Manure Incorporation

• Farmers have always known there is nutrient value in manure, it just needs to be stored, handled, and applied properly.

• Most farmers agree that incorporating manure has great value, but often timing and lack of available labor have prevented it.

• Today, as we encourage the use of vertical tillage and no-till injection, the new challenge is availability of equipment and education.
Minimum Disturbance Manure Injection and Incorporation

- No-Till Injectors
- Turbo-Till or equivalent equipment
- AerWay or equivalent equipment

- There are many different manufacturers making vertical tillage equipment today and we do not endorse any specific brand of equipment, but we have not found a good way to refer to the equipment but by brand
What do the New Regulations say about Manure Incorporation?

• Spring and Summer Application and Incorporation
• Fall Application and Incorporation
• Winter Application and Incorporation
• There are Exceptions and those Exceptions are the same for Spring/Summer and Fall Applications, but not for Winter Applications
Application Timing: SPRING & SUMMER
March 1-Sept 9

1. A person may make a nutrient application during the spring-summer time period for an existing crop or a crop to be planted either during this time period or in the fall.

2. Except as provided in subsection III.B.3, organic nutrient sources shall be injected or incorporated within 48 hours after application.
Application Timing: Fall dates
September 10\textsuperscript{th} through November 15\textsuperscript{th}

Chemical Fertilizers:
A person may make a fall application of a chemical fertilizer for an existing crop or a crop to be planted during this time period.

Organic Nutrients:
General Rules for Fall Application of Organic Sources

(i) Excepting poultry litter, a person may make a fall application of an organic nutrient source for an existing crop or a crop to be planted either during this time period or the following spring (before June 1)

(ii) A person may make a fall application of poultry litter for an existing crop or a crop to be planted during this time period
Organic Nutrients Application Timing: Fall (cont’d)

General Conditions Relating to the Fall Application of Organic Nutrients

(i) If a person makes a fall application of an organic nutrient source, the person shall incorporate or inject the material. If the material is not injected, it shall be incorporated as soon as possible, but no later than 48 hours after application.

(ii) If any of the following conditions exist, the material is not required to be injected or incorporated:

(aa) Livestock manures deposited directly by animals:

(bb) Permanent pastures;

(cc) Land used for hay production;

(dd) Fields containing highly erodible land as defined by USDA-NRCS in its Field Office Technical Guide;

(ee) Fields in which a current soil conservation and water quality plan or a current USDA/NRCS program requirement prohibits or otherwise restricts soil disturbance; or

(ff) Land where nutrients are applied to a growing crop through a spray irrigation system.
Organic Nutrients Application Timing: Fall (cont’d)

(iii) A person may make a fall application on pasture land, hay-land or other acreage under vegetative cover.

(iv) A person making a fall-application of an organic nutrient source to fallow cropland shall plant a cover crop as soon as possible after application. The cover crop planting shall occur:
   (aa) No later than November 15; and
   (bb) After July 1, 2016, in counties east of the Chesapeake Bay and Susquehanna River, no later than November 5.

(v) The rate of nutrient application shall be determined based on recommendations outlined in Section 1-B of the Maryland Nutrient Management Manual using either nitrogen or phosphorus-based criteria.
Organic Nutrients Application Timing: Fall (cont’d)

(vi) If the application is phosphorus-based, the phosphorus application rate:

(aa) For a fall-seeded crop, shall be based on the phosphorus recommendations for that crop;

(bb) For crops to be planted the following spring (no later than June 1), may not exceed the one year crop removal rate of phosphorus for the spring-planted crop;

(cc) Shall follow the provisions of the Phosphorus Site Index, as they may otherwise apply; and

(dd) Shall result in an application rate of plant available nitrogen not exceeding 50 lbs. per acre.

(vii) If the application is nitrogen-based, the rate of application for a fall-seeded crop shall be based on recommendations for plant available nitrogen as outlined in Section 1-B of the Maryland Nutrient Management Manual.

If the application is related to a crop that is to be planted the following spring (before June 1), the application of nitrogen may not exceed:

(aa) 50% of the recommended plant available nitrogen recommended for the crop; and

(bb) 50 lbs. of plant available nitrogen per acre.
Organics WINTER - APPLICATION TIMING

3. Organic Fertilizer

a. A person may make a winter application of an organic nutrient source to cropland only if:

   (i) The operation has inadequate storage \(i.e.,\) the storage capacity will be exceeded before the March 1 winter application restriction;

   (ii) The nutrient source is non-stackable; and

   (ii) There is no other reasonable option to manage it.

b. Any such application shall be made in accordance with Section 1-B of the *Maryland Nutrient Management Manual.*
c. The prohibition against making a winter application of an organic source does not apply to:
   
   (i) The application of potash, liming materials, or manure deposited directly by livestock; or
   
   (ii) A person, following organic guidelines, applying an organic nutrient for greenhouse production and for certain vegetable crops, small fruit crops, small grain crops, and cool season grass sod production listed in the Maryland Nutrient Management Manual Section 1-B.

d. Operators and generators of organic nutrient sources shall make plans for adequate storage to eliminate the need for a winter application before deadlines described in III.E.
The following restrictions apply to any such winter application:

(i) Nutrient application is prohibited during the winter if the organic nutrient source is stackable (equal to or less than 60 percent moisture content, such as poultry litter) or adequate storage is available.

(ii) Nutrient application is prohibited when the soil is saturated, when the ground is covered with snow, or when the ground is hard-frozen.

(iii) Nutrient application is prohibited to land with a slope greater than 7 percent.

(iv) Rates of application shall be minimized and available acreage used to the greatest extent practical. In no case shall the application rate per acre exceed the one-year phosphorus removal rate for the next harvested crop.

(v) Winter applications shall be by injection only and made into existing vegetative cover, small grain crops, or established hay fields and pastures. Injection into existing cover may be effected, for example, using vertical tillage equipment such as a Turbo-Till® or with a knifed injection system which minimizes soil disturbance and maximizes vegetative cover. Vegetative cover shall be maintained as such until March 1.

(vi) Applications required in emergency situations such as imminent overflow of a storage facility shall be managed in consultation with the Maryland Department of Agriculture. Operators in such situations shall contact the MDA regional nutrient management representative for guidance.
Non-Compliance of Incorporation
Winter Application

• Farmers need to contact MDA, directly or indirectly if unable to incorporate
• We want to be sure farmers are moving in the right direction for 2016 and 2020 restrictions
• Farmers that fail to contact MDA, the SCD, or their NM Advisor may be treated as an agricultural complaint if/when we receive notice of non-compliance from an outside source such as MDE or a county agency
Financial Benefit

Average Dairy Farm Manure
Total nitrogen 28 lbs. per 1,000 gallons
Organic nitrogen 17 lbs. per 1,000 gallons
Ammonia nitrogen 11 lbs. per 1,000 gallons

Ammonia nitrogen is available first year if not lost to volatilization. 11 x $0.76/lb. = $8.36/1,000 gals. A typical 6,000 gallon application could supply 66 lbs. of ammonia nitrogen at a value of $50.16.

Can you afford to lose $40+ per acre into the air?
The Maryland Income Tax Subtraction Modification for Conservation Equip.

- Subtraction on MD Tax Return equal to 100% of the cost of the equipment (see tax advisor)
- **New**- Vertical Tillage equipment used to incorporate manure eligible at a 50% rate
- **New**- Global Positioning Devices and Optical Sensing and Nutrient Application Systems
- Liquid Manure Injection Equipment
- New or Used Manure Spreading Equipment
Income Tax Subtraction Cont.

• Conservation Tillage Equipment
• No-Till Planters and No-Till Drills

• Must have a useful life of at least four years
• Equipment must be certified by the Soil Conservation District
• All equipment must be retained for three years and the tax return must be adjusted if the equipment is sold or traded within three years.
Cost-Share for Manure Injection

• Review of 2013 program, there should be a program for 2014, but no confirmation yet
• Direct no-till injection- $55/acre
• Vertical tillage, equipment rental. Custom operator, or equipment purchased after October 15, 2012- $20/acre
• Vertical tillage, equipment purchased before October 15, 2012- $10/acre
• Secondary tillage (disk, etc.)- $10/acre
Cost-Share for Manure Injection

- A farm was not eligible if they had previously used any of these methods of incorporation between 10/15/07 and 10/15/12
- Incorporation must be within 48 hours
- Primary tillage equipment is not eligible
- The application is processed through the MACS program and is a simple one page application- See the Soil Conservation Office for details early next year
Manure Transport Program

• Cost- Share Grants up to $20 per ton
• No farm limits for poultry growers
• All others, $15,000 limit per season, $30,000 limit per fiscal year
• Maryland has a goal to transport 20% of litter from Lower Eastern Shore
• Funds provided for transport do not count against the farm limit for MACS
Possible Equipment Rental

• Current rental rates for no-till manure injection are in the range of about $100-$135 per hour
• Current rental of vertical tillage is about $1 per foot so a 12’ machine would rent for about $12 per acre

• If you are interested in more information, contact your Soil Conservation Office
Garrett County Field Day

• Held at the Bobby Bender Farm, Accident MD
• April 24, 2013
• Demonstration of minimum disturbance injection and incorporation equipment
• Measurements of ammonia nitrogen loss
• Demonstration of different fencing options
• Discussion of the new NM regulations
• Demonstration of GPS and related technology
AerWay on HEL Agricultural Land Hay and Pasture Ground

• Improve infiltration of water and nutrients
• Can be set at varying degrees of aggressive cut
• Has been demonstrated on hay and pasture without doing permanent damage to the crop
• Has the versatility to be set aggressively to provide incorporation similar to a Turbo-Till
• There are several other brand names of this type of equipment available on the market
Questions
Maryland Department of Agriculture
Nutrient Management Program

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