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ClieNFarms EIP-AGRI Practice Abstracts

Protected urea in the Irish pasture-based system

Susan Moloney, Natasha Browne, Deirdre Hennessy (Teagasc)

In Ireland, the agriculture sector has been set a clear target in the Climate Action Plan to reduce greenhouse gas emissions by 25% by 2030, with the overall goal to be climate neutral by 2050.

Protected urea has the potential to give the greatest and fastest reduction in greenhouse gas and ammonia emissions within grass-based agriculture. Protected urea fertiliser is urea that has been treated with a urease inhibitor, which can be coated on the outside of the fertiliser granule or incorporated into the urea granule melt during manufacturing. Both urea and protected urea fertilisers have 71% lower nitrous oxide emissions relative to calcium ammonium nitrate (CAN) fertiliser, however, protected urea fertiliser also reduces ammonia emissions by 78% compared to standard urea fertiliser. Reducing both ammonia and nitrous oxide losses, helps to reduce the impact of grass-based ruminant production systems on water and air quality. In Ireland, traditionally urea was used in spring, and CAN in summer and autumn.

An additional advantage of protected urea is that it can be spread at any time of the year. It works as effectively as standard urea fertiliser in damp spring conditions due to the inclusion of the urease inhibitor. In the summer protected urea releases nitrogen at a slower rate and more effectively than CAN.

Protected urea is cheaper than CAN on a per kg of N basis. Protected urea is still more expensive than standard urea on a per ton basis, however, there is significantly greater N losses from standard urea. Protected urea will give the same effective N to the plant as standard urea at a 12% lower spreading rate.

Figure 1: Protected urea being spread on farm. Source: Teagasc

Figure 2: Close up of protected urea. Source: Teagasc

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