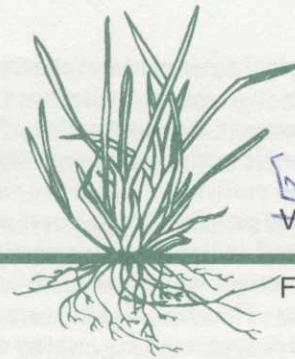


Turf Grass TRENDS



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Problem or myth?

Nitrate leaching from turf

by Dr. Richard Hull

For a little more than a decade, there has been a nagging concern in the minds of many turfgrass scientists over the environmental soundness of turf management as it is practiced now. This uncertainty has found expression in technical reports, grant proposals and even in articles written for the practical turf manager.

The popular press, both print and electronic, has picked up on these expressions of concern and exploded them into full-blown environmental crises. Consequently many people, both in and out of the green industry, are convinced that turf culture is an environmentally risky enterprise which probably is not sustainable in ecologically sensitive areas.

This figure depicts the sequence of nitrogen enrichment in N-15 as N-14 is lost during metabolic transformations of nitrogen

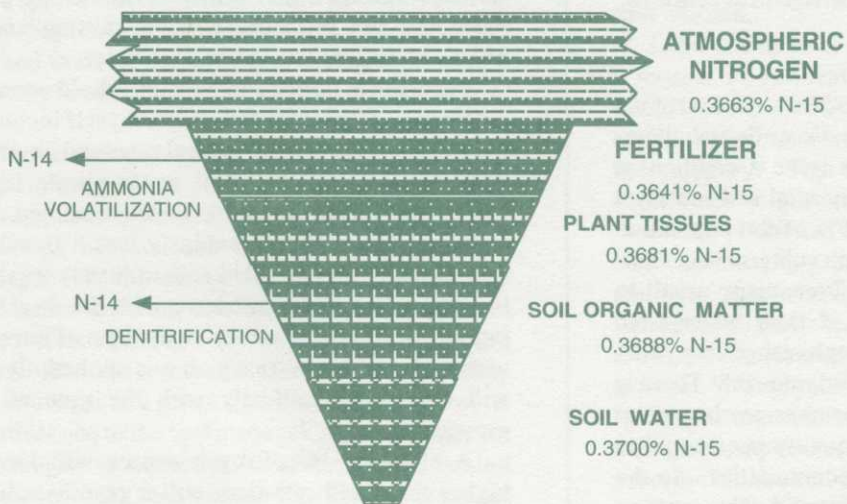


Figure by Dr. Richard Hull

When atmospheric nitrogen is chemically fixed as fertilizer, there is a discrimination against the heavy 15N which results in fertilizer depleted in 15N. After fertilizer is applied to the soil, it is absorbed by plant roots and microorganisms and undergoes several metabolic transformations. At every step, where gaseous nitrogen is lost as NH₃, N₂O or N₂ there is a preference for 14N which leaves the remaining soil and plant nitrogen enriched in 15N. Thus soil water NO₃-N normally contains more 15N than did fertilizer-N but not as much 15N as would be found in animal tissues or their waste products. While the differences in 15N% are very small, they can be detected in sensitive mass spectrometers and used to estimate the source of N in an environmental sample.

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