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## Welcome to the 3rd Farming Advice Service newsletter.

This newsletter covers nutrient management, changes to cattle controls to help eradicate bovine TB, information regarding the proposed NVZ boundaries and a review of an event in the South West Region. We hope you find this newsletter helpful. If you have any comments or if you have any ideas for topics you'd like us to cover, please get in touch.

- Email: [bookings@farmingadvice.org.uk](mailto:bookings@farmingadvice.org.uk)
- Telephone: 0845 345 1302
- Website: [www.defra.gov.uk/farming-advice](http://www.defra.gov.uk/farming-advice)

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## Nutrient Management: understanding your options

Agricultural manure and slurry is a valuable source of nutrients. However, farmers are often uncertain about how much of the nitrogen (N) in manure and slurries applied to land is actually available for crop uptake. The recent FAS technical article, available on the FAS website

[here](#), provides new information that will help farmers understand how to make more of the N in agricultural manure and slurry available to crops by using ammonia-reducing spreading techniques and anaerobic digestion (AD). This is important information for nutrient management planning and optimising the efficiency of mineral N fertiliser applications.

The Defra Fertiliser Manual RB209 (available [here](#)) provides guidance on how to ensure that proper account is taken of mineral fertilisers and other sources of nutrients, such as agricultural manure and slurry, so helping prevent costly over application. RB209 also provides useful information on how applying manures in spring can increase the amount of manure N that remains available for crops.

The principle of 'closed periods' for applying slurry and poultry manure in Nitrate Vulnerable Zones (NVZs) has been recognised as good practice for many years and has reduced the risk of crop-available manure N being lost through nitrate leaching. However, losses of crop-available N as ammonia following application to land can be large and will vary greatly according to the method of application, soil conditions, crop growth at the time of application and weather conditions. It is worth remembering that, even if manure is analysed for N content at the end of the storage period, the measurement of available N will not take into account losses following application.

In recent years, more UK farmers have started to apply slurry using machines that are designed to reduce ammonia emissions and conserve crop-available N. These are typically shallow injection machines and band spreaders (trailing hose and trailing shoe). While there may be other reasons why farmers have adopted these spreading practices (e.g. in some parts of England, pig farmers apply slurry by injection to reduce complaints about odour), one of the most important benefits is the reduction in ammonia emissions, which represents a waste of N that would otherwise be available for crop uptake. In addition, emissions of ammonia are very variable and lead to differences in the amounts of crop-available N that may be added to soil in manures. When slurries and solid manures are applied to arable land, rapid incorporation into the soil by ploughing greatly reduces emissions of ammonia. By reducing ammonia emissions, much of the uncertainty over the amounts of N available for crop uptake is removed, making the manure a more reliable and predictable source of N for crops.

While many farmers may think that the cost of injection or trailing shoe machines outweighs the benefits these machines offer, a recent study by environmental consultancy AEA and Creedy Associates (Webb et al., 2010), found that the value of manure N conserved by reducing ammonia emissions may make the use of an injection or trailing shoe cost-effective (see full technical article for details of cost calculations). The article shows that, at present prices, while the value of crop-available N conserved by applying manure via a trailing shoe does not fully meet the additional cost of using these machines, application of manure via direct injection and immediate incorporation would conserve enough available N to justify the additional costs. There may also be additional benefits from earlier turn out on grazed land and improved silage quality, but these are less readily quantified.

This article also highlights that, although ammonia emissions are reduced more by immediate incorporation of slurry by plough (by around 90%) than by injection (70-80% reduction) or trailing shoe (60-70% reduction), more slurry N was recovered by crops when applied in bands by injection or trailing shoe than when it was incorporated into arable land by cultivation. This is because incorporating manure into soil by ploughing leads to greater mixing and more opportunities for N uptake by microbes (immobilisation), which reduces the proportion of potentially available N that can be taken up by crops. However, when slurry is added to soil in bands, the potential for immobilisation is reduced, while still allowing crop roots to have easy access to the N.

On arable land, the best option to reduce ammonia emissions following slurry spreading is to incorporate as soon as possible after spreading. Incorporation by ploughing is the best option as it is the most effective means of reducing ammonia emissions and will tend to mix soil and manure more than some other forms of incorporation. However, it seems that slurry application by injector or trailing shoe may be at least as effective in increasing crop uptake of manure N as application followed by immediate incorporation.

Applying slurry to grassland by shallow injection and trailing shoe can increase the flexibility of slurry management by allowing more spreading at shorter intervals before cutting grass (compared with conventional surface broadcasting), without detriment to silage quality. Overall, the trailing shoe appears less likely to lead to sward damage or herbage contamination, while producing increases in crop N

uptake almost equal to those obtained when slurry is applied by injection. Similar effects have been reported with respect to the palatability of herbage. When slurry is applied to taller grass, there is a reduction in efficiency of application by injector and a decrease in palatability. However, when slurry is applied to shorter grass, following silage cutting, cattle respond equally well to pastures on which injection or trailing shoe are used, and both are better than surface application.

In recent years, there has been increased interest in anaerobic digestion of slurries, either alone or with other materials such as dilute food wastes. During digestion, some organic N is converted to plant-available organic forms. Typically, the proportion of crop-available N increases from 50-70% to 60-80% of total N. Field experiments have demonstrated that this extra crop-available N is taken up by crops. In addition, the easily broken down carbon compounds contained in slurry, which provide an energy source for microbes and, hence, encourage immobilisation of mineral N in soil, are converted to methane during digestion, which is used for energy or fuel. As a result, immobilisation of available N in soil is reduced when slurry is digested.

In conclusion, application of slurry by reduced ammonia emission spreading techniques can be a cost-effective means of getting more slurry N into crops. There may also be benefits in improving silage quality and reducing the interval between slurry application and grazing. Anaerobic digestion of slurries may also increase the uptake of manure N by crops, especially when the digested slurry is applied by techniques that reduce ammonia emissions.

For the full article including cost comparison calculation please see [here](#). For further information on this, or any other farm-related query, please contact the Farming Advice Service, which provides free, integrated advice to help you improve the economic and environmental performance of your farm.

## **Strengthened cattle controls to help eradicate bovine TB**

Measures to reduce the risk of bovine TB being spread between cattle

have been strengthened as part of the Government's plan to eradicate the disease in England. From **1 July 2012**, amendments to the rules on cattle movements came into force, alongside changes to compensation policy, including reduced payments for owners of TB affected herds with overdue tests.

**Changes introduced from 1 July include:**

- Removing the exemption allowing cattle held on a farm for under 30 days to be moved without being tested to reduce the risk of untested cattle spreading bovine TB when they are moved between different holdings;
- Removing the pre-movement testing exemption for movements within 'Sole Occupancy Authorities' that have holdings in high-and-low-risk TB areas;
- Pre-movement testing for cattle moved from higher TB risk herds to agricultural shows where cattle are housed or are held there for more than 24 hours – to reduce the risk of untested cattle, from higher TB risk herds, spreading the disease through close contact with other cattle; and
- Discouraging late testing of cattle for bovine TB to reduce disease spread risks for all cattle by reducing compensation for owners of TB affected herds if tests are overdue by more than 60 days.

**To further reduce the risk of TB spreading, controls around linked premises have been tightened from 1 July. Farmers likely to be affected are being contacted:**

- No new Sole Occupancy Authorities, nor requests for the addition of new premises to existing SOAs will be approved; and
- No new Cattle Tracing System links between holdings in high and low TB risk areas will be approved, with existing links between high and low risk areas being removed on a phased basis.

Additional cattle categories have also been introduced to make the TB compensation system more transparent and to remove some anomalies. A new compensation category has been introduced for young pedigree beef animals, and the dairy calved animals' category has been split into two age bands.

For full details of the changes to cattle controls please, visit [www.defra.gov.uk/animal-diseases/a-z/bovine-tb/](http://www.defra.gov.uk/animal-diseases/a-z/bovine-tb/)

## Proposed NVZ boundaries are now available to view from the Defra website

Defra has now made available further information about the proposed NVZ boundaries for the period 2013 – 2016 and the procedure for making an appeal against designation. Details are now available to view on the Defra website ([www.defra.gov.uk/food-farm/land-manage/nitrates-watercourses/nitrates/](http://www.defra.gov.uk/food-farm/land-manage/nitrates-watercourses/nitrates/)), from where there is a link to view the maps, which are hosted on the Environment Agency website [here](#). The boundaries are shown in searchable interactive maps, which enable farmers to identify if their land is in the proposed NVZs. Farmers and land managers can click on the map to access data and information relating to why that zone was designated.

### Further background

Defra has to undertake a four-yearly review of Nitrate Vulnerable Zones. A farmer can appeal on two specified grounds against the inclusion of land within the proposed maps. Any appeals will be heard through the summer and autumn with regulations being laid in the autumn that formally designate the NVZs.

The proposed NVZs cover some 59% of England (a reduction from the current 62%). There will be new areas proposed and some areas de-designated from the current NVZs.

## Attending a FAS event?

The Farming Advice Service delivers free events throughout England for farmers, other land managers, their advisers and agricultural contractors. They cover a range of topics in the areas of Cross Compliance, Nutrient Management, Competitiveness and Climate Change Adaptation and Mitigation. Events include workshops, walks and drop-in clinics. A typical event was the recent farm walk delivered

by FAS adviser John Morgan at Carne Farm, Morvah on the 23 March. This focused on Nutrient Management, and discussions included the importance of testing soils regularly and paying particular attention to the pH of local acidic soils. John was keen to point out "with good, targeted applications of slurry and fertiliser it is possible to grow more year-round stock feed on the farm, rather than buying in feed. This makes good business sense".



The walk around the dairy farm included a working demonstration of precision slurry spreading machinery. The day was well attended by local farmers, and demonstrated how important it is to recognise and make the most of the nutrient value of manures. Attendee Andrew Hichens, from Carne Farm said, "I found it a really useful meeting. It was great to be able to discuss some of the practicalities of yard drainage, slurry storage and application with John Morgan and neighbouring farmers."

For details of FAS events in your area, please access the events page of the FAS website [here](#), details are regularly updated, so if there is not an event of interest at the current time, please do come back soon.

## Register for text message updates

If you haven't already registered for text messages, we recommend you do! We use text messages to get relevant information to farmers quickly. We send text messages as a reminder of approaching key dates, or in response to current events (e.g. flooding). To register for text message updates, please email

[bookings@farmingadvice.org.uk](mailto:bookings@farmingadvice.org.uk) with 'Register for text

**updates'** in the subject line, and include your name and mobile phone number in the message. The details you provided will not be shared with third parties.

## Key dates

<b>1 May</b>	You must not carry out hedge-laying or coppicing of hedgerows from this date. (GAEC 15)
<b>1 August</b>	You can cut or plough vegetation on agricultural land which is not in agricultural production from this date. (GAEC 12)
<b>1 August</b>	You can cut hedgerows from this date. (GAEC 15)
<b>1 August</b>	Start of closed period for applying organic manure with a high, readily available nitrogen content (for example, slurry, poultry manures or liquid digested sewage sludge) to tillage land on shallow or sandy soils except where crops will be sown on or before 15 September. (SMR 4)

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