

A Practical Guide:

Digestate as side-dress application for standing corn

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What is digestate?

Digestate is a sustainable and valuable resource that can reduce input costs and improve soil health. Digestate is produced when organic material – such as manure or food waste – is processed through anaerobic digestion. It is nutrient rich and contains nearly all the nutrients that were found in the original organic material that went into the digester.

How is digestate used?

Digestate products can be used as organic fertilizers or as soil amendments supplying readily available nutrients, micronutrients and organic matter to sustain or improve soil quality.

Digestate producers and managers employ best management practices when handling and applying digestate to farmland. Best management practices that incorporate the [4Rs of nutrient management](#) will achieve the most economically and environmentally beneficial use of digestate products.

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What does applying digestate on your farm look like exactly? In this example, the dairy farm has an on-farm biogas plant that digests all manure plus off-farm feedstocks. The biogas plant includes a screw press for separation of the digestate into liquid and solid products. The farm's cropping system includes digestate application at various times during the growing season to maximize digestate use and minimize the quantity of digestate in storage, particularly during warm temperatures. Let's dive in.



This guide is ideal for farmers who...

- Have an on-farm biogas plant
- Include digestate application during the growing season
- Have corn in their rotation

On-farm example: Field stats



Soil type:

Donnybrook
sandy loam



Rotation:

corn,
soybeans, wheat
(yield goal 200, 55, 100
bu/acre respectively)



Application:

Scheduled for early
June into growing
corn crop



Soil test: 22 P; 125 K;
pH 6.7



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Seasonal Activities

Fall	Spring	Fall
<ul style="list-style-type: none"> • Harvest soybeans 	<ul style="list-style-type: none"> • Seedbed prep • Plant corn • Inject digestate (standing corn) 	<ul style="list-style-type: none"> • Harvest corn

The farmer discovered that the greatest direct economic benefit comes from the use of liquid digestate as an organic fertilizer, applied to growing corn just before corn begins to elongate (8-leaf stage). Digestate is injected using continuous manure application system (drag hose).

Benefits

- ✓ Digestate is high in readily available nitrogen, which is ideal for application into standing corn and maximizes nitrogen use efficiency. Even with available N from digestate, some nitrogen should come from inorganic sources to ensure early crop needs are provided.
- ✓ Side-dressing into standing corn allows optimum corn planting date and allows digestate application to occur when soils are often drier and less prone to compaction damage.
- ✓ This timing for digestate is also ideal for organic systems where the crop relies on readily available nitrogen and where N sources from solid manure often are not available when crop needs are highest.
- ✓ Digestate injected into standing corn reduces reduces nitrogen loss through ammonia and nitrous oxide volatilization (which lead to increased GHG emissions).
- ✓ Side-dress timing allows lower N rates (15% reduction compared to total N at planting) since early-season losses are avoided. Digestate provides nutrients for subsequent crops in rotation and helps maintain nutrient balance.

Watchouts

- ⚠ Injection increases time and horsepower requirements, however not significantly more than injecting commercial UAN (28%) nitrogen.
- ⚠ Prolonged wet conditions could result in small application window.

For more detailed information on nutrient application and calculations refer to pages 81-84 of the [Canadian Digestate Management Guide](#).

Ready to get started?

Connect with digestate producers near you!

There's no one place to find digestate. To source a supplier near you, CBA recommends contacting a biogas plant in your region and asking them directly. You can find a list of projects at biogasassociation.ca and check out their member list for potential suppliers.

TIP! Ask your custom applicator and your agronomist to see if they have a lead on local digestate.

The biogas & RNG industry is growing rapidly. Keep your ear to the ground as more digestate sources will become available through the growing network of producers.

Discover biogas for your farm!

If you're exploring biogas for the first time, or if you're ready to plan a facility for your farm, farmingbiogas.ca is the go-to source for agricultural biogas information and connections in Canada.



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.

Check out these resources to get started!



Is biogas & RNG a fit for your farm?

Take the [online self-assessment tool](#) to start exploring if it's a fit for you.



Meet the farmers fueling Canada's clean energy

Learn how three Canadian farmers use anaerobic digesters on their farms.



Want to learn more?
farmingbiogas.ca

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