

# METHOD TO ESTIMATE FERTILIZER USE BY COUNTY FOR PHASE 6

Presentation to the Ag Workgroup 08142014

Matt Johnston

University of Maryland

CBPO Non-Point Source Data Analyst

# Why Consider Fertilizer Sales Data?

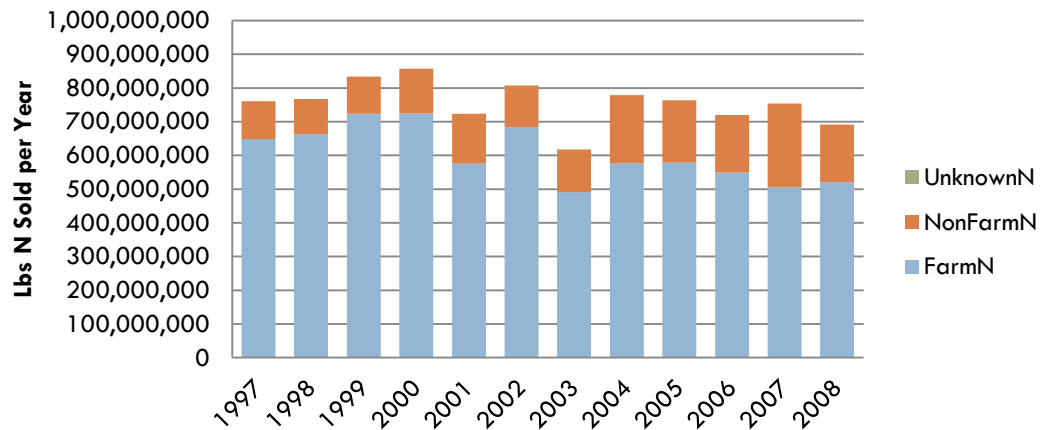
- ❑ Scenario Builder does not currently use fertilizer sales or use data. It estimates fertilizer use where crop need is greatest.
- ❑ USGS Sparrow and other groups do use fertilizer sales data to estimate nutrient inputs.
- ❑ There are real trends in fertilizer sales that don't appear in yield data.

# Fertilizer Data

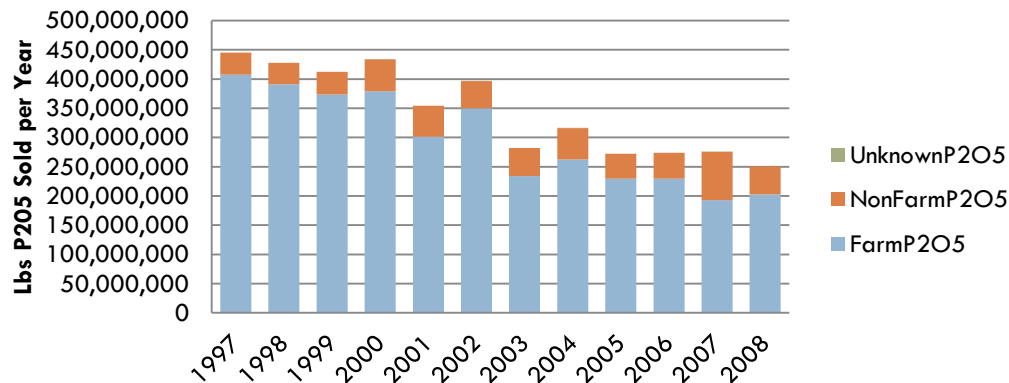
- Data is provided to AAFPCO each year by state chemists.
- Data includes location of sale, type of fertilizer sold and pounds of nutrients associated with each type.
- Data is split between farm and non-farm sales.
- **Data do not represent fertilizer use!**
- Fertilizer use must be estimated.
- Ag Census provides countywide expenditures on fertilizer products.

# Trends in AAFPCO Data

## N Fertilizer Sold Across All States



## P2O5 Fertilizer Sold Across All States



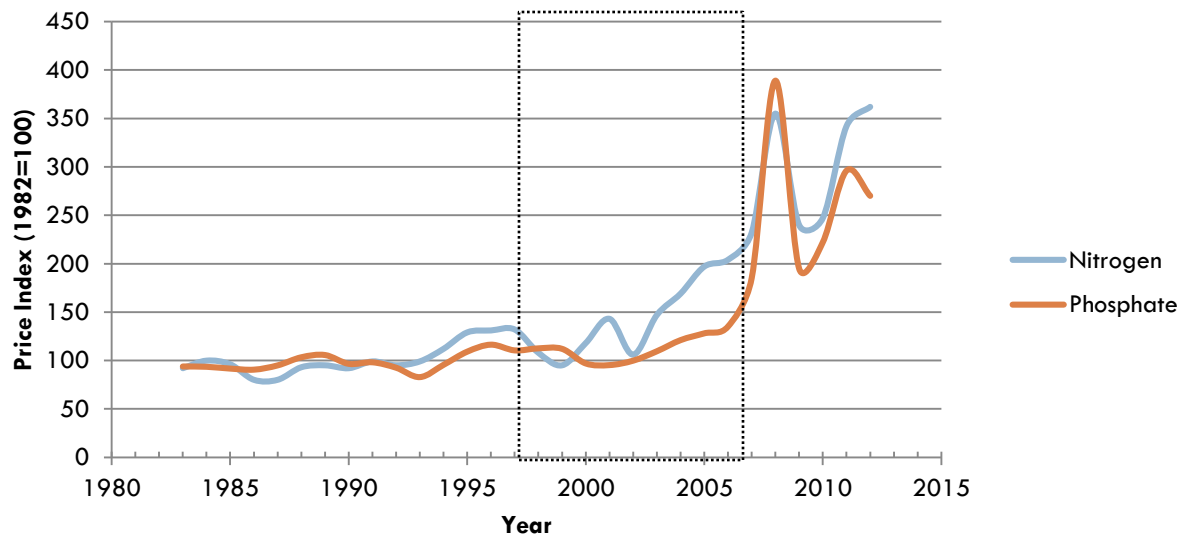
# Trends in Fertilizer Expenditures

## Ag Census Reported Fertilizer Expenditures Across All States

Year	Dollars Spent
1997	\$ 436,160,000
2002	\$ 446,383,000
2007	\$ 720,249,000

- Ag Census Fertilizer Expenditures increased 65% from 1997 through 2007.

## USDA ERS Fertilizer Price Index (1982 = 100)



- N Price Index increased 76% from 1997 through 2007.
- Phosphate Price Index increased 68% from 1997 through 2007.

# Distribution Method

- Sum all **farm fertilizer sales** across the states within the Chesapeake Bay (statewide for NY, PA, MD, DE, VA and WV).
- Sum all **farm fertilizer expenditures** from Ag Census across the states within the Chesapeake Bay (statewide for NY, PA, MD, DE, VA and WV).
- Determine **county fractions of total farm fertilizer expenditures** across all six states.
- Distribute **farm fertilizer sales** to each county based upon **county fraction of total farm fertilizer expenditures**.
- After distribution, remove counties outside of watershed to determine final set of **county farm fertilizer use estimates**.

# Distribution Method Example

- Sum AAFPCO **farm fertilizer sales** across all states for 1997
  - ▣ 648,922,596 lbs N
- Sum Ag Census **fertilizer expenditures** across all states for 1997
  - ▣ \$436,160,000 (for all fertilizers regardless of type)
- Determine **county fractions of total fertilizer expenditures** for 1997
  - ▣ Kent, DE = 0.0174;
  - ▣ New Castle, DE = 0.0075
  - ▣ Sussex, DE = 0.0224
- Multiply **total farm fertilizer sales** by **county fractions**
  - ▣ Kent, DE = 11,277,589 lbs N Available in 1997
  - ▣ New Castle, DE = 4,862,158 lbs N Available in 1997
  - ▣ Sussex, DE = 14,516,548 lbs N Available in 1997