Gaining improvements; good animal health & fertiliser management

Rumbletonrig
Climate Change Focus Farm

Notes from meeting on 5th December 2018

For the eleventh meeting of the Rumbletonrig Climate Change Focus Farm, we took a look at two diverse topics: pneumonia prevention in cattle and the benefits of protected nitrogen fertilisers.

What is Pneumonia ?

Pneumonia is inflammation or damage to the lungs. It can be caused by a multitude of factors including environmental or a respiratory disease. Most of the causes of pneumonia are present all of the time in the animals environment, but become a problem when they are triggered by environmental factors, stress or reduced immunity. Cattle are pre disposed to pneumonia due to their relatively small lung size compared to their weight.

The estimated cost to UK cattle industry is £50 million per year. Pneumonia is the most common reason for deaths or poor performance in young cattle from weaning to ten months. Studies show when 30% of cattle in a group show signs of respiratory disease and a further 40% can exhibit lung damage at slaughter. A large proportion of the costs associated with pneumonia are hidden, such as reduced live weight gain and poor feed conversion efficiency (FCE). Costs per affected animal range between £30–£80 with death having a bigger financial impact. A treated and recovered animal remains high risk to further disease.

Mortality in the grower/finisher stages represents the maximum financial loss per beef animal as a great deal of time and money has been invested in the animal for no return. The risk of losses in 12–18 month old cattle increases if animals have been infected as young calves. **Early management is key.**

How to prevent a pneumonia outbreak

Many infective agents are always present so testing for them can help build a tailored strategy, according to David Wilson, Veterinary Centre Manger at SAC St. Boswells. With the help of your vet, you can find out what you're dealing with.

- Before vaccination serology test (blood) for the presence of infectious agents then plan a targeted vaccine/treatment strategy
- Vaccination—finish vaccination program two weeks before housing

Target improved cattle immunity through reducing stress as well as treating any disease which is present:

- Ensure all calves have adequate quality colostrum at birth
- Reduce stress at all management points from castration to weaning and beyond
- Keep other diseases and health conditions under control

Control environmental factors as well as possible;

- Good ventilation of buildings, maintain low humidity. Calculate roof outlet requirement based on 0.1m^3 per head. Ensure side inlet on each shed side is equal to this figure. Use smoke pellets to monitor movement and speed of escaping air.
- High stocking densities increases animal contact. Animals on finishing diets produce more moisture and heat
- Provide adequate access to feed and clean water.

If you have a death, have a post mortem carried out on a fresh animal (within 24 hours) to find out the cause and allow you to take appropriate targeted action.

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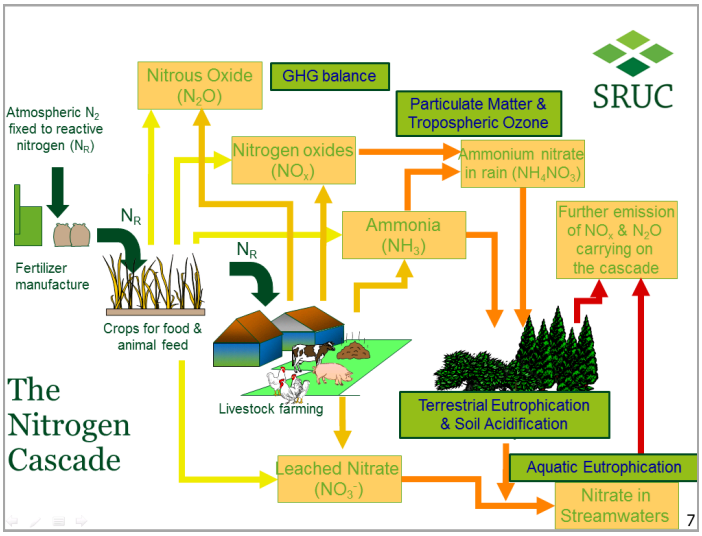
Fertiliser Management—Nitrogen use

Nitrogen is an essential nutrient to produce food and crops. The yield response to nitrogen is the steepest of all nutrients. However, the economic fertiliser rate is lower than the amount needed to achieve max yield due to the other factors which effect yield, such as weather, soil pH, compaction and nutrient status.

Scotland uses about 130,000 tonnes of nitrogen fertiliser every year. Around 30% is lost by leaching; 1% is converted to Nitrous Oxide and 10% to ammonia. At all stages along the nitrogen use timeline there is potential for losses to the environment. Nitrous Oxide is a greenhouse gas with carbon equivalent nearly 300 times that of carbon dioxide.

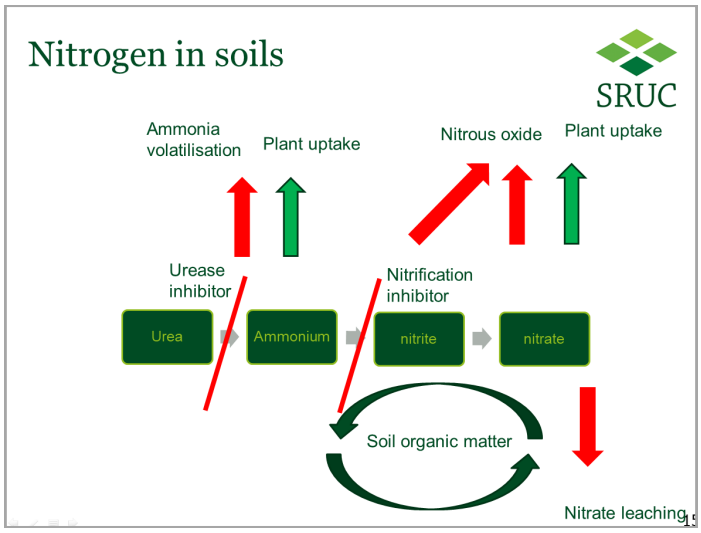


Reducing Nitrogen losses to the environment

You can reduce nitrogen losses using appropriate fertiliser type and appropriate rate for the crop, and ensuring that all application equipment is calibrated and fit for purpose.

Inhibitor technology can also reduce nitrogen loss by slowing down the chemical transformations to reduce volatilisation and nitrification. This could mean more N would remain available for crop growth and less lost to the environment. The two main inhibitor options are Urease or Nitrification Inhibitors:

- *Urease Inhibitors* contain NBPT (N–butyl thiophosphorictriamide), these slow down the conversion of urea to ammonium and the inhibitor safely breaks down in the soil.
- *Nitrification Inhibitors* can contain a number of different active substances. DCD Dicyandiamide is the most commonly tested, and reduces N^20 losses, this inhibitor also safely breaks down in soil.



Summary

- Nitrogen fertilisers are essential for maintaining crop production, but can have negative environmental impacts if mis-managed
- Stabilised fertiliser products using urease inhibitors or nitrification inhibitors can reduce N losses and lead to some yield enhancement
- Inhibitor products can help with greenhouse gas mitigation by reducing nitrous oxide emissions
- Regardless of fertiliser type, **best returns will be achieved by optimising crop and soil management**

By improving farm efficiency, you can also reduce waste and cut the farm carbon footprint. Focus Farm meetings are free to attend and all farmers are welcome. Find us on Facebook or follow us on Twitter @SACFarm4Climate, or contact farm facilitator Donald Dunbar on **01835 823 322 or** donald.dunbar@sac.co.uk for more information.

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