared on the programs of the annual meetings of the Association over the years. Dr. G. O. Mott, Professor of Agronomy at Purdue University, Dr. Eric Scharvell, Plant Pathologist at Purdue University, Dr. G. H. Ahlgren, Rutgers University, Dr. W. H. Daniel at Purdue University, and Dr. H. B. Musser of Pennsylvania State are a few of the members from educational institutions which have participated in the annual programs.

Many commercial agronomists have participated more or less regularly in the programs and in the research work sponsored by the Association. O. J. Noer of the Milwaukee Sewerage Commission was a long-time leader in this field and did much to help maintain the enthusiasm of the organization in the early years of its existence. Charlie Wilson, Fred Grau, Tom Mascaro, J. R. Watson, John Kolb, Bill Bengueyfield, and John Gallagher have been regular contributors to the Turfgrass Annual Program.

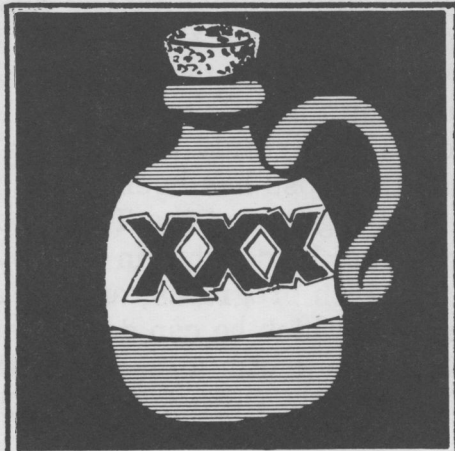
Within the Pacific Northwest, Dr. Roy

L. Goss and Dr. C. J. Gould have done more than anyone else to develop the research programs in the broad field of turf and to keep the enthusiasm of the members of the organization at a high level. The initiation in 1959 of the quarterly publication, Turf Topics, by Dr. Goss has been a real milestone in the progress of the Turf Association. Dr. Goss' leadership in the development of research programs, and the effective manner in which he can describe these results have made him a leading authority in this field in the United States. He has been ably assisted in the Northwest by Dr. V. C. Brink and Dr. Alistair McClain and Dr. N. A. MacLean of Canada, by Dr. Norm Goetze of Oregon, and by the former J. K. Patterson and K. J. Morrison at Washington State University.



In 1962 the Northwest Turfgrass Association was granted income tax exemption status from the Bureau of Internal Revenue due to the research and educational nature of the organization. All membership dues and monetary grants from any source taken in by the Association are used principally for research and educational grants. Only a small portion of the Association's money goes into running the affairs of the organization. There are no salaries or other stipends paid to the officers and directors of this organization.

The turf programs have developed over the years from the initial programs on how to do a particular job to the present day programs that delve into the mysteries of water movement in soil, anion and cation relationships in the soils and the chemistry of or-



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ganic plant nutrition. Over the years, those attending the programs have become specialists in soil fertility, soil drainage, plant physiology, plant nutrition, weed control, plant diseases, as well as remaining outstanding public relations experts and men with tremendous managerial abilities.

The future of the field is limited only by the vision and the industry of the people participating in the field. The present concerted effort by the Northwest Turfgrass Association and the U. S. Statistical Survey Service to develop a reliable index of the importance of the industry in the Northwest is an example of the vision of the Board of Directors of the Northwest Turfgrass Association. The ever-increasing numbers of golf courses, the importance of home lawns to practically everyone in the Northwest all point toward even greater emphasis on the turfgrass industry.

The Northwest Turfgrass Association will continue to exhibit uncontested leadership in this area as we enter the last quarter of the

20th century. Since the inception of the Association in 1947, we have, as a nation, spent 21 billion dollars on space research and have defined the Van Allen Belts in outer space. We have been able to predict global weather, we have discovered the solar winds that affect this weather. We have communication satellites which permits instant communication throughout the world. We have pictures of the moon transmitted 240,000 miles. We have spent ten billion dollars on biological research which has begun to define the basic principles of life itself. Geneticists have begun decoding the genetic code and developing methods of modifying this code at will. The population of the world has nearly doubled in this period and will have more than doubled before the next decade is out. These vast changes emphasize the importance of maintaining recreational facilities, and they emphasize also the need for unremitting efforts toward self-education in the areas in which we are primarily interested. This is the role of the Northwest Turfgrass Association, and one that must be pursued with vigor in the future.

Editor's Note: Since Al Law wrote this article, it may have appeared vain for him to describe his own role. However, it is the editor's prerogative to add the following comment: Probably no one has contributed more guidance to the Association over the years than Al Law. Not only has he provided technical assistance to members within the Northwest Turfgrass Association, but he has also conducted teaching and research programs that have been most beneficial over the years of the Turfgrass Association's existence.

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PLANT FOOD AND YOUR DOLLARS

By Roy L. Goss

The old cliché "you get only what you pay for" is mostly true, but can be misleading. A good part of the time we often do not get what we pay for. In regard to fertilizers and requirements for plant growth, we must consider the following factors: (1) plant food ratio, (2) plant food or fertilizer formula, (3) nutrient requirements by the plant.

Responsibility of Research

It is the responsibility of research to find the answers to the three points listed above. It then becomes industry's responsibility to manufacture or supply fertilizers to the consumer, which will conform to those requirements.

The consumer often pays a premium for certain fertilizers or plant food mixes. Sometimes there is good reason for this. For example, let us consider nitrogen. In the broadest sense, we can say nitrogen is nitrogen, no matter how you look at it - at least the plant is going to get it in some basic form. If you compare the cost of producing ammonium nitrate, ammonium sulfate or urea against the cost of manufacturing a urea formaldehyde product, you will find that it is much more expensive to manufacture the latter. Hence, it must demand a higher price on the market. The advantages of a urea formaldehyde nitrogenous product is that it will release its nitrogen over a longer period of time, thereby reducing the amount available for leaching or excessive growth at any one particular time. It is conceivable, then, that it may take less total nitrogen to produce a crop than it would from another source that suffered considerable leaching losses.

Just remember that nitrogen is the most expensive portion of any fertilizer formula. Phosphorus and potassium, along with some of the minor elements such as sulfur, magnesium and iron, are all much lower priced and do not effect the price of fertilizer as much as nitrogen.

Plant Food Ratios

Ratio does not indicate the amount of plant food contained in a fertilizer, only the relationship of one plant food to the others.

The ratio of a fertilizer can usually, (but not always) be calculated by dividing the analysis by the smallest figure; for example, the ratio $\frac{27-14-0}{14}$ is: $27-14-0 = 2-1-0$. You

may also calculate ratio by dividing the formula by the lowest common denominator. An example is: 12-4-8. The lowest common denominator is 4. $12-4-8 \div 4 = 3-1-2$; that is, for every 3 pounds of nitrogen that these fertilizers supply, they also supply 1 pound of phosphorus and 2 pounds of potash.

Fertilizers may have the same plant food ratio, but that does not mean that they supply the same amount of plant food per 100 pounds. By comparing a formula 15-5-10 with 9-3-6, it is seen that both have a 3-1-2 ratio but 15-5-10 contains a total of 30 pounds of plant food per 100 pounds of fertilizer and 9-3-6 contains only 18 pounds, a difference of 12 pounds of plant food per 100 pounds of fertilizer. On the basis of plant food contained 9-3-6 should cost 18 over 30, or approximately 60 percent as much as the 15-5-10.

The above statements will probably hold true unless one fertilizer contained a more expensive ingredient than another. In turf-grass management, organic sources or synthetic organics, such as urea formaldehyde, are more expensive than the inorganic formulations. This is one thing you should look for if there is a considerable difference in price.

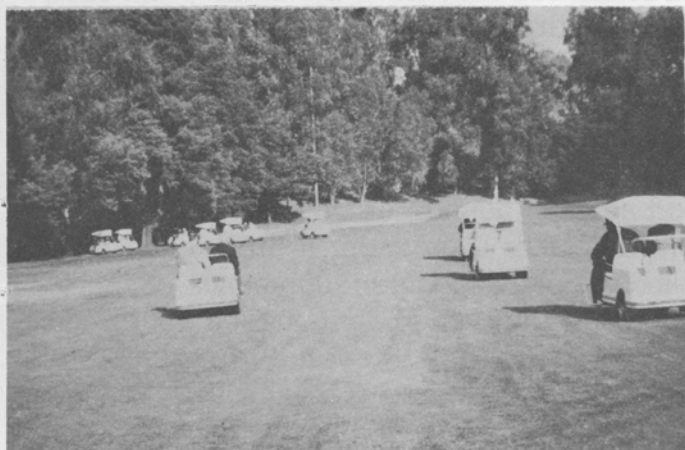
Low Analysis Fertilizers

Carefully analyze the ingredients in low analysis fertilizers. State laws usually require that the analysis of the material be clearly shown on the package even if it is in fine print. Again, we go back to the original statement that perhaps you get only what you pay for. Due to transportation costs, labor, and other costs involved in producing a product, a material with a very low analysis will not be proportionately equal to a mate-

rial with a higher analysis of plant food. If, however, the lower analysis material meets the requirements of the particular individual, then perhaps the additional cost is justified. These are things that you must work out for yourself. It is not the place of research to tell you that one product is no good for you just because the price is higher. If you feel that a fertilizer price is too high, simply figure out the plant nutrients you are buying for the price, and if it still doesn't add up, then try to find out why the material bears a much higher price. From there, the decision is up to you and you must live with it.

Superintendents Tour California Golf Courses

By Dick Malpass



Sequoyah Country Club

Sunday, January 8, was "D" day,--Departure Day--, for 20 course superintendents, a green chairman, and a golf course equipment salesman, when they left Portland, Oregon, on a chartered Greyhound bus. Destination was San Francisco and the Monterey Peninsula areas with several stops between.

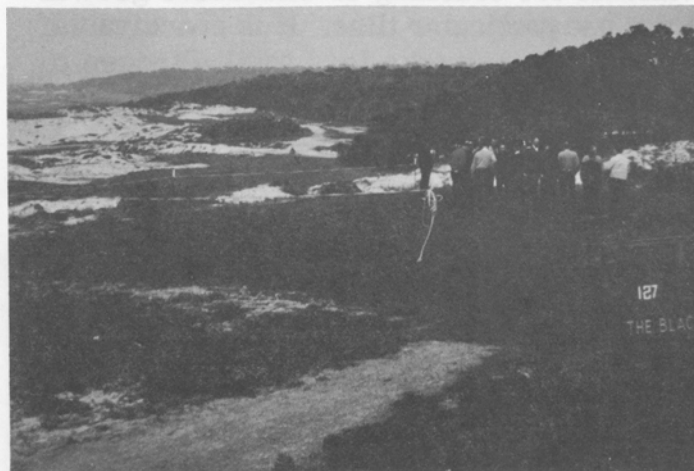
On Monday morning, January 9, they visited the Sequoyah Country Club, in Oakland, where Walter Boysen, GCSAA President, is superintendent. Following this visit, and after lunch, the Alameda Municipal course was next on the agenda. Here was seen an 18-hole course being rebuilt following plans of Desmond Muirhead, Architect. This course and one immediately adjacent have been built on reclaimed tidelands and garbage fills. These courses are heavily played as are most municipals in the area.

After a night's rest, the Olympic Club, a 36-hole facility, the Lake Merced Country Club, and the San Francisco Golf Club, all in San Francisco, were toured. All of these facilities were impressive and showed evidence of their \$100,000 to \$250,000 maintenance budgets. It was noted that all three of these courses were operating under a union contract for all maintenance people. Wages paid were substantially higher than is the case in the Pacific Northwest.

On Wednesday, January 11, the group traveled on to the Monterey Peninsula area. After securing lodging in Monterey, the superintendents were guests of Roger Larson, who is in charge of all turf facilities for Del Monte Properties, owners of much of the Monterey Peninsula. Both Pebble Beach and Spyglass Hill Golf Courses were examined.

Early the next morning, the group divided, with one-half playing Spyglass Hill and the other Pebble Beach. At noon, they drove to the Corral de Tierra Country Club near Salinas, a short distance away, where they were guests at a luncheon given by the Golf Course Superintendents Association of Northern California. Later in the afternoon, the Monterey Peninsula Country Club was visited. Due to the illness of the superintendent this course was not examined first-hand.

On Friday, January 13, they left for Modesto, in the San Joaquin Valley, where they were guests for luncheon and golf at the Del Rio Country Club. Cliff Wagoner is Superintendent of this beautifully groomed golf course. This is probably one of the finer inland valley golf courses in California.



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THE BLAC
Spyglass Hill

Saturday, January 14, they left Modesto for Sacramento where they went directly to the Northridge Country Club whose superintendent is Frank Emery, formerly of Riverside Country Club in Portland, Oregon. After luncheon in their nicely appointed club house, the group left for home where they arrived back in Portland early Sunday morning.

Much credit for the successful conclusion of this trip goes to the Northern California Golf Course Superintendents Association and their officers and members. The superintendents of each course visited were ready with answers for our questions and their hospitality was great. A great deal of thanks is due, also, to club officials who allowed us the use of their facilities.

Spyglass Hill picture shows superintendents examining a green. This course has several holes where the only grass is on the tee and green. In between is sand, sand, and more sand.

Sequoyah picture shows traveling superintendents looking over course using electric carts to travel about.

Calibrate Your Equipment To Apply Chemicals To Turfgrass

By Roy L. Goss

Many failures to obtain control from applications of pesticides are due to improper calibration of spray or application equip-

ment. Most chemicals in agricultural use are specified in pounds, or percent of active ingredient per unit volume. Agricultural recommendations, likewise, generally are expressed in the pounds of this material you should apply per acre. You should determine the correct amount of chemical formulation required per unit area. Some calculations are usually necessary and you should learn to make them as quickly as possible, since you most often have to do this in your shop, warehouse, or perhaps in the field.

It isn't really too difficult to make your calculations. As an example, let us assume that you are applying 10 pounds of active ingredient per acre from a 75 percent active ingredient material. The amount of active ingredient divided by the percent active ingredient gives the amount to be applied. The following formula will illustrate this:

$$\frac{\text{Amount of actual ingredient required}}{\% \text{ active ingredient}/100}$$

= Amount of material to apply

If we substitute the above values, we have the following:

$$\frac{10 \text{ pounds active ingredient}}{75\%/100} = \frac{10}{0.75}$$

= 13.3 pounds to be applied/acre

This same formula can be adapted for use on any given area such as 1000 square feet or 100 square feet.

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Use Conversion Tables

Every operator should construct conversion tables for the materials that he normally handles in his trade or practice. Here is an example of a conversion table that has practical use:

Conversion Table 1

Amount of actual chemical required/acre	Dry formulation/acre (pounds)		
	2% active	5% active	50% active
lb.	lb.	lb.	lb.
2	100	40	4
3	150	60	6
5	250	100	10
10	500	200	20
15	750	300	30
25	1250	500	50
100	5000	2000	200
500	--	10000	1000

A conversion table showing liquid volumes per unit area is as follows:

Conversion Table 2

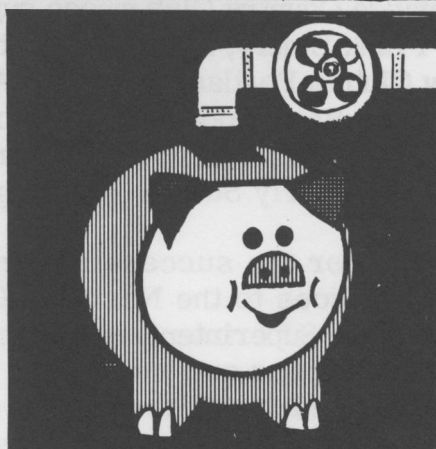
Amount of actual chemical required/acre	Volume of liquid concentrate/1000 sq. ft.	
	1 lb/gal active	4 lb/gal active
lb.	fl. oz.	fl. oz.
1	2.9	.7
2	5.9	1.5
5	14.7	3.7
10	29.4	7.3
12	35.2	8.8
15	44.0	11.0

fl. oz. = fluid oz. or liquid oz.

With just a little simple arithmetic, conversion tables can easily be made for any chemical that you wish to apply.

Calibration of Boom-Type Sprayers

The first step in calibrating a sprayer is to clean it thoroughly, and this includes the supply tank, pump, screens, boom lines and nozzles. We wish to know the volume of material being applied on a given area. This is usually expressed in gallons per acre. The gallons per acre we apply from a sprayer is dependent upon the speed of travel in the field, pressure delivered to the nozzle,



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and the size of opening or orifice of the nozzle. Manufacturers of spray equipment publish manuals or charts that will show you the gallons delivered per acre when you consider the three factors listed above. If you have determined this, then the calibration of the spray equipment can be determined in a number of ways. A simple method is to measure 1/8 mile, or 660 feet. Fill the sprayer tank with water, spray 660 feet, using the same speed and sprayer pressure. Measure the amount of water required to refill the tank. Multiply 66 x the gallons of water required to refill. Divide by the width the spray boom covers, and this will equal gallons per acre.

Another system would be to measure the time required to collect 1 quart from one nozzle and multiply this times the number of nozzles. Calculate as follows: 900 divided by seconds equals gallons per acre.

Gallons per acre divided by (miles per hour times the nozzle spacing in inches times 0.01) equals gallons per acre.

There are several other formulas for figuring gallons per acre and calibrating sprayers, but these should prove satisfactory.

Spot Treating

Spot treating or spot application is both difficult and hazardous. The tendency in spot treatment is to over-apply. There is little way of knowing how much material was applied per unit area; therefore, the only caution that can be given is to be extremely careful and do nothing more than dampen the foliage of the plant you are trying to kill, if your aim is selective weed control.

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