

Management Planning To Balance Nutrients

NORCROSS, Ga. — Nutrient management planning has emerged as a hot issue in many parts of North America. The nutrients in manure are increasingly separated from where crops are produced. The resulting geography shows many areas of nutrient surplus, and also large areas of nutrient deficit.

A report released in February 1998 by the USDA's Natural Resources Conservation Service estimates there are well over one million tons each of nitrogen, phosphate and potash in recoverable animal manures in the U.S. When distributed over all the cropland available on a county by county basis, up to 485 of the approximately three thousand counties are in a surplus situation, with more phosphorus in the manure than the crop removes at harvest. In Canada, significant amounts of manure are produced in Ontario and Quebec and the livestock industry is expanding rapidly in the Prairie provinces.

Soil test summaries across North America confirm that in states and provinces where manure nutrients exceed crop removal, soil test levels are rising. In spite of this, 46 percent of the soils still test medium or less in phosphorus, 44 percent in potassium. These soils are considered to be in a responsive situation—the crops grown on them would yield substantially less if grown without nutrient inputs. In fact, even with the higher testing fields, there are areas with lower soil tests, because soil fertility varies across

the field. The amount of land responsive to nutrient inputs is very significant. On many of the higher testing fields, nutrients inputs may be less critical, but are still important for maintenance of soil fertility.

Management plans incorporating nutrient balances are proposed to help identify situations where surpluses might contribute to environmental harm. They can also enhance the agronomic soundness of a fertility program. As an example, there are little data available to predict the potassium content of forage based on soil test alone. However, soil testing coupled with forage analysis can identify either deficit or surplus, help to appropriately allocate the feed, and identify the farm-specific soil test level critical for the forage. In the future, more crops may need to be produced to attain a targeted level of nutrient content. Comprehensive nutrient management planning may help hit the target.

Nutrient management planning provides another incentive for high yield crop management. Higher yielding crops are not only more profitable, they remove more nutrients. In fact the amount of phosphorus removed per bushel of crop increases at higher yields. Corn crops over 200 bushels per acre often remove 0.4 pounds of phosphorus (P₂O₅) or more per bushel of yield.

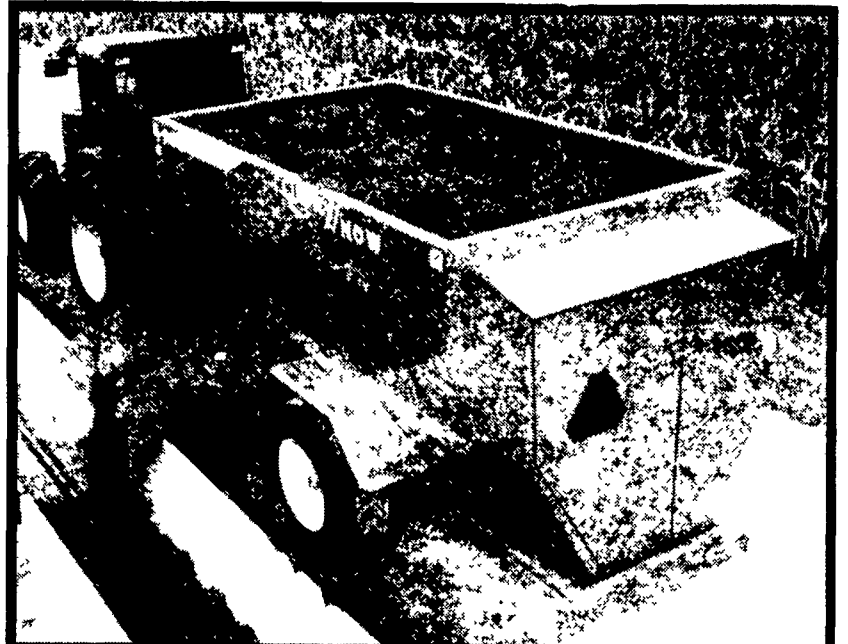
Nutrient management planning is valuable because it is comprehensive. It involves components that complement each other. The components of a

sound nutrient management plan include: an accurate yield goal and management to attain that yield goal...measurement of nutrients added in manures and removed by crops...consideration of all nutrient sources, including commercial fertilizers manures, amendments...realistic estimates of availability of different nutrient sources... maintenance of soil fertility by replacing nutrient removal...crop rotations planned for nutrient application opportunities ...adequate manure storage for unseasonable weather...nutrient application timed to minimize risk of weather-related losses...indicators of erosion and runoff transport, for example, a

Phosphorus Index ...and site-specific application to direct nutrients within fields to areas of greatest need and least environmental risk.

Not all components are workable in every situation. Still, a more comprehensive approach to nutrient management will help assure a progressive future for agriculture in North America. And how much improvement will you see on your farm? You won't know until you plan.

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