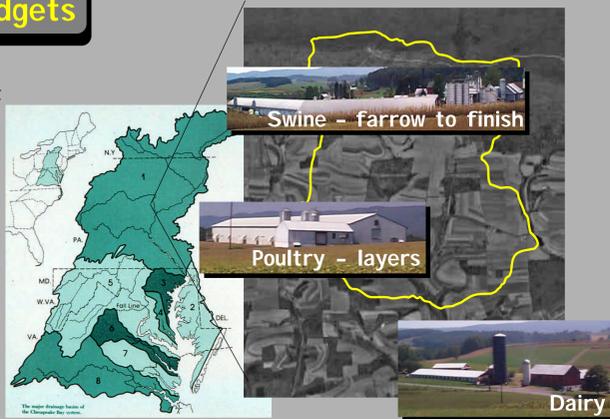


Develop Regional Nutrient Budgets

Available census and other data will be used to estimate the delivery and export of nutrients for watersheds in the region. Region-wide budgets will be developed as part of the Mid-Atlantic regional topic team effort.



The diverse and dynamic farm operations of Pennsylvania and the Mid-Atlantic region will provide a rich data set by which the spatial scale and changes over time in the region can be determined. The region combines an emphasis on animal production with areas of intensive crop production. Improved understandings of maintaining viable animal production while implementing water quality protection programs are anticipated as the budgets are developed.

Promote innovative technology development and application Animal confinement and waste management facilities

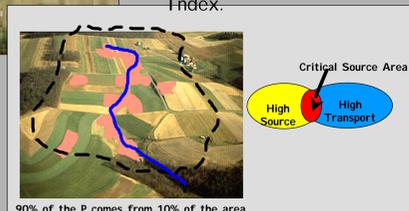
Animal confinement and waste management facilities have been designed and constructed to handle high density concentrations of animals and to minimize the labor use in waste management. Ammonia escaping with building ventilation or the dilution of nutrients in animal wastes have not been primary design criteria. Current emphasis is on developing modifications to existing designs to better protect water quality. Future designs may include these dimensions of animal housing and waste management as essential criteria to be built in to the animal operations. This project will promote the development of practices to meet current designs and foster the emergence of water quality protective designs that effectively contribute to balancing the regional nutrient budgets.



Promote innovative technology development and application N- and P-based nutrient management

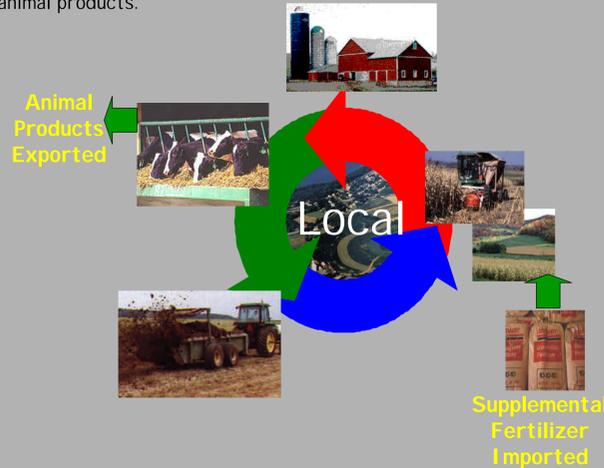


The Mid-Atlantic region is one of the birthplaces of modern nutrient management that emphasizes manure application rates balanced with crop needs, refining application methods and timing, using best management practices and evaluating new technologies. New approaches to landscape management are relying heavily on critical area management, especially using the P-Index.



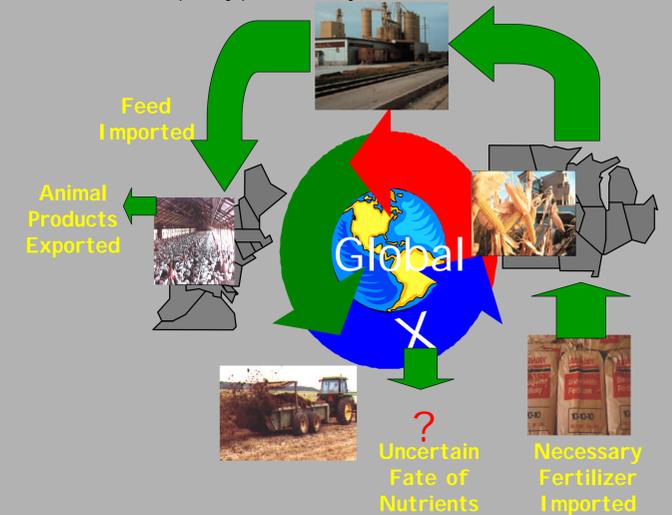
"Traditional" Ag Nutrient Flow

Previous work in Pennsylvania and other parts of the Mid-Atlantic region indicate that the flow of nutrients in the farm materials used to support animal production was traditionally within the farm or local neighborhood. Fertilizer was purchased to build or maintain soil reserves that could be depleted with the sales of animal products.



Contemporary Ag Nutrient Flow

Fertilizer that began as a supplemental input for crop production made a dramatic transformation of the agricultural production system possible. Areas of specialized crop production could develop and be maintained by the flow of fertilizer nutrients. Other locations could specialize in animal production without the requirement for the nutrients to be used in crop production to meet the animal needs. However, these nutrients that were unnecessary for crop production significantly affected the stock of nutrients in the animal production areas so that water quality might be impacted as the nutrients were lost through leaching or surface runoff. Accurate and dynamic budgets could be the basis for enlightened practices, policies, and programs that focus on critical features of contemporary production systems.



Enhance regional public policy education

Distributed ecosystem and economic system overlaying local watersheds



The boundaries of the watershed system, the contemporary economic system, and the agricultural ecosystem are likely to not coincide. Determining how the external effects of crop and animal production are distributed among the local and global stakeholders will be difficult. Patterns of material (and nutrient) flow determined in the process of developing regional nutrient budgets can be the foundation for a robust science-based method of identifying the stakeholders in the watershed, economic, and ecological processes.