The Palmer Overseeding Method

Arnold Palmer and Jim Ellison, Bay Hill's Superintendent, are very careful when choosing an overseeding mixture. Some of the world's top golfers have played at Bay Hill in Orlando, and they've come to expect certain standards.

To help maintain the Bay Hill image, Palmer and Ellison use Marvelgreen. And so do some other prestigious courses:

- Fairfield Harbor Country Club, NC
- Hounds Lake Golf Course, SC
- Augusta Country Club, GA
- Jekyll Island Golf Course, GA
- Marshwood at the Landings, GA
- Amelia Island Plantation Golf Course, FL
- Killearn Estates Golf Course, FL
- St. Andrews of the Gulf, MS
- Eden Isle Country Club, LA

Marvelgreen is also being used at the PGA TOUR Tournament Players Club, Ponte Vedra Beach, FL; Bobby Weed, Superintendent.

Marvelgreen is a product of Lofts Inc. and Lofts/Great Western, Inc.

Lofts Inc.
Bound Brook, NJ 08805 • (800) 526-3890
For your golf course, good crabgrass control just isn't good enough.

Because what may look like crabgrass might actually be goosegrass.

That's why so many superintendents now use the one pre-emergence herbicide that stops both, season-long: CHIPCO® RONSTAR® herbicide.

**NOTHING BEATS RONSTAR HERBICIDE ON GRASSY WEEDS.**

Other herbicides may take care of your crabgrass for you. But when there's goosegrass on your course too, you need the added protection only RONSTAR can provide.

RONSTAR effectively controls crabgrass, and it's the unchallenged leader in goosegrass control, as the 9-year test summaries in the chart show clearly.

And RONSTAR gives excellent control season-long, regardless of weather, because it won't leach from the soil.

And since RONSTAR is highly selective, it won't weaken your turf through root pruning.

**CRABGRASS OR GOOSEGRASS?**

**CONTROL BOTH**

*Balan®, Retasun®, Dacthal®

94%

94%

94%

94%

Summary of 9 years of testing conducted by University Experiment Station and Rhône-Poulenc personnel.

IT'S SAFE ON ORNAMENTALS, TOO. RONSTAR is so selective, it's safe not only on perennial bluegrass, perennial ryegrass, ber-
Goosegrass or Crabgrass?

With RONSTAR.

Rhône-Poulenc Inc., Agrochemical Division, Monmouth, Junction, NJ 08852

Please read label carefully, and use only as directed.

If you suspect that crabgrass isn't the only grassy weed problem on your course, play it safe. Use RONSTAR this season, for excellent, season-long control of both crabgrass and goosegrass all over the course.
Quality is Still the Most Important Element.

EVERY PROFESSIONAL KNOWS THAT QUALITY IS STILL THE MOST IMPORTANT ELEMENT IN ANY COMPLETE TURF CARE PROGRAM. Let's face it - low price is no substitute for poor product. Challenged by tough turf problems together with rising costs, you just can't afford to play games with products that don't perform consistently and economically. You need quality turf products you can depend on.

You need COUNTRY CLUB and GREENSKEEPER PROFESSIONAL TURF PRODUCTS from LEBANON.

COUNTRY CLUB AND GREENSKEEPER FERTILIZERS ARE OF THE HIGHEST QUALITY HOMOGENOUS GRADES MADE TODAY - GIVING YOU MORE FEEDING POWER FOR YOUR DOLLARS. What makes homogenous fertilizers better? Each pellet contains a chemically-balanced combination of N-P-K, regardless of the material's sizing and coverage. The plant root needs only to come in contact with one pellet to receive a balanced diet. Consequently, you get even element distribution.

WHATEVER YOUR TURF NEEDS, THERE'S A COUNTRY CLUB/ GREENSKEEPER PRODUCT SPECIALLY FORMULATED TO MEET THEM - ALL WITHIN YOUR BUDGET! Backed with over 35 years of extensive university and end-use testing, we offer you the most complete line of fertilizers and control products available on the market as well as a full range of S.C.U. blends and chemicals.

LEBANON CHEMICAL has the flexibility to formulate exactly the analysis your turf tests indicate to be most beneficial. We are fully equipped to manufacture your private label requirements when needed.

EVEN COUNTRY CLUB AND GREENSKEEPER PRODUCT IS BACKED WITH A TOTAL COMMITMENT TO SERVE YOU BETTER. Our technically experienced staff is eager to assist you in solving turfgrass problems and will design a complete turf care program for you! Plus you're supported by LEBANON'S solid network of distributors throughout the country that ensure you of product availability and prompt service.

THIS SEASON DEPEND ON COUNTRY CLUB AND GREENSKEEPER FERTILIZERS!

Call Today for more complete information.
Distributor inquiries invited.

(continued from page 40)
Iron Sulphate ..... 18% to 20% Fe 25% to 28% Fe\(^2\)O\(_3\)
Iron Chelate ..... 6% to 12% Fe 8% to 17% Fe\(^2\)O\(_3\)
Fritted Iron ............. 14% Fe 20% Fe\(^2\)O\(_3\)
Activated Sewage
Sludge ............. 4% to 5% Fe 5% to 7% Fe\(^2\)O\(_3\)

Zinc — Associated with plant enzyme systems and certain metabolic processes
Sources
Zinc Sulphate .......... 36% Zn 44% ZnO

Copper — Necessary for chlorophyll formation. Acts as a catalyst in some plant processes.
Sources
Copper Sulphate .... 25% Cu 31% CuO
Copper Oxide ..... 50% to 75% Cu 62% to 93% CuO

Boron — Necessary for normal cell division and protein formation. Aids setting of flowers and fruit.
Source
Borax ..................... 11% B 35% B\(^2\)O\(_3\)

Molybdenum — Plays a part in nitrogen utilization.
Source
Sodium Molybdate .......... 39% Mo 58% MoO\(_3\)

Chlorine — Present in plant tissue but not considered a necessary element in a fertilizer program. Concern is given to an excess, rather than a deficiency.

Now that we have covered the essential elements and the fertilizer materials that supply these elements, I would like to supply some information on manufactured fertilizers. As you know, manufactured fertilizers are the most common source of plant nutrients. They are identified by analysis numbers and/or by brand name. The common practice is to refer to the commercial fertilizers by the analysis numbers whereas many specialty fertilizers are referred to by brand name. In either case, the fertilizer will have a guaranteed analysis which is printed on a tag or may be printed on the bag.

The analysis numbers, such as 16-4-8 give the percent nitrogen, available phosphoric acid and water soluble potash in a fertilizer mixture. The first number (16) always refers to nitrogen, the second number (4) available phosphoric acid, and the third and last number (8) water soluble potash. If a mixed fertilizer did not contain all three of the primary plant foods, then a zero would be indicated in the analysis for the missing element. For example, an 8-0-8 fertilizer would be one that did not contain available phosphoric acid. A 0-14-14 would not contain nitrogen.

The guaranteed analysis, as required by the Florida Fertilizer Law, gives the percent of the primary, secondary and trace elements, if present, in a mixed fertilizer. It also gives a breakdown of the nitrogen into nitrate, ammonical, water soluble organic nitrogen and water insoluble organic nitrogen. It also lists the materials that were used to manufacture the fertilizer. In Florida, a mixed fertilizer must contain a minimum of 16 units or 16% plant food (the minimum may vary depending on
state laws), if it is to be offered for general sale. Most fertilizers today contain more than the 16% minimum. The question is often asked, why the low percentages of plant nutrients in a mixed fertilizer. Why is it not possible to buy fertilizer containing 100% plant food? Plants use fertilizer nutrients in a combined form. In checking, you will note that the materials containing plant nutrients in a combined form as listed under the various elements are relatively low in plant food. It is not possible to take materials that are relatively low in plant food, combine them in a mixture, and come up with a fertilizer containing 100% plant food or high percentages of plant foods. When formulating a mixed fertilizer, the manufacturer will use the best materials available at the most favorable cost per unit of plant food.

Most quality fertilizers for turf contain some organic nitrogen. Fertilizers that contain organics usually are referred to as a 25% organic or 50% organic etc. This percentage refers to the percent organic nitrogen in the fertilizer. This does not refer to the amount of organic material (pounds of organic) in the mixture, but rather refers to the portion of the nitrogen content that derived from organic materials. To determine the percentage of organic nitrogen in a fixed fertilizer, add the amount of water soluble organic and water insoluble organic guaranteed in the mixture and divide by the total nitrogen, then multiply by 100. Listed below is the nitrogen breakdown from the guaranteed analysis (Florida) for an 8-4-6 fertilizer that contains 25% natural organic nitrogen. This is an example showing how the organic nitrogen content can be figured.

Example: 8-4-6 analysis

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Nitrogen</td>
<td>8.00%</td>
</tr>
<tr>
<td>Nitrate Nitrogen</td>
<td>2.00%</td>
</tr>
<tr>
<td>Ammoniacal Nitrogen</td>
<td>4.00%</td>
</tr>
<tr>
<td>Water Soluble Organic Nitrogen</td>
<td>0.20%</td>
</tr>
<tr>
<td>Water Insoluble Nitrogen</td>
<td>1.80%</td>
</tr>
</tbody>
</table>

\[
\text{Organic Nitrogen} = \frac{0.25 \times 100}{16} = 25\%
\]

The formula for a mixed fertilizer is quite often confused with the analysis. The formula actually is used in the manufacturing process to arrive at the particular analysis and type mixture desired. "Filler" is another term used in connection with mixed fertilizers. It is a low plant food or non plant food material that is used to standardize weight in some low analysis all chemical mixtures. High analysis fertilizers and mixtures that contain high amounts of natural organic nitrogen contain very little or no filler.

The cost of a fertilizer is determined by the analysis and the materials used to formulate a particular mixture. A fertilizer that contains good slow acting organics and secondary and trace elements would cost considerably more than a fertilizer with an identical analysis but that...
did not contain these ingredients. Fertilizers can have identical analysis numbers but vary in price and quality and the results produced. Price comparisons should be made based on pounds of product of comparable quality and analysis or the pounds of fertilizer (comparable quality) needed to supply the amount of actual plant food desired for a given area, regardless of whether the fertilizer is in a pulverized, pelletized, lightweight, soluble, or liquid form. Other factors such as labor saving, ease of application, and results should also enter into the final decision as to which would be the best to purchase.

The forms of fertilizer that are available include pulverized, which is a mixture of dry fertilizer materials and can be made in small quantities, (a few tons at a time), or pelletize or granular fertilizers that are manufactured by mixing solutions and dry materials together and that are made in large quantities (several hundred tons at a time) in a continuous process. Bulk blend mixtures are made up of a mixture of granular materials physically mixed together. Solubles are made with fertilizer ingredients that readily dissolve in water and that can be applied with a sprayer or through an irrigation system. A liquid fertilizer is one that contains the soluble ingredients in a liquid form for spray application or by injection through an irrigation system.

Application rates for fertilizers and particularly fertilizers for turf, are usually determined by the nitrogen content. Normally from one to two pounds of N (nitrogen) per 1,000 sq. ft. would be applied for feeding of a regular dry fertilizer. Soluble or liquid fertilizers are usually applied at lower rates per feeding, with more applications for season or year than dry fertilizers. A hundred pound bag of 6-6-6 contains 6 lbs. of N, whereas a hundred pounds of 16-4-8 contains 16 pounds of N. To determine the amount of fertilizer to apply, divide the percent nitrogen into 100, which will give the pounds of product necessary to apply one pound of N. Multiply this figure by the number of pounds or fractions of pounds of N desired, to obtain the rate to use. An example, using a 16-4-8 fertilizer, is listed below.

Example: 16-4-8

\[
\begin{array}{c|c}
6.25 & 100 \\
16 & \\
96 & 40 \\
40 & 32 \\
80 & 80 \\
80 & 6.25 lbs. 16-4-8 will apply 1 lb. of N per 1,000 sq. ft. If 2 lbs. of N is desired, multiply by 2, which equals 12.5 lbs. of 16-4-8
\end{array}
\]

For your information, several common fertilizer materials and some popular mixed fertilizers are listed below by analysis with the number of pounds of product necessary per 1,000 sq. ft. to apply from a low rate of \(\frac{1}{2}\) lb. of N, up to a high rate of \(2\frac{1}{2}\) lbs. of N per 1,000 sq. ft. Chemical materials and soluble or liquid fertilizers should be applied at the lower rates with more frequent applications.

RATES FOR FERTILIZERS LISTED ARE AS FOLLOWS

Amount of Product to Apply Per 1,000 Sq. Ft.
To Obtain Amount of Nitrogen Listed

(continued on page 47)
Fertilizer Analysis

| N  | P  | K  | 5-4-0 10 Lbs. | 20 Lbs. | 30 Lbs. | 40 Lbs. | 50 Lbs. | 6-3-0 8.3 | 16.6 | 25 | 33.2 | 41.5 | 6-6-6 8.3 | 16.6 | 25 | 32.2 | 41.5 | 8-8-8 6.25 | 12.5 | 18.75 | 25 | 31.25 | 10-10-10 5 | 10 | 15 | 20 | 25 | 12-4-8 4.16 | 8.33 | 12.5 | 16.66 | 20.82 | 16-4-8 3.12 | 6.25 | 9.4 | 12.5 | 15.62 | 20-5-5 2.5 | 5 | 7.5 | 10 | 12.5 | 20-0-0 2.5 | 5 | 7.5 | 33.5-0-0 1.5 | 3 | 4.5 | 45-0-0 1.1 | 2.2 | 3.3 |

In addition to straight fertilizers, there are also a number of fertilizer-pesticide combination products that are available for use on turf grasses. These products are regulated by the Florida Fertilizer Law and only those combinations that have been approved can be offered. The Law limits the amount of pesticide that can be included in a mixture and requires that a caution statement appear on the label for the product. The directions for use must also be in line with federal and state recommendations. If the mixture will be sold across state lines, then it must also be registered in each state where it will be sold as well as in Washington (federal), and must comply with all state and federal regulations as far as labeling and use is concerned.


Lofts Presents Rutgers $65M In Royalties

Bound Brook, NJ — Lofts, Inc. recently awarded Rutgers University royalties totalling more than $65,000. Jon Loft, Lofts President and Chairman of the Board, presented the check at the 1984 Rutgers Turfgrass Field Day. The check was accepted on behalf of Rutgers University by Dr. Lowell A. Douglas, Chairman of Rutgers' Department of Soils and Crops.

Mr. Loft credited the unusually high royalties to the increased demand for high-quality turfgrasses. The check represented royalties on 1983 harvested turfgrass seed developed by Rutgers University ... including RAM I and Mystic Kentucky bluegrasses; and five perennial ryegrasses — Palmer, Repell, Diplomat, Yorktown and Yorktown II.

Royalties play a vital role in the research and development of new turf varieties. Through the marketing efforts of companies like Lofts, these improved varieties are made available for commercial and public use.

For additional information, please contact Lofts Inc., Bound Brook, NJ 08805. (201) 356-8700.
LANTANA PEAT & SOIL
1123 State Road 7
Boynton Beach, Fla.
732-4116
1-800-433-5552
STERILIZED SOILS • TOP DRESSING
TOP SOIL • MULCH • POTTING SOIL
"Keeping Golf Courses Green"

ED HAITHCOCK
DARRYL REJKO
SONNY SMITH
1-800-432-2214

Distributors for
Howard Fertilizers
QUALITY FERTILIZERS & CHEMICALS
FOR THE TURF INDUSTRY

18300 S.E.
Loxahatchee River Road
Jupiter, Florida 33458

Du Cor Chemical
Corporation
P.O. Box 13298 - Orlando, Florida 32809
Phone (305) 859-4390

Your Sand Man
E. R. JAHNA IND., INC. 102 E. TILLMAN AVE.
LAKE WALES, FLA. (813) 676-9431
New CHIPCO® MOCAP insecticide gives you the kind of grub control you need...control that's fast and effective.

CHIPCO MOCAP starts killing grubs as soon as you water it in. Other products take hours or days to work. And all that time, grubs continue to feed, destroying your turf.

For best results, apply CHIPCO MOCAP before grubs start to feed—usually in August or early September. But if grubs get the jump on you, you can still take control quickly and effectively with fast-acting CHIPCO MOCAP.

And fast action is just part of the story. CHIPCO MOCAP gives effective control of a broad spectrum of grubs.

CHIPCO MOCAP KILLS OTHER TURF INSECTS, TOO.

CHIPCO MOCAP knocks out a broad range of surface insects, including chinch bug and sod webworm. And if nematodes or mole crickets are destroying your turf, you can destroy them, too, with CHIPCO MOCAP.

For the fastest, most effective control of grubs and other turf pests, include CHIPCO MOCAP in your turfgrass management program. CHIPCO MOCAP from Rhône-Poulenc Inc., makers of CHIPCO® 28019 and CHIPCO® Ronstar® is a new addition to the CHIPCO line of fine products for turfgrass protection.

For more information write to Rhône-Poulenc, CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852

CHIPCO MOCAP RUBS OUT GRUBS.

CHIPCO, RONSTAR and MOCAP are registered trademarks of Rhône-Poulenc.
ATLANTIC SULPHUR COATED UREA

For That Deep Long Lasting Green
Without Excessive Growth
ATLANTIC SULPHUR COATED UREA
Is The Answer!

Ask Your Atlantic Representative for the
Formulations Available

ATLANTIC Fertilizer & Chemical Co.
Homestead, Florida
In Dade 247-8800 All others 1-800-432-3413

Jon Loft, Chairman Lofts, Inc. presents check for $65,232.26 to Rutgers University. L to R in rear are Dr. R. Hurley of Lofts, Drs. H. Indyk, R. Duell, C.R. Funk, L.A. Douglas and R. Engel all of Rutgers University.