

Urea-forms with 38 per cent N contains No filler. The other 62 per cent is carbon, hydrogen, oxygen without which the nitrogen would be usefull.

Urea-form have been on the market for 10 years. No one knows how to improve them, so don't look for any great changes in urea-form for turf.

Urea-forms reduce chances of error — release labor for other jobs, reduce cost per 1,000 sq. ft. of supplying N according to needs of plants.

Urea-form users say that they do not have the turf troubles they used to have. They say that less water is needed and at wider intervals. Turf is firmer with less disease. They get about the same amount of clippings each time they mow.

Burton reported interesting findings on nematodes with urea-forms.

Urea-forms are being used under roses, in flower and vegetable gardens and in horticultural work for trees and shrubs. Now it is being tested on farm crops -- cotton, lettuce, celery, and sugar beets -- results to date are very favorable.

Urea-forms are tailored to turf - -

This discussion has been on the basis of broader education with respect to urea-forms. Missing has been information on points of difference between materials produced by different methods of manufacture. It is

important that these differences be recognized even though they shall not be discussed here. Users are encouraged to make side by side tests to determine suitability to conditions.

#### — EDITORIAL —

This past summer many of our Superintendents in the Chicago area have started the use of increased amounts of Potash K<sub>2</sub>O. The theory in their thinking has been that it helps to fight disease as well as strengthen the plant structure. Additional applications are being made in conjunction with fungicide treatments at the rate of one pound of Potassium Sulfate or Muriate of Potash per green. This doesn't sound like much but if you figure that most golf courses spray their greens with fungicides at an average of 17 times per year this would mean about 8½ pounds of actual K<sub>2</sub>O per green per year, or 1½ pounds per 1000 sq. ft. per year. This in conjunction with the normal applications of Potash in the regular fertilizer program will bring the annual amount to about five pounds.

This is fine for greens and tees where the clippings are removed but in most cases it would be an excessive amount for the fairways and only promote the clover population. Of course if soil samples indicate the

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need for this amount of Potash you should apply this amount.

I would like to give a resume of an article printed in the U.S.G.A. Journal and Turf Management in the February, 1962 issue. The article was written by Mr Charles E. Corley, Agronomist, Southwestern Region, U.S.G.A. Green Section. The title of his article was, "Potassium, the Mysterious Macro-Nutrient".

Through scientific investigations and practical observations we have learned that plant uptake of potassium is often higher than any other mineral and that a deficiency of Potassium will give a marked decrease in growth and if the Potassium level is low enough, even death of the plant may occur.

**FUNCTION OF POTASSIUM.** It is pointed out in this article some of the functions of Potassium are as follows: (1) Synthesis of carbohydrates (2) translocation of carbohydrates (3) reduction of nitrates and synthesis of proteins particularly in meristematic tissues and (4) normal cell division. It is suggested that Potassium plays a part in maintaining turgor in plant cells as well as increasing disease resistance.

Most of the Potassium exists in the plant in the form of inorganic salts, but does not enter into the structural characteristics of the plant.

Usually when plants are growing rapidly, protein synthesis must necessarily be high. If carbohydrates

are used up in protein synthesis when high amounts of available Nitrogen are present, stems and plant tissue may not be stiff even though there is an abundant amount of Potassium present in the plant. However, if the Potassium level is low or deficient then carbohydrate production cannot proceed and therefore utilization of Nitrates can be cut to a minimum. The importance here then is that little or no response to nitrate fertilization can definitely be associated with Potassium levels or uptake.

It is believed that Potassium plays an important part in photosynthesis, however, no real direct evidence showing the exact nature of this function has been uncovered. It is believed that Potassium increase the uptake of CO<sub>2</sub> by the Chlorophyll molecule. This, of course, would increase the amount of photosynthate. If you have ever noticed the greening of turf-grass after additions of Potassium you might explain it by the next statement, "it is also thought that Potassium perhaps by way of activating enzymes plays a definite role in the manufacture of Chlorophyll molecules."

#### SOME FACTORS AFFECTING POTASSIUM UPTAKE.

It has been known for some time that soil aeration or the amount of Oxygen present in a soil is very important upon Potassium absorption and uptake. It has been shown that lack of Oxygen presents a greater inhibitory effect upon the uptake of Potassium than

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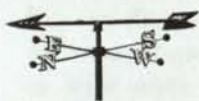
any other factor. This aeration factor does not affect the Potassium but produces its effect upon the plant root. As we have pointed out previously, there is no definite evidence to point out that in all cases it is a lack of Oxygen which causes this affect or whether it is toxic build up or concentration of Carbon Dioxide.

The factors of aeration, lack of Oxygen or build up of CO<sub>2</sub> becomes more important during July and August. This is when aeration produces its greatest affects not only on these factors, but also upon water penetration. You can now see why it becomes extremely important that we carefully observe our aeration principles during this period of time. Another important

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factor that is often crippling during this period is that we tend to keep our soil saturated with water. This not only excludes Oxygen from the soil, but does not allow the Carbon Dioxide to have free exchange with the atmosphere. This could explain the short roots during this critical period of the season.

Potassium applications should be made during the cooler periods of the year with only light applications being made during June, July and August. Large applications of Muriate of Potash or Potassium Sulfate can result in severe burning during these months. Therefore any applications of these compounds made during the hot weather should be very low and particularly when it is in combination with reasonably high levels of Nitrogen.

Ted Woehrle

**FIELD DAY — PURDUE UNIVERSITY  
SEPTEMBER 10 AND 11**

Dr. William H. Daniel of the Agronomy Department of Purdue University has planned another fine Field Day on September 10 and 11, in conjunction with the Midwest Regional Turf Foundation. He will show us some work done on plant selection and some new control for lawn weeds.

**PETE VOYKIN HAS HOLE IN ONE**

On Saturday, July 14, Pete had a Hole in One at Idelwild Country Club on the 9th hole. It is a sporty 135 yd. par 3.

Pete has been playing fine golf all year. To date he has won most of our low gross events at our monthly meetings. Last month at Midwest Country Club he shot a 72. Maybe we stand a better chance this year of winning the National Tournament.

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