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Use manufactured nitrogen fertilisers effectively and efficiently

All applications of manufactured nitrogen fertilisers should be based on a nutrient management plan, integrating fertiliser and manure supply and taking into account your soil management plan

As with organic manures, you should only apply manufactured nitrogen fertiliser according to crop requirement and when weather and soil conditions are right

Regularly maintain, calibrate and test all application equipment, as appropriate, to ensure efficient distribution and utilisation of nutrient supplied



Urea $(\text{NH}_2)_2\text{CO}$ and ammonium nitrate NH_4NO_3

Typically up to 2% of total nitrogen applied in the form of solid **ammonium nitrate (AN)** fertilisers is lost as ammonia (in European climates)

In comparison, up to 45% of nitrogen can be lost from urea-based fertilisers as ammonia, depending on conditions such as weather and soil type



Source RustaviAzot

While not widespread in Georgia, if you use it switching from **urea-based fertiliser** to ammonium nitrate fertiliser could therefore reduce your ammonia emissions.

→ When urea-based fertilisers are preferred then as far as possible, better to add urease inhibitors to reduce ammonia emissions : $(\text{NH}_2)_2\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + 2 \text{NH}_3$

For applying these fertilisers, spread when rainfall is due, (applying by injection to soil if possible) or on surface with incorporation into the soil as soon as possible

Avoid urea application on light sandy soils, grassland and arable crops in dry periods

Time your application appropriately

To reduce emissions of ammonia

You should apply manufactured fertilisers to the soil during favourable conditions, maximising the adsorption of ammonium ions onto the clay component of the soil and organic matter

and at a time when crops can make maximum use of the nitrogen



Source RustaviAzot

Ammonium nitrate

→ You should plan applications in cool but moist conditions and avoid application when rainfall is expected to minimise the risk of nitrogen loss (to both air and water)

Urea

→ You should plan applications when soils are moist (not wet), or when rainfall is expected, and the weather is cold. If feasible, you should incorporate it into the soil immediately after application.



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Thank you!

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