

Activities

Ammonium salts are recovered from animal manure via stripping-scrubbing process and are considered a priority as RENURE products, showing the potential to substitute synthetic nitrogen fertilizers in crop production.

In 2022, trials were conducted on five plots: one with potatoes and four with maize, comparing ammonium nitrate application with conventional synthetic nitrogen fertilizers (urea and calcium ammonium nitrate).

In 2023, ammonium salts were applied in winter wheat using spray booms under low-emission conditions.

An infosheet was created to share the knowledge and results obtained from the field trials.

A demo event (field visit) and a workshop were organized at Inagro with approximately 30 participants (more than half being farmers) to share knowledge and help farmers prepare for the upcoming RENURE legislation and encouraging the correct use of ammonium salts.

Further details



Total budget: € 75.000,00

Total financed: € 75.000,00

Main funding source: Rural development 2014-2020 for Operational Groups

Rural Development Programme: 2014BE06RDRP001 Belgium - Rural Development Programme (Regional) - Flanders



Ended, 2021 - 2023



Flanders, Belgium



Inagro vzw

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Field application of manure-derived ammonium salts as RENURE fertilisers



Objectives

There is a nutrient surplus from livestock industries in Flanders while additional nutrients are supplied in the form of artificial fertilizer.

The OG RENURE aims to prepare agriculture and horticulture for the use of RENURE products, such as ammonium salts recovered from animal manure, with knowledge and experience regarding the application of ammonium salts in practice, identify any bottlenecks, and gain insight into the impact of the rollout of the RENURE criteria on Flemish agriculture.

Injection machines for application of ammonium salts on grass (above) and vegetable (below)



Results

Results of the field tests indicate that the ammonium nitrate recovered from animal manure performs just as well as synthetic references (urea and calcium ammonium nitrate) in terms of effectiveness and fertilizing value. In some cases, crops treated with ammonium nitrate performed better than the reference, although this was partly due to heterogeneity of growth induced by the dry growing season. Field tests in previous projects with ammonium salt solutions (ammonium nitrate and ammonium sulphate) showed that the products are also suitable for grass, grain crops and vegetables, both in arable farming and in greenhouse cultivation.

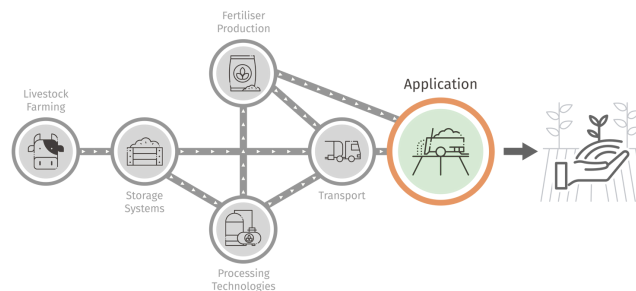
Applying ammonium nitrate with a row tiller in potatoes or with injection with a seeder when sowing maize did not cause any problems during the tests and is preferred as a low-emission method over application with a spray boom. Applying with a spray machine under the right conditions and immediately working it into the soil may be a more realistic alternative.

Context

Ammonium salts are liquid and because of the ammoniacal nitrogen form, ammonia volatilization can occur during storage and application, so it is important to do this in a low-emission manner.

Location in the Nutri-Know value chain

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However, mandatory low-emission application for subsequent applications could cause problems if the product has to be incorporated when the crop is already there, depending on the cultivation. The main bottlenecks when using ammonium nitrate in practice are the lower nitrogen content as compared to synthetic fertilizer, and the legal status that it was still considered as animal manure. The lower nitrogen content (9-12%) means that larger volumes are required as compared to synthetic fertilizer, therefore the fertilizer machine has to be replenished more often and is especially an inconvenience if the storage is located far from the plot. Mixing ammonium salts with synthetic fertilizer can meet farmers' demand for a higher nitrogen content. Moreover, this can provide a bridge in a transition phase from fertiliser to recovered fertilizers, where the mixture combines the security of the known fertiliser with the cost savings of the ammonium salts. However, the status of animal manure in current legislation provides limited options for both the sole or mixed application of ammonium salts.



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