

Best Management Practices for Digestate

A sustainable source of nutrients for your farm



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Know your digestate

Anaerobic digestate is a sustainable and valuable resource for the agricultural sector that can help to reduce input costs, improve soil health and build a circular economy.

Digestate as fertilizer

Digestate is similar to manure and it's most like swine manure. The nutrients in digestate are more readily available for crops and odour is reduced. When used with BMPs, the nutrients in digestate can be utilized as an effective fertilizer supplement or replacement, depending on the application.

Digestate as a soil amendment

Digestate has characteristics similar to compost. It supplies the soil with organic matter and many slow-release macro and micro-nutrients. Digestate can provide a boost to the organic matter, soil life and slow-release nutrients that will benefit the land for multiple years.

Digestate properties

Digestate, as a direct product of anaerobic digestion, comes in a low-solids liquid form that can be applied directly as fertilizer. Digestate producers may separate the solids from the liquid. In this separated form, the solids can be used as livestock bedding and the nutrient rich liquid digestate can be applied as fertilizer.

It's important to know the characteristics of digestate before application. The producer can typically provide more information or analysis can be performed.

Pasteurized or not?

Anaerobic digestion is a proven method of inactivating many pathogens. Some facilities also use a pasteurization step after digestion to ensure pathogen inactivation. This may be done based on the regulatory requirements (see Appendix E of the <u>Canadian Digestate Management</u> <u>Guide</u>). When pathogen inactivation can be verified, digestate can be sold as a Canadian Food Inspection Agency registered fertilizer (provided it meets other criteria as well). If pathogen inactivation is not achieved, the digestate must be applied as a waste material, as required by provincial regulations.



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Follow the 4Rs

Anaerobic digestate can be a valuable part of a farms fertility program. To maximize the value of digestate, use the 4Rs of Nutrient Stewardship which are part of best management practices (BMPs):

Right rate

- Application rate should be determined based on the crop requirements, soil testing results and recent analysis of the digestate.
- Consideration should be given to the long-term plan for the field, specifically, if the intent is to apply digestate to the field more than once (for example, will multiple applications lead to excessive Phosphorus concentrations in the soil).

Right place

- Select fields that are low in fertility and will have the highest economic benefit.
- Where practical, utilize technologies to place the digestate where it improves the plants' ability to uptake nutrients (for example, injection or side-dressing).

Right method

- Apply digestate to crops that can use them in a method that maximizes nutrient uptake and minimizes losses to the atmosphere and ground and surface waters.
- Different application methods (described on the next page) have different performance characteristics.

Right time

- Apply when the digestate will provide nutrients to a growing crop, for example: prior to planting in the spring; as a side-dress into corn; onto a living hay crop; or, prior to planting a cover crop in the fall.
- Digestate should not be applied when weather and/or soil conditions may lead to run-off or leaching to groundwater.
- Avoid surface application on hot and windy days when the potential of ammonia loss is highest. Alternatively, injection into the soil will minimize this risk.





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Applying digestate

It is important to place the digestate where crops can use it and where potential losses to the environment are minimized. Digestate with high mineral nitrogen content requires particular attention to minimize ammonia losses. Equipment for applying liquid and solid manure can also be used for digestate.

Choosing the appropriate method requires consideration of many factors. Due to the potential for nitrogen loss, application methods that minimize this risk are preferred.

Common application methods include:

Broadcast and incorporate

Where the digestate is top-dressed on the field surface and then incorporated as soon as possible after application.

Injection

The digestate is placed beneath the soil surface. closer to where the roots can utilize the nutrients, while also minimizing potential losses to the environment. Although injection requires specialized equipment, it will maximize uptake of nitrogen and crop benefit.

Band spreading

The digestate is placed on the soil surface, below the crop canopy.





The Canadian Biogas Association is a member-driven industry organization that supports the diverse needs of the biogas and renewable natural gas (RNG) sector with the goal of building a strong, robust biogas & RNG industry in Canada. We represent companies that span the interests of biogas & RNG production. By working with the agricultural sector we can strengthen both industries by maximizing the utilization of organics, such as manure and food waste to produce renewable energy and fertilizer.

Want to learn more? farmingbiogas.ca

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