

FLUF: A LIQUID ORGANIC FERTILIZER

FLUF is a new innovative fertilizer which runs counter to the grain of fertilizer concepts. Traditionally, all granular fertilizers contain 50 to 100% slow release organic nitrogen, while all liquid fertilizers contain inorganic fast release nitrogen with high burn potential and no residual. However, FLUF is combination of the best parts of both types. It has the ease of application of liquid fertilizers, and the slow release organic nitrogen of the granular fertilizers. Another marvelous feature of FLUF is that it can be mixed with fungicides and herbicides and sprayed without watering in, and still not burn the turf.

It does not require much imagination to come to the conclusion that FLUF has got to be the ideal fertilizer for greens and tees during the hot summer months.

Liquid fertilization is rarely used on Northern Golf Courses, and yet it is commonly used on Southern Golf Courses of Florida, California, Arizona. As a matter of fact, fertigation, which is a method of injecting liquid fertilizer through the irrigation system, is a new revolutionary process which is being heralded as the most economical way of fertilizing golf courses in the South where year-round play requires a perennial green turf.

Because of the dormancy experienced on Northern turfgrass, the golf course superintendent, as a creature of habit has always applied a rather heavy fall granular fertilizer to greens and fairways. This is a traditional fertilization treatment.

Come late Spring, he would like to apply another granular fertilization treatment of a slow release nitrogen which would carry him through the summer. But by experience he has learned that no organic fertilizer breaks down so uniformly that he can expect green turf all summer long. The superintendent grapples with the dilemma of whether or not to fertilize in the heat of the summer. If so, with what and how much?

FLUF appears to be the answer. Its chemistry is similar to Nitroform or the organic nitrogen found in the O. M. Scott or Lebanon granular fertilizers. They are all forms of urea-formaldehyde polymers. When urea and formaldehyde are dissolved in water and the solution is acidified, a chemical reaction takes place. They combine to form methyleneureas. If we designate U for urea and F for formaldehyde we can picture the polymers in the following fashion:

POLYMER	NAME
U-F-U	methyleneurea
U-F-U-F-U	dimethylenetriurea
U-F-U-F-U-F-U	trimethylenetetraurea
U-F-U-F-U-F-U-F-U	tetramethylenepentaurea
U-F-U-F-U-F-U-F-U-F-U	pentamethylenhexaurea
U7F6; U8F7	hexa and heptamethylenureas
U9F8; U10F9; etc.	octa and nonamethylene ureas, etc.

WATER SOLUBILITY

Cold Water Soluble (CWS)

CWS

CWS

CWS

Cold Water Insoluble (CWINS)

CWINS

Hot Water Insolubles (HWINS)

Depending upon the acidity and the temperature, a variety of mixtures of CWS, CWINS, HWINS polymers can form. Thus, the dissimilarity of the commercial ureaforms occur. All these forms are slow release organic nitrogen forms which require bacteria to break them down.

Logically, the Cold Water Solubles (CWS) break down first, followed by the Cold Water Insolubles (CWINS), and then by the hot water insolubles (HWINS). A good blend of these three is required for uniform nitrogen release.

The U.S.D.A. has come up with an index as a standard to allow the consumer to know what type of slow release he might expect. It is called the activity index (AI) which is a measure of the percentage of CWINS in each product.

Comparing Nitroform with FLUF we have the following ratings. Nitroform has an activity index of 40, which means that 40% of all the water insoluble polymers are Cold Water Insoluble, the remaining 60% are Hot Water Insolubles. That is why it takes a full year before all of the nitrogen is released from Nitroform. On the other hand, FLUF has an activity index of 75 to 80%, which means that only 20 to 25% of FLUF WINS are not water insoluble. All of its nitrogen is released within 90 to 120 days.

Counting all the water soluble and water insoluble ureaform polymers in FLUF, the liquid dispersion contains 42% ureaform or approximately 4 pounds per gallon. This calculates out to 1.7 lbs. of actual nitrogen per gallon. A pint of FLUF contains approximately 1/4 lb. of N, and 8 ounces contains about 1/8 lb. of N. It is recommended that every time the greens and tees are sprayed with fungicides that 1/2 pint to a pint of FLUF should be added per 1000 sq. ft. If one sprays 10 times, one would be putting on 1.25 or 2.5 pounds of N per 1000 sq. ft. uniformly over the summer months and obtain the most consistent nitrogen release attainable. This is the most ideal way of summer feeding greens and tees. One should also be reminded that small increments of magnesium, iron and potash should accompany the FLUF applications to assure a strong turgid growth. This can be done by adding four ounces per 1000 square feet of TRUGREEN, a chelated blend of all these elements; epsom salts, iron sulfate and potassium sulfate. The growth response has been phenomenal from this program and is delightful to experience.

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John Strickland, president of the Maryland Turfgrass Council, hands Dr. Fred V. Grau, president of the Musser Foundation, a check for nearly \$4,000. This represents the proceeds from the Third annual Mid-Atlantic Turfgrass Boosters Tournament held at Congressional C.C. This money is used for Turfgrass Research Fellowships at turf-oriented agriculture experiment stations.



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WHY ACCIDENTS HAPPEN!

Accidents are generally thought to be a result of bad luck or an act of God. However an unsafe act, a hazardous condition or some combination of the two must occur before an accident can happen. Of these two conditions, unsafe acts or work practices are a contributing factor in 90 percent of all accidents. Here are some of the factors which can cause workers to commit errors leading to accidents:

LACK OF PROPER TRAINING can be a major cause of accidents. Employees must be trained to do their jobs safely, and care must be taken to ensure that they continue to perform as instructed.

IGNORANCE OF A HAZARDOUS CONDITION can result from lack of experience or poor communications.

INDIFFERENCE OR LAZINESS resulting from fatigue, a poor relationship with the boss or a lack of motivation can make an employee take an unsafe short cut.

BAD EXAMPLES set by other workers can be imitated by less experienced employees. New workers have a higher injury rate than more experienced employees.

UNDUE HASTE caused by supervisory pressure, an overloaded schedule or a desire to complete an unpleasant task as quickly as possible can make workers bypass important safety steps or processes.

MAKING EMPLOYEES MOTIVATE THEMSELVES. You can't motivate your employees, but you can change the work climate so employees motivate themselves. It's a matter of creating an effective work climate and making your managerial expectations clear.

Offer clear directions so that employees know what to aim for, rather than forcing them to guess and perhaps make poor decisions. If they know that personal attention is being given to their work, they will take more pride in it.



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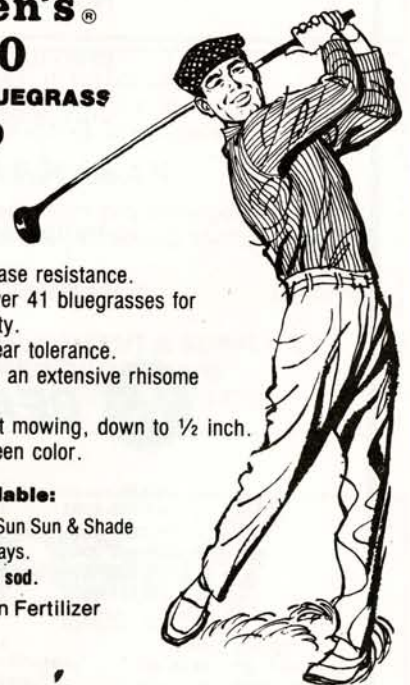
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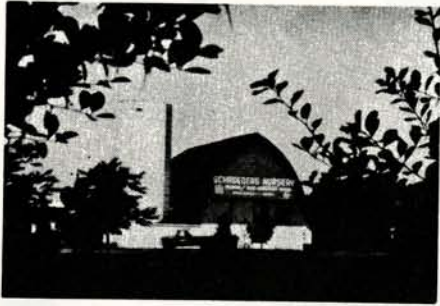
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SINCE 1934

APODACA, FLORIDA TEAM WIN GCSAA GOLF TITLES

ORLANDO, FLA.--Mike Apodaca, superintendent of Horizon Country Club, Belen, N.M., finished with a three-under-par 69 on Walt Disney World's tough Palm Course to win the Golf Course Superintendents Association of America's annual golf championships Jan. 28-29.

Apodaca's final round, coupled with a first-day score of 73 on the nearby Magnolia course, put him six strokes ahead of his nearest challenger, Richard Stuntz, superintendent of Ames (Iowa) Country Club, and seven strokes up on the third place finisher, Ron Hill, superintendent of Amelia Island Plantation, Amelia Island, FL. The 36-hole championship has been a GCSAA tradition since 1938.

A Florida Golf Course Superintendents Association foursome composed of Fred Klauk, defending champion Dan Meyers, Hill and Bill Whitaker won the team championship with a combined score of 449, narrowly defeating a Carolinas Golf Course Superintendents Association team composed of Joe Maples, Sam Hilton, Dave Powell and Hal Hicks. Another Florida team, this one from the Central Florida Golf Course Superintendents Association, took third with a score of 469. That team was composed of Joe Ondo, Dennis Parker and Jim Ellison.

Apodaca, who had been among the top finishers in the past four GCSAA tournaments, finally claimed the top prize, a silver replica of the U.S. Open Championship Cup donated in 1954 by the United States Golf Association.

John Schoellner, superintendent of Essex County Country Club, West Orange, N.J., took net honors with a score of 136, and Vaughn Barker, superintendent of Fore Lakes Golf Club, Murray, Utah, shot a 155 to repeat as seniors champion.

It was the third straight tournament in which a team from Florida came away with top honors. This year's foursome won their places on the team in three regional qualifying tournaments, and their names will be engraved on an antique silver trophy donated by the Scottish Golf Greenkeepers Association in 1972. The chapter championships, in which teams combine their best three scores, have been a GCSAA tradition since 1946.

In the accompanying ladies tournament, which was played Jan. 28-29 on Walt Disney World's Lake Buena Vista course, Audrey Hitch of St. Louis shot a 172 to beat Diane Apodaca of Belen, N.M. and Mary Roush of Mason, W. Va. Jeanne Lynn took net honors and

Dorothy Karr won the Calloway category.

The tournament pot was sweetened this year as the Exide Corp., manufacturers of golf cart batteries, inaugurated a long-drive contest during the tournament. Karl Olson of Salt Lake City, Utah, won the mens division with a drive of 317 yards, and Audrey Hitch won the ladies' event with a drive of slightly more than 200 yards. Mr. and Mrs. Arden Smith, Fayetteville, N.C. were the winners in a drawing sponsored by Exide for an expense-paid trip for two to the U. S. Open at Pebble Beach this summer.

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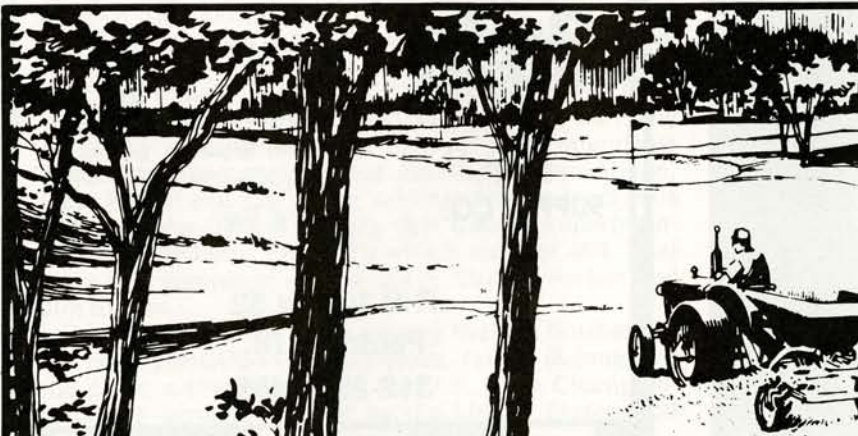
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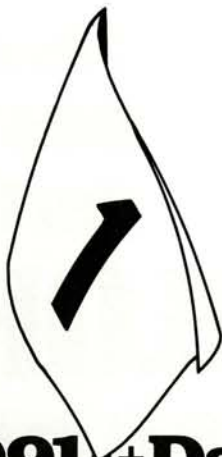
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*Daconil 2787 is a registered trademark of Diamond Shamrock Company.

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