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APRIL 1984

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LAWN  
INSTITUTE



# Harvests

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Volume 31 Number 1

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## THE HARVEST MIX

- LAWN INSTITUTE PITCH focuses on the topic of People/Plant Interactions. What are the real values of lawns and gardens to us ?

- P O BOX 108: This quarter, notes are provided on topics ranging from research fund raising programs and foundations to marketing brochures and from computer lawn programs to George Orwell's "1984". Also, please meet The Professional Lawn Care Association of America.

- CONFERENCE TOPICS included highlights of several of the feature presentations from the Thirty First Florida Turf Conference, and recent Fifty Fifth International Turfgrass Conference education programs.

DIRECTOR'S DIALOGUE presents a look at some thirty years of effort to better understand wetter water. Bob Moore, President of Aquatrols Corporation of America has contributed significantly to our thinking during this period.



## 4 - P - I

### People Plant Proximities — Psychological Imperative

**by**  
**Eliot C Roberts**

It's been a dozen years now since Professor Patrick Horsbrough of the University of Notre Dame's Department of Architecture presented a paper in Indiana Nursery News (Volume 33 Number 4) entitled "Human-Plant Proximities: A Psychological Imperative". This discussion of the importance of lawns and gardens to people of all walks of life has served well as a bench mark for continuing concern related to our quality of life, even now in the mid 1980s. Professor Horsbrough's insight as an architect interested in habitats and his being eminently qualified to speculate on how these best meet human needs, prompts us to review his article from time to time in an attempt to learn from this wealth of experience.

According to Professor Horsbrough, our thinking about relationships between people and plants should range from the romantic to the practical and be concerned with both physical conditions of the environment and political aspirations that determine where and how well we may live.

People-plant concepts are often controversial in that we do not all come from similar backgrounds and experience. We look at ecological concepts differently and place varying levels of importance on the cultivation of green plants around and about. Never-the-less, there are fundamentals that generate excitement in most all of us.

Professor Horsbrough states that it is necessary for us to consider both the simplest of physical factors, people-plants proximities, and the most complex emotional consequences of people-plant relationships. These consequences are of such great importance to us that a psychological imperative exists requiring this association to be improved and extended. This in turn is necessary because the artificiality of our surroundings tend to become evermore oppressive.

We are in the midst of experiencing quality of life changes that are real, but for which we have little understanding of cause and effect. Is it possible that the almost unreal artificiality of our standard of living can be turned about and made real and vital by environmental enhancement through creative use of plants ?

We must clearly understand what is meant by people-plant proximity. The following points have been emphasized by Professor Horsbrough:

- continual association of people and plants;
- dependence on vegetation for regeneration of air and for provision of food;
- contacts which feed the eye, employ the hand and sustain the soul and have esthetic, sensual and psychological value;
- development of ever closer harmony between people and plants resulting in expected personal, social, ecological and national benefits, the alternative to which may be viewed either in terms of the desert or the inner city, neither of which are generally noted as desirable habitats.





There is such a human characteristic as "the green thumb". This manifests itself as an identifiable affinity between a person and a plant by which certain vegetation responds. This condition may be associated with older people or may be a sign of aging. We assume that all farmers possess some obvious faculty which encourages plant growth. This is not always so; nor do we search for this ability in determining career choices. People-plant empathy and hidden or suspected talents towards the encouragement of green growth are all too often considered of lesser importance than scientific or technical know-how.

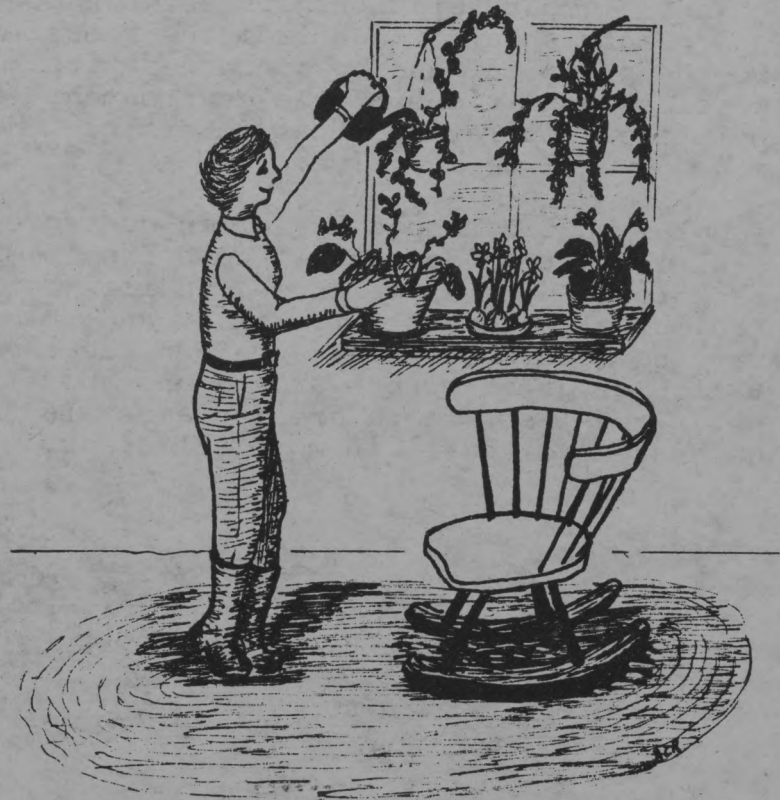
There is such a human characteristic as 'the green thumb'.

As our population becomes more concentrated in urban settings, individuals, one by one, lose contact with the soil. Their orientation becomes more structural and mechanical and less biological. Asphalt and concrete and water and sewer lines, of necessity, are of greater concern than a dynamic, living soil which decomposes waste and yields pure water for household use. The contribution of living plants and animals are quickly disassociated from the real urban environment.

Professor Horsbrough put it this way: "As our lives become more intense, more complicated, and more circumscribed by the artificial, these green thumb attributes are, I believe, increasingly relevant, and their continued concealment only adds to the mounting urban malaise of social restlessness and personal frustration... It strikes me as strange that in comparison with the advanced knowledge in the botanical sciences, the ecological systems and the sociological sophistication which has arisen so sharply during the last 25 years (Editor's note: now almost 40 years) that so little has been done to test the relationships, direct and indirect, between person and plant, between community habitat and location quality, social migration and region characteristics."

Planners, local, state and regional, deal with both urban and rural conditions. Development always yields consequences - some physical, some social. People affected seldom understand the realities of the changing natural scene. Urban populations are utterly ignorant, according to Professor Horsbrough. Yet, many of these same people flock to the countryside and to local, state and national parks in an attempt to reach for an evermore remote association with the indefinable rewards of vegetation.

Professor Horsbrough's description of his rural upbringing is particularly vivid. "...amid the various arts of cultivation, ranging from field to garden. I had the enjoyment, also the effect of time in that my environment was that of almost unchanged eighteenth-century enchantment. It was composed of great avenues of lime trees, eighty feet in height, joined church with village and house with features of a private park; artificial lakes with cascades, shaded ferneries, mossy rocks deliberately arranged, banks of rhododendrons thick as jungles; splendid specimen trees in an almost endless arboretum, giant willing-tonias and spruces and other exotics brought from half a world away, all thriving in one of those extraordinary ecosystematic sanctuaries for which Ireland is so famous.... For in the healthy state of the selected vegetation lies the evidence that any place is fit for human habitation."

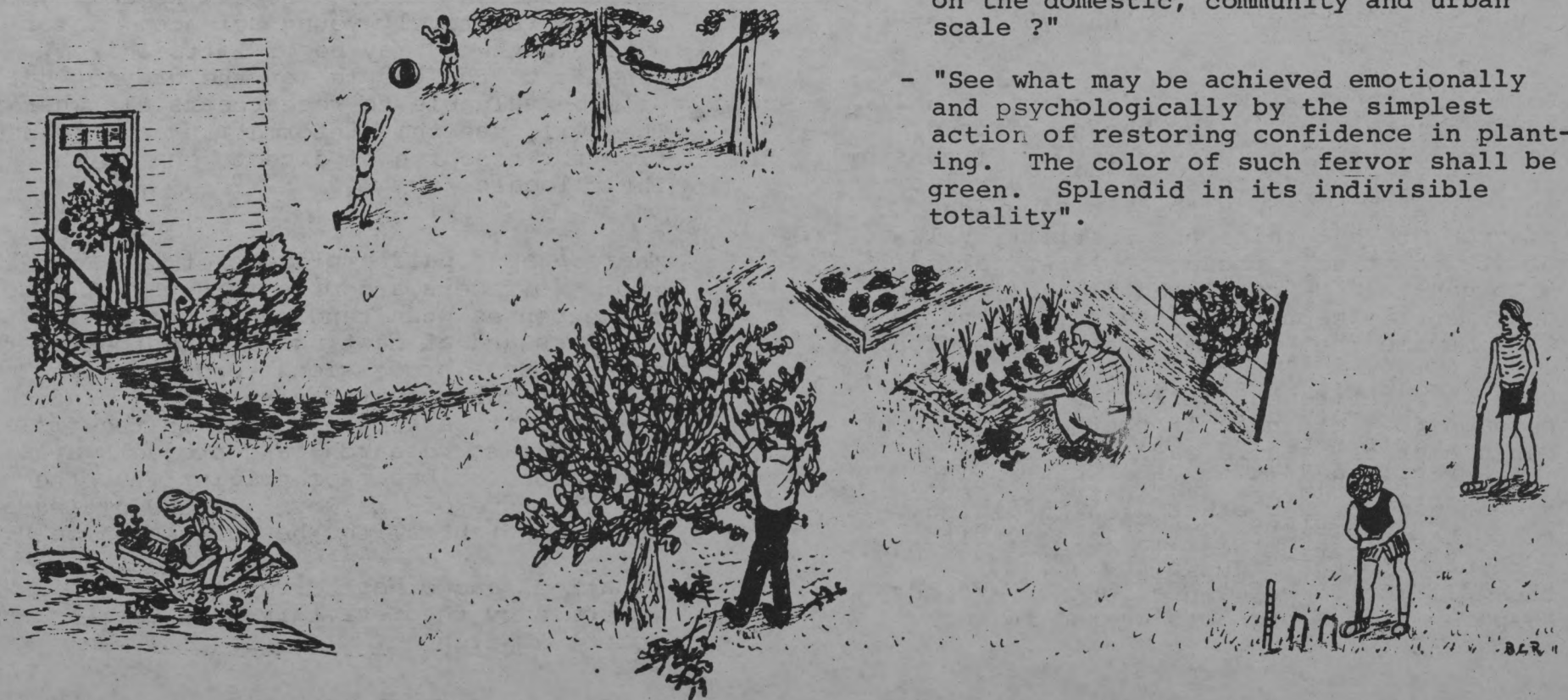




# 4 - P - I Continued

Professor Horsbrough emphasizes the critical importance of his concepts of 'personal' vegetation in landscape design in these ways:

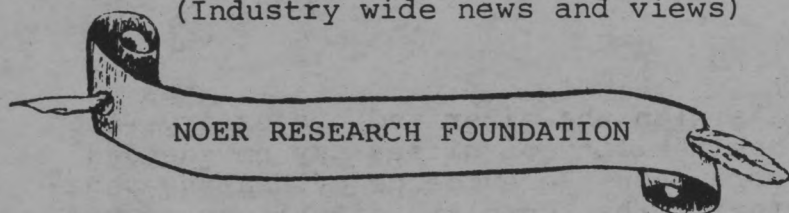
- "Our personal confidence and social stability depends upon the visible condition of surrounding vegetation."
- "The massing urban population must be sustained by the psychological and therapeutic value of the living leaf."
- "Urban horticulture is the hallmark of social stability."
- "There is heavy irony in that this basic desire for ecological association is the principal cause of the flight to the suburbs which has undermined the social responsibility towards declining urban conditions, the economic strength of the community and confidence in the city."
- "The dwindling central urban populations ....pose the question of the likelihood of a continuing exodus from the central areas, and offer at the same time a challenging opportunity for a determined attempt to enleaf these arid wastes, empark the plots that previously bore structures."
- "What was previously offered as an aesthetic ideal has now become a practical imperative for reasons of psychological well-being, of medical necessity (oxygen recuscitation) and aesthetic quality (that condition which confirms or condemns the nature of human design)."
- "As with the miner and his canary, the habitability of cities may now depend more upon the evidence of healthy vegetation than upon the efficiency of mechanical devices. Indeed, the two factors, vegetation and machinery, confront each other since it is the inefficiency of the latter that has wrought the demise of the former".
- "Environic education and necessary instructive installations should form part of every penitentiary and institution of whatever kind where emphasis may be concentrated upon the facination of growth as a means of restoring doubts of human future and in determining that human well-being depends first upon environic hygiene".
- "There would seem to be no more simple or more effective way of conveying the infinite delicacy of the ecosystem, and its responsive rewards, than by the cultivation of greenery, from pots to parks, as the foremost social habit, individual and communal."
- "The habitability of every room should be confirmed by the ability of selected plants to thrive in it. The office, the school, the shopping center, have all produced limited examples of what might be achieved in emotional, aesthetic and microclimatic benefits... a general concept of green growth vitality."
- "...lack of indentity of place hinders the individual identity of soul and of purpose. Can you suggest any more effective way of providing for this urgent sense of person-place relationship that by the arts of horticulture, on the domestic, community and urban scale ?"
- "See what may be achieved emotionally and psychologically by the simplest action of restoring confidence in planting. The color of such fervor shall be green. Splendid in its indivisible totality".





# P.O. BOX 108

(Industry wide news and views)



W Harvests

4

TWENTY FIVE YEARS OF SERVICE TO TURFGRASS SCIENCE

Robert J Welch, Secretary-Treasurer  
O J Noer Research Foundation Inc  
301 South 61st Street  
Milwaukee, Wisconsin 53214

Seeds for the O J Noer Research Foundation were planted in 1958 by his friends and associates who wanted to create a living memorial to the man who influenced the professional turfgrass management field in North America perhaps more than anyone else. These seeds germinated and grew in 1959 with the incorporation of the Foundation.

The founders devised a plan whereby basic turfgrass research would be funded in perpetuity by spending only interest from the investment of gifts. The major source of income came from the self-assessment by Milorganite distributors based on the tonnage they sold. Other gifts have come from local Golf Course Superintendent's Associations, interested individuals and memorials, the Wisconsin Golf Turf Symposium and a golf tournament conducted in the Milwaukee area.

To understand this Foundation requires some knowledge of Mr Noer. A native of Stoughton, Wisconsin, he graduated from the University of Wisconsin in 1912 with a Bachelor of Science degree in Soils with a minor in Chemistry. After two years in soil survey and soil chemistry work, he became the Wisconsin State Soil Chemist and aided Dr Emil Truog in setting up this country's first soil laboratory.

Following Chemical Warfare Service in WWII and a brief stint in the business world, Noer re-entered the University of Wisconsin in 1923 as a graduate student on a Fellowship created by the Milwaukee Sewerage Commission, to determine the fertility value of its new sludge product - later called Milorganite. He completed all the PhD requirements except the dissertation and in 1924 became the Agronomist at the Commission.

Until his retirement in 1960, he visited perhaps 80 % of the golf courses throughout North America. There was always time to look at an athletic field, school yard, greenhouse, or any other area involving turfgrass or ornamentals. These visits were made to the "man on the ground" - the golf course superintendent or groundskeeper. If the big boss wanted to come along, OK.

As a speaker, he was known and in demand throughout the turf world. His writings appeared in many national periodicals published since 1927.

Besides the many honors received from local and regional organizations, OJ received the honors of the Golf Course Superintendents Association of America who dedicated their 1960 Conference to him. He also received the Green Section Award from the United States Golf Association in 1963. He was accurately called, "America's Mr Turf".

The Foundation reached a milestone in 1969 with the establishment of the O J Noer Memorial Turfgrass Collection of turfgrass literature at Michigan State University. More recently a second collection has been created at Texas A&M. These libraries have the most complete collection of books, periodicals and turf conference proceedings available in this country. They are available to any student or interested party through interlibrary loans and will be the backbone of the USGA Green Section Information File now being set up.

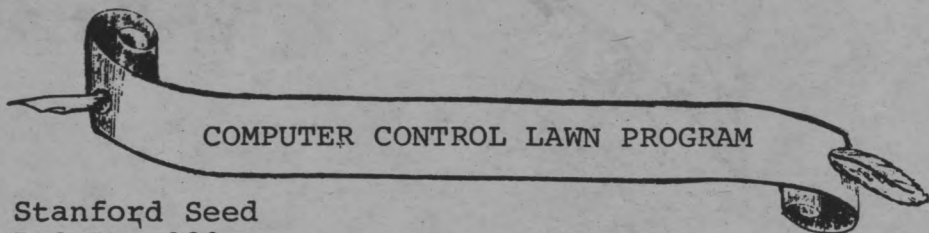
The Foundation currently manages a permanent fund of almost \$200,000.00. The real story, however, is that since its inception, turfgrass research grants have been made to 11 Universities or Experiment Stations (some more than once) totalling about \$250,000.00. These projects have also resulted in advance degrees for 13 students.

Research grants support basic research in the turfgrass field, a sorely needed factor in this relatively young science. Information gathered may be of little direct benefit to the people 'on the ground' but will be valuable to researchers elsewhere. They will use this information as a foundation for research of direct benefit in their locale.

There are no paid employees of the Foundation. Officers and Directors pay all their own expenses when tending to Foundation business and at meetings. Investments are managed by a professional organization. Requests for research grants are screened by a committee knowledgeable in the field of turfgrass research and projects are funded on the basis of originality, the basic nature of the work and the ultimate benefit potential to the turfgrass field.

Donations and other correspondence will be welcomed by the Secretary-Treasurer, Robert J Welch.





Stanford Seed  
P O Box 320  
Denver PA 17517

John Southerland, Vice President

With your computer article in the recent edition of *Harvests* (Volume 30 Number 4) I thought you might find the enclosed of interest.

Over 250,000 people in the northeast will have the opportunity to complete our questionnaire and receive a personalized computer-generated lawn care program. We are hoping that people find this a convenient way to avoid professional lawn care applicators and to rediscover the enjoyment of their own lawn maintenance.

Old English makes it easy to keep your lawn beautiful -

Just complete the attached questionnaire and you'll be registered for your free Old English Computer Control Holiday Lawn Care Program. It's designed just for you- so your lawn will grown green and healthy. And stay that way !

Here's what you get:

- 1) A computer printout, custom-tailored for your lawn, that tells you exactly WHICH Old English Lawn Care products to use ... HOW MUCH TO APPLY ... and WHEN to apply them.
- 2) Tips on preventing lawn pests and other problems.
- 3) Five free "Reminders" scheduled around popular holidays.
- 4) Special Refunds on Old English products.

Best of all, you'll have a beautiful, healthy lawn for less than the cost of professional applicators. And your satisfaction is guaranteed with Old English products !

Your Old English Computer Control Program is free - so send in your questionnaire today. We've already paid the postage.

**LAWN PRODUCTS**

- Sulfur-coated nitrogen prill works faster and is more reliable than other methods.
- Contain ground corn cob carrier - not inert items. A biodegradable, all-natural soil-enriching top dressing.
- Iron enriched to aid plant respiratory system.
- Dyed gold for better visibility on the ground - reduces possibility of over or under applications. No wasted product, time, effort.
- Multi-purpose products-do it all in one easy application.
- Money-back guarantee.

**LAWN SEED**

- Exclusive proprietary varieties: When new, genetically developed grass seed varieties are proven to be better, we include them in our exclusive Old English mixtures. So you get a richer, better lawn.
- Pennfine perennial ryegrass included in our best mixes: The Pennfine perennial ryegrass starts in just seven to ten days. Its roots then retain moisture and reduce the risk of erosion - acting as a nurse crop while the slower germinating seeds in the mixture grow. It all makes it easier to have a beautiful lawn.
- Money-back guarantee.

QUESTIONNAIRE		YES	NO
1. My lawn size is _____ sq. ft.			
2. I plan on seeding.			
a. The area to be seeded is _____ sq. ft.			
All in one area _____.			
Several spots _____.			
b. The area to be seeded is: (Check One)			
All Sunny _____			
All Shady _____			
Combination _____			
3. My lawn was newly seeded last fall.			
4. Crabgrass was a problem.			
a. In my lawn.			
b. In my neighbor's lawn.			
5. Dandelion, chickweed or other weeds were noticeable in my yard last year.			
6. Sod webworm and/or chinch bugs are sometimes a problem in this area.			
7. Grubs can be a problem in this area.			
a. They were a problem in my lawn last year.			
b. Beetles can indicate future grub damage. They were active on foliage in my yard last year.			
8. Lawns which turn brown while others remain green may be an indication of poor root development. I noticed this in my lawn last year.			
9. Other lawn problems or questions:			
(Please print:)			
NAME _____ ADDRESS _____ CITY _____ STATE _____ ZIP _____ PHONE _____			

**How to Measure Your Lawn**

If you know your lawn (not lot) size, fill it in on the Questionnaire. If you don't know your lawn size, the old-fashioned "pacing" method is still easy and reasonably accurate. When pacing, take comfortable, even steps - and measure the distance from toe to toe.

- 1) \_\_\_\_\_ paces across width times \_\_\_\_\_ length of pace (in feet) = \_\_\_\_\_ feet
- 2) \_\_\_\_\_ paces across length times \_\_\_\_\_ length of pace (in feet) = \_\_\_\_\_ feet
- 3) LOT SIZE: Multiply: length (\_\_\_\_\_) times width (\_\_\_\_\_) = \_\_\_\_\_ sq. feet

4) Do the same for all non-lawn areas:  
**Length X Width = Sq. Feet**

- House \_\_\_\_\_
- Driveway \_\_\_\_\_
- Walks \_\_\_\_\_
- Patios \_\_\_\_\_
- Gardens \_\_\_\_\_
- Plantings \_\_\_\_\_
- Tool House \_\_\_\_\_
- Swimming Pool \_\_\_\_\_
- Dog Run \_\_\_\_\_
- Other non-lawn areas \_\_\_\_\_

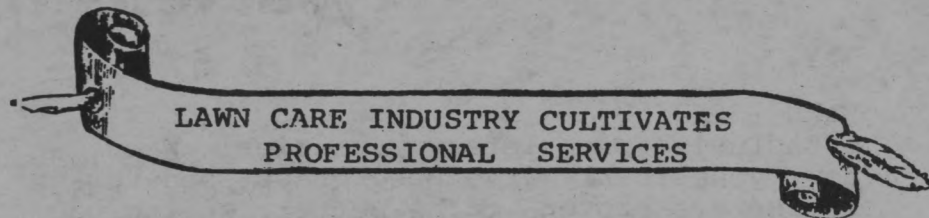
5) Add non-lawn areas..... \_\_\_\_\_ sq. feet

6) LAWN SIZE: Subtract #5 from #3 for total lawn area ..... \_\_\_\_\_ sq. feet

ESTIMATED LAWN SIZE: \_\_\_\_\_ sq. feet

NOTE: If pacing is inconvenient, you may estimate these areas. Remember that the amount of lawn care product we recommend will be based on your estimate:





Professional Lawn Care Association of Am.  
1225 Johnson Ferry Road NE, Suite B220  
Marietta GA 30067

404/977-5222

James R Brooks, Executive Director of  
PLCAA provided us with the following report:

The lawn care industry has been one of the spectacular business success stories of the past decade, growing from an annual income of \$50 million in 1970 to an estimated \$2.6 billion in 1983. This fantastic growth has been the result of the concerned homeowner, who recognizes the need for professional lawn care services.

Jack Van Fossen, President of ChemLawn Corporation, a leader in the industry, gives five reasons that many homeowners prefer professionals:

- 1) A professional gets better results than the typical do-it-yourselfer.
- 2) Lawn care firms can provide specially-designed programs more suited to a particular area than a homeowner can provide.
- 3) Chemicals will be applied the proper way at the correct times in a safe manner.
- 4) Homeowners are freed from the hassles of tending to their lawns.
- 5) A professional will give a guarantee of satisfaction.

Industry experts have noted the strong growth of the lawn care business, and they predict that sales will double in the next five years.

The new popularity of lawn care services encouraged many professionals to form an association to represent the industry and promote business ethics and professionalism. In 1979, a group of 40 lawn care businessmen established the Professional Lawn Care Association of America (PLCAA). Since then, the PLCAA has grown in membership to 450 companies and has a permanent staff housed in its new headquarters in Marietta, Georgia.

PLCAA members recognize a special responsibility to the public to understand and monitor safety and environmental factors relating to the services they perform. Each member agrees to maintain a high standard of professional service and conduct as required in the PLCAA Code of Ethics, which includes:

- \* To adhere to recognized agronomic principles of turf management.



- \* To maintain a reputation for fair and honorable conduct in relations with customers, employees and suppliers.
- \* To conduct business upon the basis of Service to the public and the lawn care industry.
- \* To abide by laws and regulations affecting the industry and promote their enforcement.
- \* To support and advance the progress of research, technology, and education in the lawn care field.
- \* To present qualifications consistent with the integrity and high standards of the lawn care industry and to scrupulously avoid any false, misleading, and deceptive statements or advertising with respect to quality or extent of service.
- \* To refrain from unfair business practices.

Members of PLCAA also actively promote professionalism within the industry by organizing and attending business seminars on state and national levels. They sponsor public seminars related to education in the lawn care field, and also recommend industry-wide standards for business and technical operations.

The PLCAA seeks to play an active role in local, state, and national legislation that affect the lawn care industry and the public it serves. Members of PLCAA promote and encourage responsible legislation that balances ecological needs with the benefits of technology in the control of harmful turf insects and diseases.

As part of its role in public education and professional conduct, the PLCAA has endorsed the Pesticide Public Policy Foundation (P3F) as the lawn care industry's pro-pesticide coalition organization. The P3F was formed as a result of recent pesticide regulation debates. It acts as a clearinghouse for pesticide regulatory information, to educate both pesticide users and the public in general.

Lawn care industry professionals are both knowledgeable and experienced with pesticides and their safe application. Members of PLCAA, through the PLCAA education programs and the P3F coalition, hope to educate the public to the many benefits of pesticides and the importance of safe and careful application.

For more information on the Professional Lawn Care Association of America, contact James Brooks at Marietta, Georgia.

For more information on the Pesticide Public Policy Foundation, call toll-free at 1-800-438-7773.



FUTURISTS ATTACK ORWELL'S 1984

World Future Society  
4916 St Elmo Avenue  
Bethesda MD 20814-5089  
301/656-8274

Ellen Dudley forwarded us the following statement:

George Orwell's famous novel 1984 has turned out to be almost totally wrong as a forecast, scholars report in a special issue of THE FUTURIST magazine.

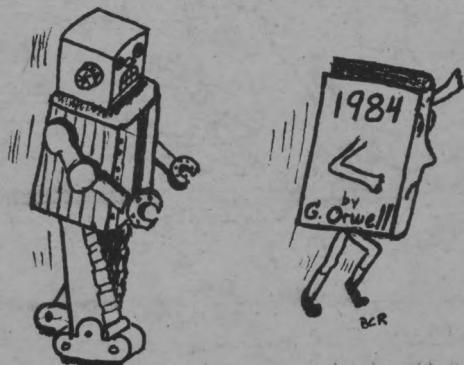
Orwell's work has had a harmful influence on young people, the scholars add, because of its unrelieved pessimism about the future.

THE FUTURIST is published by the World Future Society, an international association of future-oriented scientists, educators, government officials and others. Based in Bethesda, Maryland, the Society has 30,000 members and subscribers world wide.

"A funny thing happened to 1984 on its way to the future," says Edward Cornish, editor of THE FUTURIST. If 1984 is viewed as a prediction, says Cornish, "Orwell is so wrong as to be drummed out of the company of forecasters." There were no atomic wars in the 1950s, no Big Brother rules London, and telescreens do not spy on people in their homes.

Some admirers praise Orwell as a perceptive futurist whose purpose was to warn his countrymen against the serious risks of certain social policies. But, economist Burnham P Beckwith notes that not even these claims are justified, since Orwell was warning against the adoption of social policies akin to Stalinist communism that were never seriously considered in Great Britain.

Another Orwellian analyst, historian W. Warren Wagar, concurs. "The real world of 1984 bears little resemblance to Orwell's 1984," he says. Orwell's Inner Party, consisting of managers and technicians, could be his one harbinger of things to come, according to Wagar. "If his Big Brother is only a bogeyman from the 1940s, the myriad little brothers in their gray flannel suits are real, and they're coming our way." he says.



The pervasiveness of Orwellian terminology -- "double think," "thought police," and "Big Brother"--reinforces the illusion that 1984 conditions prevail, adding to the dependency of many readers, especially students. Cornish calls on teachers to counterbalance Orwell's distortedly pessimistic view of the future with a more positive vision, such as B F Skinner's Walden Two, an ideal community that could actually be created.

Orwell's vision of a powerful bureaucracy prompts a warning from another analyst, Gary Gappert, director of the Institute for Futures Studies and Research at the University of Akron. "The issue for the future," says Gappert, "is whether new technologies for misinformation, reduction of privacy, and the identification of dissent will reduce the effectiveness of previous constraints upon bureaucratic excess."

LANDSCAPE MAINTENANCE MARKETING BROCHURE

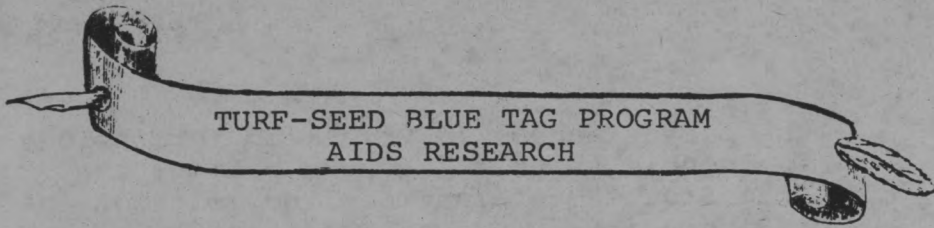


Associated Landscape Contractors of Am  
1750 Old Meadow Road  
McClellan VA 22102  
703/821-8611

An eight page, full-color marketing brochure, for the Landscape Management Contractor is now available through the Associated Landscape Contractors of America.

Developed by the Landscape Management Division of ALCA, this marketing tool affords the maintenance contractor the opportunity to distribute to potential customers a professionally designed brochure which portrays through color photographs the advantages of professional landscape maintenance. It explains what landscape management is, the advantage of contracted services, how to select a maintenance contractor; and a check list of maintenance tasks. Generic in nature, the brochure shows landscape projects throughout the country depicting quality landscape management.





Tom Stanley  
Turf-Seed Inc  
P O Box 250  
Hubbard OR 97032  
503/981-9571



- |                  |              |
|------------------|--------------|
| CBS (1)          | Shasta (2)   |
| Citation (1)     | Midnight (2) |
| Omega (1)        | N-535 (2)    |
| Birdie (1)       | Fortress (2) |
| Oregreen (1)     | Shadow (2)   |
| Birdie II (1)    | Waldina (4)  |
| Manhattan II (1) | Aurora (4)   |
| Columbia (2)     | Olympic (1)  |

Qualifying turf associations may redeem blue tags for cash at the rate of \$0.50 per point. Point values are noted in parenthesis following the named varieties and mixes. This program is scheduled to continue for 3 years as an initial run.

The purpose of the Oregon Blue Tag promotion is to boost the recognition and desirability of Oregon Certified Seed. Consumers or end users, such as golf course superintendents, lawn care professionals, landscapers, turf managers and qualifying turf organizations are encouraged to save Oregon Blue Tags that carry the variety name or seed mixture name of a Turf-Seed Inc proprietary. Varieties and mixes participating in the Blue Tag promotion include:

Turfgrass research has been the beneficiary of this Blue Tag program. Cornell University has received funds for Dr Smiley's pathological research and Dr Petrovic's turf management research.

Editors note: Congratulations to Turf-Seed Inc for sponsorship of this effort to help provide more adequate turfgrass research funding.





# Conference Topics

(Presentations of note)

Warvests

9



Fourteen topics presented at the Golf Course Superintendents Association Fifty Fifth International Turfgrass Conference January 28 - February 3, 1984 are reviewed to provide insight on the excellence of this education program. In addition, four topics presented at the Florida Turf-Grass Association Thirty First Annual Conference October 9-12, 1983 are outlined to provide timely information and authoritative subject coverage.



## 1984 GCSAA EDUCATION PROGRAM

### NATIVE GRASSES FOR COOL REGIONS

Dr Jack D Butler

Colorado State University  
Fort Collins, Colorado

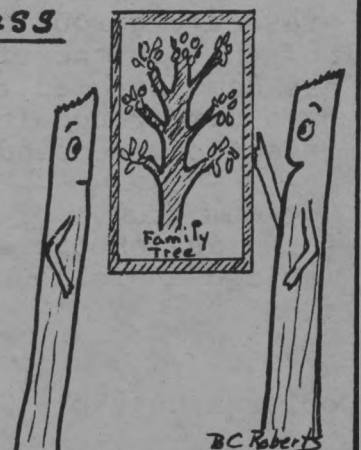
Use of so called "native grasses" for lawn and turf purposes is being considered where water is limiting and close mowing not required. Analysis of site characteristics is required to determine suitability of many grasses. Most locations that are cool and dry are ideal for the preservation of native plant material. In many areas there is already a fifty-fifty split in the use of native and introduced species, so use of native grasses is not a new concept. According to Jack Butler, the following tips will help guide the use of native grasses:

- Most native grass types are tall growing.
- Fults alkaligrass tolerates ten times the salt content of soils as Kentucky bluegrass.
- Weeping alkaligrass may be used.

- Tall fescues have a place.
- Buffalograss makes excellent cover in warm seasons where there is no water. It takes traffic quite well and can make runners up to six feet long in a year. No maintenance is required and only a couple mowings a year are needed to keep it even. Nitrogen improves buffalograss, but also aids in encroachment of other grasses during the off season.

### Blades of Grass

Am I a native?  
Why our family  
has lived here  
for generations!







## WINTER OVERSEEDING MODEL



Dr James B Beard

Texas A & M University  
College Station, Texas

Bermudagrasses are overseeded with ryegrasses to provide winter color and cover. Date of planting is of critical importance. Jim Beard has described the development of a date of planting prediction model based on soil temperature and has emphasized the following points:

- Optimum shoot growth occurs at from 80 to 95° F. (for bermudas).
- Suboptimal shoot growth takes place at from 55 to 65° F. (for bermudas).
- Hardening off of tissue is observed at temperatures within the 55 to 65° F. range (for bermudas).
- Low temperature discoloration is conspicuous between 50 and 55° F. (for bermudas).
- Shoot dormancy occurs at temperatures lower than 50° F. (for bermudas).
- Chilling injury to bermudagrasses is observed as discoloration of foliage.
- Fall preparation of bermudagrasses for colder winter weather emphasizes the production of the healthiest possible plants. This means a slow down of growth before dormancy starts. Fertilizer may be used some thirty days before dormancy and then not until one to two weeks after overseeding.
- Ryegrass seedling vigor must be checked carefully in order to assure proper shoot density. Watch for uniform development of surface cover. In College Station, Texas, climatic conditions are favorable for this type of ryegrass growth between October 10 and 20. Soil temperatures at a four inch depth cause bermudagrasses to be dormant and ryegrasses vigorous at about that time. So, this is the time to seed. Research has demonstrated that as little as one days difference in planting has an effect on overseeding.
- Optimum growth of cool and warm season turfgrass shoots and roots may be summarized as follows:

	Shoot	Root
Cool season types	60-75°F	50-65°F
Warm season types	80-95°F	75-85°F

- Ryegrass seed germinates well within the temperature range of 72-78° F. Ryegrass shoots grow well below this temperature while bermudagrass shoots grow well at warmer temperatures than this.
- When it is necessary to overseed later than usual, such that temperatures are cooler than is optimum for ryegrasses, recommended practice involves variation in the grasses used. Fine leaved fescues and bluegrasses (*Poa trivialis*) are effectively used with ryegrasses at these times.



## SELECTING OVERSEEDING GRASSES



Dr Richard H Hurley

Lofts Seed Inc  
Bound Brook, New Jersey

Sunbelt lawns and sports turf consisting of a bermudagrass base are provided with a new green surface by overseeding with one or more northern or cool season grasses. Rich Hurley draws from a wealth of experience in the evaluation of these grasses and has presented the following points and tips to aid in selecting the right grass or grasses:

- There are six different grass types that may be considered: annual ryegrass, perennial ryegrass, intermediate ryegrass, fine fescue, rough bluegrass, bentgrass.
- Annual ryegrass germinates and establishes rapidly. It is economical, but it thins during winter cold and does not wear as well as other types. Annual bluegrass contamination is a concern. The weaker annual ryegrass often allows for the encroachment of *Poa annua*, thus resulting in poor quality turf. Poor mowing (lack of clean uniform cut), heat and drought tolerance, color (light green), fast growth rate and high rate of seeding required are often listed among its liabilities.



## SELECTING OVERSEEDING GRASSES continued

- Perennial ryegrasses are also rapid in germination and establishment. They have improved mowing characteristics, darker color, more cold and heat tolerance and more tillering that creates a tighter, more uniform cover. Vertical growth is less and lower rates of seeding may be used.
- Intermediate ryegrasses are the result of a cross between annual and perennial ryegrasses. Growth characteristics are intermediate between the annual and perennial types. Thus, for lawns and golf fairway type turf, they are particularly well suited. Mowing and fertilizing costs may be as much as twenty percent less.
- Fine fescues are characterized by moderate to fair establishment rates. They have highly desirable dark green color and favorable color retention during cold weather. Fine fescues and ryegrasses are used effectively together.
- Rough bluegrass is especially shade tolerant, but not well known for its quality at times of heat and drought. Under cool, moist soil conditions, *Poa trivialis* works best. Putting quality and color retention are assets. Light green foliage, premature spring transition back to bermudagrass and disease proneness are often listed as liabilities.
- Bentgrasses produce excellent putting surfaces but are slow to establish.
- Spring transition from overseeded grass back to bermudagrass generally is of prime concern. Transition characteristics of specific cultivars vary somewhat; however, adjusting the management of bermudagrasses to improve the transition is now recommended practice. The objective is to have rate of overseeded grass recession parallel the rate of bermudagrass recovery from dormancy. When this is done, the former disappears at about the same rate as the latter comes back and high quality turf is maintained throughout.
- Mixtures of grasses to be used for overseeding might well include the following:
  - 100 % perennial or annual or intermediate ryegrass;
  - 75 % ryegrass  
25 % fine fescue

- 85 % ryegrass  
15 % rough bluegrass

- 60 % ryegrass  
25 % fine fescue  
15 % rough bluegrass

- Seeding rates of 350 pounds per acre or about 10 pounds per 1000 square feet are common for lawns. As much as fifty percent less perennial ryegrass seed is needed in comparison with annual ryegrass.



## TISSUE CULTURE UPDATE



Dr William A Torello

Univeristy of Massachusetts  
Amherst, Massachusetts

Dr Jeffrey V Krans

Mississippi State University  
Miss State, Mississippi

The science of cell and tissue culture has developed rapidly over the past twenty years with notable advances during the last ten years. Systems for study of lawngrass physiology and leading to exercises in genetic manipulation have been tested with positive results. Doctors Bill Torello and Jeff Krans have devoted significant effort to tissue culture research and have outlined the following as an aid in better understanding current progress as well as prospects for the future:

- Tissue culture involves specialized techniques. Plant parts are cultured on media that permits the generation of cell types that can be altered genetically.
- Seed tissue is placed on a gelatinous media. All substances required for plant growth are included in the media. These include: hormones, auxins, cytokinins, agar, vitamins, carbohydrates, amino acids, inorganic nutrients.





TISSUE CULTURE UPDATE continued

- From this tissue a mass of callus develops (callus is simply a quantity of undifferentiated or unorganized cells). Newly formed callus tissue may be used in subcultures. In this way, cells are cloned by transfer to new fresh or modified media at regular intervals. The media used may be liquid, such that the callus breaks up to provide individual cells that grow in clumps.
- Suspended individual cells may also be obtained. Thus, treatments are made on callus or on clumps of cells or on individual cells.
- Treatments consist of creating conditions that provide stress or develop pressure of one type or another. Salt applications for example test for drought and general stress tolerance. By using pressure selection techniques, cells that have mutated or changed to become more stress tolerant can be identified and saved, while other non tolerant cells are eliminated. Desirable cells are placed back on specially prepared media in an attempt to regenerate callus. Where this is successful, growth conditions are changed again in order to favor development of a complete plant from the callus tissue. Highly precise controls on growth conditions are required for each step from tissue to callus to cell to callus to complete plant. The process is slow at best and certain to be unsatisfactory if cultures become contaminated in any way.
- Certain changes in callus can be identified that forecast improved chances for plant regeneration. These changes appear as the start of embryo development (somatic embryogenesis). From these immature embryos formed in the callus, new plants can be generated for periods of time up to one and one half years.
- Once plants form, they are potted and evaluated further in the greenhouse and finally in the field. Differences observed are recorded and these plants used in conventional breeding programs. Perhaps sixty to seventy good turf type plants must be selected for use in planned crosses.

- Tissue culture is being used to select for heat tolerance in creeping bentgrasses. This technique saves both time and space, since several million cells can be cultured on one plate. Two to three acres would be required for culture of that many individual plants. And yet, evaluation and selection of mutated cells is just as effective as evaluation and selection of mutated plants. Screening for herbicide tolerance can be accomplished in the same way.

- In summary, the following steps are of importance:

- callus induction;
- callus maintenance;
- cell aggregate sizing;
- cell selection under pressure;
- plantlet development;
- plant screening;
- field evaluations;
- planned crosses;
- utilization.



BACTERIAL WILT OF TORONTO (C-15)  
CREEPING BENTGRASS



Dr David L Roberts

Michigan State University  
East Lansing, Michigan

During the 1970s a red leaf spot disease developed on Toronto creeping bentgrass that seemed different than other bentgrass diseases. Leaf blight often spreads to a crown rot. Infection appeared at random with other areas showing no symptoms.

The blight, or "creeping crud" as it was called, produced a red cast that progressed to a bluegreen characteristic of foliage. Leaf tips shrivelled and finally leaves turned brown.







BACTERIAL WILT OF TORONTO CREEPING BENTGRASS continued

David Roberts has conducted research on this condition and notes the following:

- Xylem vessels that conduct water up from the roots have been found clogged with bacteria at times when disease symptoms appeared.
- Healthy plants have xylem vessels that are clear and open.
- This is the first bacterial disease found on turfgrasses and has been confirmed at thirty locations in five states.
- Bacterial wilt of Toronto creeping bentgrass probably came from Europe. It has spread there. How far will it spread here? What other grasses will be infected? Answers are not known at present. Ryegrasses, bluegrasses, fescues and bentgrasses may all be susceptible.
- Much is still to be learned concerning control with antibiotics, cultural controls and host range of resistance.



- The potential for breeding turfgrasses with increased water use efficiency is considered great.
- Effects of cultural practices on water use have been well demonstrated. For example, with bluegrasses, lower mowing and lower nitrogen have resulted in ten to fifteen percent reductions in water use. This holds as long as ground cover is maintained such that evaporation from exposed soil does not increase.
- The amount of water required always depends on many soil and environmental factors. Where forty three inches of water are used each year, the amount per day would range from one tenth to three tenths of an inch.
- Bermudagrasses are recognized as drought tolerant and efficient in water use; however, there is still more to be learned.

 LOW WATER USE IN BERMUDAGRASSES 

Dr Arden Baltensperger

New Mexico State University  
Las Cruces, New Mexico



How drought tolerant are bermudagrasses? How efficiently do these grasses use water? What type of turf performance may be expected for each increment of water used? What are the best varieties? These questions have been of concern to Arden Baltensperger and although many answers are not to be had at present, the following points are helpful in understanding low water use:

- Comparisons of water use by two cool season grasses and two warm season grasses indicate:

tall fescues .....	42 inches
bluegrasses .....	39 inches
bermudagrasses .....	27 inches
St Augustinegrasses.	25 inches

These yearly amounts vary with soil and climatic conditions, but are good relative indicators.

- Much more information is required on water use efficiency.

 TURFGRASS IRRIGATION EFFICIENCY 

Dr M Ali Harivandi, Farm Advisor

University of California  
Alameda, Santa Clara and Contra Counties

Turfgrasses require water for three important processes - absorption, translocation and transpiration. In addition to these, some water is lost to maintain tissue hydration. Ali Harivandi stresses the following aspects of turfgrass irrigation efficiency:

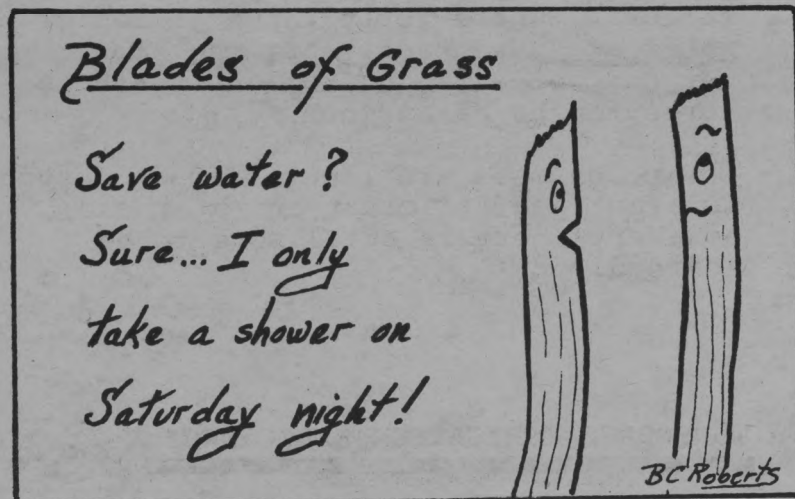
- Evapotranspiration of warm season grasses is less than cool season grasses.
- Practical turfgrass management in the 1980s dictates that restrictions in water use are necessary in some locations. Should irrigation be set to replace 100 %, 75 % or 50 % of evapotranspiration?



## TURFGRASS IRRIGATION EFFICIENCY continued

- On tall fescues, perennial ryegrasses and bluegrasses, irrigation set at 100 % and 75 % of evapotranspiration produced turf of about equal quality. Fifty percent of evapotranspiration water loss replaced by irrigation was not enough.
- In southern California trials, the method of irrigation made a difference. With sprinklers, water applied at 100 % or 80 % evapotranspiration adequately met turfgrass needs. Sixty percent was not enough. Subterranean irrigation was not as effective.
- Water applications can be reduced and acceptable quality lawns maintained. In order to bring about reductions in irrigation, climatic, variables, soil properties, turfgrass characteristics including root depth, drought tolerance and evapotranspiration properties must be considered.

- Bentgrass breeding for fairway turf is receiving increased priority.
- Screening for disease resistance continues. Dollar spot trials are of interest. There is some indication that where more fungicides are used, there is more disease requiring use of fungicides. It looks like there is an increase in diseases for which there is no identification. Bacterial wilts are new.
- Quality golf turf should have a place for improved Colonial bentgrasses. There is potential for these to have stronger rhizomes, better seed propagation, and favorable adaptation to southern and transition regions of the country. Vegetative material has been collected from low maintenance turf such as cemeteries in southern states. Two hundred and forty of these are under field evaluation.
- In order to obtain a high population turf, rhizomes must be actively developed. Forty three thousand two hundred progeny are being screened for rhizomes. An attempt is being made to learn more about the genes that control rhizome growth and development.
- Seed set is important. Often poor selfing seed sets are observed. Now it is possible to increase seed set by reducing temperature.
- Quality of pollen, checks of chromosome number, Cobalt 60 radiation of seed and rhizome nodes, methyl bromide control of off types, machine harvest of seed, cleaning of thrashers and seed processing equipment and planting of seedlings with tweezers represent the diversification of research detail necessary for turfgrass breeding success in the 1980s.



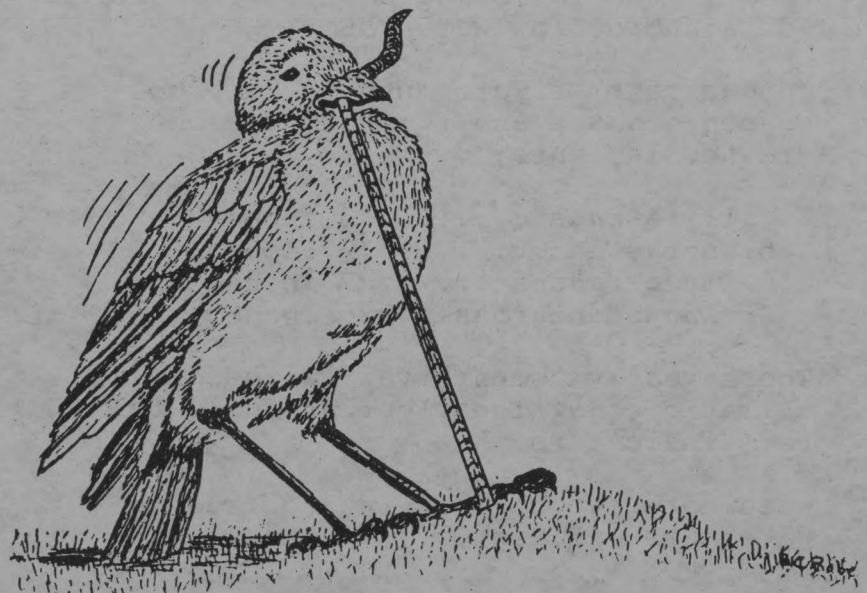
## PENN STATE TURFGRASS BREEDING UPDATE

Dr Joseph Duich

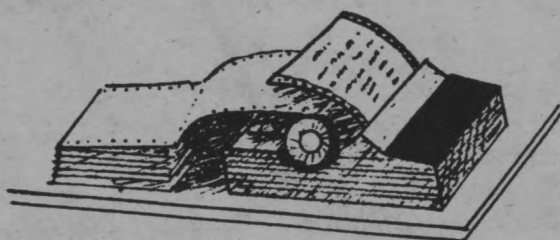
Pennsylvania State University  
University Park, Pennsylvania

The center for excellence in bentgrass breeding in the United States has been and continues to be Pennsylvania State University. Names such as Penncross and Penneagle are known and respected throughout the world. Thus, it is important to keep in touch with new developments in Joe Duich's program. He reports the following:

- Looking past Penneagle, what is ahead? With the degree of variability evident in bentgrasses, prospects are favorable if seed production can be made adequate. At present, three selections have high ratings.







**TURFGRASS COMPUTER MODELING**



Dr Thomas W Fermanian

University of Illinois  
Urbana, Illinois

The ecosystem consists of the total interaction of all living and nonliving components of any given location. On a golf course, it's grass, trees, golfers, as well as rocks, soil and water. Each and every element in the ecosystem reacts with all the others in some way. Turfgrass computer modeling provides an opportunity to better understand these complex relationships. Thomas Fermanian has put together a few of the key factors that help explain how this all works:

- Grass, microorganisms and macroorganisms affect one another in the production of quality turf and each rely on nonliving components of the ecosystem, such as air, light, water and minerals.
- Ecosystems are made up of many local habitats. Different species perform differently in these environments and relate to other organisms differently. Thus, each local habitat is unique.
- Ecosystems involve several levels of organization from individual whole grass plants to populations of grass plants to communities of grasses and other plants.
- Populations of grass plants increase or decrease depending on the existence of favorable or unfavorable growth conditions. In order to maintain highest turfgrass quality, a steady state condition (a stable population) is needed. Management practices are directed toward meeting this goal. For example, root development is affected by mowing height. Added fertilizer stimulates growth rate and greens up foliage. Separate or different practices, such as these (mowing and fertilizing), also relate to each other and alter root and foliage responses.

- Computer modeling helps to clarify the picture of population dynamics. A growth formula is developed to help understand effects of instantaneous change on turfgrass quality. Many inputs and outputs are evaluated in relation to population dynamics.
- Complexity of a model depends on perspective. Components looked at in small segments seem less complex. Add them all together and degree of complexity increases such that computer analysis is essential.
- Computer modeling is a research tool that allows for the simulation of the ecosystem. Mathematics necessary for modeling is well worked out and crop models, other than turfgrass, have proven of great value. Thousands of generations of turfgrasses can be studied without ever sowing a seed.



**ANTHRACNOSE UPDATE**



Dr Joseph M Vargas Jr

Michigan State University  
East Lansing, Michigan

Golf course greens and fairways are kept disease free by use of fungicides. Timing of application including frequency are of recognized importance. Joe Vargas has developed a model that evaluates environmental factors such as temperature, relative humidity and leaf wetness. On the basis of these measurements, accurate predictions of disease activity are made. The following outline provides an update concerning anthracnose, and related computer modeling:

- An infection model for anthracnose consists of the development of an index, actually a formula, that is programmed in a microprocessor.



## ANTHRACNOSE UPDATE continued



- Automatic recording of soil temperature, relative humidity and leaf wetness are made. This data is entered into the formula to determine a three day index. This predicts the infection level and specifies when a fungicide spray is necessary.
- Tests of the system have provided accurate information for disease prevention by use of fungicides.
- In other work, the fact that annual bluegrass loses roots as seedheads form has been used to determine when to spray with Embark as a seedhead suppressant. Time of application is of critical importance.
- Computer modeling also can assist in the proper timing of insecticides, herbicides, fertilizers and water. Research in these areas will continue to be of great benefit to turfgrass managers.
- Cultural and management practices help control *Poa annua*. Provision of free drainage to eliminate wet spots helps. Aerification to relieve compaction helps. Overseeding to thicken turf stands helps. Controlled irrigation so that over watering is eliminated helps.
- Use of preemergence chemicals can be effective in control of *Poa annua*. Chemicals for both cool and warm season grasses are readily available.
- Postemergence chemicals are available. Ethylfumisate and endothal have worked well in many locations. Endothal programs involve fertilizing the turf first. A week later, endothal is applied. Evaluate control one week later. After the second week, reseed and topdress. Eighty five to ninety percent control of *Poa annua* should be obtained. Endothal may be used on bluegrass and bentgrass alike with only a week to ten days loss of color.




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 POA ANNUA UPDATE
 

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Dr Roy L Goss

Washington State University  
Puyallup, Washington

According to Roy Goss, annual bluegrass is a weed and should be treated as a weed. Unfortunately, turf managers often have to live with it. There are some important facts to remember about *Poa annua*:

- *Poa annua* sets seed within forty five days from the development of a new plant.
- *Poa annua* dominates because of apathy and status quo in management practices. Upper management decisions may favor living with it. Superintendent's confidence in methodology of control may be lacking. There is often inadequate selling of control programs.
- Nutritional programs may help control *Poa annua*. Nitrogen on moderate to low side; phosphorus - low; potassium - high; and sulphur - high.
- Disease control of basic turfgrasses keeps *Poa annua* out.




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 NATIVE GRASSES FOR SOUTHWESTERN TURF
 

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Dr William R Kneebone

University of Arizona  
Tucson, Arizona

Many grasses have survived for centuries in the southwest. According to Bob Kneebone, the southwest is that area west of interstate thirty five and south of Kansas. Irrigation is required, but water is scarce and costly. A full cover of native grass never has existed in the southwest. A few points to remember about grasses in this region include:

- Buffalograss consists of both male and female plants. It was included in turfgrass trials conducted by the USDA in Washington DC as early as 1890. Seed treatment helps break dormancy of buffalograss seed. About half the seed produced is used for turf. It makes good fairway and rough type cover. Buffalograss does not withstand much rainfall; it becomes diseased. It may become mixed with bermudagrass; both require water to stay green in the summer. Buffalograss may be improved through breeding and research on this is developing slowly.



## NATIVE GRASSES FOR SOUTHWESTERN TURF continued

- Blue grama is a bunch grass that has a weak vegetative spreading characteristic. There is potential for improvement of blue grama; turf types need to be developed.
- Seed of bluffalograss and blue grama come from native stands ranging from South Dakota to Texas. Excellent lawns can be obtained with these grasses in locations where they are well adapted.
- Curly mesquitegrass is a grass with real lawn potential. It spreads by stolons and has good stolon development. It has been included in trials as far east as Washington DC. This grass is propagated vegetatively. Seed production traits need be identified and developed through breeding. It does well in hot dry areas of the southwest. Winterkill is common further north. At elevations of two to five thousand feet, hardiness is satisfactory. Curly mesquitegrass requires about fifteen inches of water a year to keep green.
- Desert saltgrass (*Distichlis stricta*) has both male and female plants that can be used for turf. Also, plains bluegrass could be developed to form turf types. Both these grasses have potential, but in general, the native grasses of the southwest leave much to be desired in terms of turf forming properties.
- Potential exists for new zoysias with: better winter color, more rapid rate of cover formation, softer leaves, and reduced thatch. At the same time, other desirable growth characteristics can be retained.
- Phenotypes have been selected, imbreeding of these selections started, reselections made and the previous two steps repeated to yield desirable traits. Selections then must be crossed to develop types that produce high quality turf. These are evaluated and the most desirable hybrids selected for release.
- Results of these breeding programs have shown that color differences and rate of spread differences are great. Many thousand individual seedlings have been screened and eleven selected for further evaluation. One is ready for introduction. It has been named El Toro Zoysia. It is rapid in establishment and has rapid recovery from injury (requires only one third the time of other zoysias). It is medium in foliage texture and produces less thatch. It has a shorter winter dormancy and is more rust resistant than other zoysias. It still will take three months to develop one hundred percent cover, using sprigs.
- The potential in zoysia breeding has just been touched. In 1982, a plant exploration trip to the Orient resulted in the identification of two new species. High salt tolerance was found and the potential for seed production looks better. Plant types that are cold tolerant, finer textured, faster establishing, with shorter periods of winter dormancy and having less thatch and deeper roots give much promise for new and better zoysias for lawns and turf.



### ZOYSIA BREEDING UPDATE



Dr Victor B Youngner

University of California  
Riverside, California

Considerable interest in zoysiagrasses is maintained year in and year out. With three species, japonica, matrella and tenuifolia, to select from, there are many desirable growth characteristics, including: drought tolerance, low nitrogen requirement, pest resistance, heat tolerance, wear resistance, slow growing, little seedhead formation. There are some liabilities and these include: long winter dormancy, slow establishment, thatch formation, difficult to mow, slow to heal from injury. Meyer, Emerald and Midwest zoysias are improved cultivars available for vegetative propagation. Even these go off color early in the fall and have a long period of winter dormancy. Victor Youngner has provided a zoysia breeding update and notes the following :



May the excitement, color and freshness of Spring be with you every day of the year.





## SEED LABEL UPDATE



Dr Edward E Hardin, Head

Crop Science Department  
Oregon State University  
Corvallis, Oregon

A package of lawngrass seed must contain a seed label that provides necessary information to help the customer evaluate the quality of the product. Dr. Edward Hardin discussed this most important topic with direct reference to single component packages, multiple component packages and quality of seed.

With all single component products, the following information must be available:

- Name and address of the firm that is the labeler;
- Origin of the seed (such as Oregon);
- Lot number of the seed (fields where grown);
- Percent kind of seed or kind and variety (bluegrass or fine fescue);
- Percent other crop seed (other than weeds);
- Percent weed seed (common types);
- Percent inert matter (immature or empty seed);
- Name and number of noxious weed seeds per pound (state laws differ as to what is a noxious weed);
- Percent germination (percent of pure seed that will grow to a normal plant);
- Percent hard seed (live seed but unusually slow to break dormancy and/or germinate);
- Test date (last date of germination test);
- Net weight (of seed in package).

With all multiple component products, the following information must be available:

- Kind of seed or kind and variety along with origin and germination - for example:

Merit	Oregon	85
Manhattan	Oregon	90
Tall fescue	Missouri	90

11/82

- Undesirable crop seeds (may be as bad as weed seeds )
- or
- objectionable crop seeds
- or
- restricted noxious seeds
- or
- restricted noxious weed seeds;

(These may include bermudagrass, red top, bentgrass, annual bluegrass, rough bluegrass, meadow fescue, tall fescue, orchardgrass, velvetgrass, timothy.)

- The word 'mixture' must show on the label;
- Components of the mixture must be listed in order of predominance;
- The oldest germination test must show (fifteen months may be allowed for Kentucky and annual bluegrass, perennial ryegrass, bentgrasses and Chewings, red, hard and tall fescues - all others must be five months).

Recent changes in the Federal Seed Act have brought about the elimination of designation for coarse or fine texture. Now the Act is being rewritten so as to keep all regulations such that they are fair to the seed trade and provide essential information for the use of the lawn seed.

LAWN GRASS MIXTURE		LOT XXX
FINE TEXTURED GRASSES		GERM %
39.20	in in in in in in	85.00
19.40	in in in in in in	90.00
9.80	in in in in in in	85.00
9.70	in in in in in in	85.00
9.70	in in in in in in	90.00
COARSE GRASSES		
9.65	in in in in in in	90.00
OTHER INGREDIENTS		
0.35	in in in in in in	
1.65	in in in in in in	
0.35	in in in in in in	
NET WEIGHT in LBS		
ALL TESTED JAN 1984		

## FOR INFORMATION

about Membership in The Lawn Institute

Write to: Eliot C Roberts, Director

P O Box 108

Pleasant Hill TN 38578









# FLORIDA TURF-GRASS ASSOCIATION

## 31<sup>ST</sup> ANNUAL CONFERENCE

 STATE OF THE LAWN CARE INDUSTRY 

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Jim Brooks

Professional Lawn Care Association of  
America  
Marietta, Georgia

Jim Brooks, Executive Director of the Professional Lawn Care Association of America, has provided a clear picture of the current situation related to the Lawn Care Industry. Width and breadth of interpretation have led Jim to quote from Charles Dickens Tale of Two Cities:

"It was the best of times, it was the worst of times".

Included under the notion that these are the best of times, Jim relates the following:

- The lawn care industry is approximately fifteen years old.
- At present, there are some eight to twelve thousand companies involved in lawn care, depending on classification of services provided.
- In 1982 gross sales amounted to \$1.85 billion dollars. This represents a 23 % increase.
- In 1980 there were 3.5 million residential lawns serviced. This is only thirty percent of the potential market.
- In 1982 there were 8.0 million residential lawns serviced. This represents 20 to 25 % of the potential market.
- Reasonable profit margins of 15.8 % are recognized on a national basis.
- Annual expenditures of \$0.5 billion for supplies and equipment is common.
- Professional lawn care is the fastest growing segment of the turfgrass market.

- The Professional Lawn Care Association of America is about four years old and has enjoyed a thirty percent increase in membership in the last year. Contracts, specifications and insurance programs have all aided in developing professionalism.

But, according to Jim, these are also the worst of times. He gives the following explanation and look at what's ahead:

- Government regulations are increasing. Three to four years ago most of these were federal and there was pretty much only one entity to deal with. Since then, and particularly in the last two years, as more responsibility has focused back to fifty state and eighty thousand local governments, the task of even keeping current on new regulations and concerns is nearly impossible. Each of these entities may pass laws that affect lawn service to some degree.
- New regulations on the books or being formulated at the present time include:
  - As long as thirty year record keeping of every transaction;
  - Prenotification of all property owners adjacent to lawn care customers;
  - Establishment of buffer zones;
  - Posting of warning signs before application of pesticides. Many of these are directed to both people and pets and direct both to keep off for as long as 72 hours;
  - State and/or county and/or town bans on 2,4-D and/or other pesticides;
  - Permit requirements that may involve public hearings and notices sent by certified mail;
  - Placement of warning bells on pesticide application trucks.



## STATE OF THE LAWN CARE INDUSTRY continued

nical expertise are to be provided through this foundation. As important as accurate data is, more than this is required because many of these issues are based more on emotional than on technical issues.

The list of states, counties and towns with new laws and considering legislation is long and growing daily. Action is brisk in the northeast population centers. The states of Massachusetts, New York, Maine, California, Wisconsin and Louisiana have been particularly active. Now, some twenty six states have serious regulatory matters covered by law or legal action is pending. There are over 500 pieces of legislation with some 200 of these likely to have major consequences on the lawn and turf industry.

Emphasis used to be focused on the properties of the product. Now, the focus is on the user of the product and the ability of these persons to use the product without harm. A fear mode has come into being in that we now fear what might happen long before the fact. To a large extent, this is a product of increases in population density. Judges are likely to rule that fear is a matter for which compensatory settlement is justified. The whole idea of compensation provides motivation for individual involvement. A utility company is known to have settled out of court for ten thousand dollars, not for damages caused but for fear that damages might happen.

Public attitudes have changed and the task of reversal is a major challenge to the lawn care industry. Trends are set and are continuing to become more firm. People who are frightened want to scream, not listen. This makes negotiations difficult, but none the less these are the people in need of help.

Public fear has intensified as a result of publicity related to Paraquat and Dioxin. The notion that this is not my problem is misleading. The issues of pesticide safety are complex and partly because of this, many segments of the lawngrass industry have stood by quietly far too long.

Unfair regulatory matters must be of concern to the professional and consumer alike. In September of 1983 the Pesticide Public Policy Foundation Inc was formed. A network of local organizations can help orchestrate a shift from a reactive posture to a more positive and constructive public relations mode. Arborists, lawn care specialists, golf course superintendents and other groups must get together to become involved in these public affairs matters. Legal, political and tech-

A national organization alone has little prospect of generating successful results. However, a national effort in behalf of local groups can be effective. Local involvement is of critical and fundamental importance. In many instances, it's not a matter of winning total support, but more a case of trying to make continual and gradual progress.

Jim has described the purposes of 3-P F as follows:

- Organize interested parties at the state level;
- Respond to local issues;
- Bring people together for mutual assistance;
- Continually reinvent the wheel through direct consultation regarding risk/benefit ratios.

Indeed, as Jim has so well described, these are the best of times; the worst of times. Perhaps our greatest concern should be the possibility that in the chronicle of future historians there will appear the additional note, "Now it's all gone".



### TURF COMPUTER MANAGEMENT SYSTEM



Gwen Stahnke

Lake City Community College  
Lake City, Florida

Students at Lake City Community College in Florida, under the direction of Gwen Stahnke, Instructor, have worked on a turf computer management system for use by golf superintendents. Instructor Stahnke has provided the following overview.

First, golf superintendents have a unique job. They are "Jacks of all trades" - supervisor, organizer, agronomist, landscape architect, teacher, accountant, as well as specialist in irrigation, drainage, equipment, pesticides, chemicals, conservation, environmental regulations and public relations. The value of all this expertise comes close to \$190,000 a year if performed by consultants in these several areas. The question is, how cost effective are all these many inputs of the superintendent ?



## TURF COMPUTER MANAGEMENT SYSTEM continued

Computer systems can provide practical, useful output and help to optimize time to obtain greatest benefits. The place to start is at the low end, or with record keeping. The Lake City College program involves five categories:

- financial management,
- cultural practices,
- equipment,
- chemicals,
- irrigation.

The development of record keeping systems is strictly a matter of academics, knowing what is done and recording the pertinent data related to each event.

The second level of computerization is the development of a job optimization system. This is a matter of keeping track of the various items involved in golf course management and of setting priorities. These are concerned with specific jobs to be accomplished, inventory items, budget items, and matters pertaining to employees. Many jobs are repetitive or cyclical (mowing, spraying, irrigation). These characteristics are entered into the computer.

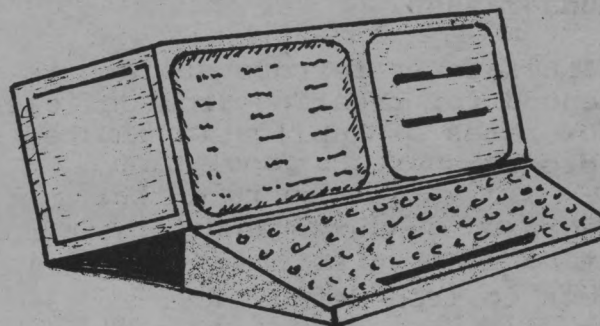
Inventories include lists of equipment and parts so that the computer knows of items needed ahead of time. There are always budget constraints; these must be identified. Employees are listed by name and ranked by level of production or yield. It is important to have well qualified people performing each task that is done.

There are always emergencies that must be met. Storms hit and trees are down. Special projects of high priority to golfers often are not planned with adequate lead time. With the aid of the computer, jobs can be reprioritized so that the best possible conditions for play result. Over 55,000 different tasks can be identified. Some 200 employees may be involved and numbers of different budget items may run as high as 500. All this can be organized systematically by computer with the following advantages:

- work is divided fairly,
- supervisors are freed to supervise,
- provides a constant and continuing line item budget account,
- provides for maximum flexibility and adjustments,
- data for records and reports can be presented in tabular or graphic form.

Computer systems are no longer theoretical, they are highly practical. Estimated savings in operating costs can amount to some 30%. Work crews may be reduced say from 10 to seven, and the seven employees programmed for eight hours a day with no slack days. There is an initial expense in acquiring both hardware (the computer equipment itself) and software (specific programs that run the computer). These costs vary considerably and easily run between \$5000 and \$8500 for the hardware. Software may cost nearly as much for broad base systems with multiple uses.

Then these must be individualized for specific golf course conditions. There are some 13,000 golf courses with prospects for turf computer management. The field is wide open and the rewards well worth the effort.



### MANAGING MICRONUTRIENTS



Dr George H Snyder

Florida Agricultural Research & Education Center  
Belle Glade, Florida

Many soils across the country, and in Florida in particular, are becoming deficient in micronutrients. Some of these have been cropped to the extent that available supplies have become limited. Others are deficient because of their natural mineral composition. We should be concerned about the levels of six micronutrients - iron, copper, manganese, molybdenum, zinc and boron.

Characteristics of grass, soil and irrigation water all influence micronutrient adequacy for fine turf. George Snyder lists the following items as of importance in the management of micronutrients:

- With some irrigation water, thirty five inches of application is equivalent to one ton of lime.



## MANAGING MICRONUTRIENTS continued

- Soil pH affects micronutrients. As pH goes up, the availability of micronutrients generally goes down.
- Iron availability is affected by phosphorus. High levels of phosphorus may interfere with iron.
- Iron deficiencies are common with centipede grasses, bahiagrasses and St Augustine grasses.
- Manganese deficiencies are found in bermudagrasses and St Augustine grasses.
- Copper deficiencies are mostly noted in bermudagrasses.
- Iron sulfate or ferrous sulfate is recommended for treating iron deficiency. Follow rates of application listed on the product.
- Bahiagrass tops grow faster than roots can take up iron so this species is subject to iron deficiency.
- Some soil fungi oxidize iron and make it less available; this may intensify iron deficiencies.
- On very acid soils, iron becomes soluble and may be leached away from the root zone.
- Spot tests may be made on lawns from time to time to see what is lacking. Those spots responsive to a small test application indicate the general need for micronutrients in the area. Fertilizers containing micronutrients are generally readily available.



## TURFGRASS SELECTION FOR RECREATIONAL AREAS



Dr Harry G Meyers

Turf Consultant  
Gainesville, Florida

In Florida emphasis is being placed on the upgrading of recreational turf. Bahiagrasses and bermudagrasses are used. From Harry Meyer's experience, the following tips are worthy of note:

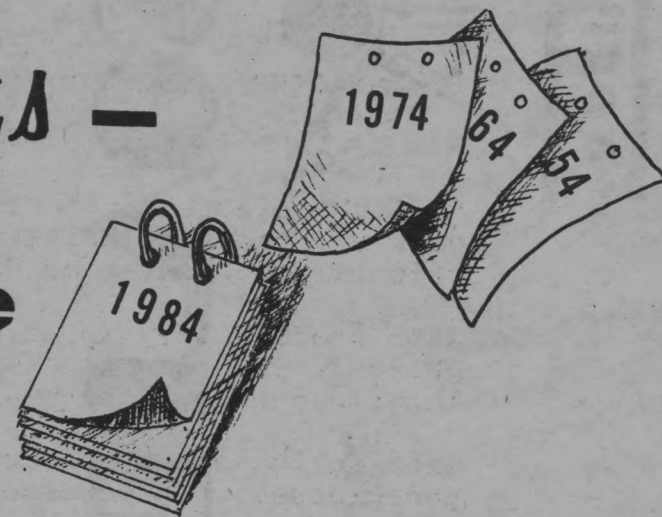
- Bahiagrasses:
  - Argentine bahiagrass has an open type of growth. It does not produce a dense sod, but it is a good utility grass. It does well with less irrigation.
- Bermudagrasses:
  - Tiflawn (57) is recommended for athletic fields.
  - Tifway (419) is also good. It is relatively slow to establish from sprigs. Count on twelve weeks.
  - Tifgreen (328) is best for putting greens and is also excellent for baseball infields. (Tifway (419) is better for baseball outfields).
  - Tifway II is a new variation of 419. This improved mutant developed from research with Gamma radiation is more dense in the mature stand and thus resistant to weeds. It is more frost tolerant and greens up earlier in the spring.
  - Bermudagrasses make good use of water and fertilizer in developing quality sports turf.





## Turfgrass Wetting Agents -

## Thirty Years Tried and True



by

**Eliot C Roberts**

In the mid 1950s, I made several visits to the Montclair Country Club in northern New Jersey to talk with Carl Treat, Superintendent, about his new method for improving water penetration on greens. He was using surfactants or wetting agents to make the water slip more readily through the thatch and on into the root zone. Results were spectacular !

Elevated portions of greens that had consistently been subject to wilt because irrigation water ran off instead of in now held the water so that it seeped down where roots could obtain it. In addition, the more regular wetting of the thatch itself seemed to help decompose it, or at least retard its formation. And with all this came less disease and, of course, great improvements in the quality of putting surfaces. I was impressed with what Carl had accomplished.

About that time I met Robert A Moore, President of Aquatrols Corporation of America. This was a relatively new firm based in New Jersey and producing Aqua-Grow®. Bob Moore, a chemical engineer, had experience with municipal wastes, composts and soil conditioners. He became interested in changing water to make it wetter in the early 1950s and some five years later had a product packaged in quart cans for department and garden stores.

In discussing these early days with Bob at the Agronomy Meetings last August, he was quick to admit that home gardeners did not understand what this new product was all about. The old saying, "Nobody buys an umbrella on a sunny day" fit well. It looked like the professional market with knowledgeable superintendents would be more receptive.

Golf courses in Florida caught on to use of wetting agents to keep dew off the greens in early morning. In Massachusetts, the Clapper Company became interested and several Milorganite distributors were instrumental in helping superintendents learn about surfactants. Dr Ray Lunt in California and Dr Steve Toth at Rutgers in New Jersey conducted some of the first studies with these materials. By that time I was located at Iowa State University and research on wetting agents was initiated there. Since then, most turfgrass scientists have obtained some research familiarity with surfactants as water use has become more of a limiting factor in production of both lawn and sports grounds.

More efficient penetration of water through thatch and into the soil has helped control disease, increase rooting, and improve rate of seed germination. Physiological effects on grass plants have been favorable with no detrimental or phytotoxic developments when used as directed. There are differences between ionic and nonionic wetting agents. The nonionic type is recommended for lawns and turf.

At present there are some six well known companies that offer a surfactant product for turf. Perhaps as many as fifty regional or local firms have a piece of the market, according to Bob Moore. Most of the wetting agents used in agriculture are applied to turf and to ornamental plants. The amount is about equally divided between the two. Only a small amount is used in food crop production. Product testing and evaluation continue in an effort to learn even more about the theory and practice of soil wetting.

One point has been clearly demonstrated - surfactants have become a respected part of water management. Companies that provide service in this area have benefited from wetting agents - thirty years, tried and true.





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