Proposed Interim Application Reduction Efficiency

Terminology

- Historically, CBP has referred to application reduction as “nutrient management”
- Comprehensive nutrient management involves having the correct source, amount, timing, and method which are, in part, available in the watershed model as separate BMPs
  - Benefits of a nutrient management plan are credited in the Watershed Model as the combined effect of the series of individual components and depend on the implementation level of each of the components.
- Today speaking about “amount”

Chesapeake Bay Watershed Model
Agricultural Practices

Optimized Nutrient Applications

- Nutrient Management Application Rates
- Precision Agriculture
- Enhanced Nutrient Management

Conservation Tillage

- Continuous No-Till
- Other Conservation Tillage

Cover Crops

- Cover Crops and Small Grain Enhancement
    - Early, standard, late-planting
    - Species
    - Seeding method

Pasture Grazing Practices

- Alternative Watering Facilities
- Stream Access Control with Fencing
- Prescribed Grazing
- Precision Intensive Rotational Grazing

Other Agricultural Practices

- Forest Buffers
- Wetland Restoration
- Land Retirement
- Grass Buffers
- Tree Planting
- Carbon Sequestration/Alternative Crops
- Conservation Plans/SCWQP
- Animal Waste Management Systems
- Mortality Composters
- Water Control Structures
- Horse Pasture Management
- Non-Urban Stream Restoration
- Poultry Phytase
- Litter Management and Liquid Injection
- Dairy Precision Feed and/or Forage Management
- Swine Phytase
- Ammonia Emissions Reductions

Application Reduction Efficiency

- Pros
  - Achieve similar overall state reductions
  - Easy to explain to stakeholders
  - Consistent benefit for all areas of a state
- Cons
  - Averages areas where application reduction has a large effect with areas with a small effect – may mask problem areas
  - May reduce the effectiveness of manure transport

Balloon Effect

Pushing on a balloon makes it puff out somewhere else.

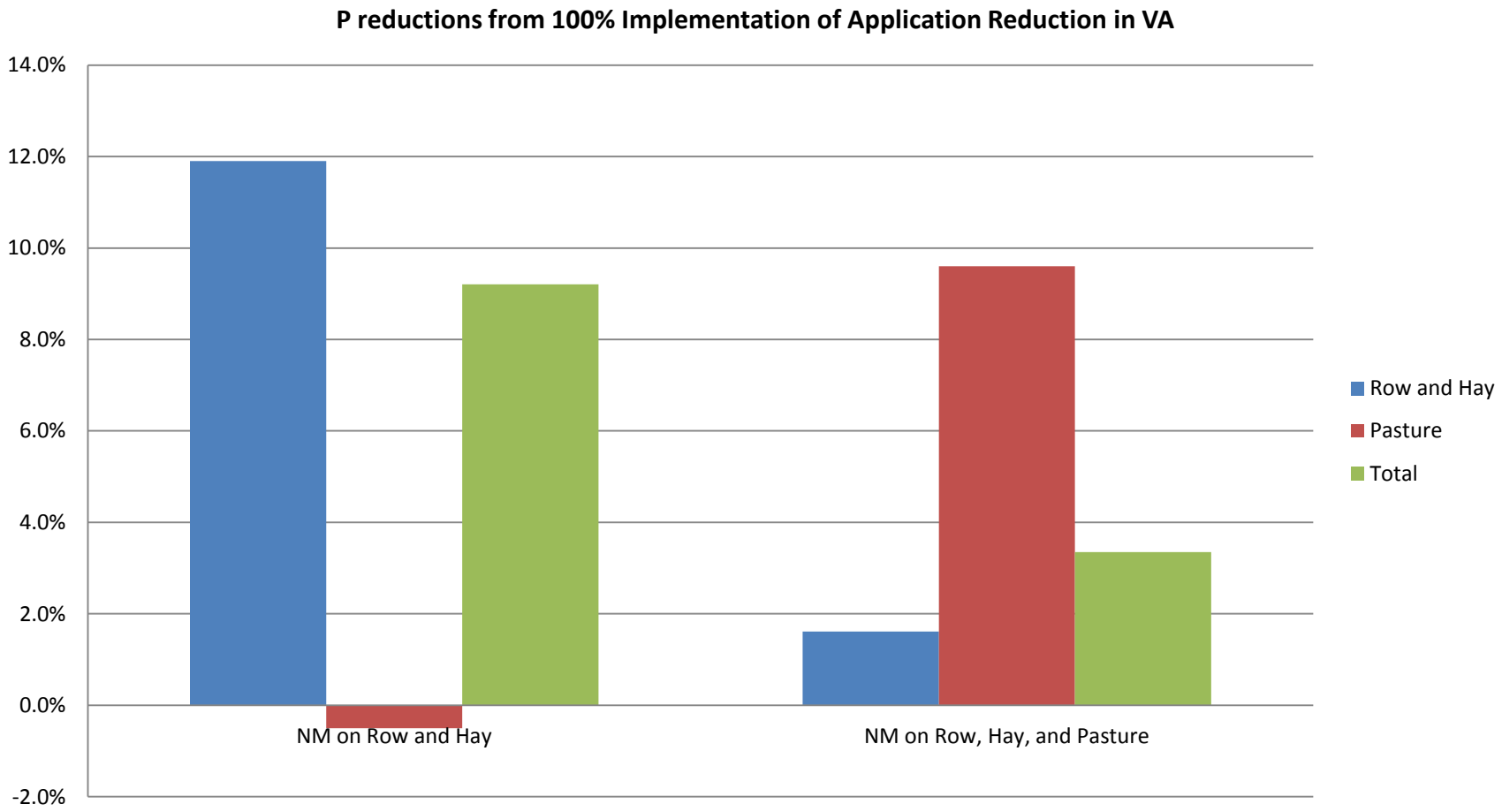
- Mass balance of manure nutrients in a county
- When manure applications are restricted on some land uses under application reduction, they are piled up on other land uses.
- Applying nutrients at “nutrient management” rates to one land use increases all other land uses slightly
- Can not give individual land use efficiencies

Pasture Sponge Effect

Pasture more efficient at taking up excess nutrients

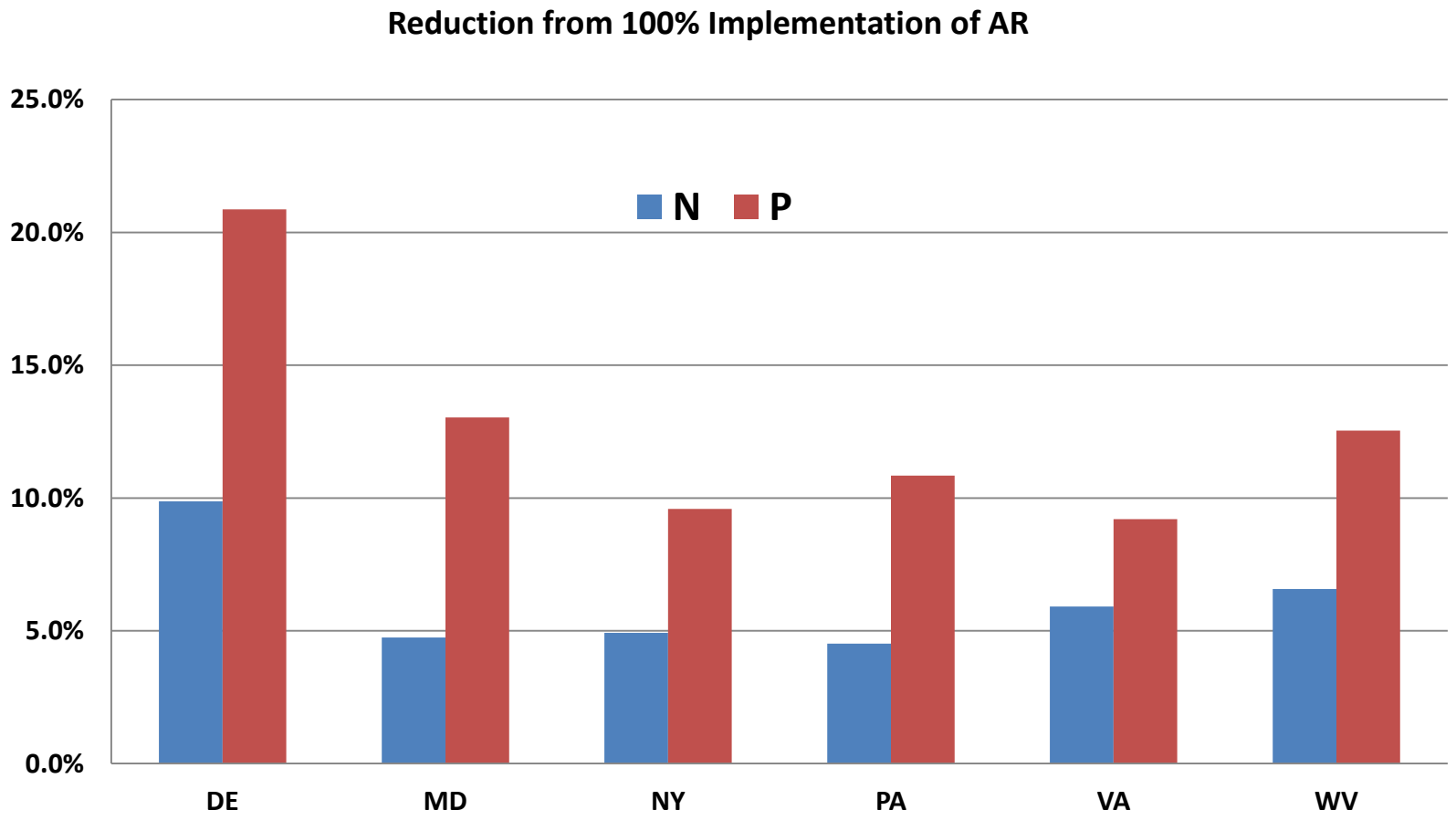
- Pasture is growing and taking up nutrients all year while other ag land uses have periods without uptake
- Crops have a maximum annual uptake amount, while pasture generally takes up a percentage of what is available
- Planners in the field generally recommend spreading excess manure on pasture as a more efficient user of nutrients

Balloon and Sponge Effects



Generally holds across states and for N and P

Proposed Reductions by State



*Assume implementation of application reduction only if it results in an overall reduction

Requirements of Option to Credit Application Reductions as Efficiencies

- States can opt in or out individually.
  - Some states can leave things as they are and others can adopt the interim application reduction (as efficiency benefit).
  - A state can not do both or split by basin.
- Implementation levels of application reduction component of nutrient management plan can not vary among crops and pasture within the reported spatial domain (i.e., county or greater scale) but can vary among, for example, counties.
- Option can only be used for “planned” scenarios such as Milestones and WIPs, not model assessments of progress.
  - Expert panel is addressing benefits of application reductions that will lead to recommendations on how to credit in progress assessments.

Application Reduction Efficiency

- Pros
  - Achieve similar overall state reductions
  - Easy to explain to stakeholders
  - Consistent benefit for all areas of a state
- Cons
  - Averages areas where application reduction has a large effect with areas with a small effect – may mask problem areas
  - May reduce the effectiveness of manure transport