

WETTING AGENTS —

They Reduce Soil, Moisture Tensions, Enable Water to Circulate More Freely and Carry Nutrients to Plant Roots

Robert A. Moore*

*This is a condensation of a speech that Moore gave at the recent annual conference of the Mid-Atlantic GCSA.

Correct or incorrect use of water can mean life or death to turf. For centuries people have dealt with water as if it were sacred — as if nothing could be done to change it. Yet, in 1959, a number of supts. in areas with adverse weather conditions produced turf that responded differently. Their turf was denser, more disease resistant, better rooted. It was turf that was tougher in relation to wear, temperature, humidity, and wilt. It was produced from freely moving, more available water and nutrients — grown consistently under low soil-moisture-tensions.

We have seen many slides and charts with response curves. These should, and someday will, show at least two sets of response curves — one for normal moisture tensions; the other for low moisture-tensions.

These tensions can be changed — and when changed, the turf produced responds differently. Clearly two factors stand out as fundamental in growing superior turf:

1. the rate at which water displaces itself in a soil;
2. the availability and rate of utilization of water and nutrients as evaluated in terms of soil-moisture tensions.

With any soil condition and moisture content, what has to be proved is that a plant's physiology is affected by the soil-moisture tension of its environment. Tension of this environment is directly affected by non-ionic wetting-agents.

Most of us are familiar with the mechanical aspect of non-ionic wetting-agents where the reduction in tension



"PMAS" - Crabgrass & Disease Control

"CADDY" - Economical Liquid Cadmium Fungicide

"SPOTRETE" - 75% Thiuram Fungicide

"C-531" - The old reliable Cadmium, Zinc, Calcium Fungicide

"PM2,4-D" - The all around weed Killer including Silvercrabgrass control.

"ALL-WET" - Added to water it allows quicker and deeper penetration... enables soil to retain needed moisture.

"THIMER" — A broad-spectrum wettable powder fungicide and crabgrass killer containing phenyl mercury and thiram.

"CAD-TRETE" a broad-spectrum wettable powder fungicide containing cadmium and thiram.

"SUPER METHAR" — the new "AMA" liquid crabgrass killer.

DISODIUM METHYL ARSONATE
PRODUCTS FOR CRABGRASS CONTROL
METHAR 80 METHAR 30 METHAR 30
 Powder Powder Liquid
 80% DSMA 50% DSMA 18.9% DSMA
 American Research Associates Inc., - Subsidiary

W. A. CLEARY CORPORATION
 NEW BRUNSWICK, N. J.

Merion Blue • Zoysia • Kentucky Blue • Bents
 — Penn Cross Bent Sod Now Available —

DEARIE AND STRUD SOD NURSERY, INC.

Route 2 - Box 100 - ELGIN, ILLINOIS

SH erwood 2-5030

GERALD DEARIE
 LEhigh 7-4394

JULIAN STRUD
 TErrace 2-7513

PHONE: HUNTLEY 2452

LOUIS SCHACHTNER

Distributor

BLACK DIAMOND HUMUS SOIL

HUNTLEY, ILLINOIS

H. & E. Sod Nursery, Inc.

191st St. (Flossmoor Road) & Crawford Ave.
 P.O. Box 140, Tinley Park, Ill. - Phone: SY 8-2210

Merion & Kentucky Blue Grass Sod
 Toronto C-15 Bent Stolons & Sod at 1/4" height
 Sure-Gro Lawn Food 12-6-6

GREENS GREEN?

Liquid MOR-LIFE 12-4-8

30 gal. Drums

5 gal. Pails

4-1 gal. Jugs

with

CHELATED IRON

OR PLAIN

KAHN BROS. CO.

Chicago 9, Illinois



MILORGANITE

USED AND PREFERRED BY
 GOLF COURSES EVERYWHERE

C. E. STEWART

Civil Engineer

Irrigation, Drainage, Water Supply, Pumping Plants
 Design — Reports — Consultation — Supervision
 18357 Homewood Ave. Homewood, Illinois

WE STOCK PARTS FOR

Worthington Gang Mowers — Jacobsen Mowers-PGM's
 Briggs & Stratton-Clinton-Koehler-Lauson Engines

SKINNER SPRINKLERS

HENRY BALL WASHERS

GREENS AIR SPECIAL

ONAN GENERATORS

MC CULLOCH CHAIN SAWS

CALL FIELDBROOK 9-3257-58

ILLINOIS LAWN EQUIPMENT INC.

9919 W. 143rd PLAGE
 ORLAND PARK, ILL.

of water allows water to penetrate more readily into problem areas such as hard spots, thatch, localized dry spots, banks, etc. Here, we can easily get lost in a tangle of dissension as to what the problem is and how it should be solved. Should we change our fertilizer program? aerify? aerify and apply soil-wetting-agents? should we renovate try new grasses? is the problem one of soil composition?

Dr. D. B. Peters, at the USDA experiment station in Urbana, Ill., studied the effects of soil-moisture-tension. His findings showed that soil-moisture-tensions control:

1. movement of water and nutrients in soil;
2. the uptake of water and nutrients by the plant;
3. that nutrient starvation set in under high tension conditions before water starvation (or wilt.)

Thus a plant's growth can be determined by the tension of the soil moisture in which it lives. Before, it was shown that these tensions can be controlled by non-ionic wetting-agents.

Nursery Stock Greatly Improved

Let's turn to the ornamental nursery field where a great deal of information is now available and more will be published this year. What happens to nursery stock grown under low soil-moisture-tensions? One big advantage in the nursery field is that a person is able to take plant material and follow its development over a period of months or years. Plants grown consistently under low-moisture-tensions make better growth, are denser, more disease wilt resistant and develop better root systems.

You can take the best prepared soil, physically change its moisture, and you will get a result that is utterly new. These same results are being obtained by the few supts. who have maintained their turf under low-moisture-tensions.

These results raise such questions as: What does constitute a proper soil mixture for a green? What is the most effective fertilizer program? What grasses are most desirable? To each question we can point to case after case where changing the physical characteristics of water gives us a new insight into our use of this basic ingredient of life itself. This requires a new look at all the good maintenance practices that have been developed over the years — a reevaluation of them in terms of low-moisture-tensions.

Program Must Be Followed

It can truthfully be said that this is a new philosophy of growing plant material. That is under low soil-moisture-tensions. But these results do not happen overnight! A program must be followed. A blend of non-ionic wetting agents should be used according to this general plan:

1. Every year apply a total of 24 to 32 ozs. of non-ionic wetting agent per 1,000 sq. ft. Each application should be at the rate of 8 ozs. per 1,000 sq. ft.
2. Under severe conditions apply 8 ozs. per 1,000 sq. ft. at monthly intervals during the season.
3. To promote deeper rooting, make both an early spring and fall application.
4. For maximum performance keep your program on schedule.


These rates of application are based on using a blend of non-ionic wetting agents that is 100 per cent active ingredients. Your average yearly cost for such a program should be in the neighborhood of \$2.00 to \$3.00 per 1,000 sq. ft. In terms of all greens, collars, approaches and tees on an average 18 hole course, the cost would be less than \$450 a year.

What can be expected from following such a program? After consistently growing under low-moisture-tension conditions, supts. have essentially eliminated syringing. They report very little evidence of wilt. Their fungicidal program and control are more effective. Their turf is denser, more resistant to wear and deeper rooted. During 1959 they had had more play than ever before and their greens were better than ever.

Our thinking shouldn't be confined to past experiences where soil wetting agents were used sparingly. This is not a one shot proposition — it is a program.

**Need FERTILIZER ?
Get MILORGANITE !**

**Call DAVIS...
RODney 3-6363**



GEORGE A. DAVIS, INC.
5440 Northwest Highway — Chicago 30, Ill.

MILLBURN Peat Moss

SAVES TIME! SAVES MONEY!

PROMPT DELIVERY ON BULK TRUCKLOADS

Write, wire or phone Central 6-4246 for details

MILLBURN PEAT CO., INC., 111 NO. WABASH AVE., CHICAGO 2, ILL.



**QUALITY TURF
FOOD TO MEET
EVERY TURF NEED**



G and F — 10-6-4 High in Organic Nitrogen
SACCO Supreme — 15-5-5 UF Nitrogen
Wedo 6-10-4 with 2,4-D

Special 10-3-7 Low Phosphate — NUTRO 8-8-8 Pellets
NUTRONITE 10-0-0 All Organic

**Geo. A. Davis - Distributors - Joe Kelly, Rep.
SMITH-DOUGLASS CO., INC. - Columbus, Ohio**