



A Practical Guide: Split application of digestate on an organic farm

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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 <u>4Rs of nutrient management</u> 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, this farm is certified organic and must rely on organic nutrients such as manure and digestate to provide all the fertility required for a corn crop. The farm raises hogs and have some beef cattle that provide manure, but the manure does not provide enough nutrients for the entire farm. To obtain additional crop nutrients, the farmer secures certified organic solid and liquid digestate products from a nearby industrial biogas plant. Let's dive in.



This guide is ideal for farmers who...

- Are certified organic
- Have some livestock
 manure available
- Use certified organic solid and liquid digestate products

On-farm example: **Field stats**



Soil type: Guelph Ioam



Rotation: alfalfa, corn, soybeans, wheat (yield goal 80, 180, 45, 90 bu/ acre respectively)



Application:

Scheduled for late November after corn harvest



Soil test: 22 P; 125 K; pH 6.7



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Seasonal Activities

| Fall | Spring | Summer |
|--|--|---|
| Apply solid digestate Incorporate solid digestate while working down the alfalfa crop | Spring field preparation Plant corn | PSNT to determine appropriate digestate rate Inject digestate into standing corn |

Solid digestate is applied in the fall to supply spring nitrogen to the seeded corn crop and to maintain soil fertility and organic matter. A pre-sidedress nitrate test (PSNT) determines the application rate for a side-dress application of liquid digestate to supply the available nitrogen required by the growing corn crop.

Benefits

- Fall-applied solid digestate provides nutrients for subsequent crops in rotation and helps maintain nutrient balance.
- ✓ Liquid digestate is high in readily available nitrogen and is best applied into growing crops or as close to planting crops as possible to maximize nitrogen use efficiency. This is especially true in organic crop production where commercial fertilizer is not used. A variety of nutrient sources are used to ensure that one nutrient is not over supplied.
- ✓ Injection of liquid digestate is also preferred for organic systems where it is critical to maximize the nutrient use efficiency of the applied readily available nitrogen by minimizing N loss through ammonia volatilization.

Watchouts

- In an organic production system, it is important for soil fertility levels to be at medium-high levels. Building low soil fertility and keeping nutrients balanced is difficult without the addition of commercial fertilizers.
- Timing of nutrient availability for crops with high fertility needs can be difficult in organic production systems. Nutrients in manure are not balanced as required by crops and cannot be changed to match a specific commercial fertilizer blend.
- Weed control is difficult in organic production systems, where use of pesticides is not permitted, however, the use of cover crops for protecting soil from weed infestations is important, in addition to the benefits cover crops contribute to nutrient cycling.
- Where there are forages in the rotation, the potassium removed with the hay or haylage cannot be adequately replaced with digestate. Planning ahead to find other organic amendments that have a higher K content (relative to N and P) could help to balance soil fertility levels.

For more detailed information on nutrient application and calculations refer to pages 93-96 of the <u>Canadian Digestate Management Guide</u>.

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.

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.





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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