When commercial fertilizer is purchased, a label or information sheet with nutrient content, application instructions and pertinent warnings is provided. This pamphlet can similarly be used for those selling, trading or giving away manure.

### Manure Information:

Source: ___________________________

_________________________________

Animal Type: ______________________

- Solid  
- Liquid
- Slurry  
- Compost

Date of analysis: ____________________

Results (identify units):

- ppm  
- percent  
- lbs/acre in.
- lbs/1000 gal  
- lbs/ton

<table>
<thead>
<tr>
<th>TKN</th>
<th>Nitrate</th>
<th>Total P</th>
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P₂O₅ equivalent = Total P x 2.3

Lab Name: _______________________

Notes: ___________________________

_________________________________

For more information on manure use, nutrient management and agricultural water quality, please contact your local county Extension agent, an Extension specialist or local USDA - Natural Resources Conservation Service (NRCS) District Conservationist.

To locate your local Extension Office please visit: http://extn.msu.montana.edu, or call: 406.994.1750.

To contact the author:

**Thomas Bass**  
Livestock Environment Associate Specialist  
call 406.994.5733, or e-mail: tmbass@montana.edu.

To locate your local USDA-NRCS Field Office:

www.mt.nrcs.usda.gov/contact/directory

Additional resources are available online at:  
www.animalrangeextension.montana.edu - click on “Natural Resources”

**Manure Basics** | Livestock manure, mixtures of manure and related organic by-products make excellent fertilizers and soil amendments. Manure from cattle, swine, and poultry are all beneficially used for crop production in Montana. Manure also provides additional benefits to the soil, as well as offsetting the amount of nutrients needed in commercial fertilizer purchases.

Manure contains necessary plant nutrients such as nitrogen, phosphorus and potassium, in addition to a variety of micro-nutrients. Also, the high organic content of manure and manure compost can help improve soil quality by enhancing tilth, leading to better water and nutrient holding capacity.

**Nutrient Content and Availability** | Organic nutrients in manure are usually not available to your crop all at once. You can expect no more than
Incorporation is necessary to prevent significant volatilization and to maximize nitrogen availability. Incorporation should be done within 1-4 days of application and also reduces odors.

**Application Rates** | Application rates for any fertilizer should be based on a recent soil test and the particular crop’s nutrient needs. Simply take the crop nutrient needs, subtract what is present in the soil and then calculate a rate based on manure nutrient content, taking into consideration first year availability. The next year’s application will require the additional consideration of residual organic N which will become available. As previously mentioned, phosphorus will persist and can be utilized by subsequent crops.

**Timing** | This is particularly important for nitrogen. Nitrogen can be lost by leaching below the crop root zone or volatilizing to the atmosphere. Therefore manure should be applied as close to the crop’s use of the nutrient as possible. Manure should not be applied in extremely wet conditions or on snow-covered or frozen ground. Doing so increases the potential for runoff and contamination of water resources.

**Water Quality** | While nutrients are essential to all life, plant or animal, in the wrong place and at the wrong concentration they can be pollutants. Set backs from environmentally sensitive areas should be observed to avoid run-off and sub-surface flow of soluble nitrogen from the application area. A 35 foot vegetated set-back will help prevent water pollution. That does not mean the area of the set back cannot be farmed, but manure should not be applied in that area. If farmed, the setback width should be increased to 100 feet.

The organic matter in manure can also be a pollutant in water. The decay of organic matter depletes oxygen and can result in death of aquatic life. Good manure management practices can also prevent organic matter, sediment and phosphorus from reaching surface waters. In addition to a set back, a permanent riparian (stream-side) buffer can filter out these pollutants associated with run-off and erosion.

Exact buffer and set back widths should take into account slope and erodibility of the field in question. The information here is based on broad generalities.

**Assistance** | Extension and NRCS can help prepare specific field nutrient budgets and selection of appropriate management practices. Conservation District supervisors and staff may also be able to provide technical assistance and recommendations.

**Manure Analysis and Information** | Owners of state or federally regulated animal feeding operations are required to provide recipients of transferred manure with the most recent nutrient analysis (Circular DEQ 9, Feb ’06, pg 30). The analysis should include: Total Kjeldahl Nitrogen (TKN), Nitrate Nitrogen and Total Phosphorus (Circular DEQ 9, Feb ’06, pg 21).