What’s new with manure: long term trends

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Introduction

- Expanded interest in knowing the nutrient content of manure.
- New species and management categories established.
Acknowledgment

Data for this summary was provided by the following laboratories.

- AgSource Laboratory
- Dairyland Laboratory
- Rock River Laboratory
- UW Soil and Forage Laboratory
Laboratory Data

- 22,903 lab values from 1998-2008 were summarized by management (liquid vs. solid) and species

- Includes 10,476 liquid dairy, 4,769 solid dairy, 408 solid beef, 1,720 solid poultry, 1,045 liquid swine and 141 solid swine samples, as well as smaller numbers of samples for other species
Nutrient concentrations can be estimated using “book” values for available N, P$_2$O$_5$, and K$_2$O.

Testing is needed to determine if a farm is typical and to establish an individual farm “typical” value.

If management and feeding practices do not change, manure analysis values will not vary significantly on a farm.
## Estimated first-year nutrient availability of various manures*

<table>
<thead>
<tr>
<th>Species</th>
<th>N</th>
<th>P$_2$O$_5$</th>
<th>K$_2$O</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy, surface applied</td>
<td>30%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Dairy, incorporated</td>
<td>40%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Beef, surface applied</td>
<td>25%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Beef, incorporated</td>
<td>35%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Swine, solid surface applied</td>
<td>50%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Swine, solid incorporated</td>
<td>65%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Poultry, solid surface applied</td>
<td>50%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
<tr>
<td>Poultry, solid incorporated</td>
<td>60%</td>
<td>60%</td>
<td>80%</td>
<td>60%</td>
</tr>
</tbody>
</table>

* If manure has been applied to the same field at similar rates for 2 consecutive years, increase the nutrient values an additional 10%. If manure has been applied to the same field at similar rates for three or more consecutive years, increase the nutrient values by 15%.
Comparison of dairy manure summary results with existing book values

![Graph showing comparison of dairy manure summary results with existing book values](image)
Comparison of liquid swine manure summary results with book values

Comparison of solid swine manure summary results with book values.
Comparison of solid poultry manure summary results with book values

![Graph showing comparison of nitrogen (N), phosphorus (P), and potassium (K) levels in manure samples from different sources and years.]
Comparison of solid chicken manure summary results with book values
Long term trends in N content of dairy manure

Solid Dairy N Trend

Liquid Dairy N Trend
Long term trends in P content of dairy manure
Long term trends in K content of dairy manure
Long term trends in N content of liquid swine manure
Long term trends in P content of liquid swine manure

Liquid Swine P$_2$O$_5$ Trend

![Graph showing the trend of P content in liquid swine manure from 1998 to 2008. The graph displays a general increasing trend with fluctuations.](image-url)
Long term trends in K content of liquid swine manure

Liquid Swine $K_2O$ Trend

[Graph showing trends from 1998 to 2008]
Long term trends in N content of solid poultry manure
Long term trends in P content of solid poultry manure

![Solid Poultry P$_2$O$_5$ Trend](chart.png)
Long term trends in K content of solid poultry manure
Long term trends in N content of solid beef manure
Long term trends in P content of solid beef manure
Long term trends in K content of solid beef manure
Liquid dairy manure nutrient content by region, WI (1998-2008)

State Avg
24
9
21

Nitrogen
P$_2$O$_5$
K$_2$O
Solid dairy manure nutrient content by region, WI (1998-2008)
Long term trends in P levels in liquid dairy manure vs. TMRs
Long term trends in P levels in solid dairy manure vs. TMRs

![Graph showing long term trends in P levels in solid dairy manure vs. TMRs. The graph plots P2O5 in solid dairy manure and %P in TMRs from 1998 to 2008. There is a decreasing trend in P2O5 in solid dairy manure and a slight increase in %P in TMRs over the years.]
Comparison of analyzed and “typical” manure nutrient content

- **Wisconsin Average, 1998-2008**
- **MWPS Average**
Manure Sampling and Testing

- Manure testing takes management practices into account and delivers more accurate values to use for farm specific nutrient management planning.
- Lab analysis summaries can be used to monitor long term trends in manure nutrient content as it is affected by management changes over time.