

GRAFFIS

Continued from page 19

Australian Air Force radio operators and rescue fliers were amazed when the plane came in safely and coughed out its last drops of gas.

During the four-month tour the Hahns performed under conditions that most of us would regard as impossible. In 1929 Walter Hagen and Joe Kirkwood made a six-month tour of Japan, Australia and a couple of courses in India, and Joe did his trick shots, but there's been nothing anywhere that's come close to the Hahns' feat.

Arthur Hills of Toledo is architect of the Giant Oak course being built at Temperance, Mich., a few miles north of Toledo. Temperance doesn't sound like a name that fits a golf course site, considering that bar revenue at many clubs exceeds green fees and car rentals and usually makes a larger net profit than any other element of country club operation. But temperance was a political factor in that part of the nation. John Morely, first president of the National Assn. of Greenkeepers, as a young man in Ohio, was secretary of the Temperance Party.

Hills is typical of the younger group of successful architects who got started in golf working for inspiring superintendents. He began as a youngster working for Andy Bertoni on the Meadowbrook course in suburban Detroit. He fell in love with golf courses, studied landscaping, was a fair golfer and wanted to express himself artistically in golf courses.

Tommy Armour said, "I know we've got some great golf architects but where are the great golf courses?" That question bothered me until I realized what architects are up against in handling the problems of land on which they are expected to create masterpieces. Complexities are added when the course is to be used for selling adjacent home sites. □



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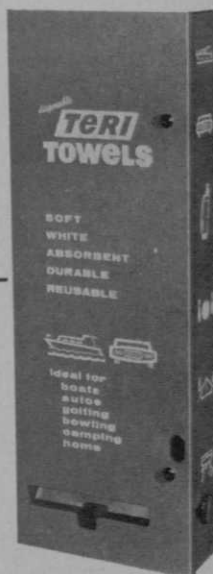


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by Dr. James B. Beard

TURFGRASS RESEARCH REVIEW

**What are the nutritional
requirements of
annual bluegrass?**

Nutritional Requirements of Poa Annua L.

*F. V. Juska and A. A. Hanson.
1969. Agronomy Journal. 61(3):
466-468. (from the Crops Re-
search Division, ARS-USDA,
Beltsville, Md. 20705).*

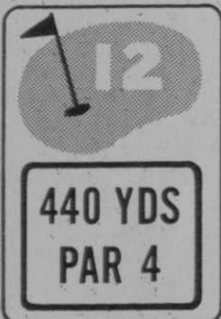
The objective of this study was to determine the effect of nitrogen, phosphorus, potassium and soil pH on the growth of annual bluegrass roots and shoots. It was conducted under greenhouse conditions with the annual bluegrass plants maintained at a cutting height of 1.5 inches. Two levels of nitrogen, phosphorus, potassium and lime were incorporated into the root zone of two soils, a loamy sand and a silt loam. Data collected included the amount of shoot growth, weight of crowns, amount of roots produced and the number of seedheads formed.

The higher level of nitrogen fertility stimulated shoot and root growth to the greatest extent followed by the higher level of phosphorus. Potassium had very little

Continued on page 24



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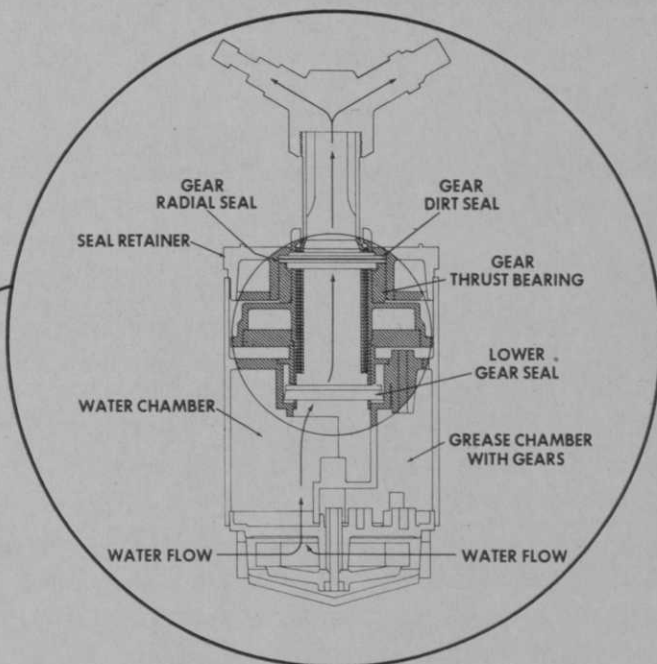
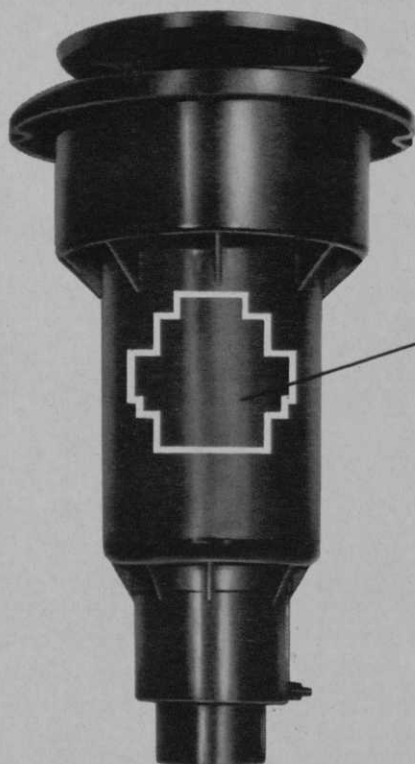
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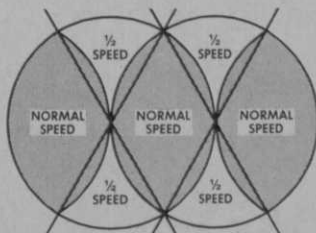


Fig. 1 Large Turf Areas
Golf Course Fairway



Fig. 2 Golf Green

Fig. 1 Single row (in-line) two speed sprinklers eliminates puddles and run-off in overlapping patterns, reduces water costs and smooths out precipitation.

Fig. 2 Another TORO exclusive—two-speed 180° pattern for pop-up sprinklers around golf green, double row fairway football field, park grounds. Nozzle rotates at normal speed on the over-lapped areas, slows down when watering bunkers or non-over-lapped areas.

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effect on the rate of shoot growth. Growth was more favorable when a balance in the levels of nitrogen, phosphorus and potassium was utilized. Shoot growth of annual bluegrass was greater at a soil pH of 6.5 compared to 4.5. Seedhead

production was less at a soil pH of 4.5 than at 6.5.

The authors concluded that annual bluegrass can produce more acceptable growth under relatively infertile soil conditions compared to Kentucky bluegrass. However, annual bluegrass is responsive to increased levels of fertility or higher pH levels, particu-

larly on poor, coarse textured soils.

Comments: One approach to controlling weeds is the modification of cultural practices, such as fertility and pH, to the extent that conditions are unfavorable for growth of the weed. The results of this study indicate that control of annual bluegrass by manipulation of the soil pH or the nitrogen, phosphorus and potassium fertility levels is not promising since the optimum levels for growth are quite similar to the optimums for the desirable species. It should be indicated that there are other cultural practices which influence annual bluegrass growth and competitive ability substantially. For example, (a) frequent or excessive irrigation or (b) a close cutting height will favor annual bluegrass growth. □

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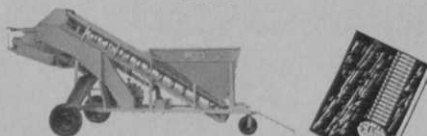
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Other papers of interest:

1. *Phenotypic and genotypic variation and covariation of some quantitative turf characters of Poa pratensis L.* C. B. Berry, D. V. Glover and W. H. Daniel. 1969. Crop Science. 9:470-473. (from the Department of Agronomy, Purdue University, West Lafayette, Ind. 47907).
2. *The how and why of night maintenance.* W. E. Lyons. 1969. Midwest Regional Turf Conference Proceedings. pp. 52-54. (from Lyons' Den Golf, Canal Fulton, Ohio 44614).
3. *Controlling Poa Annua.* W.H. Daniel. 1969. Midwest Regional Turf Conference Proceedings. pp. 86-90. (from the Department of Agronomy, Purdue University, West Lafayette, Ind. 47907).
4. *Southern chinch bug, a new pest of St. Augustinegrass in southern California.* F. S. Mori-shita, R. N. Jefferson and L. Johnston. 1969. California Turfgrass Culture. 19(2):9-10. (from the Department of Agronomy, University of California at Riverside, Riverside Calif. 92502).



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NATURAL ORGANICS Dried Blood, Fish Meal, Peanut Hulls, Etc.	2% to 12%			1½ % to 10%		50%	
ACTIVATED SEWAGE SLUDGE	5% to 6%			5% to 5½ % Approx.		51%	

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by Fred V. Grau

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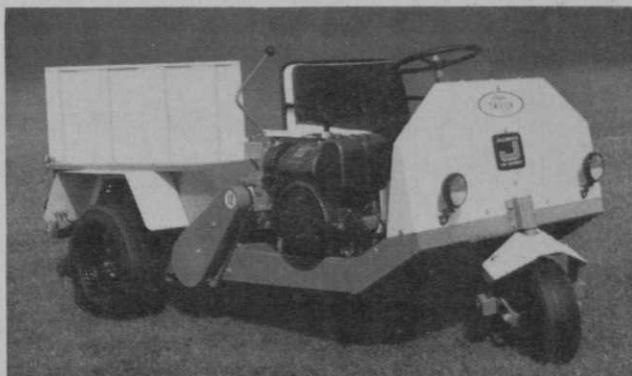
Q.—Our budget has not allowed us to use crabgrass preventive chemicals and, of course, we've had plenty of the weed. We do some reseeding. My question is, "should we aerify our fairways in the spring ahead of reseeding?"

(Maryland)

A.—In your case I would not aerify in the spring. There is no sense in stirring up all those crabgrass seeds. By eliminating spring overseeding you could afford to use a premerge chemical on at least part of the course. Save your over-

Continued on page 32

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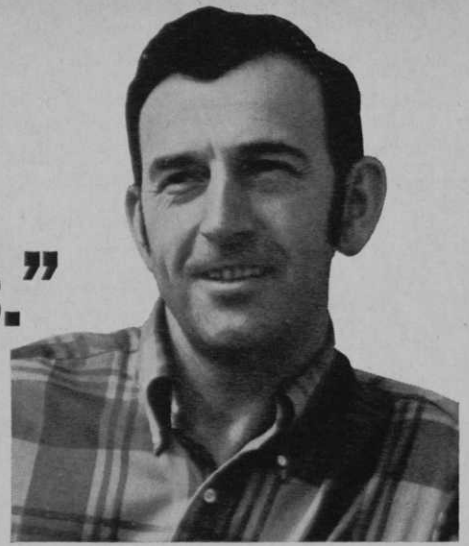
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