

# MANURE INJECTION/INCORPORATION EXPERT PANEL REPORT

WATER QUALITY GIT

DEC. 19, 2016



# PANEL MEMBERS

Name	Affiliation	Role
Curt Dell	USDA-Agriculture Research Service	Panel Chair
Art Allen	University of Maryland – Eastern Shore	Panel Member
Dan Dostie	USDA-Natural Resources Conservation Service	Panel Member
Robb Meinen	Penn State University	Panel Member
Rory Maguire	Virginia Tech	Panel Member
Chris Brosch	Delaware Department of Agriculture	Watershed Technical Workgroup representative
Jeff Sweeney	CBPO	Modeling Team representative

Technical support provided by Mark Dubin (University of Maryland), Lindsey Gordon (CRC Staffer), and Don Meals (Tetra Tech).

# Practice Definitions

- Practices address subsurface placement of manures and other organic nutrient sources (such as biosolids and composts)
- **Injection:** Low disturbance, immediate incorporation, single pass operation, slot closure
- **Incorporation:** Tillage incorporation of broadcast applied manure, incorporation within 24 hr for full ammonia emission reduction credit and 1-3 days for reduced credit, and incorporation within 3 day for N and P runoff reduction credit
  - Low Disturbance:  $\geq 30\%$  residue cover retained
  - High Disturbance:  $< 30\%$  residue cover retained

# REDUCTION FACTORS FOR UPLAND REGIONS

	Nitrogen			Phosphorus	
Category	Time to incorp.	Ammonia emission reduction	Reduction in N loading	Time to incorp.	Reduction in P loading
Injection	0	85%	12%	0	36%
Low Disturb. Incorp.	≤24 hr 24-72 hr	50% 34%	8% 8%	≤72 hr	24%
High Disturb. Incorp.	≤24 hr 24-72 hr	75% 50%	8% 8%	≤72 hr	12%

# REDUCTION FACTORS FOR COASTAL PLAIN

	Nitrogen			Phosphorus	
Category	Time to incorp.	Ammonia emission reduction	Reduction in N loading <sup>1</sup>	Time to incorp	Reduction in P loading <sup>2</sup>
Injection	0	85%	12%	0	22%
Low Disturb. Incorp.	≤24 hr 24-72 hr	50% 34%	8% 8%	≤72 hr	14%
High Disturb. Incorp.	≤24 hr 24-72 hr	75% 50%	8% 8%	≤72 hr	14%

# RESPONSE TO PUBLIC COMMENTS

- Concern expressed over P reduction credit for reduced tillage in instances where manure is applied and not incorporated.

Response: Incorporation required within 3 days for P reduction credit

- Request to clarify how reduction efficiency values for these BMPs compare to Conservation Tillage BMPs.

Response: Requirements for “Low Disturbance Incorporation” and “Conservation Tillage” only BMPs the have similar requirements. CT panel had finer breakdown for sub-regions, but when averaged within Uplands and Coastal Plains the two BMPs gave similar credit.

- Suggestion to use delayed tillage, rather than no tillage, as baseline for tillage incorporation BMPs

Response: Logical, but would require modeling changes that would require more time than is available .

# RESPONSE TO PUBLIC COMMENTS

- Concern expressed over 0% P reduction credit for High Disturbance Incorporation in Upland regions

Response: Amendment to modify to 12% reduction proposed by NY was adopted by AgWG with support from the panel. New value is within range of values reported in literature.

- Clarification requested on eligibility of the BMP for “Pasture” and “Other hay” Land Uses

Response: Panel intended all manure eligible land uses to be available. Those land uses were added to the version of report approved by AgWG.