Evaluation of Phosphorus Management Approaches for Pennsylvania

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Text version taken from Power Point presentation given at the Dairy and Animal Science Inservice Training in October, 2001. The CD can be ordered from the following site:

http://www.das.psu.edu/index.cfm?pagedefs=Nutrient/DairyInservice2001/_incPgDefsV6.cfm

Phosphorus Planning Strategies

USDA/EPA National Nutrient Management Strategy

- ✓ Agronomic P threshold strategy: Based on soil tests for crop response
- ✓ Environmental P threshold strategy: Based on an environmental P soil test threshold level
- ✓ Phosphorus Index: Based on a site P Index including both source and transport (critical source areas)

Cooperating Farms

- ✓ 11 farms throughout PA
  - ❖ Writers assisted in farm selection
  - ❖ Each farm worked with…
    - ➢ Nutrient management plan writer
    - ➢ Project economist
- ✓ Types of farms
  - ❖ 4 Dairies
  - ❖ 2 Poultry/Dairy
  - ❖ 1 Poultry/Beef
  - ❖ 1 Broiler

Phosphorus Management Strategies

- ✓Agronomic P Threshold most restrictive
- ✓Environmental P Threshold moderately restrictive
- ✓P Index most flexible
- ✓Impact needs to be evaluated on a farm-by-farm basis

Farm Characteristics

Phosphorus management impact needs to be evaluate on a farm-by-farm basis by considering:

- ❖ Total restricted acreage to total farm acreage
- ❖ Location
- ❖ Current management
- ❖ Production
- ❖ Animal density

Economic Impact

	Agronomic P Threshold	Environmental P Threshold	P Index
Total Compliance Cost for ALL FARMS	$ 61,690	$ 47,862	$ 45,380
Net Farm Income Impact	-89.6% to +13.5%	-77% to +8.8%	-82.7% to +11.2%

What does this mean for Dairy operations?

- ✓Agronomic P threshold impacted all dairy operations
  - ❖ Net farm income -11.0% to –4.5%
- ✓Environmental P Threshold impacted 3 dairy operations
  - ❖ Net farm income –1.0%
- ✓P Index impacted 2 dairy operations
  - ❖ Net farm income –6.4%

Economic Impact

- ✓The most significant economic cost was transporting manure over long distances
- ✓Farms more likely to be negatively impacted by P-based management had:
  - ❖ Limited off-farm manure utilization options due to location (southeast or central Pennsylvania)
  - ❖ Limited on-farm manure utilization options due a limited land base
  - ❖ Combined or multiple animal enterprises

Summary

- ✓ P Index offered the most management flexibility
- ✓ Southeast and central regions were most impacted
  - ❖ High animal densities – limited land base
  - ❖ Limited off-farm options for manure
  - ❖ Combined animal enterprises
- ✓ Agronomic P threshold had the highest associated costs
  - ❖ Other strategies had costs and benefits depending on farm
- ✓ Feed accounted for most P input
  - ❖ Potential benefit to feeding programs
- ✓ Cooperating dairy operations faced:
  - ❖ Fewer restrictions because of low animal density
  - ❖ Economic impacts from transporting manure to far fields
  - ❖ Increased impacts when combined with another animal enterprise

Nutrient Cycle Doesn't Cycle!