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The Bull Sheet

Official Bulletin

Midwest Association of Golf Course Superintendents



CLARENCE MUELLER
July Host to the M.A.G.C.S.

GLENDALE COUNTRY CLUB

JULY 8 MEETING

ARTICLES

1. Holmes' Corner
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5. Planning and Keeping A Small Nursery

THE BULL SHEET, official publication of THE MIDWEST ASSOCIATION OF GOLF COURSE SUPERINTENDENTS.

DICK TREVARTHAN, Editor
122 Evergreen Drive
Frankfort, Illinois 60423

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The President's Message

Our June meeting was well attended. It was held here at my home course, Gleneagles Country Club. About 34 played golf, I believe, and 81 attended dinner. Tours of the Warren Nursery were conducted in the morning and in the afternoon. I would like to thank Ben Warren for letting us all see the plots of grass and etc. I would also like to thank him for the lovely luncheon served to us. We were honored to have Dr. Jack Butler and Dr. Mike Britton from the University of Illinois with us at the Warren Nursery and also for the dinner.

We will soon be deciding on a man for the National nominating committee. Also we will be making nominations for the National Advisory committee delegate and alternate; also, delegate and alternate to the National Turf Conference in Miami, Florida. Come prepared to our next regular meeting with nominations to fill committees so they may have some time for discussion and correspondence before the National Convention.

Our joint meeting with Wisconsin will be held August 12th at the Tuckaway Country Club. Les White, formerly of Joliet will be host Superintendent. Let us all plan to attend and be with our friends from the north for golf and dinner. Jim Holmes will be our speaker.

I have accepted the position of Superintendent of Grounds at the Scioto Country Club in Columbus, Ohio. I am not giving up my Presidency of the Midwest Association. I will attend as many of the meetings throughout the remainder of the year as I can. My good friend, and our Vice-President Ed Wallenberg will preside at the meetings that I will be unable to attend.

My wife and I have enjoyed the 17 years we have lived in Illinois. We have many friends here and we know we will miss each and everyone of you. My employers, Mr. John and Edward McNulty, at Gleneagles have been like brothers to me. Our new home address will be 2850 North West Blvd., Columbus, Ohio. We extend an invitation to each and everyone of you to come visit us whenever you can.

Walter H. Fuchs,
President



Mr. Ben Warren. Many thanks to Mr. Warren, who spent the better part of June 10th explaining his research work with bluegrasses and bents at his sod nursery in Palos Park, Illinois. Ben also furnished everyone present with lunch. Next to Mr. Warren, is our old friend Dr. Jack Butler from the University of Illinois Turf Department.

SILVER LAKE HOSTS MICHIANA

President Rolfe Wells of the Michiana Golf Course Superintendents Association announced that the next meeting will be Monday, July 15th at Silver Lake Golf Club in Orland Park. Host superintendent Dudley Smith invites all Midwest members to join this group for golf and dinner.



HOLMES' CORNER

by James L. Holmes
USGA Green Section
Mid-Western Agronomist

A definite pattern can be observed regarding winter and spring desiccation or "top burn" damage to putting turf throughout the Midwest. The type or strain of bentgrass most severely damaged and, in some cases, the only type damaged, is that which I refer to as Washington. Or, that strain which goes off-color following the first frost in the fall. This off-color is evident as either a purplish or reddish cast. Further, this type of grass is the slowest to commence growth in spring, but once growth does commence, a thick, wooly, fluffy pattern usually develops. I plan to watch this closely this summer because this type of bent also may be the one which shows the most severe scalping symptoms during July and August. Numerous slides have been made which quite well picture this phenomenon and I believe a definite trend can be proved. However, under no stretch of the imagination do I mean that this particular type of bent, namely Washington, is the only one which suffered damage, merely desiccation is considerably more pronounced with this type. Consequently, older greens which were seeded to South German bentgrass have exhibited the most severe damage as this strain seems to have developed and spread.

A good example of this is Oakland Hills Country Club in Detroit where Ted Woehrle inherited 15 greens originally established with South German bentgrass; three greens have been recently rebuilt according to Green Section specifications. Extremely severe top-burn damage occurred, following a distinct "Washington pattern", on the 15 older greens; only limited or inconsequential damage was visible on the three new ones, which were planted with Old Orchard. When I visited with Ted a couple of weeks ago, sure enough, burned-off turf was showing fast recovery.

Even though turf burn was especially severe this winter, recovery is accelerated rapidly at this time. Golf course superintendents either vigorously spiked, aerated or vertical mowed desiccated areas and overseeded, but, it appears that turf recovery is coming from the old grass present as nodes did not winterkill and viability remains. This does not mean that soil opening and overseeding should not be done, but even with this program, turf which is filling in is that which existed previously.

Golf course superintendents who placed their water-

ing systems in operation and irrigated in early March, or the few who watered greens by tank, got by with the least amount of damage. A good example of this is Green Acres Country Club, Dave Burke, golf course superintendent, watered all greens the first week in March, using his spray tank and applying in excess of 500 gallons of water to high spots. As a result, putting surfaces at Green Acres are superb at this time. Now that hot weather has arrived, finally, I believe recovery will be complete on all greens by June 15th or 20th. It is important that areas which have not recovered to date completely be kept constantly moist. And, do not brush or vertical mow again until complete fill-in occurs. Greatest benefits will be derived through light, frequent topdressings. Now that high heat and humidity are with us, hand watering becomes more important. Through hand watering, high, browned-off areas remaining can be kept moist without the danger of over-watering low areas, thus increasing the possibility of serious disease activity. Efforts should be made to use the "safest" or least-burning turf fungicides as much as possible. Some of the "safest" or least-burning fungicides are Thiram, Dyrene, Kromad and Daconil.

A joint meeting of the Midwest Association of Golf Course Superintendents and the Wisconsin group is to be held August 12th at Tuckaway Country Club in Milwaukee. I have been asked to be speaker at this meeting and plan to show the Green Section movie on putting green construction. Those of you who are interested and have not seen this movie might make a note and attend this get-together.

Golf Report

JUNE 1968 MEETING

The second golfing event of this season was played at the Glen Eagles Country Club. President Walter Fuchs had the golf course well groomed and playing conditions were excellent. Twenty-nine players entered the Peoria handicap golf event (twenty-two members and seven guests). The excessive heat deterred many golfers from participating. The Chicago official temperature was 94 degrees and it was warmer in the Lemont area where Glen Eagles is located.

The winners of the Peoria handicap golf event were:

- | | |
|----------------------|--------------------|
| 1. Clarence Mitchell | 6. Albie Staudt |
| 2. Ray Schei | 7. Ron Bild |
| 3. John Hooper | 8. Bill Krafft |
| 4. Carl Hopphan | *9. Keith Fuchs |
| 5. Roy Nelson | *10. Al Wildeuradt |

* Guest Prize Winners

Albie Staudt shot a sizzling 72 for the day's low gross score.

President Walter Fuchs was presented with a gift from the Midwest Association of Golf Course Superintendents in appreciation of being our host for this June meeting.

The next golfing event will be played at the Glendale Country Club on Monday, July 8. Entrees for the event will be accepted beginning at 11:00 A.M. at the Pro Shop.

Your Golf Chairman requests that on completion of the 18 holes of play you will please turn in your scores immediately. Many players finish after 6:00 P.M. and there is only a short time lapse between that time and dinner call. In that short period of time winners of the event have to be determined and the prizes have to be tagged with the winner's name. Thank you in advance for your cooperation.

Al Bertucci, MAGCS Golf Chairman

INSECT SCALES AND GALLS

by Stanley Rachesky
Entomologist, University of Illinois

The growth and development of ornamentals is directly affected by various environmental conditions among which include temperature, moisture, fertility and conditions of the soil. In most instances well cared for shrubs can withstand insect attack. Under times of stress when only one of the environmental conditions are altered, symptoms of insect injury can and will show up quite readily. To separate insect damage from disease or drought, leaves, stems, root systems must be carefully examined.

Scales and Galls are types of insects that take advantage of plants in poor health. Only by careful examination will one discover these pests on the shrub.

Scales: Description — Scale insects are rather small and are often overlooked until the death of a branch or limb commands close inspections. They come in a wide variety of shapes and forms and in rather drab colors. They are generally stationary and they have a protective shell under which they feed, develop, lay eggs, bear young, and die. The hard-shelled, or armored scales, such as oystershell, have shells that are detached from the body of the insect, but in soft scales the protective shell is attached.

Life History — Some scales overwinter in the egg stage and some as partly grown females that mature and lay eggs or give birth to living young in the spring. The young scales crawl away from the mother shell, move about for a few days, usually toward new plant growth, and then settle down, insert their beaks into the plant tissue, and begin to grow. They lose their legs and antennae as they begin to secrete a material that forms a shell over them for protection. Some of the soft scales move about sluggishly in the adult stage, but females of the armored scales remain where they settle. The soft scale infestations may be accompanied by a sooty mold that grows in the honeydew excreted by the insects. Only the males develop wings.

Damage — The scale insects make up a large group of destructive plant pests. They infest leaves, twigs, branches, trunks, or fruit, depending on the species of scale and its host. They may seriously retard plant growth and kill shrubs or trees. They are able to develop enormous populations, and it is the removal of sap from a plant by thousands of scales that causes the damage.

Control — Scales.

Cottony maple, European elm, Oystershell, Pine needle, Scurfy, Spruce bud, Sweet gum —

Malathion — Spray foliage thoroughly in late May for pine needle and sweet gum scale; in early June for scurfy, oystershell, euonymous, Fletcher, and European elm scales; and again in early August for oystershell scale; in early July for cottony maple, Juniper, and dogwood scales; and between July 10 and 15 for spruce bud scale.

Putnam, San Jose, Tuliptree —

Dormant oil diluted according to label — Apply when plants are still dormant in late winter. Do not use on evergreens. For tuliptree scale, a malathion spray in late September is also effective.

Treatment for southern Illinois: apply 2 weeks earlier and in northern Illinois 2 weeks later.



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Plant Galls: Recognition — Abnormal warts, swellings and knots on the leaves, twigs, and branches of trees and shrubs are usually galls. There are hundreds of kinds of galls, large and small, conspicuous and inconspicuous, but each kind is characteristic of the organism that produced it and the gall-producer remains faithful to a particular kind of plant.

Cause of Galls — Most of the common galls are due to abnormal cell growth stimulated by insects and mites, but some galls are caused by bacteria, fungi, and nematodes. Still others are caused by aphids, mites, or fly larvae. On oak trees particularly, growth of galls of many shapes is stimulated by a large number of species of small wasps belonging to the family Cynipidae.

Life Cycle and Habits of Gall-Makers — The habits of the gall-maker are as varied as the galls. In general, the galls provide a home for the insect, where it may feed, lay eggs, and develop. In the case of the Cynipid galls, the small wasps lay eggs on the developing buds and shoots. These hatch into legless grubs that cause the galls to develop. After development, the galls are deserted by the insects.

The numerous green, reddish, or black galls seen on the uppersides of maple leaves are stimulated by microscopic mites that overwinter under the bud scales of the trees. As soon as growth starts in the spring, the mites move to the leaves and stimulate gall growth. They feed, lay eggs, and live inside these galls.

Nature of injury — The damage caused by galls is difficult to record or estimate. The presence of galls does not indicate that the plant is diseased and likely to die. The damage is localized and, with a few exceptions, is not considered serious enough to justify spraying. Occasionally, however, galls develop in such numbers that the leaves become distorted and lose their natural beauty, or some may fall prematurely. Cynipid galls sometimes kill oak twigs and branches, and the hickory gall aphid may seriously damage hickory twigs.

Control of Gall-Producers — Control of galls is a matter of prevention rather than cure. Galls are seldom noticed until the small animal inside is well protected from any spray material that might be used. Control measures have been worked out for only a few kinds of galls.

Control — Galls.

Elm cockscomb, Hickory —

Lindane — Spray foliage thoroughly when buds unfold.

Hackberry blister —

Diazinon, Malathion — Spray foliage thoroughly in late May. Kills psyllids in galls.

Cooley spruce, Eastern spruce —

Either spray above — Apply in late September or October or early spring just before the buds swell.

Treatment for southern Illinois: apply 2 weeks earlier and in northern Illinois 2 weeks later.

In other states, consult your state extension entomologist for insecticide recommendations.

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Mr. H. W. Abts,
Director of Personnel for Cummins Diesel
Columbus, Indiana

A. Interviewing Techniques — It's a skill — can be learned.

1. Have a purpose but avoid inflexibility
 - a. Know some **predetermined** areas you want to pursue.
 - b. Take advantage of unexpected developments which might shed new light.
2. Provide appropriate setting for the interview
 - a. Should be private.
 - b. Free of interruptions.
 - c. Have enough time to prevent hurrying.
3. Use **questions which encourage interviewee to talk**
 - a. Use leading questions.
Avoid questions that can be answered "yes" or "no."
 - b. Don't **press** for specific information — avoid the sound of **cross-examination**.
4. Improve your own listening ability.
5. **Talk only** when you must to stimulate conversation
 - a. Don't feel you have to fill every pause — give the interviewee a chance to resume.
 - b. Echo or reflect his feeling so that he will feel free to continue.
 - c. Confirm your understanding — seek to summarize or recap salient points.
 - d. Your attitude — sympathetic — sincere.
 - e. Don't argue, preach, contradict.
 - f. Observe: face, body.

B. Selection and Evaluation

1. Can he do Job?
 - a. Basic abilities — aptitude — intelligence.
 - b. Education.
 - c. Training.
 - d. Experience.
2. Will he do job?
 - a. Willingness — initiative — ambition.
 - b. Capacity for hard work — self discipline.
 - c. Motivation squares basic abilities.
3. Personality
 - a. Get along — affective.
 - b. Emotional stability, tolerance, teamworker, responsible, self confident, etc.
4. Character — Sense of values
 - a. Personal standards — no substitute.

Conclusion

- The personnel end of your job requires:
- Thorough planning — managing
 - Effort to improve interviewing techniques
 - Simple but sound evaluation

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KILLING BENT

The object of the experiment was to find a chemical which would effectively kill bentgrass in one application and would allow overseeding after one week without any residual effect on the overseeded bluegrass.

The experiment was divided into three parts: 1.) 3' x 10' bent plots at the agronomy farm, 2.) one square foot bent plots in the greenhouse, and 3.) 3' x 10' plots between the greenhouses. At the plots at the agronomy farm, the following chemicals were sprayed on 63 plots: FeSO₄, cacodylic acid, Sindone, Polycide, paraquat, and N-Dure. After about 10 weeks of experiments, these chemicals did not effectively kill the bent. They did what is called "contact kill", burning the leaves but not killing the crown or roots.

Therefore, a chemical was needed which would be absorbed strictly through the roots. The following chemicals had this property and were used on the 23 plots in the greenhouse: Radox, Pramitol 25E, Caparol 80W, TCA, Tordon, Dowpon, Fisons NC 4780, Sinbar, powdered potassium azide, and gasoline. All these chemicals will effectively kill bentgrass (crown, roots, and leaves). However, only gasoline effectively killed the bent and allowed successful overseeding with bluegrass. All the other chemicals had a residual effect on the overseeded bluegrass.

The last part of the experiment was carried on outdoors on 3' x 10' bent plots between the greenhouses. Three-hundred and fifteen grams of 10% granular potassium azide were spread on one plot and then watered in with 5 gallons of water. Then this plot was covered with black plastic which was removed 48 hours later. This particular plot was overseeded with bluegrass 96 hours after the original date of application of the potassium azide. Bluegrass was seen coming back up in this plot two weeks later.

On another 3' x 10' bent plot between the greenhouses, 2.7 gallons of gasoline (75 ml./sq. ft.) were used. This plot was overseeded one week later and bluegrass was seen coming up ten days later.

In conclusion, I would say that gasoline is the best answer to killing bent. Seventy-five ml. is the minimum amount per square foot which can be used. Ten percent granular potassium azide is the next best answer to killing bent. A cover must be put over the treated bent plot for effective kill when using potassium azide. Be extremely careful when handling this chemical. It is very toxic. No matter what chemical is used to kill it, bent should be verti-cut before treating to give better penetration of the chemical.

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DR. FERGUSON RESIGNS

Dr. Marvin H. Ferguson, Mid-Continent Director and Research coordinator for the United States Golf Association Green Section has announced plans to resign from that position. After September, 1968, Dr. Ferguson will be engaged in private business as president of Agri-Systems of Texas, Inc.

Agri-Systems of Texas, Inc., will provide a variety of services to turf and to agriculture in general. Areas of activity will include golf course design and construction supervision, irrigation systems design and installation, laboratory services for physical analyses of soils, sod production and sales, and consultation services for the turfgrass industry and for agriculture.

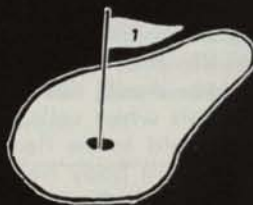
Agri-Systems will maintain a permanent staff of highly qualified turfgrass specialists and this staff will be supplemented with consultants who are specialists in specific phases of plant science, soil science, and agricultural engineering.

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WATERING GREENS EFFECTIVELY — A REVIEW

J. R. Watson, Jr., Director of Agronomy
Toro Mfg. Co., Minneapolis, Minnesota

To water greens effectively requires an understanding of several basic concepts which, individually and collectively, affect water and its proper use. There can be no set or predetermined formula or prescription for effective green watering. Rather the superintendent must balance the variables that affect watering practices and arrive at the solution that best suits each green.

To water effectively requires an understanding of the fundamental role water plays in plant growth, of the effects climate and weather have on growth rates and how they influence water-use rates and choice of grass. Effective green watering demands a knowledge of the basic physical and chemical soil properties and how these effect water absorption, storage and drainage, as well as the frequency, rate and manner in which water must be applied. All such basic information must be correlated with the requirements for play and adjusted to fit the existing irrigation facilities.

Role of Water

Water is essential to plant growth and activity, and is involved either directly or indirectly in all phases of the care and management of turfgrass. Water is necessary for germination, cellular development, tissue growth, food manufacture (photosynthesis), temperature control and resistance to pressure.

It acts both as a solvent and as a carrier of plant food materials, for nutrients dissolved in the soil are taken in through the roots and then carried to all parts of the grass plant in water. The food manufactured in the leaves is also distributed throughout the plant body in water.

Water transpired by the leaves and evaporated from the surface serves as a temperature regulator for the plant. Syringing is based on these phenomena. The amount of water within the cells of the grass leaves plays a role in counteracting the effects of traffic. When the plant cells are filled with water (above 80%) they are said to be turgid, a condition that helps leaves resist pressure from traffic (foot and vehicular) and avoid the damage, sometimes death, that may occur. Wilt is a condition that exists when cells do not contain enough water and are said to be flaccid. A 10-20% loss of water from the plant body frequently will cause permanent wilting and death.

Soil

The soil for any turfgrass area must provide support for the grass, serve as a storehouse for nutrients, supply oxygen and act as a reservoir for moisture. The texture (size of soil particle), structure (arrangement) and porosity (percentages of soil volume not occupied by solid particles) of a soil are the basic physical factors which control the movement of water into the soil (infiltration), through the soil (percolation) and out of the soil (drainage). The texture, structure and porosity, along with organic matter content, determine the water-holding capacity and control the air-water relationships of the soil.

These characteristics directly affect satisfactory green watering practices. The intake of water is through the roots—the root hairs are the organs through which water is taken. Hence, the depth of rooting and the extent to which a given root system occupies the soil determines the available water capacity of that rootzone. When the need for water by the plant is great (high temperature, high wind movement, low

humidity), this reservoir must be continually replenished.

If the need for moisture (evapotranspiration) is 0.3 inch daily — as the case may be during July and August — the soil must easily supply that amount between irrigations. Soils that are good for putting greens otherwise may only hold 0.50 to 0.75 inches per cubic foot. This would be an adequate amount of water for one to two days if it is available to the plant. For this to be the case, the roots must extend through this volume of soil, the soil must supply the needed amount of water, or have the characteristics necessary to **move** the needed amount of water at a rate rapidly enough to permit uptake by the active roots.

The root systems on most putting greens frequently extend only to a depth of three or four inches, so the volume of potentially available water is drastically reduced. Thus, the advice to water deeply and infrequently is **not valid** for many putting greens. For that matter, for many turfgrass areas.

Poor aeration, whether from poor drainage, compaction or an inherent soil condition, further complicates effective green watering.

Equipment for Applying Water

Equipment presently available permits the **controlled** application of **precise** amounts of water. Further, the flexibility of the automatic control mechanisms is such that pinpoint (each head) application of the amounts of water needed by the grass can be delivered in conformance with the ability of a given green to take in (infiltration capacity) and store it (water-holding capacity). Master controllers located in the superintendent's office, or in any central area, may be programmed to signal satellite controllers to re-cycle or to apply water at intermittent periods. This assures proper infiltration and prevents run-off with subsequent overly wet spots on greens. The satellite controllers, located in easy view of the green, may be operated independently for syringing.

Today's controllers, valves and sprinklers, when used in accordance with a good design, when installed properly and when serviced and maintained, will aid substantially in the effective watering of putting greens.

PURDUE UNIVERSITY TURFGRASS CONFERENCE PROCEEDINGS MARCH 4 - 6, 1969

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Jim Murray — Chicago Daily News

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But once again America the beautiful has taken a bullet in the groin. The country is in surgery. The Violent States of America. One bullet is mightier than one million votes.

It's not a democracy, it's a lunacy. A country that shrinks from punishing its criminals, disciplining its children, locking up its mad, is like an animal that disregards its senses. It's a lamb defending the lion's right to eat it.

We quarantine the good, the reliable, the honest. We keep a 24-hour watch on the trustworthy, but get a habeas corpus to let anarchy loose.

Freedom is being gunned down. The "right" to murder is the ultimate right in this country. Sloth is a virtue. Patriotism is a sin. Conservatism is an anachronism. God is over 30 years old. To be young is the only religion—as if it were a hard-won virtue.

"DECENCY" IS DIRTY FEET, A SCORN FOR WORK. "Love" is something you need penicillin for. "Love" is handing a flower to a naked young man with vermin in his hair while your mother sits home with a broken heart. You "love" strangers, not parents.

I will be severely criticized, even ridiculed for crying out. "Lousy sports writer, what does he know?" I can hear. "Who does he think he is? This is the 20th century", they will say, "not Disneyland." Well, it's getting to look more like the caveman era every day from this seat. Americans who have a podium should use it today.

I like people with curtains on the windows, not people with "pads." The next guy that calls money "bread" should be paid off in whole wheat. I'm sick of being told I should try to "understand" evil. Should a canary "understand" a cat?

These are some of the things, it seems to me, that have put blood on the walls of America. The next funeral procession will be for the republic itself. The American dream will be rolling up Pennsylvania Ave. behind the roll of drums. It will be buried in Arlington.

The Constitution was never conceived as a shield for degeneracy. You start out burning the flag and you end up burning Detroit. You do away with the death penalty for everyone but presidential candidates—and presidents. The national symbol is not the eagle, it's the catafalque.

The point of the country is fear. The rebellion is against good. Men of God become men of the mob. The National Anthem is a scream in the night. Americans can't walk in their own parks, get on their own buses. They have to cage themselves.

GET OFF YOUR KNEES, AMERICA! PEOPLE CRY, but it is ignored. Bare your teeth, they say, Threaten to fight back. The lion bares his teeth and the jackals slink away. A cowering animal invites attack. But America is not listening.

These are the things, it seems to me, that put a young senator, a servant of his people, to death. A young, vigorous country is immobilized by bumper stickers, slogans, neurotic students with their feet on desks they couldn't make, pulling down universities they wouldn't know how to rebuild.

It all begins with that—the deification of drifters, wastrels, poltrons—insolent guests at the gracious table of democracy.

What have the Kennedys ever done to deserve ambuscades every five years at the hands of people they ask only to serve? What apology can we offer to a noble family except to resolve to stop being ruled by our refuse, our human refuse, that is? How many good men have to die before we wrest weapons from the terrible hands of our barbarians, demand respect for our institutions, stop glorifying hate?

Our healers could not repair Bobby Kennedy. Who is going to repair America?

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PLANNING AND KEEPING A SMALL NURSERY

M. C. Carbonneau

There are several important points to consider when planning a small nursery for a golf course, park or recreation area.

It is most important to consider the purpose of having the nursery area in your over-all plan of operation. Nursery stock is available in quantity and variety today so this is usually not the problem. However, the problem can be having the material available when planting crews are ready to do their work. Many operators prefer to have plant materials on hand to make replacements for those that died.

In newly established or expanding operations it is often desirable to have a small nursery in order to have a supply of shade trees and evergreens available for use. The above are important reasons for having a "holding" or "finishing" nursery on a recreational or non-commercial operation.

It is important to point out that costs involved in producing landscape sized plant materials in small quantities is an expensive proposition. The quality of the plant material produced in many of these operations is not up to that which can be purchased. Commercial nurserymen are familiar with the special requirements necessary to produce the plants growing in their nursery. For this reason it is recommended that production costs and quality of plant material be considered before starting a "production" nursery.

It is possible, however, to purchase large liners or small sized planting stock for "growing-on" to a more desirable landscape size. This essentially is a "holding" or "finishing" nursery which can be a valuable asset. A nursery of this scope should be designed to provide plant material for expansion of facilities, replacements or for re-landscaping existing areas.

Land for use as a small nursery should be in good tilth, relatively high in organic matter and well drained. Attention should be given to weed populations on the land. If the area is infested with quackgrass, Canada thistle or bindweed, these should be eradicated before planting.

An ample supply of water is important for best growth of ornamental plants. The nursery should be incorporated into the irrigation program of a park or golf course. The water is especially necessary at planting time and for maximum growth during periods of extended drought.

The lay-out of the nursery is important for fast and efficient upkeep of the area. Blocks of one basic kind of plants (eg. evergreens, deciduous trees, etc.) should be incorporated in one area. The cultural reasons for this are as follows: spacing of the plants, cultivation, herbicide application, insecticide application and digging operations.

Proper spacing of plant material cannot be stressed enough. The distance between the rows and between the plants in the rows is governed mainly by the desired size of the plants at harvest. The kind and size of equipment available for cultivating and spraying also has a bearing on the spacing. There should be plenty of room for the equipment to move in the rows so the operator will not damage the plants. The best recommendation to be given would be to over-space in a small nursery so that the men have plenty of room to operate their equipment.

Selection of material to be grown will certainly depend on the landscape or long-range plan developed for the area. Several varieties of shade trees, flowering trees and evergreens should probably be considered for the area. Be sure to know all of the pests associated with the plant material grown. If insects and diseases are known to be a problem on specific varieties avoid planting them or take the necessary measures to prevent damaging infestations. Prevention of infestations of insects and diseases will be necessary for success of the operation.

Weed control is one of the most pressing problems in the nursery industry today. We cannot as yet recommend any herbicide to effectively control weeds in all types of ornamentals (trees, deciduous shrubs and narrowleaf evergreens). Most narrowleaf evergreens are tolerant to low rates of application of simazine. Deciduous shrubs are less tolerant than evergreens to most of the herbicides on the market today. Since applications of the materials available today are limited to special crops (we recommend that cultivation and hoeing be the main methods of weed control in a small nursery).

In summary, keep these points in mind when planning a small nursery.

1. Select large liners for "finishing" in the nursery.
2. Be sure to plant the material on well drained land.
3. Additional organic matter should be added to the soil by manuring or growing green manure or sod crops.
4. Have irrigation available for use at planting times and during dry spells.
5. Do not crowd the plants in the rows and allow space between the rows for ease of cultivation.
6. Plant only for your needs in the immediate future. Overgrown plants are expensive to maintain and expensive to move.
7. Remove blocks of plants at one time so you can keep a rotation in progress.
8. When the time comes to cease the nursery operation do not hesitate to do so. Planting without a plan can do more harm than good.

UNIVERSITY OF ILLINOIS TURFGRASS CONFERENCE PROCEEDINGS DECEMBER 7 - 8, 1968

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COMING EVENTS

The ILLINOIS TURFGRASS FIELD DAY will be held earlier this year — August 9th, 1968. Time: 10:30 until 3:30. Place: Illinois University Turf Research Plots.

The ILLINOIS TURFGRASS CONFERENCE will be held Thursday, and Friday, December 5th & 6th in the Building Auditorium at the University of Illinois commencing at 1:15 p.m. on Thursday. The Banquet will be held Thursday night. The Conference will close at noon on Friday.

The ILLINOIS TURFGRASS FOUNDATION will conduct their annual meeting at 11:30 on Friday at the Ramada Inn, 1501 So. Neil Ave., Urbana. The Board of Directors will conduct their election of officers following the annual meeting.

All the events will be held in Urbana, Illinois.

HOW DO WE GET ORGANIC MATTER OR DEplete IT?

If it were not for the organic residue reduction or decay and decomposition or if Mother Nature would permit the accumulation of the residue of her creation, just imagine what this old world would look like. Here again we can see the infinite wisdom of the Creator and the Balance of Nature as these things are decayed and decomposed Nature does not only rid the surface of the earth of the debris but also provides food for the life in the soil resulting in foods for the plants and crops we grow.

Humus is made from lignin and cellulose by a process called humification. Under the best of these conditions there is only about 75 lbs. of humus made from 1000 lbs. of cellulose and lignin. One of the very important factors involved in the conversion of organic matter to humus is air, especially oxygen—this is a must—for the oxidization of various groups of complicated organic matter complexes in the soil. Here again we can see the need of a good tilth and structure in the soil. How can air get into your soil if it is water logged and tight? In such conditions where there is not enough air to support humification what happens then? The lignin and cellulose materials become carbonized then instead of humus peat is developed or even possibly coal. Is this what has happened when we plow up manure, straw, cornstalks that have been plowed down for a number of years and they are not decomposed rather seem hard and carbonized. When we see how hard and air tight some of our soil is, we should realize that humification has not taken place. How could oxygen have gotten through the hard compact soil?

We have mentioned how that the life in the soil dying and leaving their bodies to decay help to build

tons of organic matter. How are some of the ways we can destroy humus resulting in the loss of life—destroying life thereby preventing and/or destroying humus. One of the ways that seemingly destroys much humus is by constant tillage. By exposing to air and oxygen the masses of humus material we get mineralization. This increases the need of adding organic matter material to avoid depletion. Here again we can get one of those what we might call a chain reaction which happens so often in Nature. By over cultivation or exposing the humus to the air and failing to return additional organic matter to the soil, the mineralization process is speeded up and soon the soil will be well on its way to complete depletion and we have what we so often refer to as dead soil. Billions of life supporting micro-cells will be dead—the soil's buffering capacity and its plant protecting powers are gone as well as the farmer's profit making ability. In other words, we have a dead soil.

Knowing that we must have the life in the soil in order to have humus or as said before we must have the one to have the other I would like someone to explain to me how farmers can put all these salts, acids, insecticides, pesticides, herbicides, etc. on their soil and not damage the life therein.

With these thoughts in mind we wonder when people talk about mining the soil perhaps we should think about mining the soil of its true life and health sustaining treasure the organic matter complex and learn to manage our soil so that we may increase its true balance and reserve of humus and macro and micro life and thereby provide a prosperity of greater wealth and optimum health.

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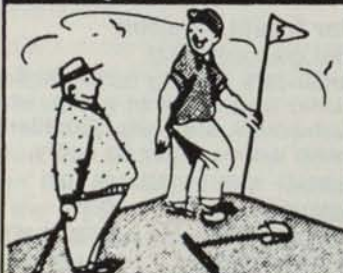
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