



AEM Tier 2 Worksheet

Manure Management for Horses: Nutrient Management, Storage, Field Application and/or Off-Farm Disposal

Glossary

Compost: Biological degradation of manure and other organic material in an aerobic process, generating heat. With horse manure, regular turning of the pile enhances aerobic conditions.

Defecation Area: The section of a pasture or paddock in which horses will defecate.

Nitrate: A chemical derived from nitrogen-containing substances such as undigested feed protein in manure. Nitrates are soluble in water, and if they get into drinking water supplies at high enough concentrations, they can pose health risks to infants and young animals.

Pathogens: Disease-producing organisms. Examples are *E. coli* 0157:H7 and salmonella, which may infect livestock or humans; and Giardia or Cryptosporidium, which are intestinal parasites sometimes found in the feces of young livestock.

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Background

Manure is a mixture of feces, urine, and bedding. The average 1000 lb. horse produces about forty-five pounds of feces and urine a day, or about eight tons a year.

If used properly, horse manure is an excellent crop nutrient source and soil conditioner. If not used properly, the pathogens, nutrients, and organic matter contained in it can contribute to the pollution of surface and groundwater, possibly including your own water supply. Bacterial and protozoan pathogens in manure can pose a human health risk when found in drinking water supplies. Nitrates from manure can leach into groundwater, creating potential human and animal health risks. Nitrates and phosphorus can also reach surface waters stimulating undesirable algae and plant growth. This process called eutrophication, consequently damages recreational and drinking water uses. The decay of this additional organic matter will rob a stream or lake of the oxygen needed to maintain desirable aquatic life.

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Agricultural Water Quality Principle

Manure produced by domestic livestock should be stored and applied to the land in a manner maximizes the nutrient value and soil conditioning benefits to the farm while protecting surface and groundwater resources.

Glossary continued ...

Vegetative Buffer – A permanent strip of dense, vigorous perennial vegetation at least 20 feet in width established and maintained along a watercourse or waterbody. See USDA Natural Resources Conservation Service (NRCS) Conservation Practice Standards NY 393s (Filter Strip), NY 390 (Riparian Herbaceous Buffer), and NY 391 (Riparian Forest Buffer).

Vegetative Filter Area – An area of grass sod, meeting USDA Natural Resources Conservation Service's (NRCS) Conservation Practice Standard NY 393a, for removing sediment, organic matter, nutrients, and other pollutants from waste water.

Waterbody – A lake, reservoir, pond, river, continuously-flowing stream, continuously-flowing spring, wetland, estuary, or bay.

Watercourse – Water flowing over a non-vegetated channel to a waterbody.

Background continued ...

The risks of pollution of ground and surface water increases when horse manure is stored in an inappropriate location or poorly designed, constructed or managed site. Properly located, designed, and constructed storage sites can minimize risks associated with stored manure.

The land spreading of manure is practiced on many horse farms in New York State. This method of manure management poses a level of potential risk. Manure nutrients, sediment, and pathogens can move from where they are applied and impact water quality. Risk can be reduced by following management techniques, such as, applying manure according to crop need, adhering to setbacks from waterbodies and wells, and not applying manure to saturated or frozen ground. **Never harvest manure laden hay or allow horses access to pastures where manure has been applied before the vegetation has been washed with an adequate rain.**

AEM Tier 2 Worksheet: Horse Farm – Nutrient Management		Potential Concern			
Factors Needing Assessment:	Lower 1	2	3	Higher 4	
How do you manage your farm's manure?	Stored in a properly located dumpster or other properly designed and located storage system, which is sized for the facility's need, and regularly hauled off the farm.	Piled, allowed to compost and hauled off the farm.	Piled, allowed to compost and spread on the farm.	Removed from the barn and spread, even when the ground is wet or frozen.	
If manure is spread on the farm, how many horses do you have per acre of land to which manure is applied?	1.0 horse or less per acre of land used solely for manure spreading and hay production.	1.1 to 2.0 horses per acre.	2.1 to 3.0 horses per acre.	Greater than 3.1 horses per acre.	
Do you keep record of manure applications to fields?	Records are kept indicating the number of loads applied per field and any fertilizer applications to each field or pasture.		Records are kept on the number of loads of manure applied to each field OR Records are kept on fertilizer applications only.	Records are not kept on the number of loads applied per field.	
Do you calibrate your manure spreader?	The average spreader load has been weighted and the area covered by the load has been measured.	An estimate of the weight of the average spreader load has been made and the area covered by the load has been measured.	Weight of the average spreader load and the area covered has been estimated.	No manure spreader calibration or application estimates have been made.	
Do you know the nutrient needs of your hayland and pastures?	All fields and pastures are soil tested at least every two years.	All fields and pastures are soil tested at least every three years.	Fields and pastures are soil tested, but less often than every three years.	Soil testing is not done.	
Is the fertilizer value (nutrient content) of your manure known?	There is a history of manure testing and manure is tested every year.	There is a history of manure testing and manure is tested every other year.		Manure samples have not been tested.	

AEM Tier 2 Worksheet: Horse Farm – Field Application		Potential Concern		
Factors Needing Assessment:	Lower 1	2	3	Higher 4
What is the condition of the field when manure is spread?	Soils are dry and fields are well vegetated.	Soils are wet and fields are well vegetated.	Soils are wet and fields are not well vegetated.	Soils are saturated, risk of runoff is high, or the site is prone to flooding.
What times of the year is manure spread?	Manure is spread only during the growing season.	Manure is never spread in late winter; early spring or when soils are frozen or snow covered.		Manure is when soils are frozen or snow covered.
Is the manure completely composted before application to fields?	Manure is piled and regularly turned for more than 6 months.	Manure is piled and lies undisturbed for more than 6 months.	Manure is piled and lies undisturbed for more than 3 months.	Manure is piled and lies undisturbed for less than 3 months.
How is the defecation area of your pastures managed?	Pastures are clipped and dragged several times a year.	Pastures are clipped and dragged once a year.	Pastures are clipped once a year, but not dragged.	Pastures are neither clipped nor dragged.
How far is manure spread from well heads or springs?	Manure is spread at least 200 feet from the nearest well head or spring.	Manure is spread at least 100 feet from the nearest well head or spring.	Manure is spread at least 50 feet from the nearest well head or spring.	Manure is spread less than 50 feet from the nearest well head or spring.
Are vegetative buffers maintained along watercourses in fields on which manure is spread?	A vegetative buffer that meets NRCS standards is maintained along watercourses in fields in which manure is spread OR A minimum 100 foot set back for manure spreading is maintained for each field.			Little or no vegetation exists along watercourses and no manure spreading set backs are maintained.

AEM Tier 2 Worksheet: Horse Farm – Manure Storage		Potential Concern		
Factors Needing Assessment:	Lower 1	2	3	Higher 4
Where is your manure pile or storage located?	Located on flat ground (0 to 2% slope) and not in a flood plain.	Located on a 3% to 8% slope and not in a flood plain.	Located on a 9% to 15% slope.	Located on ground with a greater than 15% slope OR In a flood plain.
What type of soil is under your manure pile or storage site?	Clays or silt soils or the pile sits on concrete with contaminated runoff flowing to a vegetative filter area meeting NRCS standards.	Loam soils.	Sands and gravel soils.	The pile sits on concrete without a vegetative filter area meeting NRCS standards to handle manure contaminated runoff.
How far is your manure pile or storage site from the nearest watercourse?	More than 300 feet of flow path or runoff flows into a vegetative filter area meeting NRCS standards.		Between 100 and 200 feet.	Less than 100 feet.
How far is your manure pile or storage site from wells or springs?	Located or designed such that seepage from the manure pile area does not enter wells or springs.	Greater than 200ft. down slope from well or spring.	Less than 200ft. from well or spring.	Located such that seepage from the manure pile area can enter wells or springs.

Other Considerations:

1. Are there equipment access problems to your manure storage facility?
2. Does clean runoff water (i.e. roof water) flow into your manure pile or storage area?
3. Are wells or springs high in nitrates?

Comments: