

Silage Seepage



The Environmental Questionnaire (EN2) in the Environment module of proAction® is designed to help farms take note of the positive actions they already take with respect to the environment and will provide an overview of performance on soil health, greenhouse gases, biodiversity, and other topics. This will help identify potential areas that could further benefit your farm and mitigate impacts on the environment.

Silage quality is an important consideration in feeding cows, and the majority of dairy farms in Canada store silage. Storage is typically in vertical silos or horizontal bunker silos or bags, but other methods do exist, such as pit silos or by wrapping bales in plastic. When harvested and stored properly, silage quality is preserved and there is little risk to the environment. If managed improperly, silage seepage has the potential to be a potent source of pollution on a farm. By following the guidelines outlined below, farmers can prevent the loss of valuable nutrients, and protect local land and water.

Minimizing and managing silage storage seepage

Possibly the best method to manage against potential seepage is managing silage moisture levels through cropping techniques and harvest timing. This has the added benefit of reducing nutrient losses from the silage, and thereby maintaining silage quality. While adequate moisture must be maintained in order to allow the forage to ferment into silage, recommendations exist for maximum moisture content, based on crop and type/dimensions of a silo. In general, moisture content should be less than 70-75% for bunker silos and 60-65% for vertical (tower) silos; more specific recommendations can be found from provincial Ministry of Agriculture guidelines.

Additional practices may be required to minimize seepage risk to groundwater and surface water, including:

- Silage storage should be located away from and, where possible, down slope of surface water, taking into account soil type and topography.
- Silage seepage collection systems or a system to reduce and remove seepage. These systems must be maintained to be effective.
- Silage seepage should be directed away from watercourses and wells.
- Silage seepage should be collected and stored, and kept aerated; it can be used as a fertilizer in fields or added to compost piles for moisture. If land applied, seepage should be diluted or retreated in order to reduce risk of burning of the crop from the acidity, and should be done in line with nutrient management planning in order to avoid over-application of nutrients and possible leaching.
- Before filling the silo, ensure the floor and walls are absent of cracks or damage from which leakage could occur.

Specific to horizontal silos:

- Silage storage should be covered and be maintained in good condition. A roof is recommended.
- Inspect covers regularly for tears and repair immediately to keep air and rainwater out.
- Without limiting ability to load and unload horizontal silos, silo width should be as small as possible to preserve forage quality and minimize the amount of rainwater falling on the silo.
- Horizontal silos should preferably be located on top of concrete pads instead of soil.

When feeding silage, it is excellent practice to test it and balance the rations accordingly. This will improve milk production and also serves to reduce greenhouse gases per unit of milk produced.

Gebrehanha, M.M., Gordon, R.J., Madani, A., VanderZaag, A.C., Wood, J.D., 2014. Silage effluent management: A review. Journal of Environmental Management, vol. 143, 113-122.

