

April 2022

New Version of RUSLE2 Software:

A new version of RUSLE2 Software (Version 2.7.0.5) is now available for field use. Instructions on preserving your old work and creating a backup, uninstalling the older version, downloading and installing the newer version, are available on the IMMAG website under the [“RUSLE2 Resources”](#) page. Important: This new version of RUSLE2 does not install an “NRCS RUSLE2 Profile Record Report” printing template. Please follow the instructions to download and install this printing template which is also available on the same [RUSLE2 Resources](#) webpage. This newer version of RUSLE2 is now touch-screen compatible.

The Manure Scoop

Biosecurity is always essential, and when manure and equipment are moving, extra caution is needed. Take a look at this month’s [Manure Scoop](#) to read more about how to be biosecure in your manure pumping and how new technology options are changing the game.

Carbon Corner – Solid-liquid separation

A carbon footprint is the total amount of greenhouse gas emissions from the production, use, and end-of-life of a product or service. Gases considered include carbon dioxide, methane, and nitrous oxide. Many agricultural groups are looking to find ways to improve their carbon footprint.

Examples include:

- Innovation Center for U.S. Dairy is unveiling its Net Zero Initiative
 - Carbon Neutral or better by 2050
 - \$10 million commitment and partnership with Nestle
- Pork Cares is setting a goal to reduce greenhouse gas emissions by 40% by 2030
 - Smithfield has pledged a 30% reduction by 2030

In the area of manure, several factors can impact our carbon footprint. Generally, methane and nitrous oxide emissions are the driving factors. Carbon dioxide (CO₂) released from manure is biogenic. Recently, atmospheric carbon was transformed to plant material and then into atmospheric CO₂, where it stays a part of the active carbon cycle. Therefore, it is not included as a greenhouse gas.



Figure 1. Inclined screen solid-liquid separator.

To help understand some options to achieve these greenhouse gas reductions goals, we will review different options in the coming weeks. In terms of methane emissions from liquid manure, it is primarily related to carbon and volatile solids content. Nitrous oxide emissions are mostly related to nitrogen content and ammonia emissions. Solid separation removes volatile solids from the liquid manure, providing the potential to reduce methane emissions, but how effective is it?

Take an example dairy operation using liquid manure storage in Iowa. Because the manure is decomposing anaerobically in the storage, the manure is estimated to release 41 kg CH₄/cow-year. Assuming the manure gets a crust, it will release 0.8 kg N₂O/cow-year for a carbon emission of 1262 kg CO₂-equivalents/cow-year.

However, if this same operation uses a screw press separator, will carbon emissions be reduced? Assuming a separation efficiency of 37% of the organic solids in the solid fraction, we will see a substantial reduction in emissions from the liquid storage. The liquid manure only makes 26 kg CH₄/cow-year and 0.4 kg N₂O/cow-year, while the solid fraction will only release 1 kg CH₄ and 0.7 kg N₂O per cow per year. Total carbon emissions are estimated at 1023 kg CO₂-equivalents/cow-year, a reduction of 20%.

Spring Manure Opportunities

Looking for a podcast while you are out in the field providing natural fertility or in the shop prepping for spring panting? Check out the last two 'Engineering You Farm' Podcasts about [spring manure](#) and [planter prep](#).

Improving Soil Structure and Water Management

Brian Dougherty, Iowa State University Extension and Outreach Ag Engineer, discussed improving soil structure and its importance for manure applicators. Check it out on [YouTube](#).

Events

April 20, 2022, 2 pm

[Soil Health Digital Café: Introduction to Soil Health Matrix Decision-Tool](#)

June 8-10, 2022

[World Pork Expo](#)

Des Moines, IA

June 30, 2022

[Iowa Swine Day](#)

Ames, IA

August 9-10, 2022

[Regional Soil Health Field Day](#)

Waseca, MN