Agriculture and Food Development Authority

Notes

Teagasc Notes for week ending Friday 8th May 2020

Protected Urea – The Way Forward

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We often talk about looking for silver bullets to solve our environmental issues in Ireland, such as Transport looking to electric cars as a solution. In agriculture we can look to protected urea as a tool in the battle to reduce gaseous emissions. Protected urea nitrogen fertiliser is the most important technology available to us at present in order to help achieve our targets in reducing greenhouse gas (GHG) and ammonia emissions in agriculture.

Why?

Nitrogen (N) fertiliser plays a key role on the farm in order to achieve grass and crop growth potential. Protected urea allows a farmer to spread urea based nitrogen throughout the growing season without needing to worry that the N will be lost from the field through ammonia emissions which can occur in dry weather. Protected urea also reduces GHG (Nitrous Oxide) emissions and nitrate leaching when compared to CAN. Teagasc trail work shows that protected urea achieves these benefits while yielding as well as CAN over the growing season (Figure 2), a win-win outcome both economically and environmentally.

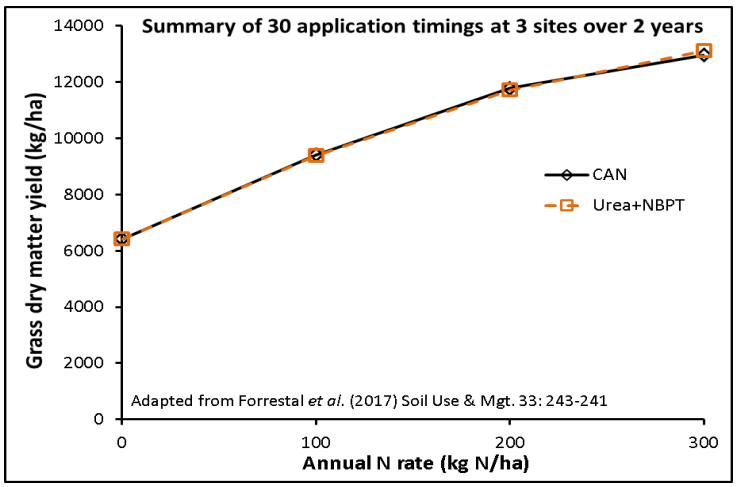

Figure 2. Protected urea consistently matching CAN grassland yields in Teagasc trials

Reduce Nitrate Leaching:

Nitrate leaching can occur during times of heavy or prolonged rainfall, free draining soils are particularly susceptible to losses as nitrate is very mobile in soil and can be readily leached to groundwater. CAN is made up of half ammonium and half nitrate, after spreading CAN a large pool of nitrate is placed in the soil open to being leached away if unfavourable conditions occur. Protected urea converts to the ammonium form of nitrogen when applied to soil. Ammonium is more stable in soil than nitrate and less susceptible to leaching due to its positive charge. Soil microbes convert ammonium to nitrate almost like a steady conveyer belt; plants take up both nitrate and ammonium as required for growth and have access to a steady flow of available nitrogen as soon as the protected urea granules begin to melt. Remember after grazing or mowing, grass is in least demand for nitrogen as the crop is small. As the grass grows demand increases and we need nitrogen to be available to the plant to ensure optimal growth is achieved without the worry of excess nitrate being leached before it is taken up by the plant until grazed or cut.

Ammonia Emissions & Water Quality

Some farmers do not like to use traditional urea (even during 1st application) as they are concerned that grass growth is poorer with this N source.
The reason for this is that the use of traditional urea leads to ammonia (N) losses after spreading; the amount of ammonia loss can be substantial and is dependent on weather conditions. The highest losses tend to occur during warm and/or windy conditions; however losses can also readily occur in cooler drying hash conditions.
Ammonia in the atmosphere is then deposited into water bodies or other sensitive habitats causing deterioration in water quality and poor grass production on the farm.

Tips

- Protected urea will reduce Ammonia/GHG emissions and reduce nitrate leaching
- Protected urea similar to urea has a lower density than CAN and other compounds, for this reason the fertiliser spreader settings and vane selection may need to be adjusted to achieve the required spread width
- For the greatest protection use protected urea within 12 months as the urease inhibitor will degrade over time in storage
- Potassium and sulphur mixes with protected urea can be purchased, however currently phosphorus (P) blends result in shelf life problems for the protection
- Protected urea is cheaper per unit of N to spread than CAN
- Consult the Teagasc Protected urea fertiliser list: https://www.teagasc.ie/crops/soil--soil-fertility/protected-urea/

Radical Change at Kildalton College

The last seven weeks have seen a radical change to course delivery at Teagasc Kildalton college. Tim Ashmore, College Principal said, “students are adapting very well to the online learning environment as staff and students virtually engage using online teaching and learning platforms”. Zoom, moodle and google classrooms have become everyday terminology within a few weeks.
The traditional exam hall assessments are gone and replaced with online Multiple Choice Questions (MCQ) and assignments. Despite these large scale changes, it is expected that all full time courses will be completed on schedule. The level of engagement from students has been exceptional, despite the challenge that many have with rural broadband. Staff have risen to the challenge and have provided support and put contingencies in place to help students navigate through this changed learning environment.
Kildalton College is an Agriculture, Horticulture and Equine Studies College which delivers full time, part time and distance education courses. Applications are now open, apply now online at www.teagasc.ie.

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