

Nitrogen: Symbol, N. A colorless, tasteless, odorless inert gas, constituting by volume 78.03% of the atmosphere. It is a constituent of all living tissues found in greatest concentration in young growing parts, in leaves and seeds. Without N, growth is impossible.

The Nitrogen Cycle: (1) Fixation of N in air by organisms or by manufacturing; (2) Absorption by plants; (3) Conversion to plant tissue; (4) Utilization by animals or decomposition by organisms; (5) Reconversion to forms suitable for plant growth, loss by leaching or erosion, or escape into air in gaseous form.

Fertilizer N may be found in nature (sodium nitrate, Chile), accumulated as plant or animal by-products (seed meals, tankage, sludges, manures), or manufactured (urea, ureaform, nitrates, sulfates).

N for turf may be soluble (urea, nitrates, sulfates) or insoluble (ureaform, sludge, tankage). Solubles feed plants directly and rapidly. Insolubles feed soil organisms first. These, in turn, supply N to plants more slowly.

Conversion of complex N compounds in soil is by way of 1) ammonia, 2) nitrite, 3) nitrate. Nitrates combine with Ca and Mg and enter plant roots in solution. Many plants can use ammonium ions directly.

N tends to increase topgrowth, green color and to delay maturity. Excess of soluble N tends to increase some turf diseases. Insoluble N forms are safer even in large quantities.

Nitrogen is a part of an intricate complex chemical and biological system which is sensitive to environmental conditions. N serves turf best when soil bacteria are favored by good drainage, optimum soil aeration, pH range near neutral (7.0), ample energy supply (carbon), and all other nutrients in balance.

By all means use dolomitic limestone liberally. A soil test should be made. A pH value of around 7.0 is desirable.

You do not need to remove anything that has been planted. Fertilize as directed in the circular. Then, according to your choice, sow freshly-inoculated seed or plant crowns (living roots). If you don't see results soon don't become discouraged. New crownvetch growth is not easily recognized and, besides, it is very slow in getting started. It develops an extensive root system first — then the tops begin to develop. You will find that PENNGIFT crownvetch gradually will take over the other plants, weeds, included, until there is a solid erosion-control groundcover.

Zebra Grass

Q. We want information regarding Zebra grass. (See page 44, GOLFDOM, Feb., 1964.)

A. We answered this question by saying we have not found information on it. Now comes Dr. Felix Juska, USDA, Beltsville, Md., who called to say that Zebra grass is *Miscanthus sinensis* often mis-named "eulalia". The 1948 Yearbook of Agriculture (p. 734) named this grass, "Chinese silvergrass", said nothing about "Zebra grass".

It is a reedy, bunch-type, semi-tropical, ornamental grass 4 to 6 feet high, with leaves cross

banded. These are two varieties in the U.S. Both are vegetatively propagated. When mature it has plumes similar to pampasgrass.

Hungry for Nitrogen

Q. We have had a problem with our greens for the last two summers. We have dollarspot and nothing seems to help it much. I spray one chemical on Monday and another on Friday. Sometimes I mix them but my only relief comes when I use twice as much as recommended. I tried hydrated lime at 3 lbs./M² back in the fall and it seemed to help some. What do you suggest? (Virginia)

A. Naturally I should know more about your greens such as 1) kind of grass 2) fertilizing program 3) irrigation. Also I would like to see a soil profile to check on thatch and mat.

Based on past experience these are distinct possibilities:

1. The light touch of lime helped because it probably stimulated soil bacteria which released some nutrients which, in turn, helped the grass to recover. I suspect that your grass is hungry for nitrogen. Well fed grass rarely develops dollarspot. Since you told me nothing about your fertilizing program it is difficult to make a valid suggestion. Also, some grasses are more susceptible to dollarspot than others.

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