Author Correction: The environmental costs and benefits of high-yield farming

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Correction to: *Nature Sustainability* <https://doi.org/10.1038/s41893-018-0138-5>, published online 14 September 2018.

In the version of this Article originally published, ammonia and NO emissions (and associated N deposition), nitrate leaching, and the CO₂ emitted during urea hydrolysis following application to land were all accidentally omitted in the comparison of the greenhouse gas impacts of using ammonium nitrate and urea to produce wheat grain.

The correction has resulted in the changes detailed below.

Figure 2c has been updated. In the caption of this figure, the Spearman's rank coefficient for panel c read “−0.34 (0.14)”; this has been updated to “−0.90 (<0.001)”. Figure 3b has been updated. Each revised figure plots new values for the greenhouse gas costs (in tonnes CO₂e) of producing a tonne of wheat under different fertilizer regimes. The greenhouse gas estimates now include indirect N₂O emissions (from ammonia and NO emissions and nitrate leaching) and CO₂ emissions from urea hydrolysis. Their inclusion means that the greenhouse gas costs from farm operations are now significantly negatively related to land costs (Fig. 2c, blue points; with updated uncertainty estimates and blue points in Supplementary Fig. 1c. Both these panels have been updated). However, these changes are modest compared with the greenhouse gas opportunity costs of wheat production; when these are incorporated too, greenhouse gas costs of alternative production systems remain strongly positively associated with land costs (Fig. 3b and Supplementary Fig. 3b,

Fig. 2c | Original and Corrected.

Fig. 3b | Original and Corrected.

Supplementary Fig. 1c | Original and Corrected.

Supplementary Fig. 3b | Original and Corrected.

blue points. Both panels have been updated). In the caption of Supplementary Fig. 3, the Spearman's rank coefficient for panel **b** read "0.97 (<0.001)"; this has been updated to "0.99 (<0.001)".

The sentence "Our GLMMs of data from a three-site experiment varying the N fertilization regime revealed a complex relationship between GHG and land costs (Fig. 2c; Supplementary Table 2), driven by divergent responses²⁸ to adding ammonium nitrate (which lowers land costs but increases embodied GHG emissions) and adding urea (which lowers land costs without increasing GHG emissions per unit production, but at the cost of increased ammonia volatilization)" has been updated to read "Our GLMMs of data from a three-site experiment varying the N fertilization regime revealed a clear trade-off between GHG and land costs (Fig. 2c; Supplementary Table 2), with fertilization using either ammonium nitrate or urea lowering land costs but increasing GHG emissions per unit production."

The text "Others that seem favourable in terms of our focal externalities incur other costs" has been updated to read "Others that seem favourable in terms of our focal externalities may well incur other costs".

The sentence "We expanded the emissions profile to include embodied emissions from N fertilizer production (from the Yara emissions database; F. Brentrup, personal communication)" has been updated to read "We expanded the emissions profile to include embodied emissions from N fertilizer production (from the Yara emissions database; F. Brentrup, personal communication), direct and indirect N₂O emissions, and direct CO₂ emissions from urea at spreading."

The coefficients for the externality cost GLMM for the wheat–GHG plot have been updated in Supplementary Table 2.

These errors have now been corrected. The authors would like to thank F. Brentrup for pointing out this important analytical error. An unrelated clarification has also been made following the sentence starting "To illustrate the effects of statistically significant management variables", where the following sentence has been added: "Note that these lines are therefore not regression lines."

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