

## Written evidence submitted by WWF (FR0054)

# Farming Rules for Water

## Evidence from WWF to the House of Commons Environment, Food and Rural Affairs Committee

---

September 2020

---

### WHO WE ARE

WWF is the world's leading independent conservation organisation. Our mission is to create a world where people and wildlife can thrive together.

#### *Legal note*

This response contains public sector information licensed under the Open Government Licence v3.0. Please refer to [Open Government Licence](#) which explains the permitted use of this information.

#### *Reason for submitting evidence*

We have an interest in UK agricultural diffuse pollution and have been working on this issue for several years. It is particularly relevant to the 'Triple Challenge' of meeting the food needs of the world, while tackling the climate crisis and reversing the loss of nature.

***Please note whilst we are submitting our own evidence; we also support the evidence submitted by Wildlife and Countryside Link.***

### SUMMARY AND INTRODUCTION

The Farming Rules for Water (FRfW) were introduced to conserve soils, deliver cleaner water, improve biodiversity and mitigate climate change, codifying into law what has, in many cases, existed as good practice guidance for farmers. However, implementation and enforcement of the rules has been patchy.

With only 16% of English waterbodies achieving 'good' or 'high' ecological health in 2019<sup>1</sup>, the FRfW serve as a 'basic measure' to "prevent or control diffuse sources of pollution" to comply with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. Not only do the Government have a legal obligation to ensure our waters are healthy but they have also made commitments to restore 75% of protected freshwater sites to 'favourable condition' in the 25 Year Environment Plan<sup>2</sup>.

Baseline regulations such as the FRfW are an integral part of a range of measures (which also include advice, incentives, and effective regulatory enforcement) that are needed to restore our environment.

Regulation serves to avoid unintended costs of an activity and to improve the health of the environment for people and nature, however, environmental regulations are often portrayed as a barrier to growth and bad for business. This is unfounded as evidence demonstrates that well-designed and properly enforced regulations can result in a range of positive economic outcomes. For example, Defra estimates that the benefits of its regulations are 2.4 times greater than their costs in monetary terms<sup>3</sup>.

Agriculture and land management activities pose a number of risks to the environment, human health and the economy which should be managed appropriately, for example:

- The percentage of assessed waterbodies impacted by pollution from agriculture and rural areas has risen from 35% in 2015<sup>4</sup> to 40% in 2019<sup>5</sup>.
- Nitrate pollution of aquatic bodies means 58% of land in England is designated a Nitrate Vulnerable Zone (NVZ) of which: 47% of land is NVZ because rivers breach the nitrate limit; 25% because groundwater breaches the nitrate limit; and 6% because of eutrophication in estuaries and lakes/reservoirs (these figures overlap)<sup>6</sup>.
- Agriculture generates 88% of UK ammonia emissions<sup>7</sup>.
- Of the UK's N<sub>2</sub>O emissions, 14.8 MtCO<sub>2</sub>e (72%) are attributed to agriculture and cropland soil emissions, which was over 3% of the UK's total Greenhouse Gas emissions in 2017<sup>8</sup>.
- In terms of total profits, the cost of total nitrogen waste (from all sources) at a UK scale is estimated at £2.5 (£1.3 – 3.7) billion per year, approximately half the agricultural profits. The societal costs attributed to total N pollution in the UK are estimated at approximately £10.9 (£2.7 – 27.1) billion per year<sup>9</sup>.

**The FRfW need to be maintained, and Government should focus on improving slurry/manure storage capacity (question 1), alongside supporting technology (question 3). Additional resources, beyond recent commitments, need to focus on effective advice and enforcement of the FRfW to achieve compliance (question 1 & 2). The costs of doing so are dwarfed by the estimated costs of pollution.**

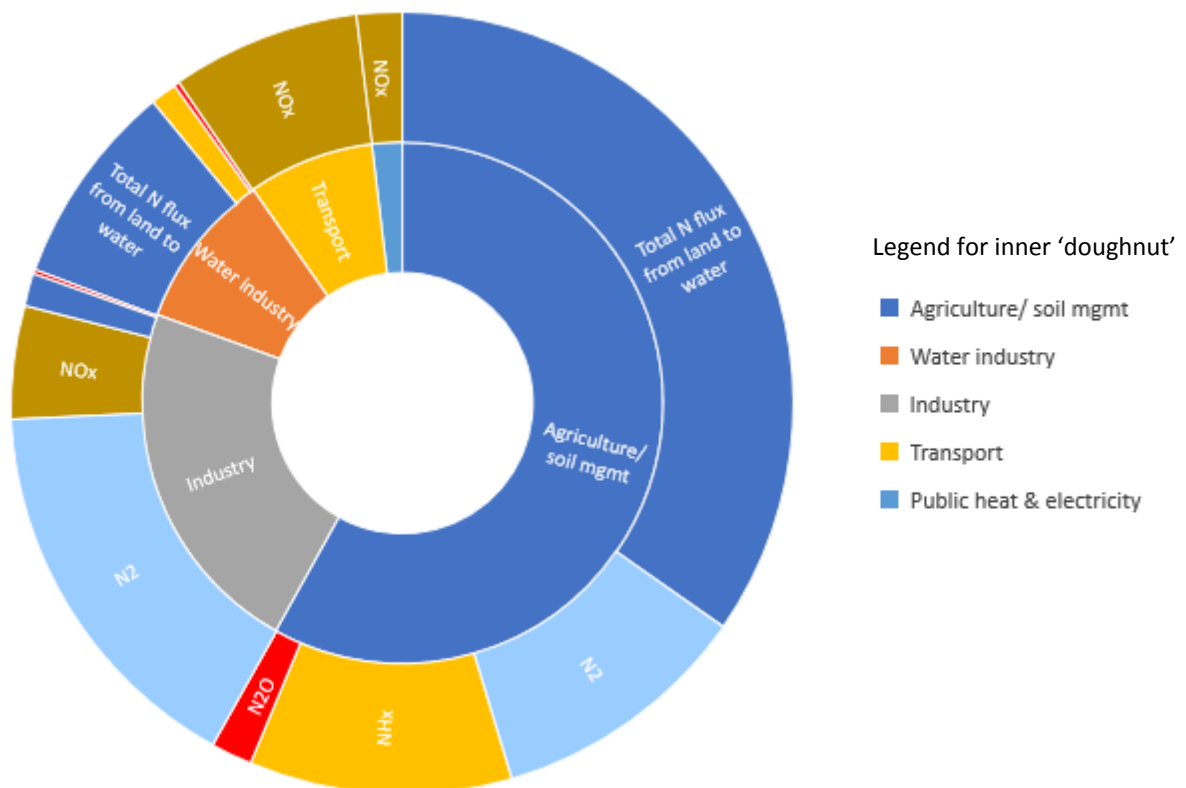
**WWF's position is that the FRfW must be placed within the wider context of taking a comprehensive economy-wide approach to tackling nitrogen waste, including legally binding nitrogen budgets and targets. Commissioning national nitrogen budgets as a policy tool (similar to carbon budgets), would facilitate a balanced and integrated approach to provide evidence of current nitrogen flows and impacts, to inform target-setting for reducing pollution, and to shape future policy and strategy.**

**The Government should also commission independent economic assessment of the costs and benefits of reducing N pollution considering the range of possible fiscal measures, within a coherent package of legislation, compliance and enforcement, financial support, collaboration with industry, and specialist advice to farmers and other stakeholders, and, making recommendations accordingly.**

**1. WHAT IMPACT, IF ANY, ARE THE EA'S IMPLEMENTATION OF FARMING RULES FOR WATER REGULATION PREVENTS FARMERS FROM SPREADING ORGANIC FERTILISER?**

- 1.1.** The EA’s correspondence<sup>10</sup> to the Chair of the EFRA Committee states that “there is nothing within our interpretation of the FRfW that stops autumn application of appropriate organic fertilisers to improve soil organic matter. Improving organic matter in soil can be achieved by spreading and incorporating organic fertilisers that add organic matter but do not contain nutrients that are not needed.”
- 1.2.** The same correspondence<sup>11</sup> also points to best practice guidelines that state “Nitrogenous fertilisers should only be applied at times when the crops can utilise the nitrogen” and “Organic material applications (containing readily available N) during the autumn or early winter period should be avoided, as there is likely to be sufficient overwinter rainfall to wash a large proportion of this nitrate out of the soil before the crop can use it”.
- 1.3.** WWF has commissioned research on Nitrogen (N)<sup>12</sup> to be published in January 2022, and for this reason we focus on N here. However, Phosphorous and micro-organisms, among others, are also important diffuse pollutants addressed by the FRfW, and similar principles apply to agricultural run-off for these, albeit less so for leaching. The N research demonstrates that the largest component of N lost to the environment in the UK results from losses to aquatic systems of approximately 712 kt N annually. The chart below shows that a third of economy-wide N losses are to water from agriculture/soil management<sup>13</sup>.

**Estimated losses of Nitrogen by sector and chemical species**



Data source: Hicks<sup>1</sup>, McKendree<sup>1</sup>, Sutton<sup>2</sup>, Cowan<sup>2</sup>, German<sup>3</sup>, Dore<sup>3</sup>, Jones<sup>3</sup>, Hawley<sup>4</sup> & Eldridge<sup>4</sup> (in press). A Comprehensive Approach to Nitrogen in the UK. Report for WWF-UK (due January 2022). <sup>1</sup>Stockholm Environment Institute at the University of York, <sup>2</sup>UK Centre for Ecology and Hydrology, <sup>3</sup>Aether and <sup>4</sup>Plantlife International.

*\* Note that this chart shows the size of losses in the N cycle by weight of Nitrogen, but not their impacts. NO<sub>x</sub> and NH<sub>x</sub> have acute impacts on human health; N flux to water causes eutrophication of aquatic and marine systems; N<sub>2</sub>O is a long-lived Greenhouse Gas; by contrast, air is 78% N<sub>2</sub>, so N<sub>2</sub> is an only partially avoidable loss of potentially useful resources.*

**1.4.** The appropriateness of spreading/incorporating slurry and manures on farm is a complex issue which depends on a number of factors such as the farming system (e.g. mixed or grassland only), stocking density, type of slurry or manure, soil type, field slope, field conditions and crop needs. Crucially, making sound decisions based on the aforementioned factors depends on sufficient storage facilities that alleviate the pressure to spread slurry/manures at inappropriate times. Until such time that farmers have sufficient storage capacity, the issue for the sector will inappropriately remain one of waste management rather than resource use. This leads to the need for the FRfW, and an environmental need to uphold non-growing season restrictions on manure/slurry application. This is to avoid excess nutrient being applied to soils when it is not required by crops and further risking the extent of agriculture's nutrient losses to the environment (which the chart above shows is already significant), and our ability to meet statutory and other commitments such as those in the 25 Year Environment Plan and Environment Act. The Environment Agency have clarified the law, and have put forward a Regulatory Position Statement (RPS) that seeks to address the complexity of this issue whilst also limiting the widespread pollution that threatens those commitments.

**1.5.** Current regulation stipulates a minimum of 4 months slurry storage, however this is poorly enforced, with a low level of compliance (see under Axe regulatory project<sup>14</sup> below), and 5 months storage in a Nitrate Vulnerable Zone (NVZ). These storage requirements are likely insufficient for good planning and management and should be regarded as minimums. Other countries such as Denmark operate with as much as 9 months storage, which allows for more headroom and promotes better decision-making.

**1.6. Instead of paring back the RPS and guidance on the regulations themselves, immediate, concerted effort should be made by Government to increase slurry storage capacity across the board to address soil, water and air pollution, and to properly enforce rules on slurry storage and the FRfW. This would include providing improved advice and guidance for farmers, incentives to improve manure and slurry management, as well as resources to enable effective enforcement of the rules<sup>1</sup>. The Slurry Investment Scheme needs to be designed to ensure that public investment in infrastructure has long-term conditionality requiring the herd size to be kept within the beneficiary's capacity to handle waste arisings legally.**

## **2. ARE THERE CHANGE THAT SHOULD BE MADE TO THE RULES OR HOW THEY ARE APPLIED?**

**2.1.** Water quality regulation has not been successful in reducing nitrate levels significantly, owing to insufficient advisory and enforcement resources to drive

<sup>1</sup> See WWF's 2018 publication 'Saving the Earth' for more information on the costs and benefits of this approach and recommendations for Government.

compliance<sup>15</sup>. Until recently, there have been low levels of awareness of the FRfW within the farming sector and/or of attention paid to the rules, in light of the limited resources for advice and minimal risks of enforcement.

- 2.2.** WWF-UK submitted Environmental Information Requests (EIR) to the Environment Agency (EA) on this topic in June 2019 and November 2020 which highlight the low level of farm inspections by agricultural regulatory officers and the high level of FRfW breaches:
- April 2018 – March 2019 **403 farm inspections** are reported as being undertaken by Environment Agency (EA) agricultural regulatory officers.
  - April 2019 – March 2020 **308 inspections** undertaken at agricultural premises for assessing various aspects of environmental legislation.
- 2.3.** This equates to fewer than one farm inspection per day across England. As the Farm Inspection and Regulation Review reported in 2018, the EA averages an environmental inspection rate of a visit once in every two hundred years per farm<sup>16</sup>. We welcome the new target of **1,500 advice led visits** in the financial year 2021/22<sup>17</sup> but this is still dwarfed by the number of farm holdings in England (106,000)<sup>18</sup>.
- 2.4.** For the first year the FRfW were in force, the EA took a light touch approach to enforcement. Consequently, it is more pertinent to note that in 2019/20, some aspects of the **FRfW were inspected at 129 farms [only], of which 66 were non-compliant** with at least one rule.
- 2.5.** The River Axe N2K Catchment Regulatory Project Report<sup>19</sup> highlights the importance of regulatory enforcement. Despite over a decade of advisory visits in the catchment, the catchment continued to decline and there were no significant improvements in farming practices - 95% of farms did not comply with storage regulations and 49% of farms were polluting the river Axe. The Environment Agency secured funding for a three-year regulatory farm visit campaign during the winter periods 2016 to 2019, during which time 86 farm audits were carried out. Initial evaluation suggests that for every pound spent by the Environment Agency in regulatory visits has resulted in investment of £33 for infrastructure improvements and 30km of the River Axe has been enhanced. **The report concludes that neither advice, incentives nor regulation delivered in isolation of the others will generate the desired environmental improvements in water quality.**
- 2.6.** In our own report 'Saving the Earth'<sup>20</sup> we estimate the cost of enforcing existing agricultural regulation would be as little as £5.8m a year and an increased advisory presence would cost just £3.2m - delivering a whole host of environmental, societal and economic benefits. In line with Blueprint for Water, we now call for a significantly higher figure, to protect the environment at least to the level expected in law. This reflects the lack of additional investment since 2018, the acknowledgement of the scale of impact on Protected Areas, and the recognition of the need for increased activity to fill both current gaps in regulation and those that will be created by the removal of cross compliance<sup>21</sup>. This represents a sound investment when set against the estimated costs of agricultural pollution - for

example, the estimated £1.2 billion annual cost associated with soil degradation in England and Wales<sup>22</sup>

**2.7. The change urgently needed is for the FRfW to be enforced effectively, advised upon, and consistently complied with by farmer/growers. The costs of resourcing effective enforcement and providing the advice that farmers need is dwarfed by the estimated costs of pollution<sup>23</sup>.**

**2.8.** In addition:

In the wrong circumstances, high risk crops, such as maize, potatoes and sugar beet, can cause catastrophic and/or very long-lasting damage to soil, as well as significant diffuse pollution. The FRfW currently include undersowing and cover crops as examples of reasonable precautions, and these are usually the best post-harvest management options<sup>24,25</sup>. What we believe is a gap in the regulations is crop/field selection. The agricultural risk factors in Regulation 4(2) should also be used in assessing the suitability of a crop to the field in question. This is not unequivocally captured by “land management and cultivation practices” (Regulation 10(5)), nor included within the list of examples (Regulation 10(7)). We propose government make deciding not to grow a crop for which the field is manifestly unsuitable from an environmental pollution and soil protection perspective, into a reasonable precaution.

### **3. WHAT ARE THE BEST WAYS METHODS OF PREVENTING AGRICULTURAL DIFFUSE POLLUTION?**

**3.1.** The Nitrogen report<sup>26</sup> referenced above recommends both farm-level and policy interventions to address nitrogen pollution in a holistic way. This comprehensive review looks at all sources of nitrogen and the different impacts on the environment and shows that tackling nitrogen pollution by tightening the nitrogen cycle will have multiple benefits across the environment, economy and society. The interventions below are taken from this report:

- 1. Covering manure stores with an impermeable cover and base, and slurry acidification** are two key measures for reducing reactive Nitrogen emissions from manure storage. Covering stores also helps to **increase storage capacity of stores** by preventing rainwater incursion.
- 2. Storage capacity** is vital to facilitate appropriate timing and application rates of manure to soils (i.e. to avoid spreading too much, or in conditions where reactive Nitrogen losses will be high). Currently one-fifth of farms only have 1-3 months capacity, below the 6 months recommended.
- 3. Key tools** to reduce N losses to the environment and ensuring more N becomes available to meet crop and animal needs are Nutrient Management Plans, precision application and placement of fertilisers, low emission spreading techniques, different types of fertiliser and the use of inhibitors to reduce N transformations to polluting forms. Where reductions in synthetic fertiliser application are achieved, this brings a co-benefit of reduced GHG emissions from fertiliser manufacture.

4. **Permanent vegetation in the landscape**, in the form of trees, hedgerows, constructed wetlands and fertilised or unfertilised grassland increases reactive Nitrogen retention in soils and plant biomass, and can intercept flows of leached reactive Nitrogen in the soil, or NH<sub>3</sub> into the air around point sources.
5. **Use of cover and catch crops** – planted to reduce soil erosion and prevent N leaching during seasons where crops are not growing – can also be effective. They provide additional organic matter input to the soil, can serve to build fertility if N-fixing plants are used, help suppress weeds and provide additional grazing in mixed farms. However, timing of incorporation is important to prevent unwanted reactive Nitrogen losses.
6. **Agroecological system measures** – such as increasing biological N fixation using legumes, increasing the value of manure processing, reducing N inputs through low-emission manure management and fertiliser spreading techniques, increasing grazing time, use of catch/cover crops and establishment of more permanent non-crop vegetation in the landscape.
7. **Other system measures** such as mixed farming and the redistribution of manure can also help to reduce N losses to the environment.

---

<sup>1</sup> Environment Agency (2020) WFD Surface Water Bodies in England: Classification Status and Objectives - Cycle 2. Available at: <https://environment.data.gov.uk/portalstg/home/item.html?id=bccec2775501841d7a4dacef57e291b61>

<sup>2</sup> UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf)

<sup>3</sup> Defra (2011) The Costs and Benefits of Defra's Regulatory Stock. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69226/pb13623-costs-benefits-defra-regulatory-stock110816.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69226/pb13623-costs-benefits-defra-regulatory-stock110816.pdf)

<sup>4</sup> Environment Agency (2015) Update to the river basin management plans in England National Evidence and Data Report. Available at: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/514944/National\\_evidence\\_and\\_data\\_report.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/514944/National_evidence_and_data_report.pdf)

<sup>5</sup> Defra (unpublished) Environment Bill: Water Targets. Stakeholder Forum – Tuesday 15 September 2020 slide-deck

<sup>6</sup> Defra (2018), Explanatory Memorandum 8693/18 ADD: Report from the Commission on the Implementation of Council Directive 91/676/EEC Concerning the Protection of Waters against Pollution caused by Nitrates. Available at: [http://europeanmemoranda.cabinetoffice.gov.uk/files/2018/05/EM\\_8693-18.pdf](http://europeanmemoranda.cabinetoffice.gov.uk/files/2018/05/EM_8693-18.pdf)

<sup>7</sup> Defra (2019) Clean Air Strategy 2019. Available at: <https://www.gov.uk/government/publications/clean-air-strategy-2019>

<sup>8</sup> Department for Business, Energy and Industry Strategy (2019) Final UK greenhouse gas emissions national statistics 1990-2017. Available at: <https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-2017>

<sup>9</sup> Hicks W.K., McKendree, J., Sutton M.A., Cowan, N., German, R., Dore, C., Jones, L., Hawley, J., Eldridge, H. (in press). A comprehensive approach to Nitrogen in the UK. Report for WWF-UK (due January 2022)

<sup>10</sup> Sir James Bevan, Letter to Neil Parish MP, 29 October 2021. Available at: <https://committees.parliament.uk/publications/7733/documents/80640/default/>

<sup>11</sup> Sir James Bevan, Letter to Neil Parish MP, 29 October 2021. Available at: <https://committees.parliament.uk/publications/7733/documents/80640/default/>

<sup>12</sup> Hicks W.K., McKendree, J., Sutton M.A., Cowan, N., German, R., Dore, C., Jones, L., Hawley, J., Eldridge, H. (in press). A comprehensive approach to Nitrogen in the UK. Report for WWF-UK (due January 2022)

<sup>13</sup> Hicks W.K., McKendree, J., Sutton M.A., Cowan, N., German, R., Dore, C., Jones, L., Hawley, J., Eldridge, H. (in press). A comprehensive approach to Nitrogen in the UK. Report for WWF-UK (due January 2022)

<sup>14</sup> Environment Agency (Unpublished) River Axe N2K Catchment Regulatory Project Report, November 2019.

<sup>15</sup> Hicks W.K., McKendree, J., Sutton M.A., Cowan, N., German, R., Dore, C., Jones, L., Hawley, J., Eldridge, H. (in press). A comprehensive approach to Nitrogen in the UK. Report for WWF-UK (due January 2022)

<sup>16</sup> Defra (2018), Farm Regulation and Inspection Review – Interim Report (July 2018). Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/724785/farm-inspection-review-interim-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/724785/farm-inspection-review-interim-report.pdf)

<sup>17</sup> Agriculture Transition Plan, June Progress Update, 2021: Available at: <https://www.gov.uk/government/publications/agricultural->

---

[transition-plan-june-2021-progress-update/agricultural-transition-plan-june-2021-progress-update](#)

<sup>18</sup> Agriculture in the UK, 2020:

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1034693/AUK-2020-19nov21.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1034693/AUK-2020-19nov21.pdf)

<sup>19</sup> Environment Agency (Unpublished) River Axe N2K Catchment Regulatory Project Report, November 2019.

<sup>20</sup> WWF, Angling Trust and The Rivers Trust (2018), Saving the Earth – A Sustainable Future for Soils and Water. Available at:

[https://www.wwf.org.uk/sites/default/files/2018-04/WWF\\_Saving\\_The\\_Earth\\_Report\\_HiRes\\_DPS\\_0.pdf](https://www.wwf.org.uk/sites/default/files/2018-04/WWF_Saving_The_Earth_Report_HiRes_DPS_0.pdf)

<sup>21</sup> Blueprint for Water (2020) Changing Course. Available at: [https://www.wcl.org.uk/docs/Changing\\_Course\\_Blueprint\\_25YEP.pdf](https://www.wcl.org.uk/docs/Changing_Course_Blueprint_25YEP.pdf)

<sup>22</sup> Cranfield University. 2011. Cost of soil degradation in England and Wales. Report for Defra.

<sup>23</sup> WWF, Angling Trust and The Rivers Trust (2018), Saving the Earth – A Sustainable Future for Soils and Water. Available at:

[https://www.wwf.org.uk/sites/default/files/2018-04/WWF\\_Saving\\_The\\_Earth\\_Report\\_HiRes\\_DPS\\_0.pdf](https://www.wwf.org.uk/sites/default/files/2018-04/WWF_Saving_The_Earth_Report_HiRes_DPS_0.pdf)

<sup>24</sup> Balshaw, Newell Price, Critchley, Harris, Twining and Chambers (2013) SP1315: Post Harvest Management for soil degradation reduction in agricultural soils: methods, occurrence, cost and benefits. ADAS Ltd report for Defra. Available at:

<http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=18793>

<sup>25</sup> Wye Catchment Partnership (2017) Improving Maize Practices. Available at: <http://wyecatchment.org/improving-maize-practices/>.

<sup>26</sup> Hicks W.K., McKendree, J., Sutton M.A., Cowan, N., German, R., Dore, C., Jones, L., Hawley, J., Eldridge, H. (in press). A comprehensive approach to Nitrogen in the UK. Report for WWF-UK (due January 2022)