

Delaware Nutrient Management  
Program

DELAWARE CONSERVATION  
PRACTICE STANDARD

MANURE INCORPORATION  
AND INJECTION

(Reported by Acres)

**DEFINITION**

Process for minimizing nitrogen volatilization (loss of N as ammonia gas) from applications of manure.

**PURPOSES**

This practice may be applied for one or more of the following purposes:

1. Predict plant-available nitrogen.
2. Reduce nitrogen loss by preventing ammonia volatilization.
3. Increase amount of ammonium-N available to plants from manure sources
4. Reduce runoff of surface applied manures.

**CONDITIONS WHERE PRACTICE  
APPLIES**

This practice applies where:

- Animal manures are applied to land in accordance to a nutrient management plan.

**CONSIDERATIONS**

This practice is designed to reduce volatile losses of nitrogen from land-applied manure and

prevent over-land losses of phosphorus to surface waters. The same principles are useful for reducing volatile losses of nitrogen from surface application of some fertilizers such as urea.

**CRITERIA**

Manure injection should be accomplished with a litter subsurfer or liquid knifing. Injection into well-established pasture is not encouraged.

To reduce nitrogen losses and maximize nitrogen availability for crop, manure should be incorporated within 24 hours of application and no later than 72 hours after application.

Manure should be incorporated with the minimum disturbance necessary to achieve mixing to maximize benefits to nutrient retention while not increasing risk of erosion or runoff.

**REFERENCES**

Information regarding the incorporation of manure and its potential impact on nitrogen availability to plants can be viewed online at: [http://www.mawaterquality.org/capacity\\_buildin\\_g/mid-atlantic%20nutrient%20management%20handbook/chapter9.pdf](http://www.mawaterquality.org/capacity_buildin_g/mid-atlantic%20nutrient%20management%20handbook/chapter9.pdf)

Effectiveness values for this practice are available at: [http://www.chesapeakebay.net/channel\\_files/24633/phase\\_6\\_mii\\_ep\\_draft\\_report\\_w\\_comments\\_121416.pdf](http://www.chesapeakebay.net/channel_files/24633/phase_6_mii_ep_draft_report_w_comments_121416.pdf)