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● Department of Agronomy

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Fall Fertilization Programs

William O. Thom

Achieving recommended fertility levels for the next season's crop is important enough that it should not be subject to all the uncertainties of spring weather. Fall offers more time for careful planning of fertilizer and lime requirements based on good soil tests. Fields are generally in good condition to support application equipment without creating excessive soil compaction.

Soil Testing. Soil testing is the best method available that can predict nutrient needs of a crop. Fertilizer and lime recommendations from soil tests that have been calibrated with field experiments have been proven to do a good job in recommending economic rates and kinds of fertilizers. A good representative soil sample is the starting point for fall fertilization. Late summer and early fall are excellent times to sample fields when other field work is less pressing. Most soil testing laboratories are not as busy so that soil test results and recommendations are returned much faster.

Liming. Soil pH is the key to maximum availability of the soil supplied or applied nutrients. Ideal ranges vary somewhat with crop. When lime is needed to adjust soil pH, it should be applied 4-6 months ahead of planting the next crop. In Kentucky, we have found that fall applied limestone is more effective in adjusting soil pH than when spring applied and usually results in higher crop yields. High per acre rates of limestone (greater than 6 tons) should be split with one-half applied in the fall and one-half applied in the spring. Applying limestone at rates of less than two tons per acre is usually not practical.

Phosphate and Potash. Fall is an excellent time to apply needed phosphate and potash. On soils with less than 6% slope, areas that have a good mulch cover, or fields that will be fall tilled, fertilizer phosphate and potash are retained by the soil. Fall fertilization allows for better utilization of application equipment and product delivery by dealers. Prices are usually less than for spring delivery and application. Some specific suggestions for major crops are outlined below:

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1. Corn and soybeans. All the phosphate and potash can be fall-applied for next year's crop whether conventional or no-till management is followed. Also, the phosphate and potash for one sequence of a corn-soybean rotation can be doubled up for both crops in one application ahead of corn.
2. Small grains. The recommended phosphate and potash should be applied prior to seeding small grains in the fall.
3. Small grains - soybeans (doublecrop). The phosphate and potash recommended for both crops individually should be added together and applied before seeding the small grain crop in the fall.
4. Tobacco. When large amounts of phosphate and potash are recommended, a large part of the fertilizer should be applied prior to seeding the fall cover crop.
5. Forages. Fall applied (at least 30 days before freeze down) phosphate and potash increases winter survival of alfalfa and the clovers. Successful fall seeding of forage crops requires that adequate fertility be available for establishment of seedlings during periods of cool temperatures and to increase winter survival. For maintaining adequate grass pasture yields, fall-applied phosphate and potash increase fall growth for late season pasture, and increase winter survival.

Nitrogen. Fall nitrogen application for corn and grain sorghum has not been practical in Kentucky because winters are too warm most years to prevent nitrification (changing from ammonium form to nitrate form). Nitrate is then lost through the processes of denitrification and leaching.

An application of nitrogen at small grain seeding of up to 1/3 of the total recommended nitrogen will increase fall growth of timely seedings in fields following conditions or crops with insufficient nitrogen carryover.