



— Soil Fertility Note 11 — Applying Nitrogen

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NCDA&CS Agronomic Division

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For home lawns and gardens, soil test reports often recommend applying one pound of nitrogen for every 1000 ft². This recommendation to apply just nitrogen confuses many people. They expect to apply a complete fertilizer, like 10 lb of 10-10-10 per 1000 ft². They do not realize that there are fertilizers that supply only nitrogen.

If a soil test recommends only nitrogen, then soil levels of phosphorus and potassium are already sufficient for plant growth. Such soils already contain a minimum of 100 lb/acre of phosphorus and 150 lb/acre of potassium. Adding more phosphorus and potassium could adversely affect plant growth or the environment.

Applying a complete fertilizer when only nitrogen is needed can cause a dangerous buildup of soluble salts. Soluble salts result when fertilizer combines with water in the soil to produce salts containing potassium, sodium, ammonium, and nitrate. These nutrients are required for plant growth, but excessive amounts can draw water from plant tissue into the soil. When this happens, plants experience fertilizer burn: they wilt, become stunted or die.

For this reason, it is risky to apply the same fertilizer grade year after year without having the soil tested. Even if fertilizer burn does not occur, there are other disadvantages. Time and money may be wasted on unnecessary applications. Lastly, excess nutrients may pollute water sources.

A recommendation of one pound of nitrogen means exactly that—one pound of actual nitrogen. Since pure nitrogen is not available, growers must purchase a high-nitrogen fertilizer and calculate the amount to apply. The following commonly used nitrogen (N) fertilizers are available from dealers: urea (46% N), ammonium nitrate (34% N), ammonium sulfate (21% N), and sodium nitrate or nitrate of soda (16% N).

The North Carolina fertilizer law requires the percentage of nitrogen to be printed on the bag as the first number in the fertilizer grade. For example, a 34-0-0 grade contains 34 percent nitrogen. Therefore, to calculate the amount of fertilizer that will supply one pound of nitrogen, divide 100 by the first number in the grade. If you are using 34-0-0, divide 100 by 34 to find out that it will take about 3 lb of fertilizer to provide 1 lb of nitrogen.

The nitrogen fertilizers sold by farm supply dealers are fast acting. They are not the slow-release forms most homeowners are familiar with. Additional quick-release nitrogen can be applied as a side dressing in the garden or broadcast on the lawn during the growing season. The amount needed depends on the crop grown, seasonal rainfall and the total amount of nitrogen recommended for the year.

Many slow-release turf fertilizers contain 20 to 35 percent nitrogen and less than ten percent phosphate or potash. The application rate given on the bag commonly provides 1 lb of actual nitrogen per 1000 ft².

Maintaining the correct soil pH is critical if you want fertilizer applications to be effective. Have your soil tested every two to three years to monitor pH and nutrient levels. Apply lime as soon as it is recommended.

If you have questions about soil sampling or fertility, contact your local agricultural advisors or the NCDA&CS Agronomic Division in Raleigh at 919-733-2655. Soil sampling materials are available in each county through the Cooperative Extension Service.

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Questions or comments should be directed to the Soil Testing Section of the NCDA&CS Agronomic Division. Additional information on soil testing, nematode testing and plant/waste/solution analysis is available from the NCDA&CS Agronomic Division.