

LIVESTOCK COMPLIANCE

Ways to reduce farm ammonia emissions

Agriculture is currently responsible for 88% of UK ammonia emissions, but Defra plans to change that. **Hayley Parrott reports**

Dairy and beef farmers are likely to be most affected by Defra's proposed controls for fertiliser, manure and slurry management.

The proposals, which also cover livestock housing design and habitat protection, are part of a draft Clean Air Strategy, launched by Defra secretary Michael Gove on 22 May.

With the government's focus on improving air quality, agricultural environmentalists are urging farmers to get on the front foot when it comes to reducing emissions.

Ammonia, which can be emitted in the breakdown of livestock muck and slurry and the fertilisation of land, is not a greenhouse gas itself. However, in very particular circumstances it can be converted to nitrous oxide, which is a greenhouse gas.

Environmental considerations, including those relating to emissions, are already playing a bigger role in planning permission applications and the success or failure of a case often depends on them.

We spoke to Nigel Penlington, head of environment and buildings at the AHDB, and Tom Gill, head of environment at Promar International, to get advice on practical solutions to reduce ammonia emissions on farms.

"It's important farmers are aware of the huge impact these [Defra] proposals could have if implemented. Therefore it is key that farmers start to consider how they may reduce

AMMONIA IN NUMBERS

8%
Defra target to reduce ammonia emissions by 2020 as part of the National Emissions directive, with 2005 as baseline year

16%
Defra target to reduce ammonia emissions by 2030 as part of the National Emissions directive, with 2005 as baseline year

10%
Ammonia levels in air have reduced by this much since 1980

3.2%
Ammonia emissions rose by this from 2015 to 2016

emissions now because growing public and government pressure is demanding better air quality," explains Mr Penlington.

"None of the proposals are set in stone, but there is a lot of change going to happen because the public health figures surrounding air quality are not debatable," adds Mr Gill.

Actions everyone can take

1 NUTRITION

Diet is the first place to start in this process, according to Mr Penlington. Feeding excess crude protein (CP) increases nitrogen excretion from animals and ammonia emissions. Ensuring protein levels in the diet are correct could also save feed costs.

2 SLURRY AND SOIL TESTING

Slurry testing allows better and more precise fertiliser planning so that applied nutrients match crop requirement. This allows soil reserves of P and K to be maintained, keeping the soil fertile and healthy.

Mr Gill recommends regular slurry testing using one of the portable test kits available, which cost per cent per test.

"These are two testers. A simple hydrometer will give total N, P & K. The other type relies on a simple chemical reaction and provides the available N," explains Mr Gill.

"The cost of these kits can be recovered in



Changing the way slurry is applied can help reduce ammonia emissions

"it is key farmers start to consider how they may reduce emissions now because government pressure is demanding better air quality"

Nigel Penlington, AHDB

saving the purchase of 1t of nitrogen fertiliser." Once tested, the nitrogen available to the growing crop can be calculated, which is less than the total nitrogen in the slurry, as not all is in a form that plants can take up.

Manure NPK software, which can be downloaded from the AHDB website, will do this calculation. And the AHDB Nutrient Management Guide (N2018) provides fertiliser recommendations for all key crops.

Determining exactly how much purchased fertiliser needs to be applied and when can save costs, improve grass yield and quality, and reduce the loss of ammonia and nitrate.

3 SLURRY APPLICATION

The preferred methods for reducing emissions from muckspreading are slurry hand grading (trailing hoses and shoes) and splash plate injection. Many contractors are now offering these methods, so it may not be a difficult switch.

Reducing NH3 emissions is also possible via

rapid incorporation of manure into soil.

4 FERTILISER USE

Urea-based fertilisers are the main culprits of ammonia emissions when it comes to fertiliser use.

Research has shown about 20% of nitrogen content of applied urea is lost to the atmosphere as ammonia, although this can be reduced if applied shortly before rain or shallowly cultivated into tillage soils.

Alternative nitrogen fertilisers such as ammonium nitrate or inhibitor-treated urea reduce the losses of ammonia in comparison with urea fertilisers. The inclusion of a nitrase inhibitor with urea-based fertiliser has been shown to reduce emissions by about 70%.

5 CLEANING HOUSING AREAS

Reducing the amount of soiling manure and urine in buildings and yards can help because ammonia is formed when urine and manure mix. The best way

to reduce the frequency of scraping floor areas and pressure washing collecting yards are effective methods.

6 ACIDIFYING SLURRY

By adding sulphuric acid to slurry to reduce the pH to 6 or below, it is possible to stop the ammonia reaction.

It might mean a bit more lime is required to balance soil pH when acidified slurry is spread.

Three factors to consider when planning

1 BUILDINGS AND YARDS

One option is to keep urine and slurry separate, Mr Penlington explains, which is possible with floors slightly sloping into stais or grooved floors with holes in.

Low-emission housing is actually likely to be better for animal health too because it is likely to improve foot health and lead to less mastitis, if managed well.

A compact, covered collection yard will mean a smaller area to wash and keep clean.

2 SLURRY AND MANURE COVERS

Covers on slurry stores not only reduce ammonia emissions from the tank, but also keep the rain out, meaning you are pumping nutrients rather than water, explains Mr Gill.

By increasing storage capacity for slurry rather than rain, you can save an estimated £1/cu m for storage and £1.60/cu m in contractor costs for spreading. In addition, it reduces the amount of journeys required in spreading and reduces the odour of the store.

There are various different fixed and floating cover options. A cover is better than relying on the formation of a crust because crusts can be difficult to agitate and release a lot of ammonia in that process.

Similarly, it is possible to reduce ammonia from farmyard manure heaps by covering with a heavy-duty polythene sheet.

3 SLURRY SEPARATION

Slurry separation has many benefits, both in terms of reducing emissions and the amount of purchased fertiliser required.

● Storage requirement can be reduced by 15-20%, depending on the quality of separator used. Less settling and therefore sedimentation and clogging takes place, so it is not necessary to stir so frequently.

● The resulting liquid fraction soaks into soil more readily, meaning less risk of run off, odour and plant and soil contamination.

● The solid fraction contains less readily available N, but a larger proportion of P and K. When spreading slurry close to NVZ limits, P and K applications often exceed crop uptake and, in time, build up higher-than-recommended soil levels. Having P and K in the solid allows it to be easily transported to land that has received low levels of organic manures, reducing the need for purchased fertiliser. ■

DEVON FARM CUTS AMMONIA EMISSIONS BY 80%

Under new Defra proposals, all slurry and digestate stores and manure heaps will have to be covered by 2027. Fitting a cover to the slurry store at Hornshayne Farm, Colyton, Devon, has taken ammonia emissions from about 545kg to 109kg.

The 80% reduction reflects about 1,000kg of ammonium nitrogen within the slurry over a year, which is worth £700 as a nitrogen fertiliser substitute to dairy farmer Andrew Hurford.

For the slurry produced on the farm annually, the cover increases the fertiliser value by 0.25kg/cu m.

Slurry store cover
In 2017, Mr Hurford had a fixed cover

fitted to the 900,000gal storth slurry store at the farm. The tension cover is made from polyester woven fabric with a PVC covering to protect against slurry and UV light.

It was made possible by a Farming Ammonia Reduction Grant (FARG) that covered 100% of the £50,000 cost.

"If you had done the cover at the same time as the store, I'm sure it would have been cheaper, but it worked out at half as much again as the store to retrofit," Mr Hurford says.

"Covering slurry stores I'm sure is the right thing to do. It effectively makes my store 25% bigger," says Mr Hurford.

Slurry application and fertiliser value

For about six years, Mr Hurford's contractor has been spreading the slurry with a trailing hose. In the recently published Defra plans, there will be a requirement to spread slurry sand deposit using low-emission spreading equipment (trailing shoe or trailing hose or injection) by 2027.

By spreading slurry using the trailing hose onto long grass where the sward traps ammonia nitrogen and odour, ammonia losses are cut by about 80% compared with a splash plate spreader, says Mr Gill.

The fertiliser value can be calculated using the free Mannar NPK

programme.

This shows that if the slurry contains 28kg of nitrogen/cu m, then spreading at the rate of 30cu m/ha the fertiliser nitrogen contribution is 25kg N/ha. This is worth £6.25/ha using a splash plate spreader.

Changing to low-trajectory dribble bar and covered store over the growing season, an additional 6kg N/ha will be available, worth £4.2/ha. This covers the extra cost of spreading compared with a splash plate and provides additional savings to contribute towards the cover. This would give a return on investment of the cover over 20 years.



Andrew Hurford, pictured with his sons, has seen the benefits of a slurry cover

<http://www.poultrynews.co.uk/business-politics/people/analysis-what-should-2-sisters-new-chief-executive-do-first.html>

Analysis: What should 2 Sisters' new chief executive do first?

By Rachael Porter, on July 20, 2018

2 Sisters has a new chief executive following a turbulent year for the firm. So what should his priorities be?

It's been a tough 12 months for 2 Sisters, with a food safety investigation and disappointing financial results dominating the headlines in 2017. Ranjit Boparan, president of parent company Boparan Holdings, has brought in a new broom, in the shape of Ronald Kers. The question is: will he be allowed to sweep clean?

Kers is the former global chief executive of Muller, the €6-billion international food company, and he brings with him more than two decades of experience at global FMCG companies, including Nestle and Procter & Gamble.

He first joined Muller as UK chief executive in 2012, leading the turnaround and transformation of the business, and was subsequently appointed global chief executive in 2015.

So far so good. But will he be allowed to make the changes required to take the company forward? A leading food industry analyst told Poultry Business that he believes that Ronald Kers' most important – and challenging – job will be to get Boparan to take a back seat.

“Boparan's 'hands-on' style doesn't sit well with being chief executive of a £3-billion turnover organisation,” he says. “I don't think he had any other choice than to bring in someone like Kers to take on the role. In fact, I think that the board should have pushed for this to happen much sooner.”

So, is Kers the person to stand up to Boparan? “He certainly has the background and the credentials. You must be a big, serious player to take that level of responsibility at Muller, so he certainly looks like a good choice.

“But he really has to assert himself. 2 Sisters is too important to UK food manufacturing for it not to succeed. The major retailers also need the company to do well and the board needs to support Kers and recruit some good managers, who can build strong and lasting relationships with the major retailers.

“For too long, 2 Sisters has been on this 'merry go round' of losing customers and then gaining customers. The company needs some stability to be sustainable.”

So Kers clearly has a big job to do. 2 Sisters is a very large UK and Dutch business and one of the largest UK food manufacturers. And the company is also an important supplier when it comes to poultry, as well as other food products.

And there-in lies part of the company's problems, according to the analyst. “The reality is that 2 Sisters probably shouldn't have bought Northern Foods, back in 2011,” he told Poultry Business. “And I think that it should sell off the parts of the business that it acquired in the deal that are not poultry-based – particularly the frozen food brands.”

“Boparan's business experience is poultry based. That's what 2 Sisters does best. As a poultry manufacturer, the company takes some beating – it's extremely good at it. But it's not about brands or other food products. And I hope that Kers will assert himself and sell off more of these non-poultry brands.”

Boparan Holdings recently sold the Goodfella Pizza's brand for £200m: “And this will go some way to putting the company's finances back on track and making up the pension shortfall. But there are other brands to sell, including at least two frozen foods and Fox's Biscuits. The latter should command a good price.”

The analyst says that he was surprised that Boparan purchased Northern Foods in the first place. “There was no logic to it and it also seemed to be extremely rushed. Convenience-food producer Greencore was set to buy the business and then Boparan swept in at the last minute and trumped them. But all the company really bought was a lot of debt and Boparan, in my opinion, has little expertise in the business and the long-life grocery brands that it took on. They didn't suit his style and it

was hard to see how the brands would fit into the existing poultry processing business. The whole deal looked like something that was done on a whim.”

It certainly incurred a lot of debt and created a significant liability. Profits have fallen by almost £10 million year-on-year at Boparan Holdings, following the hygiene breaches in 2017 that forced the firm to close its West Bromwich cutting plant for several weeks to retrain staff.

The analyst says that Kers’ job will very much be about getting 2 Sisters back to focusing what it’s good at – being the UK’s best poultry processor.

Boparan also released a statement about Kers’ appointment, saying that it: “Underlines our serious intention to do what we say we’re going to do. The past 25 years has been all about growing 2 Sisters. Today we have reset our direction and we are focusing back on our core strengths and getting back to what we do best – delivering great value, great quality food for our customers.

“We have already started with our commitments to greater transparency, a stronger colleague voice, and simplifying a complex organisation. But there is so much more to do and Ronald can take the business performance to the next level. After 25 years as CEO, I am now taking on a broader leadership role as President of the BHL group, building on my entrepreneurial background and strengthening our financial position.”

Many, no doubt Kers included, will be holding him to his word to ‘take a step back’.

Promar International’s agri food divisional director John Giles agrees that appointing Ronald Kers is a good move. “He certainly looks like the ideal candidate – and for many reasons.”

He cites Kers’ experience with brands: “He’s a ‘brand’ man – Muller has a wealth of successful ones. And that’s a vital ingredient for a company that’s purchased brands but doesn’t have any experience of managing them successfully – whether that’s selling them off or developing them.”

Kers also has plenty of international experience, which would certainly be important post-Brexit. “Who knows what the deal will be in 2019, but the UK could be trading with the US, Oceania and other countries outside the EU. Kers has plenty of experience here,” says Giles.

“Strong customer relationships are also vital to any chief executive’s role and, again, Muller prides itself on these. Large ‘family run’ businesses don’t succeed without good relationships. It’s also an innovative organisation, and Kers should bring some of the experience with him to 2 Sisters.

Muller is also a milk processing company – it takes a commodity (milk) and adds value to it. “And that’s what 2 Sisters does – it takes poultry and adds value. So Kers comes from a ‘commodity’ background.

“And I do know that further investment will be essential – and in the right areas. Whatever the outcome of Brexit – and the trade deals struck – it’s vital that a company of this size and calibre focuses on improving efficiency.”

With this in mind, the recent announcement that the food group is investing in its Willand factory – and expanding operations that will give it a greater ability to process, cut and pack products for its retail customers – should come as no surprise.

2 Sisters’ goal is shorter, more efficient supply chains and fresher, quality products coming out of its Devon-based poultry processing hub. And it also announced the creation of 300 new jobs and 20 new apprenticeships.

An increase in cutting and packing capacity and new thigh de-boning equipment has bought about the need to take on the extra staff, boosting the current headcount to more than 1,200 since January with 160 new colleagues taken on. The 300 additional new roles will take the factory numbers up to 1500.

A company spokesperson said: “It’s not about being bigger; it is actually about having a smaller more focused footprint that has the capacity to carry out the whole operation.

“We have delivered robust revenue generation despite tough market conditions. And there is an ongoing consultation exercise underway regarding the potential closure of three UK poultry sites as part of a move to consolidate poultry operations around modern specialist manufacturing sites.” It certainly looks like there will be plenty of change with Kers at the helm. And it is expected to be for the better.

<https://www.thepacker.com/article/uk-retail-consolidation-benefits-big-players>

UK retail consolidation benefits the big players

What do the latest developments in the United Kingdom retail landscape mean for the supply chain, particularly in the U.S.?

The UK grocery market, which is currently valued at \$251 billion (U.S.) is set to reach \$282 billion by 2022. This market has historically been very consolidated, with the 'big four' supermarkets, Tesco, Sainsbury's, Morrisons and Asda, accounting for just over 70% of the retail sector.

Emma Gough, senior consultant at Promar International, said further consolidation could affect all suppliers, including those in the U.S.

At the start of March, the UK's largest grocery retailer, Tesco, finalized a \$4.9 billion (U.S.) takeover of Booker, the country's largest wholesaler, despite concerns from some suppliers that this will create a monopoly within the market.

Sainsbury's and Asda announced plans to merge their businesses earlier this year, in order to provide better prices, quality and product ranges to customers.

The merger, which is estimated to be worth U.S. \$16 billion, is yet to be approved by the UK Competition and Market Authority. However, it's anticipated that if approved, the deal will be completed by the second half of 2019 and when merged, these two businesses would be the new grocery market leader, with a market share of 31%, compared with Tesco at 28%.

It's important to note that the "big four" supermarkets are losing market share and customers to the discounters, such as Aldi and Lidl, who are growing at a fast pace in the UK. Together, they currently account for a 13% share of the market, almost double their 7% share in 2013.

What does this consolidation mean? In our experience, growth and consolidation makes established players in the grocery sector more resilient, as well as offering them a certain amount of protection from new market entrants to the UK, such as Amazon.

However, the Tesco and Booker takeover and the Sainsbury's and Asda merger would result in just two retailers holding an almost 60% majority share of the UK grocery market.

This is a cause for concern for some suppliers, who may fear prices being dictated by the dominant larger players. On the other hand, it creates potential opportunities for suppliers, including those from the U.S., who are looking to increase their sales volumes to the newly merged retailers, as well as gain exposure of their products to a wider range of consumers.

And, if a new trade deal is developed between the UK and the U.S. post-Brexit, then U.S. produce exporters of apples, pears, blueberries, grapes, grapefruit, raisins and nuts in particular could have better access to the UK market and take advantage of new supplier opportunities.

Recent developments in the market will likely result in further rationalization of the supply base, and the opportunities for some with the larger accounts will result in losses for others.

Finally, U.S. suppliers need to work out where the UK fits in their export portfolio and how this will sit within their long-term strategy, because from what we've seen over the past few months, the UK market is constantly evolving.

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