

# Answers to turf questions

by Fred V. Grau



## Getting ready for the metric system

The time is approaching when all of us must be concerned with metric measurements and conversion from English to metric and vice versa. The table below is for reference. Every superintendent should file this copy of GOLFDOM. The material is reprinted from SOIL SCIENCE PROCEEDINGS, Soil Science Society of America, Vol. 32, No. 2, March-April 1968.

Conversion Factors for English and Metric Units

To convert column 1 into column 2 multiply by	Column 1	Column 2	To convert column 2 into column 1 multiply by
Length			
0.621	kilometer, km	mile, mi	1.609
1.094	meter, m	yard, yd	0.914
0.394	centimeter, cm	inch, in	2.54
Area			
0.386	kilometer <sup>2</sup> , km <sup>2</sup>	mile <sup>2</sup> , mi <sup>2</sup>	2.590
247.1	kilometer <sup>2</sup> , km <sup>2</sup>	acre, acre	0.00405
2.471	hectare, ha	acre, acre	0.405
Volume			
0.00973	meter <sup>3</sup> , m <sup>3</sup>	acre-inch	102.8
3.532	hectoliter, hl	cubic foot, ft <sup>3</sup>	0.2832
2.838	hectoliter, hl	bushel, bu	0.352
0.0284	liter	bushel, bu	35.24
1.057	liter	quart (liquid), qt	0.946
Mass			
1.102	ton (metric)	ton (English)	0.9072
2.205	quintal, q	hundredweight, cwt(short)	0.454
2.205	kilogram, kg	pound, lb	0.454
0.035	gram, g	ounce (avdp), oz	28.35
Pressure			
14.22	kg/cm <sup>2</sup>	lb/inch <sup>2</sup> , psi	0.0703
0.968	kg/cm <sup>2</sup>	atmospheres, atm	1.033
0.9807	kg/cm <sup>2</sup>	bar	1.0197
Yield or Rate			
0.446	ton(metric) / hectare	ton (English) / acre	2.240
0.891	kg/ha	lb/acre	1.12
0.891	quintal/ hectare	hundredweight/ acre	1.12
0.87	hectoliter/ ha, hl/ha	bu/acre	1.15
Temperature			
$\left[ \frac{9}{5} \text{ } ^\circ\text{C} \right] + 32$	Celsius, C	Fahrenheit, F	$\frac{5}{9} (^\circ\text{F} - 32)$
	-17.8°	0°	
	0°	32°	
	20°	68°	
	100°	212°	

Now let us take an example. Many putting greens are mowed at 1/4 inch. What does that mean in metric units? (column 2)

1/4 inch x 2.54 = .6350 centimeters.

In 1 cm there are 100 millimeters, so .6350 cm is equal to 63.5 mm.

Most ordinary student rulers are

marked off in inches and in millimeters for an easy conversion. For 3/16-inch cut the guide would be set at 48 mm. It is quite a jump from 3/16 inch (48 mm.) to 1/4 inch (63.5 mm.). The metric scale will permit more precise and more gradual changes in height of cut.

One hundred in the shade would mean 37.7 degrees Celsius (C.). Zero degrees C. is just freezing.

All turf papers now published in scientific journals state measurements in metric. Students of turf must be able to convert in order to understand. This, then, is a challenge to all superintendents and their organizations. Let the business session now and then be concerned with a drill on conversion factors. It will be much easier when the day comes that metric is standard the world over.

Q.—Do you have any suggestions for developing some sort of horticultural feature for our golf club? We read about the planting of oak trees at Oak Hill in Rochester, N.Y. We would appreciate a few ideas.

(Indiana)

A.—Over the years we have seen many examples of "feature" planting at golf clubs. Right now I recall the beautiful entrance planting at Rolling Green near Media, Pa. Joe Ryan, president emeritus of G.C.S.A.A., was responsible. He also planted many dogwoods along fairways. Chestnut trees became a "feature" at Rolling Green.

Warren Bidwell, Jim Haines and Ray Gerber have distinguished themselves by creating magnificent flower gardens around the clubhouse and the course. Others have followed their lead, sorry I can't name them all.

In Pittsburgh, Tom Snee and Walter Leix have created beauty spots out of rough eyesores by planting ground covers that require no maintenance.

A feature at Fred Waring's Shawnee-On-Delaware is a huge ginkgo tree, one of the finest I've seen.

At Cedar Rapids there is a green built (so they say) over an Indian burial mound where the inhabitants are still standing upright.

At Augusta National each fairway is bordered by some adapted flowering plant (azalea, yucca, dogwood, etc.).

These are only a few examples. State trees and state wildflowers could be features on many courses. One of my

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favorite wildflowers for sunny, dry locations is *Asclepias tuberosa*, orange milkweed, a perennial that requires no attention.

Your question is provocative and stimulating. Perhaps our readers will supply examples of features at their courses so that we can publish a follow-up.

Q.—At our club we are considering the purchase of an hydraulic seeder. Recently we have heard that there have been poor results from the use of this type of equipment, especially when seeding in connection with the use of wood pulp. Can you help us in our thinking? (Maryland)

A.—Hydraulic seeding with the use of wood cellulose pulp has produced enough failures to cause us to stop and take a second look. When the "One-shot" method is used the tank is loaded with everything required; seed, limestone, fertilizer, inoculant (if a legume is included) and wood pulp. The agitated slurry is sprayed on the area and the job is considered finished. Seed germinates easily and quickly in the wood pulp. If rain falls frequently, or if the area can be irrigated, success is assured. But, if the seed germinates in the pulp, then dry weather ensues, the wood pulp mat dries and draws away from the soil. The isolated seedlings can not strike roots into the soil and—another failure is recorded.

Our firm recommendation is to follow the "Two-step Method." Step 1. Load the tank with seed, limestone, fertilizer and 200 lbs. per acre of wood pulp to "glue" the seed to the soil. Step 2. Follow at once with a full-rate application of mulch (1000-1200 lbs. of wood cellulose pulp or 2 tons clean straw per acre). This covers the seed to keep it cool and moist where, when it germinates, the roots strike into the soil at once.

Some contractors refuse to apply limestone thru the pump—they claim that it ruins the pump. Calcium is essential where Ca-deficient wood pulp is employed. This could be another reason for disappointments. □

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