Sheep	(Continued from Page 7)
Lamb 0–26 wk	50 (10–90)
Ewe	150
Ram	185
Goat	
Kid: 0–10 mo	45 (5–85)
Doe	125
Buck	170

Horse	
Foal 0–6 mo	325 (125–625)
Yearling	750 (625–875)
Nondraft breeds mature	1,000
Draft breeds mature	1,700

Source: Pennsylvania's Nutrient Management Guide, And Who Will Be Affected From Penn State Agronomy Facts 54.

A Step By Step Approach To Developing A Nutrient Management Plan

Whether written on paper or developed with computer software, the key concept is that a nutrient management plan allocates the available manure nutrients in a way that maximizes the economic benefit of the nutrients while minimizing their environmental impact.

The basic steps in developing a nutrient management plan are as follows:

I. Collect information about the manure production, nutrient content, and application system(s) for the farm.

Many factors affect the amount of manure produced and the nutrients it contains. These include the type of animal and its age, ration, and feed consumption; the animal's management, including the bedding used and the length of time the animal is confined as the manure is collected; and the handling of the manure before and during field application, including potential drying and dilution by waste water or precipitation.

Manure production can best be determined by measuring the amount of manure contained in a manure storage. On farms that do not have a storage or when it is impossible to determine the amount in a storage, manure production can be estimated from animal numbers, animal weights, and confinement times.

Manure nutrient content should be determined by a manure analysis. "Book" values for the nutrient content of a given type of manure are averages taken from many farms. Because of farm-to-farm variability, these averages are of little value in decision making on an individual farm. Manure sample analysis results in Pennsylvania have indicated a very wide range in nutrient content for seemingly similar samples of manure taken from different farms, and we have observed as much as 100 percent error between book values and actual manure nutrient content values.

II. Determine the availability of manure nutrients.

The actual fertilizer value of the manure will depend on how the manure is handled and used. The nutrients in manure are not as readily available as fertilizer nutrients are, and this must be taken into account when manure application rates are determined.

Manure nitrogen is especially susceptible to losses and is very sensitive to management practices such as soil incorporation following application. For example, if dairy manure is incorporated on the same day that it is spread, about half of its N will be as readily available as commercial fertilizer N would be. If this manure is left on the surface with no incorporation for a week or more, however, only 20 percent of the N will be available for crop uptake.

III. Determine the nutrient requirements for the crops on the farm.

Soil tests are the best source of information about crop nutrient requirements. Soils contain a wide range of available nutrient levels, and different crops have very different nutrient requirements. The expected yield of the crop also will affect the amount of nutrient required. For example, a corn crop requires a large amount of nitrogen and a smaller amount of phosphate and potash. An alfalfa crop, however, requires no nitrogen, some phosphate, and a large amount of potash.

In general, forage crops such as hay or corn silage will use more nutrients than grain crops. A rotation of grain and forage crops will require nutrients very different from those needed by either of the individual crops grown in a field in a given year. These facts become very important when manure is used to meet crop nutrient needs.

IV. Prioritize the farm fields on the basis of their suitability for manure application.

Using soil tests, the fields' cropping and manure application history, the planned crop rotation, and other characteristics such as field location, slope, and soil characteristics, rank the fields for manure applications from highest to lowest. Some of the factors involved in this ranking are illustrated in Table 1.

Table 1. Factors involved in field prioritization for manure applications.

Nutrient Considerations

	Prioritization for Manure	
Nutrient	**High**	**Low**
crop N needs	N-requiring crops	crops not requiring N
N requirement	highest N requirement	lowest N requirement

(Turn to Page 10)