Turf Questions ...and answers

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Not Tons of Fertilizer But Pounds of Food

The place of nitrogen in American agriculture has been dramatized by the stories of the Indian showing the white settlers how to grow maize (corn) by planting a fish under each hill. With wood ashes from the campfire, the life-sustaining crop had a full diet of nitrogen from the decaying fish, phosphorus from the same fish, and potash from the wood ashes.

Authorities tell us that there are 75 million pounds of nitrogen in the atmosphere over every acre of land and sea. Why should growing plants suffer from nitrogen deficiencies in the midst of such abundance? The answer lies in the fact that the nitrogen in the air (nearly 70 per cent) is an inert gas that is as useless to grasses as sea water is to a thirsty man. A small part of nitrogen gas can be converted to forms useful to grasses by the action of bacteria such as those found associated with legume roots. Nature can store nitrogen in virgin soils rich in organic matter from whence it can be released to plants at a controlled rate. When the organic-rich soils have been depleted, we must find other ways to supply nitrogen to growing crops.

An Old Truth

In 1931 there was published in The Bulletin of the USGA Green Section a "Dictionary of Fertilizers," probably the first authentic work of its kind in the turf field. The statement, "It (nitrogen) is the most important fertilizer element in growing grass for turf purposes" cannot be improved on. The principal difference between now and 30 years ago is the fact that new, safe forms of nitrogen materials have been synthesized as the result of research findings and have been made available for use on turf. The newly revised edition of Turf Management by H. B. Musser (McGraw-Hill) has this to say (p. 22):

Key Element

"Nitrogen is the key element in turf production . . . constant liberal supplies are essential . . . nitrogen may be added to soils in organic and inorganic forms and in synthetic urea-form compounds . . . The organic and urea-form nitrogen carriers undergo a much longer process of decomposition in the soil than inorganic forms before their nitrogen becomes available . . ."

Supts. and green committees constantly have been urged to calculate fertilizer needs well in advance of the growing season so that the needed funds can be provided in the budget and so that adequate supplies on hand will be assured.

In the interests of assisting clubs in figuring nitrogen needs for a season the following examples are presented. It will be noted that the unbiased generic figures are based strictly on actual nitrogen and not on fertilizer materials.

Example No. 1 — An 18-hole golf course such as one would find in the cool-humid region of New England, New York or northern Pennsylvania.

		Pounds of Nitrogen
Greens — 18 — ave. 5,000 sq. ft. — Total	90,000 sq. ft.	
Practice green and nursery	10,000 sq. ft.	
Total	100,000 sq. ft.	
7½ lbs. of actual nitrogen to 1,000 sq. ft. for the season usually is considered adequate		750
(Note: Calcium, phosphorus and potash must be supplied according to need, guided by soil tests)		
Tees — In area and in management, tees today are remarkably similar to greens		750
Fairways — 50 acres may be considered a reasonable approximation of fairway areas on most 18-hole courses; 175 pounds of nitrogen per acre for the season is a reasonable (low) figure for unwatered turf (Figure 220 lbs./A for irrigated turf)		8,750
Total for Unwatered Fairways		10,250
Total for Irrigated fairways		12,500

Example No. 2 — An 18-hole golf course in the "Twilight Zone" such as Richmond or St. Louis, with bent greens and bermuda fairways.

Greens — 9 lbs. of nitrogen to 1,000 sq. ft. will compensate for the longer growing season	900
Tees — Essentially the same as in Example 1	750
Fairways — Bermudagrass can utilize more nitrogen than bluegrass and fescue. 250 lbs. to the acre per year is minimum	12,500
Total	14,150

Example No. 3 — An 18-hole course with improved Bermuda greens, tees and fairways.

Greens — 7,000 sq. ft. is believed to be a realistic figure for most Bermuda greens, plus nursery and practice green . . . 140,000 sq. ft. 15 lbs. of N per 1,000 sq. ft. is less than many supts. use	2,100
Tees — About the same. Estimated	2,000
Fairways — 60 acres estimated — 400 lbs. of Nitrogen per acre not excessive	24,000
Total	28,100

Make Own Estimate

Since each supt. has in his files a record of the exact acreage involved in the various parts of his course he can do his own calculation to fit his course. The examples given here are only rough guides.

It is extremely important that green chairmen and green committees become aware of the need to calculate fertilizer needs on the basis of pounds of plant food rather than so many "tons of fertilizer." When it is known that a course will need 10,000 pounds of nitrogen during the next season, for example, purchases can be made on a sound, technical basis with provision made in the budget for the expenditure. (Note: pounds of P and K

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Grau's Answers

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can be calculated similarly, guided by soil tests and previous history).

A final example is set forth to act as a guide for calculating pounds of nutrients in a ton (2,000 pounds) of fertilizer.

Fertilizer	Pounds of nutrients in 100 lbs. fertilizer N P K	Pounds of nutrients in 1 ton N P K
5-10- 5	5-10- 5	100-200-100
20-10-10	20-10-10	400-200-200
10- 3- 7	10- 3- 7	200- 60-140

In a 20-10-10, for example, each figure represents the per cent of the nutrient in 100 pounds — thus a 100 lb. bag of 20-10-10 carries 20 lbs. of nitrogen, 10 lbs. of phosphorus ($P_2 0_5$) and 10 lbs. of potash ($K_2 0$). Since there are 20 one-hundred pound bags in a ton, the pounds of nutrients in a ton can be calculated quickly by multiplying the analysis figure by 20, thus 20 x 20 = 400 pounds of N in a ton of 20-10-10.

By utilizing this example, one can quickly determine the pounds of each nutrient in a ton of any kind or analysis of fertilizer so that the total tonnage required easily can be determined.

Philadelphia Show

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ers on TV. That means a great deal. The mere mention of the word, golf, gets them to wondering where and how soon they can get their hands on a club or swing at a ball. We provided the first outlet for them this year."

Fraser says this year's Philly show was a big improvement over its predecessors because the section set up more committees than before to handle details leading up to the show. There also were more pros on the floor to explain the game and demonstrate it when the show finally went on.

Among the visitors to the Philly exhibition were several national PGA officers as well as members of quite a few of the country's other 31 sections. As for the honors, they were bestowed on Marie Weiland, William Hyndmann III and Sam