

Extension Applications of Nutrient Budgets in Pennsylvania



Biomass Energy

Robert E. Graves

Department of Agricultural and Biological Engineering

Charles W. Abdalla

Department of Agricultural Economics and Rural Sociology

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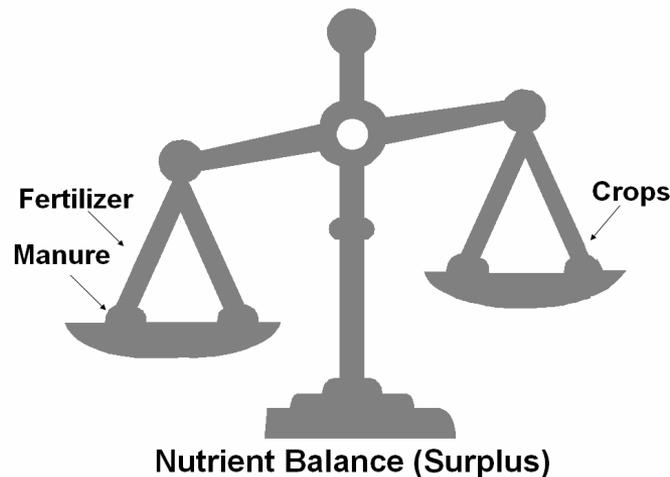
Outline

- Nutrient Budgets in PA & Mid-Atlantic
- 2 Questions
- Expand application
- Maintain optimism



What is a nutrient balance?

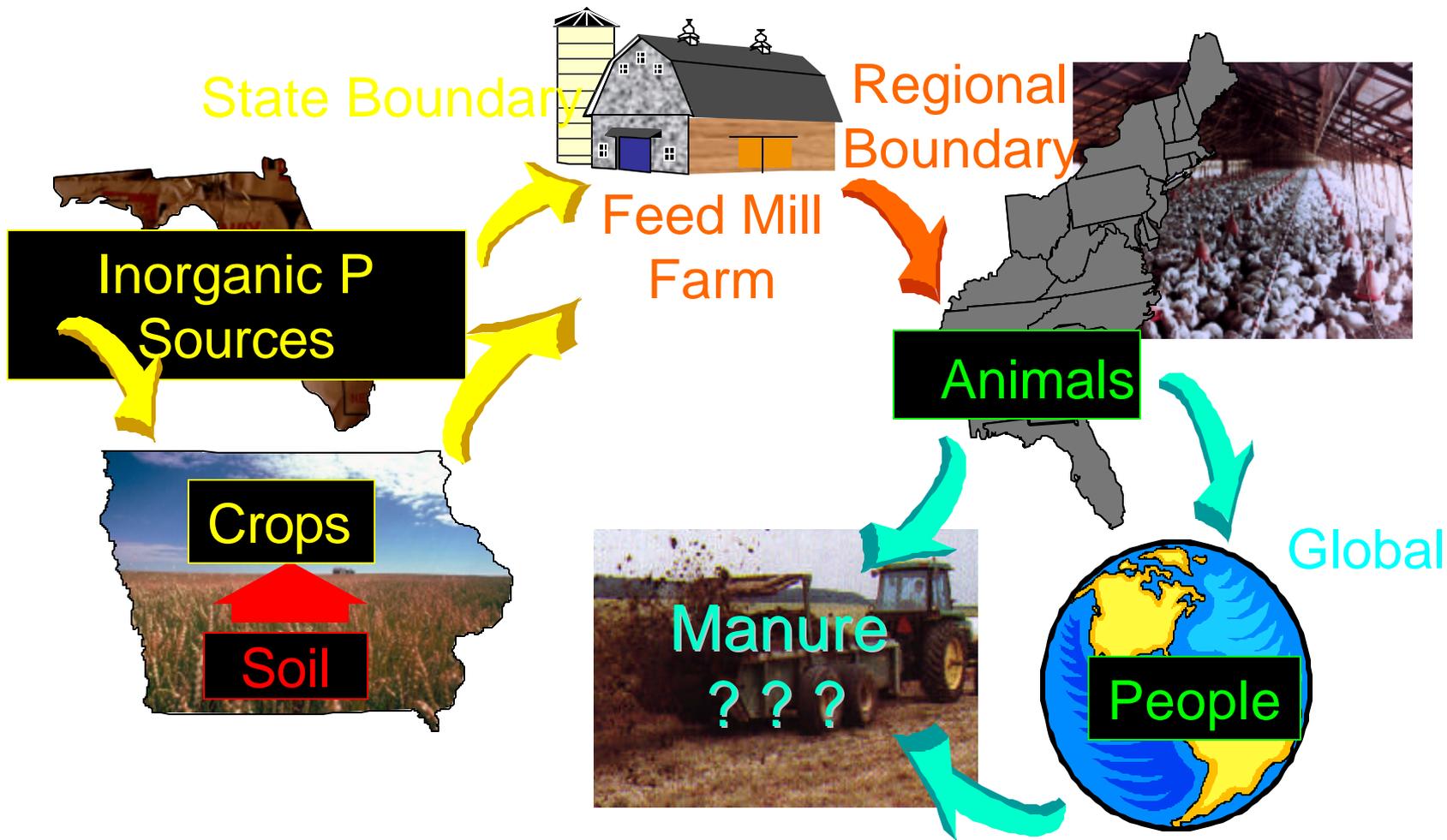
- An accounting system for nutrients
- Inputs and outputs of nutrients in a defined area
- Negative balance = deficit = output greater than input
- Positive balance = surplus = input greater than output



Where do we perform the nutrient balance?

- Farm level
- County level
- State level
- Regional level
- Watershed level





Question # 1

When was the **last time** you heard a discussion about nutrient budgets?



Question #2

When was the **first time**...



Question #2

When was the **first time...**
you heard a discussion about biomass
energy and nutrient budgets?



Bonus question

If Iowa really does use all of its corn to make ethanol ...



Bonus question

If Iowa really does use all its corn to make ethanol ...

will livestock move west and solve Pennsylvania's nutrient balance problems?



Review

- Too many nutrients vs. too many nutrients in the wrong place
- Where do you draw the boundaries?



Dilemma

How do you help people / organizations see, understand and act on nutrient budget imbalances?



Mid-Atlantic Nutrient Budgets

Aggregated nutrient budgets (county, watershed, state, region) are a way to quantify and illustrate the problem

Phosphorus – manure, fertilizer, animal products





Nutrient Budgets for the Mid-Atlantic States

Regional Project

Introduction:

[Nutrient budgets](#)
[Budget project](#)

Budgets:

[Pennsylvania](#)
[Delaware](#)
[Maryland](#)
[Virginia](#)
[West Virginia](#)
[Mid-Atlantic](#)
[Disclaimer](#)

Budget Details:

[Methods](#)
[Assumptions](#)
[References](#)

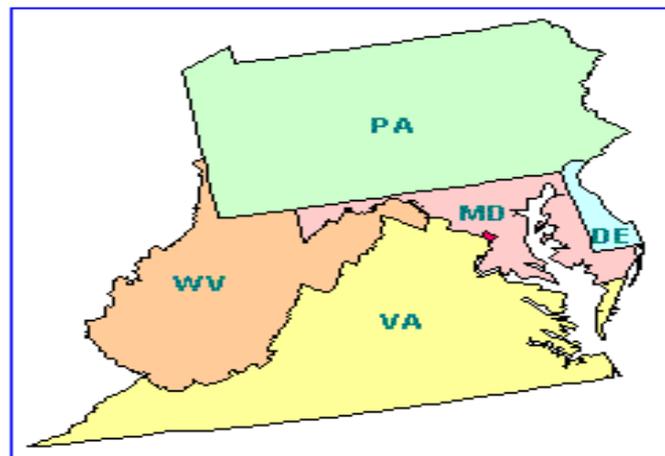
Glossary

Contact Us

As part of the [Mid-Atlantic Regional Water Quality Project](#), extension specialists and researchers at several Mid-Atlantic universities are developing [nitrogen](#) and [phosphorus budgets](#) for agricultural [cropland](#). Budgets will be posted here as they are developed.

These budgets will improve water quality protection by supporting activities that address the lack of balance between available nutrient supplies and potential nutrient use by crops in a region.

To learn about specific cropland budgets, click on a state below.



Mid-Atlantic States:

[Pennsylvania](#)
[Delaware](#)
[Maryland](#)
[Virginia](#)
[West Virginia](#)



Nutrient Budget Progress in Pennsylvania

- People understand the concept
- Farm level planning and decision making often consider nutrients
- Developing NMPs **G - VG**
- Implementing and inspecting NMPs **P-F**
- Understanding big picture and necessary changes **P – F**



What's new under the sun?

- Biomass energy
- Increased diversion of organic material from solid waste stream
- Increased nutrient removal from municipal and industrial wastewaters

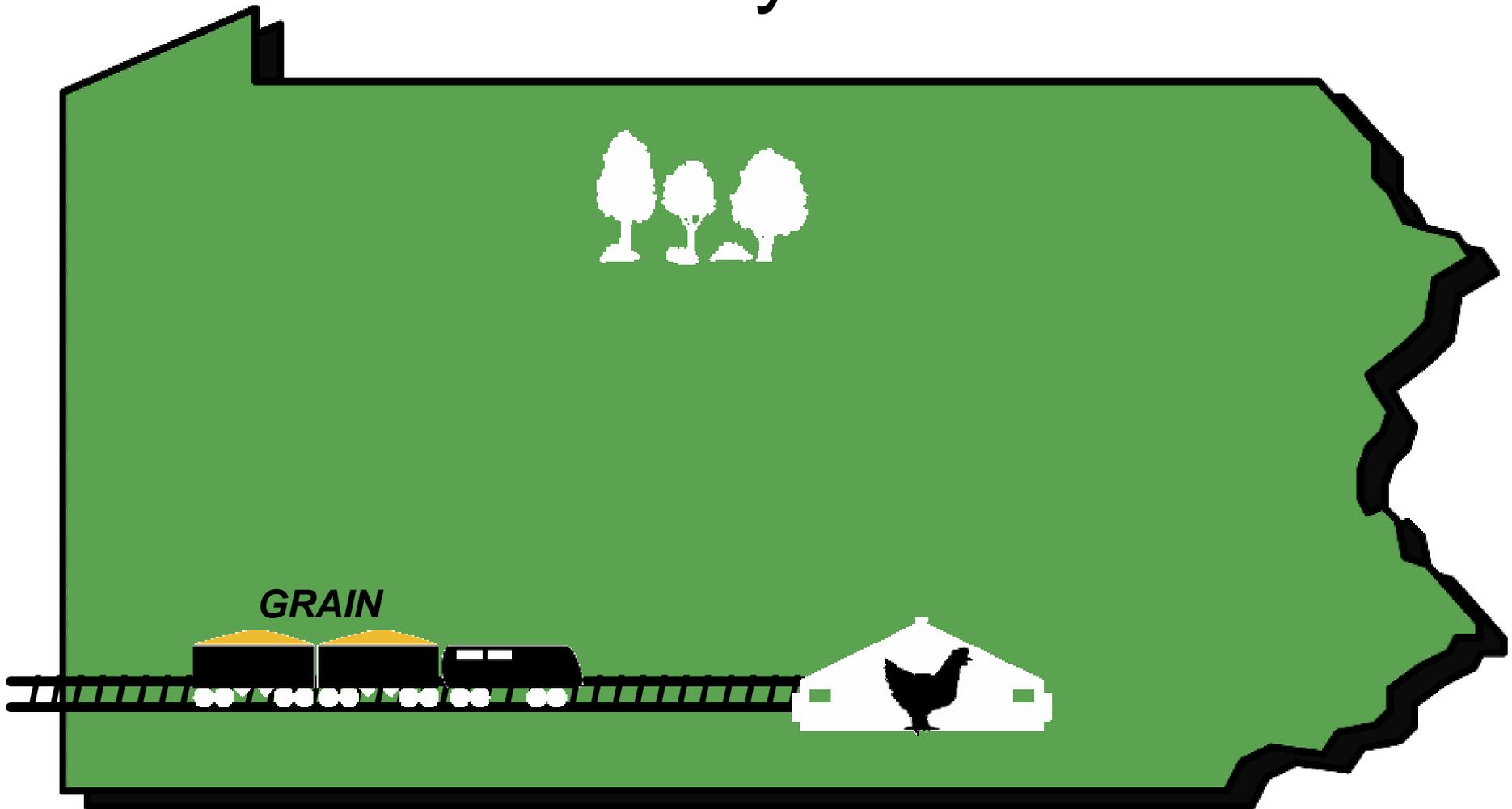


How do we/Can we use nutrient budgets to: ?

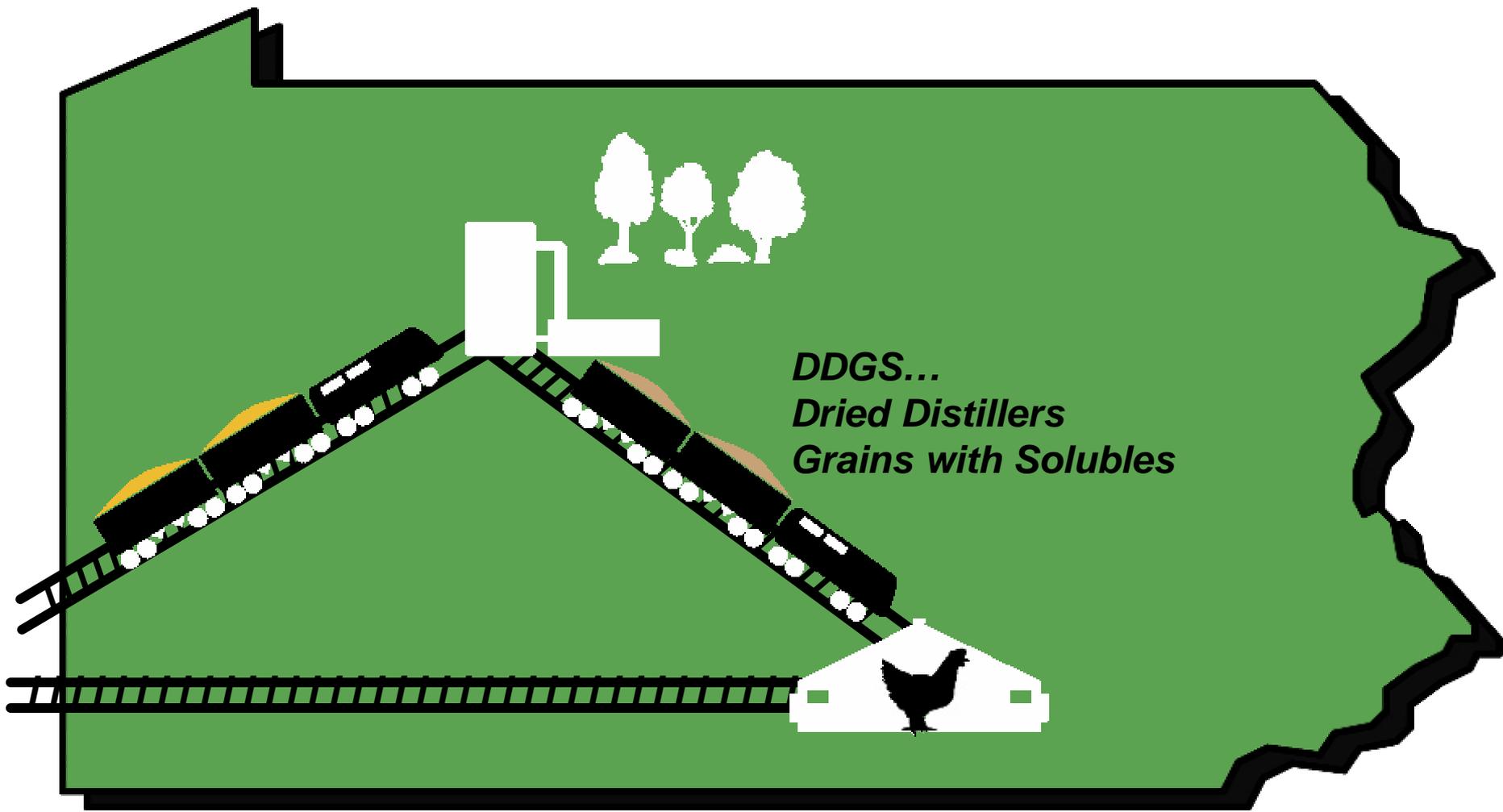
- Locate ethanol plants
- Locate centralized anaerobic digesters (biogas)
- Evaluate co-digestion of manures with off farm wastes
- Consider crops for producing biogas (European model)



Pennsylvania



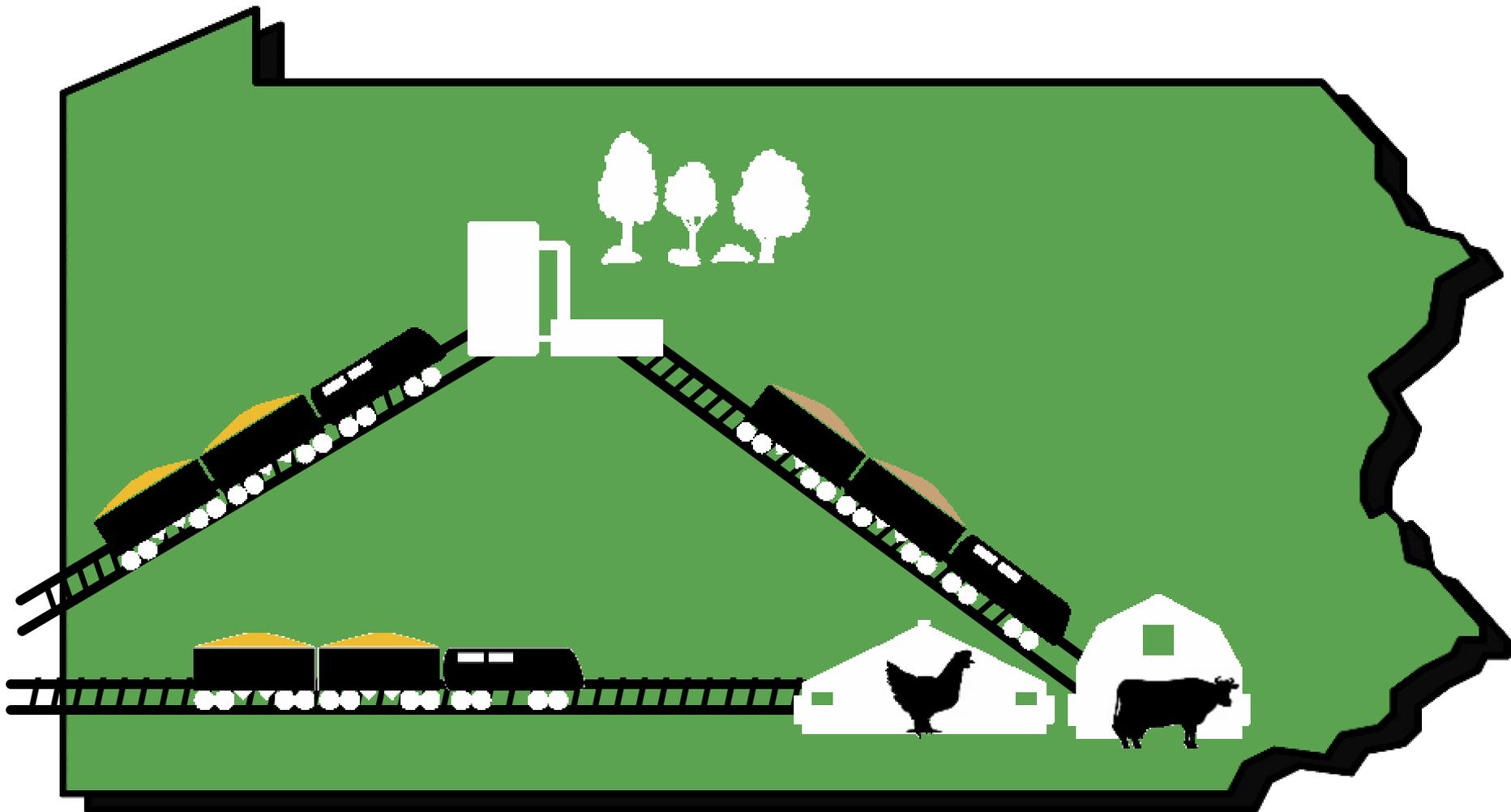
Ethanol Plant



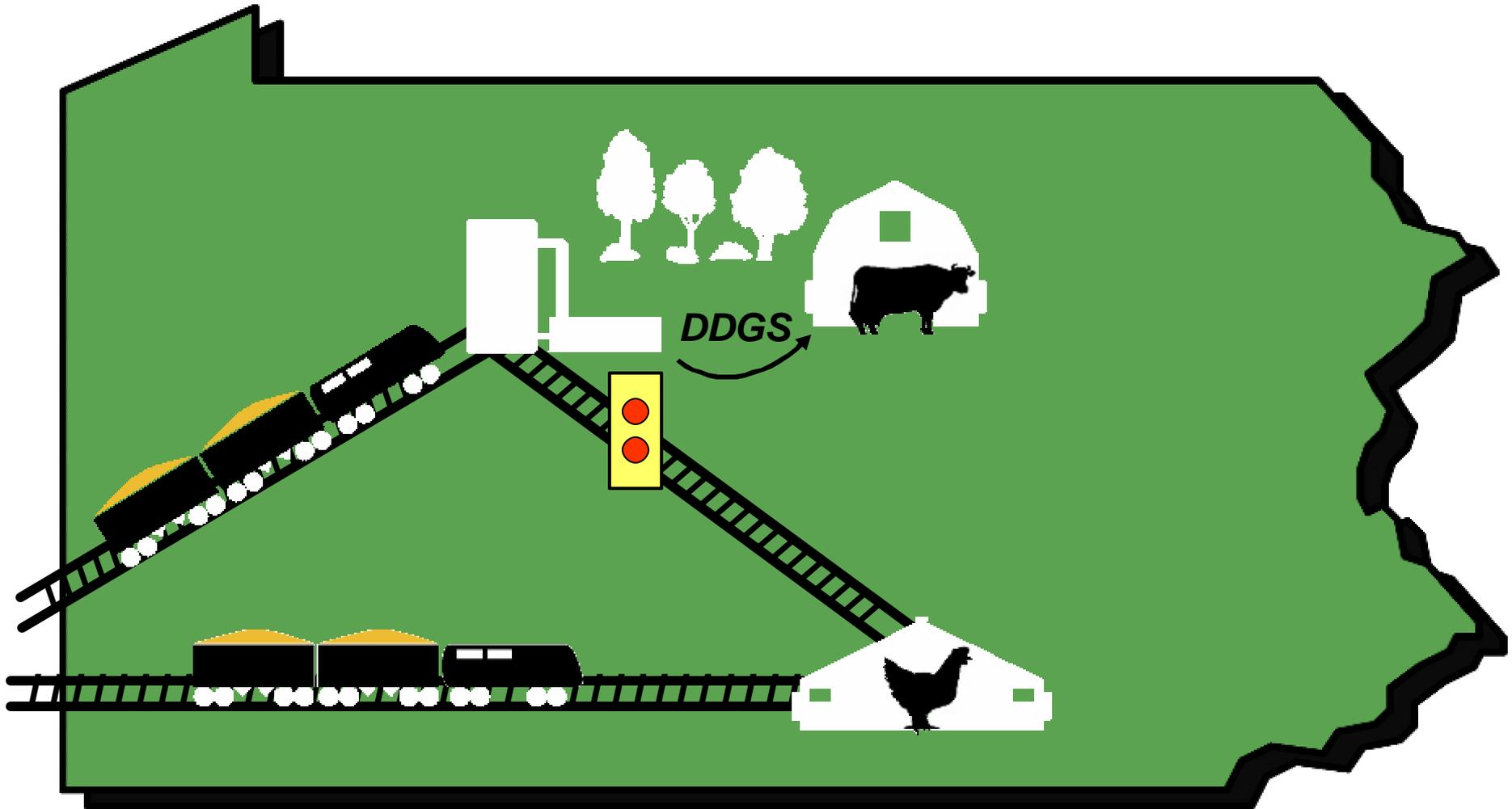
*DDGS...
Dried Distillers
Grains with Solubles*



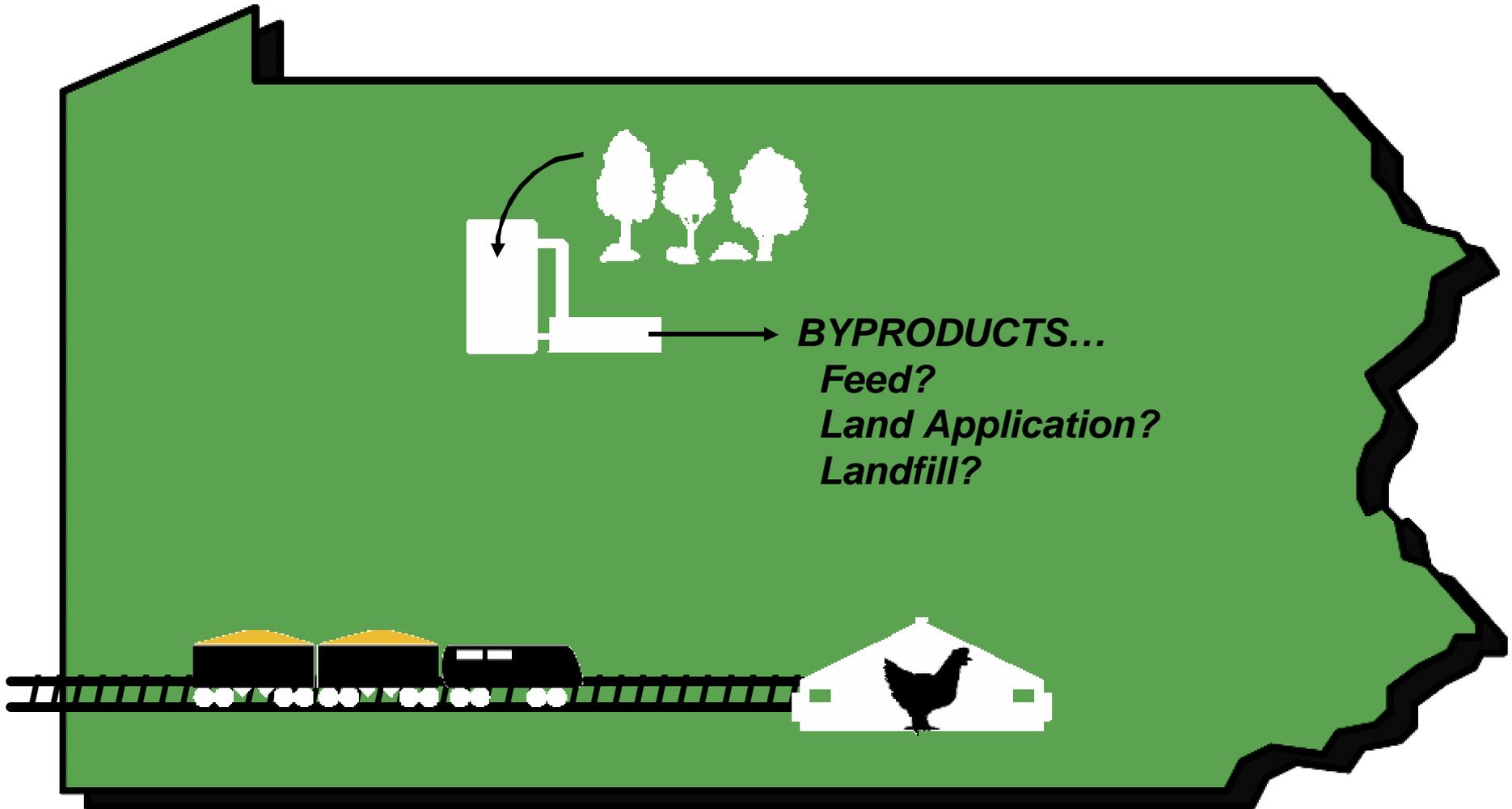
Chickens didn't want DDGS



Cows not allowed in Chicken Area



Cellulosic Ethanol Plant



Pennsylvania is Stressing Biomass Energy

- Pa Department of Environmental Protection regulates water quality
- PaDEP and Department of Agriculture administer nutrient management program
- **PaDEP and PDA are Promoting Renewable Energy**



New Farm Bill

- Bioenergy is proposed as a key goal
- Will this interest trump water quality?
- Will evaluations consider nutrient balance?



Conclusions

- Nutrient budgets are a useful tool for Water Quality and Animal Ag Issues at several scales
- Limits
- Educational potential is yet untapped.
- Should be considered in emerging proposals for bio-energy
- Political climate will decide in the short run



Acknowledgements

- Les Lanyon
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- Gerald Martin
- Mid-Atlantic Nutrient Budget Team



For more information:

<http://www.mawaterquality.org/budget/>

