



Nutrient Management

Introduction:

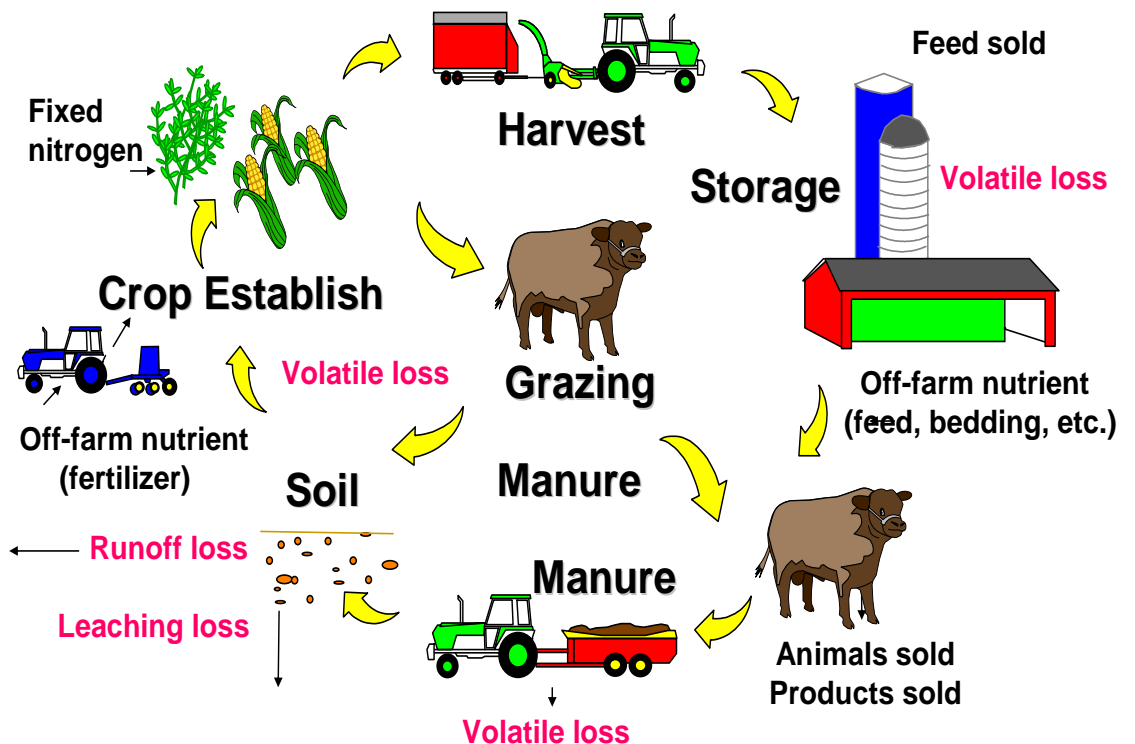
Nutrients, whether in fertilizer or organic amendments such as manure and compost, are an essential crop input and a major cost for crop production. On a typical livestock farm nutrients are recycled from soil, to crops, to animals, and finally, to the soil as manure (Figure 1).

Nutrient recycling on most farms does not form a closed loop and farmers usually purchase off-farm nutrients to compensate for those lost in various ways to the environment. Farmers may also unknowingly apply nutrients in excess of recommended rates. For example, some farmers may apply commercial fertilizers without proper regard to the nutritive value of their manure. This can harm crop production, incur additional costs, and jeopardize soil and water quality. Similarly, the application of too little nutrients can sacrifice yield, quality, and profits.

A nutrient management plan helps ensure that nutrients are used efficiently for economic production of feed and animal products, as well as for the protection of air and water quality. Development of a nutrient management plan requires integrated knowledge about soils, cropping systems, crop nutrient needs, nutrient sources, nutrient application timing, and method of application.

Best Management Practices:

Figure 1: Flow of nutrients on a typical crop/livestock farm where nutrient import exceeds nutrients lost from the farm through crops, animals and animal products in the form of sales.



A nutrient management plan helps ensure that nutrients are used efficiently for economic production of feed and animal products.

Developing a nutrient management plan is a complex task and requires collecting information about farm resources and current as well as past farm management practices. This information includes but is not limited to:

- a) Nutrient inventory; including nutrient status of the soil, nutrient content in manure, nitrogen fixation by legumes, and nutrient availability from cover crops and previous crop.
- b) Crop nutrient requirements based on; type of plant, yield expectation, and nutrient removal by crop.
- c) History of cropping management; including crop rotation, manure application in the past, and cover crop.
- d) Information about type and number of animals, manure storage capacity, and spreader capacity.
- e) Environmental risk assessment for individual fields which requires information about soil, topography, flooding frequency, as well as current cropping management.

Due to the complexity of the calculations and vast knowledge that a nutrient management planner requires, computer software is often used to aid in decision making. University of Massachusetts Extension has developed and uses FarmSoft for generating a nutrient management plan. The program calculates manure and /or fertilizer rates to meet nutrient needs and helps identify fields receiving excess nutrients. The program also calculates a site vulnerability index, highlights any major environmental concerns associated with individual fields, and prioritizes fields for receiving manure.

For more information visit www.umass.edu/cdl

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This publication has been funded in part by Mass. Dept. of Agricultural Resources in a grant to the Massachusetts Farm Bureau Federation, Inc. and by Mass. Dept. of Environmental Protection, s319 Program.