



AEM Tier 2 Worksheet

Silage Storage

Glossary

Biological Oxygen Demand (BOD): The decrease in oxygen content of a water sample brought about by the bacterial breakdown of organic matter.

Footer Drain: Sub-surface drainage tubing installed below grade to prevent sub-surface water from entering a silage storage area. It is not meant to convey polluted runoff or seepage (leachate).

Grass Filter Strip: A permanent strip of dense, vigorous, perennial vegetation at least 20 feet in width.

Vegetated Filter Area: An area of grass sod, meeting NRCS Standard NY-393a, for removing sediment, organic matter, nutrients and other pollutants from barnyard runoff or wastewater.

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

When silage is harvested and stored properly, it should have minimal impact on water quality. However, if silage is not handled or stored properly, liquid (called seepage or leachate) or runoff carrying silage liquid may escape from the silo. Seepage contains high concentrations of nutrients, acid and has a high Biological Oxygen Demand (BOD). If it gets into soil or water, it can damage the quality of ground and surface water.

If seepage enters a surface water source, it readily feeds bacteria that can rob the water of oxygen. Its oxygen consumption is approximately twice as great as manure and 100 times greater than municipal sewage. This concentrated waste can lead to the death of fish and other kinds of aquatic life.

Seepage can increase the levels of acid, ammonia and nitrate present in the water. It gives the water an unpleasant smell and can cause health problems for humans and animals.

Agricultural Water Quality Principle:

Seepage from silos should be properly treated and disposed of to protect surface and ground water resources.

| AEM Tier 2 Worksheet: Silage Storage | | Potential Concern | | | |
|---|--|--|---|--|--|
| Factors Needing Assessment | Lower 1 | 2 | 3 | Higher 4 | |
| How is clean drainage water around the silo collected? | Functioning footer drains collect sub-surface water, and surface water diversions prevent all clean surface and groundwater from entering the silo without collecting dirty water. | Functioning footer drains collect sub-surface water and surface water diversions prevent most clean surface and groundwater from entering the silo without collecting dirty water. | Footer drain collects silage seepage and outlets it on the ground (greater than 200 ft. from a watercourse). | Footer drain collects silage seepage and outlets within 200 ft. of a watercourse. | |
| How is silage seepage and contaminated runoff collected and handled? | Has designed collection system for all silo seepage and contaminated runoff | Has designed collection system for low flow rates of silo seepage for subsequent field application. High flows go to a properly-designed vegetated filter area. | Seepage drains to a grass filter strip or other permanent vegetation that is greater than 500 ft. from a watercourse. | No silage seepage collection system exists. OR Collected seepage is directed to a ditch or farmstead drainage system. | |
| What is the moisture content (%) of silage stored in horizontal silos? | Below 70% | 70-70% | 76-80% | Over 80% | |
| What is the moisture content of silage stored in tower silos: --40 ft. and under? --above 40 ft.? | -- Below 65% -- Below 60% | -- 65 – 70% -- 66 – 70% | -- 71 – 75% -- 66 - 70% | -- Over 75% -- Over 70% | |

Other

1. Are there noticeable seepage leaks through cracks or holes in silo floors, walls, or foundations?
2. Is there a well-maintained roof or cover on the silo?
3. Are any other high-moisture commodities (i.e. brewers' grain) stored? Is seepage from these storages appropriately collected and treated?
4. Where silage bags are used:
 - Is moisture controlled during filling?
 - Is the surface hard (to avoid concentrating water in ruts)?
 - Is silage spilled on the pad?

-- Is the drainage from the bags directed to permanent vegetation with a long flow path (>500 ft.)?

Additional Comments