Manure Analysis Update: 1998-2010

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Introduction

- **Knowing the nutrient content of manure is critical for nutrient management planning.**
- **New species and management categories have been established.**
- **Follow trends and update book values**

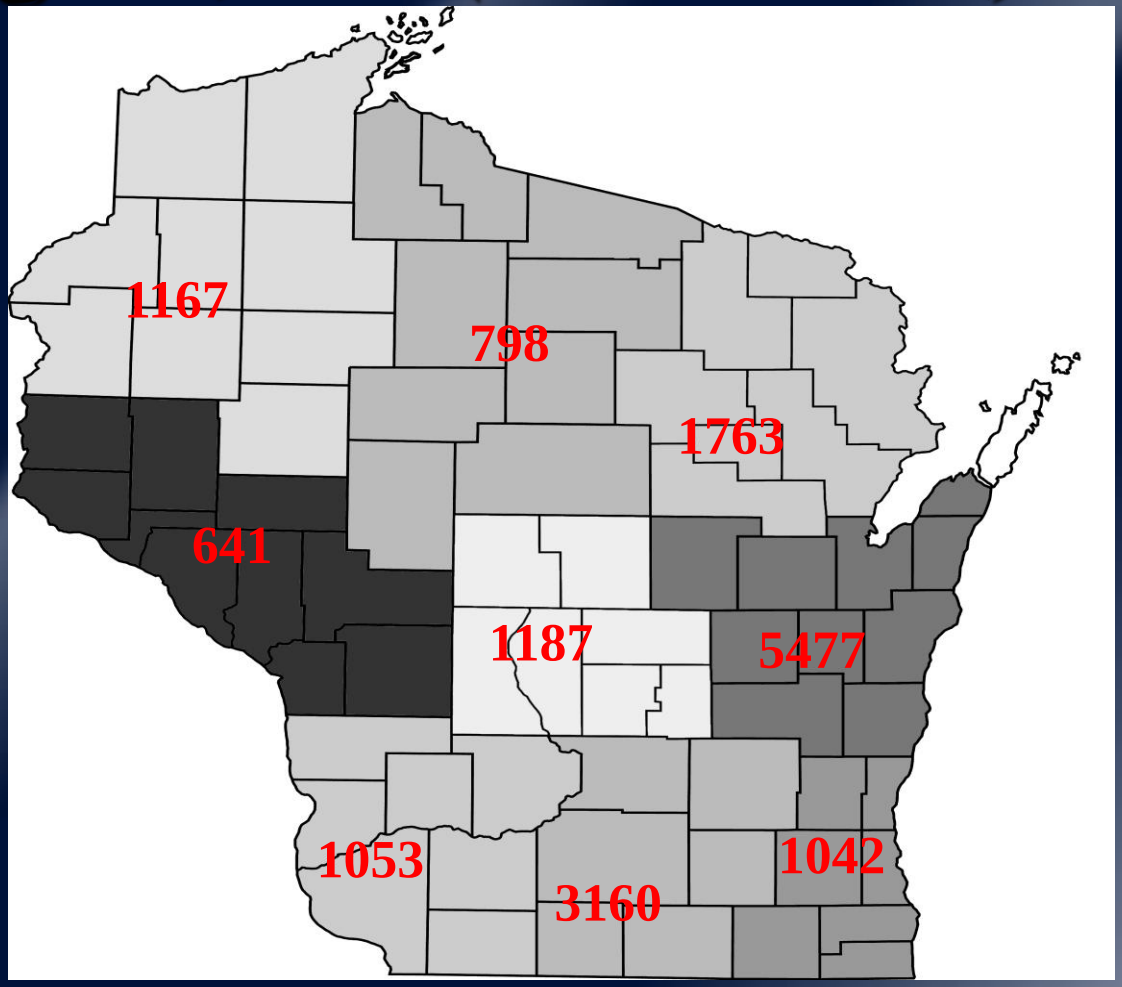
Acknowledgment

- **Data for this summary was provided by the following laboratories.**
  - **AgSource Laboratory**
  - **Dairyland Laboratory**
  - **Rock River Laboratory**
  - **UW Soil and Forage Laboratory**

Laboratory Data

- **27,391 lab values from 1998-2010 were summarized by management (liquid vs. solid) and species**
- **Includes 14,676 liquid dairy, 6,371 solid dairy, 2,298 solid poultry, 1,568 liquid swine, 553 solid beef, and 155 solid swine samples, as well as smaller numbers of samples for other species**

Manure sample numbers by region, WI (1998-2010)



Numbers listed represent 59% of total samples where county was listed.

"Book Values"

- Nutrient concentrations can be estimated using "book" values for available N, P_2O_5, and K_2O
- 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

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**

Typical total nutrient content of solid manures tested in Wisconsin. A2809

Species	DM	N	P_2O_5	K_2O	S
	%	lb/ton	lb/ton	lb/ton	lb/ton
Dairy	24	10	5	9	1.5
Beef	35	14	9	11	1.6
Swine	20	14	10	9	2.7
Duck	35	17	21	30	3.9
Chicken	60	40	50	30	3.9
Turkey	60	40	40	30	3.9
Sheep	45	26	18	40	2.7
Horse	45	10	6	10	2.5

Typical total nutrient content of liquid manures tested in Wisconsin. A2809

Species	DM	N	P_2O_5	K_2O	S
	%	lb/1000 gal	lb/1000 gal	lb/1000 gal	lb/1000 gal
Dairy	6	24	9	20	4.2
Veal Calf	2	15	10	25	4.5
Beef	5	20	9	20	4.7
Swine, indoor pit	7	50	42	30	2.4
Swine, outdoor pit	4	34	16	20	2.4
Swine f/n, indoor pit	3	25	23	22	4.0
Poultry	3	16	10	12	9.1

*Estimated first-year nutrient availability of various manures**

Species	N	P_2O_5	K_2O	S
Dairy, surface applied	30%	60%	80%	60%
Dairy, incorporated	40%	60%	80%	60%
Beef, surface applied	25%	60%	80%	60%
Beef, incorporated	35%	60%	80%	60%
Swine, solid surface applied	50%	60%	80%	60%
Swine, solid incorporated	65%	60%	80%	60%
Poultry, solid surface applied	50%	60%	80%	60%
Poultry, solid incorporated	60%	60%	80%	60%

* 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%.

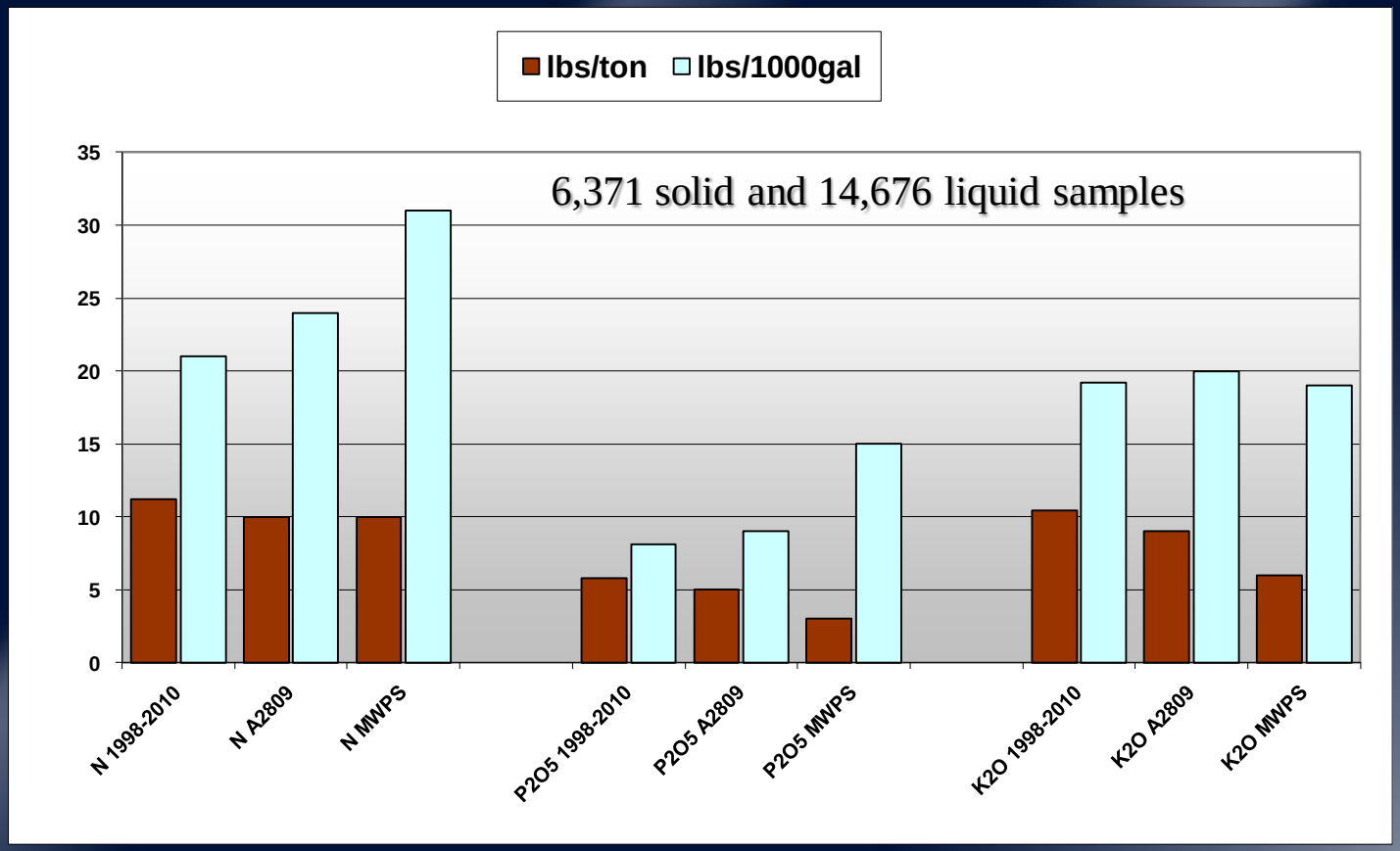
Estimated first year available nutrient content of solid manures. A2809

Species	N	N	P_2O_5	K_2O	S
	Surface	Incorp.	lb/ton	lb/ton	lb/ton
	lb/ton	lb/ton			
Dairy	3	4	3	7	1
Beef	4	5	5	9	1
Swine	7	9	6	7	1
Duck	9	10	13	24	2
Chicken	20	24	30	24	2
Turkey	20	24	24	24	2
Sheep	7	9	11	32	1
Horse	3	4	4	8	1

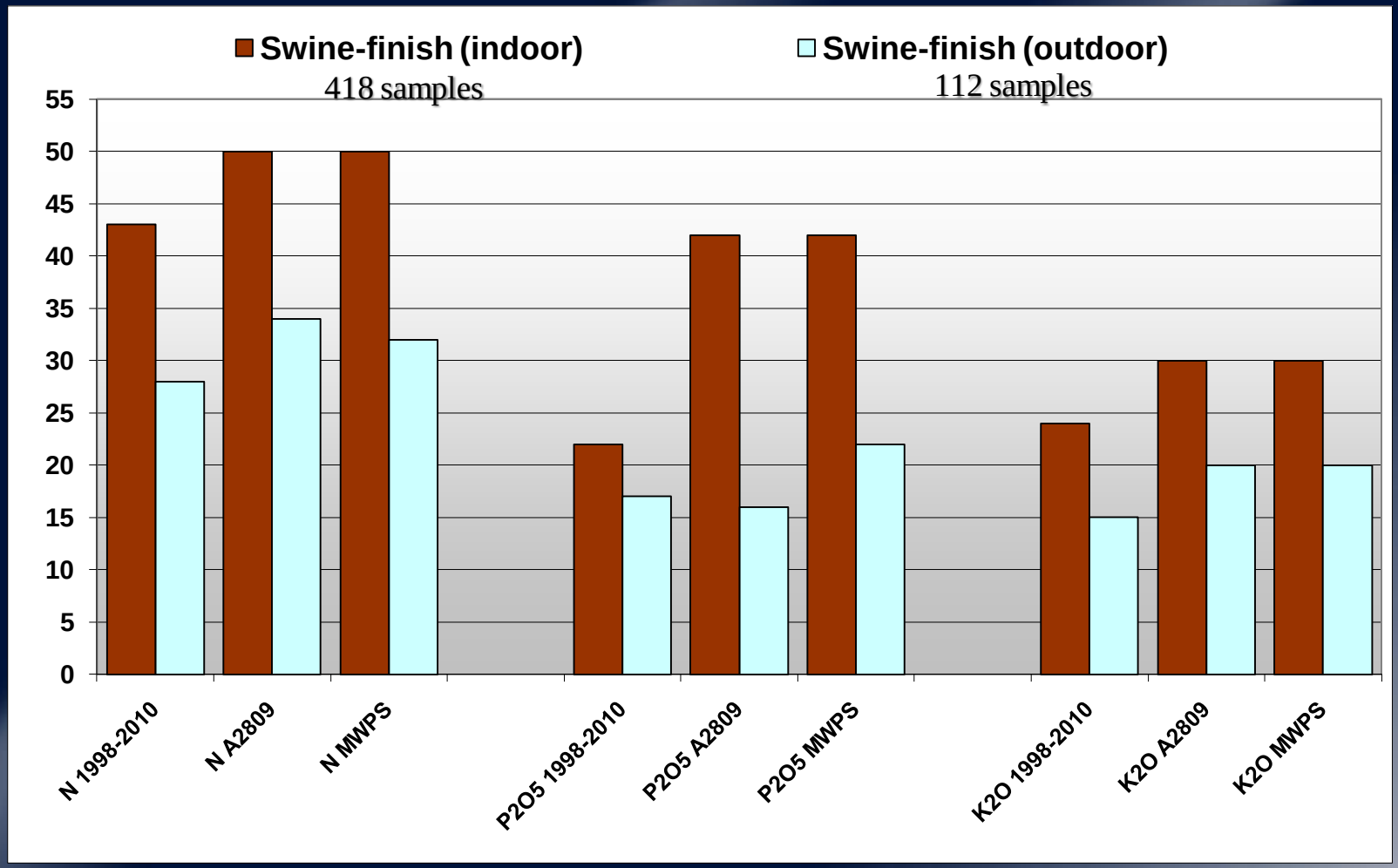
Estimated first year available nutrient content of liquid manures. A2809

Species	N	N	P_2O_5	K_2O	S
	Suface	Incorp.	lb/1000 gal	lb/1000 gal	lb/1000 gal
	lb/1000 gal	lb/1000 gal			
Dairy	7	10	5	16	2
Veal Calf	6	8	6	20	2
Beef	5	7	5	16	3
Swine, indoor pit	25	33	25	24	1
Swine, outdoor pit	17	22	10	16	1
Swine f/n, indoor pit	13	16	14	18	2
Poultry	8	10	6	10	5

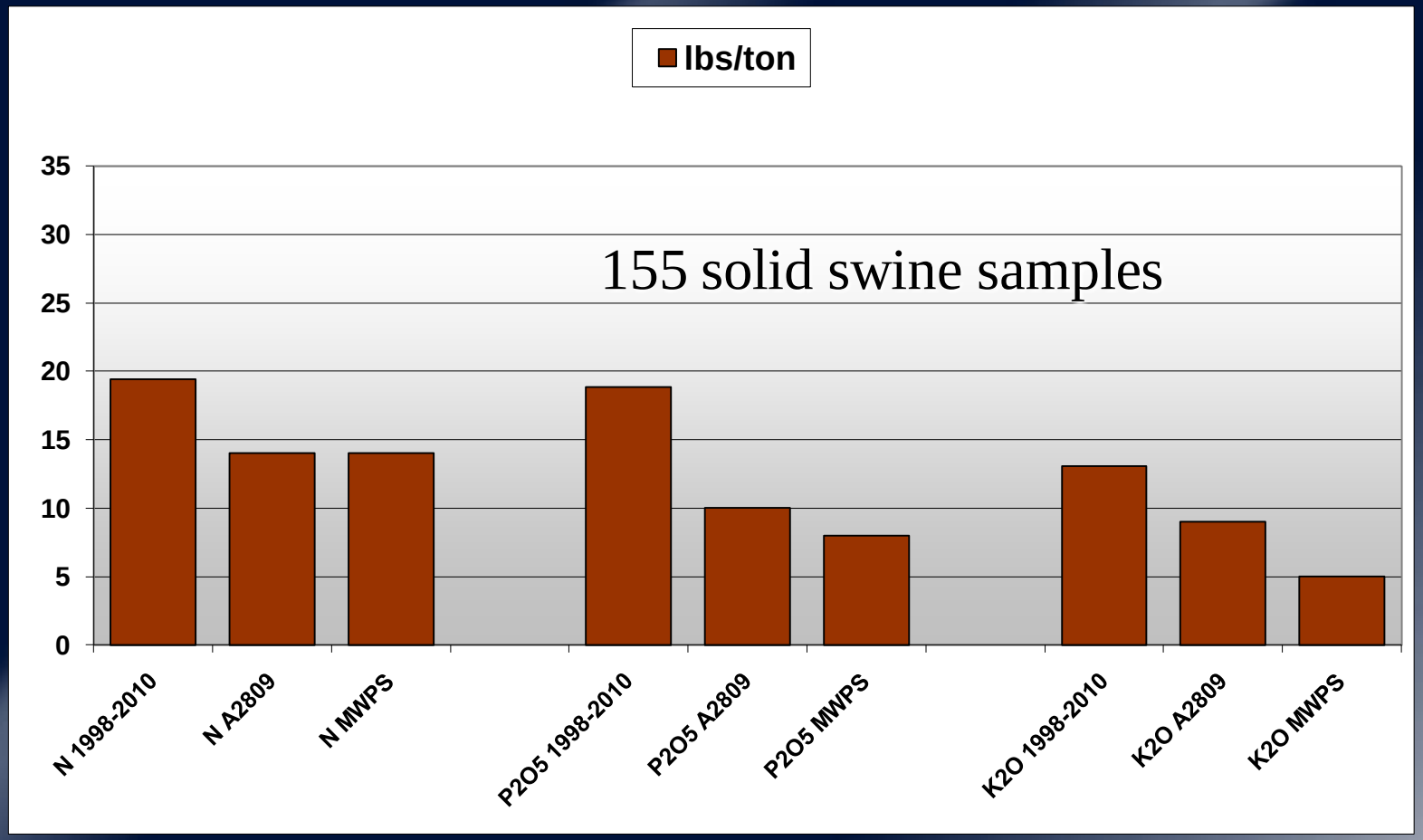
Comparison of dairy manure summary results with existing book values



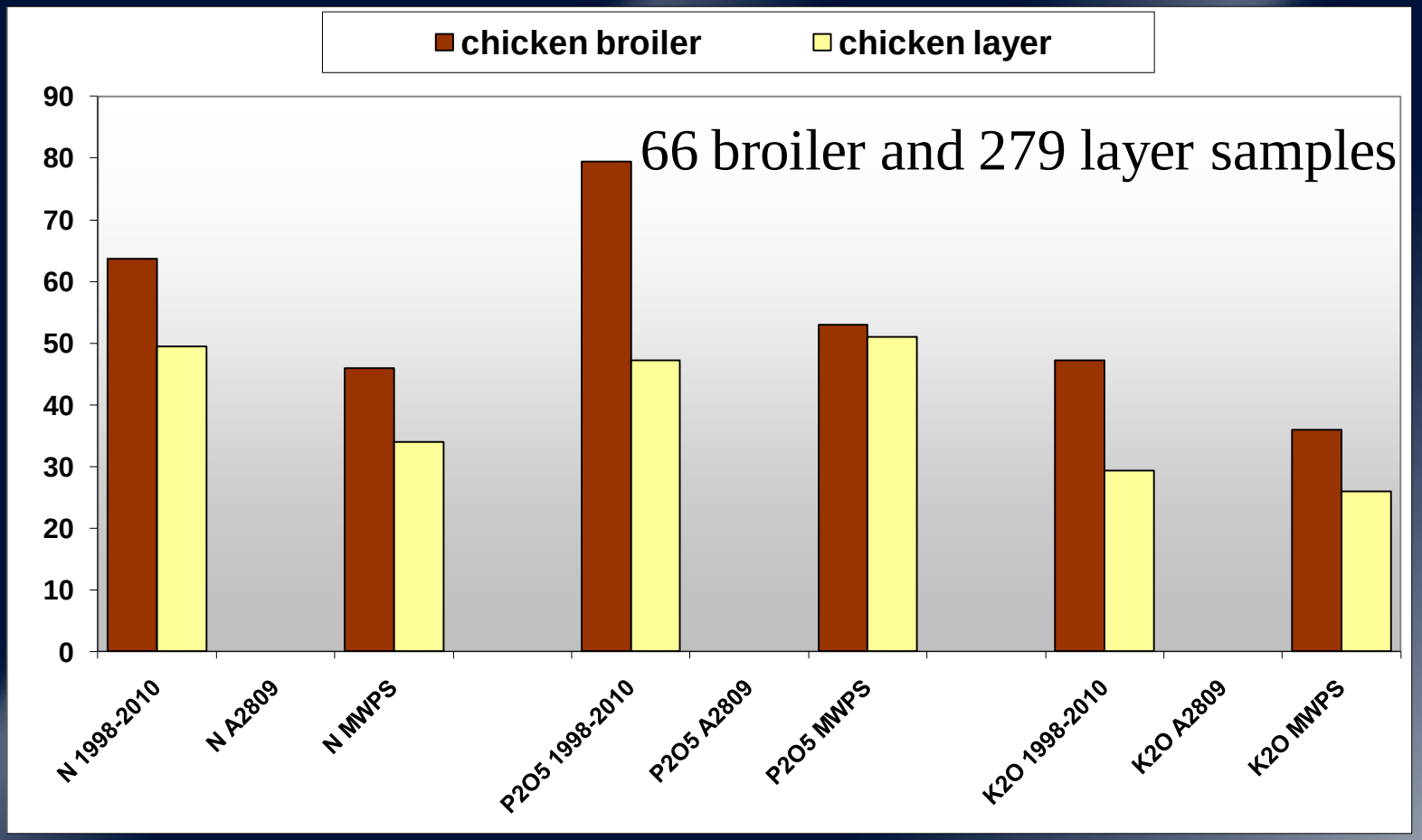
Comparison of liquid swine manure summary results with book values



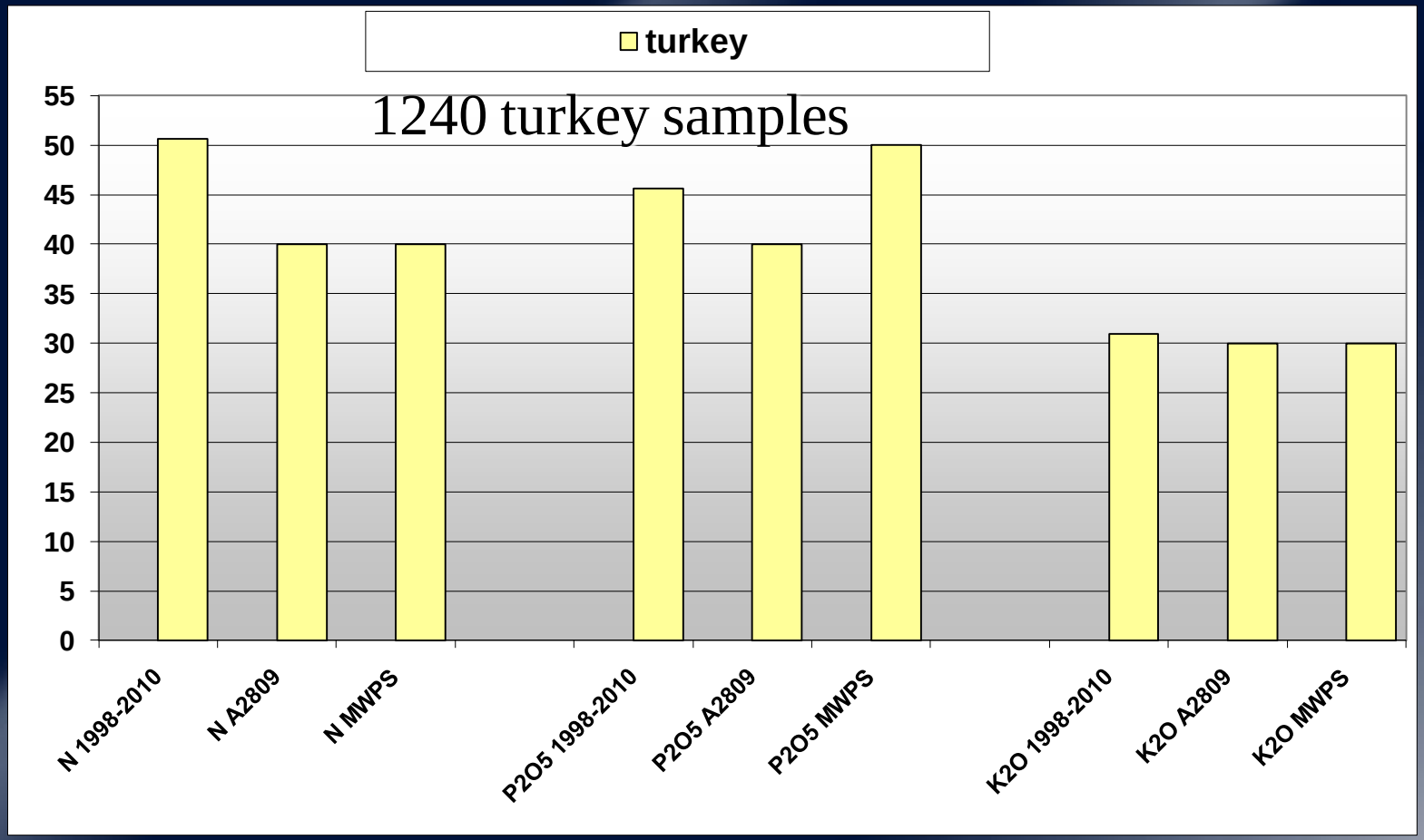
Comparison of solid swine manure summary results with book values



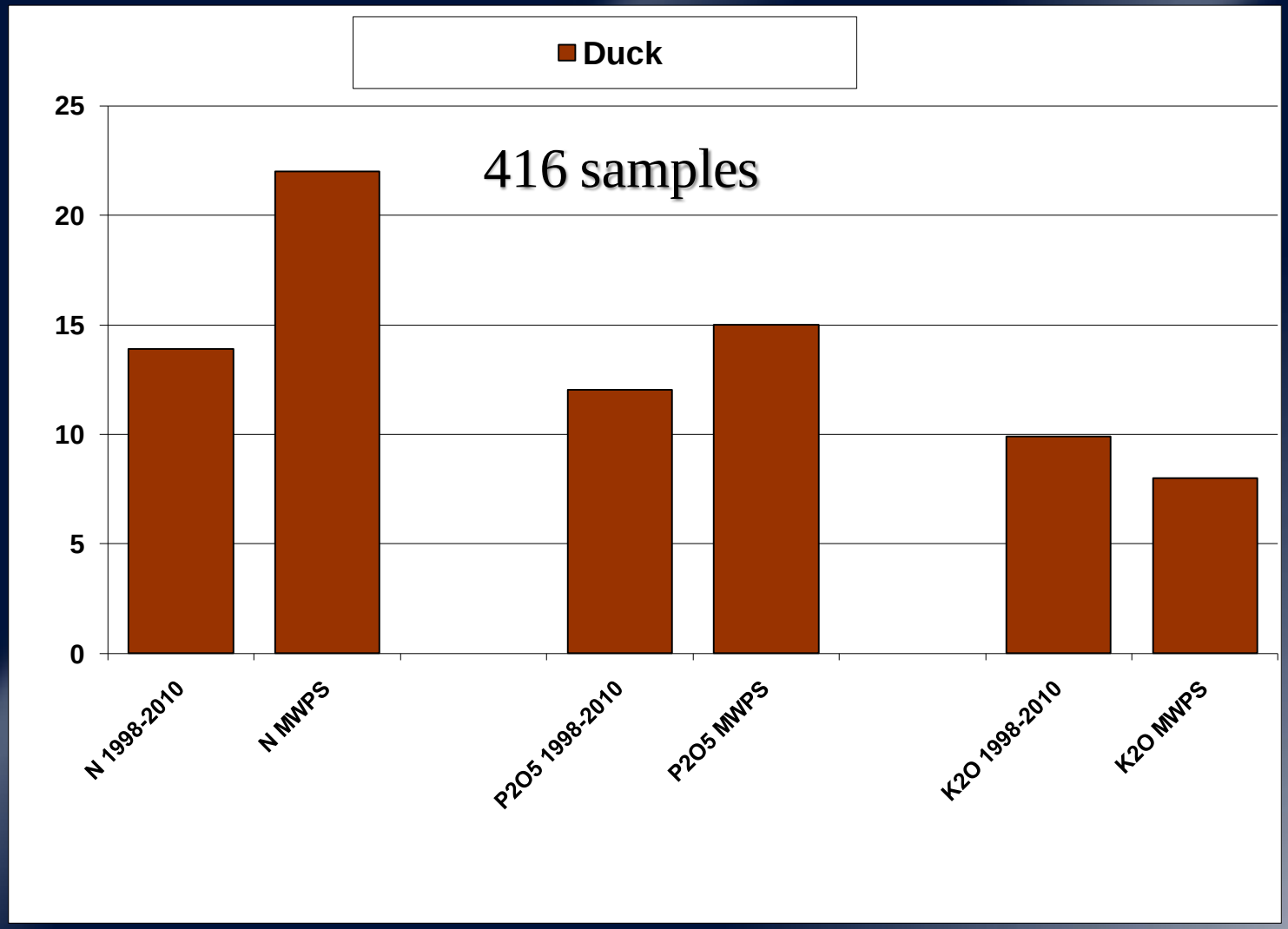
Comparison of solid chicken manure summary results with book values



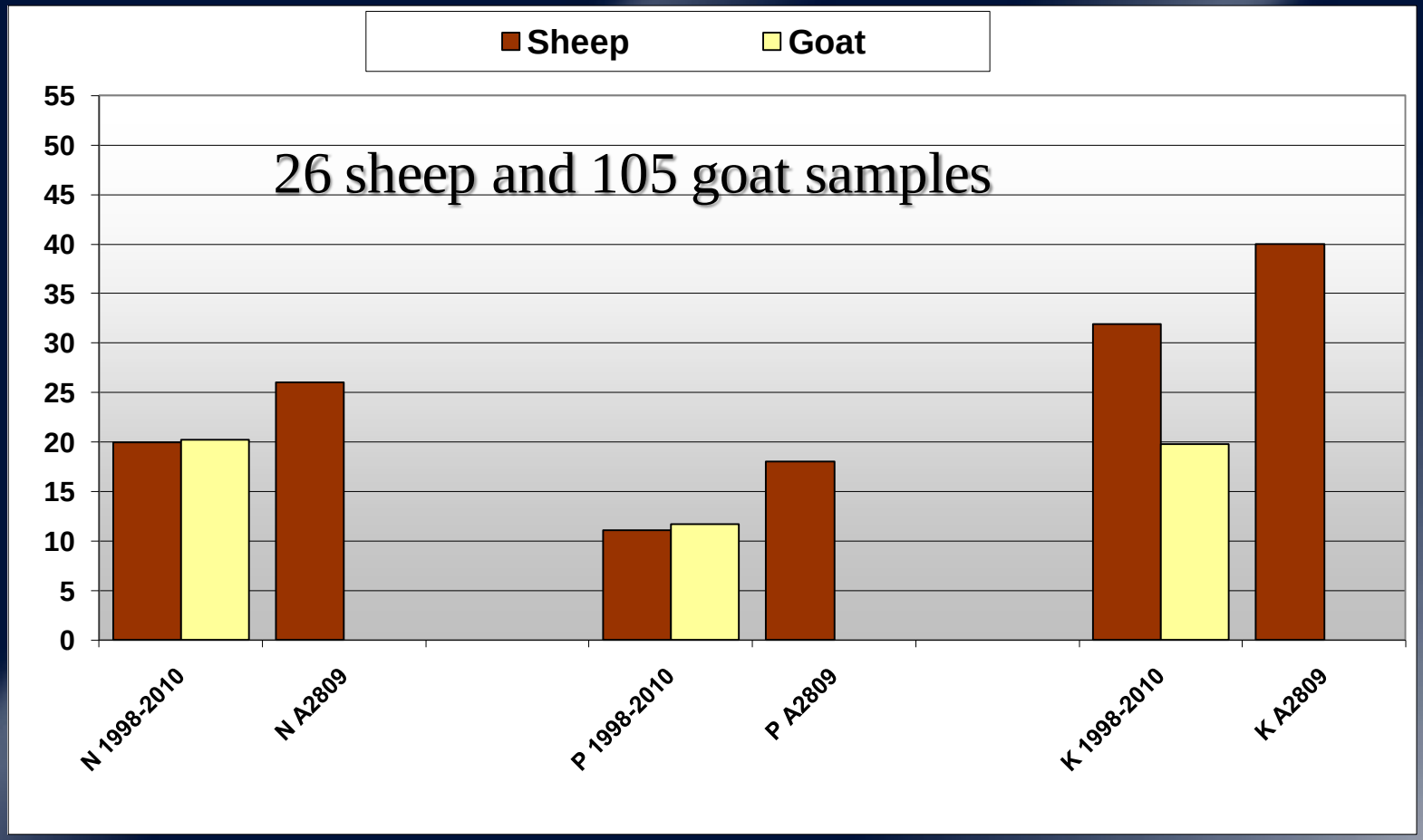
Comparison of solid turkey manure summary results with book values



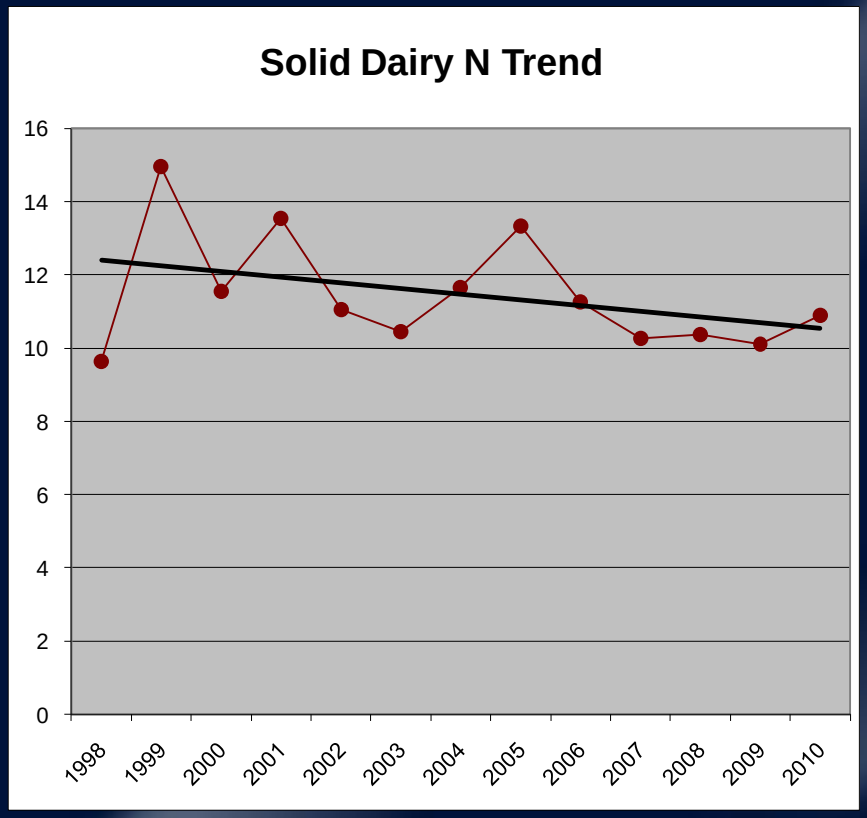
Comparison of liquid poultry manure summary results with book values

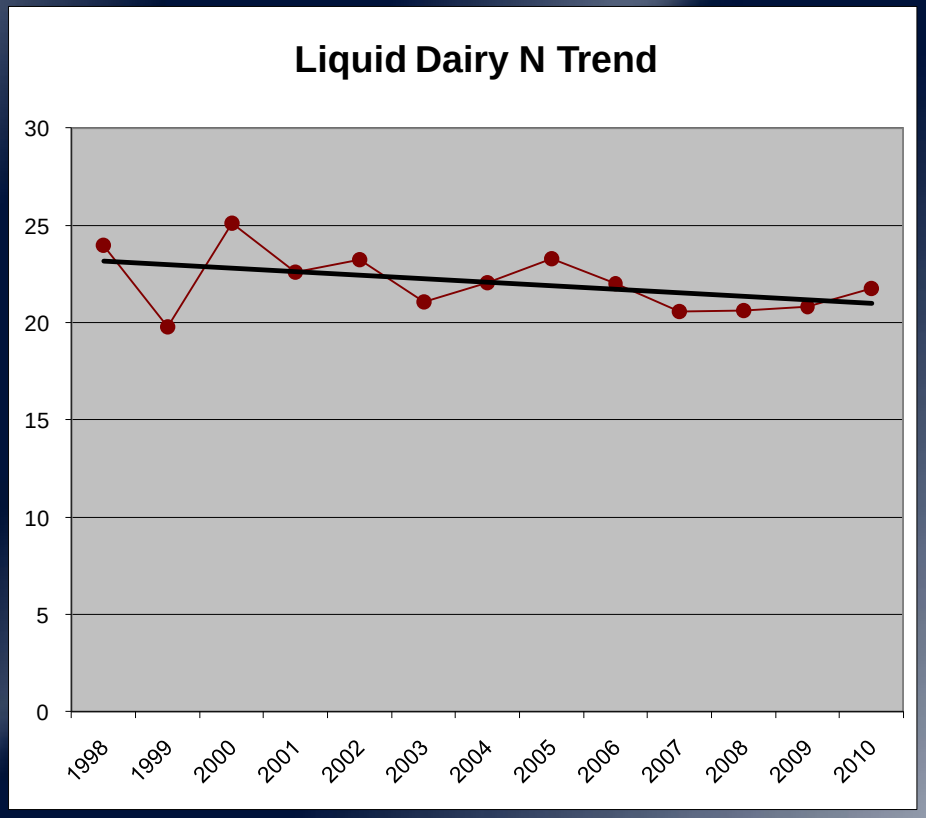


Comparison of solid sheep and goat manure summary results with book values

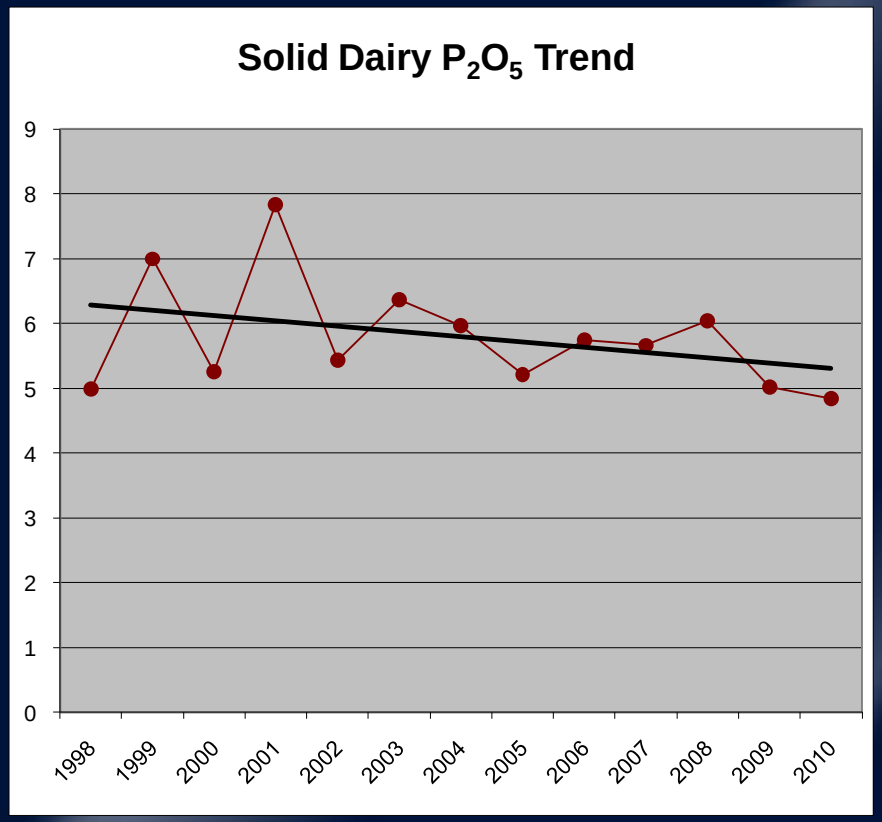


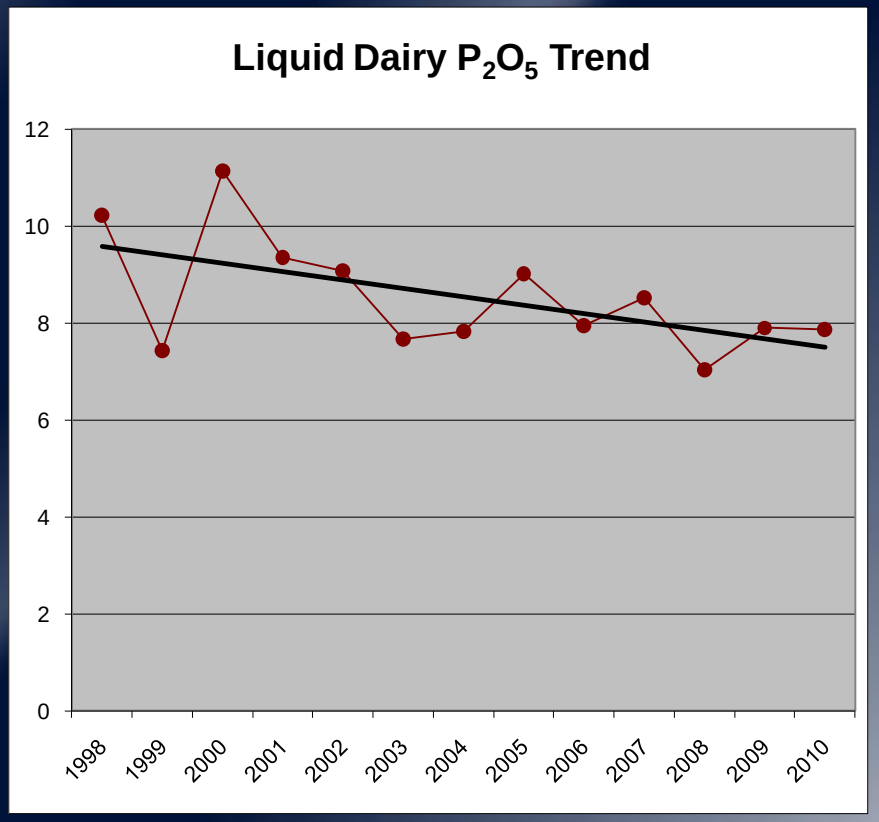
Long term trends in N content of dairy manure



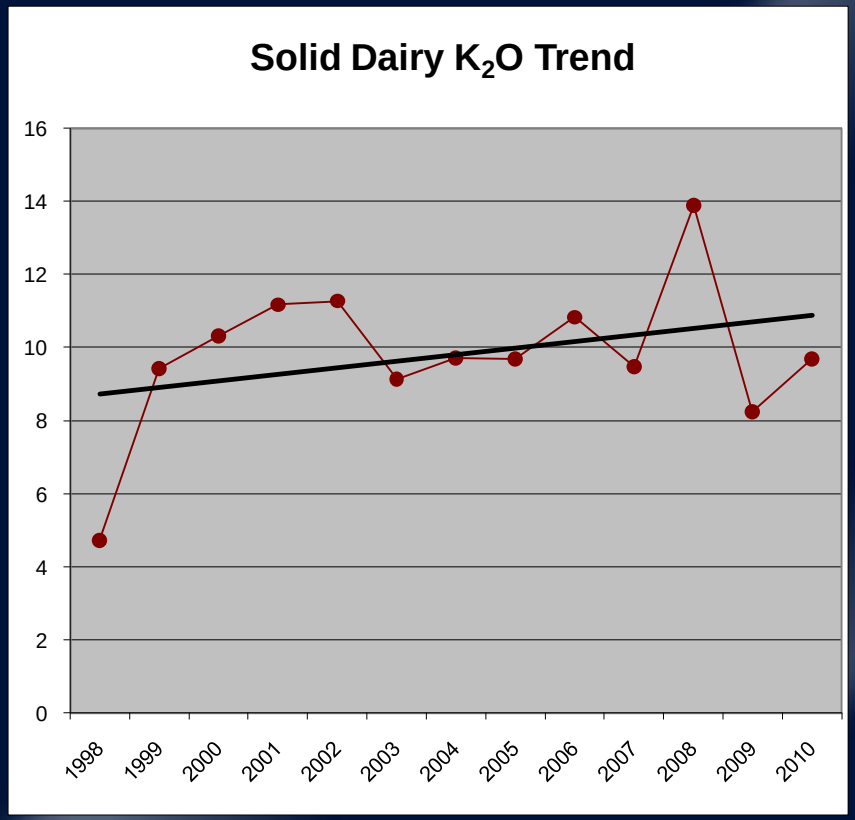


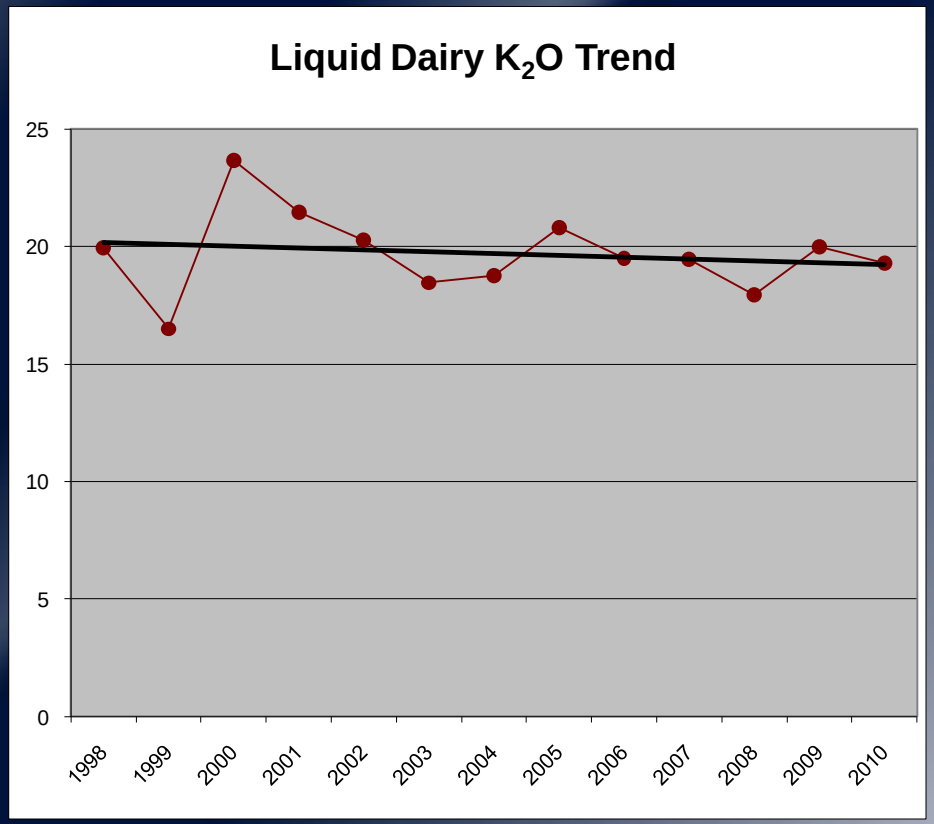
Long term trends in P content of dairy manure



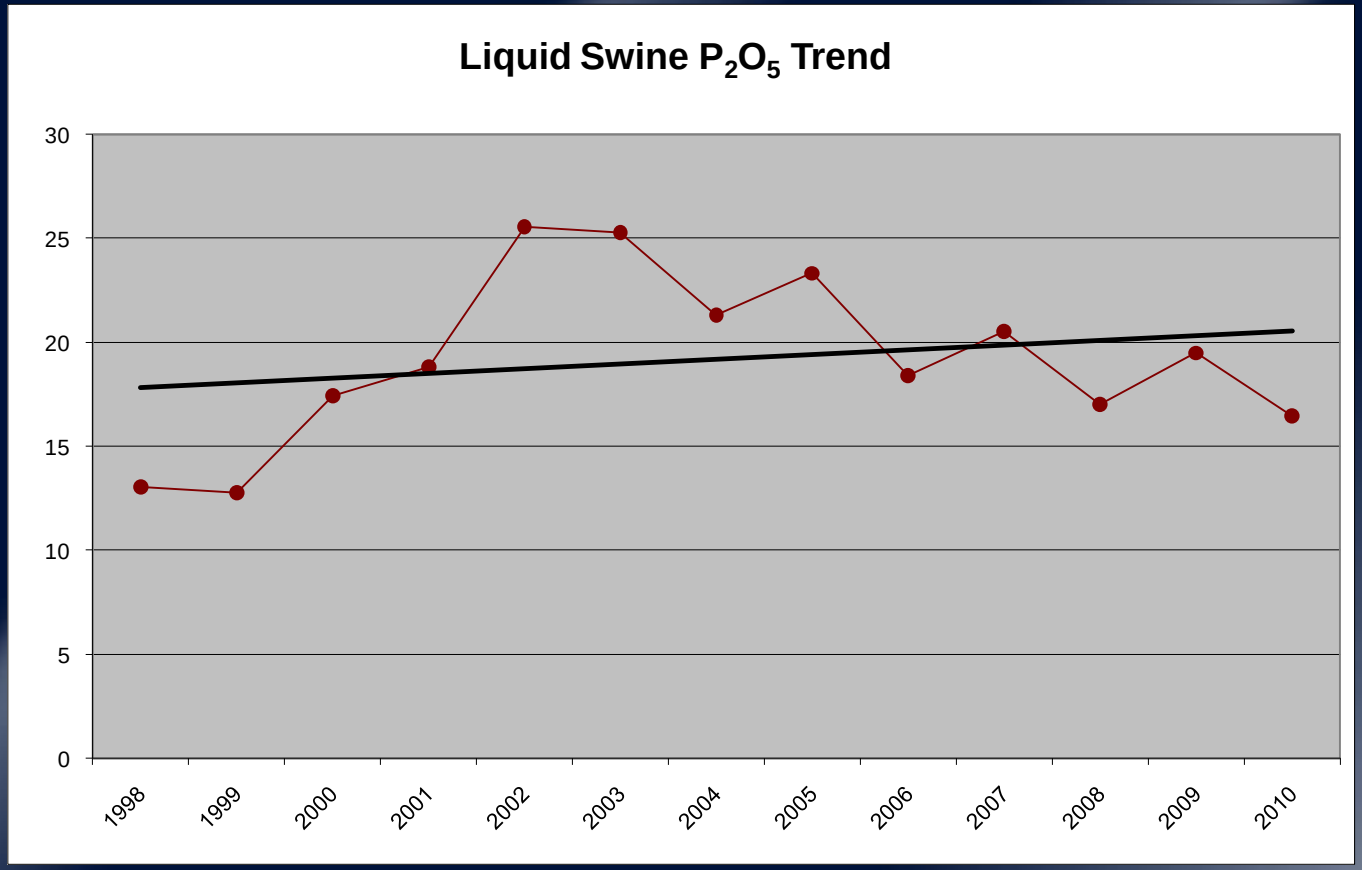


Long term trends in K content of dairy manure

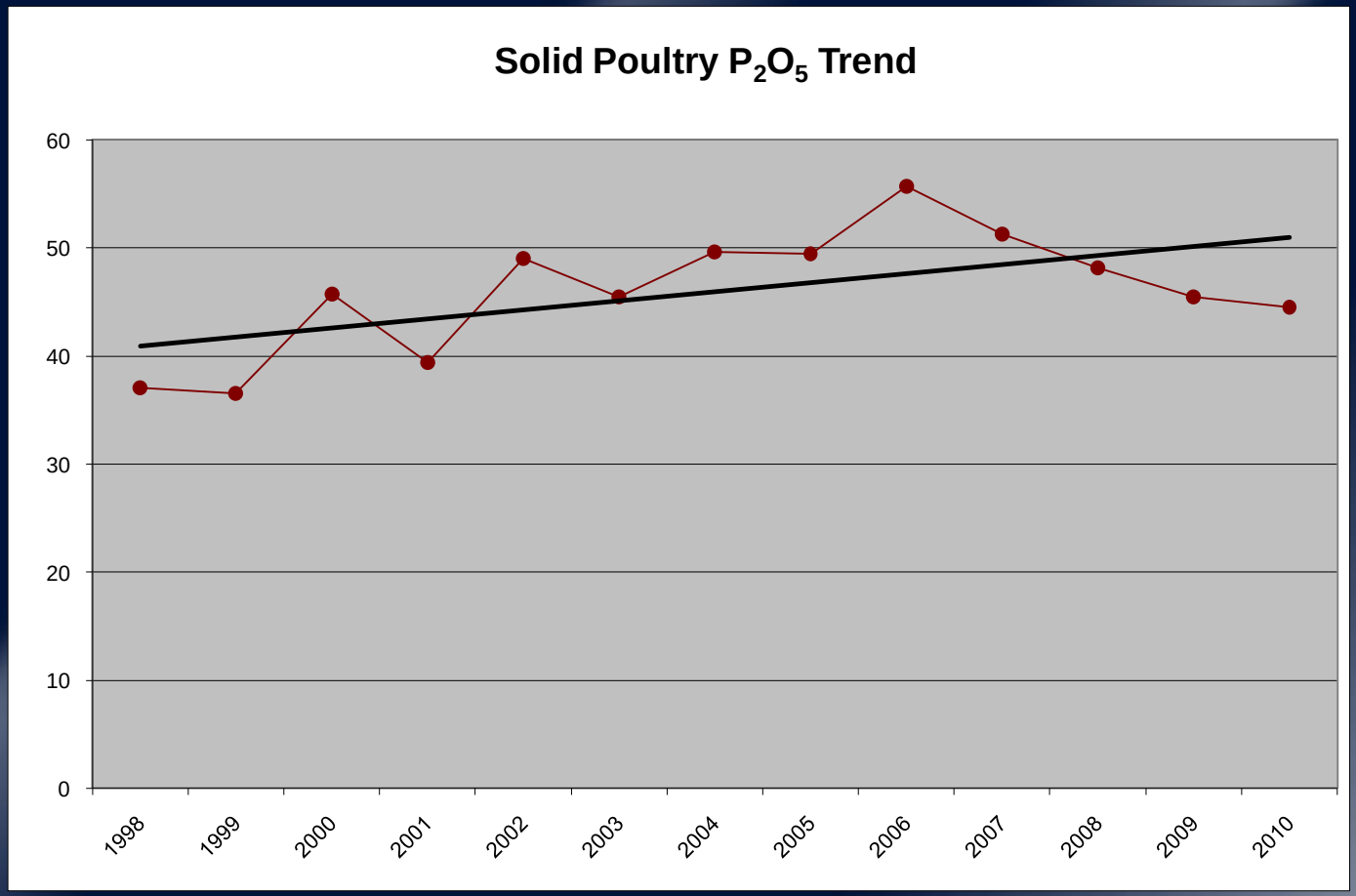




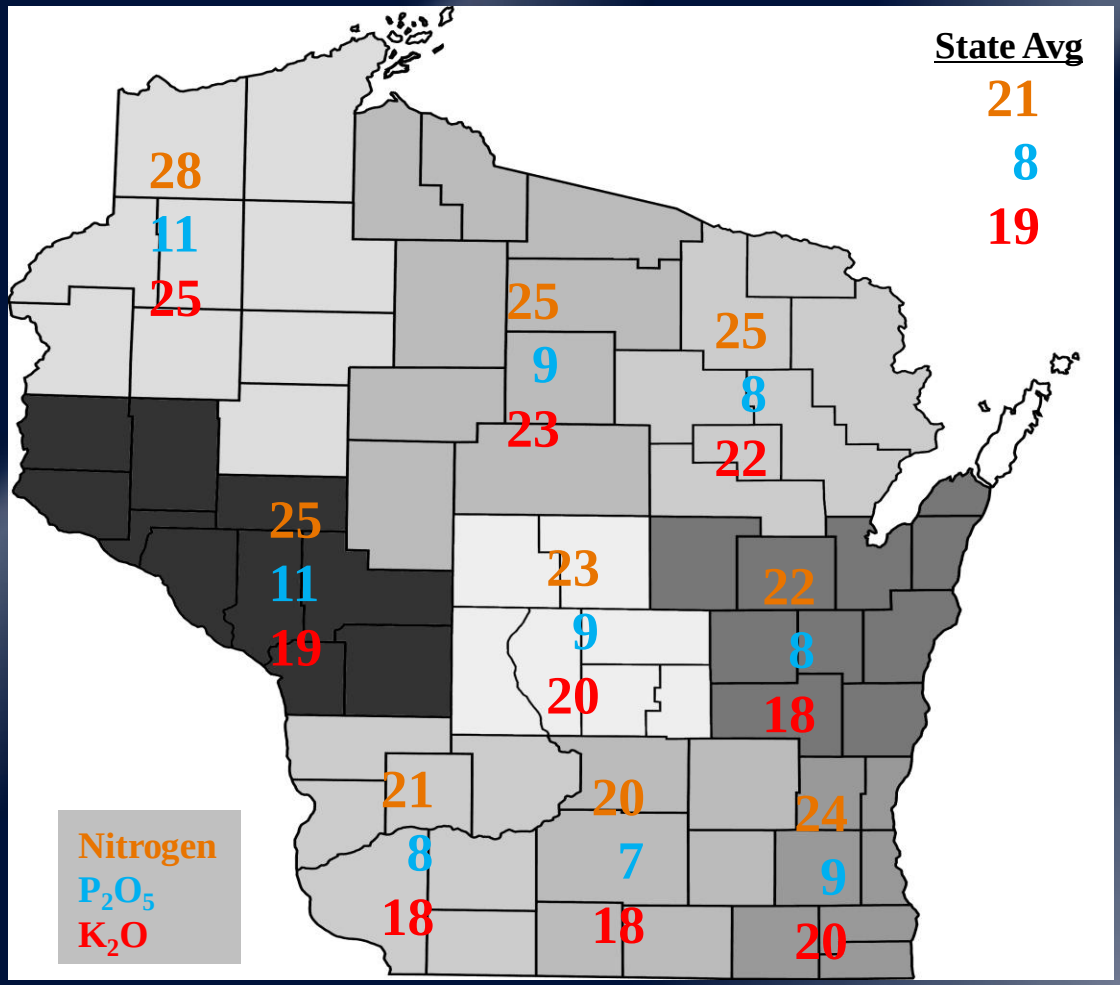
Long term trends in P content of liquid swine manure



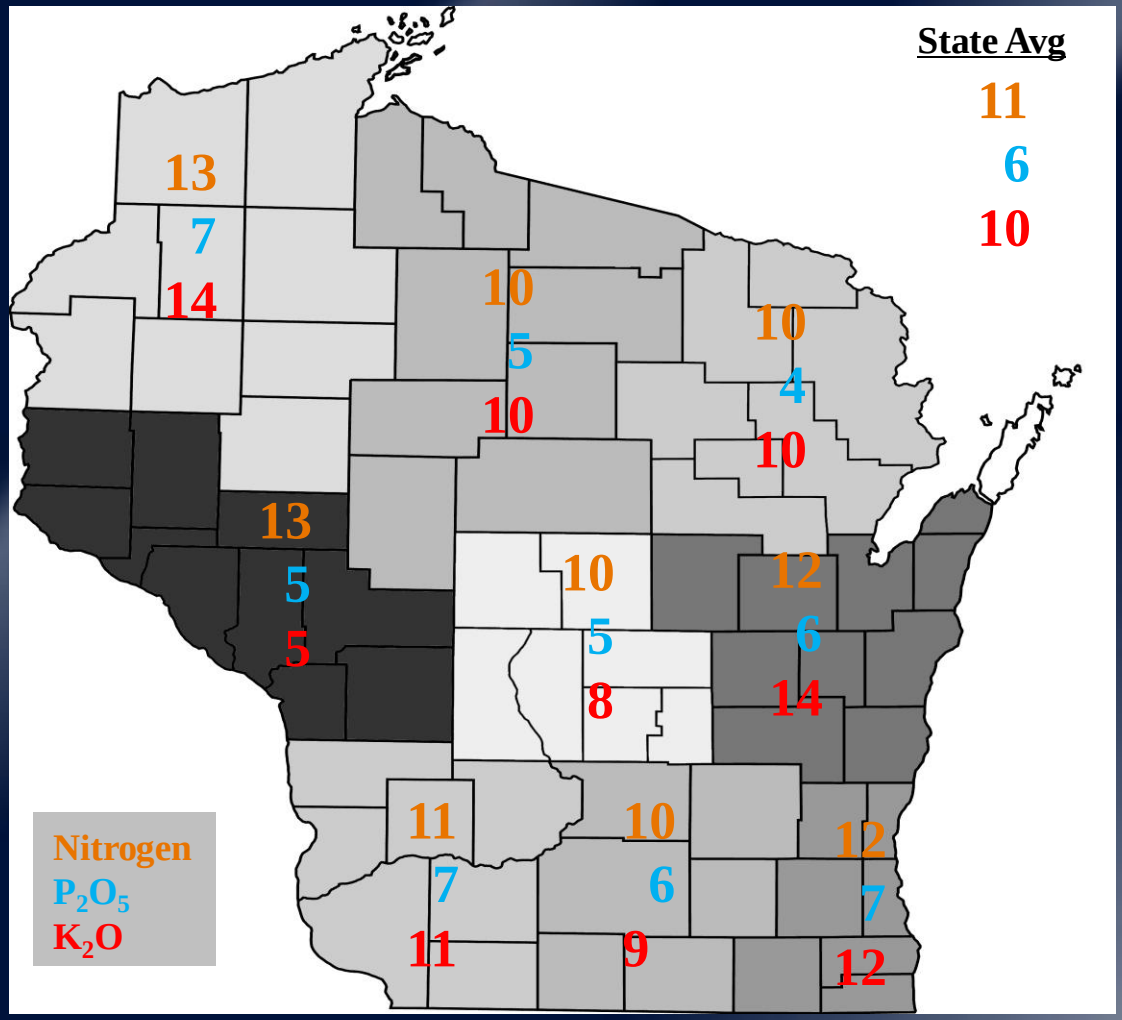
Long term trends in P content of solid poultry manure



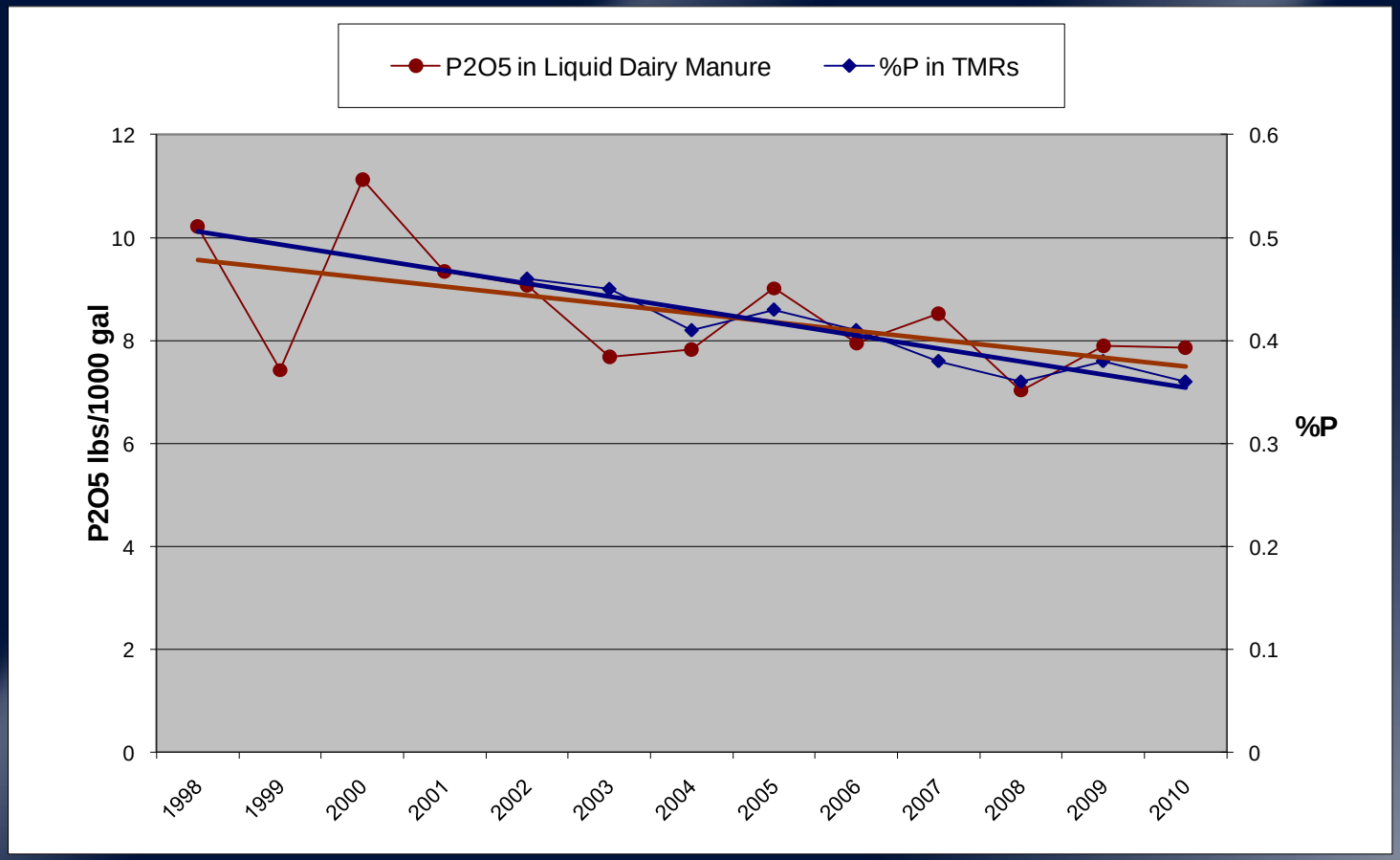
Liquid dairy manure nutrient content by region, WI (1998-2010)



Solid dairy manure nutrient content by region, WI (1998-2010)



Long term trends in P levels in liquid dairy manure vs. TMRs



Long term trends in P levels in solid dairy manure vs. TMRs