No-Till and Cover Crop Field Day
October 16, 2008

NUTRIENT MANAGEMENT

REGULATIONS

- Nutrient management regulations are in effect in Pennsylvania.
- Those regulated must be high animal density and must have at least 8,000 pounds of animals on the farm (Concentrated Animal Operation).
- High density farms have more than 2000 pounds of animals per acre of land where manure can be applied.
- Regulated farms must develop and implement approved nutrient management plans.
- Plans look at:
    - amount of manure
    - nutrient content of manure
        - obtained from manure analysis
    - manure application rates
        - based on soil test results
    - mechanical manure application setbacks
    - manure handling procedures
    - barnyard and paddock management
    - in-field stacking of manure
    - exported manure
    - nitrogen and phosphorus
- Plans for approval must be prepared by certified specialists.
    - Farm operators can attend training and testing to become certified to prepare plans for their operation. ($15 certification fee)
    - Commercial specialists, who have additional training requirements, can prepare plans for others. ($200 certification fee)

Handouts available on table.

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SOIL TESTING

- Available through Penn State.
- Cost for standard test is $9 per kit plus postage.
- Summer and fall are great times for soil testing
- Take cores from 15 to 20 random spots throughout the field. The field should not cover more than 10 to 20 acres.
- Sample between rows. Avoid old fence rows, dead furrows, and other spots that are not representative of the whole field.
- Take separate samples from problems areas if they can be treated separately.
- Collect samples in a clean container.
- Mix the core samples, allow to air dry, and remove roots and stones.
- Fill the soil test container.
- Complete information sheet and submit.

- In cultivated fields, sample to plow depth.
- Sample permanent pastures to a 3 to 4 inch depth.
- In fields that have been under no-till corn management for two years or more, surface applications of nitrogen fertilizers and manure may acidify the surface soil and decrease herbicide effectiveness.
    - Collect several cores less than 2 inches deep from the no-till area and mix in a clean bucket
    - Remove a sample and check pH using a colorimetric pH kit. (Available from farm and garden catalogs.)
    - If the pH of the surface is less than 6.2, take a standard soil sample for laboratory analysis (around 6” deep).
    - If this sample does not indicate the need for limestone, but the surface pH is below 6.2, apply 2,000 lb/A of CCE.

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FERTILIZER

- Fertilizer, applied to soil, is taken in through plant roots.
- Must be soluble in water.
- nitrogen, phosphate, potash
- Phosphorus and potassium attach to soil and can be lost if erosion occurs. When excessive amounts are present, leaching may occur.
- Nitrogen changes forms, can be leached.
- Nitrogen, in the ammonium form, can also be volatilized and lost to the atmosphere.
- When surface applying nitrogen in no-till situations, consider:
    - type of nitrogen fertilizer
        - some volatilize more rapidly than others
    - placement of nitrogen and how much incorporation will occur with planting/application equipment
    - weather forecast
        - ½ inch of rain soon after application will incorporate nitrogen

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MANURE

- Manure provides the same nutrients as chemical fertilizer.
- Also provides organic matter.
    - soil structure
    - water holding capacity
- May also provide weed seeds.
- May cause odor and/or fly concerns with neighbors.
- Manure analysis
    - Available through Penn State
    - Cost for standard test is $32 plus postage.
- Rapid incorporation can control flies and odors and keep nitrogen from volatilizing. Penn State is researching limited mechanical incorporation for no-till situations.
- Rain soon after manure application will incorporate nutrients.

- Importing - Nutrient Balance Sheet
    - More people are looking at importing manure due to high fertilizer prices
    - If manure is coming from a Concentrated Animal Operation, a Nutrient Balance Sheet must be developed to describe the rates, timing, and procedures for the manure application.
        - Nutrient Balance Sheet components
            - maps – show:
                - field locations
                - application boundaries
                - buffers
                - in-field manure stacking areas
            - consider past crops and manure applications. Also consider planned fertilizer application.
            - Soil tests may be required, depending on option selected by farmer and planner.
            - Farm receiving manure may be asked to obtain some of this information

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FIELD APPLICATION RECORD

- Provided to help you keep records of applying fertlizer, manure, pesticides, seed, etc.
- Waterproof paper, so you can keep it on the tractor or in the truck
- Record information in the field, transfer to permanent records later.
- Notebook funding came from PACD
- Take one, but fill out response sheet and leave here or mail to Conservation District.